

**In The Matter Of:**  
*Hays, Kansas & Russell, KS v*  
*Edwards County, Kansas & Kansas Water Transfer Act*

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*Formal Hearing*  
*Vol. 7*  
*July 27, 2023*

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1 BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS  
2 STATE OF KANSAS  
3  
4 IN THE MATTER OF: )  
5 THE APPLICATION OF THE )  
6 CITIES OF HAYS, KANSAS ) OAH No. 23AG0003 AG  
7 AND RUSSELL, KANSAS )  
8 FOR APPROVAL TO )  
9 TRANSFER WATER FROM )  
EDWARDS COUNTY, KANSAS )  
PURSUANT TO THE KANSAS )  
WATER TRANSFER ACT )

10  
11  
12 FORMAL HEARING  
13 VOLUME VII  
14  
15 This matter came on for Formal Hearing  
16 before Matthew A. Spurgin, Presiding Officer, at  
17 Hyatt Regency Wichita, Riverview Ballroom, 400  
18 West Waterman, Wichita, Sedgwick County, Kansas,  
19 commencing at 9:04 a.m. on the 27th day of  
20 July, 2023.  
21  
22  
23  
24  
25

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1 A P P E A R A N C E S  
2 City of Hays, Kansas appears by its  
3 attorneys, David M. Traster, Foulston Siefkin LLP,  
4 1551 North Waterfront Parkway, Suite 100, Wichita,  
5 Kansas 67206; Daniel J. Buller, Foulston Siefkin  
6 LLP, 7500 College Boulevard, Suite 1400, Overland  
7 Park, Kansas 66210; and Donald F. Hoffman and  
8 Melvin J. Sauer, Jr., Dreiling, Bieker & Hoffman  
9 LLP, 111 West 13th Street, Hays, Kansas 67601.  
10 Also present were Toby Dougherty and Jami Buck.  
11 City of Russell, Kansas appears by its  
12 attorney, Kenneth L. Cole, P.O. Box 431, Russell,  
13 Kansas 67665. Also present was Jon Quinday.  
14 Water PACK and Edwards County appear by  
15 their attorneys, Charles D. Lee and Myndee M. Lee,  
16 Lee Schwalb LLC, 7381 West 133rd Street - Second  
17 Floor, Overland Park, Kansas 66213.  
18 Division of Water Resources appears by  
19 their attorney, Kate Langworthy, Kansas Department  
20 of Agriculture, 1320 Research Park Drive,  
21 Manhattan, Kansas 66502. Also present was Lane  
22 Letourneau.  
23  
24  
25

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1 **PRESIDING OFFICER:** Any preliminary  
2 issues before we open the record? All  
3 right. And who will be the first witness  
4 available to testify today, then?

5 **MR. BULLER:** Thank you, Your Honor,  
6 good morning. The City of Hays calls  
7 Dr. Stephen Hamilton.

8 **PRESIDING OFFICER:** All right.  
9 Dr. Hamilton, we'll have you step up here  
10 and I'll get you sworn in.

11  
12 STEPHEN F. HAMILTON, Ph.D.,  
13 having first duly sworn or affirmed, was  
14 examined and testified as follows:

15  
16 **PRESIDING OFFICER:** All right.  
17 Mr. Buller, you may proceed to kick things  
18 off for us on -- I guess today is  
19 July 27th, 2023 for, what is this now, the  
20 seventh day of our hearing?

21 **MR. BULLER:** That's my count, Your  
22 Honor.

23 **PRESIDING OFFICER:** Go ahead and get  
24 things rolling for us.

25 **MR. BULLER:** Thank you, Your Honor.

1 Hamilton, Ph.D. on Behalf of the Cities of Hays  
2 and Russell, Kansas?

3 **A Yes.**

4 **Q** Thank you.

5 **MR. BULLER:** And for the record that  
6 document is being marked as Exhibit 2869  
7 and has already been filed of record in the  
8 OAH ECF system.

9 **BY MR. BULLER:**

10 **Q** Dr. Hamilton, have you had a chance to review  
11 those documents prior to your appearance here  
12 today?

13 **A Yes, I have.**

14 **Q** As you sit here, do you have any changes or  
15 corrections to make to those documents?

16 **A No.**

17 **Q** If I ask you the same questions today as appear  
18 in your prefiled testimony, would your answers  
19 remain the same?

20 **A Yes, they would.**

21 **MR. BULLER:** Your Honor, at this  
22 time, the City of Hays and -- the City of  
23 Hays would move to submit direct testimony,  
24 rebuttal testimony, and all documents that  
25 were attached and incorporated into those

1 **DIRECT EXAMINATION**

2 **BY MR. BULLER:**

3 **Q** Good morning, Dr. Hamilton, thank you for  
4 joining us this morning.

5 **A Good morning.**

6 **Q** Dr. Hamilton, please state your name and  
7 business address, spelling your last name for  
8 the court reporter.

9 **A Yes, Stephen F. Hamilton, H-A-M-I-L-T-O-N, and I  
10 am a professor of economics at Cal Poly  
11 University, 1 Grand Avenue, San Luis Obispo,  
12 California 93407.**

13 **Q** Dr. Hamilton, did you author direct testimony  
14 filed in this matter on May 30, 2023 titled  
15 Direct Testimony of Stephen F. Hamilton, Ph.D.  
16 on Behalf of the Cities of Hays and Russell,  
17 Kansas Relating to Economic Impact to the State  
18 of Kansas of Water Transfer?

19 **A Yes.**

20 **MR. BULLER:** And for the record that  
21 is Exhibit 2823.

22 **BY MR. BULLER:**

23 **Q** And, Dr. Hamilton, did you author additional  
24 testimony filed in this matter on June 28th,  
25 2023 titled Rebuttal Testimony of Stephen F.

1 documents of Dr. Hamilton into the record.

2 **PRESIDING OFFICER:** Is there any  
3 objection?

4 **MR. LEE:** None from Water PACK, Your  
5 Honor.

6 **PRESIDING OFFICER:** All right. The  
7 direct prefiled testimony and rebuttal  
8 prefiled testimony will both be admitted  
9 into the record as if they were given  
10 today.

11 **MR. BULLER:** Thank you, Your Honor,  
12 the witness is available for questions from  
13 the presiding officer and for  
14 cross-examination.

15 **PRESIDING OFFICER:** Mr. Cole?

16  
17 **CROSS-EXAMINATION**

18 **BY MR. COLE:**

19 **Q** Dr. Hamilton, my name is Ken Cole, and I  
20 represent the City of Russell.

21 **A Hello.**

22 **Q** And -- thank you. And I had an opportunity to  
23 review your report and review your analysis  
24 regarding the economic benefits of the proposed  
25 transfer, can you just briefly tell me the --

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1 what you found as far as the benefits to the  
2 State from allowing this transfer?  
3 **A Yes, I can. I conducted my analysis in two**  
4 **parts, one would be the construction phase of**  
5 **the project before it actually operates and is**  
6 **able to deliver water, and then the second**  
7 **component of benefits is having the water, being**  
8 **able to avoid periodic droughts in the future**  
9 **and have that drought resistance in the**  
10 **community.**  
11 Q Part of the purpose for this request for the  
12 transfer is to secure a reliable source of water  
13 for the City of Hays and the City of Russell.  
14 Do you understand that?  
15 **A Yes, I do.**  
16 Q Okay. Earlier in testimony, there was testimony  
17 that there is the prospect of a fairly  
18 significant investment in the City of Russell to  
19 an industry if this transfer is allowed and a  
20 secure source of water is obtained. Are you  
21 familiar with that testimony?  
22 **A Yes.**  
23 Q Okay. That testimony indicated that there's  
24 potential for an immediate investment of  
25 \$300 million within the industry. Would that be

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1 an additional benefit that's not actually in  
2 your report and would be on top of that report?  
3 **A Yes, that's correct, the jobs and the supply**  
4 **chain development that would accommodate that**  
5 **investment would be outside the scope of my**  
6 **report.**  
7 Q Right, but it would be obviously a benefit to  
8 the State?  
9 **A That would be an additional benefit to the**  
10 **State, yes, that's correct.**  
11 Q Okay. Thank you.  
12 **PRESIDING OFFICER:** Mr. Lee?  
13 **MR. LEE:** Thank you, Your Honor.  
14  
15 **CROSS-EXAMINATION**  
16 **BY MR. LEE:**  
17 Q Dr. Hamilton, good morning.  
18 **A Good morning.**  
19 Q My name is Charles Lee, my law firm, Lee  
20 Schwalb, LLC is counsel to Water PACK and to  
21 Edwards County, Kansas, and we'll wait for  
22 technical setup here for a moment but I want  
23 to ...  
24 What I'd like to do for a bit this morning,  
25 Dr. Hamilton, is walk through parts of your

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1 report and your rebuttal report to be sure that  
2 we understand it and, to the extent that it  
3 requires any clarification, certainly that Judge  
4 Spurgin understands it.  
5 So the first -- the first screen that's up  
6 here is from your direct testimony, and you're  
7 simply asked, What is the purpose of your direct  
8 testimony? And your response is, My opinions  
9 are set forth in detail in my expert report, but  
10 in general, the purpose of my testimony is to  
11 evaluate and offer any -- offer my professional  
12 opinion about the economic impact to the State  
13 of Kansas of the proposed water transfer. And I  
14 think that is consistent with your intent today;  
15 is that right?  
16 **A That's correct.**  
17 Q Okay. So if we look at the -- look at the next  
18 slide, you -- you say at page 30 of your report  
19 the following, and I'm quoting from that, The  
20 magnitude of water shortage at any given point  
21 in time depends on water demand and firm water  
22 supply. And I want to stop there for a moment  
23 and simply be sure that we're all talking about  
24 the same things in terms of two phrases up  
25 there, water demand and firm water supply. So

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1 what is your interpretation of water demand?  
2 **A Water demand is a relationship between price and**  
3 **quantity of water in a given market.**  
4 Q Okay. And so in the practical sense, what does  
5 that mean in relation to the Cities?  
6 **A That means that if water prices go up,**  
7 **consumers, residents, households, businesses**  
8 **will consume less water.**  
9 Q And harking back to my economic classes days,  
10 the -- I'm assuming that the demand for water is  
11 relatively inelastic; is that correct?  
12 **A Yes, water demand typically is very inelastic.**  
13 Q Okay. So in looking at the concept of firm  
14 water supply, what does that mean to you?  
15 **A That means the supply that's available that a**  
16 **water agency can depend on.**  
17 Q Okay. So whatever the circumstances in -- that  
18 may occur, there is some what you refer to as  
19 firm water supply that will be there regardless.  
20 Is that fair?  
21 **A Yes, that's correct.**  
22 Q Okay. So you say in your report at -- at  
23 page 14, and specifically at footnote 58, and  
24 I'm quoting, Hays used 1,792 acre-feet of water  
25 in 2020 but has firm water yield of only 1,760

1 acre-feet during an exceptional drought. So  
2 what you're saying there as I interpret it, and  
3 correct me if I'm misinterpreting it, that if  
4 there's an exceptional drought, there is a  
5 modest shortfall between firm water yield and  
6 available water; is that right?  
7 **A Yes.**  
8 **Q** Okay. And so it goes on to say that Russell  
9 used 974 acre-feet of water in 2020 but has firm  
10 water yield of only 789 acre-feet during an  
11 exceptional drought. So that's a little larger  
12 shortfall but those numbers are accurate, to  
13 your knowledge?  
14 **A From the 2020 data, yes, that's correct.**  
15 **Q** Okay. So you go on further and you're talking  
16 about a decadal drought, which I think we can  
17 stipulate is a drought of ten years or longer;  
18 is that right?  
19 **A Yes.**  
20 **Q** Okay. So I'm quoting, During a decadal drought,  
21 for example, Hays' firm water yield will decline  
22 to 840 acre-feet per year, resulting in  
23 devastating losses to the Cities. So if we can  
24 then look at the next slide, I want to walk  
25 through what appear to be the projected

1 shortfalls for the Cities in different  
2 circumstances, different scenarios.  
3 Using your figures, in an exceptional  
4 drought, there's a 2020 usage that you identify  
5 of 1,792 acre-feet, there's a firm yield that  
6 you identify of 1,760 acre-feet, so that  
7 shortfall, I think you would agree with me in an  
8 exceptional drought is 32 acre-feet. Is that  
9 correct?  
10 **A Yes.**  
11 **Q** Okay. So looking at the same analysis in  
12 relation to Russell, the 2020 usage that you  
13 identify was 974 acre-feet, the firm yield shown  
14 in your report is 789 acre-feet, so that in an  
15 exceptional drought scenario based on 2020  
16 figures is a shortfall of 185 acre-feet,  
17 correct?  
18 **A Correct.**  
19 **Q** And so then if we move on to the decadal drought  
20 scenario for Hays, that shows the same 2020  
21 usage for -- for Hays, but the yield because, of  
22 course, because of the severity and length of  
23 the drought is reduced to 840 acre-feet,  
24 correct?  
25 **A Yes.**

1 **Q** So that shows in a decadal drought there is a  
2 shortfall of 952 acre-feet, correct?  
3 **A Yes.**  
4 **Q** And that's an annual shortfall?  
5 **A Yes. And proportionately larger for Russell as  
6 well.**  
7 **Q** Okay. So if we can move on to the next slide,  
8 the -- you may or may not have seen this,  
9 Dr. Hamilton, but the Cities in their water  
10 transfer application have recited the following:  
11 The Cities have requested a combined annual  
12 total of 7,625.5 acre-feet of water from the 30  
13 water rights on the ranch. Do you recall seeing  
14 that, or do you know that otherwise?  
15 **A Yes.**  
16 **Q** Okay. And so the Cities' request in the  
17 application is that figure of 7,625.5 acre-feet,  
18 the drought shortfall in a decadal scenario is  
19 952 acre-feet, so the difference between those  
20 figures is 6,673.5 acre-feet. Do you agree with  
21 that?  
22 **A That's not consistent with the opinions in my  
23 report.**  
24 **Q** That is consistent?  
25 **A That is not consistent with my opinion, no, it**

1 **is not.**  
2 **Q** So is the math wrong, or is the analysis  
3 otherwise wrong?  
4 **A The firm water supply in my report is taking as  
5 the ten-year average of 4800 acre-feet per year.**  
6 **Q** Okay. So the figures up here are correct, you  
7 simply have a different interpretation of them,  
8 I take it?  
9 **A Well, there's always a --**  
10 **MR. BULLER:** Excuse me,  
11 Dr. Hamilton, I didn't hear the question.  
12 **BY MR. LEE:**  
13 **Q** I said roughly the figures are correct, I think,  
14 he simply has a different interpretation?  
15 **MR. BULLER:** Objection, that  
16 misstates his testimony, it also misstates  
17 the application for 4800 acre-feet per year  
18 of water. I don't know what these numbers  
19 are from, and I don't know that these  
20 numbers are accurate, but in any event, I  
21 object to that characterization.  
22 **PRESIDING OFFICER:** Okay. Mr. Lee,  
23 I'm going to sustain the objection, I know  
24 I didn't give you a chance to respond, but  
25 I'm also confused by what you've thrown

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1 around right there, can you just go back  
2 and start over?  
3 **MR. LEE:** Yes, of course.  
4 **PRESIDING OFFICER:** See if that  
5 becomes a little more clear. If Mr. Buller  
6 has an objection, then I'll give you a  
7 chance to respond to it, but I want to make  
8 sure I'm clear on this as well.  
9 **MR. LEE:** Sure, of course. We need  
10 to go back two probably, Myndee. So I  
11 won't re-ask the questions, Your Honor,  
12 unless you want me to, but --  
13 **PRESIDING OFFICER:** Just with the  
14 number that you're throwing out there that  
15 you're asking Dr. Hamilton to testify  
16 about, I'm trying to look back at his  
17 testimony and match some of this up to try  
18 to make sure I've marked points so I can go  
19 back and review things --  
20 **MR. LEE:** Happy to do that.  
21 **PRESIDING OFFICER:** -- and  
22 understand things. I'm just a little  
23 confused here so ...  
24 **MR. LEE:** Okay.  
25 **PRESIDING OFFICER:** I'm not an

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1 economist so try to bear with me here.  
2 **MR. LEE:** Well, there's only one of  
3 us here, I think, that is.  
4 **BY MR. LEE:**  
5 Q So -- so, Dr. Hamilton, just to be sure that  
6 this is more clear than it obviously is, it is  
7 correct, is it not, that in your report you  
8 identify Hays as having used in 2020  
9 1,792 acre-feet?  
10 A Yes.  
11 Q Okay. And as to -- and as for that same year,  
12 you indicated that Hays would have a firm water  
13 yield of 1,760 acre-feet, correct?  
14 A Yes.  
15 Q Okay. And then as to Russell, in 2020 per your  
16 report, it used 974 acre-feet but had firm water  
17 yield of only 789 acre-feet; is that right?  
18 A Yes, that's correct.  
19 Q Okay. And that was -- 789 acre-feet referred to  
20 the firm -- firm yield in cases of an  
21 exceptional drought?  
22 A Yes.  
23 Q Okay. So then we go on to the decadal drought  
24 situation, and this is taken from page 35 of  
25 your report, where you state that during a

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1 decadal drought, which we agreed is a drought of  
2 ten years duration, Hays has a firm water yield  
3 that has declined to 840 acre-feet per year,  
4 correct?  
5 A Yes.  
6 Q Okay.  
7 **MR. LEE:** So if we could look at the  
8 next slide. So what we have done, Your  
9 Honor, is to take the 2020 usage in an  
10 exceptional drought situation of the  
11 792 (sic) acre-feet identified by  
12 Dr. Hamilton, subtracted the firm yield of  
13 760 (sic) acre-feet identified by  
14 Dr. Hamilton, and have a shortfall figure  
15 of 32 acre-feet in that scenario.  
16 **MR. BULLER:** Your Honor, I object to  
17 this characterization of Dr. Hamilton's  
18 testimony. This slide doesn't refer to the  
19 duration of the drought, this slide doesn't  
20 refer to the intensity of the drought, this  
21 just has blank, you know, flat numbers with  
22 no point of reference, and it -- I object  
23 to this line of questioning.  
24 **PRESIDING OFFICER:** Okay. Now,  
25 this -- this slide has not been something

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1 that's been marked or offered as an exhibit  
2 that I'm aware of?  
3 **MR. LEE:** It has not.  
4 **PRESIDING OFFICER:** Okay. So right  
5 now, it appears this is just a  
6 demonstrative exhibit here, so to -- to  
7 kind of satisfy some of the objection that  
8 Mr. Buller has and I think to make sure the  
9 record is clear, will that take care of it  
10 if Mr. Lee in going through -- that slide  
11 is not -- not in the record, but if he  
12 provides the qualifiers and the  
13 explanations with each of those sections on  
14 there, would that satisfy your concern  
15 there, Mr. Buller?  
16 **MR. BULLER:** I think that would  
17 help, Your Honor, I would have to hear the  
18 question.  
19 **PRESIDING OFFICER:** I just think  
20 that would help make the record clear as  
21 well when he talks about that first section  
22 of exceptional drought, to explain that  
23 those are the numbers that he pulled from  
24 the previous sections of Dr. Hamilton's  
25 testimony?

1 MR. BULLER: That would help  
2 because, I mean, I just want to make sure  
3 the witness understands what's being  
4 referred to here and not -- this is  
5 somewhat vague and ambiguous.

6 PRESIDING OFFICER: And I think I'm  
7 following it now, but I just want to make  
8 sure we have a clear record as well; as  
9 I've said all along, we need to make sure  
10 we have a clear record for whoever may  
11 review this in the future.

12 MR. BULLER: That's all I'm trying  
13 to get at, Your Honor, thank you.

14 PRESIDING OFFICER: Is that  
15 something that you can try to explain a  
16 little better with your question, then,  
17 Mr. Lee?

18 MR. LEE: We can go back again and  
19 look at the slides or --

20 PRESIDING OFFICER: Just as you're  
21 going through that, can you just, with that  
22 first section there, just -- when you're  
23 asking Dr. Hamilton about that -- the first  
24 group of numbers there, the 1792 and the  
25 1760, just in the question just explain

1 provided for available water during exceptional  
2 drought.

3 Q Okay. So the 2020 usage of 1792 acre-feet is  
4 shown in your report, correct?

5 A That's 2020 usage from the City's web page.

6 Q And the firm yield, and which you talk about  
7 this in this same section, but the firm yield  
8 for Hays in an exceptional drought is  
9 1760 acre-feet per your report, correct?

10 A I was trying to double-check that in the table,  
11 but I believe that is correct.

12 Q Okay. And if you need to take time to look at  
13 your report, we're happy to do that.

14 A Yes, that's correct.

15 Q Okay. So if you -- the number, the shortfall  
16 number is simply the difference between the 2020  
17 usage, if that were to continue, so let's assume  
18 that the 2020 usage continues during a de --  
19 during an exceptional drought, then if that's  
20 the case, then the -- subtracting the firm yield  
21 from the continuing 2020 usage number throughout  
22 an exceptional drought would yield a shortfall  
23 of 32 acre-feet, correct?

24 A That's the difference between those two numbers,  
25 correct.

1 where those numbers are from 'cause I think  
2 you're trying to get him to explain what  
3 the -- what your -- what you have  
4 highlighted in red there, those shortfall  
5 numbers.

6 MR. LEE: I am happy to do that.

7 PRESIDING OFFICER: Just so we have  
8 a clear record. I don't want to make your  
9 case for you because that's not my job  
10 here, I have to be impartial here, but I  
11 just have to make sure we have a clear  
12 record.

13 MR. LEE: I understand.

14 BY MR. LEE:

15 Q So let's look, there's three sort of sections,  
16 Dr. Hamilton, as you can see here, the first of  
17 which is headed Hays Exceptional Drought, and  
18 you do talk in your report about a circumstance  
19 where Hays is in exceptional drought, do you  
20 not?

21 A Yes, in the future, not in 2020.

22 Q Yes, I understand that. But the firm yield  
23 number is, in fact, based on an exceptional  
24 drought, correct?

25 A That's the number that Burns & McDonnell

1 Q Okay. And so the same analogy or the same  
2 analysis would apply to Russell, I think, if --  
3 the 2020 usage of 974 acre-feet is from your  
4 report, correct?

5 A Yes, I believe so, I'm looking for that one.

6 Q Okay, sure.

7 A Yes, it is.

8 Q Okay. And the firm yield number, which is a  
9 firm yield in the case of an exceptional  
10 drought, is 789 acre-feet from your report,  
11 correct?

12 A Yes.

13 Q So in the situation in Russell where if that  
14 2020 usage would, moving forward over a period  
15 of time, also overlap with an exceptional  
16 drought, then the shortfall is 185 acre-feet,  
17 correct?

18 A Yes, that's the difference between those  
19 numbers.

20 Q Okay. And the only difference with the third,  
21 Dr. Hamilton, that talks about, as your report  
22 does, about a decadal drought, and you show the  
23 same 2020 usage, of course. So if you had a  
24 period where Hays for a period of ten years  
25 would use 1792 acre-feet, it would during that



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1 period have firm yield at some point, at least,  
2 during a decadal drought of 840 acre-feet,  
3 showing a shortfall of 952 acre-feet, correct?  
4 **A Yeah, the -- the algebra appears to be correct**  
5 **in your table; it has no bearing, however, on my**  
6 **analysis.**  
7 **Q** And it doesn't have a bearing on your analysis  
8 because why?  
9 **A Because my analysis begins in the future and**  
10 **it's forward looking and population is growing**  
11 **over time, and so if a drought happened today or**  
12 **in 2030, the damages would be far different.**  
13 **Q** Well, we'll get to the population piece of this  
14 in a bit. The -- if we simply say that the --  
15 the 2020 usage of 1,792 acre-feet is frozen in  
16 time, so that's how much it is in 2030, that's  
17 how much it is in 2040, that's how much it is in  
18 2050, then the shortfall numbers in those  
19 scenarios would be what is reflected on the  
20 screen; is that right?  
21 **A Under that hypothetical, if all those numbers**  
22 **stayed the same in the future, then that would**  
23 **be correct.**  
24 **Q** Okay, thank you. The -- you're aware, and I  
25 think that this probably was not part of the

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1 confusion, that the Cities have requested a --  
2 and, actually, just to -- just to make this  
3 perhaps a little more clear and address what I  
4 would expect is about to be an objection, if  
5 the -- if instead of in the second box down  
6 here, Dr. Hamilton, the Cities requested  
7 4800 acre-feet, let's just assume that.  
8 **MR. BULLER:** Your Honor, objection,  
9 7,625.5 acre-feet is not a number that even  
10 appears in the water transfer application,  
11 it's not being applied for in any single  
12 year, certainly isn't equal to the  
13 4800 acre-feet 10-year rolling average  
14 limitation. But that number is not what's  
15 being applied for, it doesn't exist in the  
16 transfer application.  
17 **MR. LEE:** And I can tell Your Honor  
18 where that number came from, that's the  
19 first application; the amended application,  
20 it's less than that, it's about  
21 6700 acre-feet. However --  
22 **PRESIDING OFFICER:** Okay. I'm going  
23 to sustain the objection because that is an  
24 incorrect number. Can you try to -- do you  
25 have another slide, or can you address this

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1 based upon what number we're actually  
2 dealing with in --  
3 **MR. LEE:** Yes, that was my most  
4 recent question, Your Honor, was let's  
5 assume that instead of the 7625 number,  
6 that's 4800.  
7 **BY MR. LEE:**  
8 **Q** And so the decadal drought shortfall would be  
9 subtracted from 4800 instead, and there still is  
10 an excess in that scenario, is there not?  
11 **MR. BULLER:** Objection, confusing,  
12 ambiguous, vague, and I don't understand  
13 the hypothetical. Incomplete hypothetical,  
14 sorry.  
15 **PRESIDING OFFICER:** Do you have a  
16 response there, Mr. Lee?  
17 **MR. LEE:** I don't know what's  
18 incomplete about it, Your Honor, all we're  
19 doing is substituting 4800 for the figure  
20 that's on the screen, which I think is what  
21 Your Honor was asking clarification about.  
22 **PRESIDING OFFICER:** Okay.  
23 **MR. BULLER:** My objection is that it  
24 looks like the excess number in the red box  
25 at the bottom does math based on a number

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1 that's now been changed, and so that's why  
2 I think it's vague and confusing.  
3 **MR. LEE:** Well, Your Honor, why  
4 don't we do this, if I could suggest to the  
5 Court, why don't we take ten minutes and  
6 we'll fix this slide and we can come back  
7 to it.  
8 **PRESIDING OFFICER:** All right.  
9 Let's take a short recess here.  
10 **MR. BULLER:** If I -- if I could  
11 interpose an alternative suggestion to save  
12 time, if the witness would, you know, be  
13 willing to do some math on a piece of  
14 paper; I just don't want him to be  
15 speculating about math that he's not had a  
16 chance to confirm is correct. That's  
17 really it.  
18 **MR. LEE:** Well, Your Honor, we're  
19 the ones that get to ask the questions.  
20 **PRESIDING OFFICER:** We'll take ten  
21 minutes here, we'll let Mr. Lee --  
22 **MS. LEE:** I can fix it right now if  
23 you'd like me to.  
24 **MR. LEE:** We can take ten minutes if  
25 that's okay.

1 **PRESIDING OFFICER:** That's fine.  
2 (Thereupon, a recess was taken;  
3 whereupon, the following was had.)  
4 **PRESIDING OFFICER:** If everybody is  
5 ready we can go ahead, then. Okay. We're  
6 ready to go back on the record, then.

7 **BY MR. LEE:**

8 Q Okay. Dr. Hamilton, after a short break to fix  
9 our PowerPoint, let me show you what is on the  
10 screen now where it states, and this is from the  
11 Cities' application at page 7, The Cities have  
12 requested a combined annual total of  
13 6,756.8 acre-feet of water. Are you familiar  
14 with that number?

15 A **Yes, that number appears --**

16 **MR. BULLER:** Objection, Your Honor,  
17 this is the total single year amount the  
18 Cities have requested, but they are limited  
19 to 4,800 acre-feet per year on a ten-year  
20 rolling average pursuant to the Master  
21 Order.

22 **MR. LEE:** I would suggest, Your  
23 Honor, if they don't want to see that  
24 number shown, they shouldn't have put it in  
25 the application, this is a quote.

1 Q Well, did you not write that during a decadal  
2 drought the figure, go back and look at the  
3 previous page, that during a decadal drought,  
4 the firm yield was 840 acre-feet and that the  
5 difference between those numbers, assuming a  
6 continuing decadal drought and a continuing 2020  
7 usage of that number, doesn't that yield a  
8 952-foot shortfall?

9 A **This is correct for 2020, but this is date and  
10 time specific. Again, this is not water demand,  
11 it's just 2020 usage.**

12 Q Well, as we talked earlier, and we'll re-plow  
13 that a little bit, if you assume that 2020 --  
14 that usage in 2020 simply continues going  
15 forward, so in other words that throughout the  
16 decades, Hays continues to use 1792 acre-feet,  
17 then the firm yield in a decadal drought is  
18 going to be 840 acre-feet, correct?

19 A **It's correct to the extent it appears in your  
20 hypothetical; however, the odds of that  
21 happening are -- are approximately zero.**

22 Q Well, that's not what I'm asking, and if we --  
23 if we need to look at your report in greater  
24 detail, we can, but I believe in your report you  
25 say the 2020 usage was 1792 acre-feet?

1 **MR. BULLER:** It's -- we're limited,  
2 we have a limit of 4800 acre-feet, this is  
3 misleading and it's objectionable.

4 **MR. LEE:** That's a redirect issue,  
5 Your Honor, this is an accurate quote.

6 **PRESIDING OFFICER:** Okay. Going to  
7 overrule the objection because the way the  
8 application, if it was approved as is  
9 written, in one year, that much could be  
10 drawn, and so the record will show, though,  
11 that that is the one-year limitation.

12 **MR. BULLER:** Thank you, Your Honor.

13 **BY MR. LEE:**

14 Q So that, Dr. Hamilton, is the number that you  
15 have seen in the application, correct?

16 A **Yes, it appears in the Master Order.**

17 Q Okay. So if you take that number and you recall  
18 that during the Hays decadal drought the  
19 shortfall was 952 acre-feet, correct?

20 A **I believe so, yes.**

21 Q Okay. So if you take the Cities --

22 A **Excuse me, that's not correct.**

23 Q Okay. Let's -- then tell me what is correct.

24 A **A shortfall of water shortage supplies, surplus  
25 are all date and time specific.**

1 A **Yes, that's usage and not demand.**

2 Q And you also say in your report that during a  
3 decadal drought, firm yield for the City of Hays  
4 is 840 acre-feet, do you not?

5 A **The firm yield number is correct.**

6 Q Okay.

7 A **That's correct.**

8 Q And so if that 2020 usage figure carries forward  
9 and there is a decadal drought, then the  
10 shortfall is 952 acre-feet, correct?

11 A **Under your hypothetical but your hypothetical is  
12 clearly incorrect.**

13 Q And -- well, you'll have to tell me how it's  
14 incorrect.

15 A **One, it's 2020 usage, it's not current usage;  
16 two, water demand responds to drought, and so  
17 water demand is higher in a drought. So in 2020  
18 there wasn't an exceptional drought, and had  
19 there been an exceptional drought, that would  
20 not have been -- usage in 2020 would not have  
21 been water demand.**

22 Q Well, I think perhaps we need to go back to the  
23 second slide. So we -- we agree -- the previous  
24 slide. We agreed, Dr. Hamilton, that this  
25 language on this slide is an accurate quote from

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1 your report, did we not?  
2 **A Yes, and my objection a moment ago was that**  
3 **water demand is different than the '20 value.**  
4 **And so under your hypothetical if that is future**  
5 **water demand, then your numbers are correct, but**  
6 **it's -- it's not an accurate hypothetical.**  
7 Q Well, my interest in this statement from your  
8 report, Dr. Hamilton, is the -- your language  
9 that The magnitude of the water shortage at any  
10 given point in time depends on water demand and  
11 firm water supply, so you have had to calculate  
12 firm water supply as part of your analysis,  
13 correct?  
14 **A The firm water supply is provided in a table by**  
15 **Burns & McDonnell and it's drought specific.**  
16 Q Do you think that the information you've been  
17 provided is inaccurate?  
18 **A No, those numbers are correct. The issues with**  
19 **your analysis is that you're not properly**  
20 **characterizing water demand.**  
21 Q Do you have a copy of your report with you?  
22 **A Right in front of me, yes.**  
23 Q Would you turn to page 35?  
24 **A Okay.**  
25 Q And do you see paragraph 115, I presume?

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1 **A Yes, I do.**  
2 Q Okay. Let me -- let me read that and you can  
3 tell me if somehow I read it inaccurately. It  
4 states, and I'm quoting, The Basara report has  
5 estimated that for the Smoky Hill watershed  
6 region, the risk of a decadal drought during the  
7 2055 to 2099 period exceeds 80 percent and could  
8 occur at any time. During a prolonged drought,  
9 the City's existing sources from the Smoky Hill  
10 River and Big Creek, which are highly dependent  
11 on surface water, will continue to decline along  
12 with the Cities' ability to produce water from  
13 existing sources. During a decadal drought, for  
14 example, Hays' firm water yield will decline to  
15 840 acre-feet per year. Did I read that  
16 correctly?  
17 **A Yes, that's correct.**  
18 Q Okay. So if we then go back to where we were,  
19 the -- those numbers, with the exception of the  
20 shortfall numbers, Dr. Hamilton, are all taken  
21 from your report, are they not?  
22 **A The -- those numbers do not appear in my report.**  
23 **The 2020 usage does and the firm yield does, but**  
24 **the shortfall would be your own calculation.**  
25 Q Yes, and that's -- that was my question, I said

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1 with the exception of the shortfall numbers, the  
2 other numbers appear in your report?  
3 **A Yes, that's correct.**  
4 Q In other words, you provided those numbers to  
5 us, did you not?  
6 **A That's correct.**  
7 Q Okay. So then it only becomes a question,  
8 assuming a continued period of usage equivalent  
9 to 2020, then the shortfall numbers, if that  
10 usage continues going forward, the shortfall  
11 numbers that are shown on the screen are  
12 accurate, aren't they?  
13 **A Those numbers, if that continues in the future,**  
14 **that would be correct.**  
15 Q Okay. Let's look at the next slide.  
16 So then we get, and we've looked at this  
17 slide, but I think we agree at this point the  
18 Cities have, in fact, requested in their  
19 application the right to transfer 6,756.8  
20 acre-feet, correct?  
21 **A That's in the Master Order, yes.**  
22 Q And we just agreed on the Hays decadal drought  
23 shortfall assuming that the usage number  
24 continues to stay the same going forward, didn't  
25 we?

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1 **A Yes, again, the usage would be different in a**  
2 **exceptional drought and a decadal drought than**  
3 **the usage in 2020, so it's a very imperfect**  
4 **hypothetical, but under that hypothetical that's**  
5 **correct.**  
6 Q And so the math is correct, isn't it?  
7 **A No, it's not.**  
8 Q Okay. How is it off?  
9 **A Because under a decadal drought, the City can't**  
10 **pump a full 6756 acre-feet, it can only pump**  
11 **4800 acre-feet per year.**  
12 Q Okay. So if you substitute 4800 for the  
13 6756.8 acre-feet, you still have an excess  
14 number, do you not?  
15 **A Under your hypothetical but that would not be a**  
16 **number that accorded with the actual demand of**  
17 **the Cities during an exceptional drought.**  
18 Q We can look at the next slide. The -- in your  
19 rebuttal report, Dr. Hamilton, you make this  
20 statement at page 13: The HE, and I think  
21 that's shorthand for you for the Harvey  
22 Economics, is it not?  
23 **A Yes, it is.**  
24 Q The HE report provides no analysis whatsoever to  
25 support the claims that the project would lead

1 to higher water rates and fails to address  
 2 offsetting benefits. There's no valid basis for  
 3 assuming that all or any of the costs relating  
 4 to the water transfer project will be passed  
 5 through to the Cities' rate base. Are you aware  
 6 that on June 24th -- in the June 24th, 2013  
 7 edition of the Hays Daily News that the Hays  
 8 city finance director stated that its estimated  
 9 average households would see their monthly water  
 10 bills increase approximately 70 percent, have  
 11 you ever seen that number?  
 12 **A I would have to see the article to comment on**  
 13 **that.**  
 14 **Q Are you aware the capital costs at this point**  
 15 **are projected to be in excess of \$130 million?**  
 16 **A That's actually not the number that appears in**  
 17 **my report.**  
 18 **Q Okay. What number appears in your report?**  
 19 **A I believe about 112 million were the numbers**  
 20 **that I used, and there was two phases; I could**  
 21 **get you the exact totals if you want them, but**  
 22 **that total is not correct.**  
 23 **Q If I were to represent to you that Hays -- that**  
 24 **Hays now has an estimate for capital cost from**  
 25 **Burns & McDonnell in excess of \$130 million, can**

1 walking away from our water conservation  
 2 programs. And our residents have to take part  
 3 in the water conservation programs. We have no  
 4 intention of going to a model that other cities  
 5 use where you only conserve when it's dry, and  
 6 then when it rains, you forget about  
 7 conservation, and we will maintain 24 hours a  
 8 day. Is that testimony you have seen before?  
 9 **A No, it is not.**  
 10 **Q Go to the next slide. The -- you talk about,**  
 11 **and this is at your rebuttal report at page 13,**  
 12 **and I'm quoting from that, The conclusion that**  
 13 **the R9 Ranch project represents a net cost, not**  
 14 **a net benefit, lacks both economic foundation**  
 15 **and supporting analysis. First, it ignores the**  
 16 **investments in water infrastructure and the**  
 17 **associated economic impact to the entire State**  
 18 **of Kansas via supply chain and employment**  
 19 **effects, which my report analyzes using IMPLAN**  
 20 **models. What -- what is IMPLAN, Dr. Hamilton?**  
 21 **A It's a modeling system for -- for measuring**  
 22 **supply chain impacts and induced spending that**  
 23 **results from a infrastructure investment.**  
 24 **Q And it requires, I presume, data entry, does it**  
 25 **not, to assist in coming up with conclusions?**

1 you accept that?  
 2 **A I've not seen anything of that kind.**  
 3 **Q Okay. Let's look at the next slide, if we may.**  
 4 **Again, in your rebuttal report, you state at**  
 5 **page 5 that The HE report takes the Cities'**  
 6 **conservation measures, which were enacted**  
 7 **because of their lack of drought-resistant water**  
 8 **resources, and then caps the Cities' available**  
 9 **quantity based on GPCD values that are unheard**  
 10 **of anywhere in the State of Kansas. The HE**  
 11 **report then uses that number as the basis for**  
 12 **setting a purported maximum quantity of water**  
 13 **the Cities should be permitted to divert.**  
 14 **We had the opportunity to take**  
 15 **Mr. Dougherty's deposition, who is the city**  
 16 **manager, have you met Mr. Dougherty?**  
 17 **A Yes, I met him this morning, and I've met him**  
 18 **several times on Zoom calls and phone calls.**  
 19 **Q Okay. So in his deposition at page -- pages**  
 20 **129, line 19 through 130 at line 4, he says in**  
 21 **response to a question from me about maintenance**  
 22 **of conservation measures, he says, So we will**  
 23 **maintain our water conservation programs, we**  
 24 **have an obligation to maintain our water**  
 25 **conservation programs. We have no intention of**

1 **A Yes, it's basically -- it draws data from Bureau**  
 2 **of Labor Statistics, from other sources of data,**  
 3 **and it compiles at the county level current**  
 4 **statistical facts for that county and relies on**  
 5 **those to project how much the economy would be**  
 6 **stimulated by an investment.**  
 7 **Q And there is input from the analyst that goes**  
 8 **into IMPLAN also, isn't there?**  
 9 **A Yes.**  
 10 **Q So if the input from the analyst is incorrect,**  
 11 **then IMPLAN is incorrect, I assume you would**  
 12 **concede that?**  
 13 **A The out -- the -- IMPLAN is just a tool, and so**  
 14 **it's as good as the input going in --**  
 15 **Q Okay.**  
 16 **A -- for example, the costs and so forth.**  
 17 **Q There's a couple things that are highlighted in**  
 18 **red there, which one phrase is via supply chain**  
 19 **and the other is employment effects. When we**  
 20 **talk about the supply chain, did you do an**  
 21 **analysis to determine how much of the**  
 22 **infrastructure materials and inputs would be**  
 23 **manufactured or sold in Kansas?**  
 24 **A So I had a conversation about that with the city**  
 25 **manager, and as of now, there's not good**

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1 **information on who the contractor would be and**  
2 **where that material would be sourced.**  
3 Q So you thought it was important to inquire about  
4 that?  
5 A **I did inquire about that because there's -- the**  
6 **default setting is the one I used, and it can be**  
7 **overrode if there's better information.**  
8 Q Okay. And as to the question of employment  
9 effects, you're aware that there is a -- a labor  
10 shortage in Hays, are you not?  
11 A **Yes, there's a labor shortage everywhere in the**  
12 **country right now in construction trades.**  
13 Q And that is true also, since it's true  
14 throughout the country, that's true throughout  
15 western Kansas, correct?  
16 A **It's true everywhere in the U.S. right now,**  
17 **that's correct.**  
18 Q Dr. Hamilton, thank you.  
19 A **Thank you.**  
20 **PRESIDING OFFICER:** Ms. Langworthy?  
21 **MS. LANGWORTHY:** No questions, Your  
22 Honor.  
23 **PRESIDING OFFICER:** Mr. Buller?  
24 **MR. BULLER:** Sure, just a few  
25 questions, Your Honor, thank you.

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1 **REDIRECT EXAMINATION**  
2 **BY MR. BULLER:**  
3 Q Good morning again, Dr. Hamilton, and thanks  
4 for -- for taking some more time, I'll try to  
5 keep this as brief as possible. Relating to the  
6 use of the default method in IMPLAN, Mr. Lee  
7 asked you a few questions about that. Do you  
8 recall those?  
9 A **Yes, I do.**  
10 Q Do you have information about whether there  
11 are -- there are sufficient economic resources  
12 in the State of Kansas such that all the  
13 economic activity that might be generated from a  
14 construction project could potentially be  
15 sourced from Kansas?  
16 A **Yes, there's -- we did analyze that, so in the**  
17 **water infrastructure investments, there's**  
18 **certain very commonly invested things, there's**  
19 **wells, there's pump stations, and there's pipes.**  
20 **And so all of those basic materials, the core of**  
21 **the project are all available in Kansas. So**  
22 **there's a potential that all of this project**  
23 **could be derived from the State of Kansas, and**  
24 **it's unclear if anything else would be the case.**  
25 **And this is the default value in IMPLAN when you**

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1 **just, when you don't have that information, it's**  
2 **the best you can do.**  
3 Q Thank you. And so this is a pipeline project, a  
4 construction project is a pipeline project,  
5 right?  
6 A **Essentially, yes, there's wells and pumps and**  
7 **pipes. But essentially, yes, it's a pipeline.**  
8 Q And it's a big deal for the Cities of Hays and  
9 Russell, but on the scheme of construction  
10 projects, it's pipes, it's pumps, it's wells, is  
11 it -- is it a highly sophisticated project  
12 that -- for which Kansas manufacturers,  
13 distributors, and labor doesn't have sufficient  
14 resources to handle?  
15 A **It's not rocket science, it's more like a big**  
16 **plumbing project.**  
17 Q What about on the other end of the spectrum, I  
18 mean, you've used the default IMPLAN analysis  
19 because there was insufficient information to  
20 determine exactly where the materials would be  
21 procured and et cetera, but -- but would it be  
22 reasonable to simply assume because that  
23 information is not yet available that the State  
24 of Kansas will achieve zero economic benefit  
25 from the construction project?

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1 A **That would be impossible. There's a benefit to**  
2 **Kansas no matter how much of that -- if some of**  
3 **that is outsourced to another state.**  
4 Q And even if some of it is outsourced to another  
5 state, does it present certain opportunities for  
6 the State of Kansas?  
7 A **Yes, certainly, the supply chain in Kansas would**  
8 **be stimulated, there would be other pipe**  
9 **fitters, people supplying intermediary parts**  
10 **that could also supply from Kansas that are not**  
11 **in the direct project but would benefit from**  
12 **additional sales. There's also induced benefits**  
13 **which, for example, would be sandwiches bought**  
14 **during lunch, meals at restaurants, lodging,**  
15 **rents to homeowners, et cetera.**  
16 Q So labor people who are working on the project  
17 aren't going to drive to Oklahoma for lunch  
18 every day?  
19 A **Presumably not.**  
20 Q Let's talk about the labor shortage issues that  
21 Mr. Lee addressed with you on cross-examination.  
22 Is it -- is it possible that the, even despite  
23 the labor issues, that the labor resources for  
24 the construction project could come from Kansas?  
25 A **Yes, it's entirely possible. And by the way,**

1 **there's a couple features of that analysis that**  
2 **are impacted by that national labor supply, and**  
3 **one of them is that labor wages have gone up**  
4 **considerably in the construction trades. And in**  
5 **the IMPLAN data, there's a lag in providing that**  
6 **data and it hasn't appeared yet. And so because**  
7 **of that tightness of the labor market, the wages**  
8 **paid to workers in the construction industry in**  
9 **Kansas are likely to be much larger, and my**  
10 **report is conservative on that ground. And**  
11 **there are sufficient workers in Kansas to**  
12 **complete 100 percent of this project. It's**  
13 **small relative to the State of Kansas.**

14 Q And so talk about how, you know, the project  
15 would work in relation to labor when it comes to  
16 supply side versus demand side. I mean, there's  
17 a labor shortage, but there's a supply side of  
18 this and there's a demand side to this, how does  
19 that play into the labor shortage issue?

20 A **Yes, when you see a labor shortage, it's just a**  
21 **lack of workers, and that could be because there**  
22 **are no workers seeking employment in those**  
23 **trades, but it also can be that there's no**  
24 **construction jobs. Because of the lack of water**  
25 **in Hays and Russell, there hasn't been a lot of**

1 Q So would there be an outward rippling effect  
2 relating to workers who relocated to Kansas  
3 drawn by the opportunity from the construction  
4 project?

5 A **Yes, there would be, it would help restaurants,**  
6 **hotels, if they buy houses, it would help the**  
7 **real estate market, it would help retail sales,**  
8 **it would stimulate the economy.**

9 Q In Kansas?

10 A **Directly in Kansas, correct.**

11 Q And even if some of the specific workers that  
12 are hired to work on the project are from  
13 outside of Kansas and don't relocate into  
14 Kansas, those are still jobs in Kansas, right,  
15 so with respect to their -- their working in  
16 Kansas on this project, would that result in  
17 economic benefits to the State?

18 A **Yes, certainly, there would be taxable sales,**  
19 **there would be hotel stays or -- or lodging if**  
20 **they had temporary housing. Even if they were**  
21 **to leave the state thereafter, there still would**  
22 **be benefits generated from that within the**  
23 **state, considerable.**

24 Q Mr. Lee asked you a series of questions relating  
25 to the second part of your calculation, which is

1 **new investment in infrastructure and**  
2 **construction spending, and so that is an equal**  
3 **explanation for why the labor market is tight.**

4 Q And really this is a statewide benefits  
5 comparison, right, so we're not just bound to  
6 the labor market in Hays and Russell; this  
7 project -- will this project have the potential  
8 to draw labor from across the State of Kansas?

9 A **Yes, and these workers may continue to live here**  
10 **thereafter.**

11 Q And so even workers outside the State of Kansas  
12 may be drawn because of the -- the labor issues  
13 nationwide, they might be drawn to where the  
14 opportunities are at?

15 A **Yes, that's correct, the reason someone from out**  
16 **of state would take a job in Kansas is because**  
17 **that job provided a better opportunity for them,**  
18 **and if that job provided a better opportunity,**  
19 **they may continue to find a better opportunity**  
20 **in Kansas after the project is complete.**

21 Q Is it possible that some of those out-of-state  
22 workers could permanently relocate to Kansas?

23 A **Yes, I would expect many of them would.**

24 Q And some of them have families?

25 A **Yes, they have families.**

1 the value of avoided water shortfalls. Do you  
2 recall those questions?

3 A **Yes, I do.**

4 Q And in Mr. Lee's hypothetical, which I  
5 understand you don't necessarily agree with, but  
6 the record is what it is on that, tell us  
7 briefly what your analysis of -- and calculation  
8 of avoided water shortfall measures.

9 A **So what I'm doing in my analysis, I'm measuring**  
10 **the cost to commercial, industrial, and**  
11 **residential residents from a 50-year horizon in**  
12 **which the hydrologic conditions are varying**  
13 **between moderate wet drought and extreme drought**  
14 **or exceptional drought.**

15 Q And so -- so just to sort of make sure that  
16 we're all on the same page here, your IMPLAN  
17 analysis measures the economic impacts of the  
18 water project in the event that the water  
19 transfer is approved, right?

20 A **Yes, the construction would happen only if this**  
21 **water project is approved.**

22 Q Whereas, your calculation relating to the  
23 avoided shortage -- avoided loss of water  
24 shortage measures the economic impact in the  
25 event that the water transfer is denied, right?

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1 A It's very close, yes. The analysis that I'm  
2 doing is actually taking the difference. So  
3 what I'm doing is I'm running 50-year future  
4 horizons with different intact pieces of the  
5 historic water record, and I'm saying if this  
6 was the water that appeared over those next  
7 50 years, the same hydrology that has appeared  
8 in the past, in the past 50 years, what would  
9 happen if they didn't have the project, what  
10 would happen if they did? And so the numbers  
11 that I'm giving are the difference between those  
12 scenarios, or the net benefit.

13 Q Sure. And -- and there's a cost of water  
14 shortage in the event that the Cities are not  
15 allowed to transfer the water from the ranch and  
16 have to rely only on their existing sources of  
17 supplies, right?

18 A Yes, if they do not -- if the transfer is not  
19 approved, then these communities will not be  
20 drought resistant and they will have perhaps  
21 severe losses in the event of future and  
22 periodic droughts.

23 Q But Mr. Lee's questionings were assuming that  
24 the Cities would not have shortage in the event  
25 that the water transfer is approved and they're

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1 allowed to take this 4800 acre-feet of water per  
2 year, you know, on a ten-year rolling average  
3 and no water loss because they don't have a  
4 water shortage under that scenario?

5 A Yes, the definition, economic definition of  
6 water shortage is supply -- demand minus supply,  
7 so if there's excess demand and supply, there's  
8 a shortage. Those numbers in 2022 are just  
9 usage numbers, they're not demand numbers.

10 Q Mr. Lee asked you a question about the  
11 inelasticity of water demand. Do you recall  
12 that?

13 A Yes, I do.

14 Q Is there a concept or at least a related concept  
15 relating to water usage called demand hardening?

16 A Yes, there is.

17 Q Can you explain that for us, please.

18 A Yeah, so demand hardening is the phenomenon that  
19 happens in areas that have intensively  
20 conserved. And so, for example, in Hays and in  
21 Russell, they've adopted conservation practices.  
22 And when you do that, you put rain barrels in,  
23 you irrigate your outdoor irrigation with  
24 treated wastewater and so forth, low-flow  
25 fixtures and plumbing, when you've done all

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1 those things, it becomes much harder to respond  
2 to a -- to a shortage in the future, and that's  
3 called demand hardening, and what that does is  
4 it means that these communities are less able to  
5 cut back further.

6 Q And in those communities, are the cost of  
7 drought greater -- or, I'm sorry, are the costs  
8 of a water shortage greater than in communities  
9 that have not implemented those measures  
10 already?

11 A Yes, what tends to happen, in the literature we  
12 refer to this as the elasticity of water demand,  
13 and when demand becomes less elastic, which is  
14 what demand hardening does, it becomes -- the  
15 damages get much larger from drought or from a  
16 water shortage.

17 Q And so are you familiar generally with some of  
18 the conservation measures implemented by the  
19 Cities already?

20 A Yes, I am. And they're quite -- they're quite  
21 intensive. I've not -- I've actually not  
22 seen -- even in California where we're very  
23 susceptible to droughts, I've not seen the level  
24 of investment in conservation measures that I  
25 see in the record here.

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1 Q And so for at least in this case, in the case of  
2 Hays and Russell, would you say that demand  
3 hardening would be relevant to the cost that  
4 they will incur in the event of a water  
5 shortage?

6 A Yes, it is; however, it's outside my report.  
7 For my report, I used elasticities that have  
8 been estimated for several regions, Texas,  
9 Chicago, Los Angeles, greater Los Angeles area,  
10 San Francisco, so the elasticities from those  
11 studies are what I'm applying here. Because of  
12 demand hardening, it could even be less elastic  
13 and have worse effects here because --

14 Q So -- so even though you relied on studies from  
15 San Francisco and Chicago, would it be your  
16 testimony that, if anything, your conclusions  
17 are more conservative than if you had used, for  
18 example, Kansas towns who may not have already  
19 implemented those conservation measures?

20 A Yes, and I'm using the studies from -- from  
21 Texas and these other regions because there  
22 hasn't been a study like that in Kansas and  
23 there isn't enough time or budget to conduct one  
24 just for the point of this analysis.

25 Q Sure. Thank you, Dr. Hamilton, no more

1 questions.

2 **PRESIDING OFFICER:** Mr. Cole?

3 **MR. COLE:** Yes, just a couple.

4

5 **RE CROSS EXAMINATION**

6 **BY MR. COLE:**

7 Q Mr. Lee presented you with some hypotheticals

8 that in part entailed numbers with respect to

9 what was referred to as a firm supply. Do you

10 recall that?

11 A Yes.

12 Q And what -- what is your understanding of what a

13 firm supply of water is?

14 A **So firm supply of water is water that would be**

15 **available under certain hydrologic conditions.**

16 **And so under extreme drought, there's less**

17 **supply available; under a rainy or a normal**

18 **year, there's more water supply available. And**

19 **those are numbers that I'm relying on the**

20 **engineering estimates to pin down those numbers.**

21 Q And in those calculations, it showed there would

22 be a deficit in both communities from the demand

23 in 2020 as to what was found to be the firm

24 supply; is that correct?

25 A **Yes, even in 2020, there -- had a drought**

1 existing and you're already in a deficit and a

2 community loses what was thought to be a firm

3 source of supply, would that have an economic

4 impact on that community?

5 A **Yes, that would make losses even greater in the**

6 **event that the transfer is not approved and,**

7 **therefore, contribute to a greater benefit for**

8 **the water transfer.**

9 Q Would you characterize that as a disaster?

10 A **Depending on the extent of it, it could very**

11 **well be a water disaster.**

12 Q Thank you.

13 **PRESIDING OFFICER:** Mr. Lee?

14 **MR. LEE:** Thank you, Your Honor.

15

16 **RE CROSS EXAMINATION**

17 **BY MR. LEE:**

18 Q Dr. Hamilton, have you testified as an expert

19 witness before?

20 A **Yes, I have.**

21 Q And in those circumstances, did you learn from

22 the Court or counsel that had retained you that

23 experts are allowed to testify in terms of what

24 is probable as opposed to what is possible?

25 A **Yes.**

1 **appeared at that time, there would not have been**

2 **enough water to go around.**

3 Q Okay. And the firm supply is assuming that

4 those sources of supply continue to exist?

5 A **Yes, it does.**

6 Q It does not take into consideration the fact

7 that something may happen to one of those

8 sources of supply?

9 A **That's correct, it's not doing a reliability**

10 **analysis of those sources, it's taking them as**

11 **firm, even though I've not conducted that**

12 **analysis myself of whether those are -- those**

13 **are reliable.**

14 Q So earlier in this proceeding, there was

15 testimony that the City of Russell lost one of

16 its sources of supply due to contamination, in

17 this case natural contamination, correct?

18 A **Okay. I have not seen that information but**

19 **thank you.**

20 Q Okay. And there was actually testimony that by

21 operator error upstream, in another occasion the

22 City of Russell lost what might be considered a

23 firm source of supply?

24 A **That could happen, yes.**

25 Q So in your scenario where a drought may be

1 Q Thank you.

2 **PRESIDING OFFICER:** Is that all,

3 Mr. Lee?

4 **MR. LEE:** That's it.

5 **PRESIDING OFFICER:** Ms. Langworthy?

6 **MS. LANGWORTHY:** No questions, Your

7 Honor.

8 **PRESIDING OFFICER:** All right.

9 **MR. BULLER:** No further questions,

10 thank you, Your Honor.

11 **PRESIDING OFFICER:** All right.

12 Well, thank you, Dr. Hamilton.

13 **THE WITNESS:** Thank you.

14 **PRESIDING OFFICER:** Do the parties

15 want to take a short break before we go to

16 Barfield?

17 **MR. BULLER:** Thank you, Your Honor,

18 that would be good.

19 (Thereupon, a recess was taken;

20 whereupon, the following was had.)

21 **PRESIDING OFFICER:** All right. So

22 we'll go ahead and go back on the record,

23 and, Mr. Buller, who do you intend to call

24 as your next witness then?

25 **MR. BULLER:** Thank you, Your Honor,



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1 the City of Hays calls David Barfield.  
 2 **PRESIDING OFFICER:** Mr. Barfield,  
 3 could you please raise your right hand.  
 4  
 5 DAVID W. BARFIELD, P.E.,  
 6 having first duly sworn or affirmed, was  
 7 examined and testified as follows:  
 8  
 9 **PRESIDING OFFICER:** All right.  
 10 Mr. Buller, you may proceed.  
 11 **MR. BULLER:** Thank you, Your Honor.  
 12  
 13 **DIRECT EXAMINATION**  
 14 **BY MR. BULLER:**  
 15 Q And thank you, Mr. Barfield, for appearing here  
 16 today, we appreciate it. Please state your name  
 17 and business address, spelling your last name  
 18 for the court reporter.  
 19 A **David W. Barfield, that's B-A-R-F-I-E-L-D, 1481**  
 20 **East 660 Road in Lawrence, Kansas 66049.**  
 21 Q By whom are you employed, and what is your  
 22 title?  
 23 A **I'm self-employed so I'm the owner and president**  
 24 **of Kansas Water Resources Consulting.**  
 25 Q Did you author testimony filed in this matter on

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1 June 28, 2023 titled Rebuttal Testimony of David  
 2 W. Barfield, P.E., on Behalf of the Cities of  
 3 Hays and Russell, Kansas?  
 4 A **I did.**  
 5 **MR. BULLER:** For the record,  
 6 Mr. Barfield's testimony is marked as  
 7 Exhibit 2867 and has already been filed  
 8 with the -- in the OAH's ECF system.  
 9 **BY MR. BULLER:**  
 10 Q Mr. Barfield, have you had a chance to review  
 11 that document prior to your appearance here  
 12 today?  
 13 A **I have.**  
 14 Q As you sit here, do you have any changes or  
 15 corrections to make to that document?  
 16 A **I have none.**  
 17 Q If I asked you the same questions today as  
 18 appear in your prefiled testimony, would your  
 19 answers and opinions remain the same?  
 20 A **They would.**  
 21 **MR. BULLER:** Your Honor, at this  
 22 time, I admit -- I move to admit the  
 23 prefiled testimony of Mr. Barfield.  
 24 **PRESIDING OFFICER:** Are there any  
 25 objections to Mr. Barfield's testimony?

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1 **MS. LEE:** We have no objection, Your  
 2 Honor.  
 3 **PRESIDING OFFICER:** All right. That  
 4 testimony will be admitted to the record as  
 5 if it were given here today in testimony.  
 6 **MR. BULLER:** Thank you, Your Honor,  
 7 the witness is available for questions from  
 8 the presiding officer and for  
 9 cross-examination.  
 10 **MR. COLE:** No witness -- or, rather,  
 11 no questions for the witness.  
 12 **PRESIDING OFFICER:** Mr. Lee?  
 13 **MR. LEE:** Thank you, Your Honor.  
 14  
 15 **CROSS-EXAMINATION**  
 16 **BY MR. LEE:**  
 17 Q Mr. Barfield, good morning.  
 18 A **Good morning.**  
 19 Q My name's Charles Lee, I'm with Lee Schwalb,  
 20 LLC, I am -- we are the attorneys for Water PACK  
 21 and Edwards County. So I want to have a  
 22 conversation with you this morning about a few  
 23 things related to your report. The first is  
 24 just to -- and we'll get something on the screen  
 25 here momentarily. I think this is accurate, but

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1 I just wanted to be sure we're all talking about  
 2 the same thing, this is a question and answer  
 3 taken from your direct testimony -- or from your  
 4 rebuttal testimony, and the question asks,  
 5 What's the purpose of your direct testimony?  
 6 And the answer is, I've been asked to review and  
 7 provide an evaluation of Mr. Larson's expert  
 8 report as further supplemented by his direct  
 9 testimony for this proceeding. That's your  
 10 rebuttal at 4. And when you're talking about  
 11 Mr. Larson, that's Steven Larson; is that right?  
 12 A **That is correct.**  
 13 Q Okay. And this is the scope of your engagement?  
 14 A **It was.**  
 15 Q Okay. The -- I just want to get your -- your  
 16 sense about this statement, would you agree with  
 17 me that Mr. Larson is a nationally recognized  
 18 expert in groundwater modeling?  
 19 A **I've worked with Mr. Larson for 20 years, and I**  
 20 **would agree with that statement, yes.**  
 21 Q Okay. And would you also agree, looking at the  
 22 next slide, that you have the -- the experience  
 23 and ability to review groundwater models but not  
 24 to create one?  
 25 A **Yes.**

1 Q Okay. So this is a contention which we'll talk  
2 about a little bit more depending on what  
3 your -- your thought is, and this is simply a  
4 statement, I'm not taking this from a source,  
5 but Water PACK would contend that irrigation  
6 return flows, meaning the infiltration of  
7 irrigation water to the water table has been  
8 determined to be a significant recharge  
9 component. Do you agree with that?  
10 A **Well, irrigation return flows -- I guess it**  
11 **depends on what you mean by significant, but**  
12 **they are typically considered in groundwater**  
13 **models.**  
14 Q So it's a factor?  
15 A **It is a factor, yes.**  
16 Q Okay. So --  
17 A **It's not -- well, it's not really the issue**  
18 **that's at dispute here, as I understand it.**  
19 Q Well, we'll kind of walk through that.  
20 A **Okay.**  
21 Q If we could look at the next slide. The -- this  
22 is taken from your rebuttal at page 5,  
23 Mr. Barfield, and you say that Mr. Larson,  
24 referring to Steven Larson, is correct with  
25 respect to BMcD, and that's Burns & McDonnell,

1 Q Okay. And the authors are in the left-hand  
2 side, do you know any of the individuals there,  
3 Mr. Hecox, I think, Mr. Whittemore,  
4 Mr. Buddemeier, or Mr. Wilson?  
5 A **Mr. Hecox, I've met; Mr. Whittemore, I'm**  
6 **familiar with; Mr. Wilson, yes, I worked with**  
7 **him quite a bit to get data from their -- their**  
8 **modeling and other data work.**  
9 Q And would you -- would you agree that they are  
10 experts in the field?  
11 A **Again, different ones of that list have**  
12 **differing expertises. They are sort of the data**  
13 **repository with respect to sort of geologic and**  
14 **water-related matters of the state. None of**  
15 **those are groundwater modelers, per se, but**  
16 **yeah.**  
17 Q But as to their particular discipline, you would  
18 agree that they are experts?  
19 A **We rely on, you know, their work to a**  
20 **significant degree, yes.**  
21 Q Okay. From that article and specifically at  
22 page 3, the KGS publication says that Irrigation  
23 return flows, the infiltration of irrigation  
24 water to the water table has been determined to  
25 be a significant recharge component in several

1 is it not?  
2 A **It is.**  
3 Q In respect to BMcD not accounting for, quote,  
4 enhanced precipitation recharge due to  
5 irrigation. So it's our perspective that I  
6 think is shared -- that you share is Burns &  
7 McDonnell did not take into account enhanced  
8 precipitation recharge due to irrigation,  
9 correct?  
10 A **That is a fragment of my statement in the**  
11 **report, yes, they did not do that.**  
12 Q Okay.  
13 A **I go on to say why that's not improper.**  
14 Q I simply -- we just want to be sure that we  
15 agree that that was not taken into account by  
16 Burns & McDonnell?  
17 A **Correct.**  
18 Q Okay. So if we look at the next slide, this is  
19 taken from a Kansas Geological Survey  
20 publication, and my impression is that KGS  
21 materials are -- are things that you rely on  
22 routinely. Is that a fair statement?  
23 A **We -- yes, I do interact with the Kansas**  
24 **Geologic Survey on many occasions and utilize**  
25 **their work when appropriate, yes.**

1 studies, and then it includes citations. And it  
2 goes on to say, This factor includes return flow  
3 of the sprinkler. I think as we talked a moment  
4 ago that conceptually you agree with this, don't  
5 you?  
6 A **Yes, irrigation return flows are a significant**  
7 **component; that's not the same thing as this**  
8 **irrigation enhancement precipitation recharge,**  
9 **those are different things.**  
10 Q I understand but you understand that that --  
11 that, obviously, that irrigation is not  
12 occurring and will not occur in the future on  
13 the R9 Ranch depending on what happens in this  
14 and other proceedings, correct?  
15 A **Correct.**  
16 Q So if we look, then, at the next slide, and,  
17 again, this is a Kansas Geological Survey  
18 publication, this is by Mr. Whittemore that is  
19 entitled "Groundwater Recharge in the Upper  
20 Arkansas River Corridor in Southwest Kansas,"  
21 and this actually is the Cities' Exhibit 184 at  
22 page 3, and it states in part, which I  
23 underlined, Areal recharge from precipitation  
24 over nonirrigated land is the smallest of the  
25 recharge rates. Recharge over irrigated land is

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1 substantially greater than from precipitation  
2 over nonirrigated area. Do you agree with that  
3 concept?  
4 **A Well, again, that quote -- I haven't studied**  
5 **that report, it wasn't within the scope of**  
6 **Mr. Larson's report, he didn't rely on it so I**  
7 **didn't study this particular report, so I'm just**  
8 **reacting to the quote, recharge on irrigated**  
9 **land is greater than nonirrigated land, I agree**  
10 **with that. Again, it includes this irrigation**  
11 **return flow issue. The scope of this study was**  
12 **the Upper Ark River corridor which is a**  
13 **different basin, has much different conditions.**  
14 **Q** The -- certainly will grant you that, it's the  
15 concept that we're interested in and the concept  
16 being that recharge over irrigated land is  
17 substantially greater than precipitation over  
18 nonirrigated area, I think that would be a  
19 universal concept, would it not?  
20 **A Again, when it includes the irrigation return**  
21 **flows, it's a -- it's a correct statement.**  
22 **Q** So if we look at the next slide, this deals with  
23 Dave Romero's rebuttal report that -- at pages 3  
24 and 4, and the first part of this upper part,  
25 Mr. Romero was quoting something that Mr. Larson

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1 has said, and that quote is that The BGW  
2 groundwater model was premised on the concept of  
3 increased groundwater recharge from  
4 precipitation on irrigated lands. To be  
5 consistent with this premise when evaluating a  
6 transfer, the groundwater recharge on irrigated  
7 land must be reduced when that land is no longer  
8 irrigated. So that's Mr. Larson's statement  
9 which I think you have read?  
10 **A Correct.**  
11 **Q** Mr. Romero says, I agree with Mr. Larson's  
12 description of this hydrologic concept and  
13 associated reduction of local groundwater  
14 recharge at the R9 Ranch. I take it that you do  
15 not agree with Mr. Larson's premise?  
16 **A Yes, that's correct.**  
17 **Q** And why is that, at least in general?  
18 **A Well, again, that's really the subject of my**  
19 **entire report, so what are -- what are you**  
20 **asking?**  
21 **Q** Is it possible to essentially encapsulate your  
22 disagreement, or is it simply something that in  
23 context requires a review of your entire report?  
24 **A Well, I disagree with Mr. Larson's methodology**  
25 **to compute an irrigation enhancement on a**

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1 **precipitation recharge and his method of**  
2 **quantifying it, the amount he comes up with, his**  
3 **statement that it's based upon the Balleau**  
4 **groundwater model.**  
5 **Q** So given your disagreement, then, you also  
6 disagree with Mr. Romero, correct?  
7 **A Well, Mr. Romero's statement is quite qualified,**  
8 **in my view, as I read it. He agrees with the**  
9 **hydrologic concept that there -- there might be**  
10 **greater recharge from precipitation on irrigated**  
11 **land than not. It's a very vague, in my view,**  
12 **endorsement of Mr. Larson's work.**  
13 **Q** It is nonetheless an endorsement of some kind,  
14 isn't it?  
15 **A Of some type, yes.**  
16 **Q** Okay. Let's look at the next slide. The --  
17 we're looking again at the same quote,  
18 Mr. Barfield, from the Kansas Geological Survey  
19 that talks about Areal recharge from  
20 precipitation over nonirrigated land is the  
21 smallest of the recharge rates. Recharge over  
22 irrigated land is substantially greater than  
23 from precipitation over nonirrigated area, I  
24 wanted to show that to you again because it's  
25 taken from a Kansas Geological Survey open file

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1 report authored by Mr. Whittemore. But then it  
2 goes on to say that Based on research from the  
3 Upper Arkansas River corridor study, a Kansas  
4 water plan by D. Whittemore, S. Perkins and  
5 others. S. Perkins is Sam Perkins, is it not?  
6 **A It is.**  
7 **Q** And he worked for you, did he not?  
8 **A Yes.**  
9 **Q** And you would consider him to be an expert in  
10 his field, would you not?  
11 **A He -- he is a very good groundwater modeler,**  
12 **yes.**  
13 **Q** The -- that is simply a duplicate so we can move  
14 past that. This is another part of Mr. Romero's  
15 rebuttal, Mr. Barfield, the -- where he is  
16 talking about something that Mr. Larson said,  
17 which is the top paragraph, and Mr. Larson's  
18 statement is, Do you concur with the  
19 methodology -- no, I'm sorry, this is Romero's  
20 statement about Larson. Do you concur with the  
21 methodology Larson used to rerun the various  
22 simulations of potential future conditions  
23 considered by Burns & McDonnell, reducing the  
24 amounts of recharge on the R9 Ranchlands that  
25 would not be irrigated under future municipal

1 pumping conditions, and his response is that his  
 2 review of his reported methodology of his report  
 3 are compatible with my expectations. To that  
 4 extent, I concur with Mr. Larson's methodology.  
 5 So I guess two questions essentially about that,  
 6 Mr. Barfield, do you agree with that concept?  
 7 **A Again, this is, to me, very vague. I don't know**  
 8 **quite what he's saying here with respect to the**  
 9 **methodology, did Mr. Larson construct the proper**  
 10 **model runs based on his assumptions, you know, I**  
 11 **would agree with that. I disagree with his**  
 12 **assumption. Is he saying -- you know, to that**  
 13 **extent, I concur. I guess I'm -- again, it's a**  
 14 **very vague statement, and I'm not quite sure**  
 15 **exactly what he's concurring with with respect**  
 16 **to Mr. Larson's work and what he's not.**  
 17 **Q** Okay. Fair enough. It's clear that he's  
 18 concurring with some part of Mr. Larson's work,  
 19 correct?  
 20 **A Something, yes.**  
 21 **Q** Okay. And we can look at the next slide. You  
 22 state in your rebuttal that The model  
 23 documentation is clear that while there are two  
 24 sets of recharge curves for pre- and post-1970  
 25 periods, nowhere in the model documentation is

1 the rest of the day then?  
 2 **MR. TRASTER:** Well, we were just  
 3 discussing -- we were just discussing that,  
 4 I think -- well, go ahead.  
 5 **MR. LEE:** Well, Mr. Traster and I  
 6 just had a discussion, Your Honor, I  
 7 believe that -- and Mr. Barfield was your  
 8 last witness in your case in chief unless  
 9 you want to call Mr. Wenstrom?  
 10 **MR. TRASTER:** No, that's not our  
 11 last witness, we're going to be calling --  
 12 **MR. BULLER:** Orrin Feril.  
 13 **MR. TRASTER:** -- Orrin Feril  
 14 tomorrow.  
 15 **MR. LEE:** Well, in terms of the  
 16 order today, and understanding that there  
 17 will be objection, I think, to Mr. Larson,  
 18 but I would suggest, Your Honor, that we do  
 19 Mr. Larson, Ms. Walker is here, who is an  
 20 expert, and to the extent that we can get  
 21 them on so that they can get out of town,  
 22 that would be helpful. And then we intend  
 23 to call Mr. Wenstrom in our case today.  
 24 So --  
 25 **MR. BULLER:** Yeah, so we object to

1 the difference in these curves ascribed to  
 2 irrigation alone. I interpret that to mean that  
 3 irrigation is a factor but not the sole factor.  
 4 Is that what you mean?  
 5 **A It is a factor in the difference of the two**  
 6 **recharge curves, yes.**  
 7 **Q** Thank you, Mr. Barfield.  
 8 **MR. BULLER:** Your Honor, if I could  
 9 just take a few minutes to consult with my  
 10 colleague?  
 11 **PRESIDING OFFICER:** All right.  
 12 We'll take just a five-minute break here.  
 13 (Thereupon, a recess was taken;  
 14 whereupon, the following was had.)  
 15 **PRESIDING OFFICER:** We'll go ahead  
 16 and go back on the record to resume things,  
 17 then.  
 18 **MR. BULLER:** Thank you, Your Honor,  
 19 no questions for this witness.  
 20 **PRESIDING OFFICER:** All right. I  
 21 guess that made your day easy, then,  
 22 Mr. Barfield, so no further questions.  
 23 **THE WITNESS:** Thank you.  
 24 **PRESIDING OFFICER:** I guess what are  
 25 the parties' expectation for witnesses for

1 the calling of Mr. Larson as a surrebuttal  
 2 witness for the reasons we stated on the  
 3 record yesterday. Relating to Ms. Walker,  
 4 our understanding from conversations with  
 5 Mr. Lee is that she would be our first  
 6 witness on Friday; I'm not prepared to take  
 7 her testimony today. But -- but my  
 8 understanding is that Mr. Wenstrom would be  
 9 available today, and I believe Mr. Traster  
 10 is prepared to take Mr. Wenstrom's  
 11 testimony today.  
 12 **PRESIDING OFFICER:** Okay. As we  
 13 kind of addressed yesterday regarding  
 14 Mr. Larson, I'm overruling the objection to  
 15 him testifying because he is on that  
 16 witness list, the witness list did also  
 17 state, then, witnesses necessary for  
 18 rebuttal. And so if there are things  
 19 specifically from Mr. Barfield's testimony,  
 20 and that's why we didn't have him testify  
 21 yesterday until Mr. Barfield has had the  
 22 chance to adopt that testimony in case  
 23 there's any corrections or changes he  
 24 needed to make to that prefiled testimony.  
 25 **MR. BULLER:** My -- my understanding

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1 from that, Your Honor, is that Mr. Larson  
2 would then be restricted from testifying  
3 about anything that is already in  
4 Mr. Barfield's report, and it is only as to  
5 matters that were new or corrected from  
6 Mr. Barfield on his testimony today that  
7 Mr. Larson should be allowed to testify;  
8 otherwise, Mr. Larson is an improper  
9 surrebuttal witness, and we would lodge an  
10 objection to that testimony.  
11 **MR. LEE:** Your Honor, that's not my  
12 understanding. I don't know what -- what  
13 Your Honor thinks about that. These issues  
14 are addressed in, I suppose, our respective  
15 memoranda. I've not had a chance to read  
16 the Cities' and we filed ours this morning,  
17 and so I don't know how the Court wants --  
18 or Your Honor wants to proceed with that.  
19 The -- it would be possible to call  
20 Mr. Wenstrom, although if we were to do  
21 that, I need to spend a little time with  
22 him in advance to do that because this  
23 is -- this is earlier than he expected to  
24 be called, and it's sort of the reverse, I  
25 think, of what Mr. Buller's situation is

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1 with Ms. Walker. So ...  
2 **PRESIDING OFFICER:** Okay. Since  
3 Mr. Buller is bringing up that he has --  
4 he's objecting with the scope of what  
5 Mr. Larson could testify as rebuttal  
6 witness and since you've addressed that you  
7 think those are covered in those --  
8 **MR. BULLER:** Your Honor, I would  
9 clarify, those -- the issue with respect to  
10 Mr. Larson was not addressed; it was with  
11 respect to their intent to call Dr. Keller  
12 as an undisclosed expert, who was not, you  
13 know, included in there. So we didn't  
14 address -- we were under the impression  
15 that yesterday we addressed the --  
16 Mr. Larson as a surrebuttal witness and  
17 that he would be permitted to testify as  
18 such a witness only as to matters that were  
19 changed or new as Mr. -- you know, pursuant  
20 to Mr. Barfield's testimony.  
21 In that instance, we would not have an  
22 objection to Mr. Larson -- I mean, you  
23 overruled our objection to Mr. Larson  
24 testifying as a surrebuttal witness, and  
25 that was our understanding of the scope of

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1 Your Honor's decision yesterday. To the  
2 extent that Mr. Lee intends to ask  
3 Mr. Larson about just anything and  
4 everything in Mr. Barfield's report, we  
5 think that's improper and a violation of  
6 Your Honor's prehearing order.  
7 **MR. TRASTER:** Nor did we think that  
8 Mr. Barfield went outside the scope of his  
9 report so, I mean, why -- what is to  
10 surrebut?  
11 **MR. LEE:** Well, Your Honor, what you  
12 have in front of you is actually a, from  
13 us, is a memorandum that addresses --  
14 addresses Mr. Keller generally, but it is  
15 equally applicable to the situation with  
16 Mr. Larson. I think that this -- I think  
17 that this has been decided was my  
18 understanding, that Mr. Larson would be  
19 able to testify because, as we say in our  
20 memorandum, he is different from the other  
21 experts because everybody else had direct  
22 testimony and then there was rebuttal  
23 testimony from those experts. Nobody saw  
24 Mr. Barfield's testimony until June 28th,  
25 and there was no opportunity after that per

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1 the order to do anything other than  
2 question him and then as we propose provide  
3 evidentiary -- an evidentiary response.  
4 **MR. BULLER:** And, Your Honor, I  
5 would make a correction there, that's not  
6 factual. They have had Mr. Barfield's  
7 rebuttal report since June 28th, that was  
8 three weeks before the beginning of this  
9 hearing. Your Honor made it clear that you  
10 would entertain additional prehearing  
11 conferences at the request of counsel;  
12 there was no such request. There was no  
13 such request from counsel for Water PACK to  
14 depose Mr. Barfield, there was no such  
15 request to extend the discovery deadline  
16 related to Mr. Barfield. We have not had  
17 an opportunity to participate in this kind  
18 of surrebuttal testimony because we have  
19 been abiding with your prehearing order,  
20 and we think it's fair that Water PACK  
21 should be held to the same rules.  
22 **PRESIDING OFFICER:** All right. This  
23 is what I'm going to do, we're going to  
24 take a little bit of a long lunch, I'm  
25 going to read through everything that both

1 parties have submitted here. Why don't we  
2 come back at 1:30, and then I'll have  
3 something figured out after I've had a  
4 chance to review what's been submitted and  
5 the authorities that might apply in this  
6 case.

7 **MR. BULLER:** Thank you, Your Honor.

8 **MR. LEE:** That's great, Your Honor,  
9 thank you.

10 **PRESIDING OFFICER:** We are in recess  
11 until 1:30 this afternoon.

12 (Thereupon, a lunch recess was  
13 taken; whereupon the following was  
14 had.)

15 **PRESIDING OFFICER:** Okay. I think  
16 we're ready to go back on the record now, I  
17 think everything's connected.

18 Okay. So I've gone over what the  
19 parties have submitted, looked back at  
20 the -- the draft transcript from yesterday.

21 **MR. TRASTER:** Can you turn on the  
22 mic?

23 **PRESIDING OFFICER:** Sorry, is that  
24 better?

25 **MR. TRASTER:** Yes, sir, thank you.

1 Now, we already had that motion to  
2 exclude Mr. Barfield as an expert witness  
3 and strike that testimony from the record,  
4 it was filed less than 48 hours before the  
5 hearing started and I already ruled on  
6 that. I denied that motion and overruled  
7 that objection, allowing Mr. Barfield to  
8 appear as a witness and for his testimony  
9 to be offered.  
10 During this proceeding, then, Water PACK  
11 advised that they were intending to call  
12 Mr. Larson as a rebuttal witness, and  
13 that's what the Cities were objecting to.  
14 Now, both parties have an ability to call  
15 rebuttal witnesses, whether that be a  
16 expert witness or a lay witness, fact  
17 witness. I don't think the fact that  
18 someone's already listed on the witness  
19 list that was previously disclosed and  
20 identified as an expert would preclude that  
21 witness from appearing also as a rebuttal  
22 witness.  
23 Now, the Supreme Court has held in other  
24 cases that a trial court did not error in  
25 allowing a witness to be called as a

1 **PRESIDING OFFICER:** Okay. Now,  
2 under the Administrative Procedures Act,  
3 I'm not bound by the strict rules of  
4 evidence, the act just states I need to  
5 give the parties a reasonable opportunity  
6 to be heard and present evidence and  
7 without partiality.

8 Now, that prehearing order provided that  
9 witnesses not disclosed by the deadline may  
10 not be permitted to testify; though it uses  
11 that word may, it gives me some discretion  
12 there. Now, the parties had agreed to the  
13 pre-filing of written direct testimony of  
14 the expert witnesses, which the witnesses  
15 could then adopt as their testimony after  
16 taking the witness stand at the hearing.

17 The schedule was agreed to by the  
18 parties under the deadline for disclosure  
19 of expert witnesses and the second deadline  
20 for the disclosure of any rebuttal  
21 witnesses and rebuttal experts. The Cities  
22 met that requirement, Mr. Barfield was  
23 disclosed as a rebuttal expert, and his  
24 testimony was prefiled in accordance with  
25 that procedural schedule.

1 rebuttal witness. As I stated yesterday  
2 and what I -- what I had in my notes and I  
3 confirmed looking back at that draft of  
4 that transcript, Mr. Larson would not be  
5 able to testify regarding Mr. Barfield's  
6 testimony until after Mr. Barfield  
7 appeared.  
8 Now, I did not intend and I don't think  
9 looking back at that that anything I said  
10 in there, in yesterday's proceeding,  
11 indicated that Mr. Barfield -- or that  
12 Mr. Larson could only be questioned about  
13 Mr. Barfield's cross-examination or  
14 redirect questioning; he would just be a  
15 rebuttal witness, so he can be called as a  
16 rebuttal witness in this matter.  
17 And the other matter is regarding  
18 Dr. Keller, and I think there's two issues  
19 there, Dr. Keller as a rebuttal witness and  
20 then Dr. Keller as a potential expert  
21 witness. Now, as I previously stated, the  
22 parties have the opportunity to call  
23 rebuttal witnesses; however, I don't see  
24 that there's sufficient evidence to justify  
25 allowing Water PACK to call a previously

1 undisclosed expert witness. So, therefore,  
 2 Dr. Keller could be called as a rebuttal  
 3 witness, but I'm going to deny any request  
 4 to try to offer Dr. Keller as an expert  
 5 witness.  
 6 All right. Anything else before we move  
 7 on to the next witness?  
 8 **MR. LEE:** Not for Water PACK, Your  
 9 Honor, thank you.  
 10 **MR. BULLER:** Not from the Cities,  
 11 thank you.  
 12 **PRESIDING OFFICER:** All right.  
 13 Mr. Lee, did you want to call Dr. -- or,  
 14 I'm sorry, Mr. Larson?  
 15 **MR. LEE:** I would, Your Honor, thank  
 16 you.  
 17 **PRESIDING OFFICER:** Mr. Larson was  
 18 sworn in yesterday so he would still be  
 19 under oath so you may proceed with any  
 20 questions you have for him on rebuttal.  
 21 **MR. LEE:** Thank you, Your Honor.  
 22  
 23 **STEVEN P. LARSON,**  
 24 having previously sworn or affirmed, was  
 25 examined and testified as follows:

1 **A Yeah, in fact, it all started at the USGS where**  
 2 **I worked in a research group on the development**  
 3 **of these groundwater models; then in my**  
 4 **consulting practice over the years, I've applied**  
 5 **groundwater models on a number of occasions.**  
 6 **Q** So doing the rough math, you've been working in  
 7 groundwater modeling for more than 40 years?  
 8 **A Yes.**  
 9 **Q** Okay. Have you done work with the State of  
 10 Kansas over time?  
 11 **A Yes, I have.**  
 12 **Q** And what work has that been just in sort of a  
 13 bullet point sense?  
 14 **A I guess it began with the Kansas versus Colorado**  
 15 **case on the Arkansas River.**  
 16 **Q** Which was a U.S. Supreme Court case?  
 17 **A Yes.**  
 18 **MR. BULLER:** Your Honor, is this  
 19 all -- Mr. Larson's CV was part of his  
 20 direct testimony, my understanding is that  
 21 this testimony would be in rebuttal to  
 22 Mr. Barfield; and so we all have his direct  
 23 testimony, we all have his CV, we already  
 24 looked at that.  
 25 **PRESIDING OFFICER:** Do you have a

1 **DIRECT EXAMINATION**  
 2 **BY MR. LEE:**  
 3 **Q** May it please the tribunal, Mr. Larson, though  
 4 you've done it, could you state your full name  
 5 for the record again?  
 6 **A Steven P. Larson, L-A-R-S-O-N.**  
 7 **Q** Have you changed employment since yesterday?  
 8 **A No, I have not.**  
 9 **Q** Okay. Let's talk a little bit just in terms of  
 10 background information for you to provide some  
 11 context about your testimony. The -- let's  
 12 start with your educational and work background,  
 13 beginning with education?  
 14 **A I have a bachelor's degree -- a bachelor's**  
 15 **degree and a master's degree in civil**  
 16 **engineering from the University of Minnesota.**  
 17 **Q** And so we heard some about your work background,  
 18 so in general you've worked for your present  
 19 firm for a number of years, correct?  
 20 **A Yes, I worked with the U.S. Geological Survey**  
 21 **for about nine years and then for the last**  
 22 **43 years, I guess, I've worked for Papadopoulos &**  
 23 **Associates.**  
 24 **Q** Okay. And a good part of that work is in  
 25 groundwater modeling, is it not?

1 response, Mr. Lee?  
 2 **MR. LEE:** Well, Your Honor, these  
 3 sorts of questions, I think, are usually  
 4 useful for the tribunal in the sense that  
 5 it provides some background about the  
 6 witness. You've not actually heard this,  
 7 it's true that he does have a CV, but on  
 8 the other hand, it's certainly customary as  
 9 Your Honor would know in terms of an expert  
 10 witness, despite the fact that there's a CV  
 11 involved, to go through this sort of  
 12 information and I think it would be helpful  
 13 and certainly not prejudicial to the  
 14 Cities.  
 15 **MR. BULLER:** Your Honor, this is  
 16 cumulative of his direct testimony, we  
 17 would ask that it be restricted to rebuttal  
 18 only.  
 19 **PRESIDING OFFICER:** Well, Mr. Buller  
 20 is correct there that this is all contained  
 21 within that direct testimony; therefore,  
 22 it's pretty much repetitive of what's  
 23 already in the record since he adopted  
 24 that -- that prefiled testimony as his  
 25 testimony. So I'll give you just a moment

1 if you need to kind of get things  
2 rearranged, refocused, or whatever, but  
3 just try to keep everything moving and to  
4 the point for the rebuttal.

5 **MR. LEE:** We can -- we can certainly  
6 move past that, Your Honor, thank you.

7 **BY MR. LEE:**

8 Q The -- in terms of your work, Mr. Larson, can  
9 you tell the -- can you tell us what in general  
10 the purpose is for groundwater modeling?

11 **A Well, the fundamental purpose for groundwater**  
12 **modeling is to provide a tool with which**  
13 **hydrologists and engineers can use to analyze**  
14 **various kinds of groundwater-related problems.**  
15 **And so usually the focal point of the modeling**  
16 **is to identify the problem that you're trying to**  
17 **address and then either construct or use a model**  
18 **that would enable you to address those**  
19 **particular questions.**

20 Q And so, again, at a high level, what does the  
21 word entail, in other words how is a groundwater  
22 model constructed?

23 **A Well, based on whatever question you're trying**  
24 **to answer, the complexity could be from**  
25 **relatively simple models that we'll call**

1 **analytical models to more complex models. And**  
2 **basically what you have to do is identify**  
3 **various geologic and hydrologic information that**  
4 **describes the groundwater system that you're**  
5 **dealing with. And then based on that**  
6 **information, you construct a model, and a model**  
7 **is an idealization of a real system.**

8 **And so the goal is to provide enough detail**  
9 **and structure to the model from the existing**  
10 **information on geology and hydrology that allows**  
11 **the model to address the question that you're**  
12 **trying to answer. So you put that structure --**  
13 **it's all done mathematically, and so there's a**  
14 **mathematical procedure, if you will, that's used**  
15 **to create the model in a computer form, and then**  
16 **based on inputs to that computer model, the**  
17 **model makes calculations about what groundwater**  
18 **levels are, how they might change, how they**  
19 **interact with the streams or how the groundwater**  
20 **system interacts with streams. And then you can**  
21 **quantify those things through the use of the**  
22 **groundwater model.**

23 Q And so it is intended, it sounds like, as a  
24 working tool for -- for the entity for whom the  
25 model is being created?

1 **A Yes, that should be the focus.**

2 Q Okay. So in respect to groundwater modeling,  
3 have you done work for Groundwater Management  
4 District Number 5 in Kansas?

5 **A Yes, I have.**

6 Q And what has that work been?

7 **A Well, when the model associated with this**  
8 **particular proceeding was being developed, I was**  
9 **retained to serve on sort of a technical**  
10 **committee, if you will, to sort of review the**  
11 **progress that was being made by Balleau**  
12 **Groundwater and to make suggestions or**  
13 **recommendations along the way. And then,**  
14 **ultimately, I actually prepared a report**  
15 **summarizing the review work that I had done and**  
16 **the conclusions that I had reached about the**  
17 **groundwater model that Balleau Groundwater had**  
18 **constructed.**

19 Q So you were retained as an expert to essentially  
20 peer review the GMD5 model?

21 **A Yes, I think that's fair.**

22 Q Okay. During that period of time or prior or  
23 after that, I suppose, did you work with  
24 Mr. Barfield?

25 **A Yes, I've worked with Mr. Barfield for a number**

1 **of years.**

2 Q And in what sense and what capacity?

3 **A Well, some of it started, I guess, way back the**  
4 **time of the Kansas versus Colorado, I don't**  
5 **think he was the chief engineer at that time.**  
6 **Later I worked on the Kansas versus Nebraska**  
7 **case, which I think during that period he was**  
8 **the chief engineer. And then I worked on some**  
9 **other projects within Kansas to evaluate other**  
10 **models in -- in the Kansas area that I worked**  
11 **with his department on those as well.**

12 Q And during the period of time that Mr. Barfield  
13 was the chief engineer for the State of Kansas,  
14 were you asked either by him specifically or the  
15 State of Kansas to do groundwater modeling for  
16 the State?

17 **A Yes.**

18 Q What I'd like to do, Mr. Larson is just sort of  
19 bullet point by bullet point walk through  
20 Mr. Barfield's report and get your impressions  
21 of that. It is susceptible to looking at  
22 discrete parts of the report, I think, so we'll  
23 simply look at those as we go along and I'll  
24 have some questions for you.

25 So probably, Myndee, about the fourth one



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1 over. Yeah, that's it, thank you.  
2 So one of the things that Mr. Barfield says  
3 in his report, as you can see from the screen,  
4 is that Burns & McDonnell did not account for  
5 enhanced precipitation recharge due to  
6 irrigation, but that omission was reasonable  
7 because the GMD5 model does not include that  
8 feature. My first question about that would be,  
9 I think we agree that Burns & McDonnell did not  
10 account for enhanced precipitation recharge; is  
11 that right?  
12 **A Yes.**  
13 **Q** And so he goes on to say, but that omission was  
14 reasonable because the GMD model does not  
15 include that feature. Do you think that was  
16 reasonable of Burns & McDonnell to omit that?  
17 **A I don't because the GMD model does include that**  
18 **feature.**  
19 **Q** And so the -- the issue of the omission by  
20 Burns & McDonnell in terms of the enhanced  
21 precipitation piece, did that have, in your  
22 judgment, some -- some material effect on the  
23 model?  
24 **A Yes, it does, at least in certain areas.**  
25 **Q** And let's just sort of itemize those, if we can?

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1 **A Let's what, I'm sorry?**  
2 **Q** Let's just sort of itemize in what areas it has  
3 had that effect or had an effect?  
4 **A Well, in the model report, they talk about the**  
5 **curves that they used to translate precipitation**  
6 **amounts into recharge amounts.**  
7 **Q** And let's stop for a second for the uninitiated,  
8 what -- what is a curve in the context of a  
9 groundwater model?  
10 **A This is a set of curves that are used to develop**  
11 **inputs to the groundwater model, and the input**  
12 **that these curves are being used to provide are**  
13 **how much water recharges to the groundwater as a**  
14 **consequence of precipitation. This is apart**  
15 **from, say, return flows associated with**  
16 **irrigation; it's based on precipitation that**  
17 **falls on the land, how much of it actually**  
18 **reaches the groundwater. And so there were**  
19 **curves developed to express that relationship**  
20 **between the amount of precipitation and the**  
21 **amount of recharge.**  
22 **Q** Okay. And I interrupted you, but you were  
23 talking about the effect of this omission,  
24 what -- what effects there were?  
25 **A Well, the report specifically describes that at**

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1 **least in some of the zones and in particular**  
2 **zone 9, which is the zone that includes the**  
3 **R9 Ranch area, Burns & McDonnell had concluded**  
4 **that there are two curves to express that**  
5 **relationship, one is applied to a period before**  
6 **1970, and the other is applied to a period after**  
7 **1970; and in their description of that, they**  
8 **basically indicate that the difference between**  
9 **those curves is related to the impact of**  
10 **precipitation on irrigated land, that on**  
11 **irrigated land there is an increased or enhanced**  
12 **infiltration of precipitation and an enhanced**  
13 **recharge associated with that.**  
14 **Q** Which is -- I'm sorry to interrupt.  
15 **A And that that's what the difference in the**  
16 **curves were trying to express.**  
17 **Q** Okay.  
18 **MR. BULLER:** Objection, it was not  
19 Burns & McDonnell that formulated those  
20 curves, that was in the Balleau groundwater  
21 model, not -- not in Burns & McDonnell's  
22 work in this case.  
23 **MR. LEE:** That sounds like a  
24 cross-examination question to me, Your  
25 Honor, rather than an objection.

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1 **MR. BULLER:** It misstates the  
2 record, Your Honor.  
3 **PRESIDING OFFICER:** Okay. I guess  
4 let's make sure we have a clear record, can  
5 we find that and we'll just get it  
6 clarified now?  
7 **MR. LEE:** I presume we can, I think  
8 we would have to take a bit of a break if  
9 that's -- if that's what Your Honor would  
10 like to do.  
11 **PRESIDING OFFICER:** Let's just take  
12 a couple minutes and we make sure the  
13 record is clear and ...  
14 **MR. LEE:** Okay.  
15 (Thereupon, a recess was taken;  
16 whereupon, the following was had.)  
17 **PRESIDING OFFICER:** Everybody  
18 satisfied now?  
19 **MR. BULLER:** Yeah.  
20 **PRESIDING OFFICER:** Okay.  
21 **MR. BULLER:** We're satisfied.  
22 **PRESIDING OFFICER:** All right. So  
23 we know what he's testifying about now and  
24 everybody can be clear it's within the  
25 scope of rebutting Mr. Barfield's

1 testimony. So go ahead and proceed, then.  
 2 **MR. LEE:** Okay, thank you, Your  
 3 Honor.  
 4 **BY MR. LEE:**  
 5 Q I think before we took a short break that you  
 6 were testifying about the effects of the  
 7 omission or the failure to account for enhanced  
 8 precipitation recharge. So if you recall sort  
 9 of where you were, then we can start again.  
 10 **A Yes, and just to clarify, Balleau Groundwater,**  
 11 **in the development of the model, were**  
 12 **responsible for those curves. And in their**  
 13 **report, I was referring to their report, they**  
 14 **describe the development of those curves and**  
 15 **what they were intended to represent. And at**  
 16 **least with respect to zone 9 and a couple of**  
 17 **other zones, they were referring to the**  
 18 **enhancement of recharge caused by increased soil**  
 19 **moisture associated with irrigation. And so**  
 20 **they developed two curves, one representing the**  
 21 **conditions post-1970 and one conditions**  
 22 **pre-1970.**  
 23 Q So if we look, then, at the next, what I'm  
 24 referring to, Mr. Larson, as bullet points,  
 25 the -- in Mr. Barfield's report he has an

1 introductory statement that says that The GMD5  
 2 model report, as utilized by Burns & McDonnell,  
 3 is still the best tool available for simulating  
 4 the impact of the Cities' proposed water  
 5 transfer over the long-term, and is superior to  
 6 the alternative method proposed by Larson for  
 7 multiple reasons, including, and the first of  
 8 those is that Larson incorrectly asserts that  
 9 the GMD model report, in quotes, was premised on  
 10 the concept of -- concept or, should be, I  
 11 think, method for estimating the purported  
 12 irrigation enhancement to recharge is, and those  
 13 are my brackets, and the assertion is  
 14 unsupported by either the GMD5 model report or  
 15 its supporting documentation.  
 16 So focusing on that second paragraph there  
 17 where the -- he is stating that you incorrectly  
 18 asserted that the model report was premised on  
 19 the concept or method for estimating purported  
 20 irrigation enhancement to recharge and that  
 21 that's unsupported, do you have -- do you have a  
 22 response or an opinion about that?  
 23 **A Yes, as I prescribed a moment ago, Balleau**  
 24 **Groundwater, at least for some zones, decided**  
 25 **that there were two sets of curves, one related**

1 **principally to post-1970 conditions and in**  
 2 **effect dealing with the issue of enhanced**  
 3 **precipitation on irrigated land and a pre-1970,**  
 4 **and so there's a description in the report of**  
 5 **that process.**  
 6 **There's also information in the report**  
 7 **about -- and actually a statement in the report**  
 8 **about how making that adjustment, having one**  
 9 **curve for the pre-'70 conditions and a second**  
 10 **curve for the post-'70 conditions actually**  
 11 **improved the calibration of the model, and so I**  
 12 **understood that to be that they looked at that**  
 13 **difference and actually had found evidence that**  
 14 **that actually improved the calibration of the**  
 15 **model, and that's described in the model**  
 16 **documentation.**  
 17 Q Okay. So in talking about pre-1970 and  
 18 post-1970, what's that line of demarcation,  
 19 what's the -- why are those different?  
 20 **A Well, I think they found that when they**  
 21 **separated the curves at that time, they could**  
 22 **find that they could -- the model could track**  
 23 **data better, calibrate better. And so -- I**  
 24 **don't know exactly the basis for that particular**  
 25 **point in time, but that was the purpose was to**

1 **look at the potential in some zones, not all**  
 2 **zones, for the enhancement of recharge due to**  
 3 **irrigation.**  
 4 Q Okay. And so when you -- when you use the word  
 5 calibration, is that essentially a synonym for  
 6 being able to track better?  
 7 **A Yes, calibration is the process where you're**  
 8 **sort of testing the model, you -- you run a**  
 9 **simulation of some historical conditions and**  
 10 **then you compare what the model is calculating**  
 11 **against certain measurements that are made,**  
 12 **measurements of groundwater levels, measurements**  
 13 **of streamflows, and that's what Balleau**  
 14 **Groundwater did in their calibration process,**  
 15 **and then based on that make adjustments to model**  
 16 **parameters, among them the structure of these**  
 17 **curves representing pre-'70 conditions and**  
 18 **post-'70 conditions.**  
 19 Q Okay. So if we look at the -- the next  
 20 criticism that Mr. Barfield had, the  
 21 introductory paragraph up there is the same as  
 22 what I've just recited, so just moving to the  
 23 second paragraph, Mr. Barfield states that  
 24 Larson overstates the extent to which  
 25 post-irrigation recharge is reduced on the

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1 R9 Ranch because he ignores the fact that the  
2 soils on the ranch are excessively drained sandy  
3 soils, resulting in high permeability and very  
4 low water-holding capacity compared to the rest  
5 of zone 9. Do you have an impression, an  
6 opinion about that criticism?  
7 **A Yes, the first one is that in terms of the**  
8 **difference in the curves, that's what Balleau**  
9 **Groundwater concluded based on the calibration,**  
10 **so there is some basis for the degree of**  
11 **separation, which is what I used to estimate**  
12 **what that impact was.**  
13 **The second thing is when you actually look**  
14 **at permeable soils like that, sandy soils that**  
15 **are well drained, in my view anyway, are**  
16 **particularly susceptible to the enhanced**  
17 **recharge from irrigated land because the**  
18 **moisture content in the soils is maintained by**  
19 **the irrigation, such that when rainfall comes**  
20 **along during that period of time, more of it is**  
21 **able to drain all the way to the groundwater and**  
22 **become groundwater recharge.**  
23 **Q** And that is consistent, is it not, with the  
24 Kansas geographic -- KGS, rather, survey  
25 information that we showed on the screen a bit

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1 ago where it talked about this issue of  
2 enhanced -- enhanced recharge on irrigated land?  
3 **A Yes, that's exactly the point.**  
4 **Q** Okay. So the next bullet point, critique, that  
5 Mr. Barfield has of you or of your report,  
6 again, the same first paragraph and the -- his  
7 statement is, The difference in water levels  
8 after 51 years of the Cities continuously  
9 pumping their maximum authorized quantity of  
10 water from the ranch water rights is practically  
11 negligible. Do you have an opinion about the  
12 accuracy of that statement?  
13 **A Well, I can't really comment on what he means by**  
14 **practically negligible, but I will say as I**  
15 **concluded in my report that my results are**  
16 **significantly different in terms of the impact**  
17 **on groundwater levels and the difference in the**  
18 **groundwater levels over the 51-year period as**  
19 **opposed to what Burns & McDonnell calculated.**  
20 **For some of their scenarios, they actually**  
21 **calculated that the water levels would be**  
22 **higher; my calculations indicated that, no, they**  
23 **would be lower when you take into account the**  
24 **enhanced recharge from irrigation and you take**  
25 **that out of the second run where you're**

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1 **simulating municipal pumping.**  
2 **Q** And simulating municipal pumping means there's  
3 no irrigation on the R9 Ranch, correct?  
4 **A That was my assumption, yes.**  
5 **Q** Okay. And the -- the change or the difference,  
6 in your opinion, as -- in your opinion as  
7 compared to Burns & McDonnell is what?  
8 **A Well, they -- Burns & McDonnell, when they made**  
9 **the alternative run with the municipal pumping,**  
10 **they didn't adjust the amount of recharge on the**  
11 **land that would occur under nonirrigation**  
12 **conditions as opposed to irrigation conditions.**  
13 **Q** And so I take it you consider that to be an  
14 error?  
15 **A Yeah.**  
16 **Q** Is that yes?  
17 **A Yes.**  
18 **Q** So if we then move on to the next statement by  
19 Mr. Barfield, again, the introductory paragraph  
20 is the same, the -- and Mr. Larson -- or  
21 Mr. Barfield states that Larson's method to  
22 determine the reduction in recharge under  
23 nonirrigated conditions leads to a significant  
24 overstatement of the expected reduction in  
25 recharge from natural precipitation on the

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1 ranch. Is that, in your view, an accurate or  
2 sustainable opinion?  
3 **A Well, I don't think so. First of all, I don't**  
4 **know what degree of overstatement significant**  
5 **overstatement refers to. What I can say is that**  
6 **I base it on the difference in those curves that**  
7 **Balleau Groundwater obtained from the model**  
8 **calibration, and that was the amount that those**  
9 **difference in the curves indicated for the**  
10 **period that I looked at, which is a period of**  
11 **the 1991 to 2007 that Burns & McDonnell had used**  
12 **in their analysis.**  
13 **Q** So if we then move on, this is a separate  
14 statement, Mr. Larson, but again taken from the  
15 Barfield -- Barfield's report, and he states,  
16 The effects Larson shows from this reduction in  
17 recharge are largely contained on the ranch,  
18 even under the worst-case scenario of  
19 4800 acre-feet per year for 51 years, and  
20 generally has negligible long-term impacts on  
21 the ranch and, in particular, other water right  
22 users. Do you have an opinion about the  
23 accuracy of that statement?  
24 **MR. BULLER:** Your Honor, could  
25 counsel for Water PACK please advise which

1 page of Barfield's rebuttal report this is  
2 taken from?

3 **MR. LEE:** We can, Mr. Buller, if  
4 you'd like us to look, which we can.

5 **MR. BULLER:** Please, I don't doubt  
6 that it is there, I'd just like to know  
7 where it's at.

8 **MR. LEE:** Your Honor, may we have a  
9 moment?

10 **MR. BULLER:** Thank you. Is it  
11 page 2 just before work undertaken? Yeah,  
12 that's where -- that looks like where it's  
13 from.

14 **MR. LEE:** Okay.

15 **MR. BULLER:** Good enough, just  
16 wanted to know where it was.

17 **MR. LEE:** Thank you, Mr. Buller.

18 **BY MR. LEE:**

19 Q So I think my question, Mr. Larson, was whether  
20 you have opinion about the accuracy of this  
21 statement by Mr. Barfield?

22 **A Well, again, I don't know exactly what generally**  
23 **negligible refers to or how it affects other**  
24 **water right users because that's a highly**  
25 **individual assessment, but what I can say, as I**

1 correct?

2 **A Yes, actually, when you look at the description**  
3 **in the Balleau Groundwater documentation about,**  
4 **at least for some zones like zone number 9, they**  
5 **ascribe the difference to the effects of**  
6 **irrigation maintaining soil moisture and**  
7 **allowing for greater precipitation recharge to**  
8 **occur, so they talk about that specifically.**

9 **Now, in the documentation as to how the**  
10 **overall recharge component of the groundwater**  
11 **model input is calculated, there are other**  
12 **things that they include in there, and one of**  
13 **them is transit loss associated with runoff; but**  
14 **for zones like zone 9, there really isn't any**  
15 **significant runoff, it's -- it's sandy type**  
16 **soils, the runoff is small or negligible, and so**  
17 **there is no adjustment for that. And so for**  
18 **zone 9 in particular, the difference between the**  
19 **two curves is largely related to enhanced**  
20 **precipitation from precipitation -- or enhanced**  
21 **recharge from precipitation.**

22 Q And in relation to the R9 Ranch, what about the  
23 question of dams and farm ponds, terraces, and  
24 so on, are -- are any of those present?

25 **A Not that I could determine from the**

1 **said earlier, was that when I looked at my**  
2 **results as contrasted with the results that**  
3 **Burns & McDonnell had developed, there is a**  
4 **significant difference in that my results show**  
5 **water levels would be lower, some other results**  
6 **indicated water levels would be higher in these**  
7 **future simulations that they had prepared.**

8 Q Okay. Thank you. So let's look at the next  
9 portion of Mr. Barfield's report that we want to  
10 talk about. He states that While there are two  
11 sets of recharge curves for pre- and post-1970  
12 periods, nowhere in the model documentation is  
13 the difference in these curves ascribed to  
14 irrigation alone and nowhere are the two curves  
15 applied specifically to irrigated versus  
16 nonirrigated lands. Rather, the model  
17 documentation shows that the factors affecting  
18 the difference in the curves reflect a list of  
19 land-use changes including various soil and  
20 water conservation practices, including dams and  
21 farm ponds, terraces, conservation tillage of  
22 various kinds, and irrigation. Let's stop --  
23 start with that second paragraph sentence first.  
24 You have some observations, I think, about the  
25 accuracy of what is stated there; is that

1 **documentation. The documentation showed maps of**  
2 **where the various dams were located and they**  
3 **weren't located in zone 9 that was the area that**  
4 **I was concerned with.**

5 Q Then to go back to the first sentence, which is  
6 where Mr. Barfield states that nowhere in the  
7 model documentation is the difference in these  
8 curves ascribed to irrigation alone and nowhere  
9 are the two curves applied specifically to  
10 irrigated versus nonirrigated lands, is that  
11 true?

12 **A Well, my reading of the documentation, at least**  
13 **as far as zone 9 goes, is not -- is that the**  
14 **difference between the curves is related to**  
15 **enhanced -- enhanced recharge on irrigated land.**

16 Q The -- let me -- let me actually ask you about  
17 the next -- next of Mr. Barfield's assertions.  
18 He states that Mr. Larson's methods are not  
19 consistent with the model report's appendix H  
20 which illustrates the use of the groundwater  
21 model to determine the effects of reduced  
22 groundwater pumping. Do you have an opinion  
23 about that statement?

24 **A Yes. In looking at appendix H, I don't -- I**  
25 **can't testify about what all factors Balleau**

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1 **Groundwater was trying to incorporate in there.**  
 2 **It looked like to me it was principally trying**  
 3 **to show methods of displaying model results for**  
 4 **certain kinds of scenarios. But also that in**  
 5 **looking at the written testimony of Mr. Romero,**  
 6 **he indicated that my approach was appropriate**  
 7 **and that my methodology was at least**  
 8 **appropriate, he hadn't had an opportunity to**  
 9 **check all the numbers. But my reading of that**  
 10 **was that he indicated that my approach was**  
 11 **appropriate.**  
 12 Q And when you say check all the numbers, does  
 13 that -- is that -- does that mean run the model  
 14 essentially?  
 15 A **Yeah, and doing the calculations that I had**  
 16 **done.**  
 17 Q Okay. And do you know whether in preparing his  
 18 critique that Mr. Barfield would have run the  
 19 groundwater model?  
 20 A **Not that I recall in terms of what was in his**  
 21 **report and his testimony.**  
 22 Q Okay. So if we go on to the next slide, which  
 23 is, I apologize, a little bit longer, but he  
 24 states, Mr. Barfield states that Unlike other  
 25 groundwater models that have specifically been

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1 developed and calibrated with a recharge  
 2 enhancement on irrigated lands, the GMD model  
 3 report -- GMD5 model report provides no  
 4 mechanism to estimate the difference in  
 5 precipitation recharge between irrigated and  
 6 nonirrigated cases across the entire GMD5 model  
 7 boundary or in any particular recharge zone  
 8 identified in the GMD5 model report, or based on  
 9 the difference between the specific soil types  
 10 that exist at the R9 Ranch itself and the rest  
 11 of zone 9 as defined by the GMD5 model report.  
 12 Obviously a mouthful there, but do you have --  
 13 do you have an opinion about Mr. Barfield's  
 14 statement in terms of its accuracy?  
 15 A **Yeah, I don't know exactly what he refers to as**  
 16 **across the entire GMD5 model boundary, but as**  
 17 **I've indicated at least with respect to zone 9**  
 18 **the focal point for the difference in the curves**  
 19 **was the effect of irrigation water maintaining**  
 20 **soil moisture and allowing for greater**  
 21 **infiltration of precipitation and recharge, and**  
 22 **that's what was specified for the area,**  
 23 **including R9 Ranch, and so my approach was to**  
 24 **use those curves then to adjust the amount of**  
 25 **recharge that would occur.**

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1 Q And, again, that is what Burns & McDonnell did  
 2 not do, correct?  
 3 A **That's correct.**  
 4 Q All right. So the next slide, thankfully a  
 5 little shorter, Mr. Barfield states, soil type  
 6 has a significant effect on precipitation  
 7 recharge and the potential for its enhancement  
 8 on irrigated lands. Do you know what he means  
 9 by that, and do you have an opinion about  
 10 whether he's right?  
 11 A **Yeah, I think I would generally agree that soil**  
 12 **type can have that effect and just depends on**  
 13 **the circumstances obviously.**  
 14 Q Okay. Good enough, thank you. The --  
 15 Mr. Barfield's rebuttal goes on to state that  
 16 The soils on the ranch have low available water  
 17 capacity and high permeability to the degree  
 18 that do not support Mr. Larson's conclusion of  
 19 the very significant irrigation enhancement for  
 20 recharge, approaching an average of 5 inches per  
 21 year. I take it you disagree with that  
 22 statement?  
 23 A **Yes.**  
 24 Q And how so?  
 25 A **First of all, the soils are sandy, do have low**

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1 **water capacity and high permeability, but in my**  
 2 **view those are the kinds of conditions that can**  
 3 **be particularly susceptible to increased amounts**  
 4 **of recharge on land that's -- where the soil**  
 5 **moisture is being maintained by the irrigation.**  
 6 **In terms of the amount of that enhancement,**  
 7 **that's what Balleau Groundwater was looking to**  
 8 **determine by using the two curves and to**  
 9 **calibrate the model to the two curves. So in**  
 10 **terms of the quantification that I came up with,**  
 11 **it was based on those two curves that Balleau**  
 12 **Groundwater had determined.**  
 13 Q Okay. Mr. Larson, thank you, appreciate your  
 14 time.  
 15  
 16 **CROSS-EXAMINATION**  
 17 **BY MR. BULLER:**  
 18 Q Mr. Larson, good afternoon, Dan Buller, I  
 19 represent the City of Hays, thanks for joining  
 20 us this afternoon, appreciate it. Sorry you had  
 21 to be waiting around while the lawyers did their  
 22 thing, but I'll do my best to make it through  
 23 this as quickly as I can.  
 24 Addressing first your testimony relating to  
 25 the issue about whether or not the Balleau

1 groundwater model, which I might refer to as the  
2 GMD5 model from time to time so that's what I'm  
3 talking about, that the GMD5 model was or was  
4 not premised on the concept of precipitation  
5 enhanced -- I'm sorry, irrigation enhanced  
6 precipitation recharge, okay, and so when I say  
7 precip -- irrigation enhanced precipitation  
8 recharge, is that something you're -- that  
9 you're tracking with as part of your conclusions  
10 today?  
11 **A Yeah, recharge enhanced by the existence of**  
12 **irrigation.**  
13 **Q** Yeah. So on page 3 of your report, Jami, if you  
14 want to pull Mr. Larson's report up, go to  
15 page 3.  
16 And as she's doing that, you're familiar  
17 with the Balleau groundwater model, correct?  
18 **A Yes, I am.**  
19 **Q** You're familiar with the Balleau Groundwater,  
20 BGW report, right?  
21 **A Yes.**  
22 **Q** Okay. And I think you testified you're familiar  
23 with the appendices to that report, fair?  
24 **A Yes.**  
25 **Q** Okay. Have you reviewed --

1 **A I don't -- I don't recall whether they did or**  
2 **they didn't.**  
3 **Q** That's your word, right?  
4 **A That's my word, yes.**  
5 **Q** That's your characterization of how the BGW  
6 model report incorporates that specific factor.  
7 Is that fair?  
8 **A Yeah, I think in my testimony I said premised at**  
9 **least in part.**  
10 **Q** Well, you say here that the BGW groundwater  
11 model was premised on the concept of increased  
12 groundwater recharge from precipitation on  
13 irrigated lands, I read that right, that's what  
14 you said in your report, right?  
15 **A That's correct.**  
16 **Q** So go to pages 4 and 5, if you would, Jami. And  
17 scroll down a little bit to the bottom of the  
18 page, okay.  
19 This'll be the bottom sentence of this  
20 page, top of the next, and I'll read it, By  
21 comparing the post-1970 curve to the pre-1970  
22 curve for a given amount of groundwater -- for a  
23 given amount of groundwater recharge, SSP&A was  
24 able to determine the amount of reduction in  
25 recharge that would occur when land conditions

1 **MR. TRASTER:** Did you say page 3 of  
2 the report or the testimony?  
3 **MR. BULLER:** Of the report.  
4 **MR. TRASTER:** Okay, thank you.  
5 **BY MR. BULLER:**  
6 **Q** And zoom in, if you would, Jami, to the -- yeah,  
7 that one, the GMD projected future scenarios,  
8 and I'll read the second sentence from that  
9 paragraph. The BGW groundwater model was  
10 premised on the concept of increased groundwater  
11 recharge from precipitation on irrigated lands.  
12 Is that consistent with your finding, sir?  
13 **A Yes.**  
14 **Q** That was -- did I read that correctly from your  
15 report as far as you can tell, I know it's kind  
16 of hard to read?  
17 **A You did.**  
18 **Q** Okay. And you're familiar with the BGW report,  
19 where in the BGW report specifically does it say  
20 that the BGW model was premised on irrigation  
21 enhanced precipitation recharge? Does it use  
22 the word premised?  
23 **A I don't know about the word premised, the**  
24 **description of it is on page 57 of the report.**  
25 **Q** Okay. But it never used the word premised?

1 change from irrigated to nonirrigated. Did I  
2 read that correctly, sir?  
3 **A You did, yes.**  
4 **Q** Okay. Jami, if you could go to Exhibit 2297.  
5 And go to page 81135, please. It's a ways down.  
6 Type in search 81135, control F 81135. There  
7 you go.  
8 Is this the curve you're referring to, sir?  
9 **A Yes, it looks like it.**  
10 **Q** Okay. And if it'd help, I printed off a copy of  
11 it, if that'd help you, but that looks like the  
12 figure 32 from the GMD5 model report, right?  
13 **A It does look like it, yes.**  
14 **Q** Okay. And here we've got one curve zone 9  
15 post-1970, zone 9 pre-1970, and specifically  
16 with respect to your evaluation of irrigation  
17 enhanced precipitation recharge on the ranch,  
18 the zone 9 curves on that figure are the ones  
19 you're referring to and relying on, correct?  
20 **A Yes, that's correct.**  
21 **Q** Okay. So you took the difference between the  
22 pre-1970 recharge curve and the post-1970  
23 recharge curve, and that was how you determined  
24 how -- determined the amount of irrigation  
25 enhanced precipitation recharge on the ranch.

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1 Is that a fair characterization of your  
2 evaluation?  
3 **A I used those curves to get those ratios, yes.**  
4 **Q Did you take the difference between the two?**  
5 **A Well, what I did was I looked in the model for**  
6 **how much recharge had been calculated for the**  
7 **post-1970 period that applies to the post-1970**  
8 **curve and using that was able to determine for a**  
9 **given time and a given location where Balleau**  
10 **Groundwater was on that curve.**  
11 **Q Okay.**  
12 **A And then I used that location to figure out,**  
13 **okay, if they were on the pre-'70 curve at that**  
14 **particular amount of precipitation --**  
15 **Q Uh-huh.**  
16 **A -- how much would it be.**  
17 **Q Yep. Compare it to curves at that precipitation**  
18 **amount?**  
19 **A At that precipitation amount.**  
20 **Q Yeah, right down there, the bottom is the inches**  
21 **per month in precipitation, so you looked at the**  
22 **area in the model that has that amount of**  
23 **precipitation and you traced the line up and you**  
24 **found that spot on the curve; is that right?**  
25 **A No, that's not right.**

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1 **Q Okay. But in essence, your report assumes that**  
2 **the pre-1970 curve is dry land, post-1970 curve**  
3 **is irrigated farm land?**  
4 **A Yes, for my calculations, yes.**  
5 **Q Yeah. Jami, if you go to figure 33, that's the**  
6 **next page.**  
7 **All right. This is figure 33 and that's**  
8 **the page that shows the various curves utilized**  
9 **by the BGW model report, and the ranch is in the**  
10 **light blue zone, that's zone 9, right?**  
11 **A Yes.**  
12 **Q Okay. Now, zone 9 is a big area, isn't it?**  
13 **A It is.**  
14 **Q Yeah. Based on my visual, you know, it looks**  
15 **like the largest zone in the entire model, is**  
16 **that -- is that your understanding? At least in**  
17 **the GMD5 border?**  
18 **A Yes, I guess within that area.**  
19 **Q Okay. Jami, go to Exhibit 2298, if you would.**  
20 **And then pull up the bookmarks, go down to**  
21 **Exhibit H -- appendix H. Okay. And zoom that**  
22 **in so Mr. Larson can see the title of the**  
23 **document.**  
24 **You referred earlier in your testimony on**  
25 **your surrebuttal testimony that this appendix H**

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1 was one, you know, aspect of the work that  
2 Balleau did and -- in the model and you're  
3 familiar with this -- this appendix H, correct?  
4 **A I'm aware of it, I wouldn't say I'm -- I haven't**  
5 **reviewed it in detail, but I am aware of it.**  
6 **Q Okay. Have you reviewed it in the past?**  
7 **A I don't remember how much -- I assume you're**  
8 **talking about when I was doing my --**  
9 **Q Peer review?**  
10 **A -- model review?**  
11 **Q Yeah.**  
12 **A I don't recall back then how much I focused on**  
13 **that. My focus at that time was mainly on the**  
14 **structure of the model and the calibration of**  
15 **the model, and so I was wanting to be sure that**  
16 **the calibration was as good as it could be**  
17 **and -- 'cause that provides the real metric of**  
18 **credibility to the model. And I think what I**  
19 **wrote in my report was that certain parts of**  
20 **that could have been improved, and actually I**  
21 **developed a version of the model that was**  
22 **hopefully a little bit easier to use.**  
23 **Q Okay. You improved on it. Well, in any event,**  
24 **this is appendix H, and it is a technical -- the**  
25 **title is Balleau Groundwater, Inc., June 10,**

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1 2010, Technical Memorandum: Illustrative  
2 Response to Management Action. Did I read that  
3 correctly, sir?  
4 **A You did.**  
5 **Q Jami, go to the page 8 -- sorry -- yeah, go to**  
6 **the next page, zoom in on the header, please.**  
7 **Okay. And there it is, the title of the**  
8 **report is Technical Memorandum. Do you see**  
9 **that?**  
10 **A I do.**  
11 **Q Okay. Do you know who signed that report?**  
12 **A Looks like Pete Balleau.**  
13 **Q Pete Balleau. Was he one of the people who**  
14 **sealed the groundwater model report and an**  
15 **author of the BGW model?**  
16 **A I suspect so, I'm not sure.**  
17 **Q Okay. Well, he was and we can go to page 1 of**  
18 **the report but I'll just represent that to you,**  
19 **okay. And so do you know what scenario**  
20 **Mr. Balleau was -- was running here in the**  
21 **illustrative scenario?**  
22 **A Just generally. Just generally.**  
23 **Q Okay. Well, let's go to page 80931, zoom in on**  
24 **the conclusion. Okay. There you go.**  
25 **Bear with me, sir, I'll read this off,**

1 hopefully it'll refresh your recollection. The  
2 management operation examined in the  
3 illustrative scenario is to turn off wells from  
4 year 2007 in the Big Bend GMD Number 5 part of  
5 the Rattlesnake basin where the wells are  
6 permitted with the MDS condition, MDS meaning  
7 minimum desirable stream condition. An average  
8 amount of 11,297 acre-feet per year is curtailed  
9 in the basin. So correct me if I'm wrong, but  
10 Mr. Balleau turned off 11,297 acre-feet per year  
11 of irrigation to -- to model the impacts of that  
12 land management change. Is that roughly what  
13 you understand that to mean?  
14 **A Yes, my recollection was these were scattered**  
15 **throughout the GMD5 area.**  
16 **Q** Yeah, probably along a stream, close to some --  
17 wells that were subject to the MDS requirement  
18 under Kansas law probably?  
19 **A That's not how I recall the distribution.**  
20 **Q** All right. But in any event, the illustrative  
21 scenario in appendix H is to use the model to  
22 determine the impact -- impacts of that  
23 management action in general terms? Agreed?  
24 **A Yeah, I think they were trying to show how the**  
25 **model could be used to make calculations on how**

1 **Q** He does not state that the groundwater recharge  
2 on irrigated land must be reduced when that land  
3 is no longer irrigated, did he?  
4 **A Not that I'm aware of.**  
5 **Q** Didn't suggest -- even suggest that he did that,  
6 did he?  
7 **A I don't know what their thought process as to**  
8 **what to include and not to include.**  
9 **Q** Sure, but in that conclusion paragraph, he never  
10 states it, does he?  
11 **A No, he does not.**  
12 **Q** Jami, go to page 80932.  
13 This is a table that Mr. Balleau provided  
14 in his technical memorandum in the illustrative  
15 case that we've been discussing, and it includes  
16 the table 1, a description, the net budget  
17 component difference with post April 12, 1984  
18 wells curtailed in the Rattlesnake Creek basin.  
19 Do you see that?  
20 **A I do, uh-huh.**  
21 **Q** Okay. So this is -- this is the net differences  
22 between the before and after. Is that the way  
23 you would understand this table?  
24 **A Yes, I would understand this to be a summary**  
25 **over the entire area of how it would affect**

1 **you would sort of present those calculations in**  
2 **a water budget format.**  
3 **Q** Yeah, what happens to the water when you turn  
4 all these irrigation wells off, right?  
5 **A Yeah, as a -- as a big picture type of analysis.**  
6 **Q** Yeah. And that's probably as best as I can do.  
7 So -- and in general, the way that is done is by  
8 comparing two model runs, one model run before  
9 the change and a second model run after the  
10 change, right?  
11 **A Yes.**  
12 **Q** Okay. And the second model run was the one  
13 where they removed that 11,297 acre-feet per  
14 year in irrigation, correct?  
15 **A That would be my understanding, yes.**  
16 **Q** That's a lot more than the removal of  
17 4,054 acre-feet per year of irrigation that's at  
18 issue in Mr. McCormick's Burns & McDonnell  
19 groundwater report, true?  
20 **A It is more, yes.**  
21 **Q** In the summary paragraph -- I'm sorry, in the  
22 conclusion paragraph, Mr. Balleau makes no  
23 mention of irrigation enhanced precipitation  
24 recharge, does he?  
25 **A No.**

1 **stream leakage and evapotranspiration and**  
2 **groundwater storage.**  
3 **Q** Okay. You see on that -- one of the columns  
4 says recharge on it, do you see that?  
5 **A It does.**  
6 **Q** Okay. So there's -- those are zeros all the way  
7 down on the recharge column?  
8 **A They are, yes.**  
9 **Q** Okay. Do you think that was a mistake by  
10 Mr. Balleau?  
11 **A That what was a mistake?**  
12 **Q** Not accounting for irrigation enhanced  
13 precipitation recharge in the illustrative case?  
14 **A I don't know if it was or wasn't a mistake on**  
15 **his part.**  
16 **Q** Okay. But he did not account for irrigation  
17 enhanced precipitation recharge in the  
18 illustrative case; is that true?  
19 **A As the table shows, there was no change in the**  
20 **recharge.**  
21 **Q** If indeed as you say the BGW model was premised  
22 on irrigation enhanced precipitation recharge,  
23 wouldn't it be the case that Mr. Balleau would  
24 account for that in his illustrative case?  
25 **A I don't know what exactly he was trying to**



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1 **represent in this example and whether he should**  
2 **or shouldn't have.**  
3 Q Sure. Jami, go to Exhibit 2308, please. And if  
4 you would go to -- sorry.  
5 Mr. Larson, can you identify this document  
6 for me?  
7 Jami, if you would zoom in.  
8 A **That looks like the cover page of the report**  
9 **that I prepared.**  
10 Q So this -- so this is the peer reviewed  
11 author -- peer review of the GMD5 model that you  
12 authored?  
13 A **Yes.**  
14 Q The cover page, at least? And I'll represent to  
15 you all the pages are in there. Now, you don't  
16 state in your peer review of the GMD5 model  
17 report that the GMD5 model was premised on  
18 irrigation enhanced precipitation recharge, do  
19 you?  
20 A **Not that I recall.**  
21 Q Jami, go to page 81410. Zoom it out a little  
22 bit, we're looking for section 4, okay. And  
23 that top paragraph, if you would.  
24 Okay. I'm going to read the sentence right  
25 here, Mr. Larson, Different curves were applied

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1 to different zones within the model domain and  
2 the curves for some zones were different for  
3 periods before and after 1970 to reflect  
4 land-use changes. Did I read that correctly?  
5 A **Yes, you did.**  
6 Q You don't say there that the different curves  
7 were -- for different zones were applied based  
8 on irrigation enhanced precipitation recharge,  
9 do you?  
10 A **No, I don't.**  
11 Q Jami, go back to Exhibit 2297, if you would.  
12 And go to page 81013. A search might be easiest  
13 but it's -- you can go to the beginning and just  
14 search and it might be faster. 81013. And  
15 zoom -- there you go, the second paragraph.  
16 Okay. Zoom in one more.  
17 This is from the BGW model report and  
18 states, The historical change in recharge is  
19 based on a land-use trend as scheduled by  
20 Koelliker. Do you know who Koelliker is, sir?  
21 A **I don't know him personally, no.**  
22 Q Sure. Have you heard of Koelliker?  
23 A **I've heard of him.**  
24 Q Okay. And you're familiar with the land-use  
25 trend as scheduled by Koelliker, are you

Page 1251

1 familiar with the report that this is -- this is  
2 referring to right here in this sentence, here,  
3 sir?  
4 A **Not specifically, no.**  
5 Q Okay. But the BGW model report indicates that  
6 The historical change in recharge is based on a  
7 land-use trend as scheduled by Koelliker. So it  
8 seems to be the case that the groundwater model  
9 report, the difference in the curves that we've  
10 been referring to were premised on the Koelliker  
11 report, not on irrigation -- irrigation enhanced  
12 precipitation recharge, is that the way you  
13 would read that?  
14 A **No, I would -- I would read it in the way they**  
15 **describe how they determined the difference**  
16 **between the curves and what it was intended to**  
17 **represent.**  
18 Q Okay. So the historical change in recharge,  
19 would you think those -- those words, the words  
20 I just said, do you think that the historical  
21 change in recharge described in that sentence is  
22 referring to the pre-1970 versus post-1970  
23 curves in figure 32?  
24 A **I can't tell from that particular description.**  
25 **The later one actually specifically refers to**

Page 1252

1 **the zones where the difference in the curves was**  
2 **being estimated.**  
3 Q Yeah, and that's the next paragraph. But here  
4 it says, The historical change in recharge is  
5 based on a land-use trend, so I guess that means  
6 what it means, right?  
7 A **It means what it means, you're right.**  
8 Q And then it has a parenthetical there right  
9 after the word Koelliker, parenthetical, 1998,  
10 comma, figure 7.3. Did I read that right?  
11 A **You did.**  
12 Q And it indicates the land-use changes were the  
13 basis for that, and, Jami, if you could just  
14 scroll down to the next paragraph. I'm sorry,  
15 go to 81031.  
16 So it's not the next paragraph, I was  
17 wrong. Okay. And then zoom in to that second  
18 paragraph, bottom third of the screen, here's  
19 where it talks about the recharge curves. The  
20 relationship between monthly precipitation and  
21 specified recharge is shown on figure 32, those  
22 are the curves, right?  
23 A **That's correct.**  
24 Q The recharge curves are categorized into zones  
25 representing variability based on soil type, as

1 depicted in figure 33, and that's the map with  
2 the blue area, right?  
3 **A Yes.**  
4 **Q** Figure 32 shows two sets of curves for zones 7,  
5 8, and 9 which are located in much of Big Bend  
6 GMD Number 5. The second set of curves  
7 represent post-1970 conditions that reflect the  
8 land-use change associated with water retained  
9 on farm areas. There's that phrase again,  
10 land-use change, did I read that right?  
11 **A You did.**  
12 **Q** Now, there is another sentence if you go a  
13 couple sentences down, and it says, The  
14 post-1970 curves represent more recharge per  
15 inch per month of precipitation than the -- than  
16 in the earlier period prior to 1970, and it  
17 states, Irrigation return flow, deep  
18 percolation, adds soil moisture above the water  
19 table that enhances recharge from precipitation  
20 events, and that's your point, right?  
21 **A That's correct.**  
22 **Q** Okay. Jami, go to Exhibit 2298.  
23 So this gentleman, Koelliker, the Koelliker  
24 report that I referenced back on -- back a few  
25 minutes ago, it's an appendix to the GMD5 model

1 figure 7.3 that the BMG model says that the, I  
2 don't want to misstate it, but that it was based  
3 on, I know the words based on were in there, and  
4 it talks about the various -- various factors  
5 here. And it includes depletion from dams,  
6 terraces, residue, irrigation, and then at the  
7 bottom it says actual yield, and those are some  
8 of the land-use changes that are included in  
9 figure 7.3. Would you agree with that?  
10 **A Yes, it seems that way.**  
11 **Q** Sure. It does have irrigation there, but  
12 your -- your approach here isn't about total  
13 irrigation recharge, is it?  
14 **A I'm not sure I understand that question.**  
15 **Q** Then I'll try to clarify. The concept of  
16 irrigation enhanced precipitation recharge isn't  
17 the same as total irrigation recharge, right?  
18 **A Well, there's a separate category of recharge**  
19 **associated with irrigation return flow, and**  
20 **there's other calculations, at least in certain**  
21 **areas, associated with dams and ponds and things**  
22 **like that.**  
23 **Q** Sure. And so your -- your approach is just the  
24 difference between precipitation recharge under  
25 dry land and precipitation recharge under

1 report?  
2 And, Jami, if you could go to appendix B.  
3 You can find that in the bookmarks on the  
4 left-hand side.  
5 Okay. So -- so this is page, for the  
6 record, 81 -- can you find the -- zoom into the  
7 page there, Jami, so I can get it for the  
8 record?  
9 Okay, this is page Cities' 80755, and this  
10 is the cover page for the Koelliker report  
11 referenced in the BMG model report, okay?  
12 **A Okay.**  
13 **Q** Jami, go to 80759. There it is.  
14 Okay. If you remember the parenthetical  
15 when -- that I referred to earlier, it said  
16 Koelliker and then it said 1998, figure 7.3. Do  
17 you recall that?  
18 **A I recall that phrase.**  
19 **Q** And zoom in, Jami, if you would, to the  
20 left-hand side.  
21 And here we have this figure on the screen,  
22 and it's figure 7.3. Do you see that?  
23 **A I do.**  
24 **Q** Probably just barely because it's a long ways  
25 away and I apologize for that. So this is

1 irrigated farmland. That's your -- is that  
2 correct?  
3 **A At least for zone 9.**  
4 **Q** Yeah. And you mentioned that the report  
5 separates zone 9 from the other zones or at  
6 least from some of the other zones with respect  
7 to these land-use changes. What page of the BGW  
8 model report does that distinction exist on?  
9 **A On the page 57 that you talked about.**  
10 **Q** That was it, that was the distinction between  
11 zone 9 and the other zones with respect to --  
12 with respect to the irrigation enhanced  
13 precipitation recharge?  
14 **A Well, I think you can go to figure 32 and see**  
15 **which zones were adjusted for this.**  
16 **Q** Sure, but does figure 32 state anywhere on that  
17 figure that -- the differences between  
18 irrigation enhanced precipitation recharge and  
19 dry land? Does it state that on figure 32?  
20 **A Not that I'm aware of, no.**  
21 **Q** So the question is what is -- what are the  
22 difference in those zones based on, right? And  
23 it's your contention that the difference in the  
24 recharge curves are based on irrigated versus  
25 dry land, and this seems to indicate that it's

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1 based on land-use changes, correct?

2 **A Well, my reading of the Burns & McDonnell**

3 **report --**

4 Q Do you mean the BGW report or --

5 **A I'm sorry, I keep doing that.**

6 Q That's okay. That's okay.

7 **A The Balleau groundwater report is that at least**

8 **for zone 9 that that's the driver in terms of**

9 **the difference in the curves because that's how**

10 **they described it.**

11 Q Okay. That description isn't on the figure 32,

12 though, is it?

13 **A No, it's in the text.**

14 Q Okay. Do you know what page it's on in the

15 text, sir?

16 **A 57.**

17 Q Okay, page 57. Jami, if you would go to

18 Exhibit 2297 and let's go back to page 81135.

19 Oh, just stop there for a second. This is --

20 this is page 57, right? Zoom in.

21 Okay. Mr. Larson, please indicate on this

22 page where, and if you need to approach, that's

23 fine, but indicate on this page where you're

24 referring -- to which portion of this page are

25 you referring to that indicates that zone 9 is

Page 1258

1 the zone that irrigation enhanced precipitation

2 recharge applies to?

3 **A If you see there, they talk about the three**

4 **zones, 7, 8, and 9, and then they talk about the**

5 **post-'70 curves having more recharge per**

6 **month -- or per inch per month of precipitation**

7 **than the earlier period and then they indicate**

8 **that irrigation return flow adds soil moisture**

9 **above the water table that enhances recharge**

10 **from precipitation events.**

11 Q You did read that correctly. But it doesn't

12 state anywhere on this that that's the only

13 factor relevant to the difference between pre-

14 and post-1970 return flow, does it?

15 **A No, in fact, in the -- in the model**

16 **documentation there are some other calculations**

17 **that they go through to account for other things**

18 **like dams and ponds.**

19 Q Uh-huh. The -- but the zones, the curves, which

20 you just compared the two curves and that's how

21 you arrived at your calculation, there's no

22 indication that those curves are based solely on

23 irrigation enhanced precipitation recharge, is

24 there?

25 **A My conclusion is that based on that reading and**

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1 **my understanding is that that's --**

2 Q You think that -- you think that's where that

3 says that, okay. Not all of -- so -- so your --

4 your --

5 Jami, if you could, go to page -- or

6 Exhibit 2827. And then go to page 103701.

7 There it is.

8 Mr. Balleau, are you familiar with this

9 figure?

10 **MR. TRASTER:** Larson.

11 **BY MR. BULLER:**

12 Q I'm sorry, scratch that. Mr. Larson, are you

13 familiar with this figure?

14 **A I'm not sure.**

15 Q Okay. Jami, zoom in to the bottom right-hand

16 corner of this, if you would, the bottom right.

17 It says figure 3-1, model area, R9 Ranch

18 location and R9 Ranch hydrostratigraphic unit.

19 Okay. And you can see this is Burns &

20 McDonnell, and I'll represent to you that this

21 is Mr. McCormick's groundwater model report,

22 okay. So it's figure 3-1 from that report.

23 Jami, zoom back out.

24 And here, Mr. Larson, we have the -- what

25 Mr. McCormick refers to as the ranch

Page 1260

1 hydrostratigraphic unit. Does that term mean

2 anything to you?

3 **A Well, there are different hydrostratigraphic**

4 **units that are defined in the model, if that's**

5 **what you're referring to.**

6 Q Okay. Well, Mr. McCormick modeled the changes

7 on -- in this area, that was what his modeling

8 focused on, and I don't know if you can see it,

9 but there are green-colored squares that are

10 all -- this is a boundary of the ranch, and

11 there are green-colored squares, that's the

12 area, what we've been referring to as the HSU,

13 which Mr. McCormick calls the hydrostratigraphic

14 unit, and that's the modeled area, okay? Does

15 that make sense to you?

16 **A Not exactly. Maybe I misunderstood what they're**

17 **referring to -- what you're referring to in**

18 **terms of hydrostratigraphic.**

19 Q Yeah, and you know what, that's probably my

20 fault for not using the right terminology. But

21 this is the area of the ranch that was included

22 in Mr. McCormick's model, and since -- I presume

23 in yours too but I don't -- I don't know that,

24 but as you can see here, the ranch

25 hydrostratigraphic unit, and Mr. Barfield in his

1 report indicates that it's 11,100 acres,  
2 thereabout, and so some of those boxes extend  
3 beyond, just beyond the borders of the ranch.  
4 Can you see that?  
5 **A Yes.**  
6 **Q** And the ranch itself is approximately  
7 6,774 acres, give or take. So the inside area  
8 of the ranch is 6774 acres, but the total amount  
9 of land covered in the green-shaded boxes is  
10 about 11,100 acres, give or take, okay? Make  
11 sense?  
12 **A Yes.**  
13 **Q** Now -- so 6,774, -- we've got 11,100, 6,774, and  
14 the ranch, when it was under irrigation, it was  
15 farm pivot irrigation. Does that make sense to  
16 you?  
17 **A Yes.**  
18 **Q** Okay. Those are circles, you've got a sprinkler  
19 going around in the circle, and it waters all  
20 the land under that circular area, right?  
21 **A That's my understanding, yes.**  
22 **Q** And that's the way the ranch was farmed from  
23 1991 to 2007, at least, and that's the model  
24 time period. And so when you have pivot  
25 irrigation not all of the land is saturated with

1 irrigation, only about 125 acres out of every  
2 160 acres are irrigated, would you agree with  
3 that, at least in this part of the world?  
4 **A I don't have any way of --**  
5 **Q** Okay.  
6 **A -- knowing one way or the other.**  
7 **Q** All right. But in any event, the -- so we've  
8 got -- you know, I'll just represent to you, I'm  
9 not -- I know you don't understand, but it's  
10 common for a quarter section when you've got a  
11 quarter mile sprinkler, for not all of that  
12 quarter section to be irrigated. Now under  
13 flood irrigation that would have irrigated more  
14 of it because, you know, just goes in a straight  
15 line down the quarter section and it saturates  
16 all the soil. But in pivot irrigation, it  
17 doesn't work like that, right?  
18 **A Well, it would irrigate the ground that the**  
19 **irrigation system covers.**  
20 **Q** There you go.  
21 So, Jami, if you could pull up  
22 Exhibit 1741.  
23 All right. Mr. Larson, so this is -- this  
24 is an aerial photograph with the circles on the  
25 ranch highlighted in various colors that

1 irrigation water; is that right?  
2 **A That's right.**  
3 **Q** Yeah. The --  
4 **MR. BULLER:** Is everything okay?  
5 **MR. TRASTER:** Everything's fine.  
6 **MR. BULLER:** Okay.  
7 **MR. TRASTER:** I was about to trip  
8 and realized I shouldn't.  
9 **MR. BULLER:** I'm glad you didn't.  
10 **MR. TRASTER:** Me too.  
11 **BY MR. BULLER:**  
12 **Q** Sorry about that, there are things going on  
13 behind me.  
14 And so -- so when you have pivot  
15 irrigation, the corners of the circle are not  
16 irrigated, right? The corners --  
17 **A I'm not sure what --**  
18 **Q** The corners of the quarter section?  
19 **A The corners of the quarter section --**  
20 **Q** Yeah.  
21 **A -- would not receive direct irrigation, I guess.**  
22 **Q** Right. And so --  
23 **A Although I think some of them have end guns that**  
24 **try to cover those.**  
25 **Q** Yeah. Well, in general, when you've got pivot

1 represent the different years that each of those  
2 circles were taken out of farm production, taken  
3 out of irrigated farmland and begun the process  
4 to convert it just to native grassland. And so  
5 here you can see -- and, Jami -- you can see  
6 here on this map, just zoom in to the middle  
7 bunch of yellow circles there, you can see here  
8 where on the corners of those quarter sections  
9 that those -- those outside the circles, outside  
10 the irrigated place, and you can see there's a  
11 couple spots in the ranch where there were just  
12 gaps because of -- because of the way the  
13 pivot -- pivot sprinklers are configured, they  
14 couldn't fit another one in there, and so  
15 there's an empty spot there and that's not  
16 irrigated land, right?  
17 **A Wouldn't appear to be, no.**  
18 **Q** Right. And then over here on -- next to this  
19 number 5, and that's section 5, you see a large  
20 portion there, used to be a circle but it's  
21 not -- it's not in irrigation, and I'll  
22 represent to you that that was taken out of  
23 irrigation about 1987 and so that would not have  
24 been in the model period, right?  
25 **A I don't know what you're --**

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1 Q Sure.

2 A -- referring to there.

3 Q Yeah, Mr. McCormick's time period that was

4 applicable to the model was 1991 to 2007, and so

5 what he did was he took the amount of water that

6 was applied under irrigated conditions in those

7 years and that was the amount of irrigation,

8 pumping, and applied water that was applied to

9 the ranch property. And so this was taken out

10 of production before the model period, and so

11 that would not have been included as irrigated

12 property under McCormick -- Mr. McCormick's

13 model. Does that make sense?

14 A **No, I don't think that does make sense. My**

15 **understanding is that Balleau Groundwater would**

16 **use everything in zone 9 to compute recharge.**

17 Q Well --

18 A **From the curves.**

19 Q Sure. Mr. McCormick's model utilized the

20 historic irrigation pumping from 1991 to 2007,

21 and that's just what it did, but it -- and so

22 the amount of pumping, the amount of irrigation

23 pumping and the amount of irrigation enhanced

24 precipitation recharge would not have even been

25 present even if Mr. McCormick had applied that

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1 and presumably wasn't present in your model in

2 which you claim to have applied that. Does that

3 make sense?

4 A **No, it doesn't.**

5 Q Okay. So in any property that there was no

6 irrigation, for property that there was no water

7 applied under irrigation, it would be

8 inappropriate to apply any kind of irrigation

9 enhanced precipitation recharge. Would you

10 agree with that?

11 A **As a general concept, that might be true, but**

12 **the way it was applied in the model was if it**

13 **was in zone 1 and it was post-1970, the land was**

14 **assumed to be following the post-1970 curve.**

15 Q But you added an extra factor. In your model,

16 you added an extra amount of recharge for

17 irrigation enhanced precipitation recharge,

18 didn't you?

19 A **I didn't do that, that's what Balleau**

20 **Groundwater did, and that's what -- and that's**

21 **the same thing that Burns & McDonnell used in**

22 **their runs.**

23 Q Right. But where there's no irrigation, there's

24 no irrigation enhanced precipitation recharge,

25 true?

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1 A **The recharge was calculated, for those areas as**

2 **well as others, based on zone 9 in both the runs**

3 **that I made and the runs that Burns & McDonnell**

4 **made.**

5 Q Burns & McDonnell did not apply an irrigation

6 enhanced precipitation recharge, correct?

7 A **They did through the model input.**

8 Q Okay. But your criticism is that they did not

9 appropriately quantify that factor, correct?

10 A **No, my criticism is that they didn't remove the**

11 **difference between the post-1970 curve and the**

12 **pre-1970 curve in looking at those areas.**

13 Q There you go. And that's the difference between

14 dry land and irrigated farmland, right?

15 A **That's correct.**

16 Q Okay. But if it's not irrigated, you can't

17 apply an irrigated enhanced precipitation

18 recharge, can you?

19 A **I'm not quite following because I'm using the**

20 **model as it was prepared by Balleau Groundwater**

21 **and how it -- and as it was used by Burns &**

22 **McDonnell in trying to adjust for what had been**

23 **assumed in one run versus the other run.**

24 Q Sure. Does the Balleau -- scratch that. As a

25 conceptual matter, it would be inaccurate to

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1 apply an irrigation enhanced precipitation

2 recharge to property upon which there was no

3 irrigation, correct?

4 A **As a concept, that's certainly --**

5 Q Okay.

6 A **-- my concept.**

7 Q Thank you, Mr. Larson, no further questions.

8 **MR. COLE:** And I have no questions

9 either.

10 **PRESIDING OFFICER:** Ms. Langworthy?

11 **MS. LANGWORTHY:** No questions, Your

12 Honor.

13 **PRESIDING OFFICER:** Mr. Lee,

14 anything else for the witness?

15 **MR. LEE:** Something real short, Your

16 Honor.

17 **PRESIDING OFFICER:** All right. Go

18 ahead.

19

20 **REDIRECT EXAMINATION**

21 **BY MR. LEE:**

22 Q If you could bear with me for a moment,

23 Mr. Larson, my better half is getting this

24 ready.

25 **MS. LEE:** I apologize, it's doing --

1 there we go.  
 2 **BY MR. LEE:**  
 3 Q This is, Mr. Larson, the front page to the  
 4 Cities' Exhibit 184 which is entitled  
 5 "Groundwater Recharge in the Upper Arkansas  
 6 River Corridor in Southwest Kansas," it's  
 7 authored by D.O. Whittemore, and I just want to  
 8 show you one part of this, if I may. The  
 9 highlighted part in this KGS publication says,  
 10 and this is something that I asked Mr. Barfield  
 11 about, says that Areal recharge from  
 12 precipitation over nonirrigated land is the  
 13 smallest of the recharge rates. Recharge over  
 14 irrigated land is substantially greater than  
 15 from precipitation over nonirrigated area  
 16 because the water applied produces conditions of  
 17 high soil moisture that can lead to drainage  
 18 more frequently. For example, heavy rainfall  
 19 falling on soils moist from irrigation can much  
 20 more rapidly produce conditions that lead to  
 21 effective recharge, and I think that is your  
 22 point, is it not?  
 23 A **It is.**  
 24 Q Thank you.  
 25 **MR. BULLER:** No further questions,

1 we would call Richard Wenstrom, please.  
 2 **PRESIDING OFFICER:** Mr. Wenstrom, I  
 3 do need to swear you in, could you please  
 4 raise your right hand.  
 5  
 6 **RICHARD J. WENSTROM,**  
 7 having first duly sworn or affirmed, was  
 8 examined and testified as follows:  
 9  
 10 **PRESIDING OFFICER:** Mr. Lee, you may  
 11 proceed.  
 12 **MR. LEE:** Thank you, Your Honor.  
 13  
 14 **DIRECT EXAMINATION**  
 15 **BY MR. LEE:**  
 16 Q Good afternoon, Mr. Wenstrom.  
 17 A **Hello.**  
 18 Q I won't introduce myself, we know each other. I  
 19 want to talk to you today about some background  
 20 issues both for you personally and for Water  
 21 PACK in particular, so we'll sort of proceed  
 22 along that path, starting with your full name  
 23 and address?  
 24 A **My name is Richard, middle initial J. Wenstrom,**  
 25 **W-E-N-S-T-R-O-M.**

1 thank you.  
 2 **PRESIDING OFFICER:** All right.  
 3 Anybody else, anything further?  
 4 **MR. COLE:** No.  
 5 **PRESIDING OFFICER:** All right.  
 6 Thank you, Mr. Larson.  
 7 Parties like to take a little break  
 8 before we move on to other witnesses or ...  
 9 **MR. TRASTER:** Yeah, I think we  
 10 should. I want to chat with Mr. Lee about  
 11 kind of where we are and how we're going to  
 12 proceed.  
 13 **PRESIDING OFFICER:** Okay.  
 14 **MR. TRASTER:** So that would be good  
 15 if we could take 10 or 15 minutes, that  
 16 would be helpful.  
 17 **PRESIDING OFFICER:** Okay. Let's  
 18 just come back at 3:20 and we'll pick up  
 19 then and do what we need to do.  
 20 (Thereupon, a recess was taken;  
 21 whereupon, the following was had.)  
 22 **PRESIDING OFFICER:** I think we have  
 23 everyone back now so we can go back on the  
 24 record and proceed.  
 25 **MR. LEE:** We are ready, Your Honor,

1 Q And what's your address?  
 2 A **2171 120th Avenue, Kinsley, Kansas 67547.**  
 3 Q Is that in Edwards County?  
 4 A **It is.**  
 5 Q So tell me about, to begin, your educational  
 6 background. I -- I have a sheet in front of me,  
 7 which I perhaps can help expedite that as I go  
 8 through it, the -- I understand that you have a  
 9 bachelor's degree in agricultural engineering  
 10 from North Dakota State University; is that  
 11 right?  
 12 A **That's correct.**  
 13 Q And that you've got a master's degree in  
 14 irrigation engineering from Colorado State  
 15 University?  
 16 A **Yes, that's correct.**  
 17 Q Were you in the service?  
 18 A **I was a commissioned officer in the Coast and**  
 19 **Geodetic Survey.**  
 20 Q And what does the Coast and Geodetic Survey do?  
 21 A **They make nautical charts of the coast of the**  
 22 **United States.**  
 23 Q So you -- after -- and that looks like, on the  
 24 information you provided me, was from 1967 to  
 25 '70. After -- after leaving the service, what

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1 did you do next?  
2 **A I got a job with Rain Bird Sprinkler**  
3 **Corporation, Glendora, California.**  
4 Q And what were you doing with Rain Bird?  
5 **A I was a national ag sales, marketing and product**  
6 **manager after spending a brief period out in the**  
7 **Midwest as a district manager.**  
8 Q Okay. And are you a licensed professional  
9 engineer?  
10 **A Yes, sir, I'm licensed in Colorado, California,**  
11 **and Kansas.**  
12 Q You're a member, it appears, of the American  
13 Society of Agricultural and Biological  
14 Engineers; is that right?  
15 **A Yes, for 53 years.**  
16 Q So they must know who you are, I would guess?  
17 **A I think they do.**  
18 Q So you live -- your address is rural; is that  
19 right?  
20 **A That's correct.**  
21 Q Is it a farm?  
22 **A Yes.**  
23 Q Do you actively farm now?  
24 **A I do not, I'm retired from active farming.**  
25 Q Okay. And do you own farm ground?

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1 **A Yes, we do.**  
2 Q And is that -- I take it, then, that farm ground  
3 is leased?  
4 **A Yes, it is.**  
5 Q So how long have you lived at your present  
6 location?  
7 **A We moved to the farm in 1976.**  
8 Q Lived there ever since?  
9 **A And lived there ever since. We moved from**  
10 **Southern California, and at the time I thought**  
11 **we were probably the only people to ever move**  
12 **from California to Kansas, but I think now it's**  
13 **pretty common.**  
14 Q More common, more common. So I think your wife,  
15 Jane, is here, is she not?  
16 **A Yes, she is, she's right behind Mrs. Lee.**  
17 Q Okay. And do you have children?  
18 **A We have two sons, both grown, and five**  
19 **grandchildren.**  
20 Q And I think it is the case that they are about  
21 as far away from you as they possibly can be; is  
22 that right?  
23 **A Yeah, and I hope that's not a personal thing.**  
24 **But, yeah, one lives in Kirkland, Washington,**  
25 **and one lives in a suburb of Boston.**

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1 Q Okay. I very much suspect that's not personal.  
2 You've been involved, I think, in the community  
3 in and around Kinsley or if it's defined more as  
4 Edwards County; is that right?  
5 **A That's correct.**  
6 Q How so?  
7 **A Well, in our church, I've taught Sunday school;**  
8 **for 35 years, I was the stewardship chair of our**  
9 **church; I was instrumental in forming a church**  
10 **foundation; and our little church in Kinsley has**  
11 **awarded 60 scholarships at this point to high**  
12 **school students in Kinsley High School for**  
13 **college.**  
14 Q And so beyond your -- beyond your community  
15 activities, Mr. Wenstrom --  
16 **A Excuse me, I'm not done.**  
17 Q Oh, okay. I jumped ahead, sorry.  
18 **A Something I'm very proud of, I was involved in**  
19 **the Boy Scouts of America, as a matter of fact I**  
20 **still am, and our little troop in Kinsley, I was**  
21 **the scoutmaster; and while I was scoutmaster we**  
22 **had 12 Eagle Scouts in our little town, and I'm**  
23 **very proud of that. I'm still on the Board of**  
24 **Quivira Council which is headquartered here in**  
25 **Wichita.**

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1 Q And what is the Quivira Council?  
2 **A It is a council within the Boy Scouts of**  
3 **America, the country is divided up into**  
4 **councils. And also I was on the USD 347 school**  
5 **board for nine years. And having boys, I**  
6 **coached basketball and baseball for several**  
7 **years while our boys were growing up. That's**  
8 **it.**  
9 Q That's the list, okay. That's a good list. So  
10 you've -- you've also been in business; is that  
11 right?  
12 **A Yes, we've been in business, our farm business**  
13 **started in our chapter, at least, in 1976.**  
14 Q Is that a family farm in a sense that --  
15 **A Yes, it is, it's -- the Kansas Farm Bureau has**  
16 **awarded us Century Farm status, so it's been**  
17 **owned by the same family for over 100 years.**  
18 Q Okay. And aside from your farm business, have  
19 you been involved in other businesses?  
20 **A Yes, I have. One that's -- probably I should**  
21 **mention is in 1983 we formed a company called**  
22 **Pumping Plant Testing, and that company was**  
23 **formed because when I first started irrigating I**  
24 **thought everybody knew how to run center pivots**  
25 **and I thought everybody knew about pumps and**

1 motors and -- 'cause I was the new guy on the  
2 block.  
3 But what I discovered is that people didn't  
4 know that stuff, and so I bought some equipment  
5 to analyze our own farm. And the results were  
6 so dramatic that I -- I thought, well, I could  
7 probably do this for other people too. And at  
8 the time, our farm was fairly small and so I  
9 formed that little company to take advantage of  
10 that.  
11 And the kind of work we did was we did  
12 efficiency tests for pumping plants that had to  
13 do with how well it was doing what it was  
14 supposed to in terms of water and energy. We  
15 also did re-nozzling tests to help people  
16 re-nozzle their pivots, and after it was done to  
17 make sure it was doing what it was supposed to  
18 do.  
19 We did irrigation scheduling for clients.  
20 And probably the most relevant to what we're  
21 talking about today is that we were on the list  
22 with the Division of Water Resources to do water  
23 right certification tests. And all total, we  
24 did hundreds of these tests, I mean, hundreds  
25 and hundreds and probably in an eight-county

1 area, from Ford County to Sedgwick and from  
2 Barton down to Pratt. Some of them were under  
3 contract with the State, a lot of them were  
4 private as well. And what a learning  
5 experience. We saw a lot of wells, we saw a lot  
6 of pumps, we saw a lot of motors, met a lot of  
7 farmers who I learned to know a lot better.  
8 Q And were there others involved in the company  
9 besides yourself?  
10 A Yes, we had four of us engineers at one point,  
11 but as things go, in about ten years, we tested  
12 ourselves out of business because there wasn't  
13 anybody left to work with. So what we did -- or  
14 what I did at that point is I -- we had learned  
15 so many things that were helpful to people that  
16 we started doing lectures and seminars, and that  
17 turned out to be more than I ever thought  
18 because we ended up making talks in Nebraska and  
19 Colorado and Kansas about irrigation efficiency  
20 and scheduling and how to operate pivots and  
21 et cetera, et cetera.  
22 Q So we're going to talk some both with you and  
23 Mr. Janssen to some extent about conservation,  
24 and what I'm interested in with you,  
25 Mr. Wenstrom, is a more narrowly focused inquiry

1 about water conservation efforts on your farm --  
2 water conservation on your farm. Have you  
3 engaged in those sort of efforts, and if so how  
4 would you describe them?  
5 A I would say irrigation scheduling was the  
6 primary area that we worked on on our farm, and  
7 the idea there is to apply the exact amount of  
8 water that's required by the plants for optimum  
9 growth without wasting water. And how we did  
10 that is that we were a cooperator with the ARS  
11 USDA in Fort Collins, Colorado, a water  
12 management unit there, we were cooperators with  
13 them for at least 15 years.  
14 And what we did was we did irrigation  
15 scheduling on our own farm. And the results  
16 were dramatic. I would say that we were able to  
17 cut ten days of pumping on the average out of  
18 our -- out of our irrigation regime just by  
19 knowing what we were doing. And I can elaborate  
20 on that for the next hour, but I don't think we  
21 have that kind of time.  
22 Q Well, ten days of pumping, which you don't have  
23 to do the math in your head, but that is a fair  
24 amount of water saved, is it not?  
25 A Yeah, it suggests that we weren't so hot before

1 we did all that, but I think we were pretty  
2 typical in that we tended to run our pivots too  
3 much; and once we used irrigation scheduling  
4 properly, it was a big -- it was a big change  
5 for us.  
6 Q I think you have been involved with farm  
7 organizations in the state; is that right?  
8 A Yes, I'm on the water committee for the KLA.  
9 Q Kansas Livestock Association?  
10 A Yes. And I'm also on the water committee for  
11 Kansas Farm Bureau and Water PACK, which we'll  
12 probably talk about.  
13 Q I bet we will.  
14 A Before -- before I go any further, I want to say  
15 that our farm was noticed by others and not just  
16 other farmers. In 1987, we got an award for  
17 soil conservation; in 1996, we got an award from  
18 the Department of Interior U.S. Bureau of  
19 Reclamation for our water conservation. That  
20 was a biggie, somebody from Washington, D.C.  
21 came out and gave us the award, and that was  
22 pretty exciting for our farm. 2007, we won a  
23 water conservation award locally from the Kansas  
24 Bankers; 2014, we won a model of innovation  
25 award, water and energy by a group called the



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1 Climate and Energy Project; and in 2015, we were  
2 one of the first Be the Vision awardees by the  
3 Kansas Water Office. So that's been a nice  
4 recognition over the years.  
5 And another thing I'll point out is that  
6 our farm became known for conservation. And I  
7 had a special relationship with the University  
8 of Nebraska, and when people from other  
9 countries would come to the University of  
10 Nebraska and they would ask to go to a farm  
11 where they could talk more about these things,  
12 they would send them down to Kinsley, Kansas.  
13 And so that was -- that was a nice honor for our  
14 farm.  
15 There was a bunch of people from Argentina  
16 that we helped understand irrigation. And I was  
17 always hoping that they would invite us to  
18 Argentina and maybe buy our dinner and give us a  
19 hotel room, or something; that never happened.  
20 We did get a book on fly fishing from them, but  
21 I think we had four different groups from  
22 Argentina that were on our farm.  
23 Q In the course of your -- in the course of your  
24 work and/or your conservation efforts, did you  
25 end up having opportunity to work abroad?

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1 A Yes, I did, and Jane will laugh at this one. We  
2 had two little boys at home and we didn't have  
3 any cattle at the time; so I needed money for  
4 our farm, and so I would call up some of my old  
5 friends from industry, and we ended up doing  
6 quite a bit of consulting in Saudi Arabia and in  
7 South America.  
8 And in Saudi Arabia, we -- at one point we  
9 designed a farm irrigation project with center  
10 pivots, and I was excited to find that they  
11 actually did it. Quite often you just do all  
12 that stuff and then you go home and you don't  
13 know, but they actually put those pivots in, and  
14 that was pretty exciting.  
15 Q So I think that you did work with Underhill  
16 International Corporation; is that right?  
17 A Yes. We worked with Underhill International to  
18 develop a radio control system for center  
19 pivots. And we were a little bit ahead of our  
20 time there, but we developed a product called  
21 Pivot Alert. And using Pivot Alert, you  
22 could -- you could interrogate a pivot, you  
23 could see what it was doing, you could -- you  
24 could look on a computer screen and see all of  
25 your pivots. We had a scheduling module with it

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1 where you could sit and play what-ifs. It was  
2 pretty sophisticated stuff.  
3 And we sold that service to a lot of area  
4 farmers. But I got busy, the farm kept getting  
5 bigger, and eventually we -- the product  
6 fizzled. And nowadays, all of the major  
7 manufacturers have a product just like that.  
8 But we were doing that when no one else was.  
9 Q Okay. So you also, and this is obviously, it's  
10 closer to home in relation to this proceeding,  
11 you were involved early with the -- with Water  
12 PACK; is that right?  
13 A Yeah, that's correct. Water PACK was formed in  
14 1990, I was one of the original members, and I'm  
15 still a member today. Although Water PACK is an  
16 interesting organization in that it ebbs and  
17 flows depending on what's going on. And as  
18 long --  
19 Q In what sense?  
20 A As long as there's issues that our members are  
21 concerned with, then we fire up. If there's no  
22 issues, then everybody goes back to farming.  
23 And right now, of course, that isn't true, we've  
24 got issues so pretty active.  
25 Q And you have been, I think, the president of the

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1 organization?  
2 A Yes, I've been president, I've been  
3 vice-president, I've been the board member from  
4 Edwards County. We're in the same geographic  
5 area as GMD5, and so we have board members in  
6 each county. And also I think myself  
7 individually, it's been part of my  
8 responsibility to be a technical resource for  
9 the organization due to the background and the  
10 engineering and that sort of thing.  
11 Q So what's the -- what's the mission statement  
12 for Water PACK generally speaking?  
13 A I knew you were going to ask that. It says,  
14 agricultural producers and businesses organized  
15 to promote, foster, and encourage the  
16 beneficial, economical, and sustainable use of  
17 quality water. That's it.  
18 Q Okay, thank you. So, you know, we're here  
19 talking, Mr. Wenstrom, about the R9 Ranch. Do  
20 you have experience or knowledge about the  
21 R9 Ranch?  
22 A I do. Before I do, I want to say that Water  
23 PACK has had -- has worked really hard on  
24 legislation in Topeka. We were a key party that  
25 lobbied for the water bank, eventually got that

1 passed.

2 Q And let's stop there for a second and -- so that

3 you can explain what the water bank is.

4 A Well, I think one of my colleagues is going to

5 dig into that more, but it's basically a

6 water-saving technique where you can move water

7 around to respond to areas that are

8 over-appropriated to areas that are less so, and

9 there's an incentive to save water in a safe

10 deposit box program.

11 Q Okay. So other legislation that Water PACK --

12 A Oh, yes, in cooperation with the Kansas

13 secretary of ag, who brought forth a bill on

14 augmentation, we were the prime driving force on

15 getting that passed, along with KLA and Farm

16 Bureau. Also water conservation measures, we --

17 we've been at the forefront of that, and we're

18 pretty well known in Topeka because I think

19 legislators like to hear from farmers. They

20 hear from lawyers and lobbyists all the time,

21 but I think farmers who are living the business,

22 I think make effective communicators with the

23 legislature.

24 Q And that is one of the goals and practices for

25 Water PACK?

1 are not irrigators; is that right?

2 A Yes, that's correct. We have a membership

3 called an associated membership where an

4 agribusiness can pay dues and be a member also.

5 And we have a lot of agribusinesses because we

6 spend a lot of money with them, I guess that's

7 probably the main reason why they like to

8 support us.

9 Q That may be part of it. So as part of this

10 process where we're here, Water PACK authorized

11 the retention of Steven Larson; is that right?

12 A That's correct.

13 Q And have you interacted with Mr. Larson?

14 A Not personally until yesterday.

15 Q Okay. And have you read Mr. Larson's report?

16 A Yes, I have.

17 Q Let me show you a part of that report, which is

18 from his report at 7, it's Exhibit WP01864. And

19 he states there, The inclusion of a reduction in

20 groundwater recharge in the potential future

21 scenarios of municipal pumping significantly

22 increases the impacts to groundwater levels by

23 five times or more in places near the ranch

24 boundary from those projected in the BMcD

25 evaluations. The areal extent of reduced

1 A That is correct.

2 Q Okay. So you talked about the participation or

3 interest in Water PACK ebbing and flowing, it

4 obviously is involved in this proceeding as an

5 intervenor. Why is the -- why is the

6 organization involved in the water transfer

7 proceeding that Judge Spurgin is hearing?

8 A Well, we're involved because we're not -- we're

9 not against water transfers. As a matter of

10 fact, we were in the legislature lobbying for

11 that bill when it was brought up and when it was

12 passed. And so I think we made that clear that

13 we're not against transfers.

14 But whenever there is a transfer, our

15 members expect that it's going to be done

16 according to the law and it's going to be

17 sustainable because if it's not, sooner or later

18 it's going to break down and there's going to be

19 big, big trouble, not only for us but whoever is

20 trying to transfer the water. So with that in

21 mind and our producer members, especially those

22 that are within -- close to the R9 Ranch,

23 they're very interested in this issue.

24 Q Okay. You mentioned producer members, that

25 suggests to me there are members that perhaps

1 groundwater levels was also significantly

2 increased from about 15 square miles to over

3 150 square miles when the reduction in

4 groundwater recharge was appropriately

5 considered in simulations of potential municipal

6 pumping from the R9 Ranch area. Based on your

7 own personal experience and background, do you

8 agree with that statement?

9 A I do, yes.

10 Q So let's look at a map, if we may. Do you

11 recognize that map from Mr. Larson's report?

12 MR. TRASTER: Your Honor, I'm going

13 to object, I understand Mr. -- Mr. Wenstrom

14 is a well-educated, master's degree ag

15 engineer and well respected in his field,

16 but he's not qualified as a groundwater

17 modeler; the first question was whether he

18 agrees with the statement, the statement

19 was based on groundwater modeling. And in

20 some respects I may be anticipating the

21 questions, but I -- I'm not aware that he's

22 a groundwater modeler and certainly not

23 qualified to express opinions about

24 groundwater modeling.

25 PRESIDING OFFICER: Do you have a

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1 response?  
2 **MR. LEE:** Oh, I do, Your Honor.  
3 Actually the question I was about to ask  
4 Mr. Wenstrom has to do with proximity of  
5 Water PACK members to the R9 Ranch, which  
6 is reflected in this exhibit.  
7 **PRESIDING OFFICER:** All right. I'll  
8 overrule the objection, you can ask those  
9 questions but make sure we're staying on  
10 track with knowing that Mr. Wenstrom is not  
11 an expert witness in this matter so  
12 testimony is purely facts that he is aware  
13 of.  
14 **MR. TRASTER:** I can't hear you, I  
15 think I understand what you're saying. Go  
16 ahead.  
17 **BY MR. LEE:**  
18 Q Mr. Wenstrom, are you familiar with this map?  
19 A **I have seen it, yes.**  
20 Q And does that represent the 150-square-mile area  
21 that Mr. Larson is talking about?  
22 A **Well, I think there's some other maps that**  
23 **probably extend further than this one, but**  
24 **that's -- that's one of them in the report that**  
25 **I've seen, yes.**

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1 Q Okay. So let's -- let's look at the water  
2 rights holder exhibit, which is a bit small.  
3 And if you can read that, you'll get an award.  
4 A **I'm familiar with it. I can't read it, but I am**  
5 **familiar with it, yes.**  
6 Q I think we have another way to do this. Okay.  
7 I think that's better. Do you -- do you  
8 recognize this -- this list?  
9 A **I do.**  
10 Q And what does it depict?  
11 A **It is by township and range which is in the**  
12 **vicinity of the R9 Ranch, but it's private water**  
13 **right holders in those areas. And it shows on**  
14 **the right-hand column, it shows whether the**  
15 **water right is vested senior or junior, and it**  
16 **tells the subbasin, because when you apply for a**  
17 **water right in Kansas they always assign your**  
18 **water right to a certain subbasin. And in this**  
19 **case, there's two subbasins, Rattlesnake Creek,**  
20 **which is the majority of the wells in Edwards**  
21 **County, with the exception of the alluvial along**  
22 **the Arkansas River, sorry. And those are**  
23 **denoted as Arkansas River.**  
24 Q Okay.  
25 A **And --**

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1 **MR. TRASTER:** Mr. Lee, is this one  
2 of his exhibits?  
3 **MR. LEE:** It's under the category --  
4 it's under the category of documents,  
5 Ms. Traster, produced in discovery.  
6 **MR. TRASTER:** Okay. I don't recall  
7 seeing it, but I may not have -- I may have  
8 skipped past it.  
9 **MR. LEE:** I believe it's been  
10 produced.  
11 **MR. TRASTER:** What's the Bates  
12 number on it?  
13 **MS. LEE:** And I was going to  
14 interrupt, actually the one that just  
15 pulled up is just a -- it is a copy, it's  
16 Bates number -- I'm trying to get to it.  
17 Do you have that written down, the Bates  
18 number?  
19 **MR. LEE:** Yes, I do, it's actually  
20 WP14890.  
21 **MS. LEE:** Which is a little  
22 different than the one that was up there, I  
23 mean, it has the same information but ...  
24 **MR. TRASTER:** I can't hear you, it's  
25 different than what?

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1 **MR. LEE:** She says, Mr. Traster,  
2 that the one that's up here apparently is a  
3 duplicate of 14890.  
4 **MR. TRASTER:** If it's a duplicate,  
5 it's the same thing, fine, I just wanted  
6 to --  
7 **MS. LEE:** There is -- it is a  
8 little -- it's a little different so let me  
9 get it pulled up. I just had it and it  
10 disappeared.  
11 **PRESIDING OFFICER:** Mr. Lee, while  
12 Ms. Lee is working through that, you  
13 identified the Bates number from the  
14 documents that the parties exchanged in  
15 discovery, although for purposes of the  
16 record in this matter, is this something  
17 you're intending to offer as an exhibit, or  
18 are you just using it as a demonstration?  
19 **MR. LEE:** Actually, this is a  
20 document that we would propose to offer in  
21 evidence.  
22 **PRESIDING OFFICER:** Okay.  
23 **MR. TRASTER:** I would just like to  
24 see it.  
25 **PRESIDING OFFICER:** That's fine.

1 Just need to make sure we have everything  
2 identified correctly for the record.

3 **MR. TRASTER:** Sure.

4 **BY MR. LEE:**

5 Q Well, I tell you what, for the time being, I  
6 think we can just go on without looking at that  
7 document, and perhaps when we find it, we can  
8 return.

9 **MS. LEE:** I have it now.

10 **MR. LEE:** Well, okay.

11 **MS. LEE:** It was up and then it  
12 disappeared when I --

13 **PRESIDING OFFICER:** Sure you get  
14 used to working with multiple screens and  
15 now we're just on the laptop screen, it's  
16 hard to focus around with that.

17 **MS. LEE:** Okay. Okay. Here we go.  
18 This is the actual one.

19 **MR. TRASTER:** Thank you, sir.

20 **MR. LEE:** You're welcome.

21 **BY MR. LEE:**

22 Q So, Mr. Wenstrom, I know you talked about this,  
23 let me just go over quickly what I think you  
24 said, that the left-hand column is township and  
25 range, right?

1 or another to the R9 Ranch?

2 **A That's correct.**

3 Q Okay, thank you. And then if we could look at  
4 the Barfield map. I don't think that's the one,  
5 is it? Oh, okay.

6 This is -- this, Mr. Wenstrom, is taken  
7 from Mr. Barfield's report at page 10, and  
8 the -- it says that Below for general reference  
9 to the map showing the outline of the R9 Ranch  
10 in light green an area -- irrigated lands by  
11 Water PACK members outlined in tan highlighting.  
12 So the green is purported to be the R9 Ranch,  
13 the tan areas are folks that have irrigation  
14 around that. Does that, based on your knowledge  
15 of the area, does that seem accurate?

16 **A Yeah.**

17 Q So you said earlier in your testimony, and we've  
18 tried to make the point, I think, that it's not  
19 that R9 is opposed to water transfers, it has  
20 concerns about water transfers that affect  
21 long-term sustainability, fair statement?

22 **A Yes, except it should be Water PACK is concerned  
23 about that.**

24 Q I'm sorry, what did I say?

25 **A I think you said R9.**

1 **A That is correct.**

2 Q And then the section number is next to that?

3 **A That's correct.**

4 Q Then the rights number relates to the DWR  
5 number, I take it?

6 **A Yes, every water right has a number and they're  
7 listed there.**

8 Q Okay. And then the owner is listed next to that  
9 and then shows whether it's vested or senior,  
10 and you have a fair number of these water rights  
11 on this list; is that right?

12 **A That's correct, I think there's several pages of  
13 them, excuse me.**

14 Q Okay. And there are, in fact. And this  
15 particular -- particular list shows vested water  
16 rights first, senior water rights next, and then  
17 junior water rights; is that right?

18 **A Yeah, that's correct.**

19 Q And I think you have or you and Mrs. Wenstrom  
20 and/or your trust have a combination of senior  
21 and junior rights; is that right?

22 **A That is correct.**

23 Q Okay. So end of the day, are these names on  
24 this list people or in some cases entities that  
25 have water rights that are adjacent in one form

1 Q Okay. Well, then I stand corrected, I mean  
2 Water PACK --

3 **A Okay.**

4 Q -- so thank you. The -- you have, I know, as an  
5 individual and as a Water PACK member, some  
6 reasons for your concerns about that issue of  
7 sustainability; is that right?

8 **A Yes.**

9 Q And what, in at least summary form, are those  
10 reasons?

11 **A Well, we're in it for the long haul, and I know  
12 that the Cities of Hays and Russell are in it  
13 for the long haul as well, and so I think our  
14 hope is that we'll have a solution that works  
15 for everybody. But it will not work unless it's  
16 sustainable. And so we're concerned that in the  
17 present form, we have questions about that, and  
18 the Steve Larson report was the first time that  
19 we've been able to put some numbers to it or  
20 some -- some distance to the -- to the -- to the  
21 factors.**

22 **We have on that map, there's Water PACK  
23 members over on the west side of the Arkansas  
24 River who are really the most affected, and then  
25 on the east side of the Arkansas River, the**

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1 effect is less as you go away from the river.  
 2 **And part of the reason for that is that, as I**  
 3 **just mentioned, there's two sources of supply**  
 4 **here, in my mind, and one is the alluvial along**  
 5 **the Arkansas River and the other one is the**  
 6 **Rattlesnake Creek in the High Plains -- or in**  
 7 **the Great Bend Prairie aquifer. And to the**  
 8 **extent that you're in the Great Bend Prairie**  
 9 **aquifer, the effect that we're -- the people**  
 10 **that are worried about this diminishes as you**  
 11 **get away from the R9 Ranch.**  
 12 Q Okay, thank you. As part of the -- as part of  
 13 your concerns and Water PACK concerns, I know,  
 14 Mr. Wenstrom, that you have written letters  
 15 criticizing Mr. Barfield's determination of  
 16 consumptive use; is that right?  
 17 A **That is correct.**  
 18 Q So, again, in a general sense, what is -- what  
 19 is the concept of consumptive use?  
 20 A **Well, consumptive use, to me, is the use of**  
 21 **water by a particular crop, and net consumptive**  
 22 **use to me is the evapotranspiration or the**  
 23 **consumptive use of a crop minus the effective**  
 24 **precipitation.**  
 25 Q So with that background and with that knowledge,

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1 is, in your personal experience at least, is the  
 2 calculation of consumptive use related to the  
 3 determination of sustainable withdrawals?  
 4 **MR. TRASTER:** Objection, Your Honor,  
 5 this is -- this is going back to a previous  
 6 proceeding and discussing matters that have  
 7 been -- have been or are being resolved in  
 8 a separate proceeding, and consumptive use  
 9 is not an issue here.  
 10 **PRESIDING OFFICER:** Do you have a  
 11 response, Mr. Lee?  
 12 **MR. LEE:** Yeah, sustainability is an  
 13 issue here, Your Honor, and the question is  
 14 whether there is a connection between  
 15 consumptive use and sustainability of the  
 16 aquifer.  
 17 **MR. TRASTER:** And, Your Honor,  
 18 sustainability is not an issue here, that  
 19 too is resolved in a previous proceeding.  
 20 The Water Transfer Act clearly says that  
 21 you, the presiding officer, are not  
 22 permitted to reduce the quantity requested  
 23 unless it's based on the benefits or the --  
 24 well, it's right here, unless -- this is  
 25 K.S.A. 82a-1504 that Mr. Lee put on the

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1 screen here the other day, but you can't  
 2 approve the transfer for a smaller amount  
 3 of water unless it's for the protection of  
 4 the public interest as a -- the public  
 5 interest of the State as a whole. And  
 6 there's no -- the question of  
 7 sustainability and consumptive use has been  
 8 resolved or is being resolved in separate  
 9 proceedings and is really irrelevant here.  
 10 **PRESIDING OFFICER:** Mr. Lee, is  
 11 there some argument you have as to how that  
 12 is relevant to the provisions of 82a-1504?  
 13 **MR. LEE:** Sure, Your Honor, the very  
 14 basis for the provision that Mr. Traster  
 15 just cited is the idea that you and/or the  
 16 panel have the right to grant or enter an  
 17 order providing for less water than has  
 18 been requested. That is obviously based on  
 19 one of two concepts, either how much can be  
 20 taken safely or how much is needed by the  
 21 applicants.  
 22 And to the extent that net consumptive  
 23 use, which is the question pending to -- to  
 24 Mr. Wenstrom, affects how much water  
 25 ultimately can be sustainably, safely taken

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1 from an area, that directly affects whether  
 2 either the application ought to be denied  
 3 or whether the volume requested ought to be  
 4 reduced.  
 5 **MR. TRASTER:** Your Honor, I would  
 6 respectfully disagree. The statute, in  
 7 fact, says that the previous provision sets  
 8 out the factors that go into the question  
 9 of the State as a whole, the interest of  
 10 the State as a whole, and I don't think  
 11 sustainability or consumptive use is  
 12 included in that.  
 13 **PRESIDING OFFICER:** And I would  
 14 agree with Mr. Traster's reading of that  
 15 but all other places where the legislature  
 16 define the various areas involved here, the  
 17 fact that that provision in 1504(a) states  
 18 the State as a whole. Is there some way  
 19 that you're going to tie this to the public  
 20 interest of the State as a whole, Mr. Lee?  
 21 **MR. LEE:** Your Honor, I think the  
 22 idea of the public interest of the State as  
 23 a whole is really an amorphous concept and  
 24 the -- you will hear from us ultimately, as  
 25 you have requested a trial brief, what --

1 information that would and analysis that  
2 would support that idea that it --  
3 determining what is in the interest of the  
4 State as a whole has a lot to do, for  
5 example, with beneficial use of the water.  
6 There are a number of cases that we could  
7 site to the Court for that proposition.

8 And so I guess at the end of the day, I  
9 think there's two things at play here, one  
10 is -- and something that I think sometimes  
11 has been a bit shrouded is the idea that  
12 somehow this is not a separate proceeding,  
13 standing on its own from the change of use  
14 proceeding, they're two separate things,  
15 and there are determinations that have to  
16 be made here that are not beholdng to what  
17 happens in the change of use proceeding.  
18 So that's -- that's part of it.

19 And the -- the idea of how one defines  
20 change of use -- or, I'm sorry, how one  
21 defines the interest of the State as a  
22 whole, I think that is subject to all sorts  
23 of debate. And so, ultimately, I think, to  
24 try and make some determination about that  
25 to keep evidence out is -- is a little

1 dangerous really.

2 **PRESIDING OFFICER:** You're asking  
3 questions that almost seem to get on that  
4 point of asking opinion of the witness as  
5 well. So I will let you proceed, Mr. Lee,  
6 but make sure that what you're asking is  
7 strictly fact questions that somebody not  
8 an expert would be able to respond to on  
9 the witness stand and that it's keeping  
10 everything to within the confines of what I  
11 have the authority to address in this  
12 proceeding which is -- all I have the  
13 authority to address is the transfer.

14 **MR. LEE:** Thanks, Your Honor.

15 **BY MR. LEE:**

16 Q So the question which is related to net  
17 consumptive use, Mr. Wenstrom, and I'm not  
18 seeking analysis for you, what I'm asking you is  
19 based on your own experience, is there any kind  
20 of connection between the determination of net  
21 consumptive use and how much water ought to come  
22 out of a particular source?

23 **MR. TRASTER:** Your Honor, object,  
24 this is -- goes back to the question of how  
25 much quantity -- this goes to the quantity

1 that is being -- this goes to the question  
2 of quantity, that Water PACK is attempting  
3 to reduce a quantity that we are asking for  
4 based on an analysis in a separate  
5 proceeding that has been done and they are  
6 challenging in a separate proceeding. I go  
7 back to 82a-1504 in the definition of -- or  
8 the statute sets out the factors that are  
9 to be considered for purposes of  
10 determining the interest of the State as a  
11 whole. And I just -- this idea of trying  
12 to reduce the quantity just isn't an issue  
13 here.

14 **PRESIDING OFFICER:** Mr. Lee, is  
15 there anything you want to add in response?

16 **MR. LEE:** Well, I suppose I would --  
17 one of the things I would say, Your Honor,  
18 is that Mr. Traster and Mr. Buller have  
19 written an article in which they say that  
20 you are in a position to reduce the  
21 quantity that is -- from what is requested  
22 to something less than that. And so I hate  
23 to be citing Traster and Buller on water  
24 transfer issues, but that is in the article  
25 that they have written and --

1 **PRESIDING OFFICER:** Is that  
2 something that's been submitted as an  
3 exhibit in this matter?  
4 **MR. LEE:** No, it's a KBA article.  
5 **MR. TRASTER:** I'm not familiar with  
6 this article.  
7 **MR. LEE:** We can locate it.  
8 **MR. TRASTER:** Well, I would think I  
9 would know about it if I wrote it.  
10 **MR. LEE:** Well, I can't answer that.  
11 **MR. TRASTER:** I can't either.  
12 There's -- we have -- have you written an  
13 article in the KBA?  
14 **MR. BULLER:** I don't -- I don't know  
15 about --  
16 **MR. TRASTER:** Mr. Buller doesn't  
17 know anything about it either.  
18 **MS. LEE:** Let me show you.  
19 **MR. TRASTER:** I now know what that  
20 is, sorry. It wasn't in the KBA. So I  
21 wrote this article, Daniel and I wrote this  
22 article in the -- I wrote this article,  
23 Daniel and I wrote this article, it was  
24 published in the Water Report, I don't  
25 remember it being in the KBA, but I

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1 don't -- we wrote it, I don't know what it  
2 says that you're citing so -- regardless,  
3 the statute is controlling, not my  
4 article -- our article.  
5 **PRESIDING OFFICER:** All right. As I  
6 read the statute, Mr. Lee, there is -- the  
7 condition there under 1504(a), I can  
8 approve a reduced amount if I deem it to be  
9 necessary for the protection of the public  
10 interest of the State as a whole. That's  
11 the condition that's there. And then under  
12 82a-1502, it lists the factors to be  
13 considered. The change application  
14 changing from irrigation to municipal use,  
15 I have no authority over that, and that is  
16 outside the scope of anything that -- that  
17 I can address.  
18 **MR. LEE:** Yeah, Your Honor, the --  
19 we're not encouraging that. Actually, I  
20 think probably the most important citation  
21 one could look at is K.A.R. 5-50-2, which  
22 is the discussion of, I'm quoting, To be  
23 complete, a water transfer application  
24 shall show the following, and then it has a  
25 list of factors, and they talk about, for

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1 example, the maximum quantity of water  
2 proposed to be transferred, the location of  
3 proposed point or points of diversion, and  
4 a number of things. Those are things --  
5 this is not a res judicata sort of a  
6 situation, those are things that Your Honor  
7 and ultimately the panel have to take into  
8 account in making a decision.  
9 So that, I think, is the flaw in the  
10 argument here is that somehow the change of  
11 use proceeding and this proceeding are  
12 interconnected, they're really not. I  
13 mean, you can't get water, admittedly, from  
14 the R9 Ranch to Hays without doing both,  
15 but they are two things, you've got to do  
16 the change of use. And there's a reason  
17 that -- that the Cities sought a contingent  
18 approval of the change of use because they  
19 know that that is of no value to them  
20 unless the transfer is approved here. And  
21 so they are separate proceedings that I  
22 think it needs to be clear that we're not  
23 talking about a pro forma sort of approach  
24 here.  
25 **MR. TRASTER:** So the statute is

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1 controlling. The regulation 5-50-2 has 27  
2 different categories of information that  
3 the -- that DWR regulations require in  
4 order to have a complete transfer  
5 application. It does include some  
6 information about, in another context,  
7 population, for instance, which is an issue  
8 that has come up already in this -- in this  
9 proceeding.  
10 But the issue, the directive that 5-50-2  
11 is about is filing, preparing a complete  
12 application, and the statute is abundantly  
13 clear that that determination is made by  
14 the chief engineer. The question has been  
15 resolved.  
16 So the fact that he asks for some of  
17 this information, and, frankly, I don't  
18 recall at this moment whether consumptive  
19 use is in the -- is on the list and  
20 don't -- I don't think it is, is an  
21 indication -- it doesn't alter the statute,  
22 it doesn't alter the fact that any  
23 reduction is -- needs to be based on the  
24 interest of the State as a whole.  
25 If I can put it very pointedly, Your

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1 Honor, the regulation doesn't amend the  
2 statute. It is simply about whether or not  
3 the application is complete, and the  
4 determination has been made that it is.  
5 Otherwise, we wouldn't be here.  
6 **PRESIDING OFFICER:** All right. I  
7 agree with that, Mr. Traster, under  
8 1501(a), subsection (b) there, the hearing  
9 panel could not have requested me to be  
10 appointed as the hearing officer for this  
11 matter unless there was that completed  
12 application, and there's -- I find nothing  
13 in the statutes or regulations that give me  
14 any authority to determine if that  
15 application is complete, that's the chief  
16 engineer's responsibility to do that, and  
17 once that's done, then the panel can  
18 request that I be appointed, or some other  
19 judge be appointed to preside over the  
20 matter. So that, I don't think, is an  
21 issue.  
22 What is it that you're wanting to try to  
23 address with this, then, Mr. Lee?  
24 **MR. LEE:** Well, Your Honor, the --  
25 the question of whether this water ought to

1 be transferred is, of course, at the heart  
2 of what we're talking about.  
3 **PRESIDING OFFICER:** And whether it's  
4 transferred is going to be based on the  
5 governing law, not what some party thinks  
6 should be or not. If it doesn't comply  
7 with the law, I can't grant it one way or  
8 the other, I have to follow what the law  
9 says there.

10 **MR. LEE:** Well, but -- yeah, at the  
11 end of the day, this boils down to, in  
12 part, what is in the best interest of the  
13 State and --

14 **PRESIDING OFFICER:** Correct.

15 **MR. LEE:** -- and the -- I'm sure  
16 Your Honor has not prejudged that question,  
17 and it is, as I say, a remarkably amorphous  
18 sort of a concept in trying to determine  
19 what is in the best interest of the State.  
20 There's 3 million people who live in this  
21 state, the question, as an example, of  
22 whether an improvidently granted water  
23 transfer that then has ramifications for  
24 the State in different ways, I think that  
25 is a part of this, and part of deciding

1 5,000 acres of land in Edwards County is  
2 going to be -- remain irrigation use or  
3 we're going to move that water to the  
4 Cities of Hays and Russell so that they can  
5 actually continue to thrive, continue to  
6 survive, and continue to grow. And they  
7 need the water, and that's fundamental --

8 **PRESIDING OFFICER:** If it was as  
9 simple as that, there wouldn't even be the  
10 process for the hearing, Mr. Traster,  
11 that's why those parties affected have the  
12 right to come present their case as to why  
13 it should not be approved or should be  
14 approved at the lower level -- at a lower  
15 level than what's been requested.

16 And I think both parties are getting  
17 into their ultimate arguments in this case  
18 as opposed to right now the objection was  
19 with the questions that Mr. Lee was asking  
20 Mr. Wenstrom and if those were getting  
21 outside the scope of what is in this  
22 hearing.

23 **MR. TRASTER:** I agree, Your Honor,  
24 and I simply am pointing out that the  
25 quantity isn't an issue and economic -- I

1 whether to transfer water has to do with  
2 two sides really.

3 One is what's the need on the Cities'  
4 part, which is an important issue, but also  
5 the idea that it simply cannot be the  
6 State's intention to say that buy and dry  
7 is what the State wants to do. And so  
8 because that is the case, the idea of  
9 whether it's sustainable amounts,  
10 sustainable draw amount is in our view  
11 fundamental.

12 **MR. TRASTER:** Well, that's a very  
13 interesting perspective. The statute's in  
14 terms of the public policy, the public  
15 policy is the maximum development and most  
16 economical use of the water that goes back  
17 to the -- the Water Appropriation Act.  
18 K.S.A. 82a-711 allows the chief engineer, I  
19 believe (a) allows the chief engineer to  
20 impose terms and conditions, but it  
21 specifically says maximum economic benefit,  
22 and I'm paraphrasing here.

23 But the point being that in some  
24 respects we are analyzing or considering  
25 the question of whether or not, you know,

1 mean, you're right, I'm going to the  
2 ultimate issue, but the concern here, from  
3 our perspective, is this has already gone  
4 too far in terms of getting into quantity  
5 and need which have already been resolved.  
6 I'm going to sit down and let you rule.

7 **PRESIDING OFFICER:** Okay. Why don't  
8 we do this right now, let's just take a  
9 five-minute break, give everybody a chance  
10 to kind of clear their head and figure out  
11 where to start this over again with some  
12 questions that maybe if you just rephrase  
13 it a little different way, maybe that  
14 avoids some of the objection and gets to  
15 where you're trying to go and gets us on  
16 that track to where we can hopefully try to  
17 get finished out with Mr. Wenstrom.

18 **MR. LEE:** We're happy to do that,  
19 Your Honor.

20 **PRESIDING OFFICER:** All right.  
21 Let's just come back at 4:30 then.

22 (Thereupon, a recess was taken;  
23 whereupon, the following was had.)

24 **PRESIDING OFFICER:** Okay. So now I  
25 think we have everybody back so we can go



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1 ahead and go back on the record. Mr. Lee,  
2 are you ready to continue with your  
3 questions?  
4 **MR. LEE:** I am, Your Honor, thank  
5 you.  
6 **PRESIDING OFFICER:** All right.  
7 **BY MR. LEE:**  
8 Q Mr. Wenstrom, how many acres are there on your  
9 farm presently?  
10 A **About 3,000.**  
11 Q Okay. And the -- you have grown crops and had  
12 pastureland both, I take it; is that right?  
13 A **Very little pasture, mostly crops.**  
14 Q Okay. Do you know what the relationship, if  
15 any, there is between the ground that is seeded  
16 with native grass as compared to an irrigated  
17 crop?  
18 A **Well, I can offer observations on our own farm.**  
19 **When we're irrigating, by definition, we're**  
20 **trying to make a crop grow, and we're keeping**  
21 **the water level in the root zone at a pretty**  
22 **high level. And that's all well and good until**  
23 **we have a big rain, and when we have a big rain,**  
24 **and by -- by irrigating, we almost have a full**  
25 **profile, what happens is that the water goes**

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1 down and a large part of it goes down to the  
2 aquifer, especially on really sandy soils.  
3 Now, on native grass, it's not so simple  
4 because native grass can go down 15 or 20 feet,  
5 and it's usually sitting there holding its own.  
6 As a matter of fact, this spring when -- when we  
7 hadn't had rain for a year, some of the native  
8 grass was trying to green up; at a time when  
9 there was dust at 30,000 feet around here, those  
10 grasses were trying to green up. So that says  
11 that they root very deep -- deeply.  
12 So basically what happens if you have a  
13 rain and there's some -- on some native grass  
14 like in our pivot corners, we've seeded a lot of  
15 our corners to native grass, if you have a rain  
16 there, it has to fill up the profile of the  
17 native grass before any water can escape to the  
18 aquifer. And with 20 foot of root system, that  
19 takes a long time unless you've had enough rain  
20 to where it saturates the grass, root zone, and  
21 then the excess over and above that can move its  
22 way down. And so that's very different from the  
23 recharge on irrigation.  
24 Q Okay.  
25 A **And we worked really hard on the irrigation side**

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1 because we put on water with a pivot, we put on  
2 fertilizer with a pivot, we do all these things  
3 with a pivot, so our task is to minimize that  
4 deeper flow out of the root zone because we're  
5 paying to fill it up. And if we get rain, then  
6 we don't have any choice. So on the real sandy  
7 soils, what we have to do is make light,  
8 frequent applications and try to manage the root  
9 zones so it's not completely full so we've got a  
10 little room for rainfall.  
11 Q Okay. So what's the -- again, if you know,  
12 what's the relationship between a declining  
13 aquifer and irrigation well capabilities?  
14 A **Well, that's something that we're always vitally**  
15 **concerned about is what is the static level in**  
16 **our wells doing in the off season, is it staying**  
17 **the same, is it going up, is it going down, and**  
18 **trouble for us is when it's going down. Our --**  
19 **most of our wells on our farm are on heavier**  
20 **soils that are on the class 8 and the class 9**  
21 **that we've been -- Dr. Larson was talking about.**  
22 However, on the -- on the class 9, the  
23 really light soils, there you've got -- you've  
24 got a problem because they're -- they're always  
25 trying to dewater, I mean, they're always

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1 trying to -- you're always losing water. So if  
2 those wells are going down every year, that --  
3 that's a problem, that means that you're losing  
4 saturated thickness and you're losing pumping  
5 rate, and pumping rate equates to how much you  
6 can put on the crop in a day or two days, or  
7 whatever. And if that continues, then you're  
8 going to have yield losses, and everybody knows  
9 that's how we get paid is by having yield and  
10 selling the crop.  
11 So I've got some static water level data  
12 for one of our -- four of our wells that are  
13 very close to the R9 Ranch, and unfortunately  
14 the ones the closest are not -- are not going  
15 up. Well, let me correct that, they haven't  
16 been going up until the R9 Ranch stopped  
17 irrigating. Now they're starting to crawl up.  
18 But before that, they were going down since 1989  
19 to the current date; it's pretty easy to see,  
20 you don't have to have a ruler to figure out  
21 that.  
22 Q So the data that you're talking about would  
23 indicate that if water is not coming out of the  
24 aquifer in one form or another, irrigation or  
25 otherwise, then that has had a positive effect

1 on aquifer level; is that -- is that correct?

2 **A Say again, please.**

3 **Q** Sure. The -- I think what you're saying is if

4 there is not water being pumped out of the

5 aquifer in one form or another, whether that's

6 irrigation or otherwise, then that's had a

7 positive effect on aquifer levels?

8 **A It can but it depends on what that -- what that**

9 **area of the farm in our case is doing, who's**

10 **around, how much are they pumping, it's -- it's**

11 **more dependent on that.**

12 **Q** So let's switch gears here a little bit. You've

13 obviously lived in or around the R9 Ranch for

14 many years, do you know anything about water

15 quality at the ranch?

16 **A I know about water quality --**

17 **MR. TRASTER:** Excuse me, Your Honor,

18 I don't understand the relevance.

19 **A I know about water quality on our farm --**

20 **PRESIDING OFFICER:** Before you --

21 before you answer that, Mr. Wenstrom,

22 Mr. Lee, did you have a response to that

23 objection?

24 **MR. LEE:** Well, in the sense that

25 water quality is related to what the Cities

1 can do with the water because to the extent

2 that there are serious water quality

3 issues, then the water that is available to

4 the applicant ends up being considerably

5 more expensive to deal with, for example,

6 or perhaps unavailable, and so that is the

7 basic issue.

8 **PRESIDING OFFICER:** All right.

9 Since there may be some tie with that, I'll

10 overrule the objection and allow the

11 question.

12 **A Well, the water quality on our -- our circles**

13 **that are closest to the R9 Ranch keeps getting**

14 **worse. When we first bought the property in**

15 **1989, we could drink the water if we were**

16 **servicing the pivot. We no longer can drink it.**

17 **The dissolved solids, hydrates, sulfates,**

18 **and we're not trying to drink it anyway, but**

19 **what we are trying to do is keep our equipment**

20 **running, and so it has -- has a very corrosive**

21 **effect. And we think that the water quality**

22 **problems have migrated west -- or east on the**

23 **Arkansas River to our farm because they keep**

24 **getting worse.**

25 **And so, for example, one of the things that**

1 **this is the kind of thing that happens.**

2 **Q** So, ultimately, Mr. Wenstrom, have you discussed

3 with Mr. Larson his estimate of sustainable

4 withdrawal amounts from R9?

5 **A I have, yes.**

6 **Q** And what did he tell you?

7 **MR. TRASTER:** Objection, Your Honor.

8 **PRESIDING OFFICER:** And what is your

9 objection?

10 **MR. TRASTER:** Never mind, I'll

11 withdraw it, go ahead.

12 **PRESIDING OFFICER:** Okay.

13 **A Well, I've read his report, and he has -- I've**

14 **learned about how they -- the model needs to**

15 **consider the recharge with native grass; and so**

16 **you come up with some impairments is what he's**

17 **saying, and so I've learned about that from him.**

18 **And so we were talking about, well, how do you**

19 **get rid of the impairment, and -- and the answer**

20 **is you run the model over and over and over**

21 **again with different withdrawals from the --**

22 **from the R9 Ranch until there's no more**

23 **impairment. That's my understanding of how you**

24 **solve the problem.**

25 **BY MR. LEE:**

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1 Q And did he tell you what the number of acre-feet  
2 then could be prudently removed from the  
3 R9 Ranch?  
4 A **He -- he stated a range.**  
5 Q Which was?  
6 A **21 to 2700 acre-feet per year.**  
7 Q Thank you.  
8 **PRESIDING OFFICER:** Mr. Traster or  
9 Mr. Buller?  
10 **MR. TRASTER:** I'm on my way.  
11 **PRESIDING OFFICER:** Okay.  
12 **MR. TRASTER:** Your Honor, just for  
13 planning purposes, what are you thinking in  
14 terms of how long we're going to go  
15 tonight?  
16 **PRESIDING OFFICER:** Well, at this  
17 point, I would, I guess, ask you how much  
18 do you think you have for Mr. Wenstrom, see  
19 what Mr. Cole may have, Ms. Langworthy, I  
20 hate to assume that you have no questions?  
21 **MS. LANGWORTHY:** I don't.  
22 **PRESIDING OFFICER:** I know we're  
23 about a quarter till 5:00, but I guess how  
24 much do you reasonably think you have if  
25 we're -- I guess what I'm getting at is I

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1 would hate to make Mr. Wenstrom have to  
2 come back again tomorrow if there's only  
3 going to be 30 minutes of questioning for  
4 him; if this is going to be pretty lengthy,  
5 then maybe this would be a good time to  
6 adjourn for the day.  
7 **MR. TRASTER:** Well, yeah, I think  
8 it's going to take sometime, I don't  
9 know -- it'll certainly take more than  
10 30 minutes but an hour or two, I don't  
11 know. It's hard to know until you start --  
12 I have quite a bit of information that I  
13 want to obtain from Mr. Wenstrom.  
14 **PRESIDING OFFICER:** All right.  
15 **MR. TRASTER:** This is the first  
16 time -- we've been around each other for a  
17 long time and been a lot of places, and  
18 this is the first time I've ever had him  
19 under oath where I could, you know, find  
20 out what he knows.  
21 **PRESIDING OFFICER:** All right.  
22 Well, I guess let me then ask Mr. Lee or  
23 Mr. Wenstrom, is Mr. Wenstrom planning to  
24 be available for tomorrow, or is he  
25 planning to head home tonight?

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1 **MR. LEE:** Well, I believe  
2 Mr. Wenstrom can be available tomorrow  
3 or -- yes, tomorrow morning.  
4 **PRESIDING OFFICER:** Okay. If he was  
5 planning to head home tonight, I would say  
6 let's try to keep going so we don't force  
7 him to stay another night here if he didn't  
8 want to.  
9 **MR. LEE:** Well, I'm speaking for  
10 you, Mr. Wenstrom, am I right about that?  
11 A **We could be available tomorrow morning.**  
12 **PRESIDING OFFICER:** Okay. Why don't  
13 we take this, then, as the time to adjourn  
14 for the day, 9:00 o'clock in the morning  
15 work for everybody?  
16 **MR. TRASTER:** It does. Are you okay  
17 with this?  
18 **MR. BULLER:** I am okay with this,  
19 however, GMD5 is going to be presenting  
20 Mr. Feril tomorrow. I didn't know what  
21 Ms. Walker's schedule was like. You know,  
22 a little bit of coordination among  
23 witnesses to make sure we don't, you know,  
24 interfere with schedules would be maybe  
25 appropriate. Lynn Preheim has asked me if

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1 we're still wanting to call Orrin in the  
2 morning, and I told him yes, but I can send  
3 him another email if -- I just want to be  
4 considerate of people's schedules.  
5 **MR. LEE:** Well, and that's  
6 appreciated. Some of that -- some of that,  
7 Mr. Buller, would depend; I don't know who  
8 is cross-examining Ms. Walker, but part of  
9 that would obviously depend on how much  
10 cross-examination there is because the  
11 first part of it is three minutes, of  
12 course.  
13 **PRESIDING OFFICER:** Right.  
14 **MR. LEE:** And so --  
15 **MR. TRASTER:** Do we need this on the  
16 record?  
17 **PRESIDING OFFICER:** Yeah, we can go  
18 ahead and go off the record now, don't  
19 bother typing all this. Let's go off the  
20 record now, we'll consider this adjourned  
21 till the morning.  
22 (Whereupon, the proceedings were  
23 adjourned at 5:01 p.m.)  
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