DISTRICT COURT, WATER DIVISION NO. 1, COLORADO Court Address: 901 9th Avenue, Greeley, CO 80631-1113 Mailing Address: P.O. Box 2038, Greeley, CO 80632-2038	
CONCERNING THE APPLICATION FOR WATER RIGHTS OF: **WELL AUGMENTATION SUBDISTRICT OF THE CENTRAL COLORADO WATER CONSERVANCY DISTRICT AND SOUTH PLATTE WELL USERS ASSOCIATION,** **IN WELD, LARIMER, AND ADAMS COUNTIES.**	**▲COURT USE ONLY▲** **Case No.: 03 CW 99** (Consolidated 03 CW 99 and 03 CW 177)

FINDINGS OF FACT, CONCLUSIONS OF LAW, JUDGMENT, AND ORDER OF THE WATER COURT

This matter concerns the consolidated applications from Case Nos. 03CW99 and 03CW177 for conditional water rights and approval of a plan for augmentation of the Well Augmentation Subdistrict of the Central Colorado Water Conservancy District ("WAS") and the South Platte Well Users Association ("SPWUA") (collectively, "Applicants"). A thirty-day trial to the water court was held between February 5, 2007 and May 3, 2007. Having reviewed and considered the pleadings, lay and expert testimony, documentary and other evidence, relevant statutes, controlling and persuasive case law, and the arguments of counsel, the court hereby makes the following findings of fact, conclusions of laws, and orders.

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II. CASE AND PROCEDURAL HISTORY

The original application in Case No. 03CW99 was filed on February 28, 2003 and amended on March 3, 2003 by twenty-two individuals/entities. These applicants sought a plan for augmentation for 115 wells, changes of water rights, and conditional water rights for augmentation wells. Numerous parties filed statements of opposition. SPWUA was substituted as the applicant in the spring of 2003 after the twenty-two individuals/entities joined SPWUA.

The application in Case No. 03CW177 was filed on March 31, 2003 and amended on April 30, 2003 by SPWUA. SPWUA sought changes of water rights and approval of a plan for augmentation for 233 wells. Numerous parties filed statements of opposition.

The court granted SPWUA's Motion to Consolidate Case Nos. 03CW99 and 03CW177 on August 18, 2003. WAS was added as an additional applicant by order dated March 14, 2004. SPWUA subsequently transferred its interest in the consolidated applications to WAS. WAS is thus the primary applicant in this case with SPWUA remaining as an applicant for the purpose of issues arising out of its 2003 substitute water supply plan ("SWSP"). *See* § 37-92-308, C.R.S.

The court granted Applicants' Motion for Leave to File Third Amended Application on August 29, 2005. The Third Amended Application dropped the claim for a changes of water rights and sought approval of a plan for augmentation to replace the depletions from 449 WAS member wells as well as conditional water rights for augmentation wells related to the proposed plan.

Applicants, SPWUA and WAS, requested and received three SWSPs pursuant to § 37-92-308(4), C.R.S, in this matter. SPWUA requested and received approval of a SWSP for the

2003 irrigation season. WAS requested and received SWSPs in 2004 and 2005. Various parties appealed the State Engineer's approvals of the 2003 and 2004 SWSPs to this court and those appeals were consolidated with the applications in this case pursuant to § 37-92-308(4)(c), C.R.S. The 2005 SWSP approval was not appealed.

A twenty-day trial was originally scheduled to begin on May 8, 2006. WAS filed a motion to continue the trial on February 23, 2006. Opposers contested the continuance citing their concern that the approved SWSPs were insufficient to prevent injury to their water rights. The court held a status conference on April 3, 2006 and offered Applicants three choices regarding their motion: (1) proceed to trial on May 8, 2006; (2) continue the trial, but curtail all well pumping until the Court entered a decree regarding the plan for augmentation; or (3) continue the trial regarding the plan for augmentation, but try the appeals of the SWSPs beginning May 8, 2006. The court entered its Order Determining Standard of Review for § 37-92-308(4) SWSP on May 3, 2006.

Applicants chose the third option but reverted to the second option on the eve of the trial. Applicants thus withdrew their request for approval of a 2006 SWSP and agreed to cease operation of WAS member wells unless and until the court decrees an augmentation plan. The court approved this agreement by order dated May 10, 2006, which ordered that "[n]o pumping of Applicants member wells shall occur unless and until the Court enters an augmentation plan decree." A new thirty-day trial was set to begin February 5, 2007.

The court entered several additional substantive orders before trial. On July 12, 2006, the court entered its Order Granting Motion for Determination of Question of Law (Pre-1974 Pumping) and Order Granting Motion for Determination of Question of Law (Box Elder). On September 5, 2006, the court entered its Order Denying Opposers' Motion for Summary Judgment, Denying Applicants' Motion to Strike, and Denying Applicants' Motion for Attorney Fees. On November 1, 2006, the court entered its Order Granting Motion to Dismiss and Denying Motion to Strike. On November 28, 2006, the court entered its Order Denying Motion for a Protective Order. On December 4, 2006, the court entered its Order Regarding Certain Opposers' Motion for Determination of Law Concerning Authority of State and Division Engineers.

The court approved Applicants' Fourth Amended Application on January 17, 2007, by its Order Regarding Motion to Amend Application. WAS removed 234 wells as structures to be augmented under the proposed augmentation plan (the "removed wells"). WAS still seeks approval of a plan for augmentation of 215 wells located in six of WAS's administrative reaches, Reaches A through F, along the alluvium of the South Platte River, Beebe Draw, and Box Elder Creek.

Before trial, the Platte Valley Irrigation Company, Fulton Irrigation Ditch Company, and Greeley Irrigation Company withdrew their statements of opposition. The Lupton Ditch Company and Lupton Meadows Ditch Company entered into a stipulation with Applicant on August 23, 2004.

A thirty-day trial to the court was held between February 5, 2007 and May 3, 2007 on: February 5th to 9th, 12th to 16th, 20th to 22nd, 26th to 28th, March 1st to 2nd, 26th to 30th, April 2nd to 5th, April 30th, and May 1st to 3rd.

The State and Division Engineers (the "Engineers") participated at trial regarding terms and conditions they contend are necessary to prevent injury. The Engineers did not take a position regarding whether the application should be denied or granted with sufficient terms and conditions.

Numerous Opposers did not participate at trial, including: United Water and Sanitation District; Farmers Reservoir and Irrigation District; Cache la Poudre Water Users Association; North Poudre Irrigation Company; Lower Latham Reservoir Company; New Cache la Poudre Irrigation Ditch Company; City of Black Hawk; Lupton Ditch Company and Lupton Meadows Ditch Company; Riverside Irrigation District and Riverside Reservoir and Land Company; Irrigationists' Association, Water District No. 1; West Farm, LLC; City of Westminster; and the City of Aurora, acting by and through its Utility Enterprise.

Opposers Henrylyn Irrigation District ("Henrylyn"), Jackson Lake and Fort Morgan Reservoir and Irrigation Company ("Ft. Morgan"), and The Harmony Ditch Company ("Harmony") participated in trial by presenting opening statements, cross examining witnesses, and, in the case of Harmony, presenting closing argument.

Opposers that actively participated at trial and presented evidence through witnesses were: Bijou Irrigation Company and Bijou Irrigation District ("Bijou"), the City of Greeley, acting by and through its Water and Sewer Board ("Greeley"), the City of Sterling ("Sterling"), the City and County of Denver, acting by and through its Board of Water Commissioners ("Denver Water"), the City of Thornton ("Thornton"); Public Service Company of Colorado d/b/a Xcel Energy, Inc. ("PSCo"); the City of Boulder ("Boulder"), Centennial Water and Sanitation District ("Centennial"), South Adams County Water and Sanitation District ("South Adams"), East Cherry Creek Valley Water & Sanitation District ("ECCV"), and Pawnee Well Users, Inc. ("Pawnee"). These actively participating Opposers are generally referred to as "Opposers" in this order.

On February 28, 2007, Sterling, Boulder, Centennial, South Adams, Pawnee, ECCV, Harmony, PSCo, Ft. Morgan, Thornton, Denver, and Henrylyn motioned the court for dismissal of the application pursuant to C.R.C.P. 41(b)(1). These Opposers filed their Motion to Dismiss WAS Application Pursuant to C.R.C.P. 41(b)(1) that same day. WAS responded orally the next day. The court deferred ruling on the motion at that time.

Near the end of trial, on April 5, 2007, WAS orally motioned the court to reconsider certain aspects of the court's January 17, 2007 order. The court ordered that WAS submit its motion in writing and WAS filed its motion five days later. Numerous parties responded. The

court rules on that motion in its Order Regarding Motion for Reconsideration of January 17, 2007 Order Regarding Amendment to Remove Wells entered simultaneously with this order.

At the end of trial, the court ordered that WAS's proposed ruling be submitted in three weeks and a proposed ruling was filed on May 24, 2007. The court also ordered that the Engineers' proposed terms and conditions be submitted one week following receipt of Applicant's proposed ruling and such proposed terms and conditions was filed on June 1, 2007. The court ordered that Opposers' proposed ruling be submitted three weeks following receipt of Applicant's proposed ruling. On June 14, 2007, Harmony, Boulder, Centennial, Pawnee, South Adams, Sterling, Thornton, Denver, ECCV, and PSCo filed Certain Objectors' Submittal of Proposed Findings of Fact, Conclusions of Law and Order of the Court (Dismissal of Applications). That same day, those Opposers, as well as Greeley, filed Certain Objectors' Submittal of Proposed Findings of Fact, Conclusions of Law and Order of the Court (Terms and Conditions). By order dated July 9, 2007, Applicants filed a Reply to Objectors Submittal of Proposed Findings of Fact, Conclusions of Law and Order of the Court (Terms and Conditions).

III. EVIDENCE PRESENTED AT TRIAL

The following lay witnesses testified for WAS: Tom Cech, Randy Ray, Gerald Brethauer, Paul Saiter, Gary Herman, Darlene Denel Monroe, David Dechant, Alan Dechant, Greg Hertzke, Curtis Hoos, Frank Eckhardt Jr., Patty Rettig, and Justin Vieri.

The following expert witnesses testified for WAS: John Ford, expert in geology, geological engineering, and water resources engineering; Dr. Leo Eisel, expert in water resource engineering, water rights, hydrology, and surface and groundwater modeling; Matt Lindburg, expert in water resource engineering and water rights; Lindsey Griffith, expert in water rights engineering, hydrology, augmentation plan operation, and water rights accounting; and the Division Engineer for Water Division No. 1 Jim Hall, expert in river administration in Water Division No. 1.

For the Engineers, the Division Engineer testified as an expert and Kevin Rein testified as an expert in water resource engineering.

The following witnesses testified for Opposers: for Sterling: Michael Sayler, expert in water resource engineering, including ground and surface water, water rights, plans for augmentation, agricultural engineering, including historical use analyses, returns flows and irrigation requirements, and South Platte River administration and operation; for Bijou, Bruce Kroeker, expert in water resource engineering, surface water and groundwater hydrology, water rights analysis administration; for Greeley, Phillippe Martin, expert in geology and groundwater hydrology, and Joe Tom Wood, expert in water resources engineering and injury analysis; for ECCV, Dave Kaunisto as a lay witness and Gary Thompson, expert in water resources engineering, water rights engineering, and South Platte River operation and administration; for Thornton, Walid Hajj, expert in water resources engineering, water rights analysis, water rights accounting, and hydrology; for Denver, Larry Dirks, expert in water resources engineering; for

Boulder, Bob Carlson and Jim Yahn as lay witnesses, the Division Engineer as an expert, and Lee Rozaklis, expert in water resources planning, water rights analysis, including augmentation plans and change of water rights, water rights administration, and surface and groundwater hydrology; for South Adams, Michael Sayler as an expert; for Centennial, Rick McCloud as a lay witness, Doug Clements, expert testimony in water resources engineering including water rights administration, and Katherine Kraeger-Rovey, expert testimony in hydrology including the interpretation of aerial photographs. Due to the similarity of Opposers' positions and for simplicity, these experts are generally referred to as "Opposers'."

In addition to the testimony of the persons listed above, the court received voluminous documentary and demonstrative evidence. Such evidence is referred to below as necessary.

IV. LEGAL STANDARDS

Opposers' Motion to Dismiss WAS Application Pursuant to C.R.C.P. 41(b)(1) is pending. WAS asserts claims for conditional water rights and seeks judicial approval of a plan for augmentation in this matter. The legal standards guiding the court's analysis are described below.

A. Motion to Dismiss Pursuant to C.R.C.P. 41(b)(1)

Colorado Rule of Civil Procedure 41(b)(1) states in relevant part

> After the plaintiff, in an action tried by the court without a jury, has completed the presentation of his evidence, the defendant, without waiving his right to offer evidence in the event the motion is not granted, may move for a dismissal on the ground that upon the facts and the law the plaintiff has shown no right to relief. The court as trier of the facts may then determine them and render judgment against the plaintiff or may decline to render judgment until the close of all the evidence.

Motion under this rule "provide[s] the court with an opportunity to evaluate the evidence and to determine whether the plaintiff has satisfied its burden of proof so as to require the other side to present its case." *City of Aurora v. State Engineer*, 105 P.3d 595, 614 (Colo. 2005). The "standard is not whether the plaintiff established a prima facie case, but whether judgment in favor of defendant is justified on the evidence presented." *Id*. (citing, *inter alia*, *Teodonno v. Bachman*, 158 Colo. 1, 4, 404 P.2d 284, 285 (1965)). The court "is not required to accept evidence as true, but may determine the facts and enter judgment against the plaintiff." *Id*.

B. Conditional Water Rights

A conditional water right is "a right to perfect a water right with a certain priority upon the completion with reasonable diligence of the appropriation upon which such water right is to be based." § 37-92-103(6), C.R.S. Conditional water rights are valid for six years, whereupon the right holder must either apply to the water court to make the conditional right absolute or for

a finding of reasonable diligence. § 37-92-301(4)(a)(I), C.R.S. To receive a conditional water right, the applicant must show that it completed the first step towards an appropriation and can and will place the water to a beneficial use. *In re Application for Water Rights of Vought*, 76 P.3d 906, 912 (Colo. 2003).

1. First Step Test

"The first step towards an appropriation is complete when overt acts coalesce to openly demonstrate the applicant's intent to appropriate the water for a beneficial use; whether the intent or the acts occurred first makes no difference." *Id*.

> The first prong requires the intent to appropriate water.
>
> Intent to appropriate requires "a fixed purpose to pursue diligently a certain course of action to take and beneficially use water from a particular source." The intent must be relatively specific regarding the amount of water to be appropriated, its place of diversion, and its type of beneficial use; but, for the purposes of a conditional water right decree, the applicant need not know the exact amount of water or point of diversion at the time of the first step. The applicant may demonstrate intent by filing the conditional water right application.

Id. (citations omitted).

The second prong involves overt acts in furtherance of the intent to appropriate and the application of water to a beneficial use.

> The overt act or acts must fulfill three functions: (1) manifest the necessary intent to appropriate water to beneficial use; (2) demonstrate the taking of a substantial step toward the application of water to beneficial use; and (3) constitute inquiry notice to interested persons of the nature and extent of the proposed demand upon the water supply. The overt acts can be physical acts or other useful acts towards effectuating an appropriation, such as planning the appropriation of water, undertaking studies regarding feasibility of the diversion, expending human or financial capital in activities connected with the appropriation, or applying for required permits.

Id. (citations omitted).

If the holder of a conditional water right acts with diligence, the priority date is the date the first step was completed. § 37-92-305(1), C.R.S.; *Colo. Water Conservation Bd. v. City of Central*, 125 P.3d 424, 443 (Colo. 2005).

2. Can and Will Test

The "can and will" tests states that

> No claim for a conditional water right may be recognized or a decree therefore granted except to the extent that it is established that the waters can be and will be diverted, stored, or otherwise captured, possessed and controlled and will be beneficially used and that the project can and will be completed with diligence and within a reasonable time.

§ 37-92-305(9)(b), C.R.S.

The "applicant must prove by a preponderance of the evidence that he or she can and will complete the appropriation diligently and place the water to a beneficial use within a reasonable time." *Vought*, 76 P.3d at 913. As a prerequisite to receiving a decree, the "applicant must show that water is available that can be diverted." *Mount Emmons Mining Co. v. Town of Crested Butte*, 40 P.3d 1255, 1258 (Colo. 2002). Applicants "must convince the water court that their diversion will cause no harm to senior appropriators: i.e., that water is available." *Id*. at 1260. The "applicant must prove, taking into account actual operation of decrees, that the river contains sufficient unappropriated water for the applicant to complete the appropriation diligently and in a timely manner." *Bd. of County Comm'rs of County of Arapahoe v. Crystal Creek Homeowners' Ass'n*, 14 P.3d 325, 333 (Colo. 2000). Additional factors include economic capability, need, and the project's feasibility. *Bd. of County Comm'rs of County of Arapahoe v. United States*, 891 P.2d 952, 961 (Colo. 1995) (discussing *Southeastern Colo. Water Conservancy Dist. v. City of Florence*, 688 P.2d 715 (Colo. 1984)). Such proof relies on "necessarily imperfect predictions of future conditions." *Vought*, 76 P.3d at 914.

"'[W]ater is available for appropriation if the taking thereof does not cause injury' and that 'where senior users can show no injury by the diversion of water, they cannot preclude the beneficial use of water by another.'" *Water Rights of Park County Sportsmen's Ranch LLP v. Bargas*, 986 P.2d 262, 275 (Colo. 1999) (citation omitted). Thus, water is available if a conditional right is sought in conjunction with an augmentation plan. *City of Aurora*, 105 P.3d at 617 (a "conditional right to pump water that would injure senior appropriators may only be decreed in conjunction with an augmentation plan.") (citing *Fox v. Div. Engineers for Water Division 5*, 810 P.2d 644, 645 (Colo. 1991)); *Bohn v. Kuiper*, 195 Colo. 17, 575 P.2d 402 (1978).

Whether a water right "can and will" be appropriated "is a question of fact for the water court to determine." *Application for Water Rights of Hines Highlands Ltd. P'ship*, 929 P.2d 718, 725 (Colo. 1996).

C. Plan for Augmentation

Plans for augmentation are a creation of statute that permit water rights holders to exercise their rights when they would otherwise not be able to due to the priority system. *See* Colo. Const. art. XVI, § 6. These plans seek the approval of the water court of a plan that would "permit junior water right holders to divert water out-of-priority while ensuring the protection of senior water rights." *Farmers Reservoir & Irrigation Co. v. Consol. Mut. Water Co.*, 33 P.3d

799, 806 (Colo. 2001); *Empire Lodge Homeowners' Ass'n v. Moyer*, 39 P.3d 1139, 1150 (Colo. 2001); *Simpson v. Bijou Irrigation Co.*, 69 P.3d 50, 60-61 (Colo. 2003).

Section 37-92-103(9), C.R.S., defines an augmentation plan as

> a detailed program . . . to increase the supply of water available for beneficial use in a division or portion thereof by the development of new or alternate means or points of diversion, by a pooling of water resources, by water exchange projects, by providing substitute supplies of water, by the development of new sources of water, or by any other appropriate means.

"Augmentation plans implement the Colorado doctrine of optimum use and priority administration . . . ." *Williams v. Midway Ranches Prop. Owners Ass'n, Inc.*, 938 P.2d 515, 522 (Colo. 1997). The policy of maximum utilization or optimum use "does not require a single-minded endeavor to squeeze every drop of water from" the aquifers of the State. *Alamosa-La Jara Water Users Prot. Ass'n v. Gould*, 674 P.2d 914, 935 (Colo. 1983). When in conflict, the competing goal of maximization of use must yield to the protection of senior rights. *State Engineer v. Castle Meadows, Inc.*, 856 P.2d 496, 505 (Colo. 1993); *City of Thornton v. Bijou Irrigation Dist.*, 926 P.2d 1, 86 (Colo. 1996).

"The purpose of augmentation plan adjudication is to fix the conditions under which the State and Division Engineers may allow out-of-priority diversions and depletion of the waters of a natural stream to occur consistent with the administration of decreed priorities." *Empire Lodge*, 39 P.3d at 1153. "The augmentation plan decree identifies the structures, diversions, beneficial uses, and amount of depletions to be replaced, along with how the replacement water will be supplied and how the augmentation plan will be operated, so that the State Engineer can administer the diversions for beneficial use without curtailment." *Id*. at 1150-51.

"A plan for augmentation operates outside the priority system and therefore operates out of priority." *City of Central*, 125 P.3d at 435. *See also City of Florence v. Board of Waterworks of Pueblo*, 793 P.2d 148, 156 (Colo. 1990) (Erickson, J., concurring) ("A plan for augmentation allows the operator of the plan to take water outside of the prior appropriation system . . . and therefore a plan for augmentation does not require a priority date."). Water rights operating under a plan for augmentation thus do not operate under their own priorities but operate outside the priority system under the judicially-approved plan.

An augmentation plan "shall be approved if" the plan "will not injuriously affect the owner of or persons entitled to use water under a vested water right or a decreed conditional water right." § 37-92-305(3), C.R.S. *Danielson v. Castle Meadows, Inc.*, 791 P.2d 1106, 1114 (Colo. 1990) ("The touchstone of a plan for augmentation is the prevention of injury to vested water rights.").

In considering the adequacy of a proposed plan for augmentation, the court must evaluate whether holders of other water rights will be protected from injury with respect to the amount of

water they are entitled to receive and the location and time at which they are to receive it. *Castle Meadows,* 856 P.2d at 507. A plan for augmentation must prevent injury to both senior and junior water users from the applicant's out-of-priority use or proposed use of water. *City of Central,* 125 P.3d at 437, 439. If the water court finds that injury will occur to vested rights, it must impose terms and conditions on the augmentation plan to remedy such injury. *In re Application for Plan for Augmentation of City and County of Denver Acting ex rel. Bd. of Water Comm'rs,* 44 P.3d 1019, 1025 (Colo. 2002); *Danielson*, 791 P.2d at 1112. The court may not go beyond the evidence presented in the record. *Monte Vista Canal Co. v. Centennial Irrigating Ditch Co.*, 24 Colo. App. 496, 505, 135 P. 981, 985 (1913).

The requirements of the Water Rights Determination and Administration Act of 1969, §§ 37-92-101 to -602, C.R.S. ("1969 Act"), for augmentation plans focus on prevention of injury to the rights "of others," not the water rights of the applicant C.R.S. §§ 37-92-305(4)(a)(V), -305(5); -305(8), -304(6), C.R.S. Cases interpreting these requirements focus on preventing injury to other water rights. *See, e.g.*, *Simpson,* 69 P.3d at 60–61; *Castle Meadows*, 856 P.2d at 507; *Public Serv. Co. of Colo. v. Willows Water Dist.*, 856 P.2d 829, 834–36 (Colo. 1993). Similarly, suggested terms for changes of water rights emphasize the protection of "other appropriators" through relinquishment of portions of a decree or limits on the use of a changed right. § 37-92-305(4)(a)(I)–(II), C.R.S. Augmentation plans are decreed based on the same no-injury analysis as change proceedings. *City of Aurora*, 105 P.3d at 615. *See* § 37-92-305(3), C.R.S. The fundamental purpose of an augmentation plan is "to fix the conditions under which the state and division engineers may allow out-of-priority depletions . . . to occur in the administration of decreed priorities." *Midway Ranches*, 938 P.2d at 522. An applicant's water rights are thus not entitled to protection from injury. They are spared from curtailment and allowed to operate out of priority, but only under conditions that prevent injury to other water rights operating within the priority system.

1. Applicant's Initial Burden

The "applicant bears the initial burden of producing sufficient evidence to establish a prima facie case that the proposed depletions will be non-injurious." *City of Aurora*, 105 P.3d at 614; § 37-92-305(3), C.R.S.

"[B]efore an applicant can establish an absence of injury to satisfy its prima facie case, it must first establish the timing and location of depletions, as well as the availability of replacement water to prevent injury from those depletions." *City of Aurora*, 595 P.2d at 615. The applicant must replace all depletions resulting in material injury. *Id*. at 607. "Thus, to the extent an applicant can prove that its depletions are non-injurious, or that its injurious depletions are less than its withdrawals, it is not required to replace 100% of its withdrawals." *Id*. However, where surface water is over-appropriated, like the South Platte River basin, "Colorado law presumes that groundwater depletions through well-pumping result in injury to senior appropriators absent a showing to the contrary." *Id*. (citations omitted).

The applicant must make a "reasonably accurate determination of these elements" based on reliable evidence. *Id*. at 607, 615. "Uncertainties, however, are not fatal to a plan for augmentation." *Willows Water Dist.*, 856 P.2d at 835. "Whether an augmentation plan will result in material injury to senior appropriators is a factual determination based on the evidence presented in a particular case." *City of Aurora*, 105 P.3d at 615 (citations omitted).

2. Opposers' Rebuttal

"If the applicant successfully meets its burden, the objectors bear the burden of providing evidence of injury to existing water rights." *Id*. at 614. "A classic form of injury involves diminution of the available water supply that a water rights holder would otherwise enjoy at the time and place and in the amount of demand for beneficial use under the holder's decreed water right operating in priority." *Farmers Reservoir & Irrigation Co.*, 33 P.3d at 807. Generally, injury "must be demonstrated by evidential facts and not by potentialities." *City of Thornton v. Bijou Irrigation Co.*, 926 P.2d 1, 88 (Colo. 1996) (quoting *Brighton Ditch Co. v. City of Englewood*, 124 Colo. 366, 371, 237 P.2d 116, 119120 (1951)). Injury is presumed, however, where surface water is over-appropriated. *City of Aurora*, 105 P.3d at 607. Opposers "to a plan for augmentation need not show an injury to a specific water right, only injury to senior appropriators in general." *Danielson*, 791 P.2d at 1114 (citations omitted). "Where objectors provide contrary evidence of injury, the applicant has the ultimate burden of showing an absence of injurious effect by a preponderance of the evidence." *City of Aurora*, 105 P.3d at 614-15.

3. Terms and Conditions to Avoid Injury

If the court determines that the "plan as presented in the application and the proposed ruling or decree would cause such injurious effect," the court "shall afford the applicant or any person opposed to the application an opportunity to propose terms or conditions that would prevent such injurious effect." § 37-92-305(3), C.R.S.

In determining what terms and conditions are required to avoid injury, the court must consider the factors listed in § 37-92-305(8), C.R.S. *Weibert v. Rothe Bros., Inc.*, 200 Colo. 310, 319, 618 P.2d 1367, 1373 (1980). The court

> shall consider the depletions from an applicant's use or proposed use of water, in quantity and in time, the amount and timing of augmentation water that would be provided by the applicant, and the existence, if any, of injury to any owner of or persons entitled to use water under a vested water right or a decreed conditional water right.
>
> A plan for augmentation shall be sufficient to permit the continuation of diversions when curtailment would otherwise be required to meet a valid senior call for water, to the extent that the applicant shall provide replacement water necessary to meet the lawful requirements of a senior diverter at the time and location and to the extent the senior would be deprived of his or her lawful entitlement by the applicant's diversion.

> A proposed plan for augmentation that relies upon a supply of augmentation water which, by contract or otherwise, is limited in duration shall not be denied solely upon the ground that the supply of augmentation water is limited in duration, so long as the terms and conditions of the plan prevent injury to vested water rights.
>
> Said terms and conditions shall require replacement of out-of-priority depletions that occur after any groundwater diversions cease.
>
> Decrees approving plans for augmentation shall require that the state engineer curtail all out-of-priority diversions, the depletions from which are not so replaced as to prevent injury to vested water rights.
>
> A plan for augmentation may provide procedures to allow additional or alternative sources of replacement water, including water leased on a yearly or less frequent basis, to be used in the plan after the initial decree is entered if the use of said additional or alternative sources is part of a substitute water supply plan approved pursuant to section 37-92-308 or if such sources are decreed for such use.

§ 37-92-305(8), C.R.S.

D. Law of the Case

The "law of the case doctrine is a discretionary rule that generally requires prior relevant rulings made in the same case to be followed." *In re Marriage of McSoud*, 131 P.3d 1208, 1213 (Colo. App. 2006). However, the court "may modify a prior ruling as necessary if new facts, changes in the applicable law, or other persuasive circumstances warrant such modification." *Erlich Feedlot v. Oldenberg*, 140 P.3d 265, 272 (Colo. App. 2006) (citations omitted).

E. Notice in Water Adjudications

Proper notice is fundamental to the court's jurisdiction over parties, in part, "[b]ecause a water rights decree issued without adequate resume notice is void and can be challenged at any time." *Bd. of County Comm'rs of Arapahoe v. Collard*, 827 P.2d 546, 552 (Colo. 1992); *Danielson v. Jones*, 698 P.2d 240, 244-46 (Colo. 1985) (water judge may only consider those matters that are properly presented in an application and in a manner that provides appropriate notice to potential objectors).

Applicants must strictly comply with the resume notice system. *In re Water Rights of Columbine Ass'n*, 993 P.2d 483, 491 (Colo. 2000); § 37-92-302, C.R.S. Section 37-92-302(3)(a), C.R.S., requires that the resume notice include, at a minimum: the applicant's name and address, "a description of the water right or conditional water right involved, and a description of the ruling sought." The water rights application requires similar information regarding the judicial relief sought. § 37-92-302(2)(a), C.R.S. *See City of Thornton*, 926 P.2d 24-25.

"[C]ompliance with the notice provisions of the [1969] Act must be judged with reference to the underlying purpose of the notice: to put interested parties to the extent reasonably possible on inquiry notice of the nature, scope, and impact of the proposed diversion." *Closed Basin Landowners Ass'n v. Rio Grande Water Conservation Dist.*, 734 P.2d 627, 634 (Colo. 1987); *City of Black Hawk v. City of Central*, 97 P.3d 951, 959 (Colo. 2004). "Inquiry notice requires sufficient facts to attract the attention of interested persons and prompt a reasonable person to inquire further. The receipt of inquiry notice charges a party with notice of all the facts that a reasonably diligent inquiry would have disclosed." *Monaghan Farms, Inc. v. City and County of Denver Bd. of Water Comm'rs*, 807 P.2d 9, 15 (Colo. 1991).

Persons reviewing resume notice are entitled to assume that all legal presumptions apply to the applications described therein. *Stonewall Estates v. CF&I Steel Corp.*, 197 Colo. 255, 258-59, 592 P.2d 1318, 1320 (1979).

V. ANALYSIS

A. WAS's Prima Facie Case and the Pending Motion to Dismiss

The court determines, based on the evidence presented at trial, that WAS met its initial burden of presenting a prima facie case. *See City of Aurora*, 105 P.3d at 614. WAS presented its evidence based on the assumption of pumping during the 2007 irrigation season. Although the plan cannot begin operating until 2008, the evidence presented goes towards WAS's burden of showing no injury. WAS's conditional water rights claims depend on the approval of the proposed plan for augmentation. *See id.*, 105 P.3d at 617; *Fox*, 810 P.2d at 645; *Bohn*, 195 Colo. 17, 575 P.2d 402. Regarding WAS's proposed plan for augmentation, WAS has made a prima facie case by making a "reasonably accurate determination" based on reliable evidence of the "the timing and location of depletions, as well as the availability of replacement water to prevent injury from those depletions." *City of Aurora*, 105 P.3d at 607 and 615. WAS has produced "sufficient evidence to establish a prima facie case that the proposed depletions will be non-injurious." *Id*. at 614. Thus, the February 29, 2007 motion to dismiss of certain Opposers is hereby denied. *See id*. at 616.

1. WAS's Conditional Water Rights Claims

Applicants claimed the following conditional water rights in the original application in Case No. 03CW99:

Strohauer/Bostron Well No. 1-7225 (Aug. Well Permit No. 60578-F).
Strohauer/Geis Well No. 1-Unregistered (Aug. Well Permit No. 60583-F).
WCL Partnership Well No. 3-11997 (Aug. Well Permit No. 60581-F).
WCL Partnership Well No. 2-11998 (Aug. Well Permit No. 60580-F).
WCL Partnership Well No. 3-11994 (Aug. Well Permit No. 60568-F).
WCL Partnership Well No. 3-12000 (Aug. Well Permit No. 60569-F).

Conrad/Matthew/Bass Well No. 1-3054 (Aug. Well Permit No. 60579-F).
Annan Well No. 1-3315 (Aug. Well Permit No. 60570-F).
McCarthy Well No. 13586 (Aug. Well Permit Application Pending).
McCarthy Well No. 13587 (Aug. Well Permit No. 59957-F).
Jerke Well No. 0872 (Aug. Well Permit No. 60567-F).

The rate of diversion claimed for each well was four cubic feet per second ("cfs") with an appropriation date of January 17, 2003, identified in the application as the date "Applicants met and agreed to file this application and use the well."

The Schmidt Well No. 16157R, for which and augmentation well permit is pending, was first claimed in the Third Amended Application, filed August 5, 2005. Like the other wells, WAS claimed a rate of diversion of four cfs and a January 17, 2003 appropriation date.

WAS has agreements with the owners of each of these wells to use them for augmentation purposes and agreements with the Platteville Irrigating and Milling, Farmers Independent, Western Mutual and Union Ditch Companies to deliver water from the wells to the South Platte River. SPWUA assigned its interest in the wells to WAS. The Office of the State Engineer has permitted ten of the wells for augmentation uses and applications are pending on the remaining two. The ditch company agreements, agreements for the use of the wells, and the permits or applications were admitted as evidence.

WAS's operations manager, Randy Ray, testified that each of the wells is operational and capable of delivering water to the Farmers Independent, the Western Mutual, or the Union Ditches at an average rate of no less than two cfs for the purposes of augmentation. He further testified that WAS delivered augmentation water from one or more of these wells to the South Platte River in the spring of 2004. Some of the wells are metered. WAS asserts that those that are not would not be used for augmentation purposes until a meter is in place. Several of the wells have permanent pipes or lateral ditches connecting them to the main ditches. There was evidence that the remaining wells could be connected to the main ditches using temporary piping within a matter of hours.

There was also evidence that delivery of augmentation water through the main ditches is feasible year round in the form of testimony of the president of the Framers Independent and Western Mutual Ditch Companies, Frank Eckhardt. WAS presented evidence that through the testimony of Mr. Eckhardt and the president of the Platteville Irrigating and Milling Ditch, Gary Herman, that, during the irrigation season, there is enough running capacity in the ditches to allow delivery of augmentation well water to the river. Mr. Eckhardt testified that, during the winter months, delivery is possible except during freezing or snow accumulation conditions, and even then, heavy equipment could clear the way for deliveries, if necessary.

WAS's operations manager testified that the amount of water pumped from the well would be measured and the amount of water returning to the river at the end of the ditch would be measured. Under WAS's proposal, if the amount of water returning to the river is greater

than the amount pumped from the well, indicating that there is tail water, waste or return flows in the ditch, then the credit taken at the river would be equal to the amount pumped from the well. If the amount measured at the river is less than the amount pumped at the well, then the immediate credit would be limited to the amount measured at the river. In that case, the difference between the amount pumped and the amount measured at the river would be presumed to have percolated through the ditch bed into the aquifer, and WAS would lag these accretions back to the river and take credit for them when they arrive. This testimony is consistent with paragraph 8.5 of WAS's proposed decree, except that paragraph 8.5 requires WAS to reduce the credit taken by evaporative losses.

The president of the Farmers Independent and Western Mutual Ditches testified that these ditches could carry a minimum of twenty cfs each of augmentation well water from the wells to the South Platte River in the irrigation season and a minimum of thirty cfs each during the non-irrigation season. He also testified that year-round delivery is feasible with appropriate maintenance. Under WAS's plan, augmentation water deliveries from the augmentation wells to the river during the irrigation season are not charged seepage losses according to company policy because the ditch is already running during these times, delivering water to shareholders, and the addition of a relatively small amount of augmentation water does not change seepage rates in a significant way. The evidence presented established that, as a rule, the ditches operate during the irrigation season to minimize or eliminate tail water leaving the end of the ditch. However, the testimony also indicated that the ditch superintendent is capable of shepherding augmentation water delivered from the wells through the ditch, past lateral headgates, and to the river. Lateral headgates on the ditches are locked and operated by the ditch superintendents.

The president of the Platteville Irrigating and Milling Company ("PIMC") Ditch testified that the ditch could carry a minimum of five cfs of augmentation well water from the wells to the river during the irrigation season. Like the Farmers Independent and Western Mutual Ditch Companies, PIMC does not charge seepage losses on the delivery of augmentation well water to the river at times when the ditch is running for irrigation. Lateral headgates are locked and operated by the ditch superintendent.

WAS's expert, Dr. Eisel, testified that the depletions caused by pumping the augmentation wells would be tracked using the Alluvial Water Accounting System ("AWAS") methodology, so that out-of-priority depletions could be replaced as necessary to prevent injury to vested rights and decreed conditional water rights. Pumping from these wells is considered to be one hundred percent depletive. Also under WAS's plan, the overall volume pumped from the wells would be limited by the operation of the Projection Tool set forth in the proposed decree. The Projection Tool and the use of augmentation wells in WAS's plan of augmentation are disputed material issues and discussed in greater detail below. *See* Section V.1.d.iv.

Regarding all wells except Schmidt Well 16157R, the filing of the Case No. 03CW99 Application on February 28, 2003 was sufficient to meet the first and third components of the "overt act" prong of the first step test, and that by that time, the Applicant had clearly formed a non-speculative intent to place the augmentation well water to beneficial use, consistent with the

"intent" prong of the first step test. *See Vought*, 76 P.3d at 912. For the Schmidt Well, these requirements were not met until August 8, 2005.

Regarding all wells, the formation of WAS, the hiring of water engineers and attorneys, the analysis of the wells as potential augmentation wells, and the inspection of the wells—all of which occurred prior to the filing—constitute a substantial step towards making the appropriation for the claimed purposes. The evidence presented at trial established that WAS has the funding, personnel, and equipment necessary to perform modifications necessary to use the wells for augmentation purposes. The evidence also established that WAS also has agreements with the local ditch companies to deliver the water to the river. Water is physically available for diversions in these locations, as evidenced by the use of the wells for irrigation purposes. Because the wells will be augmented by WAS's proposed augmentation plan, water is legally available for appropriation to the extent that the court approves this augmentation plan. *See City of Aurora*, 105 P.3d at 617.

The court therefore determines that the application for conditional water rights is granted contingent upon the court's approval of a plan for augmentation. The appropriation dates shall be February 28, 2003 for all wells except the Schmidt Well, which shall be August 8, 2005. The conditional water rights shall also be in the amounts and for the purposes claimed by Applicants.

2. WAS's Proposed Plan for Augmentation

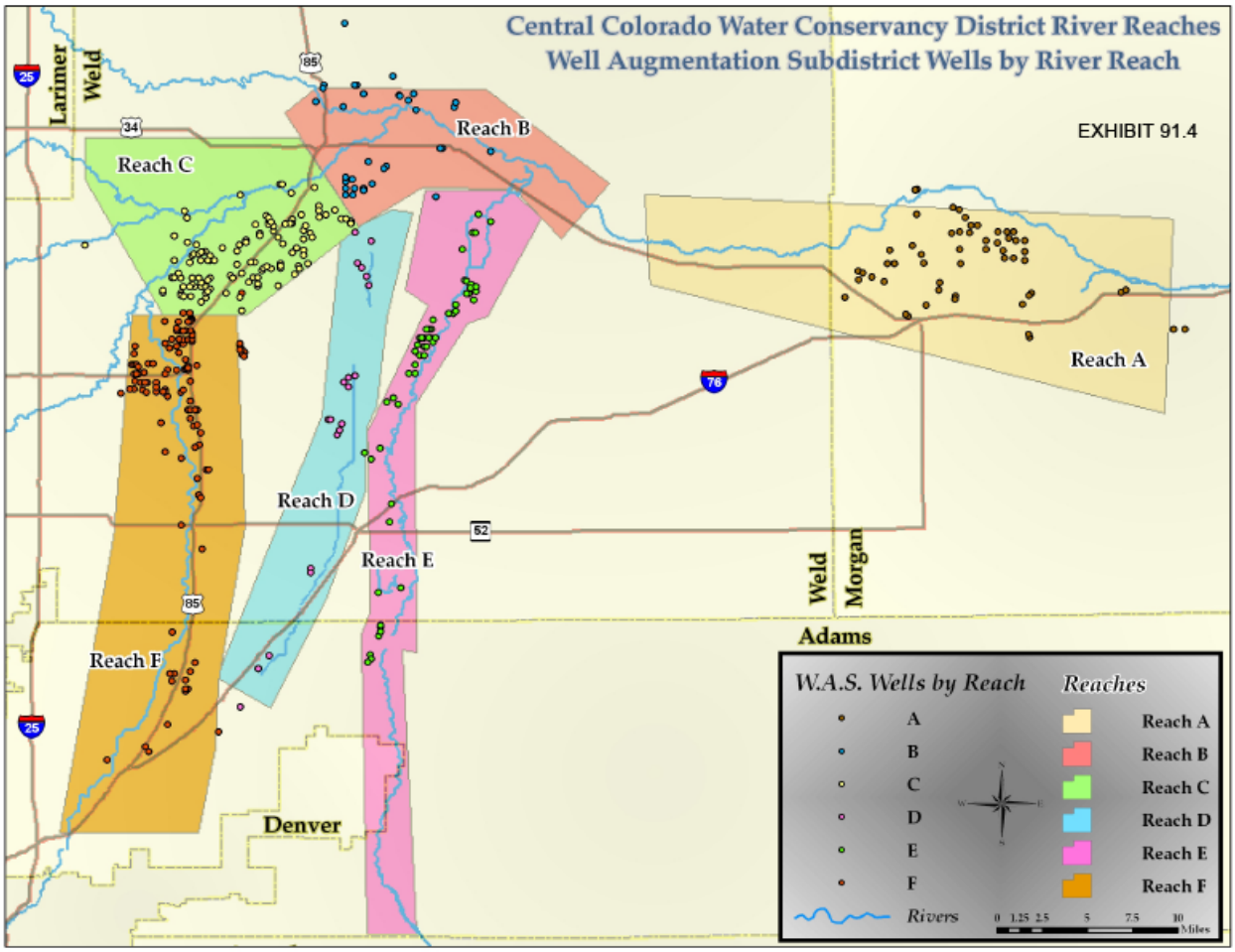
The court determines that WAS met its initial burden by setting forth a prima facie case for their proposed augmentation plan as discussed below. *See City of Aurora*, 105 P.3d at 607 and 614-15.

a. Wells to Be Augmented

WAS proposes to augment the out-of-priority depletions caused by the authorized pumping of 215 covered wells and thirty-four augmentation wells. The wells covered by the augmentation plan (the "covered wells") are listed on Applicant's Exhibit 2.2, and will be an attachment to the proposed decree.

As depicted in the figure below, the covered wells are located generally in the alluvial aquifer of the South Platte River from Brighton to Fort Morgan. For administrative purposes, the proposed augmentation plan is divided into six "reaches." Reach F is generally located along the South Platte River from the northern end of the Denver metro area to just downstream of the Jay Thomas Ditch headgate. Reach C is generally located along the South Platte River from the downstream boundary of Reach F to just downstream of the Lower Latham Ditch headgate. Both the St. Vrain and Big Thompson Rivers flow into the South Platte in Reach C. Reach B is generally located from the downstream boundary of Reach C to an area near the Bijou Canal headgate. The Cache La Poudre River flows into the South Platte in Reach B. Reach A is generally located along the South Platte River downstream of Reach B. Reach D is generally

located in the Beebe Draw.[1] Reach E is generally located along Box Elder Creek from the Denver-Hudson Canal to the meeting of the Box Elder and South Platte alluvium.



The augmentation wells consist of the twelve wells addressed in this case, seventeen wells decreed in Case No. 02CW335, and five wells for which an application is pending in Case No. 05CW331. Four of the wells listed on Applicant's Exhibit 1.1 will not be used and WAS has withdrawn their inclusion in its augmentation plan. These wells are: CCWCD-McCarthy 13588, CCWCD-McCarthy 13589, Odenbaugh 11647 and Odenbaugh 11648.

b. Depletions

There are three categories of depletions that affect the South Platte River from the pumping of the covered wells: (1) "Pre-Decree" depletions are depletions expected to affect the

[1] The court notes that the pleadings in this matter are inconsistent with respect to the effected counties. Some pleadings include Morgan County. However, the applications filed in this matter only include Adams, Larimer, and Weld Counties and it does not appear that any application was published in Morgan County.

river in the future as result of pumping of covered wells that occurred before the entry of the decree in this matter. (2) "Post-Decree" depletions are depletions expected to affect the river in the future from pumping that occurs after the entry of the decree, but before the monthly projection in any given month. (3) "Future" depletions are depletions expected to affect the river in the future from pumping projected to occur after the monthly projection for any given month.

WAS's expert, Dr. Eisel, testified the first two categories of depletions, and another of WAS's experts, Ms. Griffith, testified as to the third category, related to projecting future pumping.

i. "Pre-Decree" Depletions

WAS presented evidence establishing the timing, amount, and location of "Pre-Decree" depletions sufficient to establish a prima facie case. These depletion amounts are proposed to be fixed by the decree. The Post-Decree and Future depletions will be calculated pursuant to methods set forth in the decree.

The amount of the "Pre-Decree" depletions was calculated using the Blaney-Criddle methodology. WAS's engineers used data regarding acreage, crop type, and surface water usage reported by owners of covered wells for the years 1998-2005 to establish an average consumptive use pattern, which was then extrapolated back in time for each well to the date the well was installed to establish the amount of depletions caused by the wells over time. The timing of these depletions at the river was established by application of the AWAS model.

WAS's calculation of depletions caused by "Pre-Decree" pumping included pumping from the time each covered well remaining in the plan was permitted and pumping by wells removed from the plan for the years 2003-2005 when those removed wells pumped under SWSPs. Applicant's Exhibit 203, which will be an exhibit to the decree, summarizes depletions anticipated to affect the river from "Pre-Decree" pumping in the coming years as calculated by WAS. The calculation of these "Pre-Decree" depletions is disputed and discussed in further detail below. *See* Sections V.C.11.v-vi.

WAS's engineers also calculated the depletions expected to affect the river in the future from augmentation well pumping in 2003. In these calculations, the consumptive use was assumed to be one hundred percent of recorded pumping. Depletions were routed to the river using the AWAS methodology. Applicant's Exhibit 225.1 summarizes these anticipated depletions and will be an exhibit to the decree. Exhibit 225.1 is an accurate summary of depletions expected to occur in the future as a result of 2003 augmentation well pumping.

ii. "Post-Decree" Depletions

The amount of "Post-Decree" depletions will be calculated under WAS's proposal using either the Presumptive Depletion Factor ("PDF") method or the Integrated Decision Support Consumptive Use ("IDSCU") method.

The PDF method multiplies metered pumping from covered wells by a presumptive depletion factor and the resulting depletion amount is routed to the river using the AWAS methodology. The presumptive use factors proposed are: 0.6 for flood irrigation, 0.8 for sprinkler irrigation, and 1.0 for drip irrigation. For non-irrigation uses, WAS proposes to establish a presumptive use factor using the best available data, and approved by the Division Engineer. The presumptive use factor for non-irrigation uses is disputed and discussed further below. *See* Section V.C.11.b. With the exception of non-irrigation uses, the PDF method as described in paragraph 17 of the proposed decree is an accurate and reliable method for calculating future depletions caused by pumping that will occur after the entry of the decree and before the running of any given projection.

The IDSCU method of accounting is an alternative means of calculating depletions under WAS's plan. On a monthly basis, actual metered well pumping would be input into the IDSCU model with other necessary data, including temperature, precipitation, crop type, and surface water deliveries. The IDSCU model would then calculate the amount of water consumed by the crops. These depletions would then be routed to the river using the AWAS methodology in the same way as the depletions generated by the PDF method. WAS altered the model to require all consumptive use to be taken from well pumping before any consumptive use is attributed to surface water deliveries. WAS asserts that this change is conservative in that it overestimates the amount of consumptive use associated with well usage. The evidence presented demonstrated that this relegates the data related to surface water diversions to a secondary role and thereby facilitates operation of the model. Surface water data may not be immediately available in all months, and so rather than waiting for this data, WAS would run the model using average delivery figures and corrected with actual data when available. Because of the alteration in the model, WAS asserts that this potential delay in surface water data will not have any effect on the consumptive use amounts associated with well pumping. The use of the IDSCU method is disputed and discussed further below. *See* Section V.C.11.b.

iii. "Future" Depletions

"Future" depletions are depletions expected to occur as a result of planned future pumping. The Projection Tool is a term and condition of WAS's proposed decree that would permit WAS to plan pumping in an amount commensurate with replacement supply. When this pumping is planned, the Projection Tool relies on numerous assumptions to predict the depletive effect of the pumping in future years. WAS's expert, Ms. Griffith, testified that these depletions will be estimated by applying the presumptive depletion factors used in the PDF method of calculating depletions caused by "Post-Decree" pumping, then routing these forecasted depletions to the river using the AWAS methodology. These forecasted depletions are then input into the Projection Tool with planned pumping and predicted depletions balanced against estimated future supplies. Numerous aspects of the Projection Tool are disputed and are discussed in detail below. *See* Section V.C.1.

iv. Box Elder Creek Depletions

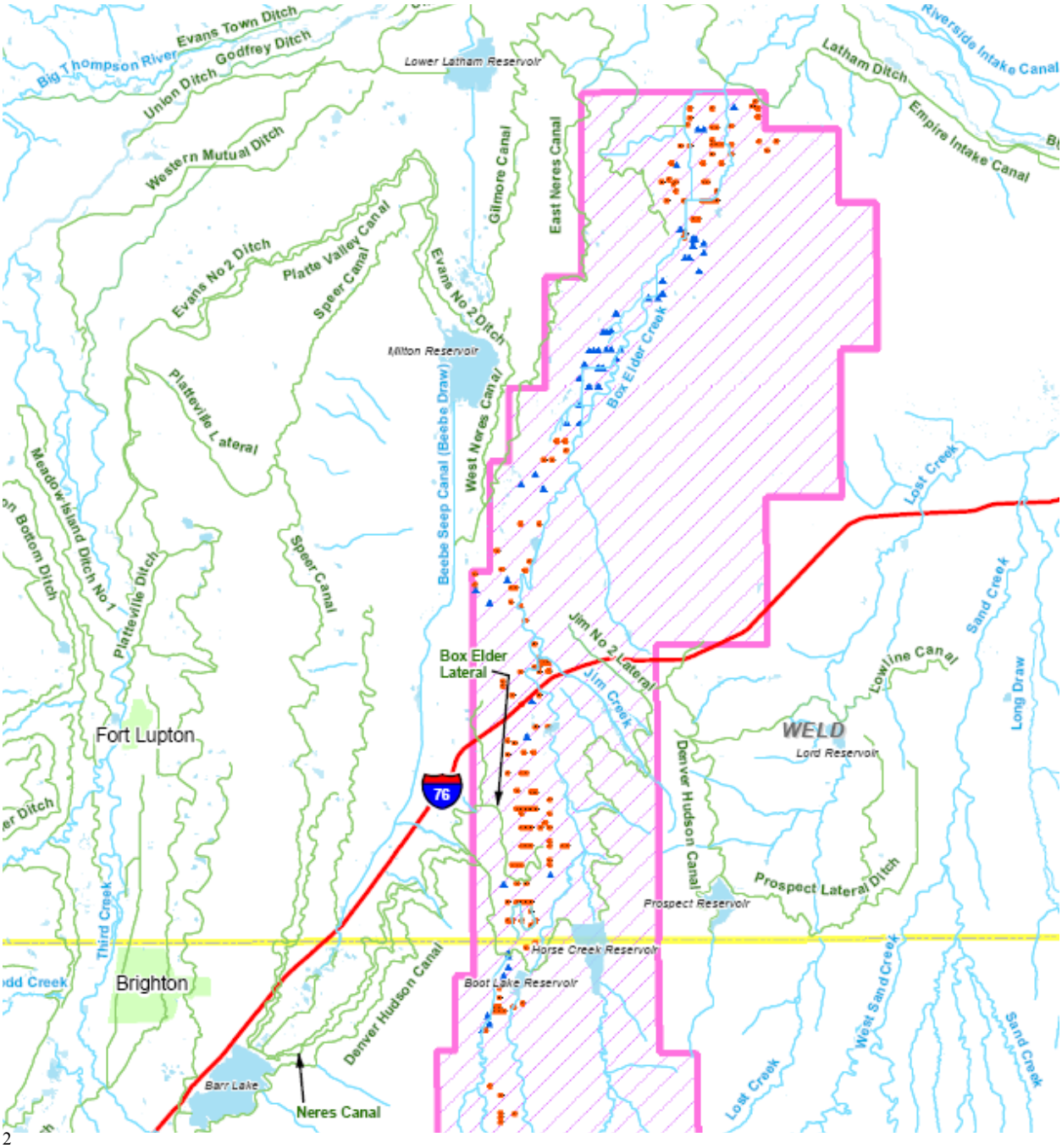
Box Elder Creek is Reach E in WAS's proposed plan. As depicted in the figure below, Box Elder Creek is a tributary of the South Platte River that is located east of the Beebe Draw. WAS asserts that Box Elder Creek is not and has not historically been a flowing stream. WAS therefore contends that a Glover-based means of calculating depletions is not proper because depletions take a long time to affect the South Platte River. WAS thus proposes a separate method to calculate depletions from wells in Reach E. WAS's expert, Mr. Ford, chose two methods of calculating these depletions: the "change" method and the "MODFLOW" method.

The change method examined the change in potential outflow to the South Platte River, on the surface and underground, from pre-well development to present full well development conditions. To calculate the change in underflow leaving the Box Elder Creek alluvial aquifer and entering the South Platte alluvial aquifer, water table measurements were used to establish the level of the water table in the basin before and after well development. WAS's expert then used Darcy's Law to calculate the change in underground outflow. He calculated that the annual decrease in underflow is equal to approximately 7.4% of the long-term consumptive use by wells in the basin. The decrease in intermittent surface water outflow was then calculated by establishing the increase in aquifer storage capacity caused by the lower water table in post-development conditions. WAS asserts that Box Elder Creek is ephemeral, flowing only in response to large storm events. As these large storm events occur, water in the streambed recharges the alluvial aquifer. If the aquifer is full or nearly so, or if the amount of water exceeds the infiltration rate of the stream bed, WAS concedes that water could theoretically flow out of the basin. WAS contends that the lower water table present in post-well conditions creates additional space for storm water to percolate into and thereby may serve to reduce outflows from the basin during large storm events. Using the aquifer properties present in the basin, WAS's expert calculated the difference in outflows resulting from this phenomenon. He opined that, on average, this reduction in surface outflows was equal to eight percent of the long term average annual consumptive use by wells in the Box Elder Creek basin.

In sum, WAS's change analysis suggested that the depletive effects on the South Platte River of pumping wells in Box Elder basin is approximately 15.4% (7.4% groundwater outflows plus eight percent surface water outflows) of long-term in-basin consumptive use for all wells. The groundwater component of this impact occurs at a steady rate year-round. The surface water component occurs largely in the summer months when the area is subject to large storm events. This distribution of depletions is reflected in Paragraph 17.5.2 of WAS's proposed decree.

The MODFLOW methodology generates a numerical model of a groundwater system that is used to track well depletions. WAS's expert input known aquifer conditions into the model. The model was then run to determine how the depletive effects of well pumping propagate. WAS asserts that such a model is useful for conditions like Box Elder Creek because the wells are located in a narrow alluvial deposit many miles from the nearest flowing stream. The MODFLOW runs indicated a depletive affect similar to that shown in the change analysis. However, the MODFLOW runs show a gradual increase in this depletive effect on the order of

on percent every three years. WAS's expert testified that it would be most accurate to quantify Box Elder depletions as 15.4% of average consumptive use for the five years preceding the calculation, increasing by one percent every three years.



[2]

[2] On this figure from exhibit CC-204, the South Platte River is not labeled and blue triangles mark the location of WAS wells.

WAS contends that the basin-wide methodology used for calculating Box Elder depletions makes it unnecessary to fix depletions caused by "Pre-Decree" well pumping similar to wells in Reach A though D and F. The 15.4% depletive effect number by definition reflects the results of the lower water table conditions caused by over fifty years of well pumping in the Box Elder basin. This is contrasted with the Glover AWAS method employed for wells not in Reach E, where each year's pumping can be quantified and separately tracked for each well. WAS proposes to calculate "Post-Decree" depletions for Box Elder Creek well pumping by establishing consumptive use using either the PDF or IDSCU methods, accounting for the consumptive use in the five year average required by paragraph 17.5.2 of the proposed decree, then routing this depletion by the 15.4% (or increased percentage in the future), distributed annually as described in the proposed decree. Similarly, "Future" depletion estimates would be calculated by applying the appropriate percentage to anticipated average, then assuming temporal distribution consistent with the proposed decree.

Opposers challenge WAS's factual basis, methodology, and conclusions regarding depletions in the Box Elder basin. For example, WAS's expert also performed a mass balance analysis that was ultimately not relied on in WAS's proposal. The court discusses Box Elder depletions as a disputed material issue below. *See* Section V.C.11.vi.

v. Summary of Depletions Presented at Trial

The following is a summary of WAS's projected depletions for the 2007 irrigation season, April 1, 2007 to March 31, 2008, system-wide and by administrative reach and type. The depletion amounts shown at trial include depletions caused by the 2003, 2004 and 2005 pumping of wells under SWSPs that were removed from the plan by amendment dated November 7, 2006. WAS motioned to remove these depletions and the court denies that motion in its Order Regarding Motion for Reconsideration of January 17, 2007 Order Regarding Motion to Remove Wells, entered simultaneously with this order.

Reach	2007 "Pre-Decree" Covered Well Depletions	2007 "Pre-Decree" Aug Well Depletions	2007 "Future" Covered Well Depletions	2007 "Future" Aug. Well Depletions	TOTALS
F	1,395.22	0	165	530	2,090.22
C	1,984.83	221.62	160	4	2,370.45
BDE	1,297.06	0	578	14	1,889.06
A	3,351.39	0	176	0	3,527.39
TOTALS	8,028.5	221.62	1,079	548	9,877.12

Based on WAS's evidence presented at trial, system wide: "Pre-Decree" depletions are 8,028.5 acre-feet; "Pre-Decree" augmentation well depletions are 221.62 acre-feet; and there are no "Post-Decree" depletions yet. Assuming a fifteen percent quota for 2007, "Future" covered

well depletions would be 1,079 acre-feet and "Future" augmentation well depletions, would be 548 acre-feet. Thus, making these assumptions for WAS's prima facie case, total depletions are 9,877.12.

c. Replacement Sources

WAS presented evidence of four types of water rights to be used as replacement sources: senior water rights, storage, recharge and retiming, and leased water rights.

i. Senior Water Rights

WAS owns the following several senior water rights and have projected the annual deliveries and consumptive use ("cu" in the chart below) for each water right in acre-feet ("af" in the chart below). Testimony of WAS's operations manager established that each of the ditches has a device capable of measuring and delivering WAS's water to the river. Each of these water rights is the subject of a pending change of water rights case, and an application to make use of the water for augmentation purposes under a SWSP. § 37-92-308, C.R.S. Most of the water rights were approved for use in 2006 and were awaiting 2007 SWSP approval at the time of trial. The table below sets forth the Water Court Case number and references to the Application and SWSP requests and/or approvals.

Name of Water Right	**Shares**	**Projected cu Amount (af)**	**Change Case No.**
Farmers Independent Ditch Company	10 Shares	82	04CW276
Rural Ditch Company	3.5 Shares	252	01CW55
Godding Ditch Company	23 Shares	98	01CW55
Godfrey Bottom Ditch Company	5 shares	133	05CW223
Mayfield Seep Ditch	100%	*	01CW55
Cole Seep Ditch	50%	*	01CW55
McCormick Seep Ditch	80%	*	01CW55
Six Mile No. 2 Reservoir	3 Shares	1	01CW55
Boulder and Weld Reservoir	10 Shares	3	01CW55
Greeley Irrigation Company	19 Shares	183	03CW348
Windsor Reservoir	3 Shares	193	05CW77
TOTAL		945	
*unknown- not included in projection			

ii. Storage

WAS has an ownership interest in a series of gravel pits on the St. Vrain River known collectively as the "Shores Project." The Shores pits are filled and emptied via the Rural Ditch.

WAS has agreements with the Rural Ditch Company that allow the use of that ditch for these purposes. Releases from the Shores pits enter the St. Vrain River near its confluence with the South Platte River. There are four pits planned for the Shores Project. Pit A is owned by WAS. It is partially mined and has a 2007 capacity of 400-500 acre-feet according to WAS's operations manager. Pit B is owned by WAS. It is completed with an estimated capacity of 800 to 1000 acre-feet. Pit C is owned twenty-five percent by WAS and seventy-five percent by the Ground Water Management Subdistrict of the Central Colorado Water Conservancy District ("GMS"). WAS has leased GMS's capacity for ten years. Pit C is not yet constructed but is planned to have a capacity of 1,879 acre-feet. Pit D is owned by GMS. WAS's operations manager estimated that WAS's total 2007 storage capacity at 1,200 to 1,500 acre-feet. At full build-out, the Shores Project will provide WAS 3,079 to 3,379 acre-feet of storage. The use of un-decreed water storage rights are discussed further as a term and condition of the decree below. *See* Section V.C.12.b.

iii. Recharge and Retiming

Recharge and retiming is a significant part of WAS's proposed augmentation plan. WAS's expert, Mr. Lindburg, testified regarding WAS's Conjunctive Use Projects ("CUPs"). These projects are designed to divert excess flows from the South Platte River and deliver them away from the river to recharge sites, where the water is allowed to percolate into the alluvial aquifer, thereby offsetting well depletions. In essence, the recharge component of the projects retimes accretions or excesses in the South Platte River system.

Augmentation wells are a part of the CUPs. Augmentation wells divert water from the alluvial aquifer at some distance from the river and immediately deliver this water to the river to offset covered well depletions at times when other sources are not available. Augmentation wells thus retime depletions by offsetting a current depletion while creating an equal or larger depletion at some time in the future. WAS asserts that the recharge and augmentation well components of the CUPs work together in an effort to "smooth out" the variable flows of the South Platte River and thereby provide a steady source of augmentation water to protect senior rights from the impacts of well depletions.

WAS has agreements with participating ditch companies that allow diversions for the purpose of recharge and delivery of augmentation water, agreements with recharge site owners, and agreements with augmentation wells owners. These agreements are summarized below. Augmentation wells listed include those for which a decree is sought in this case, as well as those already decreed in Case No. 02CW335 and seeking a decree in Case No. 05CW331.

WAS presented evidence of CUP agreements with ditch companies: the Platteville Irrigating and Milling CUP; the Meadow Island No. 1 Agreement; the FIDCO Recharge Agreement and FIDCO Augmentation Well Agreement; the Western Mutual Recharge Agreement, the Western Mutual Augmentation Well Agreement, the Western Mutual Augmentation Well Agreement Amendment, and the Union Ditch Augmentation Well Agreement; and the Jones Ditch CUP.

WAS presented evidence of recharge site agreements: Herman on the PIMC CUP; on the FIDCO, the Odenbaugh, Opatril, A&W, Loeffler, Miller, Frank (North)(Center)(South), James Ewing, Weideman (West) (Center) (East), and Ptaznik; on the Western Mutual CUP, the Ray Living Trust, Schmidt, Stromberger, WCL Partnership, Frank, and Lehan; and on the Orphan Wells of Wiggins CUP, the OWW Deed and OWW Easement.

WAS presented evidence of augmentation well agreements: on the PIMC CUP, the Herman 1 and 2; on the FIDCO, the Boney, Buderus, Clement, McWilliams, Petrocco 1 and 2, Sandau, Wiedeman 1, 2 and 3, Schafer (RCS Farms) 1 and 2, and McCarthy; on the Western Mutual CUP, the Annan, Conrad, Ewing 1 and 2, Barbara Hungenberg, David Hungenberg, Jerke, M-Double, CCWCD-McCarthy, ray, Schmidt, Strohauer 1 and 2, WCL 1 through 4, and Weber; and on the Orphan Wells of Wiggins CUP, the OWW Well Permit (Recharge Well).

Several of the recharge sites are operated pursuant to oral agreement. These sites were constructed, at least in part, with WAS funds. The evidence is sufficient to conclude that WAS has permission for the use of these sites. The court also notes that WAS possesses the power of dominant eminent domain and could potentially obtain the use of the sites without landowner consent if necessary. *See* § 37-45-118(1)(c), C.R.S.

The 2007 projected recharge yield of each CUP as well as the estimate of the recharge capacity of each project at full build-out is listed below. Augmentation well capacity, calculated at two cfs per well, limited by the flow rates for each ditch is also reflected.

CUP Project	**2007 Projected Yield (af)**	**Build-Out (af)**	**Aug Well Capacity (af)**
Platteville Irr. and Milling	185	422	2588
Meadow Island No. 1	57	57	-
Farmers Independent	156	1100	6246
Western Mutual	75	436	6246
Jones Ditch	30	37	-
Orphan Wells of Wiggins	509	1008	-
TOTALS	1012	3060	15080

The CUPs are associated with one or more water court applications or decrees, as follows: Platteville Irrigating and Milling, applications in Case Nos. 01CW148 and 05CW331; Meadow Island No. 1, application in Case No. 05CW331; Farmers Independent, applications in Case Nos. 02CW291 and 05CW331 and decree in Case No. 85CW370; Western Mutual, applications in Case Nos. 02CW196 and 05CW331 and decree in Case No. 97CW304; Jones Ditch, application in Case No. 05CW331; and Orphan Wells of Wiggins, application in Case No. 05CW331. The court notes that WAS does not seek to decree these CUPs in this case. All

factual issues related to the operation of those projects remain for trial in the pending applications related to each recharge right.

Until those projects are decreed, WAS proposes that recharge diversions be used pursuant to the Division One Engineer's Recharge Protocol. WAS presented evidence that it has complied with the terms of this protocol. Un-decreed and decreed recharge storage rights are discussed further as a term and condition of the decree below. The use of un-decree recharge projects is disputed and discussed further below. *See* Section V.C.12.c. The use of augmentation wells is also disputed and discussed below. *See* Section V.C.1.d.iv.

iv. Leased Water Rights

WAS presented evidence of the following leases and lease yields projected for 2007 at the time of trial: GMS/WAS seven-year lease for 500 acre-feet; Fort Lupton Effluent one-year lease for twenty-eight acre-feet; Castle Pines one-year lease for variable amount; Coors one-year lease for variable amount; Streed-PIMC one-year lease of 0.5 shares for ninety acre-feet; Longmont Effluent two-year lease for 866 acre-feet; Water Supply and Storage Company one-year lease for 1,644 acre-feet; Greeley-Irrigation Company-Stromberger one-year lease for 23 acre-feet; Greeley Irrigation Company-Stoneybrook one-year lease for 54 acre-feet and the Weldon Valley Ditch Company ten-year lease of 10.625 shares for 199 acre-feet. These leases total 3,404 acre-feet projected for 2007.

Each of these leases are either fully consumable water, for which no administrative approval is necessary, or the subject of a pending change application and request for a SWSP. There was testimony that each of these sources is deliverable to the South Platte River for augmentation purposes. The use of leases is disputed and discussed below. *See* Section V.C.1.d.iii.

v. Summary of Replacement Sources

In sum, WAS presented evidence of 945 acre-feet of senior water rights, 1,194 acre-feet of storage with 3,379 acre-feet of build-out capacity, 1,012 acre-feet of recharge projects, and 3,404 acre-feet of leases for a total of 6,555 acre-feet. Additionally, Applicants presented evidence of 15,080 acre-feet of augmentation well capacity.

Reach	**2007 Senior Rights**	**2007 Storage**	**2007 Recharge**	**2007 Aug. Well Capacity**	**2007 Leases**	**TOTALS**
F	0	0	242	2588	618	3448
C	569	1194	231	6246	866	9106
B, D, E	376	0	30	6246	1721	8373
A	0	0	509	0	199	708
TOTALS	945	1194	1012	15080	3404	21635

d. Operation of Proposed Plan for Augmentation

The court determines that, for the purpose of meeting its initial burden to establish a prima facie case, WAS proved ownership or control of a sufficient quantity of water to replace depletions, assuming that the sources are legally available for use and based on WAS's other assumptions. As presented by WAS, the sources are physically available in time and place necessary to offset potential injury to other water rights owners. The following table compares WAS's 2007 physical delivery capacity with 2007 depletions, by reach:

Reach	Total depletions	Total Replacement Capacity	Net
F	2090.22	3448	1357.78
C	2370.45	9106	6735.55
BDE	1889.06	8373	6483.94
A	3527.39	708	-2819.39
TOTALS	9877.12	21635	11757.88

Based on WAS's assumptions, WAS has sufficient physical capacity in each reach to replace all depletions in that reach except for Reach A for their prima facie case. However, Reach A is the furthest downstream reach. WAS thus asserts that excesses from Reaches F, C, B, D, and E can be delivered downstream to Reach A to make up this local shortfall. Testimony by WAS's operations manager and the Division Engineer established that water in the amounts WAS needs could be delivered down the South Platte River from Reach F to Reach A.

i. Projection Tool

The Projection Tool is a key term and condition of WAS's proposed augmentation plan because it allows WAS to plan pumping in an amount commensurate with replacement supply. WAS contends that its proposed Projection Tool provides a process flexible enough to allow integration of new sources and short-term leases, but conservative enough to insure that WAS does not authorize more depletions than can or must be replaced.

WAS concedes that it currently does not control sufficient replacement sources to permit all covered wells to pump at one hundred percent capacity. WAS's manager, Tom Cech, testified that the plan is in development stage, acquiring new water sources and developing new projects to add to the base supply presented at trial. WAS's augmentation plan as proposed would also change year by year as WAS purchases new sources, develops projects, and leases additional supplies. WAS often leases effluent from Front Range municipalities that are reluctant to commit to long-term leases. WAS's proposed Projection Tool seeks to balance the timely use of these leases to supplement pumping while regulating pumping to ensure that depletions do not outpace supplies.

WAS's proposed Projection Tool compares expected replacement supplies with anticipated depletions and then limits current pumping of covered wells and augmentation wells to an amount that can be replaced in the future. The function of the Projection Tool, according to WAS, is to forecast future depletions and replacements. Therefore, the assumptions made about probable future conditions are critical to its operation. WAS asserts that it recognizes that lenient projection assumptions would allow excessive current pumping and create a risk that future depletions would go un-replaced if conditions are more severe than expected. Conversely, WAS argues that excessively conservative assumptions would ensure that no future depletions go un-replaced but would prevent maximization of use by curtailing pumping more than necessary.

The fundamental rule of the Projection Tool, according to WAS, is that projected out-of-priority depletions never exceed projected replacement. The Projection Tool accounts for all depletions: "Pre-Decree," "Post-Decree," and "Future" depletions. "Pre-Decree" and "Post-Decree" depletions are input into the Projection Tool first. Projected replacement supplies follow, according to the assumptions discussed below. If there is enough replacement supply, "Future" pumping is incrementally input into the model, until projected replacement supplies match projected depletions. The result is a "quota," an acre-foot amount of allowable new depletions that is communicated to covered well owners. As proposed by WAS, the projection is extended into the future for a sufficient number of years to demonstrate that replacements will always exceed out-of-priority depletions. Because depletions tend to decrease into the future, at some point in the projected future, the level of ongoing depletions will be perpetually less than the level of secure projected replacement supply.

The Projection Tool is operated on the assumption that there will be no pumping in any year other than the first year, also referred to as "Year One." In the projected second year, all wells are assumed to be curtailed and WAS must show that it could replace projected out-of-priority depletions in all future years using only sources in hand at the time of the projection. WAS asserts that this "every year is year one" assumption encourages the development of new projects and the integration of short-term sources into the plan. WAS also asserts that it has an incentive to secure additional sources the following year to supplement pumping. If WAS obtains additional sources, pumping the following year is allowed. If not, pumping must be curtailed.

WAS contends that the sole function of the Projection Tool is to limit authorized well pumping and that it is not a plan for operation. Rather, day to day operation of the proposed augmentation plan depends on actual river call conditions and available replacement supplies.

WAS proposes to use augmentation wells to compensate for shortfalls in the projection. WAS asserts that augmentation wells delay and spread out depletions over a longer time period. Under WAS's proposal, if future depletions, including those caused by augmentation wells, exceed projected replacement supplies, projected pumping must cut back. WAS asserts that the proposed process is self-limiting and that the retiming function of augmentation wells allows

maximization of use by "smoothing out" climatic conditions and providing a steady supply of augmentation water.

WAS proposes to update all components of the projection tool monthly to account for changing conditions. Covered well owners would report meter readings monthly, driving depletions updates. The assumed call scenario and projected diversions to replacement sources would also be updated monthly. WAS intends these updates to allow the projection to react to changing conditions, such as the onset of a drought, and to adjust allowed pumping accordingly.

Several additional assumptions drive the Projection Tool. First, WAS proposes to assume a frequency and severity of call senior to the priority dates of the wells equivalent to that experienced in the five years immediately preceding the projection. In actual operation, WAS would replace only those depletions that are out of priority.

Second, WAS proposes to assume deliveries to all water rights equivalent to the average of deliveries to each right for the five years immediately preceding the projection. This assumption is significant because many of WAS's water rights are relatively junior. Additionally, WAS assumes that the days of call for replacement purposes never be less than sixty-five percent of the year. This limitation has been incorporated into the latest version of the projection tool.

Third, WAS proposes to assume that it will acquire leases of senior water rights to an extent equivalent to the average of that achieved over the five years immediately preceding the projection. WAS does not propose to assume leases of consumable effluent.

WAS presented sufficient evidence regarding the Projection Tool to establish a prima facie case of no injury to senior water rights. WAS asserted that its proposed projections and assumptions are conservative enough that, in the actual operation of the plan, it will need to replace depletions less often than predicted. In the event of a dramatic change from very wet to very dry conditions, WAS admits that it is possible that it may be forced to pump augmentation wells more than projected. Nevertheless, WAS contends that, under such conditions, depletions from additional augmentation well pumping would be input into the Projection Tool and would serve to limit covered well pumping to make up for the unanticipated deficit. WAS's presented what it labels the "Extreme Projection Tool" and "Worse Case Projection Tool" at trial to demonstrate that the proposed augmentation plan could function even in a drought equivalent to the recent 2002-06 period and replace all out of priority depletions despite the under-prediction of required replacement.

WAS presented sufficient prima facie evidence regarding their call assumptions. The historical record of South Platte River calls reflects wide fluctuations in the frequency and severity of the senior call. However, on the whole, it reflects a long term average call only forty-three percent of the time. Only eleven years of the last fifty had less than sixty days of free river. The four periods of severe calls in 1955 to 1956, 1961 to 1964, 1977 to 1978, and 2002 to 2006 were followed by unusually wet periods. The historical record also reflects that drought periods

have averaged two to five years in length and have typically been followed by a return to normal or wet conditions. WAS presented evidence that if the proposed augmentation plan had been operating during the study period, it would have been required to replace depletions less than less than fifty percent of time and Applicants would have had substantial opportunities to use junior rights. WAS also presented evidence that an assumption of year-round call through this period would not have been necessary to protect other water users from injury and would have significantly curtailed diversions by the wells.

WAS presented sufficient prima facie evidence regarding lease assumptions. WAS has been able to lease an average of 1,162 acre feet of senior water rights per year during 2005 and 2006. WAS's manager testified that WAS has an annual leasing budget of $500,000. WAS's water acquisitions manager, Mr. Hertzke, testified that there is a greater supply of senior ditch rights available for lease than there is demand and that these leases are not difficult to achieve.

Because the Projection Tool is the driving term and condition of WAS's proposed augmentation plan, virtually every aspect of it is disputed, and thus, discussed below. *See* Section V.C1.

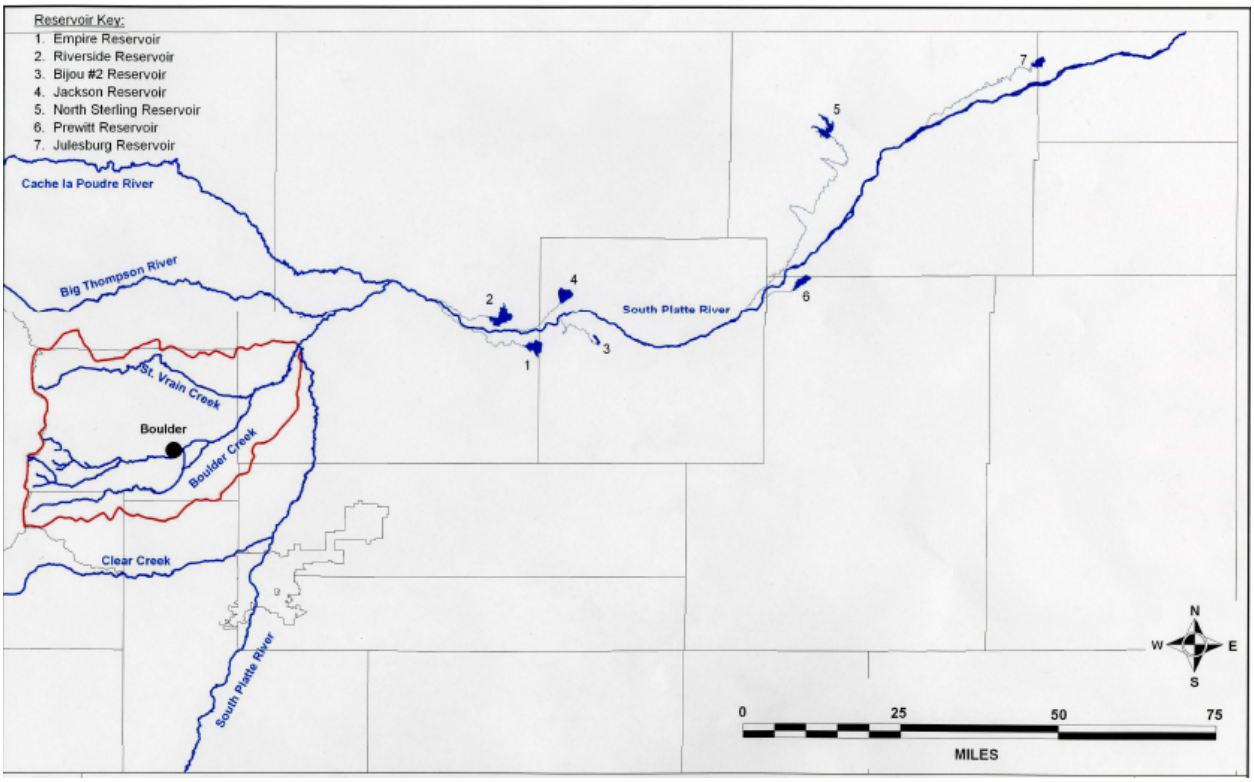
ii. Reservoir Fill Season Terms

WAS proposes the inclusion of two provisions that it labels as administrative tools for the Division Engineer in its proposed augmentation plan: a "delayed winter replacement" provision and a "well call" provision. Both would be used in a discretionary manner by the Division Engineer to maximize beneficial use of WAS wells while protecting injury to senior water rights. WAS contends that the Engineers have the authority to administer these proposed provisions. Further, such provisions would fine tune the amount of replacement needed during the non-irrigation or reservoir fill season.

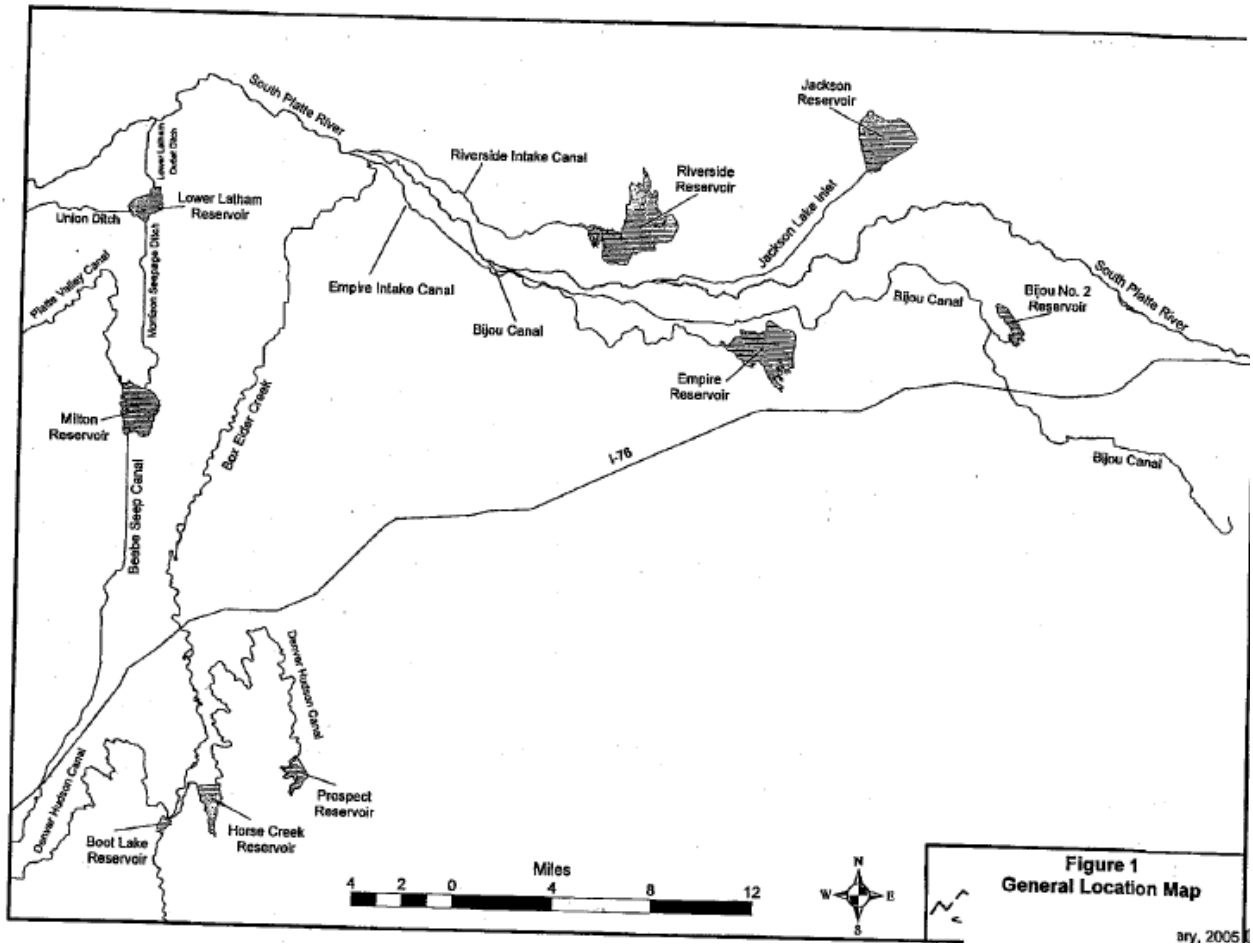
As a basis for these provisions, WAS contends that full replacement of well depletions during the winter is not required or desirable because the reservoirs along the South Platte River north of Denver (the "South Platte reservoirs") have historically filled without replacement of alluvial well depletions. These reservoirs, with the exception of Barr Lake, are depicted on the figures below. WAS thus argues that in average or wet years, full replacement of well depletions from covered wells is not necessary to achieve a fill of reservoirs senior to the wells. WAS further argues that in dry years, replacement of well depletions from covered wells may be necessary to achieve a fill prior to the onset of the sustained direct flow call. Speaking in generalities, the covered wells are junior to the senior South Platte reservoirs and senior to a group of rights established for the purpose of diverting water to recharge. WAS therefore asserts that a mechanism or process that could effectively minimize these excess deliveries and maximize diversions by the wells consistent with their priorities is desirable.

Delayed winter replacement would allow WAS to forgo replacing depletions during the reservoir fill season as long as it proves to the satisfaction of the Division Engineer that it has the ability to release the water to an effected reservoir if necessary. WAS concedes that there are

likely to be times when it is unclear whether replacement of well depletions is necessary to ensure a reservoir fill. In these times, under its proposal, WAS could apply to the Division Engineer for approval of a plan to not replace depletions until later in the season when the fill status of the potentially affected reservoir becomes clearer. WAS would hold replacement water and the effected reservoir would be "paper filled" in an amount commensurate with the amount held to prevent any potential rebound effect of the delayed filling.



WAS asserts that its well call provision is simply a form of bypass call that permits the wells to effectuate their priorities. WAS contends that well depletions are a form of diversion and that requiring these well depletions to be replaced is equivalent to a curtailment of those rights. The evidence presented established that the replacement of well depletions helps sustain flows necessary to achieve reservoir fills. However, WAS asserts, and produced some supporting evidence, that excess replacement results in waste or improperly provides water to recharge projects that are junior to the wells.



Under WAS's proposal, the Division Engineer would select a WAS well priority date as the bypass calling right in order to fill the South Platte reservoirs before the onset of senior direct flow calls in the spring. WAS claims that this has the advantage of providing a wide range of priority dates to the Division Engineer, each producing varying amounts of additional water for the reservoirs. Under a proposed well call, all wells junior to the date of the calling well would have to replace and all wells senior to the calling well would not be required to replace. WAS contends that this permits wells to effectuate their priorities while satisfying the senior calling reservoir rights. WAS also contends that the Well Call could be beneficial to upstream non-well rights because junior reservoirs may be in priority more often than they currently are.

Both the delayed winter replacement and well call provision are disputed and discussed below. *See* Section V.C.2.

B. Injury to Opposers

The burden shifts to Opposers to provide "evidence of injury to existing water rights" because WAS met its initial burden in this case. *See City of Aurora*, 105 P.3d at 614. As discussed in detail below, Opposers own and control senior and junior water rights in the South Platte River basin potentially affected by WAS's proposed plan. The final decree in this matter must protect these senior and junior water rights from injury. *See, e.g., City of Central*, 125 P.3d at 437, 439; §§ 37-92-305(4)(a)(V), -305(5); -305(8), -304(6), C.R.S.

Opposers need not show specific injury to their water rights. *Danielson*, 791 P.2d 1114; *City of Aurora*, 105 P.3d at 607. It is enough that Opposers own and control water rights in the over-appropriated South Platte River basin because injury is presumed. *Id*. at 607; *Simpson*, 69 P.3d at 59 n.7. In the South Platte basin, senior water rights frequently place calls and where out-of-priority depletions, if not replaced in time, location, and amount, will directly impact downstream water rights, including the water rights of certain Opposers, by reducing the flow available to satisfy those rights. *See Farmers Reservoir & Irrigation Co.*, 33 P.3d at 807. Senior downstream water rights that are effected by reduced flows will in turn impact other upstream water rights, including the water rights of Opposers through a rebound call.

Although historical call records demonstrate that there are periods of free river and the date of the call varies, WAS has not overcome the presumption of injury. Opposers presented evidence that their water rights would be directly effected by any failure to fully replace out-of-priority well depletions or have historically been subject to calls by more senior downstream water rights that would be directly affected by any failure to fully replace out-of-priority well depletions in time, location, and amount.

Opposers presented evidence that they own direct flow, storage and exchange water rights on the main stem of the South Platte River and major tributaries such as Clear Creek, Boulder Creek, Saint Vrain Creek, Big Thompson River, and Cache la Poudre River in Park, Douglas, Arapahoe, Denver, Adams, Weld, Morgan, Washington, and Logan Counties. Opposers water rights span much of the length of the South Platte River basin from the upper tributaries of the South Platte River upstream of the City of Denver down to the Cities of Greeley and Sterling and to The Harmony Ditch headgate near Crook. Opposers presented evidence that their water rights range in priority from very senior to very junior. The priorities of the WAS member wells range in priority from the early 1900s to approximately 2002. In general, some of Opposers' water rights are senior to some or all of the water rights decreed to the WAS member wells.

Opposers also provided evidence of more specific injury as discussed below. The court finds and determines that Opposers have demonstrated there will be specific injury to Opposers' water rights in the absence of appropriate terms and conditions for WAS's plan for augmentation. In short, Opposers have met their "burden of providing evidence of injury to existing water rights." *See City of Aurora*, 105 P.3d at 614

1. Prevention of Injury to Opposers' Water Rights

As discussed above in the section on legal standards, Section IV.B, WAS is required to replace any and all out-of-priority depletions in amount, time, and location, to prevent injury to other water rights, irrespective of whether such water rights are located at, above, or below the point of such depletion. § 37-92-305(8), C.R.S. A plan for augmentation operates outside of the priority system and therefore operates out-of-priority with no priority date. *City of Central*, 125 P.3d at 435-36. "A junior appropriator is entitled to the maintenance of stream conditions existing at the time of its respective appropriation." *Id.* (holding that plans for augmentation must provide replacement water to prevent injury to all water rights that vested prior to filing date of the augmentation plan).

Both the 1969 Act and Colorado case law require that the Engineers curtail all out-of-priority diversions that will not be replaced to prevent injury to vested water rights. "The purpose of an augmentation plan adjudication is to fix the conditions under which the State and Division Engineers may allow out-of-priority diversions and depletion of the water of a natural stream to occur consistent with the administration of decreed priorities." *Id.* at 1153. The 1969 Act expressly requires that the division engineer "order the total or partial discontinuance of any diversion in his division to the extent that the water being diverted is required by persons entitled to use water under water rights having senior priorities." § 37-92-502(2)(a), C.R.S.

2. Injury to Downstream Direct Flow Water Rights

Certain Opposers, such as Sterling, PSCo, ECCV, Pawnee, Harmony, South Adams, and Bijou, presented evidence that they own direct flow water rights in the South Platte River downstream of the location of depletions from the WAS member and augmentation wells. The potential for direct injury to these downstream water rights exists because if WAS fails to fully replace out-of-priority depletions from its upstream wells in time, location, and amount, the amount of water available to satisfy downstream water rights will be physically reduced.

3. Injury to Downstream Storage Water Rights

Calls by unsatisfied downstream storage rights are more complicated than direct flow calls. The fundamental purpose of most downstream reservoirs that would be effected by WAS well depletions is the storage of water in the non-irrigation season for subsequent delivery in the summer. If these reservoirs fill before deliveries to users begin, no injury has occurred. Thus, according to this theory, un-replaced depletions from WAS wells cause no injury if the reservoirs fill prior to the commencement of the spring direct flow call. However, the evidence presented at trial demonstrated that the administration of this principle may be difficult due to factual and legal uncertainties. WAS's well call and delayed replacement provisions are intended to provide the Engineers the administrative flexibility to determine how much replacement is needed to fill the reservoirs and thus avoid injury. The well call and delayed replacement provisions are discussed further below. *See* Section V.C.2. Nevertheless, Opposers prevented sufficient

evidence that injury to the downstream reservoirs may result from WAS's proposed augmentation plan.

4. Injury to Exchanges

Certain Opposers, Thornton, Greeley, PSCo, South Adams, and Sterling, presented evidence that they own exchange water rights in the South Platte River that may be injured directly if WAS fails to fully replace upstream out-of-priority depletions in time, location, and amount and thereby reduces the amount of water available in the river exchange reaches. WAS contends that § 37-92-305(3), C.R.S., does not indicate that augmentation plans must prevent injury to decreed exchanges. However, there is no reason to treat appropriative rights of exchange different from other water rights. *See City of Florence*, 793 P.2d at 156 (Erickson, J., specially concurring). Moreover, the relative junior priority dates of these exchanges is not significant because augmentation plans operate outside of the priority system. *City of Central*, 125 P.3d at 435.

5. Injury to Upstream Water Rights: Rebound Call

Water rights located upstream of wells depletions cannot be injured directly by a failure to replace depletions from a downstream well. However, indirect injury to these water rights may result from the increased frequency, duration or priority of calls by senior downstream South Platte River water rights if WAS does not fully replace out-of-priority depletions from the wells in time, location, and amount. The downstream senior water right call that can result from un-replaced, upstream well depletions was frequently referred to by Opposers during trial as a "rebound" call.

Rebound calls have three components. The first component is a diversion or un-replaced well depletion that reduces the flow in the river. The second component is a downstream water right that places a call as a result of being unsatisfied due to the reduced flow in the river. The third component is the call "rebounding" up the river to affect water rights with more junior priorities than the calling water right

There was a great deal of testimony about rebound calls. Certain Opposers, such as Greeley, Boulder, Thornton, Centennial, PSCo, South Adams, and Denver, presented evidence that they own direct flow and storage water rights located on the South Platte River or its tributaries above the locations of the WAS well depletions that could be injured by WAS rebound calls. Sterling also presented evidence that its water rights could be injured by having to replace out-of-priority well depletions more often or its junior storage and recharge being called out more often as a result of more frequent rebound calls from downstream senior water rights. South Adams also presented evidence that its water rights could be injured by having to replace out-of-priority well depletions more often or its junior recharge right being called out more often as a result of more frequent rebound calls from downstream senior water rights.

Rebound calls are not theoretical and have occurred in the past due to un-replaced out-of-priority well depletions. The specific evidence is discussed below concerning Opposers' water rights. *See* Section V.B.6. Further, rebound calls may occur in the future if out-of-priority well depletions caused by WAS wells are not replaced in time, location, and amount when downstream senior water rights are unsatisfied and demanding water. Moreover, the capture and future reuse of fully consumable return flows by Denver and other parties in the Denver metro area will likely diminish the supply in the South Platte and result in longer and more senior calls.

The court does not agree with WAS's contention that rebound calls do not cause injury because upstream water storage rights can store water out of priority under the "upstream out-of-priority storage statute," § 37-80-120(1), C.R.S. Out-of-priority storage under this statute is subject to certain limitations that some reservoirs and water storage right owners may not be able to meet. More significantly, such out-of-priority storage carries with it the risk that the water stored out of priority may have to be released at a time after which other means could have been used to fill that reservoir. Moreover, the statute does not create a property right and can be modified by the legislature. Only the legislature, and not this court, can modify the statute to permit what WAS requests. Thus, water storage right owners cannot be forced to accept out-of-priority storage under § 37-80-120(1), C.R.S., as a substitute for the in-priority exercise of their water storage rights.

WAS also contends that the court need not decide whether a rebound call has occurred, or could occur, because it proposes no administration that permits the condition to exist. WAS asserts that depletions occurring during times of direct flow call and reservoir refill calls would be replaced at the time of the call. WAS similarly asserts that storage calls would be honored via direct replacement at the time of the call or through the delayed winter replacement provision. WAS further asserts that the well call provision would not cause any rebound effect because it would alleviate a downstream senior reservoir call when employed, thus permitting diversions by upstream juniors that would otherwise have to wait for the senior reservoir to fill. However, as discussed in greater detail below, the court does not agree with WAS's inclusion of these provisions on both factual and legal bases. *See* Section V.C.2. Nor does the court agree that WAS's plan ultimately prevents injury to vested water rights. Thus, the court does not agree that WAS proposes no administration that permits the condition to exist.

6. Opposers' Water Rights

The court makes the following findings and determinations regarding the water rights of certain Opposers and injury to those rights.

a. Pawnee Well User, Inc.

Pawnee Well Users, Inc. ("Pawnee") is a Colorado non-profit corporation that operates a plan for augmentation for thirty-seven irrigation wells owned by its members in the Atwood and Merino area. *See* Case No. 2004CW46 (decreed December 31, 2005).

Pawnee's members own 179.956 shares of the 500 shares of The Farmers Pawnee Canal Company stock. Direct flow irrigation water rights are decreed to The Farmers Pawnee Canal Company in the amount of 14.4 cfs, with an appropriation date of September 17, 1873, and in the amount of 124 cfs, with an appropriation date of June 22, 1882. These water rights are senior to all of the water rights for the WAS member wells. Recharge water rights are decreed to The Farmers Pawnee Canal Company in the amount of 140 cfs, with an appropriation date of December 22, 1995, in Case No. 95CW263. The Farmers Pawnee Canal headgate is located on the South Platte River in the vicinity of Merino, Colorado, downstream of the Prewitt Reservoir outlet canal in Water District 64. All of the WAS member wells are located upstream of The Farmers Pawnee Canal headgate.

The Farmers Pawnee Canal 1882 water right was a calling or bypass call water right on the South Platte River for fifty days in the April through October period of 2002, twelve days in the April through October period of 2003, eleven days in the April through October period of 2004, one day during the April through October period of 2005, and twenty-one days during the April through October period of 2006. During these times, the Farmers Pawnee Canal 1882 water right was not receiving its entire decreed amount. Un-replaced well depletions from the pumping of WAS member wells has caused and will cause injury by reducing the physical supply of water downstream of the well locations and upstream of the Farmers Pawnee Canal headgate.

Pawnee members also own 2,727 acre-rights of the Logan Irrigation District that entitle them to deliveries of water from Prewitt Reservoir ("Prewitt"). Prewitt and its water rights are owned by the Logan Irrigation District (17/31), the Iliff Irrigation District (8/31), and the Morgan-Prewitt Reservoir Company (6/31). Water from Prewitt is a supplemental supply for almost 30,000 acres of land irrigated under a number of ditches and reservoirs on the South Platte River, including the Farmers Pawnee Canal. Pawnee's Prewitt water rights have been changed to add augmentation as a use and are a source of replacement water in Pawnee's decreed augmentation plan.

Prewitt has two decreed water storage rights: an initial fill right for 32,300 acre-feet with an appropriation date of May 25, 1910, and a refill right for 34,960 acre-feet with an appropriation date of December 31, 1929, both with a decreed filling rate of 695 cfs. The 1910 Prewitt water storage right is a relatively junior water storage right among the South Platte reservoir storage rights downstream of the Denver metro area. The Prewitt 1910 water right is senior to the water rights for all of the WAS member wells except one, and the Prewitt Reservoir 1929 refill right is senior to the water rights for all of the WAS member wells, except nineteen.

Prewitt is located approximately thirty miles southwest of the City of Sterling in Water District 64. The headgate of the Prewitt inlet canal is located on the South Platte River in Water District 1, between the new and old Balzac gages, approximately five miles below the headgate of the inlet canal for North Sterling Reservoir. The capacity of the Prewitt inlet canal is approximately 675 cfs. The Prewitt outlet canal discharges to the South Platte River across the

river from the headgate for The Farmers Pawnee Canal. All Prewitt structures are located downstream of the locations of all WAS member wells.

The Prewitt 1910 right was a calling water right on the South Platte River at numerous times in the 2002-03, 2003-04, 2004-05 and 2005-06 water years. Prewitt did not fill in 2004 and stored only about forty-five percent of its capacity in that year. Prewitt also did not fill in 1954, 1955, 1956 and 1964. From 1950 through 2003, well augmentation plans were not replacing winter depletions. Mr. Yahn, who has been the manager for both Prewitt and North Sterling Reservoirs for the past fifteen years, testified that Prewitt has been used more heavily in recent years because of the drought and increased administration of wells.

Un-replaced well depletions from WAS wells reduce the physical supply of water downstream of the well locations and upstream of the Prewitt inlet canal headgate. During times when the Prewitt storage rights are the calling water rights, a reduction in physical supply upstream of the Prewitt inlet canal headgate has caused and in the future will cause injury to those water rights. Water shortages in Prewitt Reservoir impact landowners under numerous irrigation ditches that take deliveries of Prewitt water.

North Sterling Reservoir ("North Sterling") has two decreed water storage rights: one for 69,446 acre-feet with an appropriation date of 1908 and a 300 cfs filling rate, and one for 11,954 acre-feet with an appropriation date of 1915 and a 711 cfs filling rate. North Sterling irrigates about 30,000 to 40,000 acres and is the main source of irrigation water supply for those lands.

North Sterling diverts water into storage during most of the non-irrigation season because the reservoir is large and the filling rate is small. North Sterling did not fill in 1954, 1955, 1956, 1964, 1978, and 2004, which were years when well augmentation plans did not replace winter depletions. When North Sterling's 1908 water storage right is not satisfied, the water available to the Prewitt 1910 storage right is inflows between the headgate of the North Sterling inlet canal and the headgate of the Prewitt Reservoir inlet canal.

Un-replaced well depletions from WAS wells reduce the physical supply of water downstream of the well locations and upstream of the North Sterling inlet canal headgate. During times when the North Sterling 1908 water storage right is the calling water right, a reduction in physical supply upstream of the North Sterling inlet canal headgate has caused and in the future will cause injury to the North Sterling water storage rights and has increased and in the future will increase the length of time it takes for North Sterling to fill and result in a corresponding delay in the time at which the Prewitt 1910 water storage right will have more water available to it. This in turn has and in the future may delay or preclude the filling of Prewitt and cause injury to the Prewitt water storage rights.

b. The Harmony Ditch Company

The Harmony Ditch Company ("Harmony") is a Colorado mutual ditch company that owns water rights for the use and benefit of Harmony's shareholders. Harmony's water rights

include a senior direct flow water right in the amount of 252 cfs with an appropriation date of April 28, 1895. Harmony has a decreed conditional recharge water right in the amount of 252 cfs with an appropriation date of December 31, 2002. *See* Case No. 2002CW363 (June 15, 2004, *nunc pro tun*c June 7, 2004). The 2002CW363 Decree also: confirmed a conditional appropriative right of substitution and exchange in the amount of 225 cfs with an appropriation date of March 28, 2002; adjudicated a change of water rights for a portion of the storage water rights in Prewitt owned by Harmony shareholders; and approved a plan for augmentation. .

Harmony and its shareholders own shares in Prewitt and are located downstream of the Prewitt Reservoir. Therefore, similar to Pawnee, WAS's failure to replace its well pumping depletions in the amount, time, and location will cause injury to Harmony for the same reasons as Pawnee.

c. City of Sterling

The City of Sterling ("Sterling") is the county seat of Logan County. Sterling operates a municipal water supply system providing between 5,000 and 6,000 acre-feet of water annually for various municipal uses within and outside of its municipal boundaries. Sterling and all of its water rights are located in Water District 64, downstream of Reach A, which is the most downstream reach of WAS's proposed plan for augmentation, and will be directly effected if WAS fails to fully replace depletions created by pumping of wells included in the plan.

Sterling derives its entire municipal water supply from wells. The East Well Field is currently Sterling's primary well field. Sterling is also developing the Scalva Well Field to meet its growing demand and operates individual wells throughout Sterling to provide water to irrigate parks and other areas. Sterling also operates a public fishing pond which draws water from the South Platte River alluvium and is considered to be a well.

Sterling uses senior and junior water rights to augment the depletions from its wells. Sterling owns senior water rights in the Henderson-Smith Ditch, Sterling Irrigation Company, Farmers Pawnee Canal Company, Springdale Ditch Company, Sterling No. 2 Ditch Company, Morgan Prewitt Reservoir Company, and the Logan Irrigation District. Sterling adjudicated changes of these senior water rights to allow augmentation use in Consolidated Cases Nos. 98CW450 and 00CW253. Sterling also owns junior recharge and storage rights that provide replacement supplies for its plan for augmentation. These were adjudicated in Case No. W-9507-78 and Consolidated Cases No. 98CW450 and 00CW253.

Sterling's water rights would be injured if WAS's plan for augmentation is approved without adequate terms and conditions. WAS presented no evidence contradicting or addressing the testimony of Sterling's expert regarding injury to Sterling's water rights resulting from WAS's proposed plan for augmentation. Sterling's expert, Mr. Sayler, described several ways in which WAS's failure to replace its depletions fully would cause injury to Sterling's water rights.

First, WAS's failure to fully replace its depletions would cause less water to be available to Sterling's water rights because Sterling is located downstream of WAS's plan. Because Sterling's water rights, such as those in the Farmers Pawnee Canal, are often the calling, or "swing" water right, when Sterling's water rights are the calling rights, Sterling will be shorted by the full amount of any shortfall in WAS's replacement supply.

Second, if WAS fails to replace its depletions fully, it will reduce the amount of water flowing into Water District 64, resulting in an increase in calls against the water rights decreed to Sterling's wells under the South Platte River Compact, senior direct flow irrigation water rights, or the Julesburg Reservoir water storage right. This would increase Sterling's obligation to replace depletions from the wells, requiring Sterling to use its replacement water supplies when Sterling would otherwise be able to retain them for later use.

Finally, Sterling's expert testified that Sterling's more junior water rights would be injured if WAS fails to replace its depletions by increasing calls against Sterling's junior water rights in the same manner as calls would be increased against Sterling's water rights for its wells. This will reduce the yield of Sterling's junior water rights for augmentation.

d. City of Greeley

Greeley owns direct flow and storage water rights in the Big Thompson and Cache la Poudre River basins, which are tributaries upstream of the location of depletions from WAS wells. WAS member wells have priorities from the early 1900s to 2003. Greeley's more senior water rights are generally senior to WAS member wells. Greeley's more junior water rights priorities are senior to some but not all of the WAS member wells. Greeley also owns exchanges on the South Platte and Big Thompson Rivers. *See* Case No. 87CW329.

Depletions from WAS wells will not directly affect Greeley's water rights in the Cache la Poudre and Big Thompson basins. Greeley's water rights have been historically called out by senior water rights on the South Platte River below some or all of the locations of depletions from WAS wells. A rebound call could injure Greeley's water rights. Depletions from WAS wells will directly Greeley's exchanges on the South Platte River in Reaches F and C by reducing the flow in the South Platte River in the exchange reach.

e. Public Service Company of Colorado

Public Service Company ("PSCo") owns and operates three electrical generation stations the South Platte River and its tributaries. PSCo has a portfolio of direct flow, storage, and exchange rights used for industrial purposes associated with these stations. The priority dates of PSCo's water rights range from 1862 to 2002 and are located upstream, downstream, and in the midst of WAS's administrative reaches.

PSCo's water rights would be injured if WAS's augmentation plan is approved without adequate terms and conditions. A failure to replace depletions could cause injury to PSCo's

water rights located downstream of the shortage and PSCo's upstream water rights would be injured by rebound calls. Some of the administrative terms and conditions contained in WAS's proposed decree, such as the delayed winter replacement and well call provisions would cause injury to PSCo's junior well rights by changing the call regime.

f. East Cherry Creek Valley Water and Sanitation District

East Cherry Creek Water and Sanitation District ("ECCV") owns water rights on the South Platte River near Kersey that were historically associated with the 70 Ranch. ECCV's water right priorities range from 1876 direct flow priorities to 1993 recharge rights. ECCV's rights could be injured similar to those of PSCo.

g. City of Thornton

The City of Thornton ("Thornton") is located adjacent to the South Platte River just downstream of the South Platte River's confluence with Clear Creek. Thornton has a portfolio of water rights on the South Platte River, Clear Creek, and the Cache la Poudre River. Thornton owns and exercises rights in numerous ditch companies along these rivers. The priority dates of Thornton's water rights ranges from 1860 to 2004. Thornton pays instantaneous, daily, annual, and long-term returns to the South Platte River and its tributaries during both the summer and winter seasons. Thornton also owns shares in other ditch companies on the South Platte that may be part of future changes. Thornton has multiple decreed junior rights for direct diversion, storage, and exchange. Some of these rights are senior to the WAS wells. Thornton's water rights are frequently short of water, place calls on the river, and are vulnerable to injury. On a daily basis, Thornton determines which of its water rights are in priority, how much exchange potential exists, diverts and pays returns. Thornton's water rights would be injured by a rebound call if WAS's plan for augmentation is approved without adequate terms and conditions.

h. City and County of Denver

Denver owns numerous water rights on the South Platte, Bear Creek, Ralston Creek, Clear Creek, and South Boulder Creek for use in the Denver metro area. Denver also owns diversion and storage facilities throughout Water Districts 2, 6, 7, 8, 9, 23 and 80.

Denver has reusable effluent from the Bi-City Waste Water Treatment Plant in Englewood and Metro Waste Water Treatment Plant ("Metro") north of the Denver metro area. Near Metro, Denver Water has recently completed the first phases of its Recycled Water Plant. The Recycling Plant diverts water directly from the outflow of the Metro Wastewater Reclamation Plant and has a capacity of thirty million gallons daily. A separate distribution system for water treated at this plant is being constructed to supply water for irrigation of parks and industrial uses.

In addition to its collection structures above the metro area, Denver is currently constructing the North and South Gravel Reservoir Storage Complexes below the Metro outfall.

These are being built for the dual purpose of diverting native South Platte River water as well as reusable effluent and other return flows and will divert water year around.

Denver can be injured by rebound calls. Denver owns water rights that are called out by downstream senior storage rights. Denver's expert testified that on November 1, 2006 the Jackson Lake inlet ditch placed a call that went upstream and called out Water Districts 1, 2, 3, 4, 5, 6, 7, 8 and 9. Denver owns water rights that are junior to this priority in Water Districts 6, 7, 8 and 9. Therefore, if WAS is does not replace depletions, downstream storage rights call out Denver's rights.

Denver's expert further testified regarding Denver's water reuse projects. Assuming Denver's is successful in pursuing these projects it is likely that there will be even less water available in the South Platte River, meaning junior storage and recharge rights will be called out more frequently.

i. Centennial Water and Sanitation District

Centennial Water and Sanitation District ("Centennial") provides water and wastewater service to Highlands Ranch, which is located south of Denver and east of Chatfield Reservoir. Centennial owns and uses surface water rights, tributary groundwater rights, and Denver Basin groundwater rights in its water supply system. Centennial's water rights have priorities ranging from 1870 to 1995. The surface water rights and tributary groundwater rights owned and used by Centennial include both direct flow and storage water rights and they divert water and/or store water from the South Platte River and its tributaries in Water Districts 8 and 23. Centennial uses its surface and tributary groundwater rights whenever they are in priority and water is physically available and supplements its supply with its Denver Basin groundwater rights. Centennial also has a reuse program and a Denver Basin well injection program. Centennial's tributary groundwater rights are withdrawn by wells and are included in a plan for augmentation decreed in Case No. 85CW415. These water rights are all located upstream of the WAS member wells.

Downstream water rights call out Centennial's rights. Due to the varying priorities of Centennial's water rights, any change in the call from downstream is likely to affect some of Centennial's water rights, making those water rights susceptible to injury from rebound calls.

Centennial has an interest in the water storage right for McLellan Reservoir ("McLellan"), with a 1948 priority date, and uses McLellan as part of its water supply and distribution system. McLellan is owned and operated by the City of Englewood ("Englewood").

WAS's expert witness, Ms. Griffith, testified that water was stored out of priority in McLellan under the 1948 water storage right in 2002-03 and that more water could have been stored in McLellan if there had not been a call from downstream senior water storage rights. The wells were not replacing depletions during the winter of 2002-03. WAS's expert further testified that the Division Engineer allowed Centennial and Englewood keep the water stored out of priority in McLellan in 2002-03. The Division Engineer confirmed this testimony and testified

that Centennial and Englewood were allowed to keep the water because if wells, including WAS member wells, had been replacing their depletions during the winter of 2002-03, the 1948 McLellan storage right would have been in priority during the time periods in which out-of-priority storage occurred. Thus, un-replaced well depletions caused and in the future may cause calls that would not otherwise occur against Centennial's water rights. These are rebound calls caused by un-replaced well depletions.

j. City of Boulder

Boulder has a portfolio of surface water rights, both direct flow and storage, which divert water from Boulder Creek, South Boulder Creek, and their tributaries in Water District 6. Boulder Creek is a tributary of the St. Vrain River, whose confluence with the South Platte River is in Reach C. Boulder also owns interests in Colorado-Big Thompson Project water and in Windy Gap Project water, both of which are delivered from the west slope through the Colorado-Big Thompson project facilities operated by the Northern Colorado Water Conservancy District.

Boulder's water rights range in priorities from 1859 to 2000. Some of Boulder's water rights, including most of its water storage rights, are used for municipal water supply purposes and some are used for irrigation of Boulder's open space land. Boulder's water rights have been called out by South Platte River water rights in every of the last four years.

Boulder stored water in Barker Reservoir ("Barker") under the 1956 and 1966 Barker water storage rights during the winter of 2002-03 when there was a senior water storage right call from the South Platte River. WAS's expert, Ms. Griffith, testified that this storage occurred during the time there was a call on Boulder Creek at the Anderson Ditch for storage in Baseline Reservoir ("Baseline"). Wells were not replacing depletions during the winter of 2002-03.

The District 6 Water Commissioner, Mr. Carlson, testified that the call on Boulder Creek from the middle of March 2003 through the end of May 2004 was a South Platte River call and not a Baseline call at the Anderson Ditch. Mr. Carlson also testified that the Anderson Ditch diverted at a maximum rate of 11.6 cfs during that time period and those diversions did not prevent Boulder from storing water in Barker. Mr. Carlson testified that the Anderson Ditch call for Baseline shown in the State Engineer's diversion records for that time period was a mistake. Regardless, the flow in middle Boulder Creek at the Nederland gauge above Barker exceeded fifteen cfs for a substantial portion of the time period in which Barker stored water in the winter of 2002-03. These Nederland gauge flows did not include flows also available at the Anderson Ditch headgate from main Boulder Creek, measured at the Orodell gauge.

Boulder was not required to release this water from Barker even though downstream senior Riverside and Empire Reservoirs did not fill in 2003. The Division Engineer confirmed that Boulder was allowed to keep this water in Barker because if wells, including the WAS member wells, had been replacing their depletions during the winter of 2002-03, the Barker 1956 and 1966 storage rights would have been in priority during the time periods in which out-of-priority storage in Barker occurred. Therefore, un-replaced well depletions have caused and in

the future may cause calls against Boulder's water rights that would not otherwise occur and have caused and will in the future cause injury to Boulder's water rights.

WAS's expert testified on rebuttal that, based on her analysis of storage volumes, the Barker storage rights would not have been in priority even if the WAS member wells had replaced their out-of-priority depletions during the winter of 2002-03. The court finds this testimony unpersuasive. First, WAS's expert testified that well owners owed water to Riverside and Empire Reservoirs and not Boulder's Barker storage rights or Centennial's McLellan storage right. Second, the Division Engineer's testified concerning his more detailed analysis of the impact of un-replaced well depletions in the winter of 2002-03. Third, Office of the Division Engineer took actions in reliance on the division engineer's analysis.

k. South Adams Water and Sanitation District

South Adams provides water and wastewater service to the Commerce City area located northeast of Denver. South Adams owns and uses surface water rights, tributary ground water rights, exchange water rights, and Denver Basin groundwater rights in its water supply system. The surface water rights owned and used by South Adams include interests in the direct flow and/or storage rights of several ditch companies and a recharge water right for the Ford Water Recharge Facility decreed in Case No. W-8440-76D. The surface water rights, tributary ground water rights, and exchange rights owned and used by South Adams divert water from the South Platte River and its tributaries in Water District 2. South Adams's tributary ground water rights are withdrawn by wells and are included in a plan for augmentation decreed in Case Nos. W-8440-76A-D and are also in a pending plan for augmentation in Case No. 2001CW258. These water rights are all located within Reach F and have priorities ranging from 1863 to 2004.

Un-replaced well depletions from WAS wells that deplete Reach F reduce the physical supply of water within Reach F. During times when South Adams's surface water rights, recharge water right, or exchange water rights are the calling water rights, a reduction in physical supply will cause direct injury to those water rights by reducing the yield of those water rights. A reduction in the physical supply of water within and downstream of Reach F due to un-replaced well depletions from WAS wells could cause injury to South Adams's water rights because South Adams could be required to replace its stream depletions caused by its wells under its plan for augmentation when it otherwise would not have to replace such depletions. This would result in South Adams losing opportunities to manage and save its augmentation water by putting it in storage or recharge for later use, thus injuring South Adams's water rights by decreasing the yield and availability of South Adams's water rights. WAS presented no evidence addressing South Adams's specific water rights.

C. Disputed Material Issues and Terms and Conditions to Prevent Injury

The court determines that WAS's proposed augmentation plan requires modifications and terms and conditions to prevent injury. *See* § 37-92-305(3), (8) C.R.S.; *Weibert*, 200 Colo. at 319, 618 P.2d at 1373. As discussed above, although WAS met its initial burden of a prima facie

case, Opposers demonstrated that the plan, as proposed, would result in injury. *City of Aurora*, 105 P.3d at 614-15 (The "applicant has the ultimate burden of showing an absence of injurious effect by a preponderance of the evidence."). There are numerous disputed material issues concerning the injurious or non-injurious effect of aspects of WAS's proposed augmentation plan. The modifications and terms and conditions needed to prevent injury are discussed below.

1. Projection Tool

The court determines that the Projection Tool, as proposed, is inadequate to prevent injury. § 37-92-305(3), C.R.S. The parties agreed that any decree in this matter must include terms and conditions requiring WAS to make annual projections of the amount of current and anticipated depletions and legally available replacement supplies before WAS's wells may begin pumping in any calendar year. These terms and conditions are collectively referred to as the "Projection Tool." The parties disagreed, however, regarding the terms and conditions necessary to formulate a projection that prevents injury. The court makes the following findings and determinations regarding components of the Projection Tool to be included in the decree.

a. Factual Basis for Projection

The year 2007 is the most difficult year for WAS's proposed augmentation plan. First, it encounters conditions where WAS is repaying large amounts of post-pumping depletions from wells no longer in the plan and from pumping at one hundred percent levels that occurred prior to the implementation of the projection. Second, the plan is emerging from a severe, extended drought that limited diversions to recharge and storage. Operation of the Projection Tool will require less pumping through a pumping quota until these two factors change.

WAS's junior replacement water rights can divert water only under no-call or "free river" conditions. Long periods of continuous or nearly continuous calls occur in Water Districts 1 and 2, during which WAS's junior replacement supplies will not be able to divert.

The South Platte River has historically experienced a call approximately forty-five percent of the time. The historical record indicates several instances of drought that resulted in sustained calls in the 1950s, 1962, 1977, and 2002-05. For example, from May 2002 through the close of trial in May 2007, a nearly continuous call was in place against water rights in Water Districts 1 and 2. A continuous call allowing for no free river days existed from July 2003 to May 2005. From May 2002 to May 2005, there were only four free river days. During these times, WAS's junior replacement water rights could not divert.

It is likely calls will become more frequent and of longer duration in the future. *See City of Aurora*, 105 P.3d at 613, n.25. First, many municipal users, including Denver, South Adams, Thornton, and Aurora, are developing projects by which they will treat and reuse at least 71,000 acre-feet of water which is presently returned to the South Platte River. Second, in recent years, storage water rights have placed calls more frequently than they did historically and are likely to continue to do so. Third, as well use has become more closely regulated on the South Platte

River, more extensive use of storage water is likely to occur because of the inability of some users to rely on groundwater supplies as extensively as they did in the past and because storage water will be used as replacement supplies in augmentation plans. Fourth, the various historical call analyses performed by experts in this case were not able to take into account new absolute and conditional water rights that were developed during the period covered by the call analyses.

b. Purpose and Function of Projection

Projections, like WAS's proposed Projection Tool, were first included in plans for augmentation decrees in Water Division No. 1 following the Colorado Supreme Court's decision in *Empire Lodge Homeowners' Ass'n v. Moyer*, 39 P.3d 1139 (Colo. 2001). The first case brought to the court's attention in which such a projection was included was the decree in Lower Logan Well Users Association, Case No. 03CW208. Projections have been included in numerous other plan for augmentation decrees since the Lower Logan decree, including, *inter alia*: Sedgwick County Well Users Association, Case No. 03CW209; Groundwater Management Subdistrict of the Central Colorado Water Conservancy District, Case No. 02CW335; Logan Well Users Association, Case No. 03CW195; Pawnee Well Users, Case No. 04CW46; Low Line Ditch Company, Case No. 03CW094; Dinsdale Brothers Inc., Case No. 03CW194; Veeman Dairy, Case No. 03CW211; and South Platte Ditch Well Users, Case No. 04CW110.

The court has taken judicial notice of these decrees and the decree from Case No. 02CW335, which was admitted as evidence. These decrees were stipulated and not litigated. They are not binding on the court in this matter. Nevertheless, given the relative novelty of use of projection tools in augmentation plan decrees, these decrees provide useful examples of the terms and conditions that water users have agreed to prior to this case. The court notes that WAS has not brought to the court's attention any decree containing terms and conditions which are substantially different than those in the cited decrees or substantially similar to certain of those included in WAS's proposed decree. The court further notes that WAS is herein litigating terms and conditions that were previously stipulated to.

The Projection Tool is a term and condition that may be included in a plan for augmentation decree to prevent injury. *See* § 37-92-103(9), C.R.S. To do this, the Projection Tool creates a procedure by which WAS can demonstrate, before it pumps wells under the plan, that it owns or controls legally reliable replacement supplies sufficient to replace the delayed depletions that will be caused by pumping the wells. Projections are of particular importance where applicants rely on a significant number of relatively junior and leased water rights as replacement supplies.

The Projection Tool is not the plan for augmentation, but rather, a set of terms and conditions of the plan. WAS's Projection Tool cannot increase the supply of water in Water Division No. 1 nor can it create or provide WAS with a legally available supply of replacement water. *See* § 37-92-103(9), C.R.S. Its purpose is to allow WAS to demonstrate that it has in hand a supply of water sufficient to replace anticipated well depletions under all conditions before any wells are allowed to pump. WAS may not pump its wells and thus deplete the river

unless it has replacement supplies in hand or can predict the availability of such supplies with reasonable and conservative assumptions as described in detail below.

Actual operational conditions under the plan are different than the conditions predicted by the Projection Tool. The Projection Tool compares existing and proposed depletions with anticipated replacement supplies to establish how much can be pumped by covered wells at a given time. Once the wells pump, all out-of-priority depletions must be replaced, regardless of Projection Tool's estimation. Every month, member well pumping and augmentation well pumping shall be input into the Projection Tool renewing the iterative process and forcing changes in allowable pumping based on changing conditions.

The court does not agree with WAS that one of the purposes of the Projection Tool is to promote pumping of wells and allow them the full benefit of their own priorities. An augmentation plan has the function of allowing junior wells to pump by integrating the wells into the priority system and the Projection Tool is a set of terms and conditions within an augmentation plan. *See, e.g., Simpson*, 69 P.3d at 60-61; *Empire Lodge*, 39 P.3d at 1150-51. Terms and conditions are included in an augmentation plan for the purpose of preventing injury to vested water rights and decreed conditional water rights. §§ 37-92-304(3) and (4), C.R.S.; *City & County of Denver*, 44 P.3d at 1025. The water rights protected by terms and conditions do not include the wells benefited by the plan, but only water rights that may be injured by the operation of the plan. WAS contends that such a determination does not maximize utilization. *See* § 37-92-102(1)(a), C.R.S. However, it is the augmentation plan itself that ensures maximum utilization. *Midway Ranches*, 938 P.2d at 522. It is not a purpose of the Projection Tool to promote well use unless and until it can be assured, before pumping occurs, that all depletions from the pumping can be replaced with available augmentation supplies. *City of Aurora*, 105 P.3d at 615. The court notes that this is consistent with the projection approach used in all other recent South Platte River well augmentation plan decrees identified above.

c. Elements, Limitations, and Assumptions of Projections

The Projection Tool has several principal elements on which the parties agree. First, the Projection Tool is performed for a multi-year time period specified in the decree, but pumping of irrigation wells covered by the decree is limited to Year One of the projection so that it can be demonstrated that all lagged depletions from pumping the wells during that year, as well as depletions from pumping of the wells in previous years, can be replaced within the term of the projection with available replacement supplies. Second, an annual projection is prepared in April, just prior to the usual onset of the irrigation season. Third, the projection is periodically updated to reflect changes in the information included in the annual projection which may affect the amount of allowed well pumping or the applicant's ability to replace depletions. Fourth, the decree specifies information which must be included in the projection. Fifth, the decree specifies certain limitations and assumptions which must be applied in developing the annual and updated projections. The principal points of dispute on the Projection Tool concern the limitations and assumptions to be used and are discussed below.

i. Call Assumption

The call assumption establishes the length of time during the projection period when it is assumed that there is a call senior to WAS wells and junior replacement supplies. If the call assumption is insufficiently restrictive, it would allow WAS to project fewer than actual out-of-priority well depletions during the projection period and greater than actually available replacement supplies to replace those depletions. The result would be injury to other water rights. Conversely, the call assumption must be based on the evidence presented. *See City of Thornton*, 926 P.2d at 88.

The parties differed greatly at trial on this issue. WAS proposed the following call assumption in paragraph 20.3.1 of the proposed decree:

> Period of Call. The projection shall be completed assuming a frequency and severity of senior call equivalent to the running average of the five years immediately preceding the projection, provided, however, that in no year shall a call senior to the Covered Wells be assumed to be effective less than 65% of the time. For each month in the projection, the call assumption shall be based on the average of the calls that occurred in that same month in the preceding five years. The average shall be based upon posted call records, and shall be updated monthly.

See Section V.2.d.1. Opposers argued that the Projection Tool must include a year-round call for at least Year One. Most Opposers asserted that, for a decree operating in Water Districts 1 and 2, the call should be assumed to be in place year-round for the entire projection period. Based on the evidence presented at trial, the court makes the following determinations regarding the call assumption of the Projection Tool:

Each and every Year One of the call assumption of the Projection Tool shall be based on conditions from 2002 though 2006. WAS's proposal of the use of the previous five-year average for Year One is problematic because previous averages are only approximations of earlier conditions and do not represent or predict actual future conditions. The five-year average is also problematic because of its delayed reaction to the onset of drought. Even with the proposed sixty-five percent limitation, WAS's proposal would overestimate free river days anytime the actual free river condition is less than 128 days for the entire year, such as during dry periods. Thus, WAS's proposal is insufficient to protect vested water rights from injury. Conversely, the court cannot conclude that the "worst case" scenarios discussed at trial and proposed by Opposers are entirely reasonable. Although a perpetual year-round call is possible, there is little evidence that such a scenario has occurred, or has occurred for any substantial length of time. Moreover, the assumption of a perpetual call on the entire length of the South Platte River effected by this case is unlikely, even when considering that the South Platte is over-appropriated and calls are likely to be more severe in the future. Rather, the use of the 2002-06 data for all Years One is representative of drought river conditions that have actually occurred. Moreover, considering the severity of the 2002-06 drought, such an assumption is sufficiently stringent to

protect vested water rights. Therefore, the use of the 2002-06 historical data as the Year One base period is most reasonable call assumption to sufficiently protect vested water rights.

The call assumption for the years after Year One in the Projection Tool shall be based on the previous five-year running average or the previous year's actual conditions, whichever is more stringent. The use of such an average recognizes that, over a longer-time period, the historical call average is reasonably accurate. The use of the previous year's conditions will avoid the Projection Tool's delay in reacting to the onset of a drought and will adequately protect vested water rights throughout the duration of more extreme drought conditions. It will also mitigate the need to rely too heavily on augmentation wells or future wetter climatic periods to make up for shortfalls between the projection and actual conditions.

Using these assumptions, the Projection Tool, and if possible, the pumping quota, can be adjusted upwards as more firm replacement water becomes available. In light of relevant legal standards discussed above, it is better to use these more conservative assumptions and adjust the Projection Tool upwards if possible than to adjust the Projection Tool and pumping quota downwards, relying heavily on augmentation wells, as WAS suggests. Moreover, this approach is preferable to using a long-term average that may have no relationship to actual conditions. If actual replacement water is less available than projected, WAS must adjust the Projection Tool to take the shortfall into account and adjust its assumptions accordingly. However, if more replacement water is available by April 1st of the next year and the need to replace depletions is reduced, WAS may adjust its assumptions upward. For example, such adjustments could be made if additional water is diverted to storage and recharge or additional leases are executed.

Year One of the Projection Tool may also include actual free river days in Year One if the days of free river are greater than the 2002-06 conditions base period. Updating the projection in this manner will protect water users and allow WAS to take advantage of more favorable conditions than have been projected.

Paragraph 21.1 of the proposed decree, which would allow WAS to overcome a shortage of replacement supplies by purchasing or leasing additional replacement supplies, is inadequate to prevent injury. Although WAS may purchase additional water and incorporate it into the projection under the modified terms and conditions of the Projection Tool as described herein, this paragraph as a means of avoiding injury resulting from a shortfall is insufficient. In the event of an unexpected shortage, it is unlikely that WAS could quickly acquire additional water rights sufficient in time, location, and amount to replace depletions. Any available replacement water would already be included in the projection making the acquisition of additional supplies unlikely. Further, the purchase and lease of additional water supplies has become increasingly costly and difficult in recent years. In short, the proposed decree provision for emergency replacement supplies is insufficient to prevent injury.

Finally, the final decree in this case shall contain a term and condition that permits WAS to invoke the court's retained jurisdiction to adjust the Projection Tool assumptions determined

herein any time that WAS can show that the Projection Tool has overestimated the need for replacement water by at least twenty percent over the preceding seven years.

ii. Direct Flow, Storage, and Recharge Supply Projections

The Projection Tool must project the availability of various types of replacement water including senior direct flow water rights, storage water rights such as the Shores Project, and junior recharge water rights. Similar to the proposed call assumption, WAS's proposed Projection Tool would allow WAS to project water availability based upon average conditions over the previous five-year period.

Opposers contend that, to prevent injury, WAS must make its projections on a "firm yield" or "worst-case" basis. For WAS's senior direct flow water rights, Opposers propose that WAS be allowed to project that the water rights will be able to divert in the amount of the dry-year firm yield during the period of the projection. Opposers also propose that projections for WAS's storage rights and recharge projects include only the water which is in storage or available for recharge when the projection is made. Opposers assert that WAS may update the projection monthly to take advantage of actual river conditions which have been more favorable than projected conditions. Based on the evidence presented at trial, the court makes the following determinations regarding direct flow, storage, and recharge supply projections in the Projection Tool:

Similar to the call assumption, the positions of both WAS and Opposers are problematic. WAS's proposal to use an averaging approach to project the amount of water available under to its direct flow, storage, and recharge water rights encounters the same problems as those discussed regarding the call assumption. For example, the use of a five-year average for junior water rights would have the tendency to overestimate the amount of water available during dry periods. On the other hand, Opposers' position is somewhat unrealistic because it would be assumed a year round call. However, WAS presented evidence that showed that actual diversions have been made to its storage and recharge rights and historical record suggests that some diversions under a free river will be available in the future.

Deliveries of senior direct flow water rights shall be projected based on the same assumptions as the call assumption that are discussed above. These assumptions shall include the distinction between Year One and following years, as well as a term and condition that permits WAS to invoke the court's retained jurisdiction to adjust the Projection Tool assumptions.

Year One of the Projection Tool may include actual water that WAS has in storage as of April 1st, the beginning of the projection period. WAS may elect to apportion the amount in storage over the period of the projection, taking into account any evaporation, seepage, or other losses occurring during the time the water is in storage. Year One of the Projection Tool may also include the accretions resulting from actual diversions made to WAS's junior recharge projects as of April 1st. These modifications are similar to the Engineers' proposed alterations to

paragraph 20.3.3 of the proposed decree. As discussed in greater detail below, WAS may take credit for such recharge accretions if the recharge projections operate under a water court decree, SWSP, or the Division Engineer's Recharge Protocol. *See* Section VC.12.c. Unlike the assumptions for WAS's senior direct flow water rights, WAS's storage and recharge water rights require these different assumptions because they are substantially more junior and will likely only be able to divert during free river conditions.

iii. Leased Supply in Projection

Leased water supplies are another significant source of replacement water in WAS proposed augmentation plan. WAS's limitation for inclusion of "additional leased supplies" is found in paragraph 20.3.4 its proposed decree:

> Additional Leased Supplies. WAS may assume deliveries from additional water supplies used under ¶13 of this decree to the extent to which it has a fixed and definite right to delivery for the term of such delivery. In addition, beginning in projected Year 2, WAS may assume deliveries from water rights leased for a term of one year or less in an amount equal to the average deliveries under such leases in the five years immediately preceding the projection. Through 2008, this average shall be based on the deliveries under such leases from January 1, 2005 through the date of the projection.

Opposers contend that leases are an insufficient source of replacement water. Opposers argue that existing leases with a fixed term and guaranteed deliveries are insufficient because such leases have terms shorter than projected depletions. Opposers also argue that projected leases of water are not a legally available source of replacement water under the proposed augmentation plan because the acquisition of future leases is inherently uncertain. Based on the evidence presented at trial, the court makes the following determinations regarding leased supply projections in the Projection Tool:

Year One of the Projection Tool may include any executed water leases and other written water supply agreements for a definite amount of water that WAS has as of April 1st. Opposers ultimately did not contest WAS's proposed use of such supplies. Such a lease or agreement represents a definite and certain amount of water that WAS may project into the future. WAS may include such a lease or agreement in the projection for the duration of such lease or agreement.

For years after Year One in the Projection Tool, WAS may project leases based on either the previous five-year average or the previous year's amount, whichever is less. Section 37-92-305(8), C.R.S., states that an augmentation plan relying on replacement supplies of limited duration shall not be denied solely on that ground if terms and conditions can prevent injury. WAS is a governmental entity with steady tax revenues and a budget to lease water each year. Although WAS has successfully leased water in the past, long-term leases are difficult to procure. It is likely that leases will become less available in the future as cities in the Denver

metro area continue to grow and reuse their transmountain effluent. *See City of Thornton*, 926 P.2d at 68. The projection of future leases will permit WAS to plan well pumping based on the likely scenario of the acquisition of some future leases. An overestimation of future leases does not necessarily mean that out-of-priority depletions will go un-replaced. The use of the previous year's amount will avoid injury to vested water rights that could otherwise occur between the time when leases become unavailable and before the five-year average catches up to a tighter lease market. In short, leases projected under these terms and conditions will not result in injury to other water rights.

iv. Augmentation Wells in Projection

Another significant source of replacement water in WAS's proposed augmentation plan is augmentation well pumping. WAS proposes to use the Projection Tool itself to limit augmentation well pumping, but would include no other limitation. Paragraph 20.3.2 of the proposed decree states:

> Projected Augmentation Well Pumping. Any amount of Augmentation Well pumping may be assumed for purposes of the projection; however, the sum of Covered Well depletions, Augmentation Well depletions, and return flow obligations shall not exceed the amount of anticipated replacement in any month of the projection. Projected augmentation well deliveries shall not exceed physical delivery capacity.

WAS asserts that the primary reason for the augmentation well pumping is the repayment of post-pumping depletions from years of member wells pumping at full capacity and pumping by wells no longer in the plan. WAS asserts that the projection will draw long-term pumping closer to the level of non-augmentation well supplies and augmentation wells will thus achieve a true buffer status.

Opposers contend that augmentation wells are not a legally available source of replacement water in WAS's proposed augmentation plan and cannot be used in the Projection Tool. Opposers concerns are based in part on WAS's proposed use of augmentation wells to compensate for errors in the projection and a buffer when other supplies are not available. Opposers contend that such use is inconsistent with the evidence presented. As proposed, augmentation well pumping could be used to replace the depletions from augmentation wells. Further, some of WAS's projected summaries showed that augmentation wells were the principal replacement supply available to WAS even using WAS's five-year average assumptions. Opposers are concerned that augmentation wells will merely delay injury to their water rights into the future in the hope additional augmentation supplies or wet periods will allow WAS to replace or avoid replacing augmentation well depletions. Based on the evidence presented at trial, the court makes the following determinations regarding augmentation wells in the Projection Tool:

WAS's proposed Projection Tool does not provide evidence of any reasonable limitation on the amount of augmentation well pumping that might be allowed under the decree in this case. Augmentation wells are provided for under Colorado law and are subject to requirements for use of a well. *See* § 37-92-103(14)(a), C.R.S. Augmentation wells do not provide new or additional water to the natural stream of the South Platte River, but rather, act as a re-timing mechanism by pumping tributary water from the South Platte alluvium to replace depletions currently hitting the river. Although current depletions are replaced, augmentation well pumping creates new depletions that will affect the river at a later date. A current depletion is, in essence, replaced with a future depletion of equal or greater size. It is possible that some future depletions will not have to be replaced if it reaches the South Platte during a period of free river. However, when future depletions have to be replaced, the evidence presented at trial demonstrated that future depletions may be greater than current depletions because of transportation losses that occurred in delivering water from the augmentation wells to the location of depletions. Thus, augmentation wells have the potential to permit additional pumping without actually replacing depletions and potentially increasing overall depletions to the South Platte.

WAS may only use augmentation wells to replace depletions when all other sources of replacement water are insufficient and when WAS is able to fully replace all depletions resulting from pumping of the augmentation wells. Such a limitation shall be included in the Projection Tool and is included in the Engineers' modifications to paragraph 8.3 of the proposed decree.

WAS may only include augmentation wells in the Projection Tool if WAS owns the well or if WAS has an executed agreement to use the well. If there is such an agreement, WAS may include the augmentation well in the projection for the duration of the agreement. Such a modification is included in the Engineers' modifications to paragraph 20.3.2 of the proposed decree.

WAS shall have the opportunity, however, to propose a reasonable limitation on augmentation well pumping with its revised proposed decree to be included in the Projection Tool. WAS shall be permitted to present additional evidence, if necessary, to support such a limitation. The limitation should ensure that augmentation well pumping is not and does not become the primary source of replacement water. The limitation should also take into account transportation losses resulting from delivering water pumped from augmentation wells to the location of depletion on the South Platte River.

v. Length of Projection

The parties disagree about the length of the projection period. In paragraph 20.1 of the proposed decree, WAS proposes to complete the projection "for a length of time sufficient to demonstrate that replacements will always exceed depletions." The projections WAS presented at trial were for a period of seven years. Opposers contend that a fixed term of fifteen years should be use in the Projection Tool.

The projection term shall be seven years or the number of years required to show that projected depletions are less than anticipated replacement supplies, whichever is greater. Opposers' request for a fifteen-year term is based on their contention that WAS only having 967 acre-feet of replacement sources. However, as discussed above, the court does not completely agree with that analysis. Meanwhile, under the assumptions proposed by WAS, seven years is required to demonstrate that projected depletions will be less than anticipated replacement supplies. Although the court has modified the WAS's proposed assumptions for the Projection Tool, it is clear that the initial years of operation of WAS's augmentation plan will be the most difficult because of WAS's responsibility to replace ongoing depletions from past pumping of wells now removed from the plan and member wells that previously pumped at full capacity. Further, it is in WAS's interest to acquire additional replacement sources and WAS expressed such a desire at trial. Therefore, seven years is a reasonable minimum period for the projection. However, in order to prevent injury, the projection shall be extended in the event that more than seven years are required to demonstrate that anticipated replacement supplies are greater than depletions.

vi. Frequency of Projection

WAS proposes to complete a monthly projection. Opposers do not contest this proposal. Paragraph 20.1 of the proposed decree would require WAS to provide only the April projection to the Division Engineer and Opposers on the Notification List initially provided for in paragraph 13.1 of the proposed decree. Paragraph 20.1 proposes that the projection be shown on the spreadsheet which is Exhibit 3 to the proposed decree. The court hereby approves a monthly projection.

WAS shall submit an electronic version of the entire projection to the Division Engineer and all parties each month due to the importance of the projection to the management of the decree and the relative ease of circulating the projection electronically. Use of the spreadsheet attached as Exhibit 3 to the decree is acceptable, as long as a revised version conforming to these determinations is first approved by this court and as long as the decree makes clear that, subject to notice to WAS and Opposers, that the Division Engineer may make changes in the forms on his or her own initiative or at the request of WAS or an Opposer.

2. Proposed Reservoir Fill Season Terms

WAS's proposed augmentation plan includes two provisions designed to ensure that the correct amount of replacement water is provided to the reservoirs on the South Platte River north of Denver (the "South Platte reservoirs") that fill during the non-irrigation or reservoir fill season. These are the "delayed winter replacement" and "well call" provisions. Delayed winter replacement would permit WAS to withhold making replacements during the non-irrigation season if the Division Engineer determines that the South Platte Reservoirs would fill. A well call would permit the Division Engineer to set a bypass call based on a WAS member well and require replacement of depletions and curtailment accordingly. WAS proposes that the Division

Engineer utilize these provisions in a discretionary manner to maximize beneficial use while protecting senior users from injury.

The court determines that neither the delayed winter replacement nor the well call provisions shall be included in the final decree in this matter. Both provisions may present ambitious and creative solutions to the challenge of incorporating wells into the priority system and the issue of injury to storage water rights. However, both provisions would affect all water users in Water Division No. 1 and would significantly alter the long-standing administrative practices of the Engineers in Water Division No. 1. The court finds no support for such modification under existing statutes, case law, or administrative rules for Water Division No. 1. Such broad-reaching, fundamental, and essentially legislative alterations are best addressed by the General Assembly.

a. Context for Reservoir Fill Season Terms

The South Platte reservoirs have historically tended to fill without the replacement of alluvial well depletions. In average or wet years, the full replacement of well depletions may not be necessary to achieve a fill of these reservoirs, which are generally senior to WAS wells. In dry years, replacement is more likely to be necessary to achieve a fill prior to the onset of the sustained direct flow call. The replacement of well depletions helps sustain flows necessary to achieve reservoir fills.

The difficulty of incorporating wells into the priority system prompts both the delayed winter replacement and well call provisions. *See* § 37-92-102(1)(a), C.R.S. The principle difference between surface and underground diversions of South Platte tributary groundwater is that, while surface diversions have an immediate impact on the quantity of water in the stream, the effect of well pumping is delayed. A junior surface diversion can thus divert during a free river without being curtailed. By contrast, the crucial time of free river for a well is not when it pumps, but when its depletions affect the river. Therefore, the depletions caused by tributary wells are in essence a form of diversion and a requirement that depletions are replaced is the functional equivalent of curtailing the exercise of those rights. *See* § 37-92-103(7), C.R.S.

Both the delayed winter replacement and well call provisions also attempt to address the unique requirements of the South Platte reservoirs. The main goal of the South Platte reservoirs during the non-irrigation season is to achieve a fill before more senior direct flow water rights begin calling for water in the spring and summer. The stored water will then be delivered to shareholders and applied to a beneficial use. It thus stands to reason that no injury to the South Platte reservoirs occurs if they fill before being called out. However, predicting when and if the South Platte reservoirs fill is fraught with factual difficulties.

b. Delayed Winter Replacement

The delayed winter replacement provision is found in paragraph 23.3 of the proposed decree. The purpose of delayed replacement is to ensure that in years when it is unclear whether

the South Platte reservoirs will fill without replacement of WAS well depletions, the right amount of replacement water is provided. Paragraph 23.3 would permit WAS to delay replacement of well depletions during the winter reservoir fill season during a call if, in the professional judgment of the Engineers, "it is likely that senior reservoirs on the South Platte River will fill, and WAS demonstrates the capability to deliver replacement water to any potentially affected reservoir in a manner sufficient to prevent injury, should this expectation prove unwarranted." Under this provision, the affected reservoirs would receive a "paper fill" to account for the delayed replacement water held by WAS. If some or all of the wells depletions do not need to be replaced, WAS would retain the water, saving it for the replacement of future depletions.

i. Operation of Delayed Winter Replacement

The delayed winter replacement provision would permit WAS to withhold replacement during the reservoir fill season if it proves to the satisfaction of the Division Engineer that it has the ability to release the water to an affected reservoir if necessary. There are likely to be years when it is unclear whether replacement of well depletions is necessary to ensure a reservoir fill. Under WAS's proposed provision, during these years, WAS could apply to the Division Engineer for approval of a plan to hold replacements until later in the season when the fill status of the potentially affected reservoir becomes clearer.

Under delayed winter replacement, calls by the South Platte reservoirs would be honored to the extent that the reservoir is "paper filled." In other words, the Division Engineer would paper fill the calling reservoir by accounting for the water it would have been able to divert to storage. There is no provision in WAS's proposal for potentially affected reservoirs to opt out of a paper fill. Effected reservoirs could be paper-filled only to the extent that WAS could later deliver water to the reservoir if necessary. All other aspects of the administration of the call would be administered as if the calling reservoir were actually diverting water from the South Platte. When the calling reservoir elected to lift its call or reached its paper fill, the call would be lifted or move to other water rights. Thus, as proposed, the paper fill is intended to be transparent regarding the administration of calls.

If the affected reservoir actually fills with South Platte water, WAS would not need to release its replacement water to the reservoir. However, if the affected reservoir does not fill, WAS would have to release its replacement water to the reservoir to replace the paper fill with actual water.

Under WAS's proposal, other parties, not necessarily involved in this case, would potentially be able to delay the replacement of winter depletions in a similar manner. WAS asserts that the Division Engineer has the administrative authority to take this action at the present time for any well. However, the Engineers have refused to take this action in the absence of a decree term. WAS's expert, Ms. Griffith, testified that, if approved by this court, other wells outside WAS's plan for augmentation would have the opportunity to delay replacement of winter

well-pumping depletions. Therefore, it appears that WAS's proposed delayed winter replacement provision could be utilized by parties other than WAS.

ii. Factual Issues Regarding Delayed Winter Replacement

The delayed winter replacement provision potentially injures other water rights. The court does not address several factual issues addressed by the parties at trial and in their briefs, including: interference with seepage from the South Platte reservoirs, potential rebound calls resulting from a paper fill, potential injury to upstream water rights, and potential injury to non-storage water rights. WAS and the Engineers have not fully analyzed the impact of the delayed winter replacement provision on water users in Water Division No. 1. Further, predicting the fill of the South Platte reservoirs and ensuring deliveries to the reservoirs are highly uncertain and complex issues that WAS and the Engineers have not adequately analyzed or considered.

A paper fill could potentially interfere with maintenance operations on reservoir ditches and related structures. WAS's expert, Ms. Griffith, and the Division Engineer testified they were unaware of maintenance operations by reservoir companies and had not considered any adverse impacts WAS's delayed replacement of well-pumping depletions might have on such operations. WAS asserts that any deliveries of delayed replacement water would occur when other water was running in the ditch, thus minimizing interference. WAS contends that such operational issues would by necessity be addressed in the context of WAS's application to the Division Engineer for approval of a specific delayed replacement plan of which reservoir companies would have notice. The Division Engineer further testified that he would attempt to facilitate an agreement between WAS and the reservoir company on these kinds of issues prior to approving a plan. In short, such analysis has not been performed but would be completed later by the Engineers.

A paper fill could also potentially interfere with farming operations and the operations of other augmentation plans. Landowners with water rights in the North Sterling and Prewitt Reservoirs determine farming and augmentation plan operations for the coming irrigation season based on amounts in reservoir storage as of April 15th each year. Opposers' expert, Mr. Thompson, testified that wells that rely on foregone deliveries of water from reservoirs as an augmentation supply would be injured by the administration contemplated by paragraph 23.3 of the proposed decree. WAS's expert testified that WAS had not investigated how the paper fill might impact farming and augmentation plan operations that rely on storage water rights. WAS asserts that a reservoir company and its shareholders could reasonably count on the paper fill amount as a part of their anticipated deliveries and that the paper fill amounts would be so small in relation to the sizes of the reservoirs that there would not an appreciable impact on delivery calculations. Nevertheless, such issues have not been analyzed or considered in any detail.

The evidence presented at trial demonstrated the factual difficulty inherent in predicting when and if the South Platte reservoirs will fill. WAS contends, with some evidentiary support, that it is possible to calculate the estimated fill dates of the reservoirs by using the beginning of season storage contents, a calculated rate at which the reservoirs can fill, and base flow in the South Platte River. WAS contends that, once established, base flows tend to drop slightly as the

fill season progress, but are generally predictable. However, even under WAS's formulation there is significant uncertainty in making such a predication and a lack of detailed factual analysis and no standards proposed as to how such a prediction would be made.

The weight of the evidence demonstrated that whether and when the South Platte reservoirs will fill cannot be reliably predicted at this time. It is difficult, if not impossible, to predict when South Platte Reservoirs will fill in any year. WAS's expert and the Division Engineer expressed uncertainty as to how indicative base flows in October to November and December are in predicting the filling of the reservoirs. Although base flows might be somewhat indicative of whether a storage right will fill, WAS performed no analyses demonstrating any relationship between such base flows and the filling of South Platte reservoirs. WAS performed no analyses on the average beginning of season storage contents for any of the individual reservoirs that might be subject to such delayed replacement. Moreover, some evidence suggested that base flows in the South Platte River vary widely from year to year and are unpredictable. Springtime weather, which affects snow pack, runoff, cannot be predicted. Nor can springtime flows in the South Platte River be predicted. It is during this time that the South Platte reservoirs are finishing their fill prior to the onset of senior direct flow calls. Even snow pack conditions, existing stream flows, and beginning of season reservoir storage are not reliable indicators of stream flows that might later be available to fill reservoirs. For example, in 2006, the snow pack was above average all winter, and then plummeted to way below average in April and May. In short, the amount of water available to fill the reservoirs changes constantly and unpredictably in response to precipitation and river flow conditions. Thus, the ability to fill reservoirs becomes increasingly uncertain after the winter months. The Division Engineer testified that he could not predict with any certainty whether reservoirs might fill in any year until the end of March. Similarly, the manager of North Sterling and Prewitt Reservoirs testified that he could not predict, as of March 30, 2007, whether North Sterling Reservoir would fill in 2007. In sum, there is a lack of evidence to show that the fill of the South Platte reservoirs can be predicted with any reasonably certainty at this time.

There are additional factual considerations in ensuring that replacement water reaches the reservoirs that WAS and the Engineers have not fully analyzed. Although WAS demonstrated that it has some ability to release water for delayed replacement delivery from its thirty augmentation wells and the Shores Project, WAS's expert testified that, based on transit losses in the South Platte River and losses in reservoir inlet ditches, WAS might need 1.88 acre-feet of replacement water for every acre-foot of water recorded in a paper fill. This amount of transportation loss would substantially limit replacement. The Division Engineer testified that if the augmentation wells were used as a replacement source, the flow rate required to deliver water to paper filled reservoirs would be unattainable in certain circumstances. The manager of North Sterling and Prewitt Reservoirs testified that numerous dry up points on the South Platte River would make it difficult to ensure that WAS's delayed replacements actually got to the paper-filled reservoir. Again, there was no detailed analysis of deliveries of replacement water to reservoirs.

Although WAS asserted that historical base flows in the South Platte River would be sufficient to fill storage water rights, WAS did not consider the future reuse of trans-mountain water by municipalities that may reduce flows in the South Platte River available to fill storage water rights. Opposers' expert, Mr. Sayler, testified that reuse of water currently in the South Platte River could reduce flows by nearly 71,000 acre-feet. He also testified that South Platte reservoirs would need 330,000 acre-feet of water to fill each year, and the loss of 71,000 acre-feet in river flows would significantly impact future reservoir fills. Further, other water users, such as Centennial, have also initiated reuse programs in recent years that will further reduce flows in the South Platte River.

There are numerous unanswered factual issues regarding the potential administration of the delayed winter replacement provision. WAS's expert testified that only the Division Engineer's approval would be required in order to paper fill a storage water right. However, WAS's expert also testified she was unsure of whether reservoirs selected to receive a paper fill would have the ability to opt out of such administration, or whether other water rights impacted by such administration would be allowed to provide input to the Division Engineer on the paper fill concept. The Division Engineer testified that he was uncertain if he could arbitrarily paper fill a reservoir. The manager of North Sterling and Prewitt Reservoirs testified that North Sterling would not agree to a paper fill and would sue the Engineers if North Sterling was administered in this manner. An expert for Opposers, Mr. Hajj, questioned whether this provision could be administered at all.

Although the Division Engineer ultimately testified that the delayed replacement concept was administrable, it is clear that the specifics of such administration are uncertain. WAS's expert testified the factors used to select a reservoir for a paper fill would be left to the discretion of the Engineers and would not be detailed in the decree. The Division Engineer suggested additional terms, but also testified that he would initiate an administrative process in which these issues could be addressed. He testified that the plan was administrable and that he could take the actions necessary to implement it. It is nevertheless unclear what such actions would mean in practice.

There are numerous operational aspects of delayed winter replacement that have not been considered. One example of the lack of analysis is apparent in WAS's point flow study. On cross examination, WAS's expert admitted the point flow analysis overstated the average amounts of water available in the South Platte River available to fill storage reservoirs, and understated WAS's required well depletion replacements due to a failure to subtract water that would actually be diverted from the South Platte River to meet the target fill rate needed to fill each reservoir. Although WAS's expert corrected her study and reached substantially the same conclusion in rebuttal, such a fundamental omission illustrates that the concept of delayed winter replacement has not been fully analyzed or considered.

iii. Legal Issues Regarding Delayed Winter Replacement

The delayed winter replacement provision raises also suffers from legal problems that are fatal. The judicial approval of the proposed delayed winter replacement provision in WAS's augmentation plan would amount to this court making a legislative decision broadly affecting water users and water rights throughout the basin. The delayed winter replacement provision would grant the Engineers administrative authority over storage water rights and WAS member wells that lacks a basis in existing statutes or administrative practice. This provision also suffers from notice and jurisdictional problems. The delayed winter replacement provision shall therefore not be included in the final decree.

WAS argues that the Engineers currently possess the authority represented by the delayed winter replacement provision. WAS argues that the Engineers can play a discretionary role assigned by the court in the implementation of a decree. *See Empire Lodge*, 39 P.3d 1139; *Simpson*, 69 P.3d 50 (both addressing authority of the Engineers in the absence of a decree). WAS further argues that, while the water court must determine the timing, location, and amount of depletions, augmentation plans can only be implemented if the Engineers are granted some discretion. The court does not agree.

The Engineers lack the administrative authority over storage water rights as contemplated by the delayed winter replacement provision under the existing statutory scheme. The 1969 Act charges the Engineers with the duty to "administer, distribute, and regulate the waters of the state in accordance with" Colorado law. § 37-92-501(1), C.R.S. However, the court's review of the Engineers' statutory authority reveals no authority that would permit the Engineers to exercise their discretion to withhold replacement of depletions and paper fill effected reservoirs. §§ 37-80-101 to -121; 37-92-501 to -503, C.R.S. Nor have the Engineers attempted to promulgate and rules or regulations to better define their authority. *See* § 37-92-501(1), C.R.S. Rather, the 1969 Act expressly requires the Division Engineer to "order the total or partial discontinuance of any diversion in his division to the extent that the water being diverted is required by persons entitled to use water under water rights having senior priorities." § 37-92-502(2)(a), C.R.S.

To compare, the delayed winter replacement provision is substantially similar to the "upstream out-of-priority storage statute," § 37-80-120(1), C.R.S. Like the proposed delayed winter replacement provision, this statute grants the Engineers the authority to administer storage water rights in a manner to maximize utilization. However, the key difference between the two is that, with regards to this statute, the General Assembly has authorized the Engineers to permit upstream out-of-priority storage, while no similar authority has been granted regarding delayed winter replacement.

WAS asserts that failing to approve the delayed winter replacement provision would lead to inefficiency in river administration and excess replacements by wells. Novel and unique issues of injury arise in the context of replacing well depletions and filling of the South Platte reservoirs in the non-irrigation season. The evidence presented at trial suggested that new administrative tools would assist the Engineers maximize the utilization of the water of the State.

See, e.g., Fellhauer v. People, 167 Colo. 320, 336, 447 P.2d 986, 994 (1968). However, the fact that the 1969 Act applies the principle of maximum utilization to the Engineers does not grant the Engineers additional authority. Sections 37-92-102(1)(a) and -102(2)(b), C.R.S., are declarations of general principles and policies and not specific grants of authority. *See Castle Meadows Inc.*, 856 P.2d at 505 (§ 37-92-102(1), C.R.S., accords with principle of maximum utilization). Rather, "[a]ugmentation plans implement the Colorado doctrine of optimum use. . . ." *Midway Ranches*, 938 P.2d at 522. Moreover, the Engineers' need for these new tools highlights the fact that they do not have them under the current statutory scheme. In short, while a certain amount of administrative inefficiency may exist under the present statutory scheme, the principle of maximum utilization does not usurp these statutes or the priority system.

WAS further argues that failing to approve the delayed winter replacement provision would lead to injury to the wells' water rights. However, as discussed above, judicial approval of an augmentation plan is not concerned with injury to the rights to be augmented, but rather, with injury to other water rights. *See* § 37-92-305(3), C.R.S. Although it is "the policy of this state to integrate" wells into the prior appropriation system, § 37-92-102(1)(a), C.R.S., the court must apply controlling Colorado law.

The delayed winter replacement provision also lacks adequate notice. WAS contend that the applications in this matter were sufficient to put all parties on inquiry notice because the applications put parties on notice of WAS's proposed augmentation plan. *See Monaghan Farms, Inc.*, 807 P.2d at 15. The court does not agree with WAS's characterization of the delayed winter replacement provision as merely one means of replacing depletions. As discussed above, this provision goes beyond an augmentation plan in both its direct and indirect impacts on other water rights. *See* § 37-92-103(9), C.R.S. The applications in this matter do not include a claim that WAS sought such a provision. Other water rights holders could thus not have been put on inquiry notice of the potential impact to their rights. *See Closed Basin*, 734 P.2d at 634. Consequently, this court lacks jurisdiction over this claim. *Danielson v. Jones*, 698 P.2d 240, 244-46 (Colo. 1985) (water judge may only consider those matters that are properly presented in an application and in a manner that provides appropriate notice to potential objectors).

Finally, the court lacks the jurisdiction over the South Platte reservoirs required to approve the implementation of the delayed winter replacement provision in this proceeding. As discussed above, the delayed winter replacement provision substantially affects the rights of these storage water rights by altering the timing of water received and by altering the authority of the Engineers. Further, there is nothing in the decrees confirming the water rights of the South Platte reservoirs that allows such reservoirs to be paper filled in lieu of receiving actual water. Nor is there any authority submitting such storage rights to this administration. As discussed in the Order Regarding Motion for Reconsideration of January 17, 2007 Order Regarding Amendment to Remove Wells, entered contemporaneously with this order, the court acquires jurisdiction over the augmentation plan and structures to be augmented when they are covered under a proposed plan. However, there is no basis for the court to acquire jurisdiction over the South Platte reservoirs in this action.

For the aforementioned reasons, the delayed winter replacement provision shall not be included in the final decree in this matter.

c. Well Call

The well call provision is found in paragraph 23.2 of the proposed decree. The first sentence of that paragraph requires that the Engineers "make every effort to allow the wells served by the augmentation plan decreed herein to deplete the river in priority in the winter months." The second sentence allows the Engineers to "recognize and use a call by a Covered Well or group of Covered Wells placed by WAS as a management tool to regulate filling of senior South Platte Reservoirs." The purpose of the well call provision is to integrate the wells into the priority system by recognizing that, as previously discussed, the depletions resulting from well pumping that affect a stream are analogous to surface diversions and requiring replacement is analogous to curtailment. The well call provision would aim to limit replacement of WAS's out-of-priority well depletions to no more than the amount needed to fill senior reservoir storage rights.

i. Operation of Well Call

There was significant confusion at trial concerning how the well call provision would operate because it is significantly different than a surface diversion call. A typical call scenario for surface diversions arises when a water user is not receiving enough water in the stream. The user places a call, resulting in junior water users forgoing diversions, which increases the supply in the stream such that the more senior water user can continue diversions. The well call provision, however, modifies the concept of a call to the realities of underground diversions of tributary groundwater and lagged depletions. A well owner cannot call for water as would a surface diverter because groundwater moves slowly, most wells are not located in the stream, and the curtailment of junior diversions, especially surface diversions, may not increase the supply of water at the well. Instead, wells pump groundwater and the depletions affect the stream later. The well call provision would in essence enable the Division Engineer to enforce well priorities, not when the wells pump, but when the wells' depletions affect the stream.

The division engineer uses bypass calls as an administrative tool to maximize diversions. A call may produce more water than the senior calling right requires. In such a situation, the division engineer employs a bypass call by which a water right junior to the senior calling right is selected. This is the bypass calling right. All upstream rights junior to the bypass calling right are curtailed. The bypass calling right is permitted to make some diversions while bypassing some water to the senior calling right that is fully satisfied. However, sometimes the bypass calling right receives no water. For administrative purposes, the location of the call is the downstream senior needing the water and the date of the call is that of the upstream junior.

WAS contends that a well call would merely be a bypass call. If reservoirs are calling during the non-irrigation season, WAS concedes that wells must replace depletions. However, if there is enough water to satisfy the reservoirs but not enough for a free river, WAS proposes to

use the well call provision. Using this provision, WAS asserts that the division engineer could place a bypass call using the priority date of a well to stimulate sufficient flows for the reservoirs and remove the reservoir call. The location of the call would be at the reservoir headgate and the date of the call would be the well priority. Under this provision, a call by a well is in effect a request for additional water from junior priorities to satisfy or negate the depletion caused by the well, although all of the water would go to the reservoir. All wells senior to the date of the call would no longer be required to replace depletions and all wells junior would continue to replace. WAS asserts that all rights that are senior to the calling well, including upstream reservoirs such as Barker and McClellan Reservoirs, would be able to divert in priority, as opposed to waiting for the downstream South Platte reservoir to fill.

ii. Factual Issues Regarding Well Call

The well call provision potentially injures other water rights. Uncertainty resulted at trial from the novelty of the well call provision. For example, the Division Engineer testified that use of the well call provision might not result in water actually reaching senior calling reservoirs. The well call is problematic because the implementation and effects of the well call provisions raise basin-wide questions that have not been fully analyzed or considered.

There is currently inadequate information regarding the implementation and effects of the well call provision. The Division Engineer testified that in order to administer the well call provision, he would need to have information for each of the WAS wells that included the priority date of the depletions for each well, the percentage of total plan depletions associated with each well, the timing of the depletions associated with each well, and the location of the depletion associated with each well. He further testified that he did not currently have this information. WAS's expert, Ms. Griffith, testified that a pre-determined target fill date/rate for storage reservoirs on the South Platte River was necessary for use of the well call provision and delayed replacement of winter depletions described in paragraph 23.3 of the proposed decree. She also testified that target dates and/or fill rates for storage reservoirs on the South Platte River would not be formalized in the decree. Although this information is to a certain extent administrative and ministerial, the fact that neither WAS nor the Engineers possessed all the information at trial indicates that the specifics of implementation and subsequent effects have not been considered.

There is also uncertainty as to how the well call provision would be administered. The Division Engineer testified he would be hesitant to use the well call provision, even in the absence of injury, as there were unresolved issues with how such a tool would operate. An expert for Opposers, Mr. Thompson, expressed similar uncertainty as to what the well call provision would mean in practice. Although the Division Engineer ultimately testified that the well call provision is administrable, the uncertainties expressed go beyond the uncertainties inherent in all augmentation plans and undermine this court's duty "to fix the conditions under which the state and division engineers may allow out-of-priority depletions . . . ." *Midway Ranches*, 938 P.2d at 522. *See Cache LaPoudre Water Users Ass'n v. Glacier View Meadows*,

191 Colo. 53, 63, 550 P.2d 288, 296 (1976). Rather, beyond the conceptualization of the well call, its administration is undefined.

The evidence presented at trial demonstrated that WAS has not fully considered injury to vested water rights. The Division Engineer testified that the well call provision could not be used if it would cause injury to vested water rights. Opposers' expert, Mr. Thompson, testified that use of the well call provision would cause substantial injury to other water rights, such as junior recharge rights. Meanwhile, WAS's expert testified that WAS had not considered potential injury to decreed conditional water rights that might result from use of the well call tool provision.

There is no historical precedent for the well call provision. WAS contends that a well call would merely be a bypass call like the 1972 recharge call that the Division Engineer testified that he frequently employs. WAS contends that the use of the WAS member well priorities would give him a wider range of dates to manage the river. However, as discussed above, the concept of a well call is significantly different than a typical surface diversion call or bypass call. The evidence established that a well call has not been employed previously in Water Division No. 1 and such a right is not included in other water court decrees.

Finally, the evidence presented at trial demonstrated that the well call provision would have a substantial but as-of-yet unknown impact. WAS asserts that, in practice, the well call would used to sustain steady fill for the reservoirs. WAS further asserts that Engineers' discretion is needed to manage the water rights system to satisfy priorities in accordance with maximum utilization. However, no such specifics were proposed or elaborated in detail. Meanwhile, Opposers' expert, Mr. Wood, testified that the well call provision would change the fill pattern of South Platte Reservoirs by increasing or extending reservoir calls, causing injury to other water rights.

The evidence presented at trial also demonstrates the broad impact that the well call provision would have. WAS's expert, Ms. Griffith, testified that if approved by this court, other wells outside WAS's plan for augmentation would have the opportunity to make use of the well call provision. Similarly, the testimony of the Division Engineer suggested that this court's approval of the well call provision in WAS's decree in this case would permit him to manage the South Platte River, and water rights dependent on that river, in an entirely new manner. Thus, the direct impact of the well call provision would extend far beyond the administration of WAS's proposed augmentation plan potentially to all water rights in the South Platte basin.

On the whole, the effects of the well calls are highly uncertain and rely fundamentally on the Engineers, in their discretion, to work out the details of such a provision. Considering these uncertainties, the court cannot determine that the well call provision would not injure vested water rights. *See* § 37-92-305(3), C.R.S.

iii. Legal Issues Regarding Well Call

The well call provision also suffers from fatal legal problems. The inclusion of the well call provision would amount to this court making a legislative decision broadly affecting water users and water rights throughout the basin, perhaps to an even greater extent than the delayed winter replacement provision. The well call provision may be creative and ambitious way to more fully integrate wells into the prior appropriation system. However, its significant departure from current law and administrative practice does not permit this court to approve it. The well call provision also suffers from notice and jurisdictional problems. The well call provision shall therefore not be included in the final decree in this case.

There is no legal precedent for the well call provision. Although nothing in the 1969 Act prohibits a well call and well have adjudicated priorities, *see* § 37-92-306, C.R.S., the well call provision is a significant departure from the 1969 Act and controlling case law interpreting that act. A call has traditionally been a means by which a senior water right may be exercised to assure delivery of water which the senior is entitled to divert. *Empire Lodge*, 39 P.3d at 1144, n.5 ("A call is placed on a river when a senior appropriator forces upstream juniors to let sufficient water flow to meet the requirements of the senior priority."). A well call under this provision, in a certain respect, turns the traditional concept of a call on its head because it would not increase the supply of water available to the well for diversion. The 1969 Act, which integrated wells into the priority system in part through plans for augmentation, does not expressly permit wells to place a call for water that would curtail diversions by other water rights. Under the current statutory structure, wells are protected from having to replace depletions that are not out of priority by being excused from replacing the amount of depletions that may not be injurious at a given time. Rather than a call, the 1969 Act requires that well pumping be curtailed if injurious depletions are not replaced. §§ 37-92-305(8) and -501(1), C.R.S. *See, e.g., City of Aurora*, 105 P.3d at 615. The well call provision would thus, in essence, create an alternative to plans for augmentation for wells that is not included in the 1969 Act. *See generally Simpson*, 69 P.3d 50. Moreover, there is nothing in the 1969 Act that grants the Engineers the authority to place and utilize a well call, even if it were to increase maximum utilization. Regardless of the possible wisdom of such a provision, this court must apply controlling Colorado law.

Furthermore, the well call provision also lacks adequate notice. WAS argues that adequate notice was provided that WAS planned to replace only so much water during the non-irrigation season as is necessary to prevent injury and that the court has the jurisdiction to implement the measures necessary to ensure this result. *See Monaghan Farms, Inc.*, 807 P.2d at 15. Similar to the delayed winter replacement provision, the court does not agree with WAS's characterization of the well call provision as merely one means of replacing depletions. This provision goes beyond a typical augmentation plan in both its direct and indirect impacts on other water rights. *See* § 37-92-103(9), C.R.S. Notice was therefore inadequate. The applications in this matter do not include a claim that WAS sought a provision such as the well call provision. Other water rights holders could not have been put on inquiry notice of the

potential impact to their rights. *See Closed Basin*, 734 P.2d at 634. Consequently, this court lacks jurisdiction over this claim. *Danielson*, 698 P.2d at 244-46.

WAS argues that the current system wastes water and results in a reversal of the priority system. WAS contends that South Platte reservoir calls currently require the replacement of well depletions all winter such that excess water leaves the State. WAS further contends that because wells are forced to replace excess water not needed to fill the reservoirs in the non-irrigation season, recharge rights junior to the wells are permitted to divert in essence at the wells expense.

However, as discussed regarding the delayed winter replacement provision, the Engineers lack the authority and this court lacks the jurisdiction to affect the right of the South Platte reservoirs to place calls. Further, the replacement of well depletions resulting in diversions to recharge is a complex basin-wide issue that cannot be resolved in the context of the adjudication of one plan for augmentation. Although reservoirs are generally senior to wells and WAS member wells which are generally senior to recharge projects, the priorities of reservoirs, wells, and recharge projects overlap such that broad characterizations are difficult to apply. Further, diversions to recharge support the pumping of other wells in the South Platte basin. Although fine-tuning in the administration of the South Platte River may be desired the well call provision goes beyond the scope of these proceedings.

3. Addition of Covered Wells

Paragraph 11.1.1 of the proposed decree would allow additional wells to be added to WAS's plan for augmentation as Covered Wells. WAS contends that once the court decrees its Projection Tool, any projection indicating that an additional well can be supported by the plan is a prima facie showing meeting WAS's burden and Opposers who disagree can invoke the retained jurisdiction provision. Opposers are concerned that the plan cannot support additional wells because wells currently included in the plan will either not be allowed to pump, or allowed to pump only on a very limited basis, as a result of WAS's limited replacement supplies.

The court determines that the paragraph in the final decree concerning the addition of wells to the plan shall read as follows:

> Addition of Covered Wells. WAS may add a well to the plan only in accordance with statute and WAS policy. All wells must be within the boundaries of WAS. If WAS seeks to add a well, either as a new well, supplemental well, or an alternate point of diversion for an existing well, WAS or the well owner shall file a separate Application with the Water Court to add the well to the plan for augmentation. A member well may be added to the plan under such appropriation date, priority and terms as the Court may determine

This paragraph is substantially similar to the Engineer's proposed modifications to paragraph 11.1.1 of the proposed decree with the addition of the word "separate" to the second sentence. Injury will result unless WAS's depletions are replaced in time, location, and amount. *See* § 37-

92-305(3), C.R.S. The addition of wells may alter the conditions under which WAS diverts out of priority and prompt new litigation. The court cannot permit the likelihood of frequent if not continuous litigation in this case concerning the addition of future wells to WAS's plan. Moreover, the resume-notice provisions of § 37-92-302, C.R.S., will ensure that all affected parties are given notice.

4. Deletion of Covered Wells

Paragraph 11.1.2 of the proposed decree would allow deletions of covered wells from WAS's plan for augmentation provided WAS replaces "all injurious out-of-priority depletions caused by pre-deletion WAS authorized pumping of the well, unless the deleted well lies within the boundaries of a designated groundwater basin created by the Colorado Groundwater Commission. In such case, no replacement of post pumping depletions shall be required."

Injury will result unless all out-of-priority depletions from WAS's member wells are replaced. § 37-92-305(3), C.R.S. *See also* Sections V.C.15 and 20. The court determines that the paragraph in the final decree concerning the deletion of wells to the plan shall be substantially similar to the following:

> Deletion of a Covered Well. WAS shall replace all out-of-priority depletions from Member Wells, pursuant to the terms of this decree, until and unless a decree or order of this Court authorizes the deletion of a Member Well from the plan for augmentation. WAS or the owner of a Member Well may file an Application in the Water Court, with notice as required by law, seeking the deletion of a Member Well and the owner's water rights from the plan for augmentation and proposing terms and conditions on which said application should be granted. Alternatively, WAS of the owner of a Member Well may delete a Covered Well from the plan by filing a notice with the Water Court setting forth: 1) the location of the well; 2) the well's permit number and decretal information; 3) the future depletions anticipated as a result of well's authorized pumping under the WAS plan. Following the deletion of a Covered Well, WAS shall continue to replace all injurious out-of-priority depletions caused by pre-deletion pumping of the well that occurred while the well was covered under the WAS plan or associated substitute water supply plan. The Court retains perpetual jurisdiction to consider the terms and conditions on which such motion may be granted, including but not limited to, terms and conditions requiring replacement of ongoing depletions resulting from use of the Member Well prior to the date the Court allows the Member Well to be deleted from the plan for augmentation.

This incorporates the modifications that the Engineers suggested to this paragraph. The court agrees with Opposers that WAS presented no evidence concerning the likelihood of member wells lying within a designated basin and such reference is therefore not warranted. However, the court determines that, unlike with the addition of a well to the plan, the deletion of a well does not require a separate water court application.

5. Replacement Only to Downstream Senior Water Rights

Opposers object to the second and third sentence of paragraph 9 of the proposed decree. The second sentence states that some of the depletions from WAS's wells "affect the river during times when the call is senior to these wells." The third sentence states that states that "[t]he purpose of this plan is to prevent injury to vested water rights and decreed conditional water rights in the river reaches at or below the location of the Covered Wells and Augmentation Well depletions." WAS's expert, Ms. Griffith, testified that WAS's augmentation plan would not have its own priority date but would be administered based on the priorities of the wells included in the plan. She further testified that WAS had not completed the analysis of how this proposed administration would actually operate. Opposers presented evidence at trial that the operation of the WAS's plan could cause injury to water rights located upstream of WAS's wells.

The court determines that because WAS's member wells will be operating outside of the priority system pursuant to an augmentation plan, WAS must replace all out-of-priority depletions to the South Platte River in order to prevent injury to all water rights that vested prior to the filing date of WAS's augmentation plan. *City of Central*, 125 P.3d 424. *See* Section IV.B. Injury will result to water users upstream from the point where WAS's well-pumping depletions impact the South Platte River unless any and all such depletions are replaced in time, location, and amount. § 37-92-305(3), C.R.S. Therefore, the second sentence of paragraph 9 of the proposed decree shall be modified to reflect WAS's obligation to replace out-of-priority depletions to prevent injury to all vested water rights, irrespective of the location of such water rights. The third sentence of paragraph 9 of the proposed decree shall be also be changed in the final decree to reflect that WAS's out-of-priority depletions must be replaced at any and all times the call on the South Platte River is senior to February 28, 2003, the filing date of the WAS's augmentation plan application.

6. Administration Based on Priorities of Member Wells

Opposers object to second sentence of paragraph 10 of the proposed decree, which states that "[w]ell depletions that are out-of-priority and would otherwise cause injury to downstream vested water rights and decreed conditional water rights senior to the priority dates of the Covered Wells and Augmentation Wells will be replaced by the same water supplies described in ¶¶12-13."

The court applies the same reasoning to this paragraph as applied to the issue of replacement only to downstream senior water rights in the previous subsection. *See* Section V.C.5. Injury will result to water users upstream from the point where WAS's well-pumping depletions impact the South Platte River unless any and all such depletions are replaced in time location, and amount. § 37-92-305(3), C.R.S. Therefore, the second sentence of paragraph 10 of the proposed decree shall be changed in the final decree to reflect WAS's obligation to replace out-of-priority depletions to prevent injury to all water rights irrespective of the location of such water rights and to reflect that WAS's out-of-priority depletions must be replaced at any and all

times the call on the South Platte River is senior to February 28, 2003, the filing date of WAS's augmentation plan application.

7. Replacement Based on Priorities of Member Wells

Opposers object to the second sentence of paragraph 22 of the proposed decree, which states that "[d]epletions from Covered Wells and Augmentation Wells will be considered to be out-of-priority during times when there is a valid call for water downstream of the well from a water right that is senior to the individual well's water right."

Similar to the previous two subsections, injury will result to water users upstream from the point where WAS's well-pumping depletions impact the South Platte River unless any and all such depletions are replaced in time, location, and amount. *See* Section V.C.5. Therefore, the second sentence of paragraph 22 of the Proposed Decree shall be changed in the final decree to reflect WAS's obligation to replace out-of-priority depletions to prevent injury to all water rights irrespective of the location of such water rights. The second sentence of paragraph 22 of the proposed decree shall be changed in the final decree to reflect that WAS's out-of-priority depletions must be replaced at any and all times the call on the South Platte River is senior to February 28, 2003, the filing date of WAS's augmentation plan application.

8. State Engineer Implementation of Plan for Augmentation

Opposers object to first sentence of paragraph 23.1 of the proposed decree, which states that

> the State Engineer shall exercise the broadest latitude possible in the administration of waters under his or her jurisdiction to encourage successful implementation of this augmentation plan, and make such rules and regulations and shall take such other reasonable action as may be necessary to allow continuance of existing uses of Covered Wells and to assure maximum beneficial utilization of the waters of this State.

Opposers argue that this provision would injure other water rights because it purports to require the division engineer to administer other water rights for the benefit of the WAS's wells and requires the division engineer to take special actions for the benefit of WAS's members to the detriment of other water users.

The court determines that such a provision is unnecessary. WAS argues that this provision expresses the legislative intent with regard to the implementation of augmentation plans. However, while WAS's provision states that the Engineers shall "exercise the broadest latitude possible . . . to encourage successful implementation of this augmentation plan," § 37-92-501.5, C.R.S., states that the Engineers shall "exercise the broadest latitude possible . . . to encourage and develop augmentation plans." Thus, WAS's proposal language modifies the statutory language to emphasize WAS's augmentation plan, which implies that it is of a higher status. More importantly, the evidence presented at trial established that provisions such as this

have not been included in other decrees. The Division Engineer likewise testified that this provision was unnecessary and that the removal of paragraph 23.1 would not change how the decree was administered. The final decree in this matter shall thus not include such a provision.

9. Administration Regarding Maximization of Beneficial Use

Opposers object to the third and fourth sentences of paragraph 23.4 of the proposed decree, which state:

> In such administration the Division Engineer and the State Engineer shall issue such orders as are necessary and appropriate and may utilize any funds, public or private, and any other resources made available to them. This plan for augmentation shall be administered to accomplish the maximum economic use of and benefit from the water which may be available or developed for such administration if persons owning, or entitled to use water under, water rights or conditional water rights will not be injuriously affected thereby.

The court determines that such language is vague and unnecessary in the context of a final decree in this matter. These sentences quote § 37-92-502(4), C.R.S., only replacing the word "each" with "this" to begin the fourth sentence. These sentences are vague in the context of this matter because it is unexplained how the addition of this provision would affect administration. No evidence was produced at trial that such language has been included in other decrees. More importantly, the Division Engineer testified that this language was unnecessary and that the removal of paragraph 23.4 would not change how the decree was administered. The final decree in this matter shall not include such a provision.

10. Transit Loss Credit

Opposers object to the second sentence of paragraph 23.5 of the proposed decree, which would allow WAS to "claim credit for all transit losses for augmentation purposes except those due to evaporation." Such a claim is apparently novel in that several of Opposers' experts had never seen an applicant attempt to take credit for a river transit loss associated with a downstream delivery of water. Opposers' experts opined that taking credit for such transit losses would result in injury essentially because no additional water is provided to the stream. The court makes the following determinations on this issue.

WAS failed to present adequate evidence regarding how its claimed credit of transit losses associated with delivering augmentation water would be calculated or quantified. WAS's expert, Ms. Griffith, testified that water deposited in transit not lost to evaporation is a credit to the stream system and offsets depletions in the reach where it is deposited. However, WAS did not provide an engineering basis for its assertion. The Division Engineer testified that the transit loss provision is administrable and that his office could approve transit loss calculations subsequently developed by WAS. The Division Engineer similarly had not studied or analyzed the engineering aspects of such a claim. Meanwhile, Opposers' experts doubted WAS's

assertion. Mr. Wood opined that such a credit would be nearly impossible to quantify. Mr. Thompson testified that WAS's proposed calculation of transit losses based on the distance between the point of delivery to the South Platte River to the midpoint of the reach where the replacement is delivered substantially understated the amount of such transit losses. Mr. Sayler testified that, because evaporation and phreatophyte consumption would consume a large portion of WAS's conveyance and transit losses, a detailed study of such losses would be needed to quantify that amount, if any, of such losses that would actually return to the South Platte River. He also stated that such a study could show that the amount of water returning to the stream could be at or near zero. In short, WAS would have this court approve credit for transit losses that would only be calculated by it and approved by the Engineers at some later date based on unknown and disputed data. Therefore, WAS's failed to sustain its burden on its claimed credit of transit losses. The second sentence of paragraph 23.5 of the Proposed Decree shall be deleted in any final decree submitted by WAS.

WAS also did not provide adequate notice of its claim for transit loss credits. WAS contends that the applications in this matter stated that out-of-priority depletions would be replaced in a manner sufficient to prevent injury and that crediting transit losses to depletions is a reasonable means of offsetting depletions in a given reach. The court does not agree. The novelty of this claim demonstrates that inquiry notice was not provided to all potentially affected parties by WAS's augmentation plan applications. *See Monaghan Farms, Inc.*, 807 P.2d at 15. WAS's applications and amendments thereto do not claim a credit for transit losses incurred in delivering augmentation water. The court thus lacks jurisdiction over this claim.

The calculation of transit losses based on the distance between the point of delivery to the South Platte River to the midpoint of the reach where the replacement is delivered understates the amount of such transit losses. For example, Opposers' expert, Mr. Thompson, testified that if water is leased at the upper end of Reach F and delivered to the entire length of Reach F for administrative purposes, WAS would assume that the water was provided at the midpoint of the reach and thus only account for half of actual transit losses. Although WAS's expert, Ms. Griffith, testified that mid-point administration for transit losses is a reasonable approximation and sufficient to prevent injury, WAS's augmentation plan in unique in its size. That is, due to the distance between WAS's reaches, even a relatively minor misestimate could result in a significantly inaccurate calculation of transit loss. Therefore, the third sentence of paragraph 23.5 of the proposed decree shall be amended the final decree to require that transit losses be assessed based on the actual distance between the point where the replacement water is delivered to the South Platte River and the location of the out-of-priority depletion to be replaced.

11. Calculation of Depletions

There were numerous objections to WAS's proposed calculation of depletions, including the use of the IDSCU method, the presumptive consumptive use of non-irrigation uses, and Future depletions. The court herein addresses those objections.

a. IDSCU Method for Determining Consumptive Use

Opposers object to WAS's proposed alternative method of calculating the volume of consumptive depletions for irrigation wells that uses the IDSCU program. Opposers contend that only those well owners with irrigation efficiencies lower than the presumptive depletion factors would elect to use the IDSCU method, while well owners with higher efficiencies would simply elect to use the presumptive factors. Opposers presented evidence that this would result in a total consumptive use calculated for all of the wells in the plan that is below the average, that is, less than the average consumptive use that would be calculated under the average presumptive depletion factors. Opposers also presented evidence that, because the IDSCU calculation would be done on a monthly time step and would require time to gather the necessary data and do the calculations, irrigators using this method would potentially not know if they have exceeded the well pumping quota until after the fact.

The court determines that the IDSCU method is appropriate under the limitations described below. The IDSCU method proposed by WAS is described in detail above. *See* Section V.A.2.b.ii. The IDSCU method is a more accurate measure of consumptive use for low efficiency users such as vegetable farmers or farms with very sandy soil. Further, Opposers' fears of well owners gaming the system to achieve fewer calculated depletions are unlikely due to the significant amount of time and resources required to acquire the data to utilize the IDSCU method. Finally, under the procedures described by WAS in the proposed decree and at trial, WAS will communicate to well owners their remaining consumptive use credits such that a well owner may determine a pumping quota.

The process for WAS to use the IDSCU methodology, however, must be modified. WAS must decide and notify the division engineer which method it will use for each well for the following twelve-month period prior to April 15th of each year. The division engineer must approve the use of the IDSCU method prior to its use for any well each year. If WAS does not notify the Division Engineer concerning which method it will use for each well or the division engineer disapproves the use of the IDSCU method, then WAS must use the presumptive depletion factor method for each member well. The division Engineer must have a reasonable basis for disapproving the use of the IDSCU method.

b. Presumptive Consumptive Use for Non-Irrigation Use

Opposers object to the fact that WAS did not provide presumptive depletion factors for non-irrigation uses**.** WAS's expert, Dr. Eisel, testified that these efficiencies had been calculated, and were included in the overall depletion figures. WAS asserts that because non-irrigation efficiencies vary widely and are subject to change as the use of the water changes, it is preferable to develop these efficiencies on a case-by-case basis and submit them to the Engineers for approval rather than identifying each of the non-irrigation well efficiencies on the decree.

The court determines that the presumptive consumptive use depletions factor for all existing or previously existing non-irrigation uses shall be 1.0. WAS did not present evidence

that a presumptive depletions factor other than 1.0 should be used to determine depletions for non-irrigation uses. Meanwhile, Opposers' expert, Mr. Wood, testified that a consumptive use depletion factor of 1.0 is typical for feedlots. WAS may establish different presumptive depletions factors, however, for different or new non-irrigation uses in the future upon an application to amend the decree in this matter, which shall be published in the resume.

c. Future Depletions

The court determines that WAS has not correctly quantified the amount of, or proven the time and location of ongoing or future depletions from the wells included in its proposed plan for augmentation. *See City of Aurora*, 105 P.3d at 615. In order to correctly describe the depletions from the wells in the plan, the decree in this case shall provide that WAS will replace all depletions occurring after the date of this decree on the following bases:

(1) WAS shall quantify and replace all depletions from all wells on the assumption that all gains from winter soil moisture would be lost to evaporation from the soil during the winter months;

(2) WAS shall determine and replace all depletions from past use of WAS wells which remain in the plan following the January 17, 2007 Order Regarding Motion to Amend Application;

(3) WAS shall determine and replace all depletions from wells withdrawn from the plan under the January 17, 2007 order that result from use of the removed wells under SWSPs approved by the State Engineer for 2003, 2004, and 2005;

(4) WAS must quantify and replace depletions in proportion to the amount of acreage that may continue to be irrigated by wells remaining in the plan and not in proportion to the number of wells withdrawn from the plan;

(5) WAS shall determine and replace all depletions from 2006 use of wells which were included in the WAS plan prior to the court's January 17, 2007 order;

(6) WAS shall determine and replace all depletions from WAS wells in the Box Elder basin, Reach E, by lagging one hundred percent of the depletions to Box Elder Creek using a Glover analysis and assuming that the depletions to Box Elder Creek would be felt immediately at the South Platte River.

i. <u>Winter Soil Moisture Gain Assumptions</u>

The court determines that WAS underestimated the consumptive use of its wells and resulting depletions by overestimating the amount of crop consumption that would be provided by winter soil moisture buildup. Mr. Clements testified that WAS overestimated the amount of winter soil moisture buildup by assuming that all winter soil moisture remains available for crop

consumption during the following irrigation season. He further testified that the standard assumption used by water resources engineers in consumptive use analyses is that any gains from winter soil moisture will be lost as a result of evaporation from the soil during the winter months. WAS did not assume that such gains were lost to evaporation. Although an analysis can be performed to determine the amount of winter soil moisture that actually evaporates during the winter season, WAS had presented no such analysis.

Opposers did not calculate the amount by which WAS's underestimate of well consumption from the 215 member wells remaining in the plan has reduced or would reduce the amount of its actual depletions to the South Platte River over time. Opposers estimated the reduction would be approximately twelve percent, based upon his earlier analysis for all 449 wells originally included in the plan. WAS did not present any evidence in its case-in-chief or rebuttal case of the amount of well depletions resulting from use of any winter soil moisture buildup assumption other than the assumption used by WAS, that is, that all winter soil moisture buildup is available for crop consumption.

Therefore, the final decree in this matter shall include the standard assumption that any gains from winter soil moisture are lost to evaporation from the soil during the winter months.

ii. Future Depletions From Wells Remaining in the Plan

The court determines, pursuant to previous orders of this court and Colorado law, that WAS shall determine and replace all depletions from past use of WAS wells which remain in the plan following the January 17, 2007 Order Regarding Motion to Amend Application.

iii. Depletions from Pumping Removed Wells Under WAS SWSPs

As discussed in detail in this court's Order Regarding Motion for Reconsideration of January 17, 2007 Order Regarding Amendment to Remove Wells entered contemporaneously with this order, the court orders that WAS shall determine and replace all depletions from wells withdrawn from the plan under the January 17, 2007 order that result from use of the removed wells under SWSPs approved by the State Engineer for 2003, 2004, and 2005.

iv. Depletions Proportionate to Use

The court determines that WAS must quantify and replace depletions in proportion to the amount of acreage that may continue to be irrigated by wells remaining in the plan and not in proportion to the number of wells withdrawn from the plan. In the January 17, 2007 order, the court noted that a withdrawal of augmented structures is analogous to a decrease in the amount of use under WAS's plan. *See* Uniform Water Court Rule 4(b). This analogy is applicable only if actual well use under the plan will be reduced as a result of withdrawal of the 235 wells that were the subject of that order.

WAS members are able to use the 215 wells remaining in the plan to irrigate nearly all of the land previously irrigated by all 449 wells. WAS proposes, however, to reduce the depletions it would be required to replace from past pumping based on the number of wells remaining in the plan. Although acreage may be irrelevant to WAS's plan in the future, it is significant in determining what depletions are attributable to wells remaining in the plan. The use of irrigated acreage described below is a more accurate means of determining the depletions attributable to the wells remaining in the plan than WAS's assumption that all wells were used equally.

WAS did not present evidence of the amount by which depletions would actually be reduced by the withdrawal of wells under the court's January 17, 2007 order. WAS's expert, Dr. Eisel, testified that to quantify depletions from past pumping, he performed a farm-by-farm analysis of depletions for all 449 wells originally included under the plan. He did not perform a well-by-well analysis of past pumping. Rather, as part of his farm-by-farm analysis, he assumed the 449 original wells were used equally on each farm. On this basis, he acknowledged that he assumed that well depletions would be reduced pro rata based on the removal of the 235 wells from the plan. He did not analyze or determine whether, how, or to what extent wells removed from the plan may actually have been used before their withdrawal or the amount of depletions resulting from use of a given well.

WAS's assumptions in this regard have no evidentiary support and Opposers presented contrary evidence. WAS's expert acknowledged that all WAS members retain at least one well in the plan that can be used to irrigate all of the same acreage on their farm which might have been irrigated by the removed wells. WAS's expert, Mr. Hajj, testified that when farms, like the WAS farms, have more than one well, each well can typically be used to irrigate the entire farm. He also testified that one well is generally considered to be the primary well for irrigation of an entire farm while other wells are used when convenient or as back-up or emergency supplies. Based on this evidence, the court cannot conclude that WAS's assumption of pro rata use is either reasonable or factually-based.

WAS's assumptions underestimate the amount of depletions because WAS has not required a reduction in actual well use under the plan in proportion to the reduction in the depletions WAS proposes to replace. Well use, and not only well pumping, creates depletions under a plan for augmentation. The use of member wells under WAS's plan is regulated by WAS's contracts with its members. WAS's manager and expert, Dr. Eisel, each testified that pumping quotas are set by reference to the member contracts.

In determining the amount of depletions that are owed from wells withdrawn from the plan, it is critical for the court to know the amount of use allowed by the remaining 215 wells under existing WAS contracts. While WAS did not supply this evidence, expert witnesses for Opposers and the Engineers analyzed the amount of use allowed by the remaining 215 wells in the plan based on the existing contracts. The analysis demonstrated that only eighteen out of the original 233 member contracts have been removed from the plan, only seven percent of the members farms have been removed from the plan, and only 8.4 to ten percent of the irrigated

acreage has been removed from the plan. In short, the contracts permit WAS members to use the remaining 215 wells to perform nearly all the irrigation originally allowed by the 449 wells

While the withdrawal of 235 wells from the plan reduced the allowable well use under the plan by only eight to ten percent, WAS proposes that withdrawal of the 235 wells from the plan will reduce the amount of its depletions owed from past pumping of its wells by thirty-one percent, a significantly higher number and disproportionate to the actual reduction in use under the existing contracts for WAS's 215 wells. Opposers' evidence shows that had WAS reduced depletions from withdrawal of the wells in proportion to the amount of use retained under its contracts, it would be required to increase its replacement obligations by at least 2,410 acre-feet.

Pursuant to the court's January 17, 2007 order, the depletions that WAS is required to replace from past pumping of the 235 withdrawal wells must reflect the actual decrease in the amount of use allowed by the remaining 215 wells. Otherwise, the withdrawal of augmented structures will not be analogous to a decrease in the amount of well use. Although the Engineers proposed such a term and condition when WAS sought to remove these wells, the court did not address such term and condition in its January 17, 2007 order nor could have because of questions of material facts that were not addressed until trial.

WAS has not demonstrated that simply removing wells from the plan actually results in a proportional decrease in use under the plan. The evidence shows that WAS has underestimated the depletions it is required to replace from the withdrawn wells because WAS has not proportionately reduced the actual use allowed by the remaining wells. Therefore, the court finds that WAS has underestimated the amount of depletions owed from past pumping under the January 17, 2007 order and must correct such error in the final decree in this matter.

v. Depletions from Pumping in 2006

The court determines that WAS shall determine and replace all depletions from 2006 use of wells which were included in the WAS plan prior to the court's January 17, 2007 order. WAS argued at trial that that it is not obligated to replace any depletions from 2006 pumping and presented no evidence regarding the amount of depletions which may result from 2006 pumping.

The issue presented is not whether WAS or the well owners that may have pumped in violation of the May 10, 2006 order are liable for such actions. Rather the issue of pumping by WAS member wells in 2006 concerns WAS's calculation of ongoing depletions from the pumping of wells that were covered under WAS's proposed plan for augmentation at the time such pumping occurred. Although the plan was not in operation in 2006 as a SWSP or otherwise, the wells remained included in the proposed plan and were under the May 10, 2006 order of this court to not pump.

Opposers presented evidence that 2006 pumping occurred and WAS did not quantify the amount of the depletions that resulted from the 2006 pumping. Opposers' expert, Mr. Sayler, based his analysis of 2006 pumping on records developed by the division engineer in its

investigation of 2006 pumping of WAS wells. The records included records of power usage for the wells obtained from power providers, flow meter records, and notes of field inspections of wells by division engineer personnel during 2006. His investigation extended beyond the 215 wells remaining in the plan because, when the investigated 2006 pumping occurred, all 449 wells remained in WAS's plan. Using these records, and applying certain assumptions, Mr. Sayler analyzed the amount of pumping which may have occurred and concluded that pumping of WAS wells in the amount of at least 2,358.4 acre-feet had occurred after May 10, 2006. Mr. Sayler testified that, for various reasons, this amount was the minimum amount the WAS wells may have pumped in 2006.

The court finds that some pumping of WAS member wells did occur in 2006 and created depletions to the South Platte River that WAS must replace as required to prevent injury to vested water rights. WAS shall determine and replace these depletions in the final decree.

vi. Box Elder Creek Depletions

The court determines that WAS shall determine and replace all depletions from WAS wells in the Box Elder basin, Reach E, by lagging one hundred percent of the depletions to Box Elder Creek using a Glover analysis and assuming that the depletions to Box Elder Creek would be felt immediately at the South Platte River.

The parties differed greatly and the court received extensive evidence on this issue. WAS's position on depletions in the Box Elder basin are described in detail above in Section V.A.2.b.iv. WAS's proposal is based on its assertion that the depletions from Box Elder wells affect the South Platte River and not Box Elder Creek because Box Elder Creek is and has always been an ephemeral or intermittent stream that has never contributed surface flows to the South Platte River.

"Under our Colorado law, it is the presumption that all ground water so situated finds its way to the stream in the watershed of which it lies, is tributary thereto, and subject to appropriation as part of the waters of the stream." *Safranek v. Town of Limon*, 123 Colo. 330, 334, 228 P.2d 975, 977 (1951) (citation omitted). *See Southeastern Colorado Water Conservancy Dist. v. Shelton Farms, Inc.*, 187 Colo. 181, 187, 529 P.2d 1321, 1325 (1974) ("If it is shown that the water would ultimately return to the river, it is said to be part and parcel thereof, and senior consumers are entitled to use it according to their decreed priorities.").

Water that is otherwise tributary is not removed from the priority system because it is captured and diverted before it actually arrives at the river channel.

> a new claimant could divert the waters of a surface tributary, if he only be spry enough to capture and divert them before they actually reach and mingle with the waters of the main stream. When it is shown or admitted these waters ultimately return to the river and thereby augment and replenish its flow, they are part and parcel thereof, whether the limit within which this occurs is short or long . . . . Whenever these waters start to flow back

to the river and it is apparent that they will reach it, they constitute a part of the stream and are not subject to independent appropriation.

Comstock v. Ramsay, 55 Colo. 244, 255, 133 P. 1107, 1111 (1913).

This court previously determined in its July 12, 2006 order that WAS must base the quantity of their depletions on the conditions in the basin prior to well pumping. Based on the historic and engineering evidence presented, the court concurs with the position of Opposers.

A. Hydrological Conditions Before Irrigation Development in Box Elder Basin

The earliest investigation of the Box Elder basin presented at trial was a land survey prepared by the Government Land Office ("GLO"), now called the Bureau of Land Management, during the late 1860s. All parties agreed that the survey showed that Box Elder Creek was an ephemeral stream during the latter part of the 1800s. The survey also showed, that the groundwater table in the Box Elder basin was very near the surface. According to the survey, it was possible to find underground water by digging "a few feet" or, in one description, by digging "4 to 6 ft."

The fact that Box Elder Creek was an ephemeral stream before the turn of the 20th century does not mean it did not flow to the South Platte River. WAS's expert, Mr. Ford, testified that an "ephemeral stream" is one that "flows in response to floods." Citing to the United States Geological Survey ("U.S.G.S.") Water Supply Paper 1658 in his August 2005 report, WAS's expert also acknowledged that the U.S.G.S. stated that the ancestral Box Elder Creek flowed to the South Platte River near the town of Hudson. Opposers' expert, Mr. Martin, testified that the Box Elder Creek channel reached the South Platte River in its historical condition.

B. Surface Irrigation Development and Beginning of Well Use in Box Elder Basin

Beginning in approximately 1907, the Farmers Reservoir and irrigation Company ("FRICO") and the Henrylyn Irrigation District ("Henrylyn") began constructing facilities to divert water from the South Platte River to the Beebe Draw and Box Elder basin for irrigation purposes. All of the structures constructed by FRICO and Henrylyn to deliver and store water in the Box Elder basin were completed and in operation between 1910 and 1920. Full development of the systems was reached by 1922.

FRICO constructed Barr Lake, the Neres Canal, the Box Elder Lateral, the East and West Neres Canals, Milton Reservoir and the Gilmore Canal. *See* Section V.A.2.iv (Box Elder basin figure). These structures deliver irrigation water in both the Beebe Draw and the Box Elder basin. The Neres Canal, Box Elder Lateral, East and West Neres Canals, and the Gilmore Canal deliver water into the Box Elder basin. The Gilmore Canal ends at the old channel of Box Elder

Creek after running along the southern portion of what has been referred to in this case as Kuner Flats. The FRICO structures continue to exist and be used for irrigation purposes.

Henrylyn constructed three main structures to deliver South Platte River water to the Box Elder basin, including the Denver Hudson Canal, Bootleg Reservoir, and Horse Creek Reservoir. Each of these structures was substantially complete by 1915. Henrylyn used the Denver Hudson Canal both for irrigation and to fill Horse Creek and Bootleg Reservoirs. The Henrylyn system was generally located upstream of the FRICO improvements. The Henrylyn structures continue to exist and be used for irrigation purposes.

The construction of the FRICO and Henrylyn systems resulted in the delivery of thousands of acre-feet of water from the South Platte River to the Box Elder basin that had not previously been available in the basin. Opposer' expert, Mr. Sayler, testified that average deliveries from the South Platte River to the basin from 1931-1999 were 22,189 acre-feet. Mr. Sayler testified that this amount combines total canal leakage and reservoir leakage and farm headgate diversion. Exactly the same conclusion regarding average deliveries for 1931-1999, can be derived from portions of the August 2005 report of WAS's expert, Mr. Ford, by combining total canal leakage and reservoir leakage. Opposers' experts, Mr. Martin and Mr. Kroeker, also concluded that deliveries from the South Platte River averaged 22,189 acre-feet for the period of 1931. Opposer' expert, Mr. Rozaklis, developed an average amount of deliveries for a longer study period, from 1922-1999, which was 22,496 acre-feet. Under Mr. Rozaklis' analysis, however, average deliveries for the period from 1931 to 1999 were 22,189 acre-feet, exactly as determined by the other experts.

A large percentage of the FRICO and Henrylyn deliveries were not consumed by irrigation use, resulting in return flows to Box Elder Creek. These return flows were comprised of three categories of water: (1) leakage from reservoirs constructed in Box Elder basin, including Bootleg Reservoir, Horse Creek Reservoir, and others; (2) canal seepage from the Denver Hudson and other delivery canals; and (3) return flows from application of FRICO and Henrylyn water to surface irrigation in the Box Elder basin. Mr. Sayler testified that return flows from 1931-1999 averaged 14,781 acre-feet annually, which was derived by combining the total reservoir and canal leakage shown with the amount of "non-consumed" water from river diversions. This conclusion can be derived from the same information found in WAS's expert reports. Mr. Martin also concluded that return flows averaged 14,781 acre-feet for the period, while Mr. Kroeker concluded they averaged 14,661 acre-feet. Mr. Rozaklis specified a higher overall amount for return flows from 1922 to 1999, 22,755 acre-feet. Mr. Rozaklis' higher return flow value, however, includes 14,781 ac-ft/yr of return flows from South Platte River irrigation deliveries, which is identical to the result reached by Sterling's and Greeley's mass balances.

These water deliveries, and the resulting return flows, had begun a rapid change of hydrological conditions in the Box Elder basin by the early 1920s. In 1924, Charles Tew filed a comprehensive report (the "Tew Report") with the District 1 water commissioner concerning the Box Elder "water-shed from source above Elizabeth to mouth below Kuner." According to page

one of the Tew Report, "reservoirs and seepage ditches . . . are contributing to the change of conditions now rapidly taking place in the Box Elder transformation." Among the changes was that Box Elder Creek had, by 1924, developed a continuous flow from Horse Creek Reservoir to the intersection of the Gilmore Canal and Box Elder Creek. This flow is illustrated as a solid blue line by Mr. Tew on maps included with the Tew Report.

The area north of the Gilmore Canal was referred to at trial as "Kuner Flats." The Tew Report referred to the same area as the Box Elder Bottoms. The southern boundary of Kuner Flats is marked by the last segment of the Gilmore Canal. By 1924, return flows from FRICO and Henrylyn deliveries had caused Kuner Flats to become severely water-logged. A "sub-surface puddle dam" resulting from the water-logging, combined with "encroachments and obstructions" along Box Elder Creek, had caused Box Elder Creek to cease flowing across Kuner Flats by 1924.

According to the Tew Report, however, the flow of Box Elder Creek, supported by irrigation return flows and flood waters, had "[a]ll formerly passed through the lower part of the valley unobstructed." The northern most of the Tew maps shows the Box Elder Creek channel continuing through Kuner Flats area to the South Platte River. Page 13 of the Tew Report also suggested that as more return flows reached Kuner Flats, "these waters . . . will and must rise to a level sufficient to permit them to pass over the top of the water table dam below." The South Platte River is directly north of Kuner Flats. Tew's conclusions are consistent with the testimony of Dr. Kraeger-Rovey., who reviewed the land surface elevation contours on U.S.G.S. Valley View School quadrangle map for the area in the Box Elder Creek basin identified during trial as Kuner Flats. Based on her review, she testified that Kuner Flats area has a gradient toward the South Platte River and that water will flow downhill through that area.

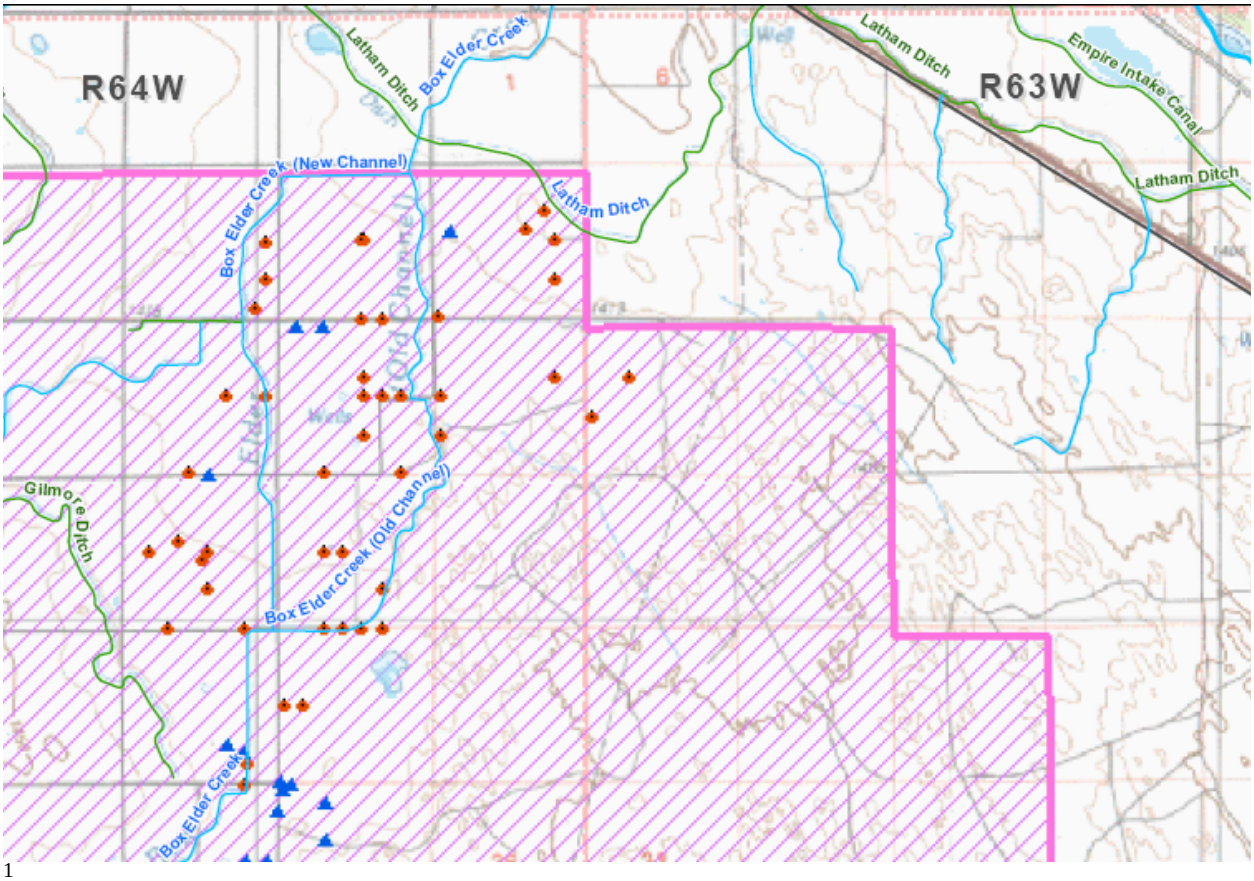
To restore the flow of Box Elder Creek across Kuner Flats, the Tew Report recommended that the channel of Box Elder Creek be opened to its "original size and capacity before the encroachments and obstructions now along it but to a greater depth and width than it originally was . . . ."

Instead, a drainage ditch through Kuner Flats to the South Platte River was constructed. In 1928, the majority of landowners in Kuner Flats petitioned the Weld County Commissioners to establish a drainage district to drain FRICO and Henrylyn return flows that were water-logging the area. The petitioners stated that "the lands within the boundaries of said proposed drainage district during several years last past have become, and are now saturated with waste, seepage and spring water to such an extent that said lands are not at present cultivatable . . . ." As a result, the petitioners proposed to construct a system of ditches "to drain and carry away from said lands the waste, seepage and spring waters which arise and accumulate on said lands which does not now have any natural or other outlet." Weld County approved the petition.

The drainage ditch was constructed in about 1929. It begins at the tail end of the Gilmore Canal, the point to which the Tew Report showed Box Elder Creek flowed by 1924. It then proceeds through Kuner Flats and connects to the original channel of Box Elder Creek above the

Lower Latham Ditch. Water delivered by the drainage ditch is carried in the original channel to the Empire Reservoir diversion canal. Water delivered to the Empire diversion canal can be delivered for storage in the Empire Reservoir or, if the reservoir water right is not in priority, can be released through the Empire canal wasteway to the South Platte River.

The drainage ditch was built to substitute for most of the original channel of Box Elder Creek to the north of the Gilmore Canal to deliver water flowing in Box Elder Creek to the South Platte River. The drainage ditch is often referred to as the "new channel" of Box Elder Creek. The original, obstructed channel of Box Elder Creek through Kuner Flats is shown below as the "old channel" of Box Elder Creek. The drainage ditch continues to exist from the Gilmore Canal to the South Platte River.



[1]

The ultimate result of the delivery of water by FRICO and Henrylyn to the Box Elder basin was to cause Box Elder Creek to flow to the South Platte River. This occurred not later than 1931. Although WAS took an opposite position at trial, WAS's August 2005 expert report also indicates that Box Elder Creek flowed to the South Platte River beginning by 1931.

[1] This figure is also from exhibit CC-204. See Section V.A.2.b.iv. for a larger figure of the basin.

The conditions described above were in place before any substantial well pumping began in the Box Elder basin and that the conditions described reasonably reflected the "conditions in the basin prior to well pumping" as required by this court's July 12, 2006 order.

The pumping of wells in Box Elder basin, along with drought in the 1950s, caused the water table of Box Elder Creek to be lowered to such an extent as to become disconnected from Box Elder Creek itself. This caused Box Elder Creek to cease flowing on a regular basis to the South Platte River. WAS's expert acknowledged that Box Elder Creek did flow to the South Platte River during the period from 1931 to 1952 and that well pumping was the reason Box Elder Creek ceased flowing regularly. Despite an extended wet period in the 1980s and 1990s, and other wet periods since the 1950s, the connection has never been re-established.

WAS's position that Box Elder Creek has always been an ephemeral or intermittent stream that never had an outlet to the South Platte River at any time in history is based on unpersuasive evidence. First, the reports prepared by WAS's expert described water that flowed to the "Lower Basin (South Platte)." Second, WAS's expert stated at trial that Box Elder Creek flowed "to the South Platte River" for twelve years during the period extending from 1931 to 1952. Third, WAS's position is contrary to representations made by WAS to the court in Applicants' Response to Motion for Determination of Question of Law, With Legal Authority Incorporated (Box Elder), dated March 7, 2006, in which WAS relied on its expert's mass balance analysis. Fourth, a map from the Tew Report shows that the channel of Box Elder Creek extended to the South Platte River. Fifth, the text of Tew Report states that Box Elder Creek flowed through Kuner Flats to the South Platte River before the development of obstructions and encroachments in the old Box Elder channel, preventing it from doing so, and would again flow across Kuner Flats. Sixth, the testimony of Opposers' expert, Mr. Martin, indicates that, if allowed to flow again, Box Elder Creek would re-establish its channel to the South Platte River. Seventh, the Box Elder Drainage District was formed for the purpose of draining Kuner Flats and, to achieve this purpose, constructed a drainage ditch that had as its function to deliver waste and seepage water to the South Platte River. That ditch is known as the "new channel" of Box Elder Creek and exists to this day.

WAS's method for lagging depletions in Reach D provides an additional basis for the court's conclusion. Beebe Draw is in Reach D and is located directly to the west of and adjacent to the Box Elder basin. WAS's August 2005 expert report described Beebe Draw as a sub-basin with substantial similarities to Box Elder basin. While asserting that there are differences between the basins, WAS's expert acknowledged that there are many similarities. The principal difference appears to be that the pumping of wells in the Beebe Draw has not been extensive enough to cause Beebe Draw, whose flow is supported by return flows from irrigation water delivered from the South Platte River, to cease flowing to the river. Because irrigation return flows caused Box Elder Creek to flow to the South Platte River from the 1920s until at least 1952, WAS's proposal for Beebe Draw supports use of the Glover method for lagging Box Elder depletions.

In sum, based on the evidence of the water development history presented at trial and described below, the court finds as follows: In the late 19th century, Box Elder Creek was an ephemeral stream that periodically flowed to the South Platte River in a natural channel during flood events. In the 19th century, the groundwater or aquifer level of Box Elder basin was near the land surface in the vicinity of Box Elder Creek. After the beginning of 20th century, water development and deliveries of water into the Box Elder basin by FRICO and Henrylyn brought an average of over 20,000 acre-feet of water annually into the Box Elder basin. Return flows, including ditch seepage, reservoir leakage, and irrigation return flows, from these deliveries averaged approximately 15,000 acre-feet annually. These return flows rapidly changed the character of the Box Elder basin and caused Box Elder Creek to become a flowing stream from Horse Creek to the Gilmore Canal by 1924. By 1924, these return flows had also caused severe water-logging of Kuner Flats, but the water was no longer able to flow through Kuner Flats to the South Platte River because the Box Elder Creek channel had been obstructed and obliterated by irrigation development along the creek and because the water from the return flows had created a subsurface puddle dam within Kuner Flats. To drain the Kuner Flats area, the Box Elder Drainage District was formed and, by about 1929, had constructed a drainage ditch connecting the flowing portion of Box Elder Creek from the Gilmore Canal to the South Platte River. The purpose of the drainage ditch was to drain and carry away water from Box Elder Creek to the South Platte River. The drainage ditch was and is referred to as the "new channel" of Box Elder Creek. Beginning by at least 1929, Box Elder Creek flowed on a regular basis via the drainage ditch to the South Platte River as a result of the accumulation of return flows from FRICO and Henrylyn water deliveries to the Box Elder basin. In about 1931, well development began in the Box Elder basin. In the 1950s, well pumping in the Box Elder basin caused the alluvium of Box Elder Creek to be lowered to such an extent as to become disconnected from Box Elder Creek itself, which, in turn, caused Box Elder Creek to cease flowing on a regular basis to the South Platte River.

C. Mass Balance Analyses

Several Opposers presented mass balance analyses of the Box Elder basin. Sterling, Greeley and Bijou each presented comparative mass balance analyses with and without well pumping, each of which had a study period from 1931 to 1999. Boulder presented a single mass balance, with well pumping, from 1922 to 1999. The function of the analyses was to provide an engineering analysis of the effect of pumping of wells in the Box Elder basin on the flow of Box Elder Creek.

A mass balance is a tool used in hydrological analysis to account for inflows and outflows to a hydrological system and to account for changes in storage in the system. The mass balance equation may be stated as inflows minus outflows equals a change in storage.

Opposers' mass balances were based on analysis of all inflows and outflows to and from the Box Elder basin for the pertinent study period, which was 1931 to 1999. Boulder, however, used a period of 1922-1999. Each approached the mass balance somewhat differently. Sterling presented a mass balance that included wells and a mass balance that omitted wells for both the

upper and lower Box Elder basin. Bijou presented a mass balance including wells and a mass balance that did not include wells for the entire basin. Greeley presented a mass balance without wells for the entire basin which it compared to WAS's expert's mass balance analysis. Boulder presented a mass balance that included well pumping as well as a period through the 1920s when there was no well pumping in the Box Elder basin.

WAS also presented a mass balance analysis of the Box Elder basin that was prepared by its expert. Though the principal focus of WAS's mass balance was to evaluate Box Elder basin in the presence of well pumping, it also included a table summarizing a mass balance analysis without wells. WAS asserted at trial that it had only used the mass balance to obtain a general understanding of the Box Elder aquifer. However, WAS relied on the mass balance to offer specific conclusions regarding the hydrology of Box Elder Creek that were consistent with those given by the Opposers based on their mass balance analyses.

WAS challenged the admissibility of Opposers' mass balances was challenged at trial on two principal grounds. First, WAS objected to the pre-well mass balance analyses as speculative because they allegedly did not take into account hypothetical changes in Box Elder basin irrigation practices that might have occurred if there had not been well development in the basin. Second, WAS challenged Boulder's mass balance analysis on the ground that it had not been calibrated or subjected to a sensitivity analysis. The court rejected these challenges at trial.

The court reaffirms its rejection of WAS's objection on the ground of speculation to the pre-well mass balance analyses. Mass balance analyses are commonly used in hydrological investigations and are reliable technical or scientific analyses presented by qualified experts which are relevant to the determinations which the court is required to make in this matter regarding the depletions from use of WAS wells in the Box Elder basin. C.R.E. 702; *People v. Ramirez*, 155 P.3d 371 (Colo. 2007); *People v. Shreck*, 22 P.3d 68 (Colo. 2001). The elimination of the wells in the pre-well mass balance was an appropriate change in the analysis which provided information that is relevant to the determinations which the court is required to make in this matter regarding the depletions from use of WAS wells in the Box Elder basin. *See also Kansas v. Colorado*, Special Master Report, Volume 2, 234–35 (1994 WL 16189353 at 101). ("Model results are calculated as the difference between a pair of runs. For example, to show postcompact pumping, the first run of the model is made on the basis of actual historical conditions, that is, all the switches are "on." The second run would have a single change, that is, postcompact well pumping would be reduced to the 1948 compact level. The difference in stateline flows would represent the depletions caused by the additional postcompact pumping."). These mass balances comply with C.R.E. 403. *Shreck*, 22 P.3d at 78. *See also Ramirez*, 155 P.3d at 378.

The court also reaffirms its rejection of WAS's objection to Boulder's mass balance analysis on the ground that the mass balance was not calibrated or subjected to a sensitivity analysis. Mr. Rozaklis testified that he compared the results of his mass balance analysis to information in the Tew Report and the GLO survey reports and found his results to be consistent with the observations in those reports. The testimony of Mr. Rozaklis persuades the court that

calibration and a sensitivity analysis of his mass balance model was not required because a mass balance inherently considers all inflows and outflows to a hydrological system and resulting change in storage, which are the subject of the analysis. The mass balance analysis presented by Boulder is a reliable technical or scientific analysis presented by a qualified expert which is relevant to the determinations that the court is required to make in this matter regarding the depletions from use of WAS wells in the Box Elder basin. C.R.E. 702; *Shreck*, 22 P.3d 68. The mass balance presented by Greeley also complies with C.R.E. 403. *Shreck*, 22 P.3d at 78.

The mass balance analyses presented by Opposers, though differing in certain respects, presented consistent findings regarding the inflows to the Box Elder basin, the amount of irrigation deliveries to the Box Elder basin, the amount of return flows (including reservoir leakage, ditch seepage, and irrigation return flows) resulting from those deliveries, the amount of water which would have flowed in Box Elder Creek out of the basin to the South Platte River in the absence of well pumping and the amount by which outflows to the South Platte River were reduced by well pumping. Opposers' experts relied on WAS's information regarding deliveries of water from the South platte River to Box Elder basin. The following table summarizes the consistency of the findings of Opposers' experts:

	Sterling	***Greeley***	***Bijou***	***Boulder***	
Study Period	1931-1999	1931-1999	1931-1999	1922-1930	1931-1999
South Platte River Irrigation Deliveries to Box Elder Creek Basin	22,189	22,189	22,189		22,189
Return Flows from South Platte River Irrigation Deliveries to Box Elder Creek	14,781	14,781	14,661	16,327	14,781
Surface Water out to South Platte River with wells	2,299	2,299	2,274		5,023
Surface Water out to South Platte River without wells	15,471	16,137	14,839	17,829	
Depletions Caused by Wells	13,172	13,838	12,565	12,806	

The mass balance analyses also reach the same conclusions regarding the effect of well pumping on Box Elder Creek. These conclusions are fully consistent with the narrative history of the Box Elder basin discussed above. Under each of the analyses, thousands of acre-feet of water were delivered to the Box Elder basin by the FRICO and Henrylyn irrigation systems, which in turn produced thousands of acre-feet of return flows to Box Elder Creek. These importations caused the Box Elder aquifer to fill and Box Elder Creek to become a flowing stream in the reach below Horse Creek Reservoir. This resulted in thousands of acre-feet of surface flows from Box Elder Creek to the South Platte River beginning in the 1920s. After it began in approximately 1931, well pumping increased through the 1930s and 1940s, and then increased dramatically after the end of World War II, becoming the main outflow from the Box

Elder basin. Despite the continuing increase in well pumping after 1931, there were still consistent outflows from Box Elder Creek to the South Platte River until 1952. As of 1952, however, as a result of well pumping, and drought, outflows to the South Platte River ceased or, under the Boulder analysis, occurred only sporadically until 1970, when they ultimately ceased. The result of the well pumping was to deprive the South Platte River of thousands of acre-feet of water annually. These conclusions are supported by the evidence presented at trial and accurately describe water supply conditions and the effect of well pumping in the Box Elder basin from the 1920s through 1999.

The direct relationship between FRICO and Henrylyn water deliveries to Box Elder basin and well pumping and Box Elder Creek outflows to the South Platte River is inherent in the mass balance analyses. Deliveries of water to the basin produced, on average from 1931 to 1999, return flows in the amount of 14,661 acre-feet, which is the lowest figure that Opposers presented. During the same period, well pumping averaged 15,061 acre-feet. Thus, ninety-seven percent of the water supply for the Box Elder basin wells during this period came from irrigation return flows, and only four percent from aquifer storage. When wells are removed from the mass balance, irrigation return flows remain essentially the same, but outflows from the basin dramatically increase to 15,471 acre-feet, an amount nearly identical to the amount of well pumping. This persuasively illustrates what each of the mass balances show, which is that the Box Elder wells were taking as their supply the very water that had flowed out to the South Platte River before well pumping.

Opposers estimated the amount of water which was lost to the South Platte River due to well pumping for the period from 1931 to 1999 by performing mass balance analyses with and without well pumping. Each of the analyses and results differed slightly, but the results are consistent. Sterling determined that the effect was 13,681 acre-feet. Sterling also quantified the effects of well pumping at full well development from 1990 to 1999 as 22,328 acre-feet. Greeley determined that the effect was 14,526 acre-feet. Bijou determined that the effect was 12,565 acre-feet. Bijou also quantified the effects of well pumping from 1974 to 1999 as 17,904 acre-feet.

Although WAS's expert testified that he did not use his mass balance analysis to quantify the amount of depletions from pumping of Box Elder wells, his mass balance is consistent with the conclusions reached by Opposers' experts. WAS's mass balance acknowledges that deliveries of irrigation water to the Box Elder basin caused Box Elder Creek to become at least an intermittent stream from 1929 to 1952 and that, after 1952, well pumping and drought caused Box Elder Creek to become ephemeral again. WAS's mass balance also indicates that its August 2005 report had concluded that, despite well development, Box Elder Creek flowed to the South Platte River from 1931 to 1952 with an annual average of 3,371 acre-feet flowed to the South Platte River from 1931 to 1952. WAS's expert acknowledged this fact in his trial testimony. In short, WAS's mass balance is consistent with Opposers' the mass balances and with the narrative history of the Box Elder basin.

D. Ground Water Commission Proceedings

On March 6, 2006, the Central Colorado Water Conservancy District ("Central"), WAS's parent district, filed a petition asking the Ground Water Commission to designate large portions of the Box Elder basin as a designated groundwater basin under § 37-90-106(1)(a), C.R.S. A nine-day administrative hearing on the petition was held before hearing officer Joseph Grantham during January 2007. Many of the same expert witnesses who testified regarding Box Elder issues at trial also testified at the administrative hearing.

On February 20, 2007, the hearing officer issued his initial decision. *See* § 37-90-103(6)(a), C.R.S. ("designated ground water" distinct from "underground water" in 1969 Act, § 37-92-103(11), C.R.S.). The hearing officer's findings on the water development history of Box Elder basin and the connection of the basin to the South Platte River are fully consistent with the court's findings in this matter.

Central appealed the hearing officer's decision to the Ground Water Commission. The court takes judicial notice that, on May 18, 2007, the Commission orally affirmed the decision of the hearing officer and denied the appeal. The Court also takes judicial notice that, on May 25, 2007, the Commission issued its written order affirming and adopting the decision of the hearing officer. The decision was appealed in Weld County District Court Case No. 07CV487 on June 14, 2007 and that the appeal is pending.

E. Non-Acceptance of WAS's Arguments

WAS's proposal to replace 15.4% of the annual consumptive use of wells located in the Box Elder basin does not comply with the court's July 12, 2006 order. WAS calculates this amount as the combination of surface flood flows and groundwater recharge to the South Platte River which pumping of WAS's Box Elder basin wells would remove from the river. ISee *See* Section V.A.2.b.iv. WAS's proposal does not properly or fully take into account the fact that wells in the Box Elder basin caused the stream to cease flowing to the South Platte River. Rather, WAS would lag depletions to the South Platte River, rather than to Box Elder Creek on the assumption that Box Elder Creek has always been an intermittent or ephemeral stream that did not contribute substantial surface flow to the river. As a result, despite the July 12, 2006 order, WAS in essence would take credit for the fact that wells in the Box Elder basin broke the connection between Box Elder Creek and its aquifer.

WAS understated the amount of current and future depletions associated with the wells and failed to meet its burden of proving the amount and timing of Box Elder wells depletions under its augmentation plan by: (1) proposing that depletions from pumping of WAS wells in the Box Elder basin be quantified as 15.4% (plus one percent every three years) of the annual consumptive use of the wells; and (2) proposing to lag the depletions to the South Platte River, rather than to Box Elder Creek, by use of a MODFLOW analysis or Darcy equation. To a certain extent, at some point in the future all then-current depletions would be replaced under WAS's proposal because the 15.4% would increase by one percent every three years. However,

even assuming that WAS's proposal were otherwise meritorious, replacing depletions based on WAS's 15.4% plus one percent every three years calculation would not replace depletions at the proper time. *See City of Aurora*, 595 P.3d at 615.

WAS asserts that even if return flows from irrigation deliveries to the Box Elder basin caused Box Elder Creek to become a flowing stream from 1931 to 1952, the flows would not have reached the South Platte River because evaporation, native vegetation, and phreatophytes would have consumed this water before it reached the river. The court is not persuaded.

First, this contention is not supported by WAS's mass balance, which concludes that following irrigation development Box Elder Creek was an intermittent stream that flowed to the South Platte River during at least the period from 1931 to 1952, in an amount averaging 3,369 acre-feet annually. Thus, even under this analysis, the full amount of water flowing to the South Platte River before well pumping stopped Box Elder Creek from flowing was not consumed by native vegetation or phreatophytes.

Second, WAS's mass balance includes evapotranspiration attributable to both native vegetation and phreatophytes. One inflow of WAS's mass balance is "precipitation recharge," the amount of which is based on the conclusion that native vegetation consumes all but 0.4 inches, or ninety-seven percent, of precipitation that falls on the entire mass balance study area. This leaves limited potential for additional consumption by native vegetation. WAS's mass balance also includes a component for phreatophyte consumption, which totals 4,900 acre-feet in 1931, before well development in the Box Elder basin. In other words, WAS's mass balance showed water flowing to the South Platte River from 1931 to 1952 over and above the amount required for consumption by native vegetation and phreatophytes.

Third, the phreatophyte component of the mass balance was used to calibrate WAS's mass balance. WAS's expert admitted at trial that his calibration would not have worked if one assumed that phreatophyte consumption consumed all of the water which the Opposers' mass balance analyses showed to be flowing to the South Platte River in the absence of wells.

Fourth, Opposers' evidence demonstrates that native vegetation and phreatophytes would not consume the full amount of water which would return to the South Platte River if it were not captured by well pumping. The great bulk of the native vegetation in the Box Elder basin study area is located too far above the water table in the Box Elder basin and too distant from the channel of Box Elder Creek to have consumed the water returning to the South Platte River from ditch leakage, reservoir seepage, or irrigation return flows. In addition, Opposers' mass balances, like WAS's mass balance analysis, all included a component for precipitation recharge and, despite doing so, found that Box Elder Creek flowed to the South Platte River before well pumping caused the flow to stop.

Finally, even if one assumes that the well pumping in the Box Elder basin resulted in consumption of water that would otherwise have been consumed by native vegetation or phreatophytes in the Box Elder basin, and if one claims this as a basis for not replacing

depletions from that pumping, doing so would allow WAS a salvage credit for eliminating evapotranspiration, which is barred under Colorado law. *City of Aurora*, 105 P.3d at 608-609; § 37-92-103(9), C.R.S.

WAS relies on Water Supply Paper 1658, Ex. 86.52 (the "Paper"), to support its contention that Box Elder Creek was never a flowing stream. However, the Paper confirms Opposers' position. The Paper was published in 1964, based on data collected in the late 1950s and early 1960s. While the Paper indicates that Box Elder Creek was an intermittent stream in the late 1950s, this is not inconsistent with the evidence that well pumping caused Box Elder to cease flowing to the South Platte by 1952.

Pages 121 to 123 of the Paper address Box Elder Creek. At pages 122 and 123, the Paper concludes well pumping in the basin has been very heavy in recent years; that wells in the basin are "too closely spaced"; that about 20,000 acre-feet annually of pumping was occurring in a "normal year"; that the heavy pumping has lowered the water table by as much as 32 feet; that the decline of the Box Elder water table is "the most marked in the report area;" and that irrigation return flows were recharging the drawndown aquifer rather than flowing to the South Platte River. On cross-examination, WAS's expert acknowledged each of these conclusions of the Paper and admitted that they are consistent with the conclusions of his August 2005 report that well pumping had dropped the Box Elder water table so much that Box Elder Creek had again become ephemeral.

In short, the Paper supports the determination that well pumping in the Box Elder basin broke the connection between the Creek and the underlying aquifer. Nothing in the Paper addresses the issue of whether Box Elder Creek flowed to the South Platte River before 1952 and nothing in the Paper is inconsistent with that conclusion.

F. Replacement Requirement

The wells in the Box Elder basin caused Box Elder Creek to cease flowing to the South Platte River and deprived surface water rights on the South Platte River of water to which they were legally entitled. Surface water rights on Box Elder Creek or the South Platte River senior to the wells are entitled to the return flows from irrigation deliveries intercepted by wells in the Box Elder basin.

WAS must therefore calculate the amount and timing of all present and future depletions from its Box Elder basin wells by: (1) lagging one hundred percent of the depletions to Box Elder Creek using a Glover analysis; and (2) assuming that the depletions to Box Elder Creek would be felt immediately at the South Platte River. This procedure is consistent with the court's July 12, 2006 order regarding quantification of depletions from WAS's Box Elder basin wells and with the legal requirements pertaining to plans for augmentation. §§ 37-92-305(5), (8), C.R.S.; *City of Aurora*, 105 P.3d at 615. This requirement regarding the lagging of depletions from wells in the Box Elder basin is consistent with WAS's proposed procedure for

lagging the effects of its well pumping in all other reaches included in the WAS plan, including the Beebe Draw in Reach D.

12. Replacement Sources

In paragraph 12 of the proposed decree, WAS proposes to include as replacement sources in the plan for augmentation three general types of water rights: (1) water rights decreed for augmentation, including augmentation wells; (2) new water rights which have not yet been decreed; and (3) water rights that have been decreed for uses other than augmentation that would need to be changed to allow augmentation use. The court makes the following determinations regarding these replacement sources.

a. Augmentation Wells

WAS may use augmentation wells as a replacement source under the terms and conditions previously discussed in Section V.C.1.d.iv. Augmentation wells do not provide new or additional water to the natural stream of the South Platte River, but rather, act as a re-timing mechanism by pumping tributary water from the South Platte alluvium to replace depletions currently hitting the river. *See also See* § 37-92-103(14)(a), C.R.S. Therefore, similar to the previous discussion of augmentation wells in the Projection Tool, WAS shall have the opportunity to propose a reasonable limitation on augmentation well pumping with its revised proposed decree for the use of augmentation wells as a source of replacement water.

b. Un-Decreed Water Storage Rights

WAS may use water diverted under free river conditions and stored in Shores Lake described in the application in Case No. 00CW083 for augmentation under this plan. There is no dispute on this issue. Further, if the application in Case No. 00CW083 is granted and a decree entered, WAS may use water diverted into Shores Lake pursuant to such decreed water right in accordance with any terms and conditions of the decree.

c. Un-Decreed Recharge Storage Rights

WAS may use as a replacement source in this matter the accretions from diversions to the un-decreed recharge projects described in the pending applications in Case Nos. 01CW148 and 05CW331 while those applications are pending if such accretions are accounted for pursuant to the Division Engineer's Recharge Protocol.

Opposers argue that such un-decreed recharge water rights should only be used in WAS's plan for augmentation after they have been decreed for augmentation use. Opposers contend that although water may be diverted into un-decreed recharge projects under free river conditions, the timing of recharge accretions and the terms and conditions for use of accretions as replacement sources are complex matters that may be disputed. Opposers assert that injury to other water rights may occur if appropriate methods and data for determining recharge accretions are not

used. Such injury determinations are generally made by the water court, with the exception of substitute water supply plans approved by State Engineer pursuant under § 37-92-308, C.R.S. However, Opposers contend that this statute does not provide the Engineers authority to approve the timing of accretions or the terms and conditions for use of recharge projects that may cause injury to other water rights. Therefore, Opposers argue that the decree in this case cannot authorize such approval under the Division Engineer's Recharge Protocol.

The court determines that, in the particular facts of this case, accretions from un-decreed recharge projects are a legally available source. First, WAS may divert water without a decree. A "water right comes into existence when a person initiates and completes an appropriation of water of a natural stream of the state" and the "right to use the water accrues by acts in which the person puts the water to a beneficial use." *City of Lafayette v. New Anderson Ditch Co.*, 962 P.2d 955, 960 (Colo. 1998). A water court decree "does not confer, but rather confirms a pre-existing water right." *Shirola v. Turkey Cañon Ranch Ltd. Co.*, 937 P.2d 739, 748 (Colo. 1997). However, without a decree "water rights are generally incapable of being enforced." *Id*. WAS may therefore only divert to the recharge projects described in Case Nos. 01CW148 and 05CW331 during free river conditions. Second, despite Opposers' assertions to the contrary, no evidence was presented at trial that the use of the Recharge Protocol to calculate accretions from such diversions resulted in miscalculated accretions and injured other vested water rights. Third, this matter concerns only the temporary use of the recharge Protocol for the un-decreed recharge projects described in the pending applications in Case Nos. 01CW148 and 05CW331 and not recharge projects that are unconnected to a pending application. Finally, there is no statutory procedure in § 37-92-308, C.R.S., or elsewhere for WAS to more formally calculate its accretions.

The court does not accept Opposers' contention that while WAS may divert water to its recharge projects during free river conditions, it may not receive credit for those accretions. Opposers' distinction in this regard is untenable because the purpose of diversions to such recharge projects is to replenish the aquifer in order to replace well depletions. *See Bd.of County Comm'rs of County of Park v. Park County Sportsmen's Ranch, LLP*, 45 P.3d 693, 703-04 (Colo. 2002). To not permit WAS to take any credit for such accretions would in essence eliminate the beneficial use for which the water was diverted and, in turn, undermine the basis for such a diversion. *See* Colo. Const. art. XVI, § 6.

d. Decreed Water Rights Requiring Change of Use

The water rights listed in paragraph 12 of the proposed decree for which there are pending applications to change the use of such water rights to augmentation may be used for augmentation in this plan to the extent that WAS has acquired the right to use such water rights and to the extent authorized by and in accordance with any decree or approved SWSP.

13. Additional Augmentation Supplies

WAS proposes that it be allowed under the decree in this matter to add additional augmentation supplies to the plan in the future with notice as provided for in paragraphs 13, 13.1, 13.2, and 13.3 of the proposed decree. Opposers contend that WAS does not provide parties or objectors a meaningful opportunity to comment or seek relief from the court in the event a dispute exists over the addition of supplies to the plan. Opposers do not, however, propose alternate language. Further, Opposers could invoke this court's retained jurisdiction in the event of a dispute.

The court determines, however, that the substance of paragraphs 13, 13.1, 13.2, and 13.3 is currently inadequate. In the relevant paragraphs in the final decree in this matter, WAS shall incorporate the modifications of the Engineers to these paragraphs.

14. Well Metering

WAS asserts that it will not authorize pumping by member wells that are not metered and provides language to this effect in paragraph 14 of its proposed decree. The court has elsewhere rejected WAS's proposal regarding "authorized" pumping in this order. To the extent that this paragraph would eliminate WAS's responsibility for replacing "unauthorized" depletions from pumping by un-metered wells, it is insufficient to prevent injury. § 37-92-305(3), C.R.S.

WAS has provided no proof that all member wells included in this plan are metered with certified, accurate, and working flow meters. WAS proposed no means by which it can ensure that wells will be metered or that flow meters will be installed and maintained in proper working order. Furthermore, WAS proposed no means of ensuring that well depletions from non-metered wells or wells with malfunctioning, inaccurate, untested, or uncertified flow meters can be accurately quantified and replaced. Nor has WAS proposed any means of ensuring flow meter records are or will be timely obtained to ensure pumping quotas will not and have not been exceeded. Finally, WAS has not demonstrated how many of the augmentation wells are also used for irrigation under the plan and how WAS is proposing to meter and account for both types of uses. The court again determines that WAS must replace all depletions from well pumping, not only those which are "authorized."

The paragraph concerning well metering in the final decree shall include the following language, incorporating the Engineers' modifications to paragraph 14 of the proposed decree:

> Covered Wells shall be metered. WAS shall not authorize pumping of unmetered wells. Meters will be tested and certified as accurate at least once every four years by a registered professional engineer or other qualified person as approved in advance by the Division of Water Resources. In the event a flow meter malfunctions, the amount of water pumped during the time of malfunction may be estimated based on power records for the well, calculating the power coefficient for the prior month (by calculating the acre-feet pumped per kilowatt hour consumption for irrigation of the crops or other

intended use for the prior two months of pumping and multiplying that number times the kilowatt hours for the time period the flow meter malfunctioned). WAS shall make every attempt to repair or replace a malfunctioning flow meter within 30 days of the time the malfunction is discovered.

The paragraph concerning the measurement of augmentation wells in the final decree shall include the following language, incorporating the Engineers' modifications to paragraph 8.1 of the proposed decree:

> Water diverted from all Augmentation Wells shall be measured using a totalizing flow meter installed on each well. To the extent an Augmentation Well is used both for irrigation purposes that well shall be equipped with two totalizing flow meters so as to separately measure the dates and amounts of water used for each purpose, and this shall be reflected in the records for that well.

In addition, the final decree in this matter shall contain the following paragraph from the Engineer's modifications to WAS's proposed decree:

> Validity of permits and decrees for Wells. Entry of this decree does not validate any expansion of use that may have occurred for any Member Well or Augmentation Well, nor does it mean that each Member Well or Augmentation Well is operating in compliance with its permit and/or decree for its groundwater right. Applicant shall ensure that all well permit files are valid and the uses proposed for the Member Wells and Augmentation Wells in this decree are consistent with the decreed and permitted uses for the Member Wells and Augmentation Wells. If well permits for any of the Member Wells or Augmentation Wells do not meet this standard, valid well permits must be obtained by the well owners.

15. Replacement Only of Ongoing Depletions for "Authorized" Past Pumping

Paragraph 14 of the proposed decree also proposes that WAS will replace past depletions from "authorized" well pumping only. For the reasons previously stated, this proposed term and condition does not prevent injury. The quantification of depletions from past pumping that WAS must be able to replace under this plan must be based on the requirements set forth in Section V.11.c of this order. The court further addresses WAS's arguments below.

WAS contends that requiring it to replace depletions outside its proposed plan is inconsistent with the statutory scheme because it would make WAS the enforcer, in place of the Engineers, to insure all other water users against potentially illegal actions by the owners of covered wells. *See* § 37-92-502(2)(a), C.R.S. The court does not agree with WAS's characterization of the issue. *See* Sections V.C.11.c.v and V.C.20.

The issue in this proceeding is not whether well owners may have pumped unlawfully. *See* § 37-92-503, C.R.S. Such a determination is the duty of the State Engineer. However, the

issue before the court is whether WAS's proposed augmentation plan can be operated without injury. § 37-92-305(3), C.R.S. The junior wells to be covered by the proposed augmentation plan cannot pump unless they are covered by a decreed plan for augmentation of approved SWSP. Their inclusion in this proposed plan creates the opportunity for and invites pumping. Moreover, the potential for injury is elevated in the facts of this case where covered wells are permitted to only pump a fraction of their decreed or full capacity amount. The terms and conditions that require WAS to replace so-called "unauthorized" pumping are thus crafted to protect vested water rights from the conditions created by WAS's proposed plan.

16. Curtailment of Authorized Well Pumping

WAS proposes in paragraph 21 of the proposed decree that, in the event the "authorized" depletions from its plan for augmentation exceed available projected replacement supplies, WAS shall required to reduce or curtail its member well pumping or acquire additional replacement supplies. The court determines that this proposed term and condition does not prevent injury.

The court has previously concluded that WAS may not limit its replacement obligation to depletions from "authorized" pumping only. The court has identified the limitations and assumptions and other terms and conditions that must be included in the projection in this decree. If, despite application of these limitations, assumptions, and other terms and conditions, WAS's well depletions at any time exceed the amount of WAS's available replacement supplies, WAS shall immediately limit or fully curtail well pumping so that it replaces all depletions in time, location, and amount. To the extent that full curtailment does not result in full replacement of depletions, WAS must acquire additional replacement supplies in the amount of any shortfall. Nothing in this paragraph affects WAS's obligation under this decree to replace all well depletions in time, location, and amount. To the extent that WAS is not able to replace all depletions by reducing its quota, curtailing well pumping, or acquiring replacement supplies to replace ongoing depletions, WAS's failure to replace depletions will result in injury.

17. Call Definition

The proposed decree submitted by WAS does not contain any definition of the term "call." Opposers' expert, Mr. Clements, testified that a definition of the term "call," patterned after that used in other recent decrees, should be included in any decree entered in this case in order to avoid confusion and ensure proper administration of the decree. The proposed definition is included in the GMS decree, Case No. 02CW335, and the Pawnee Well Users decree, Case No. 04CW46.

The court determines that the term "call" need not be included in the final decree. The testimony at trial established that there are various uses of the term "call" within the water community. The evidence also established that the mechanisms by which calls are placed and who places calls are not well defined. Opposers have not established with any specificity why a definition or their proposed definition of the term must be included in the final decree to prevent

injury. For instance, the Division Engineer did not testify that such a definition is required to administer this decree. Therefore, such a definition need not be included in the final decree.

18. Accounting

Opposers argue that the proposed accounting form contains some but not all of the required accounting information necessary to determine compliance with the terms and conditions required to prevent injury to other water rights. Opposes contend that additional information is needed as proposed by their expert, Mr. Clements.

The court determines that the relevant paragraph in the final decree in this matter shall include the following language from the Engineers' modifications to paragraph 26.2 of the proposed decree.

> These accounting forms are not decreed herein and may be changed from time to time with the approval of the Division Engineer and with notice to all objectors in this case. The initial accounting forms have not yet been approved by the Division Engineer and must be approved by the Division Engineer within 90 days after the entry of this decree. If the initial accounting forms are not so approved, the Member Wells shall not be permitted to divert under this decree.

Such review of accounting within the purview of the Division Engineer and the Engineers' review of the accounting will prevent injury.

Concerning the accounting for augmentation well accretions in a ditch or drain, the relevant paragraph in the final decree in this matter shall include the additional following language from the Engineers' suggested modifications to paragraph 8.5.2 of the proposed decree.

> The amount of augmentation credit received by WAS will be the lesser of a) the measurement at the location at which the water is placed into the river, or b) the measurement at the point where the water is discharged into the ditch or drain, reduced by transit losses due to evaporation and evapotranspiration, which amount will be determined by the Division Engineer.

Moreover, such deliveries must also take into account transit losses. *See* Section V.C.10.

19. Retained Jurisdiction

WAS proposes in paragraph 44.1 of the proposed decree a general retained jurisdiction period of seven years from the date of entry of the decree for the purpose of reconsideration on the issue of injury to other water rights. WAS contends that perpetual retained jurisdiction is not necessary because the bulk of WAS's well depletions occur within seven years. WAS further asserts that seven years will allow the plan to emerge from the 2002-05 drought period, pay off accumulated post pumping depletions from dropped wells and pre-projection one hundred

percent pumping, and give the court a good idea as to whether the terms decreed are sufficient. In short, WAS asserts that if the plan works over the next seven years, it will work indefinitely because WAS faces its greatest challenges at the present time.

The court determines that perpetual retained jurisdiction is appropriate for this case. Opposers' expert, Mr. Clements, testified that because the depletions from pumping of the WAS member wells and augmentation wells will continue for decades after the pumping occurs and it is unknown when, if at all, pumping at the full one hundred percent quota for member wells will occur. Further, WAS proposes perpetual retained jurisdiction for other purposes in paragraph 44.2 of the proposed decree. Perpetual retained jurisdiction for all purposes is necessary and appropriate in these circumstances to insure that no injury to other water rights will occur from operation of the proposed WAS plan for augmentation.

20. Enforcement

The court determines that WAS failed to propose terms and conditions adequate to assure enforcement of its decree in a manner that would prevent injury to vested water rights. WAS contends that, as a legal and policy matter, WAS cannot be vicariously liable for the illegal actions of its contract holders. As discussed above, this position mischaracterizes the issue. WAS seeks a decree with terms and conditions that take advantage of the statutory provisions allowing water conservancy districts to seek to adjudicate and operate augmentation plans on behalf of their members. WAS has not accepted its responsibility for the actions of its members that its proposed plan helped cause but were not specifically authorized. As discussed above, however, the court has found that WAS is responsible for assuring that all depletions resulting from well use under this plan will be replaced.

As proposed by WAS, it would only be required to replace depletions from "authorized pumping" by member wells. WAS's manager, Mr. Cech, explained that "authorized pumping" would only encompass the pumping allocated to each well under WAS's proposed quota system each year. If any well pumped more than its annual quota, WAS would not be responsible for replacing those depletions associated with the over-pumping. He further testified that if a WAS member pumps more than is allowed, WAS has a three-step process to deal with member violations. The first two times a member exceeds its quota, WAS levies a fine that is based upon three times the most expensive water leased by WAS and its sister subdistrict, GMS. The third violation results in revocation of the member's contract and expulsion from the augmentation plan. However, even though the fines are based on the theoretical purchase of water, Mr. Cech testified that those fines were not intended be used to purchase water to replace depletions associated with the pumping violations. Mr. Cech stated that WAS could not curtail member wells because only the Engineers have authority to curtail water rights.

WAS's current implementation structure for its proposed augmentation plan is insufficient to avoid injury to other water rights. § 37-92-305(3), C.R.S. Evidence presented established that that numerous WAS members pumped in violation of this court's May 10, 2006 order while they were still under WAS's plan. This demonstrates that WAS's plan, as currently

structured, lacks sufficient control to avoid injury to vested water rights by replacing all out-of-priority depletions. *See* Section V.C.11c.v. Further, as discussed below, WAS's plan, as currently structured, shirks its statutory responsibility to ensure that all out-of-priority depletions are replaced.

WAS is held to the same standard as an individual seeking an augmentation plan. WAS "may initiate and implement plans for augmentation for the benefit of all water users within their boundaries." § 37-92-302(5), C.R.S. WAS is also responsible for the actions it initiates in water court. § 37-45-118(j), C.R.S. ("to obligate itself and execute and perform such obligations according to the tenor thereof"). Thus, WAS stands in the shoes of a water user by seeking to implement and operate an augmentation plan in its own name to cover out-of-priority member well depletions and is held to the same legal requirements as an individual water user seeking an augmentation plan. Therefore, WAS must ensure that the augmentation plan will be operated without injury to other water rights by replacing all injurious out-of-priority depletions associated with its member well pumping. *City of Aurora*, 105 P.3d at 607; § 37-92-305(3), C.R.S.

WAS has broad powers as a water conservancy district. *See, e.g.*, §§ 37-45-118, -120, C.R.S. For example, WAS can levy and collect taxes upon all property within the subdistrict, as well as levy and collect special assessments against the landowners who benefit directly by the use of water or capacity in the subdistrict's facilities. *See also People ex el. Rogers v. Letford*, 102 Colo. 284, 298, 79 P.2d 274, 282 (Colo. 1938) (powers equated with quasi-municipal corporation). WAS also has specific statutory powers regarding the management, control, delivery, use and distribution of water by the district. § 37-45-134, C.R.S.

WAS's contracts with its members further give WAS the power to control its members and to protect vested water rights from injury. The contracts state that members are bound by statute, as well as WAS's rules and regulations, bylaws, resolutions, and policies as amended. The contracts presented at trial also stated that WAS would seek approval of a plan for augmentation but that "[i]f necessary [the member] agrees to curtail his or her well to the extent ordered by the Board of Directors of the Well Augmentation Subdistrict of the Central Colorado Water Conservancy District . . . ." The contracts further provided that

> [The member] understands that in the event that pumping from the well(s) described in this Petition ceases, there will nevertheless be post-pumping depletions affecting the South Platte River (and its tributaries, where applicable) for a number of years following cessation of pumping. In such event, [the member's] obligations under this contract, including but not limited to payment of annual special assessments, shall extend for so long as post-pumping depletions continue. Any annual special assessment imposed for the purpose of replacing post pumping depletions shall become a tax lien upon the lands for which such water is petitioned and allocated. Upon termination of this contract, any unpaid assessment will remain a lien upon the land

Therefore, WAS has the ability to structure its relationship with its members as may be necessary for WAS to operate an augmentation plan that will replace all out-of-priority depletions associated with member well pumping in order to prevent injury to vested water rights.

The court does not agree with WAS's position that it is almost completely unable and unauthorized to enforce its augmentation plan. For instance, WAS may, among other things, "make and enforce all reasonable rules and regulations for the management, control, delivery, use and distribution of water," including "provide for and declare forfeitures of rights to the use of water upon . . . failure to comply with any order, contract or agreement . . ." § 37-45-129(a), (c), C.R.S. Moreover, as discussed above, WAS has broad statutory powers and the ability to structure its contractual relationship with its members.

Nor does the court agree with WAS's construction of §§ 37-92-501 to -504, C.R.S., regarding the authority to curtail wells. These sections of the 1969 Act grant the Engineers certain exclusive authority in the administration of the water rights system. However, when looking at the 1969 Act as a whole, they do not preempt water users of all responsibility in the implementation of augmentation plans such that no injury occurs to vested water rights. *See* §§ 37-45-118(j), 37-92-305(2), C.R.S. As proposed, WAS's augmentation plan avoids its responsibility for enforcement and defers too greatly to the Engineers.

WAS must therefore restructure the enforcement of its proposed plan for augmentation in the final proposed decree in this matter. Opposers and the Engineers proposed several specific terms and conditions. The court determines that the paragraph regarding enforcement in the final decree in this matter shall include a term and condition that states that

> WAS shall maintain summaries of Covered Well meter readings, and shall immediately report any Covered Well that pumps more than the amount authorized by WAS to the well owner. If the well owner refuses to cease pumping, WAS shall take action under its bylaws, rules, regulations and policies to prevent further pumping. Upon notice, the Division Engineer may also issue orders to cease pumping to users if WAS does not authorize additional pumping. WAS shall be required to replace depletions caused by pumping it did not authorize, unless such depletions are replaced pursuant to another augmentation plan or substitute water supply plan.

Furthermore, the paragraph regarding secondary augmentation plans in the final decree in this matter shall not include the language deleted by the Engineers in their modifications to paragraph 25 of the proposed decree. The paragraph regarding post-pumping depletions in the final decree in this matter shall not include the language deleted by the Engineers in their suggested modifications to paragraph 27.4 of the proposed decree. Beyond these specific modifications, WAS may restructure the enforcement of the proposed final decree and take other actions as necessary to prevent injury to vested water rights.

VI. Order

Due to the significant alterations to WAS's proposed decree that are required by this order, WAS shall have thirty days, if necessary, from the date of this order to file with the court and serve on all parties a revised proposed decree consistent with this order. Opposers shall have fifteen days, if necessary, in which to file and serve objections to the revised proposed decree and WAS shall have ten days to reply.

If WAS does not file and serve a revised proposed decree within thirty days of the date of this order, the application herein, as amended, shall be deemed denied and these Findings of Fact, Conclusions of Law, Judgment, and Order of the Water Court shall become final and appealable thirty days from the date of this order.

Dated: October 18, 2007.

By the court:

Roger A. Klein
Water Judge
Water Division No. 1

This document was filed pursuant to C.R.C.P. 121, § 1-26. A printable version of the electronically signed order is available in the Court's electronic file.