STATE OF KANSAS
BEFORE THE DIVISION OF WATER RESOURCES
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the City of Wichita's	**)**	
Phase II Aquifer Storage and recovery Project	**)**	**Case No. 18 WATER 14014**
In Harvey and Sedgwick Counties, Kansas	**)**	
	)	

Pursuant to K.S.A. 82a-1901 and K.A.R. 5-14-3a

CITY OF WICHITA'S PROPOSED FINDINGS & CONCLUSIONS

I. Power of Agency to Consider Proposal

A. Proposed Findings

1. The City of Wichita's Proposal is not seeking a new appropriation of water (Vol. IV, p. 1062, lines 23-25).
2. The City of Wichita's Proposal is not a new application because the City of Wichita (the "City") is not asking for any new water (Vol. VII, p. 1752, lines 23-25).
3. With respect to the proposed procedure to recognize Aquifer Maintenance Credits, the availability of water in the Little Arkansas River for diversion would remain identical to the base flow and seasonal limits developed as part of the ASR Phase I and Phase II permitting process (Proposal, City Exhibit 1, p. 3-5, Section 3.3, second paragraph).
4. The City proposes that the quantity of water diverted from the Little Arkansas River that cannot be physically recharged through the ASR system could be sent to the City's main water treatment plant to directly meet City water demands. The water left in storage as a result of utilizing Little Arkansas River flows rather than groundwater from the EBWF would be considered as an ASR Aquifer Maintenance Credit ("AMC") with similar characteristics to the current ASR recharge credits (Proposal, City Exhibit 1, p. 1-2, last paragraph).

5. The rate of accrual of all recharge credits could not exceed the constructed physical diversion capacity of the ASR system including direct surface water diversions and future bank storage wells, and will be limited to the rate and quantity authorized by Water Right No. 46627 (Proposal, City Exhibit 1, p. 3-6, Section 3.4, proposed condition 2).
6. Under the City's Proposal, credit withdrawal would remain subject to existing limits (Vol. VII, p. 1663, lines 3-6).
7. Under the City's Proposal, the only credits that would be withdrawn at ASR Phase I sites would be physical recharge credits, as no AMCs would be allocated to ASR Phase I wells (Proposal, City Exhibit 1, p. 3-6, Proposed Condition No. 3).
8. The AMC accounting procedure would allow the City to obtain the same credits it could obtain under its existing permits, but without pumping a hole in the aquifer to create capacity for physical recharge (Vol. V, p. 1288, line 12 through p. 1289, line 2).
9. The City's Proposal is not a change application (Vol. V, p. 1255, lines 5-6).
10. A change application could not be used for the City's Proposal because the Proposal is not seeking to change the point of diversion, place of use or use made of water (Vol. VII, p. 1657, lines 15-17).
11. The City's Proposal is neither a new application nor a change application (Vol. VII, p. 1658, lines 3-7).
12. Division of Water Resources ("DWR") Staff distinguish between permit changes and permit modifications (Vol. VII, p. 1656, lines 14-16).
13. There are some modifications that can be made to existing permits without a change application, and examples are changing meter requirements, reducing the amount of water used, dividing a

water right and correcting typographical errors (Vol. VII, p. 1656, line 18, through p. 1657, line 9).

14. A water user with an irrigation right can dismiss the irrigation right but retain the well for domestic use without filing a change application (Vol. VII, p. 1752, lines 10-13).
15. An AMC is merely a change in accounting (Vol. VI, p. 1510, lines 19-20).
16. It would be an accounting modification (Vol. VII, p. 1687, line 17).
17. Under the City's existing approved applications, the City can annually recover 19,000 acre feet of recharge credits if the credits are available (Vol. VII, p. 1667, lines 19-24).
18. The AMCs, if approved, would still be subject to that 19,000 acre feet limit (Vol. VII, p. 1663, lines 3-6).
19. The August 8, 2005 Initial Order approving ASR Phase I, approved the accounting method for Phase I as it was submitted, until otherwise modified by formal written approval of the chief engineer (August 8, 2005 Initial Order, p. 15 of 21, Paragraph 5).
20. The August 8, 2005 Initial Order also contemplated that if the City developed an improved model or methodology to account for water stored in the basin storage area that is approved by the chief engineer after consideration of the Groundwater Management District #2 (the "District"), the chief engineer may approve the improved methodology without the necessity of holding additional public hearings (August 8, 2005 Initial Order, p. 15 of 21, Paragraph 6).
21. By an Order of December 21, 2009, the chief engineer modified the prior orders for ASR Phase I to modify how such prior orders would be referred to, and to extend the time for the District to conduct a review provided for in Condition No. 23 of the ASR Phase I permit (December 21, 2009 Order, pp. 3-4).

22. The proposal for the modification of Condition No. 23 was in the form of a letter to the chief engineer in which the Board of Governors of the District sought an extension of time to December 31, 2010 to complete their review of the project (December 21, 2009 Order, p. 2, Paragraph 8).
23. The September 18, 2009 Initial Order approving the City's ASR Phase II permits provided that the accounting method for Phase II would remain as previously submitted, until otherwise modified by formal written approval of the chief engineer (September 18, 2009 Initial Order, p. 5, Paragraph 5).
24. The September 18, 2009 Initial Order also provided that if the City develops an improved model or methodology to account for water stored in the basin storage area that is approved by the chief engineer after consideration of the District, the chief engineer may approve the improved methodology without the necessity of holding additional public hearings (September 18, 2009 Initial Order, p. 5, Paragraph 6).
25. The September 18, 2009 Initial Order indicates that it would become final agency action absent petition for administrative review within 30 days of its service date (September 18, 2009 Initial Order, p. 7).
26. The proposal to lower the bottom index levels from the 1993 levels was characterized by Mr. Lane Letourneau as a fundamental modification of permit conditions (Vol. VII, p. 1687, lines 7-11).
27. The upper and lower index levels for each index cell were set initially as stated in Attachments 3 and 4 to the August 8, 2005 Initial Order approving the City's ASR Phase I permits (August 8, 2005 Initial Order, p. 15 of 21, Paragraph 4).

28. The same upper and lower index levels were incorporated by reference in the September 18, 2009 Initial Order approving the ASR Phase II permits (September 18, 2009 Initial Order, p. 5, Paragraph 4).
29. Subsequently, while Mr. Daniel Clement was employed on the staff of the District, he participated in a collaborative effort of the City, DWR, the District and USGS to reset the lower index levels for the ASR Phase I and ASR Phase II permits (Vol. IV, p. 1057, line 5, through p. 1058, line 12).
30. As Mr. Clement described reason for the changes, they were partly due to correcting for confusion of high and low levels and head discrepancies in the index levels as originally set, but also partly due to using newly available information to interpolate 1993 water levels for various index cells (Vol. IV, p. 1057, lines 8-16; p. 1057, line 22 through p. 1058, line 3; p. 1060, lines 7-19).
31. Because of the imprecision associated with interpolation, the calculated lower index levels are imperfect and could be off plus or minus two feet (Vol. IV, p. 1060, line 23, through p. 1061, line 6).
32. Mr. Clement believes that the lower index levels were revised by findings and an order of the chief engineer (Vol. IV, p. 1058, lines 4-12).
33. The timeframe when Mr. Clement was employed with the District was from 2010 into 2013 (Vol. III, p. 768, lines 16-18).
34. Mr. Lane Letourneau indicated there was also a change in date as to when index levels would be measured, such that they are measured now in January (Vol. V, p. 1336, lines 2-19).
35. Mr. Tim Boese agreed that to reduce use of water or correct a typographical error in a permit, a change application is not required (Vol. VIII, p. 2167, line 20, through p. 2168, line 1).

36. Other examples of changes that can be made without a change application or new permit application included supplying an omitted legal description, requests to reduce the place of use, quantity of use and rate of use, dividing a water right or adding conditions such as a meter requirement, monitoring plan or conservation plan (Vol. VIII, p. 2172, lines 3-24).
37. Mr. Boese characterized the recalculation of the lower index levels as "correctional" (Vol. VIII, p. 2173, line 12).
38. However, Mr. Boese acknowleged that in addition to correcting errors in the lower index levels as originally set in the ASR Phase I and ASR Phase II permits, the recalculations also made use of additional data that was discovered after the index levels were originally set (Vol. VIII, p. 2173, lines 15-19).
39. Mr. Boese later noted that K.A.R. 5-5-6(b), allows permit modifications to conform the stated location of diversion works to the actual location where the works were constructed (Vol. XI, p. 2862, lines 13-25).
40. K.A.R. 5-5-6(c) allows administrative correction of an authorized point of diversion or place of use if stated criteria are met (Vol. XI, p. 2863, lines 1-14).
41. K.S.A. 82a-733 allows the chief engineer to approve a water conservation plan for an existing right (Vol. XI, p. 2864, line 24 through p. 2865, line 19).
42. K.A.R. 5-3-5(1) allows the chief engineer to approve material changes in a conservation plan (Vol. XI, p. 2865, line 22, through p. 2866, line 22).
43. K.A.R. 5-7-5 allows for changes in an existing water right reducing authorized quantity, rate of diversion, place of use and point of diversion (Vol. XI, p. 2866, line 23, through p. 2867, line 11).

44. K.A.R. 5-1-7 allows the chief engineer to require installation of flowmeters (Vol. XI, p. 2868, line 20, through P. 2870, line 12).
45. K.S.A. 82a-742 allows for an Order of the chief engineer dividing an existing water right (Vol. XI, p. 2870, line 20, through p. 2871, line 16).
46. K.A.R. 5-4-1(e) allows the chief engineer to issue an Order to curtail use under a permit to prevent impairment of another user's rights (Vol. XI, p. 2871, line 20, through p. 2872, line 17).
47. K.A.R. 5-7-4(b) allows the chief engineer to approve an application enrolling a water right in a water right conservation program (Vol. XI, p. 2872, line 18, through p. 2873, line 18).
48. Mr. Boese does not believe there is a statute or regulation that provides for DWR's ability to correct typos or omissions (Vol. XI, p. 2877, lines 5-13).
49. The need for the change in accounting for AMCs arises from current high water levels in the aquifer that limit the City's ability to conduct physical recharge because the aquifer is now so full (Vol. I, p. 151, line 19 through p. 152, line 8; Vol. 1, p. 242, lines 15-23).
50. Additionally, the City's identification of the importance of ASR recharge credits for drought mitigation purposes had not occurred as of the 2009 ASR Phase II approval, but resulted from studies initiated in and after 2014 (City's Exhibit 1, March 12, 2018 Proposal Cover Letter, pp. 1-2).
51. During the two-year drought of 2011-2012, the City's use of the aquifer was not significantly different, but other water rights holders were increasing their usage because of the climate conditions (Vol. I, p. 173, lines 3-7).
52. Beginning in 2014, City staff initiated a series of studies, professional engineering evaluations, and permit reviews, to ensure that existing and planned water resources are adequate to meet the demands of a 1% drought (Proposal, City Exhibit 1, p. 1.1, end of first paragraph).

53. The modeling performed by Burns & McDonnell showed that in a simulated 1% drought, water levels would drop below the 1993 levels in 17 of the 38 index cells in the City's wellfield (Proposal, City Exhibit 1, hydrographs in Attachment I).

54. The table of modeled inputs and variables for the Burns & McDonnell modeling projected the City would need to draw an aggregate total of 50,849 acre feet of credits during the second through sixth years of the modeled 1% drought (Proposal, City Exhibit 1, p. 2-10, Table 2-5, with correction to 5th year credits noted in testimony at Vol. III, p. 715, lines 1-18).

55. The Balleau Groundwater modeling confirms that with the existing 1993-based lower index levels, the City would only be able to access 14,900 acre feet of credits during the modeled 8-year drought (Vol. IX, p. 2504, lines 6-14).

56. The issues raised with the existing lower index levels by the 2011-2012 drought and the subsequent Burns & McDonnell and Balleau Groundwater modeling constitute new information not available at the time the Phase II Permit was approved, because the ASR Phase II Permit approval occurred September 18, 2009 (September 18, 2009 Initial Order, p. 7).

57. In 2016, K.A.R. 5-12-1 and 5-1-1(uu) were revised to change how the lower limits of a basin storage area are determined (Vol. VII, pp. 1713-1715).

58. The Proposal at issue in this hearing was submitted on behalf of the City of Wichita, and the City of Wichita is also the holder of the ASR Phase II permit (Proposal, City Exhibit 1, Proposal cover letter and cover pages; September 18, 2009 Initial Order, p. 1).

B. Proposed Conclusions

1. *Clawson v. State*, 49 Kan. App. 2d 789, 800-801, 315 P.3d 896 (2013) contains a statement that "our court has specifically held that where an agency has no specific statutory authority to retain

jurisdiction, it has no ability to reconsider or modify its final orders once the time for seeking judicial review has passed" Id., at 800-801 (citing *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d 455, 459, 27 P3d 943 (2001) and *In re. Petition of City of Shawnee for Annexation of Land*, 236 Kan. 1, 15, 687 P.2d 603 (1984)).

2. *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d 455, 459, 27 P3d 943 (2001), the first of the two cases cited for the statement, does not contain such a holding. *Id.*
3. On the facts of the *Johnson* case, following Johnson's arrest for driving under the influence, the hearing officer had ordered a 30-day suspension, followed by an additional 330-day period of restriction. *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d at 455-456. After the period to seek review had passed, the Department of Revenue realized it had missed a prior diversion, and filed a motion to amend the suspension on the grounds that the suspension period should have been one year. *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d at 456. The district court upheld the hearing officer's action to approve the amendment. *Id.*
4. In *Johnson v. Kansas Department of Revenue,* the appellate court characterized the motion to amend the suspension order as an effort "to revisit the factual issue of Johnson's driving history" *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d at 457.
5. In refusing to allow the Department of Revenue to pursue reconsideration of that issue after the period to seek reconsideration had passed, the court rejected an argument that Johnson or his counsel had an obligation to disclose the prior diversion, as the hearing officer served in the state Division of Vehicles, which was the custodian of that record. *Johnson v. Kansas Department of Revenue,* 29 Kan. App.2d at 459.
6. The court also noted that K.S.A. 2000 Supp. 8-259 did not provide for reconsideration of suspension orders. *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d at 457.

7. With respect to an argument that the agency had inherent or implied power to reconsider suspension orders, the court found that it was inconceivable that the legislature promulgated KAPA, KJRA and K.S.A. 2000 Supp. 8-259 with the intention that Kansas Department of Revenue would retain the inherent power to retry driver's license suspension hearings at will. *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d, at 459.
8. The court distinguished *Pitts v. Kansas Dental Board*, 267 Kan. 775, 987 P.2d 348 (1999)(holding absence of language in the Kansas Dental Act authorizing reinstatement of revoked licenses did not reflect legislative intent to permanently bar dentists with revoked licenses from readmission to the profession). The basis for the distinction was that "the Dental Board was not relitigating the facts which prompted the original revocation." *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d at 458-459.
9. The *Johnson* court itself distinguished *In re. Petition of City of Shawnee for Annexation of Land*, 236 Kan. 1, 15, 687 P.2d 603 (1984)(the other case cited as support for the broad statement in *Clawson*), on the basis that in the *City of Shawnee* case, the administrative reconsideration occurred while the case was pending appeal in the district court. *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d at 457. *Clawson* itself recognizes this with the parenthetical summary after the citation to the *City of Shawnee* case, summarizing the holding as, "administrative board acting in a quasi-judicial capacity loses the jurisdiction to reconsider or change its prior ruling during pendency of the appeal." *Clawson v. State*, 49 Kan. App. 2d 789, 801.
10. The issues actually before the court in *Clawson* were, first, whether the chief engineer could retain jurisdiction to reduce the approved rate of diversion or quantity of water rights authorized to be perfected after the issuance of a water appropriation permit, and second, whether the chief

engineer had the authority to include a monitoring plan when approving and issuing water appropriation permits. *Clawson v. State,* 49 Kan. App. 2d 789, 793, 799, 807.

11. The *Clawson* court's concern with the notion of continuing jurisdiction to reduce rate or quantity of diversion appears to have been largely rooted in the importance of stability in property law. *Clawson v. State,* 49 Kan. App. 2d 789, 798-799.

12. Also, the focus was on exercise of the retained jurisdiction through future unilateral action by the chief engineer, and the court noted that "the KWAA does not give the chief engineer carte blanche authority to alter water appropriations." *Clawson v. State,* 49 Kan. App. 2d 789, 807. In the paragraph summing up its ruling on the retained jurisdiction question, the court observed, "If the chief engineer could reduce the rate of diversion and the quantity of the water rights authorized to be perfected, the permit would be meaningless." *Id.*

13. The present case is fundamentally unlike *Clawson* in that the requested permit modifications have been initiated by the permit holder, rather than the chief engineer (Finding 58, above), and consequently, this is not a case in which the chief engineer is seeking to make unilateral alterations in rate or quantity of diversion, or in any other features of the existing permits.

14. This case is also more similar to *Pitts v. Kansas Dental Board,* 267 Kan. 775, 987 P.2d 348 (1999) than to *Johnson v. Kansas Department of Revenue,* 29 Kan. App. 2d 455, 27 P3d 943 (2001), in that the City is not seeking to reargue the facts on which the original permit was based, but is seeking to have the chief engineer take into account entirely new circumstances, including current high water levels, drought modeling following the experience of the 2011-2012 drought, and 2016 regulatory changes, all of which have come into being since the existing permit conditions were approved (Findings 49-57).

15. The present case is also significantly unlike *Johnson v. Kansas Department of Revenue,* 29 Kan.

App. 2d 455, 27 P3d 943 (2001) in that, in *Johnson*, K.S.A. 2000 Supp. 8-259, the statute providing the basis for the agency action, had no provision for subsequent modification by the agency. *Johnson v. Kansas Department of Revenue*, 29 Kan. App. 2d at 457.

16. In contrast, K.S.A. 82a-708b clearly allows the chief engineer to consider applications seeking major changes in permits, including changes in the place of use, point of diversion, or the use made of water under the existing right,
17. K.S.A. 82a-706 provides that, "The chief engineer shall enforce and administer the laws of this state pertaining to the beneficial use of water and shall control, conserve, regulate, allot and aid in the distribution of the water resources of the state for the benefits and beneficial uses of all of its inhabitants in accordance with the rights of priority of appropriation."
18. K.S.A. 82a-721 provides that, "This act shall be construed liberally to effectuate the purposes hereof, and the enumeration of specific powers in this act shall not operate to restrict the meaning of any general grant of power contained in this act or to exclude other powers comprehended in such general grant."
19. In the context of the KWAA as a whole, it does not rationally follow from the three types of substantive changes specifically addressed by K.S.A. 82a-708b that the legislature meant to prohibit all other changes that might be requested by permit holders, particularly changes in permit conditions which are less substantive features of the permit than the permitted use, place of use, or point of diversion. Such a reading does not make practical sense, and it is more functional and pragmatic to infer from K.S.A. 82a-708b that the authority to consider the three types of major changes specified also extends to requests for less significant permit modifications.
20. Such a reading is consistent with the testimony of Lane Letourneau and Tim Boese, which

established that the chief engineer regularly considers and approves requested alterations to permits that are not specifically covered by K.S.A. 82a-708b, or, in some cases, any other specific statutory provision (Findings 12, 13, 14, 35, 36, 39, 40, 42, 43, 44, 46, 47 and 48).

21. Most telling of these examples is K.A.R. 5-7-5, which Mr. Boese identified as allowing for changes in an existing water right reducing authorized quantity, rate of diversion, place of use and point of diversion (Finding 43). Subsection (a) of K.A.R. 5-7-5 provides: "In order to have an approval of application or water right reduced, the water right owner may file, at any time, a request to reduce any of the following: (1) The authorized maximum annual quantity of water; (2) the authorized maximum rate of diversion; (3) the authorized place of use; (4) the authorized points of diversion; (5) the types of beneficial use; or (6) any combination of paragraphs (a)(1) through (a)(5)."

22. There is only one way to reconcile K.A.R. 5-7-5(a)(1) and (a)(2) with the holding in *Clawson v. State*, 49 Kan. App. 2d 789, 804-807 that the chief engineer does not retain jurisdiction to reduce rate of diversion or authorized quantity of water rights. To do so, *Clawson* must be interpreted in its context, and as holding only that the chief engineer cannot "retain" jurisdiction to *unilaterally* alter the permits, but may nevertheless exercise jurisdiction to consider a permit modification when the permit holder voluntarily invokes that jurisdiction by submitting a request for the modification.

23. K.A.R. 5-7-5(f) also specifically recognizes that requests submitted and considered pursuant to K.A.R. 5-7-5 are not change applications pursuant to K.S.A. 82a-708b.

24. The record in this case also reflects that both the ASR Phase I and ASR Phase II permits have previously been modified by the chief engineer in various respects that would not be within the types of changes addressed by K.S.A. 82a-708b (Findings 21, 22, 29, 30, 34, 37 and 38). These

include the previous adjustments to the lower index levels (Findings 29, 30, 34, 37 and 38).

25. The City's currently requested adjustment to the lower index levels is similar to the some of the prior adjustments to the lower index levels, in the sense that some of the prior adjustments were based on information that was unavailable when the levels were initially set (Findings 56 and 38).

26. In view of the foregoing conclusions, the chief engineer has jurisdiction to consider the modifications requested in the City's proposal because: 1) the Proposal is not an effort to reargue the facts on which the Phase II permits were based, but seeks adjustments to permit conditions due to materially changed circumstances; 2) the specific reference in K.S.A. 82a-708b to three types of permit changes does not prohibit the chief engineer from considering and approving other permit modifications; and 3) *Clawson v. State*, 49 Kan. App. 2d 789, 315 P. 3d 896 (2013) does not prevent the chief engineer from considering and approving the City's Proposal, because the Proposal, like requests made pursuant to K.A.R. 5-7-5, has been submitted by the permit holder.

II. Aquifer Maintenance Credits

A. Proposed Findings

1. The two components of the City's Proposal, the AMCs and the revised lower index levels, are conceptually separate, and either could be approved without the other (Vol. III, p. 540, lines 18-23).
2. The City has the right under five of its existing groundwater permits, which DWR has termed its "native water rights," to withdraw 40,000 acre feet of water from its wellfield in the aquifer each year (Vol. I, p. 205, line 25 through p. 206, line 20).
3. Under the City's existing ASR Phase II permits, the City is only allowed to inject treated water

in the aquifer for credits when the water level at any monitoring well within 660 feet of the injection well is ten feet or more below the land surface elevation at the monitoring well (September 18, 2009 Initial Order, p. 5, paragraph 8).

4. The City proposes that the quantity of water diverted from the Little Arkansas River that cannot be physically recharged through the ASR system could be sent to the City's main water treatment plant to directly meet City water demands. The water left in storage as a result of utilizing Little Arkansas River flows rather than groundwater from the EBWF would be considered as an ASR Aquifer Maintenance Credit (AMC) with similar characteristics to the current ASR recharge credits (Proposal, City Exhibit 1, p. 1-2, last paragraph).
5. Physical recharge activities would continue to occur during periods where aquifer conditions facilitate adequate physical recharge capacity defined by an annual ASR operations plan (Proposal, City Exhibit 1, p. 3-6, Section 3.4, proposed condition 1).
6. Under the City's existing ASR Phase II permits, recharge credits are determined by the chief engineer based on the annual accounting reports (September 18, 2009 Initial Order, pp. 5-6, paragraphs 9 and 10).
7. Under the City's existing ASR Phase II permits, there are existing lower index levels, below which the City is not allowed to withdraw credits, and these lower index levels are based on 1993 water levels in the aquifer, which were drawn from the lowest measurements of record. (Vol. II, p. 295, lines 17-21, p. 296, lines 13-16).
8. The limitations imposed by the lower index levels only apply to credit recovery and do not prevent the City from pumping its base rights below the 1993 index levels (Vol. III, p. 539, lines 13-15).
9. The City's existing ASR Phase II permits do not allow "passive recharge credits" (September

18, 2009 Initial Order, p. 5, paragraph 2).

10. The term “passive recharge credits” is not defined in the September 18, 2009 Initial Order (September 18, 2009 Initial Order).
11. The September 18, 2009 Initial Order was approved by David Barfield as chief engineer (September 18, 2009 Initial Order, p. 7).
12. Mr. Barfield does not believe AMCs to be passive recharge credits, the distinction being that the AMCs will pass through the ASR diversion and treatment infrastructure and are subject to the rate and quantity limitations of the permit(s). (DWR Exhibit 4, September 18, 2017 letter of David Barfield, p. 1, paragraph 2).
13. In DWR’s view, the proposed AMCs are not passive recharge credits. (Vol. VII. p. 1895, lines 9-11); Mr. Daniel Clement of Burns & McDonnell was of the opinion that AMCs are not passive recharge credits because of the link between the aquifer and the Little Arkansas River (Vol. IV, p. 951, line 16 through p. 952, line 1).
14. Beginning between 1993 and 1998, the City, as part of its Integrated Local Water Supply Plan, made a conscious effort to shift from using Equus Beds groundwater as its main source of supply to using Cheney reservoir instead (Vol. 1, p. 145, lines 15-25; Proposal, City Exhibit 1, p. 3-3, Figure 12).
15. As a result, surface water became 60% rather than 40% of the City’s overall raw water source, and water levels in the aquifer increased significantly between 1993 and 2016 (Vol. 1, p. 146, lines 1-25; Proposal, City Exhibit 1, p. 3-4, Figure 13).
16. In some places, the increase in water elevations was more than 30 feet (Proposal, City Exhibit 1, p. 3-4, Figure 13).
17. Current high water levels in the aquifer limit the City’s ability to conduct physical recharge

because the aquifer is now so full (Vol. I, p. 151, line 19 through p. 152, line 8; Vol. 1, p. 242, lines 15-23).

18. Following the 2011-2012 drought, the Wichita City Council determined to conduct its drought planning for the occurrence of a 1% drought, and to repurpose ASR as a long term mechanism to accumulate recharge credits for drought mitigation. These decisions preceded submission of the Proposal (Proposal, City Exhibit 1, Proposal Cover Letter, first two pages).
19. By comparing ASR plant capacity with simulated transient water levels modeled by the USGS, the City determined that creating potential for efficient physical recharge at the ASR plant capacity rate of 30 MGD would require reduction of water levels in the aquifer to 1998 levels (Proposal, City Exhibit 1, p. 2-11, Section 2.4.2; Vol. I, p. 159, lines 14-20).
20. The maximum aggregate recharge capacity of the ASR Phase II wells would be around 34.5 MGD (Vol. III, p. 759, lines 2-8).
21. The existing ASR permits do not contain any constraints on lowering groundwater levels to create physical recharge capacity (Vol. 1, p. 158, lines 11-17).
22. Using its native rights to lower groundwater levels in the aquifer to create physical recharge capacity and storage for the ASR system is consistent with the requirements of the existing permits and is the only way the City has identified to produce ASR credits today (Vol. 1, p. 158, line 23 through P. 159, line 7).
23. As of April 11, 2019, the City had only accrued 6,372.2 acre feet of credits (Vol. 1, p. 168, lines 10-17).
24. To accrue the credits the City projects it will need in a 1% drought, it would have to maintain the aquifer in a partially depleted state for a period of years or decades (Vol. 1, p. 159, line 18 through p. 160, line 3).

25. Under the City's existing ASR Phase II permits, there is no limit on the aggregate quantity of credits that can be accumulated (September 18, 2009 Initial Order, pp. 5-7).
26. Under the City's existing ASR Phase II permits, there are no restrictions that would prevent the City from maintaining aquifer levels at the 1998 levels indefinitely, or from accruing progressively more recharge credits until all the water in the basin storage area becomes City recharge credits (September 18, 2009 Initial Order, pp. 5-7).
27. The City's current strategy is that it is now reemphasizing and prioritizing taking water out of the aquifer to draw the aquifer level down to create the physical space to put physical recharge credits in. (Vol. I, p. 257, lines 4-9).
28. Mr. George Austin recognized in his testimony that if the chloride migration rate for 1998 was consistent with the annual average migration rate for the 1995-2005 time period in which 1998 was included, chloride migration resulting from drawing water levels down to 1998 levels for a period of twenty years would be about 264 feet per year, or a mile of chloride migration (Vol. XII, p. 3159, line 22 through p. 3160, line 6).
29. Intervenor Josh Carmichael was concerned about the threat of chloride migration because the colored lines in Figure 8 of the District's Exhibit 68 (the Klager graphic projecting chloride impacts from the 2014 USGS study) "are right on top of me" (Vol. XIII, p. 3336, lines 1-8).
30. Mr. Carmichael is concerned that chloride impacts to his domestic well could cause rusty valves and pipes, water spots on dishes and an adverse effect on his health (Vol. XIII, p. 3336, lines 13-17).
31. He indicated he is on the cusp of being affected by chloride movement although chlorides are not yet impacting him currently (Vol. XIII, p. 3364, lines 11-20).
32. The modeled scenarios that gave Mr. Carmichael concern were those shown by the black and

purple lines, which he referred to as “number 1 and number 3” (Vol. XIII, p. 3350, lines 19-21).

33. These scenarios are the “existing pumping (baseline)” and “double Wichita municipal pumping and existing irrigation pumping” scenarios (District Exhibit 68, Figure 8).
34. Later, Mr. Carmichael also testified he would be impacted by the line representing “double Wichita municipal pumping and no irrigation pumping” (Vol. XIII, p. 3365, lines 10-16).
35. Based on the 2014 USGS study, the chloride movements shown on the Klager graphic, and Mr. Carmichael’s description of his property’s location relative to the chloride movement lines depicted on the Klager graphic, Mr. Carmichael can expect to be impacted by chlorides under baseline pumping conditions (Findings 29 through 33).
36. Based on the 2014 USGS study, the chloride movements shown on the Klager graphic, Mr. Carmichael’s description of his property’s location relative to the chloride movement lines depicted in the Klager graphic, and George Austin’s testimony about chloride impacts, Mr. Carmichael can also expect to be impacted by chlorides if the City reduces the aquifer to 1998 levels for twenty years (Findings 28 through 33).
37. Mr. Richard Basore testified that the river influence of the salt front keeps moving toward the wellfield (Vol. XII, p. 3234, lines 5-13).
38. He described his various wells as located 2/3 of a mile, ¾ of a mile, and a mile and a half from the river (Vol. XII, p. 3235, lines 10-15).
39. He also indicated that in his experience, in areas next to the river, shallower wells tend to be higher in salt content than deeper ones, though he does not know whether this is due to clay layers or perched water tables (Vol. XII, p. 3236, lines 9-22).
40. Between 1980 and 1985, Mr. Basore’s irrigation well became too salty for irrigation of soybeans, and he had to put in a deeper well to reach higher quality water (Vol. XII, p. 3248,

line 17 through p. 3249, line 12).

41. His domestic well in the shop is probably 15 feet deep with a sand point and may have to be deepened or replaced (Vol. XII, p. 3249, line 22 through p. 3250, line 1).
42. Mr. Basore understands that any increase in City pumping will increase hydraulic gradient and speed up the movement of the salt front toward the wellfield, but will bring the salt under his property first, as he is on the front line of having to deal with it (Vol. XII, p. 3250, lines 1-14).
43. The Klager graphic shows that the area of Mr. Basore's wells is already impacted by every represented pumping scenario, including existing pumping (District's Exhibit 68, Figure 8).
44. Based on the 2014 USGS study, the chloride movements shown on the Klager graphic, Mr. Basore's description of his various wells' locations relative to the chloride movement lines depicted in the Klager graphic, and George Austin's and Mr. Basore's own testimony about chloride impacts of City pumping, Mr. Basore can expect to be impacted by chlorides if the City reduces the aquifer to 1998 levels for twenty years (Findings 28 and 37 through 43).
45. Mr. Basore also testified that if there were massive inflows from the river as a result of drawdown in the aquifer, other contaminants such as selenium and phosphorous were also of concern (Vol. XII, p. 3300, lines 6-19).
46. Mr. Carmichael testified that in parts of the aquifer impacted by salinity, irrigation systems would cost an additional $30,000 to $60,000 to guard against that (Vol. XIII, p. 3363, lines 2-7).
47. Mr. Carmichael also testified that if his domestic well becomes unusable, the resulting damage to the value of his property will be hundreds of thousands of dollars (Vol. XIII, p. 3366, line 24 through p. 3367, line 10).
48. Having the aquifer in a partially depleted state to accommodate physical recharge could put the City in a posture of going into a drought with lower starting levels in the aquifer, which will

disadvantage all water users in the area well field, and will also result in reaching the 1993 lower index levels quicker (Vol. I, p. 169, lines 16-25).

49. Like the modeling Burns & McDonnell performed for the City, the Balleau Groundwater modeling used 1998 water levels as the beginning levels for the modeled pumping scenarios (Vol. IX, p. 2497, line 22 through p. 2498, line 4).

50. Of the 35 wells Balleau Groundwater identified as potentially losing the capacity to produce water, 29 would be impacted by the City's use of its 40,000 acre feet of native rights, without any pumping of credits (District Exhibit 68, p. 12 of 16, lines 351-353).

51. Based on Balleau Groundwater's Figure 7, the 29 wells impacted by the use of the City's native rights include 27 domestic wells and 2 irrigation wells (District Exhibit 68, Figure 7).

52. The Balleau Groundwater modeling shows that if the aquifer went into the modeled 1% drought with 1998 water levels as the starting levels, 27 domestic wells and 2 irrigation wells would be impacted by the City's full use of its existing 40,000 acre feet native rights (Findings 46-48).

53. The remaining six wells identified by Balleau Groundwater as potentially impacted would only be impacted if the City pumped credits to reach the proposed new lower index levels (District Exhibit 68, p. 12 of 16, lines 353-354).

54. The six additional wells projected to be impacted if the City pumped to the proposed new lower index levels are all domestic wells (Exhibit 68, Figure 7).

55. The Balleau Groundwater analysis does not distinguish between physical credits and AMCs (District Exhibit 68).

56. The projected impact to the six additional wells is a modeled impact of the new lower index levels and not a modeled impact of AMCs (Findings 50 and 52).

57. The projected new streamflow depletion is also a modeled impact of pumping credits to the

proposed minimum index levels and is not tied to AMCs (Exhibit 68, p. 11 of 16, lines 334-336).

58. The projected potential to induce chloride migration is also a modeled impact of lowering water levels to the proposed minimum index levels and is not tied to AMCs (Exhibit 68, p. 12 of 16, lines 366-369).

59. With respect to the proposed procedure to recognize AMCs, the availability of water in the Little Arkansas River for diversion would remain identical to the base flow and seasonal limits developed as part of the ASR Phase I and Phase II permitting process (Proposal, City Exhibit 1, p. 3-5, Section 3.3, second paragraph).

60. The rate of accrual of all recharge credits could not exceed the constructed physical diversion capacity of the ASR system including direct surface water diversions and future bank storage wells, and will be limited to the rate and quantity authorized by Water Right No. 46627 (Proposal, City Exhibit 1, p. 3-6, Section 3.4, proposed condition 2).

61. Under the City's Proposal, credit withdrawal would remain subject to existing limits (Vol. VII, p. 1663, lines 3-6).

62. Prior to the recovery and use of recharge credits at any point of diversion, the City anticipates using the full native water rights available at such point of diversion (Proposal, City Exhibit 1, p. 4-8, first full sentence).

63. Under the City's Proposal, there would be a 120,000 acre foot cap on aggregate credit accumulation, representing an estimated 11.7% of the total available aquifer storage within the central wellfield storage area (Proposal, City Exhibit 1, p. 3-6, proposed condition 4).

64. Mr. Joe Pajor testified that in his estimation, AMCs would only be used and withdrawn about once every hundred years (Vol. II, p. 365, lines 10-19).

65. The AMC accounting procedure would simply allow the City to obtain the same credits it could obtain under its existing permits, but without pumping a hole in the aquifer to create capacity for physical recharge (Vol. V, p. 1288, line 12 through p. 1289, line 2).

66. An initial loss of 5% and a recurring gradational loss, which would average 3% and vary by index cell, would be imputed by a simplified accounting method (Proposal, City Exhibit 1, p. 4-3).

67. At 2006 water levels, the simplified accounting method would produce nearly the same results as the existing accounting method for physical recharge credits (Proposal, City Exhibit 1, p. 4-6, Figure 16).

68. For later years, when aquifer levels were higher than 2006, recharge accounting with the proposed method mirrors the current accounting system results, but with a variance that increases as water levels in the aquifer increase (Proposal, City Exhibit 1, p. 4-3, and p. 4-6, Figure 16; Vol. IV, p. 1095, lines 9-14, p. 1096, lines 22-25).

69. Most of the variance is due to the need, when water levels are high, to rely on Recharge Basin 36 which has a very substantial loss of physical recharge (Vol. IV, p. 1096, line 22, through p. 1097, line 4).

70. The other factor contributing to the variance is that the losses assumed in the simplified accounting model are conservative for periods with high water levels (Proposal, City Exhibit 1, p. 4-3, last paragraph).

71. The initial 5% loss in the simplified accounting model is based on the retention that would occur if the aquifer were pumped down to allow 30 MGD in physical recharge, and was an intentional feature of the simplified method to avoid a penalty in the form of the higher leakage that occurs when the aquifer is kept full (Vol. V, p. 1186, line 15, through p. 1187, line 11; p.

1205, line 19 through p. 1206, line 5).

72. An AMC cannot have any greater impact on safe yield than a physical recharge credit generated by withdrawing water and then replacing that water (Vol. VII, p. 1875, line 7 through p. 1876, line 1).

73. With respect to the issue of whether water that could be withdrawn with AMC credits is already spoken for under existing appropriations, the AMCs would be no different than existing physical credits, which are not tied out to the inventory of water in the aquifer (Vol. II, p. 333, line 2 through p. 334, line 19).

74. It is impossible for the AMCs to cause any potential detrimental impacts that do not already exist as a result of the provisions for physical recharge credits under the existing permits, because the limitations on use of source water, rate of accrual and credit withdrawal are the same for AMCs as for physical recharge credits, (Findings 59-61).

75. By way of specific example, the District's scenario of the City accumulating 120,000 acre feet of credits and withdrawing them at 19,000 acre feet per year (Vol. VII, p. 1690, lines 20-25) is not precluded using physical recharge credits under the existing permits (September 18, 2009 Initial Order, pp. 5-7).

76. In fact, the City would not even be limited to 120,000 acre feet of physical credits under the existing permits (September 18, 2009 Initial Order, pp. 5-7).

77. If the City accumulated 200,000 acre feet of physical recharge credits, it could draw them at 19,000 acre feet per year under the terms of the current permits (Vol. VII, p. 1896, line 16 through p. 1897, line 12).

78. AMCs provide a public benefit in the sense that water can settle out when left *in situ* as opposed to churning it by pumping a hole and recharging (Vol. VII, p. 1881, lines 2-10).

79. There are benefits of decreased risk of contamination when the aquifer is not disturbed by withdrawal and injection of water into it (Vol. IV, p. 1108, lines 9-20).
80. AMCs provide a public benefit because it is in the public interest to manage the aquifer full, and to have the aquifer full going into a 1% drought (Vol. V, p. 1403, lines 4-6 and 16-18).
81. AMCs keep the aquifer full because the City does not have to pump it down to obtain credits (Vol. IV, p. 1097, lines 9-16).
82. AMCs also provide a public benefit related to minimum desirable streamflow, in that, because of the fuller aquifer, there will also be more water flowing out of the aquifer into the adjacent stream (Vol. VII, p. 1986, lines 1-15).
83. DWR is of the view that AMCs are legal and that they are consistent with ASR regulations (Vol. VII, p. 1720, lines 1-16).
84. For purposes on K.A.R. 5-12-1, the storage referred to occurs in the basin storage area, by virtue of the accounting method (Vol. VII, p. 1726, lines 18-25).
85. DWR has also referred to the AMC water as "stored in the aquifer as the functional equivalent of a physical replacement of water" (Vol. VII, p. 1851, lines 12-20).
86. The recovery system is the same as for a physical recharge credit (Vol. VII, p. 1727, lines 6-8).
87. An AMC is a recharge credit as described within the definition of K.A.R. 5-5-1(mmm), referencing "the quantity of water that is stored in the basin storage area that is available for subsequent appropriation for beneficial use by the operator of the aquifer storage and recovery system" (Vol. VII, p. 1727, line 18 through p. 1728, line 4).
88. DWR had examined K.A.R. 5-5-1(mmm) and concluded that source water need not be "injected" to be stored in the aquifer for subsequent appropriation (Vol. VII, p. 1730, lines 3-9).
89. The phrase refers to where the water is and not how it got there (Vol. VII, p. 1855, lines 6-16).

90. The words, “subsequent appropriation” signified that the water stored in the aquifer via the accounting method would be appropriated by a different permit (Vol. VII, p. 1731, lines 2-4).
91. With respect to an AMC, it is not necessary to put water into an unsaturated portion of the aquifer *per se* (Vol. VII, p. 1733, lines 13-17).
92. With respect to the definition of aquifer storage and recovery system, all aspects of the definition were met (Vol. VII, p. 1734, lines 3-7).
93. Storage and recovery occurs by the accounting for a recharge credit (Vol. VII, p. 1734, line 13).
94. The City’s Proposal would allow the City to avoid a step just to pump a gallon to replace it with a gallon (Vol. VII, p. 1735, lines 14-17).

B. Conclusions

1. AMCs pose no risk of injury to anyone, because they cannot be created or withdrawn in quantities or at rates any different from the physical recharge credits accruable under the existing permits (Findings 12, 25, 26, 59, 60, 61, 65, 72, 73, 74, 75, 76 and 77).
2. AMCs can have no greater or different impact on safe yield or existing appropriations than physical recharge credits approved under the existing permits (Findings 72 and 73).
3. The modeled impacts that the District attempts to impute to AMCs are all based on drawing undifferentiated “credits” (which could all be physical recharge credits) below the existing lower index levels, and so, are modeled impacts of the proposed new lower index levels and not impacts of AMCs (Findings 55, 56, 57 and 58).
4. The AMC accounting procedure would simply allow the City to obtain the same credits it could obtain under its existing permits, but without pumping a hole in the aquifer to create capacity for physical recharge (Findings 8, 65 and 94).
5. In addition to the statutory qualifications conferring standing, a party seeking to maintain a

controversy must demonstrate he or she also meet the traditional requirements for standing. *Cochran v. Department of Agriculture, Division of Water Resources*, 291 Kan. 898, 908 (2011).

6. To demonstrate standing in Kansas, the traditional test is twofold: "a person must demonstrate that he or she suffered a cognizable injury and that there is a causal connection between the injury and the challenged conduct." *Cochran v. Department of Agriculture, Division of Water Resources*, 291 Kan. 898, at 908.
7. As in *Cochran*, at a stage in proceedings where there has been no discovery and averments are taken as true for purposes of standing analysis, the cognizable injury requirement can be met by alleging a potential injury that could be caused by the challenged conduct. *Cochran v. Department of Agriculture, Division of Water Resources*, 291 Kan. 898, at 909.
8. In the present case, however, the discovery and hearing stages have been completed, and the facts of record, as shown by the evidence referenced in Findings 8,12, 25, 26, 55, 56, 57, 58, 59, 60, 61, 65, 72, 73, 74, 75, 76, 77 and 94, supporting Conclusions 1-4, above, establish that the District and Interveners have not suffered and will not suffer any cognizable injury from approval of the City's proposal for AMCs.
9. Accordingly, it follows from Conclusions 5-8, above, that the District and the Interveners lack standing to maintain their challenges to the AMC portion of the City's Proposal.
10. Under the existing permits, the only way for the City to accumulate the credits it needs is to use its native rights to lower groundwater levels in the aquifer to create physical recharge capacity (Finding 22).
11. To accrue the credits the City projects it will need in a 1% drought through physical recharge, it would have to maintain the aquifer in a partially depleted state for a period of years or decades (Finding 24).

12. Creating potential for efficient physical recharge at the ASR plant capacity rate of 30 MGD would require reduction of water levels in the aquifer to 1998 levels (Finding 19).
13. Reducing water levels in the aquifer to 1998 levels for an extended period of years to allow physical recharge would create a risk that the aquifer would go into a prolonged drought with beginning water levels at the 1998 levels, and in such an event, 29 wells in the aquifer, including 27 domestic wells and 2 irrigation wells would be impacted by use of native rights alone, without drawing any credits, and without any adjustment to the lower index levels (Findings 48-52).
14. Mr. George Austin recognized in his testimony that if the chloride migration rate for 1998 was consistent with the annual average migration rate for the 1995-2005 time period in which 1998 was included, chloride migration resulting from drawing water levels down to 1998 levels for a period of twenty years would be about 264 feet per year, or a mile of chloride migration (Finding 28).
15. Based on the 2014 USGS study, the chloride movements shown on the Klager graphic, Mr. Carmichael's description of his property's location relative to the chloride movement lines depicted in the Klager graphic, and George Austin's testimony about chloride impacts, Mr. Carmichael can expect to be impacted by chlorides by existing pumping and also if the City reduces the aquifer to 1998 levels for twenty years (Findings 28 through 33).
16. Based on the 2014 USGS study, the chloride movements shown on the Klager graphic, Mr. Basore's description of his various wells' locations relative to the chloride movement lines depicted in the Klager graphic, and George Austin's and Mr. Basore's own testimony about chloride impacts of City pumping, Mr. Basore can expect to be impacted by chlorides if the City reduces the aquifer to 1998 levels for twenty years (Findings 28 and 37 through 43).

17. Chloride impacts to Mr. Carmichael's domestic well could cause rusty valves and pipes, water spots on dishes and an adverse effect on his health, and if his domestic well becomes unusable, the resulting damage to the value of his property could be hundreds of thousands of dollars (Findings 30 and 47).
18. In parts of the aquifer impacted by salinity, irrigation systems would cost an additional $30,000 to $60,000 to guard against that (Finding 46).
19. As a consequence of continuing chloride migration, Mr. Basore's domestic well may have to be deepened or replaced, and if there are massive inflows from the river as a result of drawdown in the aquifer, other contaminants such as selenium and phosphorous are also of concern (Findings 41 and 45).
20. The point of AMCs is to allow the City to accumulate the credits it needs without drawing down the aquifer to create capacity for recharge, and hence, without giving rise to the negative water supply and chloride impacts that would follow from reducing the aquifer to 1998 water levels for a prolonged period of years, and this is a substantial public benefit (Conclusions 4, 13, 14, and 15-19, and supporting Findings referenced therein).
21. AMCs serve the public benefit of maintaining a full aquifer, with attendant beneficial impacts on desirable streamflow and the water quality benefits of leaving water in situ and avoiding prolonged periods of chloride migration (Findings 78-82, Conclusion 20 above, and additional supporting Conclusions and Findings reference therein).
22. DWR's interpretation of applicable regulations (Findings 84-93) and DWR's conclusion that AMCs are allowed by and consistent with the applicable regulations (Finding 83) are reasonable and persuasive.
23. Because AMCs have no potential detrimental impacts, provide significant public benefits, and

are consistent with applicable regulations, and because the District and Interveners have failed to establish requisites for traditional standing to challenge the AMC component of the City's Proposal, the AMC component of the City's Proposal should be approved (Conclusions 1-4, 9, 20-22, and supporting Conclusions and Findings cited therein).

III. Proposed Adjustments to Lower Index Levels

A. Proposed Findings

1. The two components of the City's Proposal, the AMCs and the revised lower index levels, are conceptually separate, and either could be approved without the other (Vol. III, p. 540, lines 18-23).
2. The City has the right under five of its existing groundwater permits, which DWR has termed its "native water rights," to withdraw 40,000 acre feet of water from its wellfield in the aquifer each year (Vol. I, p. 205, line 25 through p. 206, line 20).
3. Under the City's existing ASR Phase II permits, there are existing lower index levels, below which the City is not allowed to withdraw credits, and these lower index levels are based on 1993 water levels in the aquifer, which were drawn from the lowest measurements of record. (Vol. II, p. 295, lines 17-21, p. 296, lines 13-16).
4. The limitations imposed by the lower index levels only apply to credit recovery and do not prevent the City from pumping its base rights (which the parties have also termed "native rights") below the 1993 index levels (Vol. III, p. 539, lines 13-15).
5. Because of the imprecision associated with interpolation, the calculated 1993 lower index levels are imperfect and could be off plus or minus two feet (Vol. IV, p. 1060, line 23, through p. 1061, line 6).
6. Even when water levels are above the existing lower index limits, under the City's existing

approved applications, the City currently has an aggregate 19,000 acre foot annual limit on recovery of available recharge credits (Vol. VII, p. 1667, lines 19-24).

7. During the two-year drought of 2011-2012, the City's use of the aquifer was not significantly different, but other water rights holders were increasing their usage because of the climate conditions (Vol. I, p. 173, lines 3-7).
8. Following the 2011-2012 drought, the Wichita City Council determined to conduct its drought planning for the occurrence of a 1% drought, and to repurpose ASR as a long term mechanism to accumulate recharge credits for drought mitigation. These decisions preceded submission of the Proposal (Proposal, City Exhibit 1, Proposal Cover Letter, first two pages).
9. The City now sees the purpose for which it will need to be able to recover credits to be meeting the demand of its customers in prolonged extreme drought events, to avoid needing to go in to stage 3 and stage 4 restrictions within the City's drought response (Vol. I, p. 166, lines 1-4).
10. Mr. Joe Pajor testified that in his estimation, credits would only be used and withdrawn about once every hundred years (Vol. II, p. 365, lines 10-19).
11. Beginning in 2014, City staff initiated a series of studies, professional engineering evaluations, and permit reviews, to ensure that existing and planned water resources are adequate to meet the demands of a 1% drought (Proposal, City Exhibit 1, p. 1.1, end of first paragraph).
12. The table of modeled inputs and variables for the Burns & McDonnell modeling projected the City would need to draw an aggregate total of 50,849 acre feet of credits during the second through sixth years of the modeled 1% drought (Proposal, City Exhibit 1, p. 2-10, Table 2-5, with correction to 5th year credits noted in testimony at Vol. III, p. 715, lines 1-18).
13. The Burns & McDonnell modeling of impacts on water levels was based on the projected needs of the City during a 1% drought, and the point was to determine what changes in water levels

would result and whether there was a need to change the lower index levels (Vol. III, p. 718, lines 16-23).

14. The Burns & McDonnell modeling was based on 1998 aquifer levels as starting water levels, consistent with the aquifer management strategies available to the City under the existing permits. That is, it assumes water levels reduced to 1998 levels to allow accumulation of credits by physical recharge (Proposal, p. 2-11, Section 2.4.2).
15. By comparing ASR plant capacity with simulated transient water levels modeled by the USGS, the City determined that creating potential for efficient physical recharge at the ASR plant capacity rate of 30 MGD would require reduction of water levels in the aquifer to 1998 levels (Proposal, City Exhibit 1, p. 2-11, Section 2.4.2; Vol. I, p. 159, lines 14-20).
16. The modeling performed by Burns & McDonnell showed that in a simulated 1% drought, water levels would drop below the 1993 levels in 17 of the 38 index cells in the City's wellfield (Proposal, City Exhibit 1, hydrographs in Attachment I).
17. Table 2-10 of the Proposal shows, in its sixth column from the left, the proposed adjusted lower index levels developed with the use of the Burns & McDonnell modeling (Proposal, City Exhibit 1, p. 2-24, Table 2-10).
18. All of the proposed new levels include an adjustment for contingency, which was subtracted from either the existing index level or the modeled index level, and the fourth column from the left in Table 2-10 shows, for each index cell, whether the existing or modeled level was used (Proposal, City Exhibit 1, p. 2-24, Table 2-10; Vol. III, p. 739, line 6 through p. 740, line 4).
19. The contingency is ten feet for most of the index cells, and is at least ten feet for all of them (Proposal, City Exhibit 1, p. 2-24, Table 2-10).
20. The first two rows, for index wells 1 and 2, have typographical errors in the fifth (contingency)

column, but the proposed new level stated in the sixth column for each of the two wells is correctly stated (Vol. III, p. 740, lines 5-24).

21. Adjusted levels were proposed only for ASR Phase II wells and not for ASR Phase I, so the existing lower index levels for the Phase I wells would be left intact (Vol. III, p. 743, line 12 through p. 744, line 1).
22. The intent of the Proposal is that the adjusted lower index levels for Phase II would also apply to any additional Phase II infrastructure and to any infrastructure added to the index cells with Phase II infrastructure in later phases (Vol. III, p. 744, lines 7-25).
23. Table 2-11 in the Proposal shows, for each index cell, the existing lower index level, the proposed adjusted level, the difference in feet, the remaining saturated thickness in feet at the proposed adjusted level, and the percentage of predevelopment saturated thickness remaining at the proposed adjusted level (Proposal, City Exhibit 1, p. 2-25, Table 2-11; Vol. III, p. 745, line 3 through p. 746, line 6).
24. Comparing the difference between the existing and proposed elevations with the feet of remaining saturated thickness gives an indication how much additional room there would be to extend a well (Vol. III, p. 747, lines 9-12).
25. The water levels shown in the first two columns of Table 2-11 are elevations above sea level (Vol. p. 750, lines 2-4).
26. The Balleau Groundwater modeling confirms that with the existing 1993-based lower index levels, the City would only be able to access 14,900 acre feet of credits during the modeled 8-year drought (Vol. IX, p. 2504, lines 6-14).
27. Like the modeling Burns & McDonnell performed for the City, the Balleau Groundwater modeling used 1998 water levels as the beginning levels for the modeled pumping scenarios

(Vol. IX, p. 2497, line 22 through p. 2498, line 4).

28. If the Burns & McDonnell modeling had been done with starting levels representing the aquifer as 100% full, versus the 1998 levels, that would impact or change the outcome of the modeling; if you start with water levels higher, it is logical to assume you will end with water levels higher as well (Vol. IV. p. 938, lines 6-14).
29. If the Burns & McDonnell modeling were redone starting with the aquifer 100% full, the existing minimum index levels would not be affected as soon (Vol. IV, p. 944, lines 2-16).
30. In the drought of 2011 to 2012, the City did not draw any credits, and did not use its full 40,000 acre feet of native rights in the aquifer, and water levels did not drop below the 1993 levels (Vol. I, p. 226, lines 4-21).
31. If the City goes into a drought with the aquifer in a partially depleted state, under the current permit conditions the difficulty would be that because the City risks in later years of a protracted drought not being able to recover its credits when needed to meet customer demand, it would have to take the credits out earlier in a drought event (Vol. I, p. 169, lines 4-13).
32. To avoid losing the ability to recover the credits, the city may have to take them before it really knows if they will be needed for supply purposes during the drought (Vol. I, p. 174, lines 1-19).
33. The City has no way of knowing in the first or second year of a drought whether that drought is ultimately going to be a three-year drought, a four-year drought, a six-year 1950s drought or an eight-year 1930s dustbowl drought or a drought exceeding a megadrought of the 20th Century (Vol. I, p. 176, lines 14-21).
34. No one will be benefited by the City taking credits early in a drought when it does not need them (Vol. I, p. 177, lines 10-18).
35. Both physical recharge credits and AMCs are expensive and will have the same cost for the City

(Vol. I, p. 269, line 17 through p. 270, line 5).

36. Water that the City withdraws when it takes the credits at levels above the 1993 lower index levels is gone from the aquifer and does not magically come back when water levels decline below the 1993 levels (Vol. I, p. 177, line 19 through p. 178, line 4).
37. If the City had 38,000 acre feet of credits, and could wait and pump them during the third and fourth years of a drought instead of the first two years of the drought, the cumulative impact of drawing the 38,000 acre feet would not be different because it happened in years three and four; when the water is gone, it is gone (Vol. I, p. 178, line 15 through p. 179, line 6).
38. Adjusting the lower index levels would help to keep the aquifer fuller by allowing the city to wait longer before it has to decide whether to draw credits in a drought, because the longer droughts occur less frequently (Vol. I, p. 181, lines 5-10).
39. The 1% and 2% droughts modeled by John Winchester are similar to, but not exactly the same as, the historical droughts of the 1930s and 1950s, respectively (Vol. I, p. 55, lines 9-14).
40. The observation in the Anthony Layzell report (City Exhibit 5) that in eastern Kansas, droughts as severe as the dustbowl have only occurred about once every century is consistent with John Winchester's conclusion that the 1930s dustbowl drought approximates the 1% exceedence drought (Vol. I, p. 64, lines 15-25).
41. The proposed lower index levels will involve potential detrimental impacts, in that lower aquifer levels will adversely impact chloride contamination because if water levels are lower, the tendency of the plumes, both natural and manmade will be to move more, with some exceptions (Vol. I, p. 263, line 22 through p. 264, line 2).
42. Balleau Groundwater ran the model used by Burns & McDonnell and also the USGS model, and found a difference in the ratio of horizontal to vertical hydraulic conductivity, which did not

result in a significant change to technical aspects they evaluated in the Proposal (District Exhibit 68, p. 2 of 16, lines 36-43).

43. Balleau Groundwater found that the results in both sets of model simulations was not different enough to affect their overall conclusions, however, their results were presented based on their assessment with the model in its original USGS form (District Exhibit 68, p. 2 of 16, lines 54-58).

44. Rather than running the USGS model to assess impacts based on the projected City pumping in Table 2-5 of the Proposal, Balleau Groundwater extended their simulation to evaluate the impacts of pumping to the proposed new lower index levels (District Exhibit 68, p. 4 of 16, lines 98-100 and 106-107).

45. Like Burns & McDonnell, Balleau Groundwater assumed the City would use its 40,000 acre feet of native rights before withdrawing credits, and did not attempt to examine the aggregate quantity of credits the City could have drawn above the 1993 levels if it reordered its use of water sources to draw credits first (District Exhibit 68, p. 5 of 16, lines 128-130).

46. As a feature of the Proposal, prior to the recovery and use of recharge credits at any point of diversion, the City anticipates using the full native water rights available at such point of diversion (Proposal, City Exhibit 1, p. 4-8, first full sentence).

47. However, exhausting native rights prior to use of credits is not a requirement or condition of the City's existing permits (September 18, 2009 Initial Order, pp. 5-7).

48. Balleau Groundwater projected that if credits were available and the City pumped to the proposed lower index limits, the City could produce an additional 79,500 acre feet of water during the modeled drought (District Exhibit 68, p. 6 of 16, lines 155-158).

49. The City is not precluded from using its native rights to pump below the 1993 index levels under

the existing permits (Vol. III, p. 539, lines 13-15).

50. Lowering the existing lower index limits would only have the effect of facilitating recovery of credits because the lower index limits only restrict recovery of credits (Vol. II, p. 295, lines 17-21).

51. The modeled drought scenarios assume existing permit conditions except for the adjusted lower index levels (i.e., only physical recharge credits are available), which is why the scenarios begin with 1998 water levels (Finding 14 above, supported by Proposal, City Exhibit 1, p. 2-11, Section 2.4.2).

52. Accordingly, in the modeled scenario, water diverted by withdrawing credits is only present to begin with because the City injected it (Finding 51, above, and September 18, 2009 Initial Order, pp. 5-6, and original accounting method referenced therein).

53. Balleau Groundwater estimated that the additional pumping would result in "up to 10 cfs depletion of the Little Arkansas and Arkansas rivers" (District Exhibit 68, p. 6 of 16, lines 172-174).

54. What Balleau Groundwater's Figure 4 actually shows is 43,800 acre feet of river depletion from the Little Arkansas and Arkansas Rivers, without differentiation as to what inflows are coming to the aquifer from which river (Vol. IX, p. 2499, lines 21-23; District Exhibit 68, Figure 4).

55. Balleau Groundwater's report does not explain how it equates this 43,800 acre feet of inflow to "depletion" expressed as a 10 cfs decrease in flow (District Exhibit 68, p. 6 of 16).

56. Balleau Groundwater's Figure 4 depicts the river depletion as having such an impact in parts of years 5 through 8, but without explanation as to how it is derived (District Exhibit 68, Figure 4, cfs flow rates represented on the left vertical axis).

57. Balleau Groundwater acknowledged that during the years that characterize the 1% drought

scenario the gage at Valley Center was below minimum desirable streamflow 49% of the time (District Exhibit 68, p. 6 of 16, lines 176 to 179).

58. Balleau Groundwater further assumes, without supporting analysis or explanation, that half of its imputed 10 cfs impact would be assigned to each of the Arkansas and Little Arkansas rivers (District Exhibit 68, p. 6 of 16, lines 179-180).

59. Then, even though Balleau Groundwater's own Figure 4 shows its estimated, aggregate 10 cfs impact occurs in only parts of three years (District Exhibit 68, Figure 4), Balleau Groundwater treats the 5 cfs assumed allocation to the Litte Arkansas river as "a change in flow of 5 cfs at that gage," meaning the Valley Center gage on the Little Arkansas, and opines that this would increase the occurrence of flows below Minimum Desirable Streamflow to 53% of the time, translating to one month of Minimum Desirable Streamflow not met (District Exhibit 68, p. 6 of 16, lines 176-183).

60. The conclusion of an aggregate, undifferentiated 10 cfs impact on the flow of two rivers based on an aggregate depletion of 43,800 acre feet from those two rivers is unexplained, the assignment of half of it to the Little Arkansas is an unsupported assumption, and treatment of that 5 cfs as a constant change at the Valley Center gage is contrary to the facts shown in Balleau Groundwater's own Figure 4 (Findings 54-56, 58 and 59, and supporting evidence referred to therein).

61. Balleau Groundwater also acknowledged that if segments of the river near the City dry out or have low flow during a drought, the model does not account for it and may overestimate river depletion from pumping (District Exhibit 68, lines 195-198).

62. Balleau Groundwater noted that during the drought of 2011 and 2012, flow on the Little Arkansas was less than 1 cfs about 30% of the time and on the Arkansas River, flow was less

than 10 cfs 20% of the time, and these quantities of flow could be depleted by the City pumping 40,000 acre feet (District Exhibit 68, p. 7 of 16, lines 200-203).

63. Mr. George Austin testified that during his years at DWR, he did not analyze permit applications for minimum desirable streamflow compliance (Vol. XII, p. 3163, lines 1-7).

64. Mr. Austin also testified that Minimum Desirable Streamflow administration is done by DWR in connection with long term declines in Minimum Desirable Streamflow achievement, and that he would not expect DWR to do that type of administration for pumping in reaction to a drought, but only for systemic problems they might be addressing and not for transient problems that may be related to the drought (Vol. XII, p. 3170, lines 8-18).

65. DWR considered that the impact of the City's proposal was favorable for Minimum Desirable Streamflow, because it would result in the aquifer being managed at higher levels (Vol. VII, p. 1675, line 20 through p. 1676, line 2).

66. DWR does not protect Minimum Desirable Streamflow by denying applications, but approves applications with conditions relating to Minimum Desirable Streamflow, and administers as necessary to protect Minimum Desirable Streamflow as though it were an appropriation right if flows at the gage go below for a given number of days (Vol. VII, p. 1681, line 22 through p. 1682, line 8).

67. In the evaluation of new applications, it is not typical for either the DWR or groundwater management districts to analyze Minimum Desirable Streamflow (Vol. VI, p. 1876, lines 10-15).

68. Any water right could affect Minimum Desirable Streamflow in a prolonged dry period (Vol. VII, p. 1879, lines 11-14).

69. It would be foolish for an efficient water agency to deny every permit that might conceivably have an impact on Minimum Desirable Streamflow (Vol. VII, p. 1879, lines 15-20).

70. That is why DWR approaches the issue via real time administration (Vol. VII, p. 1879, lines 21-25).
71. Balleau Groundwater's modeling showed that the additional drawdown in the aquifer from pumping down to the proposed lower index levels is 1 or 2 feet in the shallow zones of the aquifer and 5 feet in the center (District's Exhibit 68, Figure 6, Scenario C; Vol. IX, p. 2531, lines 1-9).
72. Balleau Groundwater identified up to 35 wells with potential to lose capacity to produce water from the total drawdown (District Exhibit 68, p. 12 of 16, lines 350-352).
73. Of the 35 wells Balleau Groundwater identified as potentially losing the capacity to produce water, 29 would be impacted by the City's use of its 40,000 acre feet of native rights, without any pumping of credits (District Exhibit 68, p. 12 of 16, lines 351-353).
74. The remaining six wells identified by Balleau Groundwater as potentially impacted would only be impacted if the City pumped credits to reach the proposed new lower index levels (District Exhibit 68, p. 12 of 16, lines 353-354).
75. The six additional wells projected to be impacted if the City pumped to the proposed new lower index levels are all domestic wells (Exhibit 68, Figure 7).
76. Mr. Clement was of the view that the data developed on remaining saturated thickness would enable the lowering of wells that may be impacted (Vol. IV, pp. 1000-1002).
77. Even for a domestic well in a situation with low practical saturated thickness, if we're talking about a yield even for stock watering or whatever the case may be, to get on the order of thirty gallons per minute, you can do that in lower yield environments with much more screen interval, you can get it in sands that are a little bit tighter, things of that nature (Vol. IV, p. 1000, line 18 through p. 1001, line 1).

78. Balleau Groundwater also concluded that if the City diverts groundwater resulting in lowering water levels to the proposed minimum index level, there is increased potential to induce migration of chloride from the areas of Burrton and the Arkansas River toward other wells in the area (District Exhibit 8, p. 12 of 16, lines 366-369).

79. Mr. George Austin recognized in his testimony that if the aquifer were pumped back down to pre-1992 water levels, and hence, to higher rates of chloride migration, but remained there for a period of only a year or two, one could expect perhaps a few hundred feet of chloride migration as a result (Vol. XII, p. 3158, lines 1-14).

B. Proposed Conclusions

1. The point of the proposed adjustment in the lower index levels is to allow the City to wait until later years of a drought to withdraw credits, rather than having to make that call to avoid losing the credits, at a time when it does not know if they are actually needed for the drought response (Findings 16, 31, 32 and 33).
2. By avoiding the need to draw credits early, the aquifer will be kept fuller, as longer durational droughts occur less frequently (Finding 38).
3. Unlike the AMCs component of the City's proposal, the proposed adjustment to the lower index levels does have some potential detrimental impacts in the nature of potentially increased chloride migration, stream depletion, drawdown of the aquifer and impact on existing domestic wells (Findings 41, 53, 71 and 74).
4. The Balleau Groundwater modeling is a worst-case scenario in the sense that it models the consequences of pumping down to the revised lower index levels rather than pumping the Table 2-5 quantities the City projects it will need to pump during the 1% drought (Finding 44).
5. The worst-case scenario is unlikely to occur, because all of the proposed lower index levels

include a contingency of at least ten feet below the elevation the City believes it would need to access credits in a 1% drought (Findings 13, 17, 18 and 19).

6. This ten-foot contingency beyond projected needs is particularly significant given that the Balleau Groundwater modeling results for its Scenario C (i.e., pumping all the way to the proposed new lower limits) results in only five feet of additional drawdown in the central area of the aquifer and 1 and 2 feet of drawdown in the shallower zones (Finding 71).
7. The six existing wells Balleau Groundwater identified as wells that might lose water supply due to the modeled drawdown are all domestic wells (Findings 74 and 75).
8. Given the remaining saturated thickness of the aquifer at the revised lower index levels, it should be possible to extend any domestic wells that are impacted by taking credits below the 1993 index levels (Findings 76 and 77).
9. The potential chloride impacts that might occur have not been specifically modeled, but reference to existing studies on chloride migration suggests it might be a few hundred feet over a period of a year or two (Finding 79).
10. Assuming for purposes of comparison that the City would exhaust native rights first in both scenarios, the City could recover an additional 79,500 acre feet in credits during the 1% drought by pumping credits all the way to the adjusted lower levels (Findings 45 and 48) but only if those credits were available due to water left in storage due to ASR operations (Findings 50-52).
11. The Balleau Groundwater modeling and report supports a conclusion that there will be combined inflows approximating 43,800 acre feet to the aquifer from the Arkansas and Little Arkansas rivers over the modeled period of the 1% drought (Finding 54), but does not rationally support any conclusion as to the impact on Minimum Desirable Streamflow or the flow of either river in cubic feet per second, or the effect on elevation at the Valley Center gage (Findings 55-

60).

12. In its ordinary practice, DWR does not deny applications based on potential impacts on Minimum Desirable Streamflow, but deals with such issues when they actually occur, via real time administration (Findings 63, 64 and 66-70).
13. The impacts modeled by Balleau Groundwater, if they ever occur at all, would not be expected to occur frequently, because the need for the City to respond to a 1% drought would not be expected to occur frequently (Findings 10, 39 and 40).
14. Based on the foregoing Conclusions and the Findings cited in support of them, the proposed adjustment to the lower index levels will be beneficial in that it will allow the City to avoid the need to withdraw credits at the early stages of a drought when they may not be needed, and this will result in the aquifer being managed fuller because droughts of long duration tend to be less frequent, and will consequently also favorably impact Minimum Desirable Streamflow (Conclusions 1 and 2).
15. The proposed adjustment will also be beneficial in that it will allow the City to access more of the credits created by ASR operations when those credits are needed for drought response (Conclusion 10).
16. The proposed adjustment to lower index levels will not prejudicially affect the public interest, and should be approved, because 1% droughts are unlikely to occur with frequency, and even in the event of such an occurrence, the worst-case scenario modeled by Balleau Groundwater is unlikely to materialize. Further, even if the modeled scenario occurs: a) the 1-foot, 2-foot and 5-foot modeled declines in water levels in the aquifer are not an "unreasonable lowering;" b) other rights are unlikely to be impaired within the meaning of K.S.A. 82a-711(c) as to either quality or quantity; and c) speculative, transitory impacts on Minimum Desirable Streamflow are best

handled by DWR thorugh real time administration, according to the agency's regular practices (Conclusions 4-9 and 11-13).

Respectfully submitted,

Office of the City Attorney
of the City of Wichita, Kansas

By /s/ Brian K. McLeod
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CERTIFICATE OF FILING AND SERVICE

The undersigned hereby certifies that he transmitted the above and foregoing Proposed Findings and Conclusions by electronic mail on this 30th day of July, 2021, for filing, to ConnieOwen@everestkc.net and served the same upon counsel for the other parties herein by electronic mail addressed to:

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