

SUPREME COURT OF THE UNITED STATES
NO. 141, ORIGINAL

STATE OF TEXAS,)
)
 Plaintiff,)
)
 VS.) VOLUME IV
)
 STATE OF NEW MEXICO)
 AND STATE OF COLORADO,)
)
 Defendants.)

TRANSCRIPT OF PROCEEDINGS

The above-entitled matter came on for HEARING before HONORABLE MICHAEL A. MELLOY, SPECIAL MASTER, held REMOTELY via Zoom, on OCTOBER 7, 2021, commencing at 11:01 a.m.;

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1 **JUDGE MELLOY:** This is Judge Melloy.
2 Again, this is in Original No. 141, Texas versus New
3 Mexico and the State of Colorado, United States as
4 intervenor. Let me start by asking the parties who
5 will be participating in today's hearing to enter
6 their appearance. Who do we have for Texas?

7 **MS. KLAHN:** Sarah Klahn, Your Honor.

8 **JUDGE MELLOY:** Okay. And New Mexico?

9 **MR. WECHSLER:** Good morning, Your Honor.
10 Jeff Wechsler. This afternoon, it'll be Zachary Ogaz
11 for Mr. Sloan and Mr. Ivey.

12 **JUDGE MELLOY:** For the United States?

13 **MR. LEININGER:** Good morning, Your
14 Honor, Lee Leininger for the United States. This
15 afternoon for Mr. Sloan, Judy Coleman, and for
16 Mr. Ivey, Jim Dubois.

17 **JUDGE MELLOY:** Okay. And, Mr. Wallace,
18 are you on?

19 **MR. WALLACE:** Yes, I am. Good morning,
20 Your Honor. Chad Wallace for the State of Colorado.
21 If there is an occasion to ask any cross-examination
22 questions of Dr. King, Preston Hartman from our office
23 will be doing that.

24 **JUDGE MELLOY:** Okay. All right. And
25 since most of the time, you had your camera off,

1 Mr. Wallace, which is fine, if you want to ask some
2 questions, I'm going to let you jump in at the
3 appropriate time, in case I forget to -- to ask -- ask
4 if you wanted to ask any questions.

5 All right. Who's taking -- is this
6 United States or Texas taking the next witness?

7 **MR. LEININGER:** The United States, Your
8 Honor.

9 **JUDGE MELLOY:** Okay. Mr. Leininger, you
10 may call your witness.

11 **MR. WECHSLER:** Your Honor, before, may I
12 ask a clarification that came up at the end of
13 yesterday's trial day?

14 **JUDGE MELLOY:** Sure.

15 **MR. WECHSLER:** It has to do with the --
16 the order of cross-examination and friendly cross, and
17 at the beginning of the trial a couple status
18 conferences ago, you had indicated you weren't going
19 to allow friendly cross-examination or -- or tag
20 teaming unless the United States and Texas were not
21 aligned on a particular issue, and that's because
22 they're offering a joint case, but yesterday during
23 Mr. Esslinger's cross-examination, after New Mexico
24 went, Mr. Dubois then asked a number of questions of
25 -- of Mr. Esslinger, which were quite clearly aligned

1 with Texas and -- and pretty classic friendly
2 cross-examination. And, again, it was after New
3 Mexico's cross so I'm just looking for direction on
4 what the procedure will be, both in terms of the order
5 for those two to be cross-examining their -- each
6 other's witnesses and -- and, also, when that will be
7 allowed.

8 **JUDGE MELLOY:** Well, I'm not sure that
9 when I said I wasn't going to allow tag teaming that I
10 meant as between Texas and United States. What I was
11 more concerned about were more than one attorney for
12 the same party, in other words, you and Ms. Thompson,
13 for instance, being on at the same time and one
14 objecting and one taking part of the cross and
15 another. That was what I was really concerned about.
16 I do think the United States as a party has the right
17 to ask some questions. As far as the order is
18 concerned, I think you may have a good point. What I
19 will do is -- is, since this is a U.S. witness, if
20 Texas wants to ask any questions, they'll go next,
21 then you can cross-examine as to -- as to questions
22 asked by both parties.

23 **MR. WECHSLER:** Fair enough. Thank you.

24 **JUDGE MELLOY:** Any question about that?

25 If not, then Mr. Leininger, would you

1 call your witness?

2 **MR. LEININGER:** Thank you, Your Honor.
3 The United States calls J. Phillip King.

4 **JUDGE MELLOY:** Dr. King, would you raise
5 your right hand, please? Do you swear or affirm that
6 the testimony you're about to give will be the truth,
7 the whole truth, and nothing but the truth?

8 THE WITNESS: I do.

9 **JUDGE MELLOY:** All right. Would you
10 state and spell your name for the record, please?

11 THE WITNESS: James Phillip King,
12 J-A-M-E-S, P-H-I-L-L-I-P, K-I-N-G.

13 **JUDGE MELLOY:** One of the easier ones to
14 spell. I need to ask you a couple questions we're
15 asking each of the witnesses, Dr. King. First of all,
16 is there anyone in the room with you during your
17 testimony?

18 THE WITNESS: No.

19 **JUDGE MELLOY:** Do you have any documents
20 that you will be referring to during your testimony
21 with you?

22 THE WITNESS: No.

23 **JUDGE MELLOY:** Other than the exhibits
24 that may have been furnished.

25 THE WITNESS: No.

1 **JUDGE MELLOY:** And then I also need to
2 admonish you that the witnesses are not allowed to
3 have any kind of communication device, such as smart
4 phones, laptops, and any texting, e-mail, instant
5 messaging capability. Do you understand that?

6 **THE WITNESS:** Yes.

7 **JUDGE MELLOY:** All right. With that,
8 Mr. Leininger, you may proceed.

9 **MR. LEININGER:** Thank you, Your Honor.

10 **JAMES PHILLIP KING,**
11 having been first duly sworn, testified as follows:

12 **DIRECT EXAMINATION**

13 **BY MR. LEININGER:**

14 **Q. Dr. King, are you employed by the Elephant**
15 **Butte Irrigation District?**

16 **A. I'm a consultant for Elephant Butte**
17 **Irrigation District.**

18 **Q. And how many years have you been a consultant**
19 **for EBID?**

20 **A. About 29.**

21 **Q. Have you been disclosed as a non-retained**
22 **expert in this case?**

23 **A. Yes.**

24 **Q. By whom?**

25 **A. By the United States and Texas.**

1 Q. What were you asked to do in this case for
2 the United States?

3 A. To rebut the expert report of Dr. Margaret
4 Barroll.

5 Q. And -- and who is Dr. Barroll?

6 A. She is a hydrologist who first was an
7 employee and is now a consultant for the State of New
8 Mexico.

9 Q. Let's go to the next slide.

10 MR. LEININGER: Your Honor, presented
11 here is exhibit marked US-216. It's a pleading in
12 this case, and it's titled, "United States of
13 America's Disclosure of Expert Rebuttal Witness J.
14 Phillip King.

15 Q. (BY MR. LEININGER) Dr. King, have you reviewed
16 this document?

17 A. Yes.

18 Q. Does it contain your disclosure of expected
19 expert witness testimony?

20 A. Yes.

21 Q. Let's go to Page 3 of this document, PDF 3,
22 where it lists, "Subject matter." Under subject
23 matter, it states that you will provide testimony in
24 rebuttal of the report of Dr. Margaret "Peggy" Barroll
25 dated October 31, 2019. Did I read that correctly?

1 A. Yes.

2 Q. Partially. And this disclosure was filed on
3 December 20th, 2019. Dr. Barroll continued to produce
4 reports; is that right?

5 A. Yes.

6 Q. How many more reports?

7 A. I believe three.

8 Q. And what about Dr. Barroll's four reports and
9 analysis are you prepared to rebut?

10 A. Her critique and criticism of the 2008
11 Operating Agreement among the Elephant Butte
12 Irrigation District, El Paso County Water Improvement
13 District No. 1, and the United States.

14 Q. Did you produce an expert report rebutting
15 Dr. Barroll's analysis of the 2008 Operating
16 Agreement?

17 A. I did, and it's included in the disclosure.

18 Q. So you're prepared to offer your expert
19 opinion rebutting Dr. Barroll's allegations about
20 Project operations?

21 A. Yes.

22 Q. And you're willing to return for live
23 testimony in the spring to explain your rebuttal?

24 A. Yes.

25 MR. LEININGER: Your Honor, at this time

1 we'll move to admit as an exhibit what's been marked
2 as US-216. It's un-objected to.

3 **MR. WECHSLER:** Yeah. And, Your Honor,
4 I'll explain, it's not objected to, and that's because
5 Dr. King, in his deposition, indicated that he had
6 drafted the bulk of this, so pursuant to the
7 discussion that we had about expert reports being
8 admitted, it seemed fair to allow Dr. King's own words
9 to be admitted, even though it's a pleading.

10 **Q. (BY MR. LEININGER) Dr. King --**

11 **MR. LEININGER:** Oh, I'm sorry, your
12 Honor.

13 **JUDGE MELLOY:** Just a second. All
14 right. Exhibit 216, that's U.S. Exhibit 216, right?

15 **MR. LEININGER:** Correct.

16 **JUDGE MELLOY:** Is admitted. Now, we're
17 not going to get into the report, are we?

18 **MR. LEININGER:** No, Your Honor. It's
19 just to distinguish his testimony this fall from next
20 spring.

21 **JUDGE MELLOY:** All right. Okay. You
22 may proceed.

23 **Q. (BY MR. LEININGER) Dr. King, you were also**
24 **disclosed by Texas as a non-retained expert. Let's**
25 **look at how Texas describing your anticipated**

1 testimony. Can we go to the next exhibit? What's
2 being presented here is a document marked as Exhibit
3 US-72. It's titled, "State of Texas Third
4 Supplemental Disclosure of Expert Witness
5 Information."

6 MR. LEININGER: Your Honor, by agreement
7 of the parties, we will not be offering this into
8 evidence. It's just being used for demonstrative
9 purposes.

10 Q. (BY MR. LEININGER) Dr. King, have you
11 reviewed this document?

12 A. Yes.

13 Q. And does it further explain your expected
14 testimony?

15 A. Yes.

16 Q. Let's go to Page 6/7 on here under, "Subject
17 Matter." There's your name, and if we look down at
18 the second paragraph, first couple lines, it states
19 that you will offer opinion -- sorry -- facts,
20 specific facts, from the perspective of your EBID
21 hydrology consultant position; is that correct?

22 A. Yes.

23 Q. Let's go to the end of this paragraph.

24 MR. LEININGER: Your Honor, this is
25 split because it's between Pages 6 and 7.

1 Q. (BY MR. LEININGER) You were also disclosed
2 for purposes of testimony regarding how EBID operates
3 pursuant to the 2008 Operating Agreement. Do you see
4 that line?

5 A. Yes.

6 Q. And then at the bottom, you were also
7 disclosed for purposes of testimony regarding the
8 receipt, delivery and/or supply of Rio Grande Project
9 Water by EBID, correct?

10 A. Yes.

11 Q. You understand your testimony today will be
12 on how the Project operates and providing your
13 perspective on EBID Project operations?

14 A. Yes.

15 Q. And you were deposed in this case twice; is
16 that correct?

17 A. Yes. That's correct.

18 Q. And your depositions included questioning on
19 your knowledge of the facts of the Project,
20 operations, receipt delivery, supply of the Project
21 water?

22 A. Yes.

23 Q. Let's go to the next slide, please.
24 Presented here is -- is what has been previously
25 marked as Exhibit US-217. Dr. King, what is this

1 document?

2 A. This is my curriculum vitae.

3 Q. Did you create this?

4 A. Yes.

5 Q. When did you create this?

6 A. I'm guessing about late 2016 or 2017.

7 MR. LEININGER: Your Honor, I'll pause
8 here and just move to admit this curriculum vitae.

9 MR. WECHSLER: Your Honor, there's no
10 objection to US-217, and also to save Mr. Leininger
11 time, I think we have no objection to any of the other
12 U.S. exhibits, and they likely can all be admitted at
13 this time.

14 JUDGE MELLOY: You're correct,
15 Mr. Wechsler. I'm just looking at the list here. So
16 I will admit 216, US-217, US-580, US-661, and then for
17 demonstrative purposes only, US-72 and King
18 Demonstrative Exhibits 1 through 22. Make sure there
19 aren't any gaps.

20 MR. LEININGER: Right. Your Honor, I
21 believe for record purposes, US-661 was already
22 admitted under Michelle Estrada-Lopez's testimony.

23 JUDGE MELLOY: All right. And then I
24 also see on the next page, there's King Demonstrative
25 Exhibits 23 and 24, all which are labeled as A

1 exhibits and will all be admitted accordingly, so
2 they're in evidence.

3 MR. LEININGER: Thank you, Your Honor.

4 Q. (BY MR. LEININGER) Dr. King, you mentioned
5 that your CV here was something that you produced in
6 2017, I believe. Is it still current?

7 A. No.

8 Q. We'll discuss the updates shortly, but let's
9 review your background and experience so we don't have
10 to backtrack next spring. We'll start with your
11 personal background and education. Where did you grow
12 up?

13 A. In Escondido, California.

14 Q. And your primary and secondary education was
15 in California?

16 A. Yes.

17 Q. Let's go to the next slide.

18 MR. LEININGER: This is Demonstrative
19 Slide, Your Honor, marked King Demo 1.

20 Q. (BY MR. LEININGER) Does this demonstrative
21 slide -- well, we will -- we will go through your post
22 high school education with this demonstrative slide.
23 Let's start with your undergraduate education. Where
24 did you receive your undergraduate degree?

25 A. I received a bachelor's of science from the

1 University of California at Berkeley.

2 Q. What was your major?

3 A. Civil engineering.

4 Q. Was there a particular field within civil
5 engineering that you received your undergraduate
6 degree on?

7 A. This was a general civil engineering degree,
8 but my area of focus was construction engineering.

9 Q. You next list a master's degree in
10 agricultural engineering. That's coming six years
11 after your bachelor of science degree. Were you in
12 school this whole time?

13 A. No.

14 Q. What were you doing?

15 A. I joined the Peace Corps and served from 1983
16 to 1985.

17 Q. And what did you do while in the Peace Corps?

18 A. I was posted in Malawi, which is a small
19 landlocked country in southeastern Africa, and I was
20 the irrigation engineer and land husbandry officer for
21 an agricultural development division in a rural area
22 of Malawi.

23 Q. How did that affect your future career path?

24 A. It was a dramatic turning point for me. The
25 Peace Corps basically dropped me into a drought and

1 famine, and most Americans of my generation have never
2 witnessed a famine before, and it certainly was
3 formational in my interest and dedication to
4 agricultural and water resources engineering.

5 **Q. So you returned to the United States. You**
6 **went to Colorado State University and received your**
7 **master's degree, and then you then remained at CSU for**
8 **your doctorate?**

9 A. Yes.

10 **Q. What was your dissertation topic?**

11 A. I developed an expert system, which is an
12 artificial intelligence application for the management
13 of irrigated molting barley.

14 **Q. You were using artificial intelligence in**
15 **1980s for agricultural modeling?**

16 A. Yes.

17 **Q. And what did you do after you received your**
18 **doctorate degree in 1990?**

19 A. I took a position as an assistant professor
20 at New Mexico State University in civil engineering
21 department.

22 **Q. And it lists here at the end of your**
23 **education a master's of business administration at**
24 **NMSU; is that correct?**

25 A. Yes.

1 Q. And why did you pursue your MBA?

2 A. Well, engineering is a business.

3 Q. Okay. I believe Judge Melloy may have seen
4 some of the campus on his tour, but just remind us,
5 where is NMSU located?

6 A. It's in Las Cruces, New Mexico.

7 Q. Are you still on the faculty at NMSU?

8 A. No. I retired effective July 1st of this
9 year.

10 Q. Let's go to the next slide, please. This
11 slide is titled, "Employment," and it is labeled as
12 King Demonstrative 2. Let's start with what's the
13 third bullet there. 1992, you started an engineering
14 business with a company named Blair & King; is that
15 correct?

16 A. Yes.

17 Q. So you hold a professional engineering
18 license?

19 A. Yes.

20 Q. How do you become a licensed -- how do you
21 become licensed as a professional engineer in New
22 Mexico?

23 A. Well, the licensure requires a bachelor's in
24 civil -- in engineering from an accredited program,
25 which my B S from UC Berkeley fulfills. One must then

1 pass the fundamentals of engineering exam, which I did
2 as a senior at Berkeley, then four years of relevant
3 experience, then pass the PE exam, professional
4 engineering exam, and then to maintain the license, we
5 have continuing education requirements.

6 **Q. And who is Blair in Blair & King?**

7 A. That would be Dr. Al Blair, who was a faculty
8 member in the department when I arrived at NMSU, and
9 we started Blair & King Engineering as a -- sort of a
10 side business from our university duties.

11 **Q. And Dr. Blair will be testifying next week.**
12 **What -- was your Blair & King consulting business**
13 **primarily agricultural engineering?**

14 A. Yes.

15 **Q. And then in 1995, the first bullet point, you**
16 **went solo in your consulting business?**

17 A. Yes.

18 **Q. Why?**

19 A. Dr. Blair left New Mexico State University,
20 and -- and I stayed on, and he went onto -- he also
21 moved to Texas and, among other things, became the --
22 the district engineer for the El Paso No. 1, and I
23 started -- at that point, I started King Engineering
24 to continue working -- primarily to continue working
25 with EBID.

1 Q. And you started working as a consulting
2 engineer for EBID when?

3 A. In 1992.

4 Q. Let's go to the next slide. We have what's
5 been labeled as King Demo 3, Demonstrative No. 3, with
6 the title, "NMSU Appointments and Honors." You had
7 quite a distinguished career in academia, but does
8 this slide provide the highlights of your appointments
9 and honors of your career?

10 A. Yeah. Certainly the second half of my
11 career.

12 Q. Of these honors, what do you feel are
13 particularly noteworthy?

14 A. I'm very proud of the first one, the Civil
15 Engineering Professor of the Year Award from my
16 department because that was awarded by the students,
17 and the John Clark Distinguished Professor of Civil
18 Engineering was quite an honor because John Clark
19 first of all is a world-renowned civil engineer. I
20 used his book as an undergraduate at UC Berkeley, and
21 he was also the department head at civil engineering
22 at NMS.

23 Q. And of these appointments and honors, are
24 there ones that are particularly relevant to the
25 issues in the case today?

1 A. I think the most relevant would be my service
2 as an executive committee member on the NMSU Water
3 Science and Management Program. I was also a founding
4 member of that program. It's an interdisciplinary
5 master's and doctorate program that the university
6 offers, and I also served as the doctoral advisor for
7 one PhD candidate whose dissertation focused directly
8 on the hydrology of the lower Rio Grande.

9 **Q. So you -- you had a 31-year career as a**
10 **professor at NMSU, and your CV, your curriculum vitae,**
11 **lists a number of publications. How many publications**
12 **did you list?**

13 A. In this one, I believe I had 46.

14 **Q. And have there been subsequent ones since**
15 **2017?**

16 A. Yes.

17 **Q. How many?**

18 A. About five, I think.

19 **Q. Let's go to the next slide. This one is**
20 **labeled, "NMSU Research." And at the bottom, it's**
21 **denoted as King Demo 4, Demonstrative No. 4. Is this**
22 **a summary of your research topics in your career as a**
23 **civil and agricultural professor?**

24 A. Yes. Stream flow forecasting, I've done that
25 both on the Rio Grande and other rivers, surface

1 water/groundwater interaction, water management,
2 evapotranspiration, salinity, flood management, inland
3 brackish groundwater desalination, which, in fact, is
4 ongoing, and drought and climate change impacts and
5 adaptation?

6 **Q. Are there any that are particularly relevant**
7 **to your testimony in this case?**

8 A. I would say all of them.

9 **Q. Okay. Today we'll concentrate, for purposes**
10 **of your fall testimony, broadly on water management.**
11 **Let's go to the next slide. And here, we have a slide**
12 **which is labeled as King Demo, Demonstrative No. 5,**
13 **titled, "Other Water Related Activities." This**
14 **demonstrative slide lists your other activities in**
15 **your career. Let's start with your board of**
16 **directors. You've also served on the board of**
17 **directors for local water agencies; is that correct?**

18 A. Yes. I served on the board of directors of
19 Leasburg Mutual Domestic Water Consumers Association.
20 I was also served by that system, and I chaired it.
21 And I served on the board of directors of the Dona Ana
22 Soil and Water Conservation District, as well.

23 **Q. And both the water district and the mutual**
24 **domestic water association, they are located in the**
25 **Mesilla Valley?**

1 A. The Leasburg Mutual Domestic is located
2 almost entirely in the Mesilla Valley. I think we've
3 got some facilities up on the Mesa. And the Dona Ana
4 Soil Water Conservation District includes the New
5 Mexico portion of the Mesilla Valley.

6 **Q. Let's go back to the full slide. It shows**
7 **here that you were a policy fellow at Washington DC**
8 **for a year. What did you do in that position?**

9 A. I was a fellow of the American Association
10 for the Advancement of Science posted at the National
11 Science Foundation at their headquarters in -- it was
12 then in Arlington, Virginia, and I served in the
13 Division of Civil, Mechanical, and Manufacturing
14 Innovation, and I was charged with evaluation of the
15 efficacy and return on federal investment in basic
16 research, and I also participated in a -- the
17 oversight of a research program focusing on white
18 water environment and climate issues.

19 **Q. And if we go back to the full slide, at the**
20 **bottom is listed governor's designee in 2007 to 2010**
21 **on the New Mexico Soil and Water Conservation**
22 **Committee. What was the New Mexico Soil and Water**
23 **Conservation Commission?**

24 A. That's a statewide commission that oversees
25 or -- or coordinates the activities of the soil and

1 water conservation districts, and generally promotes
2 soil and water conservation around the state.

3 **Q. And what was your role on the Commission?**

4 A. I was representing the governor, and I was
5 basically functioning as a technical advisor. I also
6 initiated and oversaw a research project on the
7 efficacy of non-native vegetation control in the
8 state's river systems because that's a major source of
9 water loss to the state.

10 **Q. And finally, if we go back to the full slide,**
11 **you're currently on an advisory panel for the New**
12 **Mexico Interstate Stream Commission. What are you**
13 **advising the ISC on?**

14 A. This expert panel has provided a state -- a
15 report that basically states the state of knowledge on
16 climate science and its potential impacts on water
17 resources for the -- the region and the state of New
18 Mexico in particular in support of the state of New
19 Mexico's 50-year water planning efforts.

20 **Q. Is there any preliminary advice you've given**
21 **or contributed to the team?**

22 A. I -- I did submit my report and responded to
23 reviewers' comments. Short answer is we are looking
24 at a warmer, drier, more arid future where we'll have
25 to deal with less water, in fact, we'll have to deal

1 with a lot less water.

2 **Q. Let's go to the next slide, please. This**
3 **slide has been marked as King Demonstrative 6**
4 **labeled, "EBID Consultations." We'll turn now to your**
5 **work with EBID. What is your experience with EBID and**
6 **stream flow measurement and monitoring?**

7 A. That was actually the first thing I did as a
8 consultant with EBID was to develop and install flow
9 measurement systems to -- to provide realtime or
10 near-realtime flow data at critical points in the
11 system starting initially with river diversions, but
12 moving out into major control points within the -- the
13 canal system, and that function has been taken over by
14 district staff so I'm -- I'm rarely involved except
15 when specific issues arise, and they have really
16 expanded and diversified the -- the system and made it
17 much more sophisticated and functional.

18 **Q. The next one, what sort of on-farm water use**
19 **consultation have you done with the district?**

20 A. A few things. What comes to mind is the --
21 early in my service with the District, we developed
22 methods where the EBID staff can measure the delivery
23 of water to farmers at their turnouts. More recently,
24 I also participated with District staff to assess the
25 use of water -- the use of water at the farm level by

1 what we call small tract users who are EBID
2 constituents with less than 2 acres of land.

3 **Q. And next, how have you assisted in flood**
4 **management?**

5 A. Flood management was -- that was a particular
6 problem in 2006 through 2008, in that general area --
7 that general period of time when we had several major
8 damaging events, and we worked with other local
9 entities involved in flood -- floodwater management to
10 look for opportunities where we could, number one,
11 protect property from damage from flooding, improve
12 our infrastructure and our operations, but also look
13 for opportunities to capture some of that floodwater,
14 either for direct use by -- by delivery to farm
15 turnouts for irrigation or to infiltrate it so that it
16 would help to recharge the local aquifers. That also
17 has been taken over by staff, in particular the
18 district engineer, who has really become a leader in
19 flood management in the area.

20 **Q. And that's a good segue for No. 4. On your**
21 **personnel development and training, what did you**
22 **contribute there?**

23 A. I consider this probably my core function
24 with EBID, and that is developing the District's
25 internal capacity, its human infrastructure, if you

1 will. I started out doing some training courses, this
2 would be back in the '90s, with some of the District's
3 hydrotechs and ditch riders on --

4 **Q. Excuse me, Dr. King.**

5 A. Yes.

6 **Q. A ditch rider? What is a ditch rider?**

7 A. Think of that as a legacy term from the early
8 days of the Project. Again, the Project started back
9 in roughly 1916 is when things came online, and the
10 staff that were out there in the field making sure the
11 water was behaving itself and the turnouts were open
12 and things like that were riding along the ditch banks
13 on horseback so they were ditch riders, and we still
14 have staff out there who are riding up and down the
15 ditch banks making sure everything is working. The
16 big difference now is that instead of on horseback,
17 they're in a pickup with a cellphone and a laptop.

18 **Q. So I -- thank you. I interrupted your**
19 **personal development experience. Please continue.**

20 A. Well, the -- my point is really throughout, I
21 have been working to develop the human infrastructure
22 in the District, and, you know, the evidence of the --
23 the staff taking over the stream flow measurement and
24 monitoring, the on-farm water use metering, flood
25 management. I am, again, rarely involved in those

1 know because the District has developed the capacity
2 to do those. It's really been a -- as I look back on
3 my 29 years with the District, it's really been an
4 evolution in the capability and even the culture of
5 the district.

6 **Q. And then No. 5, what other sorts of services**
7 **do you provide?**

8 A. I do provide expert services as the District
9 protests applications to appropriate groundwater in
10 the -- in the basin.

11 **Q. And why are you involved in that process?**

12 A. Well --

13 **Q. Why is that important?**

14 A. The concern is, is that withdrawing
15 groundwater from aquifer systems that are
16 hydrologically connected to the Rio Grande can deplete
17 the surface water of the Rio Grande Project, which can
18 certainly have impacts on EBID, but even El Paso No. 1
19 or Mexico.

20 **Q. And we'll get to your expert analysis on that**
21 **next spring, but approximately how many protests have**
22 **you worked on for EBID?**

23 A. Several. I've kind of lost count. I think
24 EBID has about 15 that are currently active, and I am
25 working on five of them right now.

1 **Q. And what about your role with EBID related**
2 **directly to Project operations?**

3 A. There -- there are a few things that I do.
4 First of all, I provide water supply updates and
5 outlooks, reports. I assist in the Project allocation
6 process, which we'll talk about here. I do make board
7 -- recommendations to the board of directors in
8 consultation with EBID staff on the allotment. I help
9 to coordinate the Project and EBID operations, and I
10 assist in the water accounting for the District.

11 **Q. All right. Let's begin with water supply**
12 **updates and outlook. How does that assist in EBID**
13 **operations and water management?**

14 A. I -- I do water outlook and update reports
15 from across multiple scales, both spatial and
16 temporal.

17 **Q. And we can go to the next slide. Sorry.**
18 **Dr. King, we're introducing another slide here, and**
19 **it's been marked as King Demo 7, demonstrative 7,**
20 **titled, "Water Supply Updates and Outlook: Sources of**
21 **Information." Let me ask you first: When you mention**
22 **water supply here, what are you referring to?**

23 A. The hydrologic status of the basin really.

24 **Q. Okay. And when putting together a water**
25 **supply conditions and outlook report, where do you get**

1 **your information?**

2 A. Well, let me start with, you know, the
3 smaller spatial and temporal scale, which would be the
4 Rio Grande Project where we're looking at near-term,
5 even realtime, information, and the primary sources
6 for data on those comes from EBID, El Paso No. 1, the
7 Bureau of Reclamation, and the U.S. International
8 Boundary and Water Commission.

9 **Q. And you mentioned realtime, so that**
10 **information is available on Websites?**

11 A. Yes. Each of these entities makes data
12 available in realtime to the public on the Web.

13 **Q. And what other sources do you use and for**
14 **what?**

15 A. Well, what happens in the Rio Grande Project,
16 of course, is a function of what's happening in the
17 Rio Grande basin. So if we look at -- if we expand
18 our -- our spatial scale to include what's going on
19 upstream in the basin and mid-term, getting up to
20 things like what's happening with snow pack in the
21 upper watershed or things like that, I also bring in
22 data from the U.S. Geologic Survey, the Army Corps of
23 Engineers, who has a nice summary page, and the
24 Natural Resources Conservation Service.

25 **Q. Okay. What about the larger picture?**

1 A. I'm getting now to regional to continental
2 scale, and by mid-term, I would say looking, again, at
3 not only the current snow pack but looking, right now,
4 for example, I have been looking at what the forecasts
5 are for our upcoming snow pack season in southern
6 Colorado and northern New Mexico, and to get to those,
7 the common sources I go to would be NOAA and the
8 National Weather Service.

9 **Q. And just for clarity of the record, NOAA**
10 **stands for?**

11 A. The National Oceanic and Atmospheric
12 Administration.

13 **Q. Then you also review long-term water supply?**

14 A. Yes. Actually, I've been informing the board
15 of directors and EBID staff and even the general
16 public for certainly 20 years about, in particular,
17 the effect of severe and sustained drought and climate
18 change on the hydrologic future of our -- of our area,
19 and for those, I -- those discussions, I keep up with
20 the works, for example, the Intergovernmental Panel on
21 Climate Change, the IPCC, and various other sources
22 like scholarly and professional articles.

23 **Q. Let's go to the next slide, which has been**
24 **marked as King Demo 8, Demonstrative 8,**
25 **titled, "Purpose of Water Supply Updates and Outlook."**

1 **Dr. King, why do you do all this water supply updating**
2 **and forecasting?**

3 A. Well, there -- there -- you saw many scales
4 of -- of looking at the picture, but there are also
5 many recipients of those data. So, for example, I do
6 a monthly water supply outlook and update with the
7 board of directors of EBID. I also, with EBID and
8 Project people, we do operations meetings, the staff
9 to keep them apprised of what -- what's happening in
10 the system, EBID farmers, keeping them informed of
11 what things are looking like. In the allocation
12 committee, which is this committee with representation
13 that you heard from Michelle the other day on. We
14 basically get together and compare notes about what
15 the outlook is like, and even the general public, I do
16 many public presentations on the -- the water supply
17 outlook from near-realtime out to climate-change
18 impacts and those -- the general --

19 **Q. So -- sorry. Then why is this reporting and**
20 **informing important?**

21 A. It is important, for example, on the -- the
22 Board and staff, it drives a lot of planning. And --
23 and stakeholders other than the district also have
24 planning and adaptation concerns that they need to
25 address.

1 **Q. What does EBID do with the information that**
2 **you provide?**

3 A. Well, both the District and the Project as a
4 whole have to plan their -- you know, the start of the
5 season and the shutdown planning at the end of the
6 season so there's -- there's, you know, those -- those
7 sorts of seasonal scale decisions that need to be
8 made.

9 **Q. And how does the EBID board of directors use**
10 **the information?**

11 A. Well, one thing that we'll get into here is
12 that a board of directors -- I -- I do make
13 recommendations to the board of directors of EBID for
14 the allotment, and that is in very close consultation
15 with the District's hydrology director, and it's based
16 on the allocation that comes out of the Allocation
17 Committee. We also have to coordinate then what we
18 are doing within the Project with El Paso No. 1,
19 Reclamation, and the USIBWC and, in fact, Mexico.

20 **Q. So you share this water supply updates and**
21 **outlook information with others outside of EBID?**

22 A. Certainly.

23 **Q. What about the State of New Mexico, have they**
24 **requested water supply reports from you?**

25 A. Not that I recall.

1 **Q. Let's go to the next slide.**

2 **MR. LEININGER:** Your Honor, what's been
3 previously marked as King Demo 9, Demonstrative 9.

4 **Q. (BY MR. LEININGER) Dr. King, what is on this**
5 **slide?**

6 A. This is a schematic of the focusing
7 particularly on the EBID portion of the Rio Grande
8 Project.

9 **Q. Did you put this together?**

10 A. Yes.

11 **Q. Let's -- let's walk the Court through this,**
12 **please. Let's begin with the legend. Let's zoom in**
13 **on there. What are the large blue triangular shapes?**

14 A. Those schematically represent the storage
15 reservoirs. Elephant Butte is the upper one, and
16 Caballo Reservoir is the lower one.

17 **Q. And the black triangles -- black rectangles,**
18 **excuse me?**

19 A. Those are the -- those represent the
20 diversion dams, EBID's main diversion points are
21 Percha Dam, Leasburg Dam and Mesilla Dam.

22 **Q. And the lines with arrows?**

23 A. The thicker arrow you see running down the
24 middle of it represents the Rio Grande, and the
25 thinner blue arrows that you see coming off the main

1 diversion points are the main canals that the District
2 owns and operates. We've got the Arrey Canal coming
3 off Percha Dam, the Leasburg Canal coming off Leasburg
4 Dam, and the East Side and West Side Canals coming off
5 the Mesilla Dam.

6 **Q. The Special Master asked Ms. Estrada-Lopez if**
7 **water diverted at each diversion dam is metered. Does**
8 **this schematic help answer that question graphically?**

9 A. Yes. The --

10 **Q. Let's pull back.**

11 A. The circles with the black-and-white pattern
12 fill represent metering stations on the main system.
13 There are certainly more metering stations within the
14 conveyance systems, but those are the -- the key ones
15 that we measure flow at.

16 **Q. The Reclamation Project manager,**
17 **Ms. Estrada-Lopez, went over the Project**
18 **infrastructure so we're not going to repeat that, but**
19 **what are the three green rectangular shapes on this**
20 **schematic?**

21 A. Those represent the service areas served by
22 those main diversion points and main canals. We've
23 got the Rincon Valley, which is -- we refer to that as
24 our upper valley, served by the Arrey Canal. We've
25 got the Leasburg Dam -- the upper Mesilla, which is

1 served by Leasburg Dam and Leasburg Canal and the
2 lower Mesilla valley, which is served by the east side
3 and west side canals coming off Mesilla Dam.

4 **Q. Then you have some red texts and lines with**
5 **arrows in the lower Mesilla Valley. What are you**
6 **showing here?**

7 A. Yes. Ms. Estrada-Lopez referred to these
8 interstate deliveries, and we'll see this when we get
9 to operations, but EBID -- the lower Mesilla includes
10 irrigated acreage in Texas, and so EBID delivers water
11 to El Paso No. 1 in the canal system, the Eastside and
12 Westside Canal systems for delivery to their -- to
13 their EP No. 1 constituents. It gets a little more
14 complicated because there are some constituents of EP1
15 in Texas that EP1 cannot reach with their canal and
16 lateral system, so EBID delivers to those farmers, and
17 conversely, there are some EBID farmers in New Mexico
18 that EBID cannot reach with its canal and lateral
19 system so EP1 delivers water to those farmers'
20 turnouts.

21 **Q. And just remind us, why can't the districts**
22 **deliver water just to their own constituents?**

23 A. The state line, as I've drawn it here, I've
24 simplified it down to a straight line, which it
25 certainly is not. In fact, it is meandering.

1 Literally, it's an old river channel from some time in
2 the mid 1800s and so it zigzags through this -- this
3 southern part of the lower Mesilla Valley, and our --
4 the Rio Grande and our facilities cross it many times.

5 **Q. Anything else you want to explain from this**
6 **schematic?**

7 A. To illustrate the fact that we're always
8 looking to improve the system, EBID has added an
9 additional supplementary diversion point, which we'll
10 refer to here as Wasteway 18, and what this is, is it
11 -- in the southern part of the Rincon Valley, we
12 always have trouble getting water in a timely fashion
13 down to the tail end of our -- of our service areas,
14 and so what we did is we had a wasteway in the
15 southern part of the Rincon Valley that we put lift
16 pumps into where we now lift water out of the Rio
17 Grande, and we pipe the laterals in the area so that
18 we can put water into those pipe laterals, and instead
19 of being at the tail end of the Arrey Canal system
20 now, those farmers in that southern Rincon area now at
21 the head of this new Wasteway 18 supplementary
22 diversion point.

23 **Q. Does that improve efficiency?**

24 A. Oh, it -- it dramatically improves both our
25 delivery efficiency and, very importantly, our timing

1 of deliveries.

2 **Q. I believe Judge Melloy saw this structure on**
3 **his tour, but can you tell us why it's called a**
4 **wasteway? Is the water wasted?**

5 A. Well, again, that's a -- a legacy term. When
6 you're operating a surface water, an open channel
7 system, you have to be very careful. You'll never
8 have exactly the right amount of water in a canal.
9 You'll either have too much or too little. And if you
10 have too much, you run the risk of overtopping the
11 canal, which can be quite catastrophic. It can cause
12 flooding and physical damage to the canal. So
13 operations staff have essentially safety valves where
14 if there's too much water in the system, they can open
15 a wasteway and return water to the river through --
16 through a channel back to the river, thereby relieving
17 the -- the stress on the canal system. That water
18 returns to the river, and it is not wasted because it
19 goes into the river and it is then available for
20 diversion downstream as part of the Project water
21 supply.

22 **Q. And who paid for the Wasteway 18 work?**

23 A. This was a project that was -- that was
24 funded on a grant from the Bureau of Reclamation with
25 costs shared from EBID and the farmers in the local

1 service area of that Project.

2 **Q. Not New Mexico?**

3 A. No.

4 **Q. And let's see. There's a second highlight on**
5 **this schematic. What is that?**

6 A. We are just starting on a very similar
7 project at the tail end of the upper Mesilla Valley
8 service area. We're taking the California Extension,
9 which is a -- right now, it's a gravity-fed diversion
10 point, but it -- it's operationally very difficult.
11 So we're doing the same thing where we're putting lift
12 pumps in. We're piping the laterals in the area so
13 that we can better push -- push water through them to
14 make those farmers the -- at the head of the
15 California Extension rather than the tail end of the
16 Leasburg system.

17 **Q. And is the California Extension also funded**
18 **jointly by Reclamation and EBID?**

19 A. Yes. And the farmers in the service area,
20 yes.

21 **Q. And, again, New Mexico does not fund these**
22 **efficiency improvements?**

23 A. No.

24 **Q. Let's add what's been previously admitted as**
25 **-- as US-661. This was presented during**

1 Ms. Estrada-Lopez's testimony, and you can see on the
2 left side of this slide is the July 15, 2016, Project
3 water order that she had discussed. How are these new
4 diversions accounted for? We're not going to go over
5 this in detail because Ms. Estrada-Lopez did, but how
6 are these new diversions accounted for in the Project?

7 A. Well, the -- certainly everything is
8 accounted for and so when we put the river pumps in at
9 Wasteway 18, that refers to the -- the upper
10 highlighted line you see there. You see the river
11 pumps have an order in for 20 CFS. That's the design
12 capacity of the -- of the lift pumps, and at the
13 California Extension, it's currently a gravity-fed
14 system, but diversions lifted by the pumps will be
15 accounted for on that line of the accounting sheet --
16 or the order sheet.

17 Q. So everything is accounted for?

18 A. Yes.

19 Q. Let's go to the next slide. You have a slide
20 that's been previously marked as King Demo 10,
21 Demonstrative 10, labeled, "EBID Hydrologic Cycle."
22 What does this slide show?

23 A. This is a little cartoon that I'll use. It
24 shows the flow of water through EBID's system, but I'm
25 really going to use it to define some terms that I'll

1 be using for the remainder of my testimony.

2 **Q. Okay. Please go ahead. How does Project**
3 **water move through the EBID system?**

4 A. Okay. Well, we have water up in the
5 reservoir and so the first step of getting it moving
6 is to release it from the reservoir storage, so the
7 term release means that release from Caballo
8 Reservoir, and this happens by manipulating the gates
9 that are built into Caballo Dam to release water into
10 the bed of the Rio Grande. From there, we divert it
11 from the river, so the term diversion will mean the
12 District -- the districts or Mexico taking water from
13 the river into their conveyance systems, which is
14 composed of main canals and laterals. Continuing on
15 down, the District conveys it to the farmers' turnouts
16 where they make delivery, so I'll use the term
17 delivery to mean the delivery of water to farmers at
18 their farm head gates. And I should point out that
19 there's a little difference in terminology here
20 between what Ms. Estrada-Lopez talked about in her
21 testimony and -- and what -- and this terminology I am
22 giving you here, and it's -- it's easily explained.
23 It's just a difference in perspective from Reclamation
24 to the Districts. What I am calling a diversion here,
25 the Bureau of Reclamation refers to as a delivery

1 because that's where Reclamation hands over the water
2 from Reclamation to the districts, and at that point,
3 they're done with it. That's where we're taking it so
4 that is our diversion, and the point where we hand
5 water over, that is to say EBID hands water over to
6 the farmer is at their farm turnout so that's what we
7 call a delivery. To what Reclamation calls a
8 delivery, we call a diversion, and the delivery for us
9 refers to the delivery to district lands.

10 **Q. Thank you for that clarification. Is that**
11 **the end of the hydrologic cycle within EBID?**

12 A. No. With any irrigation system, there is a
13 drainage function that -- that is required. As we
14 apply water to the -- to the irrigated fields, some of
15 that water percolates through the crop root zone into
16 the local groundwater, and to keep that from
17 accumulating and cause problems in the -- with the
18 saturation of the -- of the crop root zone that
19 Mr. Esslinger referred to, we installed a drainage
20 system, which collects the excess groundwater
21 resulting from those irrigation activities and removes
22 it, returning it back to the Rio Grande.

23 **Q. And is the water that goes through the crop**
24 **root zone the only source of water in the drains?**

25 A. No. Our main canals and laterals are -- most

1 of our main canals and laterals are unlined, so there
2 is seepage that occurs from those unlined canals and
3 laterals, and that seepage goes -- it seeps down into
4 the -- into the local groundwater, and then just like
5 the -- the on-farm deep percolation, it flows
6 laterally to the drain systems and -- and back to the
7 river. We also have operational spills that occur in
8 -- in the operation of the system.

9 **Q. What -- what happens to the water in the EBID**
10 **-- EBID drains once it returns to the river?**

11 A. It -- it returns to the river, and then just
12 like the wasteway flows that we talked about, it's
13 available for downstream diversion as part of the
14 Project supply.

15 **Q. Let's go to the next slide, please. We're**
16 **presenting here what's been called King Demo -- what's**
17 **been labeled King Demo 11, Demonstrative No. 11,**
18 **titled, "Water -- EBID Water Management Stages:**
19 **Continuous Cycles ."** So let's start now with the
20 **process in EBID. How does EBID go about managing its**
21 **water supply?**

22 A. Well, it is a cyclical process that repeats
23 throughout the season, and, in fact, as you'll see, as
24 I present this, there are repeating cycles within the
25 cycle that because it's a fairly complex process, but

1 it all starts with the allocation, and that is the
2 process of allocation is the determination of how much
3 water is available to the two districts and -- and
4 Mexico for diversion at their river headings.

5 **Q. Okay. Then what happens to the allocation?**

6 A. Once EBID has an allocation, they allot that
7 water to their farmers, that is given what the
8 allocation diversion from the river is, they determine
9 how much water then the farmers can order for delivery
10 to their farm head gates.

11 **Q. And next, you have operations. Why?**

12 A. I think of operations as the physical act of
13 getting water from its release at Caballo down the
14 river through the canal system to the turnout, and so
15 we have operations, which is the physical movement of
16 that water through the system.

17 **Q. And what do you do after the water is
18 released, diverted, and delivered within EBID?**

19 A. Then there is the accounting associated to it
20 where given the -- the diversions and deliveries that
21 took place, we update the allocation and allotment
22 balances respectively.

23 **Q. And you do this on a continuous basis?**

24 A. Yes.

25 **Q. Throughout the irrigation season?**

1 A. Yes.

2 **JUDGE MELLOY:** Mr. Leininger, could I
3 ask Dr. King one question for clarification?

4 You previously talked about delivery to
5 farm head gates, and then you also used the term
6 turnout. Are they one and the same?

7 **THE WITNESS:** Yes, Your Honor, for our
8 purposes here -- well, let me rephrase that. We refer
9 to the head gates. The head gates can be the farm
10 turnout or they can be the -- the canals -- the canal
11 headings at the river. Those also are sometimes
12 referred to as head gates. I'll try to refer to the
13 -- the farm turnouts as turnouts, and if I refer to
14 head gates, I'll try to precede that with canal head
15 gate.

16 **JUDGE MELLOY:** Thank you.

17 **Q. (BY MR. LEININGER)** Let's -- let's go through
18 these one at a time beginning with allocation. Let's
19 have the next slide. Next slide, please. Now,
20 Ms. Estrada-Lopez went into allocation in some detail.
21 We'll just recap. What -- what is allocation?

22 A. Allocation, again, it's the programmatic
23 determination of how much water is available to EBID,
24 El Paso No. 1, and Mexico to order. It tells them how
25 much diversion they can order during the season.

1 **Q. And -- and when is the initial allocation**
2 **done?**

3 A. We like to do it as early as possible. In,
4 you know, fairly good years, we will do the initial
5 allocation as early as December or January, but in
6 some of the harsher years that we've dealt with,
7 particularly in recent years, there may not be enough
8 water to allocate that early, in which case it can be
9 delayed by months.

10 **Q. And -- and you already testified on your**
11 **consulting role on water outlook reporting. In the**
12 **initial allocation, is allocation based on outlook and**
13 **anticipated inflow into storage?**

14 A. Absolutely not. We do not consider forecasts
15 or anything when we're doing the allocation. We only
16 consider water that is already in storage and
17 available for release.

18 **Q. How is the allocation updated through the**
19 **year?**

20 A. Generally, it's updated monthly until we make
21 a final allocation. In some cases, there is not
22 sufficient water to increase the allocation. In other
23 cases, we may need to allocate off schedule just to
24 get water -- get water out there into the diversion
25 accounts of the districts and Mexico.

1 **Q. When do the periodic allocation updates end?**

2 A. When we make our final allocation, and that
3 -- again, it depends very much on the year when that
4 happens. In a good year, it would happen near the end
5 of the -- of the -- of the irrigation season, as the
6 -- as the irrigation season -- as the crop season is
7 winding down. In some of the harsher years we've had,
8 it's when, you know, we're just not going to get any
9 more water to allocate.

10 **Q. What do you do after the release season?**

11 A. At the year end, we go through a process,
12 which I refer to as this year-end reconciliation, and
13 when we're doing the initial allocation and the
14 monthly updates, those necessarily have estimates of
15 key parameters like the release from Caballo, what the
16 release from Caballo for the entire season will be,
17 because it's still during the season, and what the --
18 the total diversions by the two districts and Mexico
19 will be because, again, it's still during the season.
20 Once we shut down at the end of the year and we're no
21 longer releasing or diverting water, at that point, we
22 go in, and we do a final year-end reconciliation using
23 the actual measured values of the release from Caballo
24 and the diversions by the two districts and Mexico.

25 **Q. Why is it important to do an end-of-the-year**

1 allocation calculation?

2 A. It is because that is based on the true
3 numbers rather than estimates, and that also is where
4 we determine how much each district will have in its
5 allocation balance to carry over into the next year.

6 Q. Okay. Ms. Estrada-Lopez described the
7 allocation process, but let's -- let's review before
8 you talk about how the water is allocated -- or
9 allotted, rather, to EBID. Can you give us a recap of
10 the programmatic steps in the allocation process? And
11 let's start here with what's been marked as Slide King
12 Demo 13, Demonstrative 13, and it's
13 titled, "Allocation D1 and D2 and the Operating
14 Agreement." Why don't you explain these concepts?

15 A. Okay. I'll keep it at the conceptual level
16 here because I know we'll get into this in a lot more
17 detail in the spring, but there are a few key concepts
18 that -- that the allocation process depends on. The
19 first one I'll talk about here are the D1 and D2
20 curves, and what they are is they're two equations
21 that relate the annual release from Caballo Dam to, in
22 the case of D1, it relates the annual release from
23 Caballo Dam to the annual Project delivery -- delivery
24 to U.S. lands and Mexico, and D2 relates the same
25 annual Project release to diversion from the river.

1 They're both --

2 **Q. What --**

3 A. Go ahead.

4 **Q. Sorry. I didn't -- right. Please go ahead.**

5 **What is the source of this information?**

6 A. Okay. They are -- the D1 and D2 curves, as
7 you've heard already, are based on data that was
8 collected by the Bureau of Reclamation in a period of
9 1951 through 1978, which was the first drought period
10 that the Rio Grande Project experienced.

11 **Q. And how do you define drought?**

12 A. Well, drought is an extremely loaded word,
13 complicated word. There are literally dozens of
14 definitions of drought. I think of this period of
15 1951 through 1978 as a multidecadal drought period
16 with a few wet years scattered throughout it.

17 **Q. Okay. And then you -- you indicate here that**
18 **the source of the information comes from Reclamation**
19 **records?**

20 A. Right. When they were operating the -- the
21 Project during this '51 through '78 period, which had,
22 you know, recurring shortages, they measured the
23 release from Caballo, the diversions from the river,
24 and the deliveries to U.S. lands and Mexico for the
25 period of 1951 through 1978.

1 **Q. And how are D1 and D2 used?**

2 A. D1, and, again, what it does is it estimates
3 the delivery to U.S. lands and Mexico based on the
4 Caballo release for this '51 through '78 period, it is
5 used in the allocation of water to Mexico. D2, on the
6 other hand, is used to determine the allocation to EP
7 No. 1 based on the current year's usable water.

8 **Q. And how is water allocated to EBID?**

9 A. It is a little bit different in that it does
10 not rely directly on D1 or D2. It relies on the
11 diversion ratio.

12 **Q. Let's go to the next slide, please. So**
13 **you've introduced, and I think we've heard this term**
14 **diversion ratio before, and I understand you'll be**
15 **presenting more in-depth explanation of diversion**
16 **ratio in the spring; is that correct?**

17 A. Yes.

18 **Q. All right. But for our purposes today, what**
19 **is the diversion ratio?**

20 A. Well, simply put, it is the sum of the annual
21 diversions -- the annual charged diversions to EBID,
22 El Paso No. 1, and Mexico to the annual release from
23 Caballo.

24 **Q. And how do you determine charged diversions?**

25 A. Well, the charged diversions are generally

1 the -- the physical diversion, the measured diversion
2 at the -- at the canal heading. There are some
3 accounting adjustments that are specified in the
4 operating agreement and the operating manual.

5 **Q. Okay. And who determines the diversion ratio**
6 **for the initial allocation and the updates during the**
7 **year?**

8 A. Well, during -- in the initial update and in
9 those seasonal updates, of course, we don't yet know
10 what the annual release for Caballo or the sum of the
11 annual charges to the two districts and Mexico will
12 be, so that is based on an estimation that the
13 allocation committee arrives at by consensus, and
14 that's what we use for those initial and -- and
15 in-season updates. When we get to the end of the
16 season, we use the actual measured values and computed
17 diversion ratio based on what we measured for charged
18 diversions and release.

19 **Q. And were you listening to Ms. Estrada-Lopez's**
20 **testimony?**

21 A. Yes.

22 **Q. And do you recall the Special Master asking**
23 **the Project manager during her testimony what's the**
24 **purpose of the diversion ratio, what does that tell**
25 **you? Do you recall that exchange?**

1 A. Yes.

2 **Q. How would you answer that question?**

3 A. Well, as we -- as we get into the details
4 here, what it really does is it provides a method for
5 estimating for a given release, which we can estimate
6 based on what -- what sort of storage we have
7 available and how we anticipate managing it. For a
8 given annual release, how much water would be
9 available to the -- for diversion to the two districts
10 and Mexico.

11 **Q. Isn't that what the D2 formula does? How are**
12 **they different?**

13 A. Well, they're certainly related. Both of
14 them, for example, you see in the second form of the
15 equation here, given an annual release, the diversion
16 ratio helps you to predict the annual charged
17 diversions. The D2 does the same thing. The input
18 for the D2 curve is the annual release, that's the X
19 axis, if you will. And the output on the Y axis is
20 the annual charged diversion, but they're different in
21 that the D2 is a regression equation that's based on
22 those data actually measured by the Bureau of
23 Reclamation during the period '51 through '78, so it's
24 representing sort of a typical diversion, not an
25 actual diversion, but an estimated diversion for the

1 conditions in '51 through '78, and they do it over a
2 wide range of releases and diversions. In the case of
3 the diversion ratio, it is looking at a single current
4 year based on current hydrologic conditions with a
5 single annual release to estimate a single annual
6 charged diversion.

7 **Q. So -- so the diversion ratio reflects the**
8 **water delivery performance?**

9 A. Yes.

10 **Q. And giving you an example, lower diversion**
11 **ratio, what does that mean?**

12 A. Yes. Lower diversion ratio means that for a
13 given level of annual release, there will be less
14 available charged diversions.

15 **Q. All right. So what's the whole purpose of**
16 **the diversion ratio?**

17 A. It is to -- it is to estimate how much total
18 divertible water there will be available to the two
19 districts and Mexico for a given level of annual
20 release from Caballo, and we use that to estimate or
21 to allocate water to EBID.

22 **Q. Does that mitigate the impacts that are felt**
23 **by this supply?**

24 A. Yes. It's intended to -- to determine the
25 allocation to EBID so as to mitigate the impacts of

1 groundwater pumping in the Mesilla Valley on the
2 surface water supply of the Rio Grande Project in --
3 in the New Mexico portion.

4 **Q. Let's go to the next slide, please.**

5 **Dr. King, you're being presented here with what's been**
6 **marked as King Demo 15, Demonstrative 15,**
7 **titled, "Sources of Allocation Water." Before we dive**
8 **into the -- the process of allocation, what -- what is**
9 **the allocation committee allocating?**

10 **A. Well, it's basically allocating Project water**
11 **supply.**

12 **Q. And what does Project water supply consist**
13 **of?**

14 **A. Well, the biggest source and the one that we**
15 **can best control --**

16 **MR. WECHSLER:** Your Honor, I'm going to
17 object to that as a legal conclusion. As you pointed
18 out in your motion for summary judgment, what the
19 Project supply is precisely what we're conducting this
20 trial to understand.

21 **MR. LEININGER:** Well, Your Honor, if he
22 would be allowed to answer the question, he's going
23 through the facts of Project supply and what is
24 actually being allocated then diverted.

25 **MR. WECHSLER:** Which --

1 **JUDGE MELLOY:** Well -- go ahead.

2 **MR. WECHSLER:** Well, he -- he certainly
3 can talk about what's allocated in diversion, but the
4 question that's being posed here is what is Project
5 supply.

6 **JUDGE MELLOY:** Well, I'm going to let
7 the witness answer what he understands goes into
8 Project supply. There may be -- there may be a
9 difference of opinion as to whether that's actually
10 what should be a Project supply, but as a member of
11 the Allocation Committee, I think he can testify what
12 factors he considers in determining Project supply.
13 So go ahead.

14 **Q. (BY MR. LEININGER) Dr. King, please continue.**
15 **What constitutes Project water supply?**

16 **A.** When we're making an allocation, the sources
17 that we consider would be the big one, as I said, is
18 the Project and water -- the Project -- sorry -- the
19 water in Project storage, at least the usable
20 component of that, and also water already released
21 from Project storage, because if it is already
22 released this year, then it's obviously part of the
23 release this year. We also have the return flows that
24 are originating from the canal seepage that we talked
25 about before, surface and subsurface drainage, as well

1 as those operational spills, which go back to the
2 river and are then available as part of the Project
3 supply.

4 **Q. And, I'm sorry, I meant to ask you your**
5 **definition of operational spills. Can you explain**
6 **that again?**

7 A. Well, that -- that's essentially --

8 **Q. What is an operational skill?**

9 A. When I talked about the -- the wasteway flows
10 when we were talking about wasteway -- where the term
11 wasteway came from, an operational spill is water that
12 in the -- in, you know, the operational reality of
13 conveying water through this open channel system, you
14 need to drop some back into the river. That's called
15 an operational spill. We do have water that is
16 actually ordered for diversion that is returned to the
17 river, and you'll see that in the order sheet, as
18 well. But it's that water that goes directly from the
19 canal system back to the -- the river without ever
20 being delivered to a farm head gate.

21 **Q. Okay. And, again, please excuse my**
22 **interruption. What else constitutes the Project water**
23 **supply?**

24 A. We have surface and groundwater tributaries
25 of the Rio Grande. We have stormwater runoff, and if

1 the water in Project storage is the one we can best
2 control, stormwater runoff is the one we can least
3 control, and our -- our -- as Mr. Esslinger mentioned,
4 we do have a flood control function, as well. The
5 problem with stormwater is that it is extremely
6 unpredictable. It can be extremely high flows on, you
7 know, a few thousand cubic feet per second in the
8 single event. It's very short duration in general
9 because it comes from our -- our monsoonal events, and
10 it carries a lot of sediment and debris with it when
11 it comes in, so it is both the source of water and
12 kind of a problem, as well, that we -- we manage both
13 to try to use it beneficially, but also try to limit
14 the damage of it in our flood control function. And
15 then we do get some municipal wastewater effluent that
16 is returned to the river, as well.

17 **Q. And -- and all of these sources of water**
18 **contribute to the water that's diverted and charged as**
19 **a part of the allocation; is that correct?**

20 A. Yes.

21 **Q. Let's go to the next slide.**

22 **MR. LEININGER:** This would be, Your
23 Honor, U.S. Exhibit -- sorry. We have to switch
24 systems here, but what is being presented now is U.S.
25 Exhibit 580. It is a allocation sheet -- it's marked

1 as a July -- I believe it is marked as a July 11,
2 2016, allocation sheet.

3 Q. (BY MR. LEININGER) Dr. King, why don't I have
4 you explain it. What is this document?

5 A. This is one of the in-season allocations that
6 the Allocation Committee put together based on data as
7 of July of 2016.

8 Q. Okay. And you're familiar with this
9 document?

10 A. Yes.

11 Q. And how are you familiar with this document?

12 A. Well, in -- in 2016, I assisted in putting it
13 together and reviewing it and --

14 Q. Okay. Why --

15 A. -- I also selected it for inclusion in this
16 presentation.

17 Q. Right. And why did you select this
18 particular allocation sheet for your testimony?

19 A. It's an in-season allocation rather than an
20 initial or a final reconciliation. There's really no
21 such thing as a typical one, but there's nothing
22 particularly special about this, which is one reason I
23 -- I chose it.

24 Q. Okay. So this demonstrates the continuous
25 cycle in EBID water management that you testified to

1 earlier?

2 A. Right. This -- this would be one iteration
3 in the allocation cycle.

4 Q. All right. Can you use this allocation sheet
5 to show us the allocation process?

6 A. Certainly. I'll do this again in a
7 simplified way using a simplified flowchart to just
8 highlight the -- the major steps that go into it.

9 Q. And, Dr. King, what's being presented now is
10 a demonstrative labeled King Demo 16 with the
11 titled, "Simplified Allocation Process," and is that
12 the allocation sheet on the right of this slide that
13 you just talked about?

14 A. Yes.

15 Q. Okay. So what are the steps the Allocation
16 Committee goes through to make or update an
17 allocation?

18 A. Okay. The simplified version, what we do is
19 first estimate what we believe we will release for the
20 entire in this case 2016 season. You see that there
21 on Line 17.

22 Q. And that estimate comes from where?

23 A. Well, it's the total amount of
24 physically-available water in storage and already
25 released, and you -- we then subtract off what we

1 anticipate for reservoir losses during the current
2 year, and you wind up with the total water available
3 for release, but then we subtract off the anticipated
4 carryover water from the current year, 2016, that the
5 districts anticipate carrying forward to next year,
6 2017, and you see that it -- in this example on Lines
7 14 and 15, those would both be zero. What that means
8 is that the districts anticipate that at this point,
9 they will use all of their allocated water.

10 **Q. Then Ms. Estrada-Lopez already described**
11 **carryover, but basically it's last year's unused**
12 **allocation for a district; is that right?**

13 A. Yes. In this case, we're looking at what the
14 districts anticipate holding back this year, so it
15 would be water that they would carry over from 2016
16 into 2017.

17 **Q. Next on your schematic, you have Mexico.**
18 **What does Mexico get?**

19 A. Okay. First of all, if we are deemed to be
20 in an extraordinary drought, Mexico gets 60,000
21 acre-feet, and that's -- that's Mexico's allocation.
22 In fact, when that happens, we go in, and instead of
23 having a formula to calculate Mexico's allocation, we
24 type in the number 60,000 for Mexico's allocation, and
25 so if we are in an extraordinary drought, this is an

1 easy one, it's 60,000 acre-feet. If we are not in --
2 if we are in an extraordinary drought, we take that
3 current usable water in Line 17, and we plug it into
4 the D1 equation, and what that Line 17 reveals in this
5 case is an estimated D1 delivery to the two districts
6 and Mexico. On Line 19, you see the D1 delivery
7 estimate, which is about 410,000 acre-feet. Mexico
8 then gets 11.35 percent of that, and their allocation
9 then as of this allocation is 46,497 acre-feet shown
10 on Line 20.

11 **Q. And why 11.35 percent?**

12 A. We'll get into that in more detail in -- in
13 the spring as, again, we drill down on this, but short
14 answer is that Mexico's full allocation of 60,000
15 acre-feet is 11.35 percent of what the Bureau of
16 Reclamation determined to be a full delivery to the
17 U.S. lands and Mexico and so that -- that 11.35
18 percent is held constant.

19 **Q. Okay. And the 11.35 percent only applies**
20 **during an extraordinary drought, the reduction by**
21 **11.35 percent; is that correct?**

22 A. Oh, the use of D1 at all doesn't come into it
23 except in extraordinary drought.

24 **Q. Okay. So the Allocation Committee has**
25 **determined how much Mexico receives. What next?**

1 A. Next, we will go and estimate the current
2 year's usable water, and that's basically the -- the
3 water we have available for allocation for this year,
4 which what we do there is we subtract out the water in
5 storage associated with carryover from last year, and
6 what you see there is the two districts' carryover
7 balances from 2015 into 2016 on Lines 12 and 13. In
8 order to convert that to a storage, we add them
9 together and divide through by the diversion ratio,
10 and we get that carryover obligation on Line 9.
11 That's the amount of storage associated with the
12 carryover that the two districts have. So we subtract
13 that out of the sum and wind up with Line 11, which is
14 the total usable water for the current year's
15 allocation.

16 **Q. Okay. We'll get into a little more**
17 **description of the diversion ratio on here. So then**
18 **what happens, where does EPC -- El Paso County Water**
19 **Improvement District No. 1 receive its water?**

20 A. That then is the amount of water we have to
21 consider for this year's allocation, so what we do is
22 we take that Line 11 value, and we plug it into the D2
23 equation, which is shown on Line 22. That -- and,
24 actually, that is the gross D2, where we're taking
25 that Line 9 and plugging it into the D2, but in this

1 particular case, it is scaled down to 92 percent of D
2 cannot reach 2 with that multi-extreme doubt D2
3 correction factor that you see on Line 21 and --

4 **Q. We'll have a little more explanation of that**
5 **-- the origins of that next spring, too, correct?**

6 A. Right. So what we've actually got to work
7 with from D2 is an adjusted D2, which is an accounting
8 for these consecutive years' drought, and what this is
9 reflecting is the severe drought conditions that
10 existed in the twenty teens. In fact, we had -- we
11 applied a multi-extreme drought D2 correction factor
12 in five years of the twenty tens. It was a rough
13 decade. So --

14 **Q. So --**

15 A. Go ahead.

16 **Q. I'm sorry. Yes, continue. How does EP No.**
17 **-- if I use the term EP No. 1, would you know I'm**
18 **referring to El Paso County Water Improvement District**
19 **No. 1?**

20 A. I certainly would because that's what I'm
21 using, too.

22 **Q. Okay. Very good. So when do they get their**
23 **water on this allocation sheet?**

24 A. Okay. Well, that gives us a gross D2
25 diversion allocation so what we do then is we subtract

1 out the amount of water that we allocated to Mexico up
2 there on Line 20, and we come up with the net adjusted
3 D2 diversion allocation estimate based on the adjusted
4 D2 to the two U.S. districts. It's the total adjusted
5 D2 minus Mexico, and so El Paso No. 1 gets 43 percent
6 of that, and you may recall that the -- the 43 percent
7 is the El Paso portion of the authorized acreage in
8 the -- in the United States. And so the 43 percent of
9 that, which you see on Line 25, is El Paso No. 1's
10 allocation for this year.

11 **Q. Okay. So basically, EP No. 1 gets 43 percent**
12 **of the U.S. share of the adjusted D2 amount of the**
13 **Project allocation?**

14 A. Yes.

15 **Q. Which then brings up EBID. What about EBID's**
16 **allocation?**

17 A. Okay. To get at EBID, first thing we have to
18 do is estimate the diversion ratio, and as I said,
19 this is done by the -- the two districts and
20 Reclamation and the Allocation Committee. You see
21 this diversion ratio in this particular allocation was
22 estimated at .8, and, again, that is the -- that is
23 the estimate because it is during the season.

24 **Q. How do you arrive at this diversion ratio at**
25 **this point in irrigation season?**

1 A. Well, it's -- in simple version, it's based
2 on a few things. Basically, the previous years have
3 an effect on what the diversion ratio will be this
4 year. That's kind of the point of that multi-year
5 drought correction factor. It's also affected by what
6 the annual release is this year and so at this point,
7 it is our best estimate, and in making this estimate
8 during the season, we are also looking at how the
9 system has been performing in terms of its
10 relationship between actual measured diversions thus
11 far and the actual measured release from Caballo thus
12 far to come up at our best estimate of that diversion
13 ratio for the season.

14 **Q. And Ms. Estrada-Lopez discussed the meaning**
15 **of a diversion ratio of 1. The diversion ratio you**
16 **showed here on Line 28 is 0.8. How does a diversion**
17 **ratio of 1 compare to a diversion ratio of .8?**

18 A. Well, it would mean that there's -- basically
19 that there's -- the .8 means that we are only
20 diverting 80 percent of what we are releasing so we
21 are losing 20 percent of what we are releasing on net,
22 that is the total gains minus the total losses.
23 Diversion ratio of 1 would be much, much better
24 because we would be diverting the same amount that we
25 are releasing, in which case the river gains -- the

1 gains in the system are offsetting the losses in the
2 system.

3 **Q. And this --**

4 A. Go ahead.

5 **Q. I'm sorry. Go ahead. I didn't mean to**
6 **interrupt.**

7 A. We have not seen a diversion ratio of 1 for
8 quite a while. We've been close to it, but I don't
9 think we've had a diversion ratio of 1 since 2002,
10 which was the end of the wet period.

11 **Q. So is the Rio Grande predominantly a losing**
12 **river since 2002?**

13 A. On balance, it is now.

14 **Q. So, finally, where is EBID's allocation**
15 **amount as of July in 2016?**

16 A. We take that release estimate, and we
17 multiply it by the diversion ratio, which gives us the
18 total amount of water that we estimate will be
19 available for diversion, and we -- we do not want to
20 allocate more water than we will have available for
21 diversion because then we get to the end of the
22 season, and we don't have water to deliver that has
23 been allocated so the sum of release and diversion
24 ratio adjustment is the release plus that diversion
25 ratio adjustment, which is the difference between the

1 release and the anticipated diversion. Basically what
2 we're estimating here on Line 29 is that we will lose
3 about 124,000 acre-feet from release to diversion so
4 we'll only have 496,000, call it, available for
5 diversion.

6 **Q. So then where is EBID's final allocation?**

7 A. Well, we take that value on Line 30, and we
8 -- we subtract out the allocation to Mexico, the
9 allocation to -- of this year's water to EP No. 1, and
10 the carryover water to get EBID's allocation of this
11 year's water, which you see in Line 31. That is its
12 current-year diversion -- I'm sorry, not 31, 33. You
13 see it's 156,000 acre-feet on Line 33.

14 **Q. And then on Line 34, does that reflect EBID's**

15 --

16 A. Yes.

17 **Q. -- diversion allocation for the year? Okay.**

18 **So to sum it up, EBID's allocation of this year's**
19 **water is based on the Project release and diversion**
20 **performance?**

21 A. That's correct. And that the -- yes, that's
22 correct.

23 **Q. Anything else that you then do in the**
24 **Allocation Committee?**

25 A. Well, keep -- keep in mind, in order to get

1 to these -- this year's allocation, we subtracted out
2 the carryover balances of the two districts up there
3 on Lines 12 and 13 and so we added in to get to a
4 total allocation for the year, which you see down
5 there on Lines 38 and 39, and those are the
6 allocations to the two districts that would come out
7 of this allocation spreadsheet. That's what they have
8 to order on the season, and Mexico's allocation is
9 back there on Line 20.

10 **Q. Thank you for that explanation, Dr. King.**
11 **Let's go to the next slide. We're going to transfer**
12 **now to the -- from allocation to allotment. Let's go**
13 **to the next slide, please. This is a demonstrative**
14 **which is labeled King Demo 17, Demonstrative 17,**
15 **titled, "Allotment of Water by EBID." What does the**
16 **allotment process determine?**

17 **A. It -- there are a lot of analogies in this**
18 **process to the allocation procedure except in --**
19 **instead of determining how much water will be**
20 **available to the districts and Mexico for diversion**
21 **from the river, we are -- we are determining how much**
22 **water a farmer can order for delivery to their farm**
23 **turnout.**

24 **Q. And who decides how EBID's allocation is**
25 **allotted?**

1 A. It is set by the board of directors of EBID.

2 **Q. And how is the allotment made?**

3 A. Well, it is -- it is determined largely on
4 the district allotment. It's made by the board of
5 directors considering what we have in our allocation
6 account, as well as the performance of our conveyance
7 system and any on-farm considerations that may come
8 into it.

9 **Q. Okay. So when does EBID allot water?**

10 A. Just as there's an initial allocation,
11 there's an initial allotment, and we do that before
12 the diversion begins, and it is often based on that
13 initial allocation. We want to do that as early as
14 possible to give farmers some idea of what they'll
15 have to work with during the season.

16 **Q. And how does the Board decide to update the**
17 **allotment?**

18 A. It's updated typically monthly at the -- at
19 the -- at the routine monthly board meetings. It can
20 be updated more frequently, and it can also be
21 allocated -- sorry -- allotted less frequently if we
22 don't have an increase in allotment to justify an
23 increase -- increase in allocation to justify an
24 increase in allotment.

25 **Q. Okay. And, again, this is part of the -- I'm**

1 **sorry.**

2 **My question is: This is, again, part of that**
3 **continuous management of Project water --**

4 A. Yes.

5 Q. -- that you had already discussed?

6 A. Yes.

7 Q. Okay.

8 A. As the allocation process runs its cycles, we
9 are running parallel cycles here in allotment.

10 Q. **What's next for allotment purposes within**
11 **EBID?**

12 A. Well, there's a final allotment that we make,
13 and that can be as, you know, in a full supply year as
14 the system winds down or when we do not anticipate
15 that we're going to have any additional water to --
16 we're not going to receive any additional allocation
17 in a very tough year, we can go final well before the
18 end of the season, but the Board does have to consider
19 a lot in doing this because we want to get as much
20 water out there allotted as -- as we can, subject to
21 farm operation concerns, but we also have to give them
22 enough -- give our farmers enough time to order the
23 water we allot to them before we shut the system down.

24 Q. **Let's go to the next slide. This slide has**
25 **been labeled as King Demo 18, Demonstrative 18,**

1 **entitled, "Simplified Allotment Calculation." So how**
2 **does the Board arrive at allotment?**

3 A. Well, a few things that come into it here.
4 This is the basic simplified equation and a few of the
5 things that we consider. First of all, we have 90,640
6 authorized acres, and we do allocate water to that
7 acreage. Every acre gets the same allotment of water
8 with some exceptions that we'll talk about. We then
9 have the allocation, which comes out of that
10 allocation committee process, but we also have this
11 factor, which I've listed there as the Letter E, which
12 has an efficiency, and just like the diversion ratio
13 relates the release to the available diversion, this
14 district-wide diversion to delivery conveyance tells
15 us that for a given level of diversion, how much water
16 are we going to have to deliver to our farm turnouts.
17 And remember that between diversion and delivery,
18 there is a whole lot of unlined canal that the water
19 has to flow through in order to get to those turnouts.

20 **Q. Can you give us an example of allotment**
21 **within EBID?**

22 A. It's a fairly simple calculation. I think an
23 example would help a lot. In that allocation
24 spreadsheet that we looked at from July of -- of 2016,
25 you saw that we came out with an allocation of 180,965

1 acre-feet. This is a fairly -- this is a fairly low
2 release. It's -- it's less than, you know, half of
3 what we would consider a -- you know, a full prime
4 time wet -- wet years type allocation. We estimate
5 the conveyance efficiency to be 55 percent, and it is
6 higher if we have more water to -- to convey and
7 deliver. We would then calculate or estimate the
8 diversion to be that 181,000 acre-feet spread out over
9 90,640 acres and multiplied by that 55 percent
10 conveyance efficiency, and you wind up with 1.1
11 acre-feet per acre or 13 inches.

12 **Q. And this allotment would be adjusted during**
13 **the year based on the actual performance?**

14 A. Yes. The actual conveyance that diversion to
15 delivery conveyance, as well as idle acreage. You
16 know, if we got water -- land that is just sitting
17 there not doing anything with it, and then there are
18 some on-farm issues that I suspect we'll get to in the
19 spring.

20 **Q. Okay. So you've made an allotment. What can**
21 **the farmers do with their water? Let's go to the next**
22 **slide. This has been marked as King Demo 19,**
23 **Demonstrative 19, and labeled, "Farmers May Choose**
24 **To." Once you made the allotment, what happens?**

25 A. Once farmers have that water in their

1 allotment account, they can order it, and EBID will
2 then, you know, order it for release from Caballo,
3 we'll divert it from the river, we'll convey it
4 through our -- our canal and lateral system to their
5 farm turnout, and then they use it on their farm, and
6 that's a typical use of it. It's not the only option,
7 though.

8 **Q. Dr. King, let me interrupt you for one**
9 **moment. The realtime transcript seems to have paused.**
10 **I don't know if it may be just my issue.**

11 **MR. WECHSLER:** It's still working for
12 me.

13 **MR. LEININGER:** Still working for you?
14 Okay. I apologize. It stopped on Line 66/21 for me.

15 **JUDGE MELLOY:** It stopped for me, as
16 well.

17 **MR. LEININGER:** Heather, should we
18 reboot this?

19 **THE REPORTER:** Yeah, rebooting is
20 probably the best option since it's still working for
21 some.

22 **JUDGE MELLOY:** Why don't we take a
23 minute to -- actually, you know, this might not be the
24 worst time to take a break. It 's 12:45. And,
25 actually, it's working for me now so --

1 **MR. LEININGER:** Me too.

2 **JUDGE MELLOY:** But maybe this might be a
3 good time. We've been going for an hour and 45
4 minutes. Why don't we take our 20-minute break at
5 this time, and anybody wants to reboot can do it at
6 that -- during the break. Thank you, everyone.

7 (Recess.)

8 **JUDGE MELLOY:** All right. Looks like
9 everyone is back. Are we ready to go on,
10 Mr. Leininger?

11 **MR. LEININGER:** Yes, Your Honor.

12 **Q. (BY MR. LEININGER)** Dr. King, when you were
13 testifying regarding -- a few minutes ago regarding
14 the Mexican allocation, you made a statement about
15 what Mexico gets in the allocation process, and you
16 said, "First of all, if we are deemed to be in
17 extraordinary drought, Mexico gets 60,000 acre-feet."
18 Did you misspeak?

19 **A.** I did. I did misspeak, if that's what I
20 said. Let me be very clear on this. It's a very
21 important point. Mexico's 60,000 acre-feet allocation
22 comes unless we are in extraordinary drought. If we
23 are not in extraordinary drought, it is automatically
24 60K. If we are in -- in extraordinary drought, then
25 it's reduced proportionately as estimated by D1.

1 **Q. Thank you for that clarification.**

2 So let's continue with the water is then
3 allocated and allotted, and then you were going to
4 describe what the farmers may choose to do with their
5 allotment. So once you've made allotment, what
6 happens?

7 A. Okay. As I said, they can use it on their
8 farm. They just put in an order, and EBID delivers.
9 They can also use the -- the District's mechanisms for
10 transferring water where they can transfer their
11 allotted water -- if they choose not to use it, they
12 can transfer their allotted water to another user to
13 use on a seasonal basis or if they want to be on the
14 other end of that transaction, they can transfer water
15 in from another EBID water user to get more surface
16 water on their land.

17 **Q. Does the transfer need approval from the**
18 **state engineer?**

19 A. No. It's handled by the board of directors.

20 **Q. What else can farmers do with their water?**

21 A. Well, they can do nothing. When I refer to
22 idle land, that's what I was referring to. We do have
23 farmers who don't order it, they don't transfer it,
24 they don't do anything, and that is an option, but it
25 is a use-it-or-lose-it proposition with the allotment.

1 **Q. Can farmers acquire more water rights than**
2 **they have land?**

3 A. Yes. In response to the current drought that
4 we're in, back in 2005, EBID passed a policy that
5 allows farmers to what we call stack water rights, and
6 a -- a given acre of land with EBID water rights can
7 hold up to 2 acres of surface water rights. What this
8 allows a farmer to do is to in a -- when the allotment
9 takes place, they would be allotted up to twice the
10 allotment based on the amount of rights they held.
11 They were also taxed through our assessment process
12 based on the acreage of water rights. So if they
13 stack up to two -- two acres per acre, they are
14 assessed two acres per physical acre.

15 **Q. And this stacking policy is implemented by**
16 **who?**

17 A. It was implemented by EBID through the board
18 of directors, and the intention was to allow us to
19 take the reduced surface water supply that we had due
20 to the drought or, you know, early on, and give
21 farmers a mechanism to take the water that we have and
22 concentrate it on less acreage, thereby reducing the
23 demand for groundwater.

24 **Q. Does the Office of the State Engineer or New**
25 **Mexico have any role in this process?**

1 A. Not in the actual stacking process. I
2 believe they are informed of it.

3 **Q. There was prior testimony that water is**
4 **allotted on an equal foot per acre basis, but the**
5 **amount of actual on-farm water use varies?**

6 A. Widely. You know, from idle land, which uses
7 none at all, up to however much water a farmer wants
8 to transfer in.

9 **Q. Let's go to the next slide, please. This**
10 **slide is our transition slide to operations, so let's**
11 **talk about operations. You started -- you talked**
12 **about allocations to the District and allotment to the**
13 **farmers. How does EBID get water from Caballo**
14 **Reservoir to the farmers' turnout?**

15 A. Well, it is a -- a process, and this is the
16 -- the simplified version of it. I realize it's a lot
17 to absorb in one go.

18 **Q. This -- this is simplified?**

19 A. It actually is, yes. There's -- there's a
20 lot of moving parts here, as you'll see, as we get
21 into it.

22 **Q. So it's more complex than this?**

23 A. Yes. I'll go into some of those complexities
24 after we get through the basic flowchart -- process
25 flowchart.

1 **Q. Okay. Well, let's start. So what's the**
2 **first step?**

3 A. I like to think of it as the whole process
4 starts with an order, which is in response to crop
5 water need. So if a crop -- if a farmer, an EBID
6 constituent assesses his crop water need, he asks
7 himself does it need to be irrigated. If the answer
8 is no, then nothing happens, and we continue to wait
9 until the crop does need to be irrigated, and once it
10 does and the farmer decides that he needs to irrigate,
11 he's got another choice to make, and that is whether
12 to use surface water or groundwater. If he chooses to
13 use groundwater, then he turns on his pump, and he
14 pumps and irrigates his crop, and his crop water need
15 has been fulfilled.

16 **Q. So a farmer may choose to irrigate by**
17 **groundwater pumping only?**

18 A. For a given irrigation, yes, he can certainly
19 use his well.

20 **Q. At this point in the irrigation season?**

21 A. Yes.

22 **Q. When the farmer decides to use their EBID**
23 **surface water, what does he or she do?**

24 A. Okay. Well, this is where the order
25 originates, so the farmer places an order with our

1 dispatch office, and this is a very easy process.
2 They can do it with a phone call or even online from
3 their computer or phone. The dispatch office compiles
4 all of the orders from all of the farmers in the
5 district. From there, we bunch them up by -- we sort
6 of tally them by -- by operational unit within the
7 headings and by -- headings meaning the primary
8 diversion points.

9 **Q. So -- so then the farmer gets his water?**

10 A. Right.

11 **Q. Or the farmers get their water?**

12 A. Right. And based on -- based on those --
13 well, not yet, they don't. We've got -- you saw what
14 the spreadsheet looked -- the flowchart looks like.
15 We've got a lot before the farmer actually takes
16 delivery of it. Once we get the total --

17 **Q. So --**

18 A. -- the total of the orders, the District
19 calculates the conveyance loss, and that's that
20 difference between the diversion and the delivery. We
21 have to add that in to get to our order for diversion.

22 **Q. Okay. So at this point, EP No. 1 and**
23 **Reclamation get involved?**

24 A. Yes. At this point, we get together the --
25 this is generally handled by the water masters and

1 Reclamation, and we have the -- we sum up the orders
2 for the two districts and Mexico. And, again, these
3 are orders for diversion, which include those orders
4 for delivery that started back with the farmer.

5 **Q. All right. What happens next?**

6 A. Well, next, we start working on the release
7 from project storage, and so the first thing we do in
8 order to get to that is we determine the river gains
9 or losses, and so we -- we know the total of the
10 amount of water we want to divert, so we have to look
11 at the way the system is currently performing based on
12 actual measured values to see if it's gaining. We --
13 that's less water we have to release. If it's losing
14 water, that's more water we have to release to make
15 the diversion, so we add or subtract the gains or
16 losses respectively.

17 **Q. Are these gains and losses -- I think you**
18 **already mentioned this, but are these gains and losses**
19 **you refer to related to the diversion ratio?**

20 A. They certainly are. You can think of the
21 diversion ratio as a seasonal -- you know, it's
22 integrated over the entire season. The total annual
23 diversions divided by the total annual release. What
24 we're looking for in the order phase, though, or the
25 -- the release phase is an instantaneous value of

1 that. What -- how is the system performing right now?
2 And it varies throughout the year. So what we're
3 dealing with here with the river gains and losses is
4 instantaneous rather than seasonal, but certainly
5 related.

6 **Q. And then the waters released from Caballo,**
7 **how is that determined?**

8 A. First of all, we look at how much water we
9 want to release from Caballo. Based on the elevation
10 of the reservoir, we determine what the gate opening
11 from the control gates at Caballo needs to be. At
12 that point, the two districts and Reclamation agree,
13 certify it. That's when the order sheet is issued,
14 and the Bureau of Reclamation then pushes the buttons
15 at Caballo and sets the gate to order.

16 **Q. Then the released water is diverted at the**
17 **diversion dams?**

18 A. Before that, if -- as Michelle mentioned, if
19 the change is more than a hundred cubic feet per
20 second from what was before the new order, it is
21 released downstream of Caballo. We do a manual
22 metering of it there. But it is also continuously
23 metered. We just do that to maintain the continuous
24 metering.

25 **Q. And then the released water is diverted at**

1 **downstream diversion dams?**

2 A. That's correct. That's when we get into our
3 system. At Percha Dam, we set the canal head gates to
4 order. Same at Leasburg, we set them to the order
5 that we specify -- that we specified in the sheet.
6 Mesilla is a little more complicated. We set that to
7 generally to order --

8 **Q. Why -- why does the Mesilla block here say**
9 **order plus or minus adjustments?**

10 A. Well, this is where Mesilla gets a little
11 more complicated because it diverts water both to
12 farmers in New Mexico and into Texas, the El Paso --
13 El Paso No. 1 lands within the Mesilla Valley, and it
14 -- there's some interactions with American Dam that
15 I'll talk about when we get to American Dam that may
16 propagate up to Mesilla.

17 **Q. Go ahead and explain how Mesilla Dam relates**
18 **to American Dam.**

19 A. Okay. American Dam is critical because it,
20 of course, is immediately upstream of the Mexico
21 diversion, and so rather than set the diversion into
22 the American Canal to order the way the upstream dams
23 do, in this one, the downstream flow going through the
24 dam is set to Mexico's order to keep Mexico on order,
25 and any fluctuations that inevitably happen are

1 directed into the American Canal.

2 **Q. And how can -- pardon me. I was going to**
3 **ask: How can these fluctuations in flow affect EBID's**
4 **diversions at Mesilla?**

5 A. Because the -- any fluctuations are directed
6 into the American Canal. If, for example, the water
7 is below order at American, if Mexico is kept on
8 order, then El Paso No. 1 would necessarily be shorted
9 in the -- in the American Canal. So we do have a
10 provision whereby if -- if the American Canal is
11 significantly shorted, EBID will cut its diversion at
12 Mesilla Dam to get more water down into American and
13 essentially split the shortage between American and
14 Mesilla Dam until we can bring more water down to
15 Caballo and get everybody back on order.

16 **Q. Thank you. Then Mexico gets its delivery?**

17 A. Yes. Mexico takes their delivery, and,
18 again, because American Dam is -- is managed to keep
19 them on order, they get their delivery down at the
20 International Dam on order as -- as closely as
21 possible.

22 **Q. Once the diversions have been made, what does**
23 **EBID to convey the water for delivery to farmers?**

24 A. We get into our system, and we have our ditch
25 riders and our hydrotechs out there managing it

1 through this open channel system. Then it gets to the
2 -- from there, we -- we distribute it through our --
3 our canals and laterals to break it up by units and
4 order blocks, the same as we totalled it up back in
5 the order phase, and then we start making deliveries.
6 And this is --

7 **Q. But you have -- you have a -- sorry,**
8 **Dr. King. You have a 6A/6B box with a lot of arrows.**
9 **What is this all about?**

10 A. Well, let me explain these one box at a time.
11 Let me also just say that this -- this gets back to
12 that little complexity at the state line that we
13 looked at when we were looking at the schematic
14 several slides back. EBID's primary deliveries,
15 obviously, and all of them from Percha and Leasburg
16 are two EBID turnouts, so that would be that upper
17 right-hand box you see there. When we get down into
18 the -- the southern Mesilla Valley, EBID makes their
19 deliveries to El Paso No. 1, to the El Paso District,
20 so that El Paso No. 1 can deliver to their
21 constituents, but remember, EBID, because they -- the
22 EP1 can't reach all their farmers, EBID delivers to
23 some of their farmers, as well, to the El Paso No. 1
24 turnouts, and the El Paso District takes some of that
25 water they received and delivers it to the EBID

1 turnouts. And this is done in Unit 6A and 6B by
2 agreement between the two districts, and that's why
3 you see the 6A/6B there.

4 **Q. And those -- those 6A and 6B deliveries are**
5 **accounted for in the charged diversions for the -- for**
6 **the districts?**

7 A. Yes. Charged diversions and deliveries.

8 **Q. And, finally, the surface water gets to the**
9 **farm?**

10 A. Yes. Finally, it reaches that turnout, flows
11 through it on to the farm, the irrigation happens, and
12 then the whole cycle starts over.

13 **Q. So that still didn't seem very simplified.**
14 **How is your flowchart a simplification of operations?**

15 A. Well, that -- that's the process. You know,
16 that's the sort of antiseptic version of it. In
17 reality --

18 **Q. Okay. Dr. King, let me -- let me interrupt**
19 **you for just one moment. What's been introduced here**
20 **is King Demonstrative No. 22, King Demo 22, and it's**
21 **entitled, "Project Operations Under the 2008 Operating**
22 **Agreement." Pardon my interruption. What is this**
23 **showing?**

24 A. Okay. These are some of the -- you know,
25 some of the real-world complexities sort of. You

1 know, this is -- in the previous one, that's sort of
2 the mechanical look at it. This is more of the
3 organic look at how the system functions. First of
4 all, we have these realtime data systems that are
5 generating data where everybody involved is looking at
6 their laptop or their phone to see what water is where
7 and who's doing what and everything so that we can
8 coordinate this very delicate balancing act. In this
9 mix, we have the farmers, you know, the farmers in
10 both districts who have to be there to place the
11 orders and receive the water. We have those ditch
12 riders who have to shepherd the water down to the
13 turnout. We have the hydrotechs who are out there
14 making sure that the -- the main system and the
15 distribution of water is going well, again, in both
16 districts. We've got the water masters in the two
17 districts in constant communication to, you know, pick
18 up excess water if there's some or drop some water if
19 there's shortages. All these people have to
20 coordinate in realtime, and they -- it's a very
21 intense process. It runs 24/7 during the season
22 because flowing water does not wait.

23 **Q. And then you have the tax department. How**
24 **are they involved?**

25 **A. That's one additional level of complexity.**

1 For a farmer to place a valid order, they must have
2 remaining balance in their allotment account. They
3 can't have already ordered all their water and
4 continued to order, and they must be current on their
5 EBID tax assessments to take delivery of that water.

6 **Q. And how are the engineers involved?**

7 A. Well, I -- being an engineer, I'm involved at
8 a fairly high level of dealing with things at a fairly
9 high level allocation updates, you know, allotment
10 recommendations, but also as operational issues
11 particularly between the two districts may come up,
12 I'm on call for those. We also have the district
13 engineer, who is a professional engineer, also, and
14 the maintenance staff who have to respond for the sort
15 of things that aren't in the -- in the flowchart like
16 ditch breaks or washouts or those real-world facts of
17 life that -- that come up in -- in a system with this
18 level of complexity.

19 **Q. And how are the federal agencies that you**
20 **list here involved?**

21 A. Well, as you saw, Reclamation participates in
22 the allocation, the determination of the release, the
23 setting of the gates at Caballo, and then metering
24 particularly down the river system are activities that
25 they're engaged in and some of the higher-level

1 accounting issues, as well. We also have the --

2 Q. And --

3 A. Go ahead.

4 Q. No, I'm sorry. I didn't mean to interrupt
5 you.

6 A. I was going to say, the IBWC is also involved
7 because obviously they're operating American Dam,
8 which is a key point for Project operations you saw.
9 They're keeping Mexico on order and what they can do
10 at American Dam can propagate upstream and downstream.
11 They also act as a liaison because in these realtime
12 operations, we have to coordinate with Mexico and so
13 they are our -- our communication channel with Mexico,
14 as well.

15 Q. Thank you. I -- I don't see either of the
16 states, New Mexico or Texas, on this slide. Are they
17 involved in EBID's Project operations?

18 A. No.

19 Q. Have they ever been?

20 A. Not to my knowledge.

21 Q. Let's go to the next slide. So, now, we're
22 moving on to accounting. If we'd go to the next
23 slide, we have a demonstrative here titled King Demo
24 23 with the heading, "EBID Allocation and Allotment
25 Accounting Charges." How is accounting for water by

1 **the districts structured?**

2 A. I'm hoping by this time, it's fairly
3 intuitive, but when we have a reservoir release, the
4 water goes down the river to where EBID makes its
5 diversions, and those diversions are measured. They
6 generate an allocation charge, and that allocation
7 charge is then debited to the District's diversion
8 allocation.

9 **Q. And for allotments?**

10 A. It's, again, a fairly parallel process where
11 the delivery to a farmer's turnout, which, again, is a
12 measured delivery, generates an allotment charge, and
13 that allotment charge is debited to the farmer's
14 delivery allotment account.

15 **Q. And the Allocation Committee has made changes**
16 **to the operations and accounting under the 2008**
17 **Operating Agreement, haven't they?**

18 A. Yes.

19 **Q. And can you describe that process?**

20 A. Well, the changes that are -- have been made
21 to the process are made in the operating manual, which
22 is a much more detailed or sort of the day-to-day kind
23 of procedures that sort of refines the way we
24 implement the operating agreement, and it is done by
25 consensus among the member -- the signatories to the

1 -- to the operating agreement, the two districts and
2 the United States and -- go ahead.

3 **Q. No, sorry. I don't mean to interrupt you.**

4 A. Okay. I think we have a little lag time here
5 in our audio. The -- when the -- primarily the
6 Allocation Committee, which represents all three of
7 the entities, recognizes an area that was not
8 accounted for or not anticipated in the original
9 operating agreement, they get together and look at
10 basically accounting fixes for those issues.

11 **Q. Let's -- let's discuss some of those fixes.**
12 **What are some of the issues you have addressed through**
13 **the operating manual? Can we have the next slide,**
14 **please? This slide is a demonstrative labeled King**
15 **Demo 24, Demonstrative No. 24, titled, "Evolution of**
16 **the Operating Manual." What are some of the issues**
17 **you've addressed over the last 14 years of operating**
18 **agreement?**

19 A. Let me give you a very short -- brief
20 explanation of -- of some of the highlights, I guess,
21 because I -- I believe we will be getting into a lot
22 more detail on this in the spring. But most recently,
23 we agreed on an accounting adjustment, which would
24 come at that year-end reconciliation where Texas is --
25 receives an accounting charge against their allocation

1 balance, their allocation account that would carry
2 over into the subsequent year for the impacts of
3 groundwater pumping in that part of the Mesilla Valley
4 in Texas.

5 **Q. I'm sorry. What do you mean by the impacts**
6 **from Texas in the Mesilla Valley?**

7 A. Well, again, one of the primary purposes of
8 the operating agreement was to mitigate the effects of
9 withdrawal of hydrologically-connected groundwater
10 from the aquifers underlying the Rio Grande, and that
11 happens with pumping that occurs in Texas, as well.
12 So this is an adjustment that charges those impacts to
13 -- to Texas when they impact the allocation to EBID.

14 **Q. What else has evolved since 2008?**

15 A. Obviously, the allocation to Mexico is a very
16 important function of -- of the Project and if we do
17 have an over allocation to Mexico, and we generally
18 do. We try to keep it small. But we've come up with
19 methods to equitably distribute that over allocation
20 or over delivery to Mexico to the two districts.

21 **Q. And then you have a modification that may**
22 **come into play this year, correct?**

23 A. That certainly comes into play this year,
24 which is the what we term release accounting at the
25 end of the season, and what this stipulates is that if

1 one district runs out of water and shuts down and the
2 other district continues to release and divert water,
3 then the district that continues to release and divert
4 water is charged for the larger of the release from
5 Caballo and their actual physical measured diversion.

6 **Q. I think we'll have some more testimony on**
7 **that next spring, also. Finally, is this another**
8 **adjustment?**

9 A. Yes. This is that one you saw, the .92
10 factor back in the allocation spreadsheet we worked
11 through that it takes into account the -- it's kind of
12 referred to as a drought hangover. It persists from
13 one year to the next where the diversion ratio that
14 occurs one year is certainly affected by what happened
15 the previous year and in those years where we have
16 consecutive years drought as we did for much of the
17 twenty teens, and, in fact, it's looking more and more
18 like this will be implemented again in 2022. We have
19 this factor to adjust down the estimate -- the D2
20 estimate for purposes of allocation to El Paso No. 1.

21 **Q. And, again, you'll show that analysis -- you**
22 **and Dr. Blair will show that analysis in the spring?**

23 A. Yes.

24 **Q. Is that correct? Okay. Very good. Let's**
25 **summarize your testimony. How do you characterize**

1 EBID's efforts to -- to utilize Project water in the
2 lower Rio Grande?

3 MR. WECHSLER: Objection; vague.

4 Q. (BY MR. LEININGER) Will you summarize,
5 please, operations by EBID for the purpose of water
6 delivery and distribution?

7 A. Certainly. What I hope I have conveyed here
8 today is that it is a complex process. We make as
9 much of it as explicitly programmatic as possible, and
10 our -- our staff and the other members of the Rio
11 Grande Project do coordinate this very complex system
12 involving hundreds of participants, you know,
13 including even down to our farmers, to manage these
14 cycles and cycles within cycles to release, divert,
15 and convey water as efficiently as possible in the Rio
16 Grande Project. And the way we operate now is really
17 all part of the evolution of the -- of the Project in
18 general, and EBID in particular, that goes all the way
19 back to the -- the pre-Project days in the late 1800s
20 and early 1900s in the community ditches that preceded
21 the Rio Grande Project. The one thing that has
22 certainly remained constant is that our -- our goals
23 in all of this are to maintain sustainability and
24 resilience of -- of irrigated agriculture in the
25 Rincon and Mesilla Valleys.

1 **MR. LEININGER:** Thank you, Dr. King. I
2 have no further questions.

3 **JUDGE MELLOY:** Ms. Klahn, do you have
4 any questions?

5 **MS. KLAHN:** No, I don't, Your Honor.
6 There was not to be any cross-examination in the -- on
7 either Dr. King or Dr. Blair.

8 **JUDGE MELLOY:** Is that still your view,
9 Mr. Wechsler?

10 **MR. WECHSLER:** Well, Your Honor, we're
11 reserving all of our cross-examination. I don't know
12 how that relates to Texas, but certainly New Mexico
13 intends to reserve our cross-examination, both on
14 today's testimony as well as Dr. King's spring
15 testimony until the spring.

16 **JUDGE MELLOY:** All right. Then,
17 Mr. Wallace, I don't know where you fit into all this,
18 but do you have anything you want to ask?

19 **MR. WALLACE:** Not at this time. Similar
20 to New Mexico, we will reserve our right to conduct
21 cross-examination in the spring.

22 **JUDGE MELLOY:** All right. Well, then,
23 Dr. King, I guess you're done until some time next
24 March or April, so see you back then.

25 **THE WITNESS:** Thank you, Your Honor.

1 **JUDGE MELLOY:** Thank you very much for
2 your testimony.

3 **THE WITNESS:** Thank you.

4 **JUDGE MELLOY:** All right.

5 **MR. LEININGER:** And, Your Honor, we'll
6 be transitioning here from -- from this seat to others
7 so if you don't mind, I'm just going to turn off the
8 video for a few minutes and let --

9 **JUDGE MELLOY:** Why don't we take five
10 minutes just to get the witness -- witnesses switched
11 out and notebooks and give everybody a chance to
12 stretch. We'll just take a five-minute break. All
13 right?

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

15 (Recess.)

16 **JUDGE MELLOY:** All right. Looks like
17 we're ready to get started again. Before we start
18 with the examination, I'd ask the parties to enter
19 their appearance for this portion of the proceedings
20 for this witness. Ms. Barfield?

21 **MS. BARFIELD:** Yes, good morning, Your
22 Honor. This is Theresa Barfield on behalf of the
23 State of Texas.

24 **JUDGE MELLOY:** And Ms. Coleman for U.S.;
25 is that correct?

1 **MS. COLEMAN:** Yes. Good afternoon, Your
2 Honor. It's Judith Coleman for the United States.

3 **JUDGE MELLOY:** And who for New Mexico
4 again?

5 **MR. OGAZ:** Good afternoon, Your Honor.
6 This is Zachary Ogaz for New Mexico, not Jeff
7 Wechsler, as you can tell.

8 **JUDGE MELLOY:** All right. And I assume
9 Mr. Wallace is still on for Colorado or do we have
10 anybody --

11 **MR. WALLACE:** Yes, it'll be myself, Your
12 Honor.

13 **JUDGE MELLOY:** Okay. All right. I
14 forgot to mention earlier before we start with the
15 witness that we did receive a delivery yesterday, I
16 believe sent by the State of Texas, of a very large
17 exhibit that is going to be used as part of
18 Dr. Blair's testimony, as I understand. Is that
19 right, Ms. Barfield?

20 **MS. BARFIELD:** Your Honor, that sounds
21 correct. I will say that Ms. Klahn will be handling
22 Dr. Blair's testimony, but we -- according to our
23 cycle of binders going out the door, I do think that
24 it was Dr. Blair's that went out and that it is
25 voluminous.

1 **JUDGE MELLOY:** No, not voluminous. This
2 is large -- it's a single exhibit that is very, very
3 large that appears to be --

4 **MS. BARFIELD:** Okay.

5 **JUDGE MELLOY:** -- a very large blowup of
6 the relevant portion of the Rio Grande Valley, and --
7 and I assume there will be smaller versions to be used
8 during the -- the testimony. I'm not sure exactly,
9 but just so people know what's what we received.

10 **MS. BARFIELD:** I know what you're
11 talking about now, Your Honor. That is correct.

12 **JUDGE MELLOY:** Okay. All right.

13 **MR. OGAZ:** Your Honor, can we get a copy
14 of that, as well, please?

15 **JUDGE MELLOY:** Well, I guess that's what
16 I was going to ask. I assume you're making copies
17 available to everyone, Ms. Barfield?

18 **MS. BARFIELD:** Ms. Klahn I see just
19 appeared. I'm going to let her speak to this issue
20 since it's her witness.

21 **MS. KLAHN:** Yeah. Mr. Ogaz, the map is
22 within Mr. Blair's exhibits that were disclosed
23 yesterday. This is just a 4-by-8, 2-by-6 something
24 large version because we anticipate wanting to use
25 this in the spring, as well. So if you'd like me to

1 send you a 2-by-6-foot version, I'm happy to do that.
2 Just let me know.

3 **MR. OGAZ:** Yes, please. Do you know
4 what exhibit it was, exhibit number?

5 **MS. KLAHN:** I think it's Blair Demo 3 or
6 4. It's the -- it's the IBWC map of the Rio Grande.
7 I'm sure you've seen it before.

8 **MR. OGAZ:** Okay. Thank you.

9 **JUDGE MELLOY:** All right. Then we'll
10 start with Mr. Sloan. If you'd raise your right hand,
11 please. Do you swear or affirm that the testimony
12 you're about to give will be the truth, the whole
13 truth, and nothing but the truth?

14 **THE WITNESS:** Yes, I do.

15 **JUDGE MELLOY:** All right. Mr. Sloan,
16 would you state for the record your name and spell --
17 spell your name, please?

18 **THE WITNESS:** Yes, Your Honor. Robert
19 Sloan, R-O-B-E-R-T, S-L-O-A-N.

20 **JUDGE MELLOY:** All right. And I do need
21 to ask you a couple preliminary questions. Do you --
22 is anyone in the room with you?

23 **THE WITNESS:** No, Your Honor.

24 **JUDGE MELLOY:** Do you have any documents
25 that you'll be using during your testimony?

1 THE WITNESS: No, Your Honor.

2 JUDGE MELLOY: And then I do need to ask
3 that you not use any communication devices, including
4 cellphones, smart phones, tablets, computers, whatever
5 that use any type of communication such as e-mail,
6 text, and so on. Do you understand that?

7 THE WITNESS: Yes, sir.

8 JUDGE MELLOY: All right. Then,
9 Ms. Barfield, are you taking this witness?

10 MS. BARFIELD: Yes, I am, Your Honor.

11 JUDGE MELLOY: All right. You may
12 proceed.

13 MS. BARFIELD: Thank you, Your Honor.

14 ROBERT SLOAN,
15 having been first duly sworn, testified as follows:

16 DIRECT EXAMINATION

17 BY MS. BARFIELD:

18 Q. Good morning, Mr. Sloan, or afternoon that is
19 in your time zone.

20 A. Good morning. Good afternoon, actually.

21 Q. Can you please give us the address of where
22 you live?

23 A. 1411 Archer Farm Road, La Mesa, New Mexico.

24 Q. And do you farm within Elephant Butte
25 Irrigation District?

1 A. Yes, I do.

2 Q. Now, throughout the course of our discussion
3 this morning, if I abbreviate Elephant Butte
4 Irrigation District to EBID, can we understand that
5 we're talking about the District?

6 A. Yes.

7 Q. Okay. What's the location in New Mexico of
8 the farm address you gave us?

9 A. It is approximately 12 miles south of the
10 city of Las Cruces.

11 Q. Okay. And are you also a board member of
12 EBID?

13 A. Yes, I am.

14 Q. What's your current position?

15 A. Currently, I hold the office of vice
16 president.

17 Q. How long have you held the position of vice
18 president?

19 A. A couple -- two or three years, best I can
20 recall.

21 Q. All right. Did you hold a position before
22 vice president with EBID?

23 A. Yes. Earlier on in the history here on the
24 Board, I was secretary.

25 Q. Okay. What's -- in total, how long have you

1 **been on the board of EBID?**

2 A. Been on there for about 17 years.

3 **Q. All right. Can you describe for us your**
4 **general duties as vice president of EBID?**

5 A. To fill in as far as overseeing the meetings
6 and -- and in case the president is not able to
7 attend, to oversee the meetings and perform those
8 duties.

9 **Q. All right. Let's talk a little bit about**
10 **your family history. Did you grow up on a farm in New**
11 **Mexico?**

12 A. Yes, I did.

13 **Q. Okay. And were you -- did you farm and was**
14 **it your father's farm?**

15 A. My father was -- was a farmhand. I grew up
16 on the farm so I helped, you know, doing different
17 chores at a fairly young age, maybe starting around
18 ten and then, you know, continued doing things going
19 through high school.

20 **Q. What kind of farm did your dad have?**

21 A. He had a -- pretty much a diverse farm here
22 in the valley of different crops from cotton, corn,
23 some vegetables, alfalfa, those type crops.

24 **Q. Which valley was your farm -- your father's**
25 **farm in?**

1 A. We're located in the Mesilla Valley.

2 **Q. All right. How many acres did he farm?**

3 A. We rented -- had a lot of rented ground so
4 probably varied from 300 to 600 acres, depending on
5 the year and the crops -- or the acres he had rented.

6 **Q. Okay. How long has your family been farming**
7 **in EBID?**

8 A. Oh, they've been here since the '20s, so
9 almost 90 years. Been around, we're fifth generation
10 -- or I'm -- my son is going to be fifth-generation
11 farming here in this valley.

12 **Q. So fifth generation so that goes back to your**
13 **great grandfather, did I get that right?**

14 A. Yes. It would have been my great grandfather
15 and every -- every generation after that's been
16 involved in some form of production agriculture.

17 **Q. All right. Now, did you go to college?**

18 A. Yes, I did.

19 **Q. And where did you go to college?**

20 A. I attended here in Las Cruces, New Mexico
21 State University.

22 **Q. Did you have a major?**

23 A. Yes, I did. I achieved a bachelor of science
24 in agronomy.

25 **Q. What year was that?**

1 A. I graduated 1978.

2 **Q. Now, after college, did you go back to**
3 **farming immediately or did you do something else in**
4 **the interim?**

5 A. I had a few odd jobs, different -- different
6 type jobs, but by 1980, I went -- went back to work in
7 conjunction with my father on the farm.

8 **Q. At some point in time, did you end out of**
9 **purchasing your own acres and starting your own**
10 **farming operations distinct from your dad?**

11 A. Yes. Over time, starting in the mid '90s, I
12 was able to acquire some acreage of my own and kind of
13 kept building up the operation from there.

14 **Q. In the '80s, when you were working with your**
15 **dad on his farm, I mean, was that your occupation, you**
16 **were a farmer with your father on his land?**

17 A. Yes, ma'am.

18 **Q. All right. Now, currently talking of your**
19 **own farming operations separate from your father, how**
20 **many acres do you currently own within EBID?**

21 A. Currently, up around 700 acres that I -- that
22 I own.

23 **Q. Do you additionally lease acres that you**
24 **farm?**

25 A. I do. I continue to lease acres to this day

1 in the valley.

2 **Q. About how many?**

3 A. Range there again since it's a rental
4 agreement, but we usually have between 600 to 700
5 acres a year rented.

6 **Q. All right. So currently, are you farming all**
7 **of the 700 acres that you own in addition to all of**
8 **the 6 to 700 acres that you rent?**

9 A. Yes. That's correct.

10 **Q. All right. And what types of crops are you**
11 **currently growing on those acres?**

12 A. We have kind of a mixture of crops from
13 cotton, small grains, alfalfa, corn, some vegetables,
14 and then we've added pecans to the mix.

15 **Q. What are the primary crops of those that**
16 **you're growing now?**

17 A. Probably alfalfa and -- and pecans maybe kind
18 of crept up to be more primary than it was, so
19 probably alfalfa and pecans.

20 **Q. About how many acres of alfalfa do you grow?**

21 A. This year, we had probably around 500 acres.

22 **Q. What about cotton, how many -- how many acres**
23 **of cotton are you growing?**

24 A. I had 150. 50 got hailed out, so
25 approximately a hundred at this time.

1 **Q. All right. Has the makeup of the number of**
2 **acres as applied to or compared to crops changed over**
3 **time?**

4 A. It has shifted predominantly due to markets
5 and the economics. If you can't make any money, it's
6 hard to keep doing some things so you have to adjust
7 to meet the markets and try to do the best you can.

8 **Q. When you say "economics," is it profit**
9 **driven?**

10 A. Sure. Just trying to balance inputs with
11 what you're going to get on the back end. Some of
12 these markets have been pretty low so you're limited
13 on what you're going to get. You know, depending on
14 production, you're just limited on what you can make.

15 **Q. All right. Now, you mentioned pecans. How**
16 **many acres of pecans do you currently have?**

17 A. Probably close to 300 acres total of --
18 counting everything from, you know, immatures to trees
19 that are producing.

20 **Q. Okay. And when you say "immatures," does**
21 **that mean that they're young and not producing yet?**

22 A. Yes. They -- when you plant them, they may
23 look just like a small stick, for example, and, you
24 know, it takes quite a few years to get them into
25 production.

1 **Q. When did you first start planting pecan**
2 **trees?**

3 A. I think the oldest ones that I have are
4 around 17 years old.

5 **Q. All right. And why did you start first**
6 **planting pecan trees?**

7 A. Probably at the time it definitely looked
8 like it was a viable economic option, plus my son had
9 come back to farm with me, and he showed quite a bit
10 of interest so we thought we'd give it a try.

11 **Q. Now, typically -- you mentioned these young**
12 **trees. Typically how long does it take for a pecan**
13 **tree to produce a yield once it's planted?**

14 A. I think a rule of thumb, you know, it varies
15 a little, but probably ten years to get into
16 significant production. I think it's kind of a
17 ten-year haul to get them there.

18 **Q. Okay. What's the lifespan of a pecan tree in**
19 **terms of producing a healthy yield?**

20 A. You know, they're a pretty resilient tree,
21 and they seem to be able to perform fairly well.
22 There's some in the valley that are over 70 years old
23 so, you know, maybe -- I don't know. They may go a
24 hundred years or better if they don't get diseased.
25 They seem to be pretty strong.

1 **Q.** Okay. Now, let's talk about the irrigation
2 needs for the crops that you farm, including the pecan
3 trees, but -- but first of all, is there a particular
4 irrigation season for the crops that you've described
5 to us?

6 **A.** Yes. Depending upon the type of crops,
7 you're going to have some cool-season crops and then
8 you'll have some warmer-season ones that grow just
9 like it says, some of them that are better suited for
10 cold temperatures, some for warm temperature.

11 **Q.** Well, let's talk about those cool-season
12 crops. Which crops are the cool season or winter
13 crops?

14 **A.** Typically, most of your small grains are --
15 are cool season, and then some of the vegetables, you
16 know, some onions and the lettuce are -- cabbage are
17 some more cool-season type crops that they get planted
18 in the wintertime.

19 **Q.** What's the primary type of vegetables that
20 are your winter-season vegetables?

21 **A.** On my operation, it's onions.

22 **Q.** Now, what are the typical months of the
23 irrigation season for those winter crops you just
24 described?

25 **A.** Usually from first of November around to --

1 until some time in March, you know, they do get
2 harvested maybe going into the spring into April and
3 May, but most of the irrigations occur between
4 November and March.

5 **Q. When you say most of those irrigation, can**
6 **you estimate for us about how many irrigations per**
7 **seasons that these winter or cool-season crops need?**

8 A. Again, it varies on your small grains. You
9 may be looking at four or five or six. Your
10 vegetables that are irrigated on a more frequent
11 schedule, that may get up into the -- into the 12 and
12 13, 14-type numbers because they're irrigated on a
13 little tighter schedule.

14 **Q. Okay. Now, which crops are your warm-season**
15 **crops?**

16 A. Predominantly alfalfa, corn, cotton, and, you
17 know, some of the vegetables, and then the pecans for
18 sure.

19 **Q. Okay. And similar to what we just talked**
20 **about with the cool season, what are the typical**
21 **months for an irrigation season for those warm --**
22 **warm-season crops?**

23 A. Normally as the temperature warms up here in
24 the spring in our area, you would start some kind of
25 irrigation maybe in April going in and continuing all

1 the way on until September into October. When it
2 starts to cool down again, kind of going to fade out
3 or the crop is going to end, one of the two.

4 **Q. Okay. And how many irrigations per season**
5 **does it take for those crops?**

6 A. It just depends on the crop. You know, if
7 it's a -- a perennial like an alfalfa or a pecan, so
8 to speak, that potentially can be -- they're alive for
9 12 months out of the year, you know, you may -- you
10 may have to irrigate those 12, 13, 14 times, depending
11 on temperature, rainfall factors. Some of the more
12 determinate crops like corn, for example, or cotton
13 that's going to have a life span, you know, the
14 irrigation may drop down in the 7, 8 type numbers. It
15 just depends on some factors out there.

16 **Q. You mentioned pecans. Speak about pecans**
17 **specifically, how many irrigations does it take for a**
18 **typical season of pecans or for a year?**

19 A. Oh, I -- I think any more just under the
20 circumstances and -- and depending on how the year
21 goes, but you're probably looking in the teens, 14, 15
22 times, it's not uncommon. Some of those are fairly
23 light irrigation, but, you know, it still counts as an
24 irrigation.

25 **Q. Okay. Now, are any of these crops you've**

1 **been talking about more water intensive than others?**

2 A. Yes. I think in general terms, the crops
3 that are alive for the 12 months out of the year are
4 just going to use more water because their life span
5 is all the way around the calendar so they're just
6 going to have more of a water use than a determinate
7 crop that's going to end, you know, maybe -- like a
8 corn, for example, may be like 120-day crop so there's
9 only so long that you can irrigate that.

10 **Q. Okay. Ones that are -- that are longer,**
11 **that's going to be pecans and alfalfa; is that right?**

12 A. Yes, ma'am.

13 **Q. Okay. Now, do you have occasion to fallow**
14 **lands?**

15 A. Yes. We've been doing some fallowing or --
16 or leaving ground idle with no crops planted on it and
17 no -- no irrigation here for -- for a good while in
18 our area, and we have been doing that.

19 **Q. Currently, how many of your total acreage,**
20 **including leased land, do you fallow?**

21 A. Probably this year, we were in the range of
22 around a hundred acres that was fallowed.

23 **Q. Now, has that remained consistent, say, over**
24 **the last five years?**

25 A. It kind of varies from year to year,

1 depending on -- mainly on availability of water, so it
2 may go down to 50, may go up to 150. So it kind of
3 just depends on the year.

4 **Q. And what drives the need to fallow?**

5 A. You know, most of our decisions on that has
6 been just availability or lack of water. Some of the
7 farms are -- don't have real good wells for
8 groundwater usage, and the surface water has been kind
9 of erratic here for quite a few years worth of drought
10 so we kind of just have to make adjustments.

11 **Q. So let's talk about how much the water needs**
12 **in order to supply the irrigation that you described**
13 **to us. So essentially, how -- how much do you need --**
14 **how much water is needed to irrigate the pecans per**
15 **year that you described to us?**

16 A. You know, there again, depends on your soil
17 type and some different factors, but I don't think
18 it's uncommon for some of these pecan makers to need
19 five to as high as six acre-feet depending on
20 rainfall, soil type, different temperature, different
21 factors like that.

22 **Q. What about the alfalfa?**

23 A. It's pretty similar. You know, there again,
24 having a long season, a lifespan there of quite a few
25 months, you can definitely -- typically here we cut

1 six, sometimes seven times the alfalfa, so you're
2 looking at a fairly lengthy season, so you're up there
3 close to pecans in the same category.

4 **Q. Okay. And cotton, what does that look like?**

5 A. It's probably a little less of a water user
6 than a lot of crops. It's the nature of the plant.
7 So you're probably looking at more 3-and-a-half
8 acre-feet type numbers of cotton.

9 **Q. Now, overall for your entire farm, for all of**
10 **the crops that -- that you plant and harvest in a**
11 **given year, are you able to estimate how much water**
12 **you need for -- for the full irrigation seasons?**

13 A. I think with the balance, we can probably get
14 by with the 4-and-a-half acre-feet in that range, you
15 know, some crops less, some more obviously, and kind
16 of move it around.

17 **Q. Okay. As a farmer in EBID, do you pay**
18 **assessments to the District itself?**

19 A. Yes. Our irrigation district here is a -- is
20 basically an assessment tax-based organization where
21 the majority of the funding does come from the
22 irrigated acres.

23 **Q. How -- for your farm and for your acres, how**
24 **much do you pay per acre?**

25 A. I think the current assessment rate is \$90 an

1 irrigated acre.

2 Q. Is that per year?

3 A. Yes, ma'am.

4 Q. Okay. Now, as a board member in EBID, do you
5 have an understanding of whether there's a primary
6 source of revenue to the District to enable the
7 District to operate?

8 A. Yes. You know, we're well aware of it, being
9 on the Board and being a farmer. You know, we're --
10 production acres that are irrigated out here are the
11 ones that are paying for the operations and
12 maintenance of the irrigation district so, yeah, it's
13 coming right out of our pockets for sure.

14 Q. Okay. It's farmer funded; is that right?

15 A. Yes, ma'am.

16 Q. And as a board member and to your knowledge,
17 do you know whether EBID as a district receives any
18 money from the State of New Mexico to assist in the
19 operation and the maintenance of the district
20 facilities?

21 A. Not that I'm aware of. Not -- not for those
22 categories, no.

23 Q. Okay. Let's talk about your sources of
24 irrigation water for your farming practices. What are
25 your water sources?

1 A. Our -- our area here, our irrigation
2 district, is a combination of surface and groundwater,
3 and they're used to perform the irrigations for the
4 calendar year on a crop, to produce a crop.

5 **Q. So let's talk about surface water first. Do**
6 **you, as a farmer in EBID, receive surface water from**
7 **the Rio Grande?**

8 A. Yes, I do.

9 **Q. Okay. And is there a process as a farmer for**
10 **ordering the surface water that you're going to use**
11 **for your crops?**

12 A. Yes, there is. This function is all
13 performed by the employees of the irrigation -- EBID
14 irrigation district, and basically as a -- as a
15 farmer, you're going to figure out when you need to
16 irrigate and -- and where and what -- what crops and
17 everything, and you're going to call -- they have a
18 dispatch office. You can either call it or it can be
19 done by e-mail or fax, but, you know, typically in
20 today's time, everybody does e-mail. But you're going
21 to contact them and tell them, you know, where you're
22 wanting to place this order, what kind of crop and
23 acres that you're looking at, and then some kind of a
24 delivery time that you'd be ready to receive it.
25 That's kind of -- and then from there, they're going

1 to take it and move it -- move it through the system.

2 Q. By the way, I know you mentioned to us what
3 valley your father's farm was located in, but what
4 valley is your farm in?

5 A. I'm also still in the Mesilla Valley.

6 Q. Okay. And -- and what diversion canal within
7 the EBID district infrastructure does your farm use to
8 receive its water orders that you just described?

9 A. Majority of mine is off of the Mesilla
10 diversion, but I do have a little bit off the Leasburg
11 diversion.

12 Q. Okay. Can you estimate for us how many
13 orders per irrigation season you make as a farm to
14 satisfy the needs of your crops?

15 A. You know, there again, depends on the length
16 of the season, but it kind of can run, you know, into
17 the hundreds on -- on most seasons. You know, it's
18 fairly complex, and you're ordering water several
19 times a week to try to schedule it as close to the
20 delivery as you can get.

21 Q. All right. When you do make an order for
22 water, about how long does it take between you placing
23 the order and the water arriving to your farm?

24 A. You know, EBID has made a lot of progress in
25 that trying to -- trying to smooth it out as far as

1 release from the reservoir from Project storage and
2 trying to get it down. There again, we're looking at
3 not necessarily my farm, but from Project storage to
4 some of the farmers' gate it's probably 60 miles.
5 It's a gravity system, so typically we're looking at
6 two to three days. Sometimes if it goes longer, we
7 have to switch over to groundwater to fill in the
8 gaps.

9 **Q. So when you make -- well, when you typically**
10 **make the first order for surface water of the season**
11 **and for which of your crop varieties?**

12 A. There again, it depends on availability of
13 the surface water, and that's very dependent on the
14 amount available out of storage. So we generally --
15 you know, if we have water available in April, we're
16 going to start ordering there, and if it's not
17 available until the end of May, that's when we'll
18 start ordering. As soon as it's available, we start
19 placing orders to -- to utilize the surface water.

20 **Q. Now, do you have an understanding as a farmer**
21 **in EBID as to how the water is allocated out of the**
22 **reservoir in terms of how much would be available to**
23 **your farm?**

24 A. Yes. I think there's kind of by a -- by
25 committee-type thing, and there's -- everybody looks

1 at the levels that's -- in the Project storage in the
2 reservoirs, and then from there, they determine how
3 much is available for allocation for the irrigation
4 season. And so they -- this would be the United
5 States, EBID, and El Paso District No. 1, and so once
6 they make those numbers, then we have our hydrologist,
7 Dr. King, that then makes the determination of how
8 much water basically it's going to take to get to the
9 farmer's gate, and from there, that's when they'll
10 finally make the allotment, which is a final number
11 that you know that you have available -- that they
12 think they can deliver to your ditch, you know, to
13 your gate.

14 **Q. Now, what was your allotment for your farm**
15 **for 2021?**

16 A. This calendar year, we had a 4-inch
17 allotment, which is one of the lowest on record.

18 **Q. I take it that's changed over the years?**

19 A. It -- it's been moving -- in general terms,
20 it's been -- we've been kind of on the low side since
21 early 2000s.

22 **Q. So the low side since early 2000. What's**
23 **your assessment as a farmer as to the reason for that**
24 **change in the early 2000s?**

25 A. You know, predominantly, the whole western

1 side of the United States has been in some form of a
2 drought, which the drought means less snowfall, less
3 rainfall. It means less runoff, which means less
4 water in the reservoir. So that's been kind of a
5 trend here, which we're hoping that at any time, we
6 can turn around.

7 **Q. The drought that you described that started**
8 **in the early 2000, has that continued through today?**

9 A. Unfortunately, yes.

10 **Q. Okay. The allotment that you described to us**
11 **and you said specifically 4 inches for 2021, is that**
12 **essentially a cap on the surface water that's**
13 **available to your farm for 2021?**

14 A. Well, that's going to be a pro rata cap.
15 There is -- there is opportunity to maybe move that
16 water around within your operation or transfer some
17 water in that you could put a little more surface
18 water on some fields, maybe less than others, but,
19 yes, that would be considered a cap on the overall
20 acreages.

21 **Q. Okay. So let's talk a little about the**
22 **groundwater that you mentioned. Do you have**
23 **groundwater wells on your property?**

24 A. Yes, I do.

25 **Q. Okay. And how many groundwater wells do you**

1 **have on your property now for irrigation purposes?**

2 A. On the land that I own, probably we have 12
3 today.

4 **Q. And are you using all of those?**

5 A. Yes, ma'am.

6 **Q. Okay. Now, has the amount or the number of**
7 **groundwater wells for irrigation purposes on your farm**
8 **changed since you've started farming?**

9 A. All the land that I currently have had an
10 irrigation well on it so if that's changed, it's been
11 in the form of a replacement. We have drilled some, I
12 guess, supplemental wells to some wells that had a lot
13 of age, and we were afraid they may not -- they may
14 fail so to hedge that, we may have drilled one or two
15 wells to try to combat that situation. But they're
16 all replacement to wells that were previously on the
17 properties in the -- from the '50s.

18 **Q. Okay. So -- so the original wells were all**
19 **from the '50s. Is -- did I understand that correctly?**

20 A. On -- on the lands that I have, I think
21 they're all from the '50s. I don't think any prior to
22 that.

23 **Q. Okay. But you have replaced some of those**
24 **wells?**

25 A. Yes, ma'am.

1 **Q. Okay. Approximately how many of the wells on**
2 **your farm have you had to replace?**

3 A. Probably in the neighborhood of six wells out
4 of the group that's -- you know, from the '50s to now
5 is a pretty good time, so probably about six of those
6 wells have had to be replaced.

7 **Q. Now, when you replaced these six wells, do**
8 **you know whether or not the wells were drilled deeper**
9 **than they were originally?**

10 A. Everything we drilled since the original ones
11 have been -- have been deeper, some a little deeper,
12 some a little bit more, but nothing extreme. But, you
13 know, a lot of the early wells were fairly shallow so
14 we've gone a little deeper just to try to hedge
15 against anything in the future.

16 **Q. And what do you mean by hedge against the**
17 **future?**

18 A. Well, concerns -- I think concerns over
19 pumping and the water table, you know, dropping a
20 little bit deeper or lower. So, you know, it just
21 seemed prudent to go a little bit deeper on the newer
22 wells than to -- you know, to stay with the number
23 that was there from the '50s.

24 **Q. Okay. And when you said -- I think you said**
25 **dropping on the water table. What did you mean by**

1 **that?**

2 A. The static water table in the area, there's a
3 -- it kind of fluctuates from year to year. Some of
4 the areas in the valley are a little different, but
5 there's a general number where the water -- basically
6 you're going to have water a certain depth in the
7 ground.

8 Q. And as a farmer within EBID, do you have an
9 understanding that over the course of the years that
10 you've been farming since the '80s, that the water
11 table has dropped?

12 A. There again, it fluctuates. When we have an
13 abundance of surface water, it actually goes up, and
14 it can be excessive. And so there's -- that's an
15 issue that most don't have that luxury. Usually when
16 it drops, it just keeps dropping. But here if you
17 have an extra amount of surface water delivered over
18 the course of 12 months or 6 months or whatever, it
19 actually can go up to the point where it could be
20 harmful to crops. If it gets too high, you know, it
21 can get up into the root system of some of these
22 crops.

23 Q. In your experience farming, when is the last
24 time that you experienced that phenomenon with the
25 surface water delivery so high that there was a risk

1 of -- of the root systems being affected?

2 A. Actually, I experienced that pretty much all
3 the way through from the 1980 to at least 2000.
4 There's 20 years there that that pretty much was the
5 case.

6 Q. And that period from 1980 to 2000, that was
7 not a drought period, correct?

8 A. No, ma'am.

9 Q. Okay. Now, is there any limitation on the
10 amount of groundwater that you can pump for irrigation
11 on your farm?

12 A. Yes, ma'am. They had adjudication decision
13 made, and I think it was in 2011, where they went to a
14 4-and-a-half acre-foot cap on the amount of water that
15 you could -- that you could pump. It's kind of
16 strange because it's a combined number, but that's
17 kind of a cap on the pumping for the groundwater.

18 Q. When you said it's a combined number, what
19 did you mean?

20 A. Well, the way the ruling came down, it's
21 combined between surface and ground. So if the
22 4-and-a-half is the total, if you get 2 acre-feet of
23 surface, you can only pump 2-and-a-half acre-feet.

24 Q. Okay. And when you said at approximately
25 2011, what happened then that -- that mandated this

1 **change?**

2 A. The state and the adjudication process here,
3 they had a Stream System 101, and that's where this
4 all was kind of determined in the courts -- in
5 adjudication court, and that was kind of the outcome
6 was those -- that number on a cap that affected
7 groundwater specifically.

8 **Q. Now, what happened prior to 2011, was there**
9 **any cap?**

10 A. There was no cap. And, of course, I have
11 frustration as -- as a producer that our only -- all
12 we can do with the water surface and ground at this
13 point is to farm. So the -- the cap seemed a little
14 arbitrary to me that you're just -- they have nowhere
15 to go with the water. No one's going to just pump it
16 out on the ground for fun so it costs too much so --
17 but anyway, that -- that's kind of how that all came
18 about in that time period.

19 **Q. Okay. But if I understand you correctly**
20 **prior to 2011, you as a farmer did not have any**
21 **limitation on the amount of groundwater you could pump**
22 **for your crops, right?**

23 A. No, ma'am. You were able to pump what you
24 needed to farm, and to some extent, that's still the
25 case today unless you go over.

1 **Q. Okay. Now, do you have a preference**
2 **regarding the available water resources for your crops**
3 **for your irrigation needs?**

4 A. Well, growing up and farming in this area,
5 the preference is definitely the surface water. In
6 general, it's a better source of water, a little more
7 pure, less, you know, salt content in it, and then
8 just a better source of water. And then plus you're
9 already paying your assessment for that water, so it's
10 just a win-win deal to be able to utilize that surface
11 water.

12 **Q. Now, you mentioned salt in the water. What**
13 **is your understanding, if you do have an**
14 **understanding, of what the salt content is for the**
15 **surface water that's available for your irrigation**
16 **needs?**

17 A. Any time water hits the surface of the earth
18 here or the ground, it's going to go in there and
19 interact with the minerals that are in different areas
20 in the ground, and sometimes it just comes out a
21 little bit -- it typically is going to come out in a
22 more salty form, but I guess it really comes out
23 pretty good. But in general, it's going to come out
24 with more salt in it, and salts are, for the most
25 part, just detrimental to crop production.

1 **Q. Do you have, as a -- as a farmer in EBID,**
2 **have you experienced a difference in the salt content**
3 **as applied to your crops between surface water and**
4 **groundwater?**

5 A. Yes. You know, when you use the groundwater
6 in the different wells have a different salt content
7 coming out of those wells, and it -- and it varies up
8 and down the valley, but it's -- in general, it's
9 going to be just higher than the -- than the surface
10 water.

11 **Q. Now, how do you know what the -- the -- the**
12 **salt contents are in the groundwater in your**
13 **irrigation wells?**

14 A. You know, we've taken water samples over
15 time. We've kind of sampled these wells as they're
16 pumping, send those samples off to a lab and try to
17 get a -- get a feel for the general makeup and salt
18 content to see, you know, sometimes there's nothing
19 you can do about it, but maybe there's opportunities
20 to blend it or combine that water with other -- other
21 wells or with surface water to try to get the best
22 results you can get.

23 **Q. Now, how often do you test your wells?**

24 A. Usually we start out maybe test them a couple
25 of years in a row, kind of determine a baseline

1 number, and then from there, you know, maybe on an
2 as-needed basis, depending on circumstances. Could be
3 every fifth year, sixth year, just trying to keep an
4 idea of what you're pumping.

5 **Q. So in terms of the baseline number that you**
6 **just spoke about, how do you -- what do you use to**
7 **measure whether or not a salt level is acceptable to**
8 **you as a farmer?**

9 A. Normally, you know, whenever you send it off
10 to a lab, there's going to be quite a few different
11 numbers and parameters that are sent back to you.
12 Kind of a common number that everybody references is
13 TDS, total dissolved salts, and that number is
14 reported usually in parts per million, and the -- kind
15 of, you know, anything around a thousand or less is --
16 is not bad. When you start going over a thousand,
17 you're probably looking at having some problems.

18 **Q. If you know, what's the typical or average**
19 **TDS level for the irrigation wells that are on your**
20 **property?**

21 A. I think an average for us is probably around
22 that thousand number, thousand parts per million.

23 **Q. And do you know by comparison what the**
24 **surface water is that's available to your farm for**
25 **irrigation?**

1 A. It's more in the range of -- of 5 to 600.

2 **Q. Okay. Does the New Mexico Office of State**
3 **Engineer require you as a farmer in EBID to test the**
4 **irrigation water in your wells?**

5 A. No, they do not.

6 **Q. Do you have any management techniques to deal**
7 **with salinity from groundwater?**

8 A. I think, you know, like I just mentioned,
9 trying to, you know, maybe combine water, utilize
10 surface water when available, and then, you know,
11 worst comes to worse, you can apply some soil
12 amenities to try to combat the salinity so you just
13 try to manage it the best you can.

14 **Q. Have you heard of the term conjunctive**
15 **management?**

16 A. Yes, I have.

17 **Q. And what is your understanding of that term?**

18 A. I would understand it to mean that you are
19 going to try to utilize water sources, in our case
20 ground and surface water sources, combined in the best
21 possible manner to achieve, you know, a profitable
22 crop in a calendar year.

23 **Q. Now, does your understanding of -- of that**
24 **management term mean optimizing the use of one of**
25 **those types of water over another?**

1 A. Well, I think they both have the role. Like
2 we've discussed earlier, the surface water definitely
3 is preferred just because of a quality and volume and
4 different factors, but at the same time, groundwater
5 has its role, especially now that we've got most of
6 our wells up and running in good shape. There's a
7 timing issue tied to release from the reservoir to
8 your -- to your farm gate, you know, and there's --
9 some crops are very sensitive to timing, especially
10 like a vegetable crop, so that's -- you know,
11 groundwater has some role, and that is in a timing
12 factor, because it's -- it's almost impossible to get
13 surface water delivered, you know, instantaneously or
14 24 hours or something. It's just -- the nature of the
15 system is hard to do that.

16 **Q. Now, have you always had to conjunctively use**
17 **surface water and groundwater for the irrigation needs**
18 **on your farm or has that changed?**

19 A. Historically we have. The valleys have these
20 wells, like we've talked about since predominantly
21 from the '50s, so they've been used, you know, maybe
22 for the cool-season crops in the winter. They've been
23 used as a timing, you know, if you have one up and
24 running for a timing issue, you couldn't get your
25 surface water, you may start pumping and get, you

1 know, maybe half a day into it with the pump and then
2 the surface water rise and continues on. So they've
3 been used conjunctively for a good while.

4 Q. Okay. Now, since you started farming in the
5 '80s, have you always conjunctively used, as you have
6 described, surface water and groundwater components
7 for the irrigation needs of your farm?

8 A. Yes, ma'am.

9 Q. Okay. Now, when the drought started that you
10 described earlier in the early 2000s time frame, did
11 you have to start using more groundwater for your
12 irrigation needs?

13 A. Yes. We had to ramp up our use of the
14 groundwater just, you know, to stay in business
15 because, otherwise, you didn't have enough water to
16 farm.

17 Q. So this process of utilizing both groundwater
18 and surface water to cover your irrigation needs, has
19 that process always been able to adequately cover the
20 irrigation for your crops through the years?

21 A. Yes. Use of the groundwater, in our case a
22 supplemental source of water between that, combine
23 that with the surface water availability, has been
24 able to -- for farmers here to stay in business for
25 almost a hundred years now, and so they've -- ever

1 since they built the -- built the dam, which leveled
2 out the delivery of the surface water, they've been
3 able to manage those two components and do a pretty
4 good job. Everybody has been able to produce a crop
5 and stay in business, it looks like.

6 Q. Okay. Now, are you familiar with the -- with
7 the 2008 Operating Agreement? If I say that, do you
8 know what I mean?

9 A. Yes, ma'am.

10 Q. Okay. Were you a board member at the time
11 that the 2008 Operating Agreement was adopted?

12 A. Yes, I was.

13 Q. Okay. Now, were you involved in any way
14 whatsoever in the negotiations or mediations that
15 culminated in the operating agreement?

16 A. No. I was not on that. We kind of had a
17 committee of board members that were in that process,
18 and I was not one of those.

19 Q. Okay. Now, based on what you've told us
20 already this afternoon, I mean, obviously you were
21 already a farmer in EBID prior to the implementation
22 of the 2008 Operating Agreement, right?

23 A. Yes.

24 Q. Okay. Now, from your perspective as a farmer
25 in EBID, did the 2008 Operating Agreement change your

1 particular experience with groundwater dependency for
2 irrigation as it applies to your farm?

3 A. As a farmer, I'd have to say no, because we
4 were already probably five or six years into
5 significant drought. We'd already geared up and were
6 using groundwater to offset our lack of surface water,
7 and even though the operating agreement, there was a
8 shift in the surface water supply to EP No. 1, I
9 couldn't quantify -- to this day, I couldn't quantify
10 the amount that you were shifting so you were already
11 pumping and so as a farmer, at least for me, it was
12 just, you know, part of the business. You were going
13 to have to pump regardless to some level so it wasn't
14 -- I couldn't -- I couldn't really tell you as a
15 farmer, no.

16 Q. Okay. Well, did the implementation of the
17 operating agreement allow you as a farmer to keep
18 pumping the groundwater that you had come to rely upon
19 for your crop irrigation needs?

20 A. I'd have to say yes. I mean, we're still
21 pumping to this -- to this day, and -- and it had, you
22 know, some success keeping crops going and -- and
23 dealing with the situation at hand, mainly the
24 drought. So -- so I'd have to say yes, we haven't --
25 we haven't had to shut off. We've had the

1 limitations, as we've talked about the 4-and-a-half
2 acre-feet type number, but we haven't been, you know,
3 told we cannot pump so I'd have to say that it -- it
4 did allow it.

5 **Q. All right. So as a farmer in EBID, are you**
6 **satisfied with the operating agreement?**

7 A. Oh, as a farmer, you know, you just -- you're
8 probably not a hundred percent satisfied, but overall,
9 I'd have to say it probably the lesser of other evils,
10 which the other evil being where you were terminated
11 or cut off on your -- on your groundwater access.

12 **Q. Now, as an EBID board member, does that**
13 **opinion change at all?**

14 A. I think as a board member, maybe knowing more
15 of the details and -- and all the negotiations and
16 effort that went into it and the reasoning why the --
17 the operating agreement was entered into, probably
18 relatively satisfied. Obviously, I think everybody
19 involved on the New Mexico side is probably looking to
20 -- you know, maybe there's some minor adjustments that
21 could be made, but overall, I'd have to say as a board
22 member, I think that was the best that could be done
23 through the negotiations at that time.

24 **Q. Going back to your groundwater wells for a**
25 **minute, are the groundwater wells on your property**

1 metered?

2 A. They're currently metered, yes, ma'am.

3 Q. Have they always been metered?

4 A. No, ma'am, they have not.

5 Q. And when did you start metering?

6 A. Best I can recall, around 2006, the Office of
7 the State Engineer implemented a metering order to
8 require all irrigation wells in our -- in our valley
9 to be metered.

10 Q. Prior to 2006 at the time of the Office of
11 the State Engineer issuing the metering order you just
12 told us about, were any of the wells within EBID as a
13 district required to be metered by the State of New
14 Mexico?

15 A. Not to my knowledge.

16 Q. Okay. Now, you -- you were on the Board at
17 the time of the 2006 metering order from the State, if
18 I understood your testimony correctly?

19 A. Yes, ma'am.

20 Q. Okay. So do you recall whether or not as --
21 as a board member that there were any concerns within
22 EBID of problems or anything with the 2006 metering
23 order by the State of New Mexico?

24 A. I think the biggest concern was just the
25 logistics and then -- and then the ultimate cost of

1 getting -- of having meters installed on all the --
2 all the irrigation wells. There's a substantial
3 number of wells and so it's a fairly large number of
4 expenses being put -- the burden has been put on to
5 the owners of the wells to get that done so that was a
6 definite concern.

7 **Q. So were there any other concerns, other than**
8 **this financial and logistic issue of getting meters**
9 **put on the wells within the district?**

10 A. There might have been some concerns, but as a
11 board member, I think that was the main -- that was
12 the main concern was the financial burden.

13 **Q. Are you able to estimate for us approximately**
14 **how many farmer irrigation wells within EBID needed to**
15 **have meters put on them as a result of the 2006 order?**

16 A. Oh, probably at that time, I would -- I would
17 guesstimate 2,500 plus.

18 **Q. Okay. And if you know, approximately how**
19 **much, in terms of money, per well was the -- the**
20 **forecasted cost to put a meter on a well?**

21 A. Probably at that -- that time, it's been, you
22 know, quite a few years back, probably the low-end
23 number was around \$900 just to purchase the meter.

24 **Q. And do you have any understanding as to**
25 **whether EBID, as a district, asked the State of New**

1 Mexico for any assistance or funding to help put these
2 meters on the farmers' wells in response to that
3 order?

4 A. I know we had discussion as a board about it.
5 I do not remember if there was any formal request or
6 documentation or anything of that nature that went out
7 to the State, but we had board discussion.

8 Q. Let me ask that another way. Do you have any
9 knowledge of whether or not the State of New Mexico
10 ever funded or assisted farmers financially with the
11 installation of these meters?

12 A. That, I -- no, I don't.

13 Q. Okay. Now, did you ultimately put these
14 meters on the wells in your farm?

15 A. Yes, I did.

16 Q. Okay. Can you describe for us what -- what
17 type of meter you put on the wells at your farm?

18 A. The meters I installed at the time were a
19 mechanical meter. A trade name or common name was
20 McCrometer, that's a brand name, and that was a style
21 of meter that was available at that time.

22 Q. Was that the style of meter that you
23 described as costing around \$900?

24 A. Yes, ma'am.

25 Q. Okay. Now, is that -- is that a

1 **realtime-read meter or not?**

2 A. It's got a mechanical readout just like
3 looking at a dial or a gage, and it has to manually --
4 a person has to go read it or take a picture of it or
5 something. It has to be physically looked at to get
6 the reading.

7 Q. Okay. Now, does the State of New Mexico or
8 more specifically the Office of State Engineer with
9 New Mexico ever come out to your property to inspect
10 your meter?

11 A. Yes, they do.

12 Q. Okay. Do they do this on any regular basis
13 that you've been able to observe?

14 A. Not that I -- not a regular basis. It seems
15 to be -- they go out -- it appears they go out daily
16 and make rounds, and I guess they see what they see.

17 Q. In any given calendar year, how often do you
18 see a representative from the New Mexico State --
19 Office of State Engineering come to your property to
20 look at your wells or your meters?

21 A. You know, maybe a few times a year. I really
22 don't -- you know, you see their trucks, see their
23 people out and about, but certain wells maybe once a
24 year, some wells maybe more often. I don't know.
25 Maybe twice. It just kind of seems random a little.

1 **Q. Okay. Is there any schedule setup between**
2 **you and the Office of the State Engineer for that**
3 **process to happen?**

4 A. There hasn't been any kind of pre-scheduled
5 meeting or get together or whatever. It seems to be
6 they go out and check them on their own under their
7 own time and discretion.

8 **Q. Okay. Do you have any understanding of what**
9 **a representative from the New Mexico Office of State**
10 **Engineer does when they show up on your property**
11 **randomly, as you stated, to look at your wells and**
12 **meters?**

13 A. Based on what it appears, you know, probably
14 number one, look to see if the well has a meter, if it
15 has a meter, maybe physically look and try to see if
16 it's functioning. If the well happens to be operating
17 and pumping water at that time, they may or may not
18 perform some kind of calibration test, and if they do,
19 maybe they leave a note -- kind of a written note on
20 your meter or some part of the pump area right there.
21 Obviously the well has been to be running to get some
22 kind of calibration.

23 **Q. Okay. So in the random visit that an OSE**
24 **agent would make to your property, as you describe, if**
25 **the well isn't running, they can't test the**

1 calibration; is that right?

2 A. I don't see how because you wouldn't know how
3 much water was pumping.

4 Q. Okay. And no arrangements are made or have
5 been made in your experience as a farmer in EBID
6 between you and the Office of State Engineer to make
7 sure a well is running before they come out?

8 A. No.

9 Q. Now, in your experience, does the
10 representative from the Office of State Engineer do
11 anything if they come out and find a problem with the
12 calibration of your well -- of your meter rather?

13 A. Yes. If they find some kind of problem with
14 either the meter itself or the calibration, they will
15 leave a note and ask you to call them to work -- to
16 work it out or get some more information on what they
17 found. So they leave, like, a little tag tied on the
18 well that indicates, you know, the problem that they
19 discovered, and they'll have a number there for you to
20 call to get further information.

21 Q. Okay. What can you as a farmer do to correct
22 a calibration issue if you get a red tag that you
23 described?

24 A. You know, if it's something on those style of
25 meters like a McCrometer that's just a mechanical

1 meter, you have to take it off and either replace it
2 or send it off and have it redone at, like, a
3 factory-type representative would have to kind of redo
4 it and recalibrate it and everything. So have to have
5 some repairs or replacement.

6 **Q. So if there is a calibration issue like you**
7 **just described, do you have any idea of what the**
8 **approximate cost it is to send it off like you said?**

9 A. Normally if you've got much problem at all,
10 you can spend 3 to \$500 getting the meter fixed.

11 **Q. Okay. Does the Office of the State Engineer**
12 **for New Mexico offer you as a farmer any help with**
13 **that monetarily?**

14 A. They have not.

15 **Q. Have you been red tagged?**

16 A. Yes, I have.

17 **Q. Okay.**

18 A. Several times.

19 **Q. Have you been red tagged in the past year,**
20 **and if so, what was the issue, if you know?**

21 A. Seems like this past calendar year, less red
22 tags. The previous 2020 calendar year, we had quite a
23 few tags that our meters were over reporting. In
24 other words, if it was registering 2,000 gallons a
25 minute on the meter, their calibration was maybe at

1 1,800, something of that nature. So there was more of
2 that over -- the meter installed was over reporting
3 than what was actually being pumped.

4 **Q. Okay.**

5 A. You can go either way. You know, you would
6 assume typically it would be that your meter was
7 registering less gallons than being pumped, but you
8 never know.

9 **Q. All right. Now, in your experience, is there**
10 **a better or more sophisticated way to monitor the**
11 **wells other than the McCrometer that you described to**
12 **us?**

13 A. Yes. There again, with having experience on
14 the EBID board, when the order came down, the Board
15 tried to be proactive and address the situation on
16 behalf of both the -- the District and the farmers and
17 to some extent the State, they did some -- you know,
18 quite a bit of work trying to develop different type
19 of metering devices that could also be -- the
20 information could be transmitted on a realtime basis,
21 and they've done this over the years fairly
22 successfully, and so I've had some frustration just in
23 the overall cost and the money that the State could
24 not help on this situation of getting these
25 telemetry-type meters put out there with some assist

1 -- you're talking about a lot of money. I think
2 today's number, the wells could be up to 3,500, so
3 when you multiply that times -- these more
4 sophisticated meter, you're probably more up around
5 2,500 or \$3,000, so you can see when you multiply it
6 out, that's a substantial number, but you get a better
7 reading, and it would be more realtime. You wouldn't
8 have the lag on reporting and all this stuff. And I
9 don't know what they spend on personnel going around
10 and physically checking everything, and you can
11 eliminate some of the personnel by having this type
12 deal. So I personally think that's a better way to
13 approach it, but that may just be my opinion.

14 **Q. You said that's approximately \$3,000 or**
15 **\$3,500 per well?**

16 A. Yeah. I think if you were putting more of
17 these on and had a volume of scale, you might be able
18 to buy some of the components cheaper, but it is a lot
19 more advanced system, not only the measurement
20 portion, but then you have to have some equipment
21 there for transmitting that information, you know,
22 through -- throughout the area to whomever it can go
23 to the -- it can go -- you know, the cool thing is, it
24 can go to the farmer owner of the well, it can go to
25 the District, it can definitely go to the state

1 engineer's office, so it's a pretty interesting way to
2 do business.

3 Q. As an EBID board member or a farmer, do you
4 have any knowledge as to whether or not the State of
5 New Mexico has ever offered to financially assist the
6 farmers in installing this more sophisticated method
7 of metering the wells?

8 A. Not -- not to my knowledge, no.

9 Q. What about EBID as a district, do they have
10 any program or setup to assist the farmers?

11 A. They do. They're the ones that have -- we
12 have employees with the District that they can go out,
13 and they will -- of course, the individual owner of
14 the well has to agree to pay for it, but they will
15 come out, that includes the installation and setup and
16 calibration and then some period of maintenance in the
17 years going forward. So the District has been
18 proactive in that -- in that regard, and they have --
19 I don't know the exact number, but they do have a
20 pretty good number of those type meters out in the --
21 in the district.

22 Q. You mentioned earlier when we were talking
23 about the assessments that EBID is -- is a
24 farmer-funded district, do you recall that testimony?

25 A. Yes, ma'am.

1 Q. Okay. So is it correct that even if EBID
2 could and would assist its farmers by installing these
3 more sophisticated metering gadgets, that ultimately
4 the farmers would pay through assessments anyway?

5 A. Yeah. If you went out of on area-wide basis,
6 you would just have to raise the assessment to
7 accommodate those extra charges to install those type
8 of meters. And once again, it's kind of putting a lot
9 of burden on the -- on the -- on farmers and owners of
10 these wells, and they already have a lot of expense
11 tied to just trying to keep them up and running
12 without having to add that to the list of expenses.

13 Q. All right. Now, as an EBID board member and
14 a farmer within the district, did the New Mexico
15 Office of State Engineer ever monitor or regulate the
16 groundwater wells on your property before the
17 implementation of the 2006 metering order?

18 A. No, ma'am.

19 Q. All right. Let's widen that question. To
20 the best of your knowledge, as an EBID board member
21 and also a farmer in the District, do you have any
22 knowledge of whether the State of New Mexico or the
23 Office of State Engineer ever monitored the amount of
24 groundwater pumped by irrigation wells within the
25 entire district or even in southern New Mexico prior

1 to 2006?

2 A. Not to my knowledge.

3 Q. All right. Now, regarding the meters we
4 discussed, who's responsible for reading those?

5 A. Currently, we're on a -- I guess you'd call
6 it an honor system, so the owner or the operator of
7 the well is responsible for reading those meters.

8 Q. Okay.

9 MS. BARFIELD: I have no further
10 questions at this time.

11 MR. OGAZ: You're on mute, Your Honor.

12 JUDGE MELLOY: Ms. Coleman, do you have
13 any questions?

14 MS. COLEMAN: No questions for this
15 witness, Your Honor.

16 JUDGE MELLOY: Okay. Mr. Ogaz?

17 MR. OGAZ: Thank you, Your Honor.

18 CROSS-EXAMINATION

19 BY MR. OGAZ:

20 Q. Good afternoon, Mr. Sloan.

21 A. How are you?

22 Q. I'm doing well. Thank you. I understand
23 from your testimony today that you've been farming for
24 over 40 years; is that correct?

25 A. That's correct.

1 Q. And your farming operation is south of Las
2 Cruces?

3 A. Yes, sir.

4 Q. And over the last 45 years, you said you
5 farmed a variety of crops; is that correct?

6 A. That's correct.

7 Q. And you said that the -- the crops you grow
8 tends to shift each year?

9 A. It has shifted over time, maybe not -- maybe
10 not necessarily year to year, but over time, it has
11 shifted.

12 Q. Do you need permission from anyone to change
13 those crops?

14 A. Thank goodness, no.

15 Q. So you get to choose the crops that you want
16 to grow each year?

17 A. Yes.

18 Q. Okay. And do you use a combination of
19 surface and groundwater to irrigate?

20 A. Yes, sir.

21 Q. And do you use flood irrigation?

22 A. Predominantly flood, yes.

23 Q. Have you recently installed any drip
24 irrigation?

25 A. We've been utilizing drip irrigation

1 specifically on onions for about the last seven years.

2 Q. And did you need any permission to -- to
3 switch to drip irrigation?

4 A. No, we did not.

5 Q. So you get to choose your own method to
6 irrigate; is that correct?

7 A. That's correct.

8 Q. Earlier, you mentioned that your father also
9 farmed in EBID?

10 A. That's correct.

11 Q. And what crops did you say he grew?

12 A. Historically, he grew most of your row crops
13 from grains, alfalfa, cotton, corn, and then some
14 vegetables.

15 Q. Is that similar to the same crops you grow
16 today?

17 A. It'd be pretty similar, other than we've
18 added pecans.

19 Q. Did your father use a combination of surface
20 and groundwater to irrigate?

21 A. Yes, he did.

22 Q. Do you know how many groundwater wells your
23 father had?

24 A. He had less acres. He probably had six or
25 seven wells. Can't remember exactly.

1 **Q. And do you know how old those groundwater**
2 **wells were?**

3 A. Best of my knowledge, they were probably
4 drilled in the '50s.

5 **Q. And did your father drill those wells?**

6 A. He -- he probably was involved in having them
7 drilled at that time because he was -- he was farming,
8 him or my grandfather, one of the two.

9 **Q. So did your grandfather also farm in EBID?**

10 A. Yes, sir.

11 **Q. Okay. And what crops did he grow?**

12 A. I think something similar, you know, corn,
13 cotton, alfalfas, grains, just kind of a combination.

14 **Q. And did your grandfather also irrigate with a**
15 **combination of surface and groundwater?**

16 A. Yes, he did.

17 **Q. Earlier you mentioned that you grow some**
18 **crops or you irrigate some crops all yearlong. Do you**
19 **irrigate your pecans all yearlong?**

20 A. No, but they do get irrigated longer than
21 most just because they are a perennial crop so, you
22 know, they get -- we do not irrigate through the
23 winter months.

24 **Q. Do you irrigate your alfalfa all yearlong?**

25 A. No, same way. Once the freeze comes, we do

1 not irrigate the alfalfa.

2 Q. Okay. Do you get your surface water from
3 EBID?

4 A. Yes, sir.

5 Q. How much is a full allotment from EBID?

6 A. 3 acre-feet, 36 inches.

7 Q. And you said earlier that you were allotted 4
8 inches of surface water this year?

9 A. That's correct.

10 Q. Did you use all 4 inches of your surface
11 water this year?

12 A. Yes, I did. And I think I actually bought a
13 little extra from some neighbors.

14 Q. And so is 4 inches enough to grow any of the
15 crops you mentioned earlier?

16 A. It is not.

17 Q. So did you have to use groundwater to
18 supplement your irrigation?

19 A. Yes, sir.

20 Q. And would 4 inches have been enough water to
21 grow any of those crops when your father was farming
22 in EBID?

23 A. No, it would not.

24 Q. So did your father also use groundwater to
25 supplement his surface water?

1 A. Yes, he did.

2 Q. Mr. Sloan, earlier, you said you have about
3 12 wells; is that correct?

4 A. I think that's -- that's correct.

5 Q. You said you have to have a permit to use
6 groundwater in New Mexico?

7 A. Well, currently to drill -- to drill a well,
8 you have to have a permit. I don't know if that's the
9 same answer as your question.

10 Q. Do you -- when did you first have a
11 groundwater well permit?

12 A. Me personally, probably early 2000s.

13 Q. And did the New Mexico State Engineer Office
14 -- does the New Mexico State Engineer's Office enforce
15 how much groundwater you can pump according to your
16 water right permit?

17 A. Yes. Currently, they do.

18 Q. And do you know how much groundwater you can
19 pump each year?

20 A. The cap is at 4-and-a-half acre-feet.

21 Q. Do you know how much that would be total for
22 all of your acreage?

23 A. I'd have to get a calculator.

24 Q. Earlier, you said you have meters on all your
25 wells; is that correct?

1 A. That is correct.

2 **Q. All right. How often do you report your**
3 **meter readings to the New Mexico State Engineer?**

4 A. They need to be reported on a quarterly basis
5 so every -- every three months.

6 **Q. And if you fail to report your meter records**
7 **to the OSE on time, what happens?**

8 A. Oh, you start getting nasty -- nasty mail
9 letters telling you you're in violation.

10 **Q. Do you believe that the -- the meters keep**
11 **farmers from overusing groundwater?**

12 A. I can't -- I can't answer that. I think they
13 -- I think most of the farmers are trying to do the
14 best they can, and they use what they need to make a
15 crop, but I don't know if the meters are that big a
16 factor or not. I can't answer that.

17 **Q. As an EBID board member, you authorized EBID**
18 **to sue the Office of the State Engineer to halt the**
19 **meter order; is that correct?**

20 **MS. BARFIELD:** Objection; foundation.

21 **JUDGE MELLOY:** I'll overrule that. Go
22 ahead.

23 A. I don't remember the particulars at this
24 time.

25 **Q. (BY MR. OGAZ) Mr. Sloan, does the OSE track**

1 how close you are to your groundwater limit?

2 A. Yes, they do.

3 Q. And have you ever used more water than you
4 were allowed to use under your permit?

5 A. Yes, I have.

6 Q. And that's called an over diversion, correct?

7 A. Correct.

8 Q. Did the Office of the State Engineer inform
9 you of your over diversion?

10 A. Yes, they did.

11 Q. And how did you resolve the over diversion
12 with the State Engineer's Office?

13 A. On some, we were able to resolve it. Other
14 ones, we just -- we just went in and talked to Ryan
15 Serrano here, and we kind of worked it out. They do
16 have a policy of a combined -- where they let you
17 combine wells into a lump sum, and you can kind of
18 mitigate some of this over diversion based on that.

19 Q. So did you have to reduce your groundwater
20 use in -- from your other wells in order to compensate
21 for your over diversion?

22 A. Yeah. We just tried to work it out the best
23 we could.

24 Q. Okay. Earlier, you mentioned you used
25 multiple groundwater wells. When did you last drill a

1 **groundwater well?**

2 A. Good question. Can't remember if it was
3 either late in 2020 or early in 2021.

4 **Q. And do you recall how much it cost you to**
5 **drill that well?**

6 A. I can't -- off the top of my head, I can't
7 remember, but I can throw a ballpark number if you
8 want it.

9 **Q. Yes, sir.**

10 A. I think those particular -- that well was
11 probably close to \$80,000.

12 **Q. Okay. And do your wells run on gas or**
13 **electricity?**

14 A. We have a combination, some gas, some
15 electric.

16 **Q. So the more you pump, the more you pay for**
17 **gas and electricity each year?**

18 A. Yes, sir.

19 **Q. Do you know how much you paid in gas and**
20 **electricity for your pumps this year?**

21 A. I do not.

22 **Q. Do you know if you're paying more for gas and**
23 **electricity for your pumps now than you were in 2005?**

24 A. I'm sure we are. Everything's gone up.

25 **Q. And you also have to pay for maintenance on**

1 those wells, too, correct?

2 A. Yes, sir.

3 Q. And you also test -- you also have to send
4 your -- you also do testing on your wells for
5 salinity, correct?

6 A. We do some, yes.

7 Q. And does your groundwater contain more
8 salinity than your surface water?

9 A. In general, yes.

10 Q. So the more groundwater you use, the more
11 salinity you are applying to your crops?

12 A. In general terms, yes.

13 Q. Do you have to pay for surface or other soil
14 amenities to reduce the impact of the salinity on your
15 crops?

16 A. In some circumstances, we do.

17 Q. So the cost of having to rely on groundwater
18 starts to add up, correct?

19 A. It does.

20 Q. But without the groundwater, would you be
21 able to continue farming?

22 A. I would not.

23 Q. So do you have to factor in the cost of
24 groundwater pumping into your farming decisions?

25 A. It's definitely a budget item.

1 Q. And before you plant, do you also have to
2 consider the amount of surface water you received?

3 A. It comes into play so that's some information
4 you've got to factor in.

5 Q. Does the amount of surface water you receive
6 impact the amount of acres you farm in a year?

7 A. It has, yes.

8 Q. Does it impact the crops you grow?

9 A. Also this -- that's correct.

10 Q. So if you receive less surface water, do you
11 fallow more acreage?

12 A. We have since we've been receiving less
13 surface, yes, that's correct.

14 Q. You said you fallowed about a hundred acres
15 this year; is that correct?

16 A. That's -- that's an approximate number, yes.

17 Q. And in years that you have to pump more
18 groundwater, does fallowing help you stay in
19 compliance with your groundwater permit?

20 A. It plays into the equation, yes, sir.

21 Q. All right. Is fallowing a requirement of
22 your groundwater permit?

23 A. No, it is not.

24 Q. Okay. Earlier, you said drought was one of
25 the causes of your decreased surface water allotments.

1 Is there anything else that you can think of that has
2 also decreased your surface water allotments?

3 A. To some extent, the operating agreement has
4 decreased the surface water.

5 Q. And you're also a current member of the EBID
6 board, correct?

7 A. Yes, sir.

8 Q. Which precinct in EBID do you represent?

9 A. I'm currently representing Precinct No. 6.

10 Q. You said you were first elected in roughly
11 2004; is that right?

12 A. Yes, sir.

13 Q. And you've been on the board continuously
14 since that time?

15 A. I have.

16 Q. So you were on the board when the 2008
17 Operating Agreement went into effect; is that correct?

18 A. I was, yes.

19 Q. I'd like to bring up New Mexico Exhibit 2373.
20 Mr. Sloan, I'm showing you what has previously been
21 admitted as New Mexico 2373. Do you see that?

22 A. I do.

23 Q. Do you recognize this document?

24 A. I mean, as to the extent that it's presented.

25 Q. And what is this document?

1 A. As I'm reading it, it's referencing the
2 Operating Agreement on the 10th day of March, 2008.

3 **Q. I'm going to ask you a few questions about**
4 **this document. If we could turn to Page 5?**

5 **MS. BARFIELD:** Your Honor, before we go
6 into questions about the Operating Agreement, I'm
7 going to object on the basis of foundation. By the
8 testimony Mr. Sloan just gave, the only reason he has
9 any knowledge of the document is because counsel just
10 put it in front of him right now.

11 **Q. (BY MR. OGAZ) Mr. Sloan, is this the first**
12 **time that you have seen this document?**

13 A. It's not the first time, but the last time I
14 would have seen it would have been 2008, and my
15 recollection is pretty slim on that far back.

16 **Q. Did you read this document back in 2008?**

17 A. I don't remember.

18 **Q. Mr. Sloan, are you aware of how the operating**
19 **agreement allocates water to the farmers in EBID?**

20 **MS. BARFIELD:** Objection; Your Honor,
21 lack of foundation, also calls for expert testimony.

22 **JUDGE MELLOY:** He can answer as a board
23 member. Go ahead, Mr. Sloan.

24 A. As a board member, kind of just general
25 ideas, but nothing specific, no.

1 Q. (BY MR. OGAZ) Have you ever tried to explain
2 to the farmers in your precinct how this operating
3 agreement works?

4 A. There again, in generalities, nothing
5 specific because it's -- it's the specific -- the
6 technical information is fairly complicated so just in
7 general terms.

8 Q. Okay. We can take this down. Mr. Sloan, at
9 the time the operating agreement was signed, did you
10 support the 2008 Operating Agreement?

11 A. At that time, I did.

12 Q. And were you involved in the negotiations of
13 the operating agreement?

14 MS. BARFIELD: Objection, Your Honor;
15 asked and answered.

16 Q. (BY MR. OGAZ) If I understood you correctly,
17 you were not a part of the negotiations in 2008; is
18 that correct?

19 A. That is correct.

20 Q. Okay. Who was involved with those
21 negotiations?

22 A. It was a committee, a board of directors man
23 that were involved. I do not remember specifically
24 which man that was.

25 Q. Did you have any role whatsoever regarding

1 **the 2008 Operating Agreement before it was signed?**

2 A. I had no role in the negotiation, so it would
3 have just been in general board duties.

4 **Q. And you mentioned you did support the**
5 **operating agreement at the time, so what convinced you**
6 **that the 2008 Operating Agreement was something you**
7 **wanted to support?**

8 A. At the time, I think the best information we
9 had available, the history of the Project, hydrology,
10 legal, all those factors come into play, and it seemed
11 to be the best opportunity to resolve some issues with
12 our fellow district.

13 **Q. And who gave you those facts?**

14 **MS. BARFIELD:** Your Honor, I'll object
15 to the extent that the question is calling for
16 attorney/client privileged information.

17 **MR. OGAZ:** Your Honor, I've only asked
18 him who provided him with the facts. I'm not asking
19 him what those facts are.

20 **JUDGE MELLOY:** All right. You may
21 answer.

22 A. I think best of my recollection, the
23 hydrologist was Dr. Phil King, and the attorney -- I'm
24 trying to remember who the attorney, if it was Steve
25 Hernandez or -- he had fellow attorneys with him, but

1 I can't remember everybody's name.

2 Q. (BY MR. OGAZ) So earlier, you did say that
3 you supported the operating agreement, but did you
4 also vote to approve the operating agreement?

5 A. Yes.

6 Q. And when you voted to approve the operating
7 agreement, was it your understanding the operating
8 agreement changed how surface water would be allocated
9 to EBID and EP1?

10 MS. BARFIELD: Your Honor, I will object
11 to the extent that the information asked for came from
12 attorney/client privileged communications.

13 JUDGE MELLOY: Well, I think he's talked
14 about he generally understands the operating
15 agreement. I'm going to overrule that.

16 A. Can you restate your question?

17 Q. (BY MR. OGAZ) When you voted to approve the
18 operating agreement, was it your understanding that
19 the operating agreement changed how surface water
20 would be allocated to EBID and EP1?

21 A. It was my understanding that that was a
22 component of the agreement.

23 Q. And when you voted to approve the operating
24 agreement, was it your understanding that the
25 operating agreement would reduce the amount of surface

1 water that would be allotted to EBID farmers?

2 A. That's a little complicated on a year-to-year
3 basis, so I can't really say -- I can't say that I
4 agree with that statement.

5 Q. Okay. When you voted to approve the
6 operating agreement, was it your understanding that
7 EBID farmers would receive less Rio Grande Project
8 water than they received historically?

9 A. There again, I think it was on a
10 year-to-year, depending upon availability of
11 allocation from the reservoir.

12 Q. When you voted to approve the operating
13 agreement, was it your understanding that the
14 operating agreement allowed EBID farmers to use as
15 much groundwater as they wanted?

16 MS. BARFIELD: Your Honor, I'll renew my
17 objection that to the extent that Mr. Sloan learned
18 the response, learned whatever his content of the
19 response from his lawyers, that the attorney/client
20 privilege does protect that information.

21 MR. OGAZ: Again, Your Honor, I'm just
22 asking what his understanding was at the time.

23 JUDGE MELLOY: I'm going to let him
24 answer.

25 A. I can't say that that was -- that that was a

1 thought, that it was some kind of a magical number for
2 unlimited pumping or anything of that nature, no, sir.

3 Q. (BY MR. OGAZ) Okay. And when you voted to
4 approve the operating agreement, was it your
5 understanding that the operating agreement would
6 dismiss pending lawsuits and prevent future lawsuits
7 over the use of groundwater by EBID farmers?

8 MS. BARFIELD: Objection. I'll renew my
9 objection on the basis of the attorney/client
10 privilege. If we could lay some foundation as to
11 whether or not any of these communications were
12 learned outside of that relationship, that might
13 satisfy the issue here, but I don't think that's the
14 case.

15 JUDGE MELLOY: I'm going to sustain as
16 to this issue unless you can lay some further
17 foundation.

18 MR. OGAZ: Okay. I'll move on actually.

19 Q. (BY MR. OGAZ) Mr. Sloan, as a farmer in EBID,
20 have you received less water since the operating
21 agreement went into effect?

22 A. Well, if your question is referring tied to
23 the operating agreement, I can't answer that. We've
24 had less surface water tied to the drought since early
25 2000s, so it's hard to define the operating agreement

1 and shortages or from the drought from me.

2 Q. Mr. Sloan, have you had to regularly pump
3 more groundwater in the last 15 years?

4 A. Yes.

5 Q. Mr. Sloan, do you have to pay EBID a flat
6 rate regardless of the amount of surface water you
7 were allotted each year?

8 A. That's correct.

9 Q. Would you still have to pay EBID if you
10 weren't allotted any surface water?

11 A. Yes, because -- yes.

12 Q. So if EBID farmers don't receive any surface
13 water from EBID, what are the farmers paying for?

14 A. Paying -- actually paying for operation and
15 maintenance of the overall system.

16 Q. But they wouldn't be paying for any water,
17 right?

18 A. We're not paying for water now.

19 Q. And if you received no surface water from
20 EBID, would you be entirely relying on groundwater at
21 that point?

22 A. That's correct.

23 Q. You are almost entirely relying on
24 groundwater now?

25 A. This calendar year looks like it, yes, sir.

1 **Q. Mr. Sloan, when did EBID deliver water to you**
2 **this year?**

3 A. Water deliveries ran from first of June to
4 the -- I can't remember the cutoff date, if it was end
5 of July -- end of June or end of July.

6 **Q. So you couldn't have used surface water to**
7 **irrigate in the spring even if you wanted to because**
8 **it wasn't available until June, right?**

9 A. This is correct.

10 **Q. And did you have to use groundwater to**
11 **irrigate this spring?**

12 A. I did.

13 **Q. How much groundwater did you have to pump to**
14 **irrigate your crops until the surface water was**
15 **delivered?**

16 A. We were -- we had to pump a hundred percent
17 of the water we used until the surface water was
18 available.

19 **Q. Mr. Sloan, if you couldn't use groundwater,**
20 **you wouldn't have been able to plant for the 2021**
21 **season, could you?**

22 A. That's correct.

23 **MR. OGAZ:** Thank you, Mr. Sloan. I have
24 no further questions.

25 **THE WITNESS:** Thank you.

1 **JUDGE MELLOY:** Ms. Barfield, do you have
2 any redirect?

3 **MS. BARFIELD:** No, Your Honor, I don't.
4 Thank you.

5 **JUDGE MELLOY:** All right. Then I think
6 you're done, Mr. Sloan. Appreciate your testimony.
7 You're free to go. Thank you very much.

8 **THE WITNESS:** Thank you, Your Honor.

9 **JUDGE MELLOY:** Well, this is probably a
10 good time to take our afternoon break. Who's your
11 next witness? Is it Ms. Coleman or Ms. Barfield going
12 to be --

13 **MS. COLEMAN:** Neither.

14 **MS. BARFIELD:** Your Honor, our next
15 witness is Art Ivey, and Ms. Klahn with my office on
16 behalf of the State of Texas will be handling that
17 witness.

18 **JUDGE MELLOY:** All right. Okay. Well,
19 let's take a 20-minute recess at this point, and then
20 we'll take Mr. Ivey. Thank you.

21 **MS. BARFIELD:** Thank you, Your Honor.

22 (Recess.)

23 **JUDGE MELLOY:** Are we ready to get
24 started again?

25 **MS. KLAHN:** Yes, Your Honor.

1 **JUDGE MELLOY:** Can I ask if there's any
2 change in appearances for this portion of the
3 proceeding? I see you're going to be replacing
4 Ms. Barfield, Ms. Klahn; is that correct?

5 **MS. KLAHN:** That's correct.

6 **JUDGE MELLOY:** And, Mr. Ogaz, you're
7 going to be on for this witness, as well?

8 **MR. OGAZ:** Yes, Your Honor.

9 **JUDGE MELLOY:** And then --

10 **MR. DUBOIS:** James Dubois is on for the
11 United States, Your Honor.

12 **JUDGE MELLOY:** Okay. All right. Very
13 good. Do we have the witness ready to go?

14 **MS. KLAHN:** Yes. Mr. Ivey is on.

15 **THE WITNESS:** Art Ivey, Your Honor.

16 **JUDGE MELLOY:** For some reason, I'm not
17 getting the video, Mr. Ivey. Is everybody else?

18 **MS. KLAHN:** Yeah.

19 **JUDGE MELLOY:** Let me see here just a
20 second. Let me see what the problem is.

21 **THE WITNESS:** I broke the camera.

22 **JUDGE MELLOY:** Well, just a second here.
23 There we go. Okay. I got it now. All right.

24 Okay. Mr. Ivey, would you raise your
25 right hand, please? Do you swear or affirm that the

1 testimony you're about to give will be the truth, the
2 whole truth, and nothing but the truth?

3 THE WITNESS: I do.

4 **JUDGE MELLOY:** Mr. Ivey, would you state
5 your name and spell your name for the record, please?

6 THE WITNESS: My name is Arthur,
7 A-R-T-H-U-R, H middle initial, Ivey, I-V-E-Y, comma,
8 J-R, period, for Jr.

9 **JUDGE MELLOY:** All right. And I'm
10 asking each of the witnesses a few preliminary
11 questions. First, let me ask: Is anybody in the room
12 with you during your testimony?

13 THE WITNESS: No, sir.

14 **JUDGE MELLOY:** Do you have any documents
15 available to you that you'll be using during your
16 testimony?

17 THE WITNESS: No, sir.

18 **JUDGE MELLOY:** I need to advise you that
19 you're not allowed any communication devices such as
20 cellphones, smart phones, tablets, computers,
21 whatever, that have e-mail or text or instant
22 messaging capability. Do you understand that?

23 THE WITNESS: Your Honor, I do. I do
24 not have any of those devices with me.

25 **JUDGE MELLOY:** All right. Very good.

1 Then, Ms. Klahn, you may proceed.

2 **MS. KLAHN:** Thank you, Your Honor.

3 **ARTHUR IVEY JR.,**

4 having been first duly sworn, testified as follows:

5 **DIRECT EXAMINATION**

6 **BY MS. KLAHN:**

7 **Q. Good afternoon, Mr. Ivey.**

8 **A. Good afternoon.**

9 **Q. I see you're in your home office.**

10 **A. I am in my home office.**

11 **Q. All right. Could you give us your business**
12 **address, please?**

13 **A. Business address is 20500, that's 2-0 comma**
14 **5-0-0 Alameda, A-L-A-M-E-D-A, Avenue, A-V-E, or you**
15 **can call it Texas 20. That's the state highway. The**
16 **name of the town is Tornillo, T-O-R-N-I-L-L-O, Texas**
17 **79853.**

18 **Q. Thank you, Mr. Ivey. Do you farm within the**
19 **El Paso County Water Improvement District No. 1?**

20 **A. I do.**

21 **Q. Are you a board member with the El Paso**
22 **County Water Improvement District No. 1?**

23 **A. I am.**

24 **Q. How long have you been on the Board?**

25 **A. Never have gone back and look. I think it's**

1 been since '98, so 23 years.

2 **Q. Okay. If I abbreviate El Paso County Water**
3 **Improvement District No. 1 to EP1, will you know what**
4 **I'm talking about?**

5 A. Yes, ma'am.

6 **Q. All righty. How long has your family been in**
7 **EP1?**

8 A. At least since my grandfather's day.

9 **Q. When was that?**

10 A. He came into the valley in about 1890s, I
11 believe, and farmed here in the valley, and then my
12 father farmed -- the farm where I live today, my
13 father started farming that in about 1951.

14 **Q. Okay.**

15 A. And then I've taken over since then.

16 **Q. Okay. Were you born in -- in the El Paso**
17 **area?**

18 A. I was born in San Antonio, Texas because my
19 father was a farmer in Quemado, Texas, which is near
20 Eagle Pass.

21 **Q. Okay. When did you come to the farm that**
22 **you're living in today?**

23 A. But I came here when I was one-year-old.

24 **Q. Okay. What year was that?**

25 A. 1951. I was born in 1950.

1 **Q. Okay. You grew up on that farm; is that**
2 **right?**

3 A. I grew up right here on this farm.

4 **Q. Okay. What kind of crops did your father**
5 **grow when you were growing up there?**

6 A. He grew predominantly cotton. He did grow
7 some vegetables occasionally and we grew some alfalfa
8 occasionally and silage crops occasionally when the
9 berry industry was around.

10 **Q. Okay. Did he irrigate?**

11 A. We have always irrigated, yes, ma'am.

12 **Q. With water from EP1?**

13 A. With surface water predominantly.

14 **Q. Okay. Did you assist with farming when you**
15 **were growing up?**

16 A. I think every farm boy born in 1950 had to
17 assist their daddy, so yes.

18 **Q. Okay. Including with the irrigation?**

19 A. Including with the irrigation.

20 **Q. All righty. Did you go to college?**

21 A. I went to college. I attended University of
22 Texas at Austin for about three out of four years when
23 I lived in Austin. I worked also in Austin for about
24 two of those four years.

25 **Q. Okay. Did you complete your degree at some**

1 point?

2 A. I did not.

3 **Q. What were your majors or major?**

4 A. I was petroleum engineering until my first
5 class of petroleum engineering, and the professor said
6 you're in a dead industry, so I dropped that course
7 and went to civil and went to -- I ended up with
8 architectural engineering, which happened to be a
9 five-year program at Austin.

10 **Q. Okay. You mentioned that you didn't finish**
11 **your degree at Austin -- while you were in Austin, but**
12 **you -- you worked for part of that time. Can you tell**
13 **the court what one of your jobs was in Austin related**
14 **to water rights?**

15 A. I had a couple of semesters of drafting and
16 so the State of Texas, through the Texas -- I believe
17 it was Texas Water Resource Council or Texas --
18 something like that was the name of the -- it's the
19 precursor to what is now TCEQ. Now, I worked there in
20 an office for about two years as a draftsman.

21 **Q. Okay. What kinds of things did you make as a**
22 **draftsman for the precursor to TCEQ?**

23 A. During that period, they were trying to
24 establish all the stakeholders on all the internal
25 rivers of the State of Texas all the way from, you

1 know, the Brazos to the Rio Grande to the Trinity, and
2 people that were taking out water, and so we would
3 pinpoint those permits, people had to apply for
4 permits, and we were pinpointing those on maps, and
5 occasionally, there were no maps to some of these
6 counties, so the draftsman had to pretty much freehand
7 a map. I would blow it up. I'd have a scale, and I
8 would blow it up, things like that.

9 **Q. Okay. Now, also, while you were attending**
10 **University of Texas, did you return to your family's**
11 **farm during the summers?**

12 A. Every summer except for one. I always came
13 back because I was a bug scout, kind of like an
14 amateur entomologist. I was very good at it, and I've
15 been doing that since I was about 12 years old. So
16 physically, I could only check about 3,000 acres of
17 crops. It was cotton crops. I was a cotton bug
18 specialist. I would do about 3,000 acres every
19 summer. In those days, people would pay me about, oh,
20 \$3 an acre paid every month, one dollar every month,
21 and those \$9,000 put me well through school. It helps
22 a lot on the school, so I would do that every summer.

23 **Q. Okay. What year did you leave Austin?**

24 A. I left Austin in '72. I came to El Paso and
25 started working -- I bought a well service rig, and I

1 went around servicing agricultural wells, the big
2 turbines, and I would go -- I was not a driller. I
3 would not drill the wells. I would service the pumps
4 that were in these wells, and I did that for a couple
5 of years. Plus, when I left home, I told my father I
6 wasn't coming back until he planted pecans or let me
7 plant them. I came back anyway and worked with him,
8 too, off and on. But I had that --

9 Q. Okay.

10 A. -- side business of the turbine pumps.

11 Q. Okay. So you mentioned that you did return
12 to farming. What caused you to return to farming?

13 A. I think it's in the blood, I think.

14 Q. I'm sorry?

15 A. I think it's in the blood. And then my --
16 later on, when I was here in '74, I fell in love with
17 the wife, who I'm still married to, and my father
18 started planting pecan trees so that kept me around
19 and so that's why I came back to start farming.

20 Q. Okay. So you -- you came back at least in
21 part because you planted pecans; is that right?

22 A. That's correct. No, that's what kept me
23 here, yes.

24 Q. Okay. So why -- why did your father decide
25 to switch to pecans; do you know?

1 A. I think because his son was pestering him so
2 much, but it was also becoming -- I saw the writing on
3 the wall a long time ago. We have a 400-acre farm.
4 Cotton on 400 acres is not viable. Today if all you
5 had was a 400-acre cotton farm, you would be broke.
6 You would not be in business. So I kind of saw that
7 coming a long ways ahead of time, and we did that
8 because financially, our family probably would not
9 have survived without gradually going into pecans.

10 Q. Okay. Let's take a look at the location of
11 your farm. Could I have Art Ivey Exhibit -- I think
12 it's Demo 1 -- put up, please? There we go. Can you
13 see that map, Mr. Ivey?

14 A. Yes, ma'am.

15 Q. All righty. We don't have a laser pointer or
16 anything for you so could you just describe for the
17 Court generally by using the terms on the map and the
18 colors on the map to sort of where your -- let me take
19 a step back. Have you seen this map before?

20 A. I have seen this map.

21 Q. Okay. And what is this a map of?

22 A. This is a map of our -- of our water
23 district, El Paso County Water Improvement District
24 No. 1.

25 Q. Okay. And there's colors on the map

1 **associated with units. What do those units refer to?**

2 A. Those are different divisions of the -- the
3 way we control the irrigation waters in those -- in
4 each one of those divisions.

5 **Q. Which unit are your -- is your farm located**
6 **in?**

7 A. If you look down at the very bottom of that
8 map, in yellow, you see Fabens. Below that in kind of
9 a turquoise, you see Tornillo Canal. Just about where
10 the L on the canal touches the river, that's the river
11 on the bottom of that blue line, is my farm, and the
12 reason I know that, if you go down to L on Tornillo
13 Canal, that's about right in the middle of my farm.

14 **Q. Okay.**

15 A. It's right on the river.

16 **Q. Right on the river. And you said you have --**
17 **you're still on the same 400 acres you were raised on;**
18 **is that right?**

19 A. Not exactly, but pretty much, yes.

20 **Q. Have you added any ground?**

21 A. And then since then, just last year in April,
22 I've added another 170 acres up around the little town
23 of Tornillo.

24 **Q. Okay. So how many pecan trees do you have**
25 **presently?**

1 A. Well, 570 acres, roughly I'd have about
2 20,000 plus or minus pecan trees.

3 **Q. When was the last time you finished planting**
4 **pecan trees?**

5 A. Somewhere around the beginning of this
6 drought, which I always say the drought began in about
7 2003. That's kind of the date from my mind. So that
8 was probably about the last time -- on that year
9 somewhere around in there is when we finally planted
10 those trees, '3 to '5, 2003, '4, or '5.

11 **Q. Okay. Do you irrigate those pecans?**

12 A. I do.

13 **Q. And what is your primary water source?**

14 A. Primary, we hope, is surface water.

15 **Q. And where does that surface water come from?**

16 A. From -- comes from Elephant Butte Irrigation
17 -- I mean, the Elephant Butte Dam up river.

18 **Q. Okay. Are there other water sources that you**
19 **sometimes have to use?**

20 A. We also have supplemental wells that we
21 sometimes have to use. We don't like to use, but I do
22 use them when I have to.

23 **Q. So why -- why don't you -- why do you prefer**
24 **the surface water?**

25 A. Surface water is what we call sweet water.

1 Even though after going through El Paso, it degrades,
2 it's probably still in the area of 1,000 to 1,200 TDS,
3 which is total dissolved salts, and a lot of people
4 think anything over a thousand is bad. That's still
5 sweet water down in Tornillo so we use that water
6 because it's sweet. My well water on my wells, I have
7 about, oh, seven active wells right now on the
8 original 400 acres, and we average probably about 21,
9 2,200 TDS. Best one's about 19, worst one's about
10 2,400.

11 Q. Okay. Now, were you -- were you watching or
12 listening to Mr. Sloan's testimony?

13 A. I heard part of that, yes.

14 Q. Did you hear his testimony about the TDS in
15 the water that is delivered from Elephant Butte and
16 Caballo at his farm?

17 A. Yes, ma'am. And that's pretty well -- pretty
18 well -- that's -- that's right on the money.

19 Q. 500 -- 500 TDS is pretty good?

20 A. Yeah. Usually above El Paso, I've always
21 said 4 to 600. It kind of depends. So I think 5 to 6
22 is what he said. That's about what I've always
23 encountered or remember.

24 Q. Okay. You can take that back down. Thanks.
25 So your surface water is the same TDS as

1 **Mr. Sloan's groundwater, according to his testimony,**
2 **if you heard that?**

3 A. Well, it's good sweet water to me so --

4 **Q. Yeah.**

5 A. We get it sometimes below that thousand
6 threshold, I imagine, when we have high flows,
7 especially when we have storm. But you're right, most
8 of the time, it -- it's above a thousand most of the
9 time.

10 **Q. So -- and the -- and the TDS of your wells,**
11 **which you said, I think, was between 1,900 and 2,400**
12 **TDS, something like that? What did you say? I'm**
13 **sorry.**

14 A. I think about 2,400.

15 **Q. Okay. What are the consequences of using the**
16 **wells on your pecans in your experience?**

17 A. Well, it's very hard, and yet you've got to
18 do it. We use those only as necessary because to us,
19 it's like putting poison on your ground. The TDS is
20 so high, that over time, if I had nothing but those
21 wells, for example, probably in a few years, four or
22 five years, I wouldn't be in pecan business nor would
23 anybody around me because of our salt content. So
24 because of that, we're -- we're -- we are constantly
25 trying to ameliorate it by adding soil amendments,

1 things like that, but --

2 Q. Okay. We'll talk about --

3 A. -- it would not be good.

4 Q. Yeah. We'll talk about the salinity -- the
5 ways you manage salinity in a minute. If you -- have
6 you ever had -- what's a full allotment of water from
7 the EP1 district?

8 A. 4 acre-feet.

9 Q. 48 inches?

10 A. Yes, ma'am. 48 inches.

11 Q. Okay. Have you had a full allotment from the
12 District?

13 A. Oh, yes. We've had some in the past.

14 Q. When you have full allotments from the
15 District, do you run your wells?

16 A. Not at all.

17 Q. Also want to ask you about drains. I don't
18 know if you were listening to the testimony this
19 morning of Dr. King. He was talking about drains
20 inside the Rio Grande Project. Are you familiar with
21 drains inside of the EP1 district?

22 A. Yes, I am.

23 Q. Are there any drains that provide water to
24 your land? Within EP1. Sorry.

25 A. If there are any, it would be in the upper

1 valley. That's a confluence coming out of the Mesilla
2 Valley. There's a little bit that comes in at the
3 very top of our district, but once it gets in our
4 district, there are no other places that we can lift
5 the water or get the water -- get to that water and
6 put it in our system.

7 **Q. Okay.**

8 A. It would be better than my well, but it
9 wouldn't be real good water.

10 **Q. Okay. So let's talk -- you started to say**
11 **some things about the salinity management techniques**
12 **that you've had to use over the years. First, what**
13 **are you managing for when you're managing salinity?**
14 **What specific chemicals or molecules are you managing**
15 **for?**

16 A. We're trying specifically to get the sodium
17 driven down below the -- the root zone, and there's a
18 lot of sodium. Basically table salt is almost what it
19 is.

20 **Q. Okay.**

21 A. And that and a lot of chlorides in the water.

22 **Q. So tell -- just describe physically the**
23 **impacts to the soil when you have to use your**
24 **groundwater wells. What -- what sorts of things**
25 **happen to the soil from the high TDS groundwater?**

1 A. Well, especially on a clay soil, we have a
2 lot of clay soil, it tends to flocculate, and it'll
3 seal off. We have trouble getting the salts leached
4 or getting them to pass the root zone, so we try
5 various methods of -- we want the sodium to keep going
6 down.

7 **Q. Okay.**

8 A. So there's various methods, both mechanical,
9 and we have soil amendments that I mentioned earlier.

10 **Q. So if you don't leach the poor quality water**
11 **below the root zone, what happens to the plant?**

12 A. Well, the salt buildup on top of the roots
13 will start up taking that, and you can see it on your
14 leaf. Your leaf will start showing a salt burn
15 similar to what even a house plant would have if you
16 had a lot of salt. Eventually, of course, it'll kill
17 your plant, and that's what would eventually happen to
18 a pecan. So we try all the time to keep our ground
19 fluffy, if you want, meaning we try and keep it so
20 that we can leach or drain. Drainage is another term.
21 We try and keep the water draining.

22 **Q. Okay. Let me just ask you -- take a step**
23 **back and ask you about the leaf burn that you**
24 **mentioned. Have you had occasions in the past where**
25 **you had leaf burn on one or more of your trees?**

1 A. I have, yes.

2 **Q. And what -- does it have an impact? Does**
3 **that leaf burn have an impact on production from the**
4 **tree; do you know?**

5 A. Well, I'm pretty sure it must. I can't give
6 you quantitative amounts, but I'm sure it does. It
7 can even kill a tree.

8 **Q. Okay. So let's talk now about the actual**
9 **management techniques that you use. You just used the**
10 **term fluffy, and I kind of cut you off. So why don't**
11 **you tell us, what do you mean by keeping the soil**
12 **fluffy, and how do you do that?**

13 A. Well, we do it a lot of times mechanically.
14 We run big chisels, parabolic chisels. You've
15 probably seen pictures. They're big chisels, and they
16 will generally get some big ones in our area that may
17 go down 2 foot deep, and they'll rip. Some people
18 call them rippers. Out in California, they call them
19 rippers. And you rip your ground specifically so that
20 you get drainage. If you don't get drainage, all your
21 salts stay up on top. You also have what we call slip
22 plow. It's another type of tool. Generally, those
23 will go 5, some of them even go 6 foot deep. Same
24 thing. Your idea is to rip that ground so that you
25 get constant drainage, and then we have track

1 excavators and -- that are the ultimate tool if you
2 need -- because you can refigure your ground. You can
3 rebuild your ground.

4 **Q. I think I understand the chisel and the slip**
5 **plow. Those sound physically like I can understand**
6 **them, but what do you mean by a track excavator? What**
7 **is that and how does that work to make the soil**
8 **fluffy?**

9 A. Well, the track excavator is similar to --
10 well, it is, what you see on the big construction
11 jobs, big old bucket. You go down there, and our
12 valley is an alluvial river valley. It was formed
13 over eons by flood events, so you get little stratas
14 of 2 or 3 inches of clay. You get stratas of sand.
15 You get stratas of gravel. When the track excavator
16 -- you'll find that you have perch water tables quite
17 often and they may be a little 1-inch-thick layer of
18 clay at 4-foot depth that's holding that water up
19 keeping the salts right in the root zone. So with
20 this track excavator, you go down, you breakthrough
21 those, then you try and mix the clay with the sand.
22 It's quite an expensive proposition, but basically
23 you're rebuilding your soil and you will end up with a
24 brand new soil. You try and mix that. Some areas
25 where it's predominantly clay, you cannot do that.

1 I've had areas that are -- I've gone 18-foot deep and
2 never gotten out of clay. In which case, that is
3 almost -- you can't remediate that unless you actually
4 haul clay out and bring sand in. But most of the
5 time, right there where you're working, where you're
6 going to plant trees, or you can do this after you've
7 planted trees -- I've done both -- you remediate, and
8 you're building a soil that you hope will last a
9 lifetime. So far, I've had some that we did 20 years
10 ago, and they're still working fine.

11 **Q. Okay. And you mentioned having -- that**
12 **you've sometimes dug down to find just clay. Did you**
13 **bring in sand? I wasn't clear on that. Did you bring**
14 **in sand to mix with it to make it workable?**

15 A. On certain areas of my farm, I have had to do
16 that. I could not afford to do that on the whole
17 farm, but usually when we've encountered that, it's
18 been, like, a single acre or two, and we'll hire dump
19 trucks and carry the clay out. You need some clay.
20 Clay holds water, holds nutrients. I mean, you can't
21 have pure sand, but you can bring some sand in and
22 make a pliable ground. Good ground is you put the
23 water on, the water goes down like it's supposed to.
24 We don't want to see it there three or four days
25 later. That water standing, you're in trouble if

1 you're growing pecans or similar to alfalfa. Alfalfa
2 is similar. They like water, but they don't like wet
3 feet.

4 Q. So if I understood then, you've used the
5 track excavator in many of the acres? How many acres
6 of the 400 that you've owned for a long time have you
7 had to track excavate approximately?

8 A. Approximately half of those, about 200.

9 Q. Okay.

10 A. Of the 400.

11 Q. And on those 200 acres, do you also have to
12 do the other more shallow physical redistribution of
13 soil every year like the chisel or the slip plow?

14 A. Our soil is such that if possible, I do every
15 acre every year, at least with the shallow chisel,
16 which is 17 inches to 2 foot deep. Every year, we do
17 that, if possible. And when I say "possible," it's
18 usually a time restraint.

19 Q. Okay. And then you mentioned -- and I think
20 actually, we heard Mr. Sloan mention this, the use of
21 soil amendments. Tell us about what soil amendments
22 are for purposes of dealing with salinity.

23 A. Well, you need a chemist or a good soil --
24 you need a good agronomist but --

25 Q. Give me the farmer answer.

1 A. Well, you need a farmer that'll tell it like
2 a farmer, but you put out basically sulfur, because
3 sulfur will break down slowly in your ground if you
4 put out elemental sulfur, and it will gradually kick
5 off sodium molecule, and it'll make it leachable,
6 whereas the sodium will be sitting on top
7 un-leachable. You can also use gypsum. Gypsum is a
8 form of sulfur. Of course, the best is sulfuric acid,
9 but sulfuric acid has its own problems. It's very
10 dangerous to work with. You can spray that on your
11 soil, and you will immediately leach out a whole bunch
12 of your salt. Assuming, that's the other part, your
13 ground is open enough that it'll take the water. You
14 pile the water on, you drive the salt out.

15 **Q. So if you don't do any of these physical**
16 **manipulations of the soil first, does the soil**
17 **amendment help?**

18 A. The soil amendment will always help, but you
19 need to -- it won't help -- you won't get maximum
20 result unless you have drainage, so you've got to
21 figure out some way of having drainage.

22 **Q. Okay. Have you used all three of those**
23 **methods of -- of soil amendments, the sulfur, the**
24 **gypsum, and the sulfuric acid?**

25 A. I've used all three.

1 Q. Okay. And can you just tell us your
2 experience with -- let's start with sulfuric acid, do
3 you still use sulfuric acid?

4 A. I no longer use sulfuric acid. It's very
5 dangerous, plus the price has gone way up.

6 Q. How does it work for you to use sulfuric
7 acid? I mean, you don't just spray the acid on the
8 field, do you?

9 A. There are people that do that. There's
10 companies that'll come and do that, but most of the
11 time, they'll spray an acre, put out very minimal
12 amounts of -- they'll put one ton of sulfuric acid out
13 per acre. That's a very low amount, very hard to
14 calculate. They've got to have stainless steel rigs,
15 and you get very little benefit out of it, in my
16 opinion. We used to run it in our ditches, water run.
17 We'd buy it by the transport load, and we'd take out
18 strips and check your PH, and we'd run it down our
19 ditches, and it worked very well. It eats up even
20 galvanized steel lids that we use to control our ditch
21 openings, and it'll gradually even eat up your
22 concrete ditch. But we just figures that was the cost
23 of doing business, using that, and it worked great.
24 But many problems with that. It got so that even the
25 companies that used to sell that would no longer sell

1 it or the price got so high that it was untenable.

2 **Q. Okay.**

3 A. So then we switched to gypsum and finally
4 elemental sulfur.

5 **Q. Okay. So tell us about how the -- how you**
6 **use both of those types of amendments and how -- how**
7 **it's worked.**

8 A. Okay. Gypsum is one step along the way of
9 degradation so it works better, and if you got trouble
10 spots, you can put some pretty heavy doses of gypsum,
11 and you'll see results even as early as one year. The
12 funny thing about gypsum is when you dig your track
13 excavator or even a backhoe and go down about a foot,
14 you'll see the gypsum layer again. You'll see gypsum
15 where it stuck, because it needs air and other things
16 happening in your soil to make it viable. Same thing
17 on elemental sulfur, only it's elemental sulfur. You
18 put it out on your ground, you've got a little yellow
19 -- it's a side product of the oil industry. Used to
20 get it out of Midland/Odessa, which is pretty close to
21 here. You spread it on the ground. You've got little
22 yellow pockmarks it looks like on the ground when you
23 start. By the end of the season, you won't see that.
24 Process of soil things working in the soil will
25 gradually change that. It'll finally end up being a

1 little particle of sulfuric acid. It'll grab that
2 sodium molecule and get it out of there. So that's
3 kind of how it works.

4 **Q. Okay. Now, you mentioned the word leaching a**
5 **couple of times. Can you tell us what leaching means**
6 **in the context of the irrigations that you're doing?**

7 A. Well, in the way I'm talking about the
8 leaching, it means that the water continues to
9 percolate, and the water will percolate down below
10 your root zones, and because you're constantly trying
11 to get your salts below the root zone.

12 **Q. So if you apply regular -- well, does that**
13 **require extra water in order for you to have the**
14 **ability to leach it below the root zone or can you do**
15 **that with just a regular irrigation delivery?**

16 A. Well, it was all surface water, that 4-acre
17 foot, there was a component in there. I can't tell
18 you how much of leaching. That's not the consumptive
19 use of the tree. In that 4-acre-foot of that sweet
20 water, we get enough leaching out of there that we can
21 go on about our business -- and we did for many years.
22 We had about 20 years of real nice run of water. So
23 there's a leaching component even in that 4 foot that
24 we get. When I use my wells, the component has to go
25 up, and that's because the well water is, like I said,

1 it's like a poison. It's a lot saltier, and roots --
2 plants are smart like people, but it's like a man out
3 in the ocean. If he gets desperate and he starts
4 drinking that sea water, he's going to die. Same
5 thing on trees. The way I say it is, it's a
6 colloquialism, but it's like the water isn't as wet so
7 instead of 4 inches, you may have to put 5 inches on
8 your irrigation. That extra inch is try and make sure
9 there's enough water there. The tree's a pretty smart
10 thing, and it'll try and keep that good water up --
11 going up through its vascular whatnots to get it up
12 into the tree before it gets into the salt. So you
13 have to have -- actually, you have to put more water
14 on if you've got salty water.

15 Q. Okay.

16 A. So you don't damage the tree.

17 Q. All right. So let's see. We've talked about
18 the type of crops that you grow, which is pecans, how
19 you manage your different water sources, and the extra
20 steps you have to take to use groundwater. What I'd
21 like to do now is just try to pull this all together
22 for the Court so that we can have a picture of the
23 seasonal basis of your farming activities, and I'd
24 like to start with the harvest. When is the harvest
25 for pecans in your part of the valley generally?

1 A. In general, in our -- we wait for a hard
2 freeze, and that's usually somewhere around
3 Thanksgiving. Our first cross date is November 6th.
4 Two weeks later, we hope we've had enough hard freezes
5 that usually around Thanksgiving Day, we're hoping
6 that the day after, that Friday, we start harvests.
7 Quite often, that'll happen. Many years it's later.
8 Very rarely, but occasionally it may be earlier. But
9 it's Thanksgiving. Then we -- yeah, what was your
10 question again?

11 **Q. You answered it.**

12 A. Okay.

13 **Q. What's the means by which you harvest the**
14 **pecans? Can you describe the tools and the labor that**
15 **you need to do that?**

16 A. Well, you can imagine all those trees with
17 pecans up there. You have a shaker, which looks like
18 a pair of scissors, only it's padded, and those
19 scissors grab a hold of that tree and shake it as hard
20 as they can, and here come all the pecans. Along with
21 the pecans comes the husks, the little twigs, comes
22 the leaf, the dead leaf, and then you have to do
23 something with those. So we put a mechanical sweeper,
24 kind of like a mechanical broom, that rolls that into
25 a wind row, and then in that wind row, you've got your

1 good pecans, but you've got all the husks, all the
2 junk, all the stuff. Then over that, we run a -- kind
3 of like a super vacuum cleaner that we pull behind
4 trailers -- I mean, behind tractors, and it tries to
5 separate as best it can using fans, and it tries to
6 throw as much of the junk out on the side as it can
7 and keep the good pecans going to the back where you
8 have a trailer with pecans, throws them into another
9 trailer, and that goes to a cleaning plant where they
10 try and get the last of that trash. Sometimes it's
11 even clots. You can have clots. Now, then we clean
12 them up and have our final product at the farm level,
13 which is the pecan in shell.

14 **Q. Does that go to a processing plant then?**

15 A. And that's the product -- there's some
16 vertical integration in our -- in our industry, but
17 I'm still the farmer, low man on the totem pole, so we
18 sell that pecan to the next step, which is generally a
19 processor or a sheller, we call them. He will shell
20 those things, and then he sells the meats that go out
21 to the confectioners and the candy makers, et cetera,
22 et cetera.

23 **Q. And what kinds of -- do they grade the pecans**
24 **from good to bad? How does that work?**

25 A. We hope that we grow number one pecans, but

1 we always have some number twos, and that's how we
2 separate into number ones, number twos. Some people
3 on their plant, we would have number threes, which are
4 basically black pecans, and those are -- those are
5 meant for the hogs, I think. Those aren't very good.
6 But we generally we'll have -- we try and grow number
7 ones, and we always have a little bit of number twos.

8 **Q. Okay. So then you've harvested. You've done**
9 **your processing on the farm. You've delivered them to**
10 **the shellers. What's next from a -- from a farm**
11 **perspective in your year? What do you do next?**

12 A. Well, immediately after harvest, harvest is
13 just the start. People think we get through a
14 harvest, and then we calm down. Unfortunately on
15 pecans, that's just the start. The harvest is the
16 start of all the hard work again. As soon as the
17 harvest is done or out of the way or sometimes while
18 the harvest is going on, on one side of the farm, you
19 start your next process, and we have hedging of the
20 pecan trees. We do it with great big mechanical saws,
21 and that's because we are trying to stop the alternate
22 bearing or minimize the alternate bearing.

23 **Q. Okay. So you called it hedging. You're**
24 **basically trimming the trees; is that right?**

25 A. Trimming the trees with great big mechanical

1 saws.

2 **Q. Okay. And -- and say again why -- why you do**
3 **that every year?**

4 A. We are trying to stop -- pecan trees are like
5 fruit trees. They alternate bear, and we are trying
6 to stop the alternate bearing cycle from extremely
7 high to extremely low. We're hoping we get something
8 more in the middle. The banker likes it that way,
9 too, a little bit, you know, because -- but anyway,
10 that's what we're trying to do with -- the hedging is
11 one of many different tools we try and use on pecans
12 to get a steadier volume year to year so we don't have
13 -- you know, you made 3,000 pounds this year, but next
14 year you made 600. Well, that 600 pounds, you're
15 going to have a hard time paying your bills.

16 **Q. So alternate bearing, you mean in some years,**
17 **you have a very, very good crop, and other years, you**
18 **would have a poor crop, and you're trying to even it**
19 **out; is that right?**

20 A. Correct.

21 **Q. And how does pruning help accomplish that?**

22 A. Well, it's almost counter intuitive. You try
23 and prune heavily when you're going to have an on
24 year, when you know you're going to have a big crop.
25 You're hitting yourself in the head. You're lowering

1 your big crop. But the year after that, instead of
2 dropping off the charts, your return crop would
3 generally be quite a bit better. So that's why we do
4 that. We do that in general to try to level out the
5 alternate bearing.

6 **Q. Okay. What's the shape of the tree that you**
7 **are aiming for when you're pruning?**

8 A. Well, you'd have to ask every farmer because
9 every farmer have his own idea. My idea, I do
10 Christmas trees. Kind of like a Christmas tree, very
11 few around here do that. I'm not saying it's better
12 or not, but that's the way I do it. Others go
13 straight up the side. The most common is straight up
14 the sides, like a box, and then on the top, they'll do
15 a 45-degree rooftop, we call it, and they'll do that
16 maybe one direction, two years later, they may run it
17 another direction. And it also depends on the way
18 your field is laid out, you know.

19 **Q. Well, what do you do with all that wood after**
20 **you pruned? There must be a lot of wood left.**

21 A. That's where the cleaning comes in. There's
22 a lot of wood left. We try and get as much of that
23 gone. People can come take all they want from El Paso
24 or wherever they are here locally, and all I say is
25 don't leave me a mess. There's a timing component.

1 At a certain point, we have to get all that wood up.
2 We carry it to a certain part of the farm where we
3 burn it when the conditions and timing is right.
4 We'll burn that wood, whatever is left over.

5 Q. So after you've gotten the wood out of the
6 way, what's next? Is it -- is it still winter, by the
7 way? I mean, you've harvested and you've pruned. Is
8 it still winter?

9 A. This is all winter.

10 Q. Okay.

11 A. And --

12 Q. What's next then?

13 A. We're rushing, rushing, rushing, because
14 after that, you need to do that chiselling that I was
15 talking about to get your ground already disking or
16 anything you want to do on your ground. We basically
17 try and prepare the floor of the orchard. After the
18 removal of the wood, we try and maintain that floor
19 all year round until next harvest. We used to do it
20 prior to harvest, but we found it's almost impossible
21 to get everything done prior to harvest because you
22 have irrigations, you have timing things happening.
23 So nearly -- most of the farmers, 90 percent of them,
24 prepare your ground for harvest right then in the
25 winter before bud break. Bud break on a tree actually

1 start trying to grow again is usually in our area --
2 bud break is around first of April, but around the mid
3 March is about when that pecan tree, if you cut into
4 the bark, it's either -- the flows are starting again
5 about mid March. So we have until mid March to try
6 and get all that done.

7 **Q. Okay. Do you ever get any water delivered to**
8 **you or is water made available to you at all in the**
9 **winter, surface water?**

10 A. If -- if I have time and if there is, we have
11 some effluent flows that come out of El Paso. They're
12 very small and very few irrigations so, in general,
13 you don't get to -- you can ask for it, but we don't
14 get much of that. There's a percentage of that, that
15 you get. In the old days when there was plenty of
16 water, we used to get a lot of water out of the
17 Mesilla Dam -- I mean, the Mesilla drains as they fed
18 into the Great American Canal. We don't get those
19 anymore, but we do get some effluent out of the city
20 of El Paso.

21 **Q. Okay. So just to be clear about that, you**
22 **mentioned getting water from the drains in the**
23 **Mesilla. That -- those are drains that would drain**
24 **back into the river and then be diverted into the EP1**
25 **system? The water would be diverted into the EP1**

1 **system; is that right?**

2 A. That's correct. Up at the top of that
3 system.

4 **Q. Okay. You say you haven't gotten that for a**
5 **number of years?**

6 A. It's timing and it's very little -- oh, that,
7 we haven't gotten in a long time. Ever since the
8 drought started, we haven't gotten any of those
9 waters.

10 **Q. And then effluent, when is effluent?**

11 A. We did get some effluent, but it's very
12 small. It's usually around -- it can be as little as,
13 like, 15 CFS to maybe 60 CFS, and out of 15, you might
14 get one irrigation so each year, you might get four
15 irrigations in our whole system, and it's very little.
16 People can ask for that water, and if nobody wants it,
17 we'll let somebody use it, meaning the district will.

18 **Q. Okay.**

19 A. If -- if there's too many people, we go on a
20 system that says, okay, you're going to get, say, 2
21 inches out of your hundred acres. Well, that -- that
22 water is usually going to need about 6 inches in the
23 winter. You're getting 30 acres -- maybe you're able
24 to irrigate 30 of your hundred acres and then you've
25 got to let it go and give it to the next guy. We've

1 done some of that, we, meaning the water district. I
2 just put my water district hat on.

3 Q. Okay. Thank you.

4 A. Sorry.

5 Q. That's okay. So the -- so what's the -- is
6 water in the winter critical or is there -- how do you
7 deal with that?

8 A. I would not say it's critical. I would love
9 to have some. That effluent, even though it's bad, is
10 better than my wells, believe it or not. It's usually
11 running around that 1,200 to somewhere in that, 1,400.
12 That's better than my wells. But if all I have is my
13 wells, I will not put winter on, and I usually will
14 not use the effluent in the winter. The trees are
15 pretty much dormant. As a farmer, if you are trying
16 to make optimum yields, that winter water keeps your
17 roots fresh and ready to go. It'd be a wonderful
18 thing to do in the winter. Some of those years back
19 in the '80s when we had a lot of water, I would do
20 that. I think your trees, personally speaking as a
21 farmer, I think your trees will do better if you could
22 do that, but like on a row water year like we're
23 having right now, I do not plan on putting any winter
24 water. And I know -- that's the optimum. We're not
25 going for optimum right now. We're just -- I wouldn't

1 want to put that salt on the ground, so I'll wait
2 until mid March. But by mid March, if we don't have
3 water, then you start your wells up, and you get the
4 water out there.

5 **Q. Okay. So are we at the point of moving onto**
6 **spring then? Have we finished all the winter tasks?**

7 A. Well, you'll even do some herbicide and you
8 may lay down some herbicides down the tree row, if
9 that's appropriate to your operation. It's basically
10 a cleaning up and getting ready for the springtime.

11 **Q. Okay.**

12 A. And then there's springtime.

13 **Q. What happens in the spring?**

14 A. You do want me to go on. Okay. In the
15 springtime, you've got a -- well, in the springtime,
16 the work starts as far as planting your fertilizers,
17 your irrigations. You have insect problems starting
18 to show up, so it's -- it's regular farm work that
19 goes on and on and on until the following October, and
20 October is when you get to take a breath so...

21 **Q. When do you normally hear from the district**
22 **about the allotment of water that's going to be made**
23 **available to you?**

24 A. Okay. We try and let the farmers know as
25 early as we think we have an idea, meaning back to the

1 board hat.

2 **Q. Okay.**

3 A. The -- we try and let them know by January
4 because if water is available, even for cotton, they
5 like that water in March. So we can't always do it in
6 January so hopefully by mid February, we can at least
7 give them an idea whether we're going to have
8 early-season water. The other reason is we've got a
9 lot of farmers here that do not have wells that grow a
10 lot of cotton. Cotton needs that early water. We --
11 typically we irrigate our cotton ground and we plant
12 into the moisture. That's how we grow cotton in this
13 valley on beds. It's a good system, but you -- if you
14 don't have a well, for example, this last year, there
15 was no early water out of the dam. So --

16 **Q. So what happens when there's no early water**
17 **out of the dam to the cotton ground in your district?**
18 **What --**

19 A. A lot of guys cannot plant, and the only guys
20 that can do it are people that have wells. The people
21 that do have wells will go ahead and do that, and
22 basically they're the only ones that can't plant
23 cotton because you're not going to be able to get that
24 water to it. It's not just cotton, but -- but it's
25 principally cotton in our valley.

1 **Q. Cotton --**

2 A. That needs that early water, yeah.

3 **Q. Okay.**

4 A. Alfalfa, too. You know, it depends on, you
5 know...

6 **Q. Okay. So cotton and alfalfa can use the**
7 **early water if it's available, and if they can't, then**
8 **what happens just to --**

9 A. If they don't have -- if they don't have
10 wells, they don't plant.

11 **Q. Okay. All right.**

12 A. So they've lost another year of trying to
13 grow a crop.

14 **Q. Right. So, now, we're into -- I think you**
15 **said now we're into irrigation in terms of our walk**
16 **through the year. How many irrigations do you aim for**
17 **with your pecans?**

18 A. At least nine, and some years it's ten.
19 Depends on the rain events, and it depends on the
20 heat. Of course, the heat and the rain events and --
21 and your fruit load, also, will have a little bearing.
22 So all of those things. But generally, I'm usually
23 using -- this past year, we did nine. There's quite a
24 few years we've been at ten.

25 **Q. How many of those nine irrigations in 2021 --**

1 well, first of all, what was your allotment in 2021;
2 do you remember?

3 A. Our allotment --

4 Q. From the district?

5 A. -- I believe was 18 inches, a foot and a
6 half.

7 Q. Okay.

8 A. Yeah.

9 Q. Okay. So the -- of those nine irrigations,
10 how many of those were surface water; do you recall?

11 A. I got about 3-and-a-half. The reason I say
12 3-and-a-half, we were running so tight, the district
13 on water, they couldn't get me any part of fourth
14 irrigation so I had to start my wells up again. But
15 most of my ground took nine irrigations, about three,
16 some of them four, were with the sweet water, and the
17 rest were with -- we also -- I have one little portion
18 about 75 acres that are perfect beautiful ground.
19 That's all I got, and it took an extra irrigation that
20 I'm putting on right now. Actually, we're running our
21 wells right now on that irrigation.

22 Q. Okay. How much water do you try to provide
23 to your trees over the course of the season?

24 A. If it's --

25 Q. What -- yeah, sweet water.

1 A. If it's sweet water, we try to put out that
2 entire 4 foot if it's available. The trees will use
3 that. Remember, there's a leaching factor in there.
4 I don't know what it is, but that -- and --

5 **Q. If you had to use a combination of surface**
6 **water and well water like you did this year,**
7 **understanding there's a leaching factor, what -- is**
8 **there -- would you be more out than 48 inches?**

9 A. I would put more water on, yes, because that
10 -- what I told you about that salt in the water not
11 being as wet, and we need a higher leaching factor.
12 Not only that, but you usually have to get your
13 irrigation days pushed together a little bit, so you
14 may even have an extra irrigation if you're using your
15 wells a lot. So my guess would be this year on most
16 of my ground, we probably used maybe 4-and-a-half foot
17 of water. There may be years where I'm, oh, I'm going
18 to use 5 foot of water instead of the 4 foot but
19 because it's saltier water.

20 **Q. Okay. How do you decide when to irrigate?**

21 A. We have different mechanisms in this valley.
22 I use some gypsum blocks, which are these little
23 gypsum blocks with two little electrical leads. You
24 got a little meter. It'll tell you what your ground
25 saturation is, and you can place those at 6 inches,

1 18, and then maybe 2-and-a-half foot. And that gives
2 you -- you can go out and check those daily if you
3 want, and you can see when the top layer is starting
4 to get low on water and the second et cetera. So you
5 try and use those or you can be like me and you farm
6 for 50 years and the seat of the pants works pretty
7 good. But anyway, you use those, try and guess when
8 your water gets down to a critical level, and you try
9 and -- that's where a little bit of art comes in. You
10 have to order your water, in general, five to seven
11 days ahead of time to get water out of our irrigation
12 system if you're talking about irrigation water coming
13 from the dam.

14 **Q. Okay. So it takes five to seven days from**
15 **the Caballo Dam to get water down to you?**

16 A. You know, I'm not sure, but it takes that
17 long to order.

18 **Q. Okay.**

19 A. Our order dates are basically kind of, like,
20 8:00 Tuesday for the following Friday, Saturday,
21 Sunday, Monday.

22 **Q. Okay.**

23 A. And then 8:00 Thursday for the following -- I
24 don't remember. Anyway, I'd have -- it's about four
25 or five days you have to put your order in ahead of

1 time --

2 **Q. Okay.**

3 A. -- to try and get the water to you.

4 **Q. Okay.**

5 A. Kind of like what Bobby Sloan was talking
6 about. We -- we have to be a little bit artistic or
7 know our ground well enough so there's a lag time.
8 You can't just place the order and get your water
9 tomorrow so...

10 **Q. Okay. So for purposes of 2021, you mentioned**
11 **that you have an 18-inch allotment, and so you**
12 **supplied presumably at least 30 inches of irrigation**
13 **water from your wells; is that right?**

14 A. Yes, ma'am.

15 **Q. Is that sustainable over the course of period**
16 **of years in your view, in your experience?**

17 A. No, it is not. There's already been growers
18 that have gone broke and out of business, but I
19 consider myself a high well-managed farm, but if we
20 had to do that for too many years, if I just had to
21 rely on my wells, it is not sustainable. My guess is
22 in four or five years, I'd probably have about killed
23 most of my trees. I have some neighbors that have
24 killed quite a few of their trees only because they
25 didn't have the soil amendments out there in time or

1 they didn't, you know, manage something right. So
2 we've got -- we have people right now that can show
3 you a lot of burned-up -- burnt-looking trees that are
4 in a lot of trouble right now, and this has only been,
5 I don't know, well, since 2003. Actually, been a long
6 time, hadn't it? Been 17, 18 years of this drought.

7 **Q. Yeah. Are you familiar with the 2008**
8 **Operating Agreement?**

9 A. I am somewhat.

10 **Q. How are you familiar with it?**

11 A. I was on the board of directors when that
12 thing -- when we signed that thing and negotiated that
13 thing.

14 **Q. Was the 18 inches of water that you had --**
15 **the District had available to its constituents this**
16 **year, was that water associated with some of EP1's**
17 **carryover; do you know?**

18 A. Yes, it was.

19 **Q. So can you describe for the Court your**
20 **experience of receiving water in EP1 under the**
21 **operating agreement?**

22 A. I'm not sure exactly what you mean there.

23 **Q. Let me try and ask it a different way. Since**
24 **the operating agreement, have you experienced any**
25 **differences in the amount of water available to you as**

1 **an EP1 farmer from the dam?**

2 A. Well, not really because it -- we've been in
3 this drought. We've got lower water coming from the
4 dam. So, yeah, we haven't had a full supply except, I
5 think, 2006. 2006 was one of those strange years we
6 had a lot of rain and stuff. No, I take that back. I
7 think even 2006, we started off and had to use our
8 wells.

9 **Q. Okay.**

10 A. But -- so, yes, we've gotten a lot less
11 water, but it's principally because of this drought.

12 **Q. Okay.**

13 A. I think. Maybe I don't understand the
14 question.

15 **Q. Well, maybe I'm not asking it very well. So**
16 **we just mentioned the carryover. One feature of the**
17 **operating agreement is carryover, and are you familiar**
18 **with that?**

19 A. Yes. The carryover is vitally important only
20 because it allows each as they get more and more
21 efficient to save some of their water. So, yes,
22 that's a viable thing. We've been asking for that for
23 30 years. It was finally negotiated in the operating
24 agreement, and I think it's a good thing -- good thing
25 for both districts. You run your district

1 efficiently; you're going to get to keep some of your
2 water.

3 **Q. So how does it encourage people to run the**
4 **district efficiently?**

5 A. Well, in our case like you saw this -- no
6 early water this year because we had used it up last
7 year. If there was a way that we could have saved
8 enough water, you may allow for that early-season
9 water, and you may give those cotton farmers a chance
10 to plant the cotton. So that's the beauty of it. It
11 can give you early-season water, whereas right now, we
12 didn't get our water until June. For a cotton guy,
13 that's too late. For a pecan guy, we have wells
14 because we know we have -- we have a permanent crop.
15 I can't go out there and plow it under. So we have to
16 start March 15th, so I've got to put that salty water
17 that I've got on it no matter what and hope I keep
18 enough on there that the tree doesn't get too badly
19 affected. But that's kind of --

20 **Q. So let me ask you about carryover. You said**
21 **that the carryover -- the ability to carryover is**
22 **something that the -- the District has wanted for**
23 **years. How long -- how far back -- I mean, does it go**
24 **back to when you started being a -- a member of the**
25 **Board that carryover was something that the District**

1 **was asking for?**

2 A. Well, ever since I've been on the Board,
3 we've been trying to talk about carryover with the
4 Bureau and with EBID. It's a -- you know, we've been
5 talking about it. I came on the Board, like I said,
6 in '98, so at least that time, and I'm pretty sure it
7 was going on prior to that, too.

8 **Q. Okay. All right.**

9 **MS. KLAHN:** I don't have any further
10 questions for this witness. Thank you, Mr. Ivey.

11 **THE WITNESS:** You bet.

12 **JUDGE MELLOY:** Mr. Dubois, are you going
13 to ask any questions?

14 **MR. DUBOIS:** No, Your Honor, I am not.
15 Thank you.

16 **JUDGE MELLOY:** All right. Mr. Ogaz, you
17 may proceed.

18 Just a second, let me -- before you do
19 that, so I don't forget, you had identified this map,
20 Ms. Klahn, which was Ivey Demonstrative Exhibit 1,
21 which was labeled an A exhibit. I assume you want
22 that in evidence?

23 **MS. KLAHN:** Yes, please, thank you.

24 **JUDGE MELLOY:** And, Mr. Ogaz, before I
25 forget, you had identified some exhibits as A exhibits

1 from Mr. Sloan, which I forgot to discuss,
2 specifically New Mexico 183, 184, and Texas 320, all
3 of which were board of director minutes. I don't
4 think you discussed any of them. Do you want those in
5 evidence?

6 **MR. OGAZ:** Yes, Your Honor.

7 **JUDGE MELLOY:** All right. They'll be
8 admitted. They're all A exhibits.

9 All right. Mr. Ogaz, you may proceed.

10 **MR. OGAZ:** Thank you, Your Honor.

11 CROSS-EXAMINATION

12 BY MR. OGAZ:

13 **Q. Good afternoon, Mr. Ivey.**

14 **A. Good afternoon.**

15 **Q. I understand from your testimony today that**
16 **you've been farming pecans in EP1 for about 45 years**
17 **now; is that correct?**

18 **A. Yes, sir.**

19 **Q. So is that you started growing pecans back in**
20 **roughly 1975?**

21 **A. Yeah. I think they were actually planted in**
22 **'74 or maybe even '73, but, yes, somewhere in there.**

23 **Q. Would it be correct to say that you are one**
24 **of the pioneering farmers with respect to the growing**
25 **of pecan trees in EP1?**

1 A. No, I don't think so. My generation,
2 possibly, I saw that change from cotton to pecans, but
3 it was actually my father and some uncles who started
4 the first commercially -- you know, farm planted
5 strictly for pecans commercially back in about 1960 or
6 '63.

7 **Q. And do you recall how many other farmers were**
8 **growing pecans back in the early 1960s?**

9 A. Nobody except for the Allison Farm, which is
10 now called 5R. They had them along their -- their
11 ditch banks. They used them kind of as wind breaks,
12 and they would harvest those. And I think all of a
13 sudden, it dawned on them somewhere in the, oh,
14 probably around 1970 or in mid '60s, about the same
15 time we did, You know what, these pecans are making us
16 a lot more money than the cattle. They were running
17 cattle and cotton, so yeah. But they -- they have
18 some of those trees. Those are precursors similar to
19 the Stahmann orchard, some of those trees. Matter of
20 fact, Stahmann had a hand in some of those plantings
21 back in Tornillo, Texas many years ago.

22 **Q. Do you recall what years Mr. Stahmann was**
23 **growing those pecan trees? Was he one of the first?**

24 A. If I remember. I don't know enough. I'm not
25 quite old enough. Born in 1950. But I think if I

1 remember the story, up until about the '30s,
2 Mr. Stahmann, and that's when he moved up to where he
3 lives now -- I mean, where the Stahmann orchards are
4 now, and he left those orchards, and Riley Allison,
5 who -- you know, the Riley Allison, for example, paved
6 most of New Mexico back in the '50s bought this farm
7 down here, and they had those trees all along the
8 edges of their fields.

9 **Q. Do you recall how many acres of pecans are**
10 **being grown in EP1 in the early 1960s?**

11 A. Oh, probably only a couple hundred
12 commercially. Couple hundred acres.

13 **Q. And do you farm only pecans now?**

14 A. No. But 90 percent, yes.

15 **Q. What else do you grow?**

16 A. I have some out ground that we've been
17 growing sod on at the moment and contemplating
18 possibly putting more pecans in that ground, but we
19 have not yet.

20 **Q. And you started with about 30 acres of pecan**
21 **trees back in the mid 1970s, correct?**

22 A. Yes. 30 acres out of about 400 was our first
23 planting.

24 **Q. All right. And since then, you've gradually**
25 **increased the number of acres you've grown in EP1?**

1 A. All the way to -- that was a 400-acre farm at
2 the time. We planted the last of that 400 acres
3 about, I was trying to remember on Sarah, I think
4 around '3, '4, '5, somewhere in there, we finished
5 planting the last of that 400 acres.

6 **Q. So you're currently farming about 570 acres**
7 **of pecans right now?**

8 A. Right. I just bought a farm last year of 170
9 acres mature pecan trees.

10 **Q. That's almost 20 times the acreage you**
11 **started with; isn't that right?**

12 A. No. We started with 400 acres, I guess, so
13 we've added 170.

14 **Q. From the time you started with 30 acres of**
15 **pecans, are you growing about 20 times more acres of**
16 **pecan trees now?**

17 A. You're talking about pecans?

18 **Q. Yes, sir.**

19 A. What is that, 19 times, something like that.

20 **Q. Mr. Ivey, why did you choose to cultivate**
21 **pecans rather than other crops?**

22 A. I didn't want to go broke and I wanted to
23 raise a family and I didn't want the family to go
24 broke.

25 **Q. So are profit margins a major reason why you**

1 grow mostly pecans?

2 A. Yes.

3 Q. And profit margins for cotton, are they
4 thinner than for pecans?

5 A. Very.

6 Q. Is that why you don't grow cotton anymore?

7 A. That's exactly it, yes.

8 Q. There are a lot more farmers in EP1 growing
9 pecans now than there were in 1970s, correct?

10 A. Yes, there sure are.

11 Q. Do farmers in EP1 still grow other crops?

12 A. Yes, they do but not many.

13 Q. What other crops are --

14 A. They still grow cotton and alfalfa, and other
15 than a little bit of dehydrator onion, that's about
16 it, whereas they -- you know, whereas they used to be
17 able to grow a lot of vegetables. They don't do that
18 anymore.

19 Q. And you use surface water to irrigate your
20 pecans when it's available, right?

21 A. Yes.

22 Q. Okay. And that surface water will be a mix
23 of return flows from EBID and water released straight
24 from Elephant Butte Dam?

25 A. Yes.

1 Q. Being downstream of EBID, the surface water
2 you receive has historically had more salinity than
3 the surface water in EBID; is that correct?

4 A. Yes.

5 Q. Mr. Ivey, you use groundwater from your wells
6 when there isn't enough surface water, right?

7 A. Correct.

8 Q. And you've drilled several new surface --
9 sorry -- several new groundwater wells since 2000?

10 A. No, I actually drilled eight, and we had to
11 cap one last year.

12 Q. Okay. And you inherited a few wells that
13 were drilled back in the 1950s, correct?

14 A. Correct.

15 Q. Wells were needed back in the 1950s because
16 of the prolonged drought?

17 A. 1950s drought, yes.

18 Q. But the quality of your groundwater is not as
19 good as the surface water, is it?

20 A. Not even close.

21 Q. And the groundwater has always been of a
22 lower quality since you started farming?

23 A. Yes.

24 Q. But with proper management by yourself,
25 you're able to successfully continue growing pecans,

1 **despite that lower-quality groundwater?**

2 A. Well, that's to be seen in my opinion because
3 I -- I consider my operation, of course, very well
4 managed, but over time, it doesn't matter how good I
5 am, if we have to use this water, it's going to be
6 over with.

7 **Q. And since you started farming in 1975, have**
8 **you been able to increase your per-acre pecan yields?**

9 A. Well, sure. But we had immature trees and
10 they grow to a mature orchard and, of course, you try
11 to do what you can to ensure your yield is going up.

12 **Q. As part of your farm management program, do**
13 **you add elemental sulfur or gypsum to your trees every**
14 **year?**

15 A. Yes. In the soil. To the soil.

16 **Q. And you said that you typically add extra**
17 **water, depending on how salty the irrigation water is?**

18 A. Yes.

19 **Q. And the more salty the irrigation water, do**
20 **you have to apply more irrigation water?**

21 A. Right. As I explained, it's not as wet, and
22 if you -- if you don't add a little more, that tree
23 will start up taking.

24 **Q. That extra water, that is within your full**
25 **allotment from EP1?**

1 A. No, it is not. It's -- it has nothing to do
2 with my allotment from EP1.

3 Q. Okay. Mr. Ivey, does every farmer have their
4 own fertilizer or soil amendment program?

5 A. Yes.

6 Q. And you found the -- your own farm management
7 program sufficient to deal with the water quality
8 issues down in EP1?

9 A. For right now, yes. Only temporary, I'm
10 afraid.

11 Q. Mr. Ivey, you've never lost any trees because
12 of salinity, have you?

13 A. Oh, yes, I have. I've lost one or two here
14 or there.

15 Q. Okay. And salinity is not the only external
16 factor that could impact your crop yields, correct?

17 A. Well, no. We've got insects, weather, hail,
18 anything you can imagine.

19 Q. Can a late-spring frost impact your yields?

20 A. Of course.

21 Q. Can an early-fall frost impact your yields?

22 A. Of course.

23 Q. Can the soil -- can your soil type where your
24 trees are planted impact your yields?

25 A. Yes.

1 Q. Will surface water availability impact your
2 crop yields?

3 A. Yes.

4 Q. But you've never lost any trees because of
5 water shortage, have you?

6 A. Water shortage? I don't know. That's hard
7 to say. I have lost a few. I've always attributed it
8 to salt. I don't really think it's a water shortage.
9 I don't know. That's -- that's -- I don't know. I
10 don't know.

11 Q. Can all -- any of those factors also impact
12 the grade of your pecans?

13 A. Yes. Of course.

14 Q. Okay. Mr. Ivey, in EP1 is a full allotment 4
15 acre-feet of surface water?

16 A. Yes, it is.

17 Q. And during the 1980s and 1990s, did you have
18 a full allotment for a number of those years?

19 A. Boy, we sure did.

20 Q. And did you have to use your wells in years
21 you have received a full allotment?

22 A. No. It was a mistake.

23 Q. Okay.

24 A. That's why I lost those three wells.

25 Q. How many groundwater wells do you have,

1 **Mr. Ivey, total?**

2 A. I have seven on the original 400, and the new
3 farm I just bought, we have two.

4 **Q. All right. And are you required to have a**
5 **permit from the State of Texas for those wells?**

6 A. I think they know where they're drilled. I
7 don't need a permit to run them or anything.

8 **Q. And are you required to have a meter on any**
9 **of those wells?**

10 A. No, we are not.

11 **Q. So you don't have to measure or report your**
12 **groundwater usage to the State of Texas?**

13 A. I do not.

14 **Q. And the State of Texas doesn't limit or cap**
15 **your groundwater use at all?**

16 A. No, sir.

17 **Q. Okay. Mr. Ivey, would you recommend that**
18 **anyone try to grow pecans in the Hudspeth area?**

19 A. No. That's why you see no trees down there.
20 That ground is too salted. It's salted up. It's
21 wonderful ground, but it's got a lot of salt. My
22 ancestors went broke in the '50s down there.

23 **Q. All right. And how --**

24 A. Excuse me. I'm sorry.

25 **Q. Sorry. And have you ever seen pecans grown**

1 **down in Hudspeth?**

2 A. Other than that yard tree or two down there,
3 no, because they can't make it. Like I said, the
4 ground is beautiful. I had a farm in Hudspeth many
5 years ago, but the salt was salted up in the '50s, and
6 they hadn't come back yet. It -- it broke, like I
7 said, a great uncle of mine went broke down there. So
8 you -- if we ever got the salt out of the ground, it
9 could grow pecans, but it cannot grow pecans now.

10 **Q. And, Mr. Ivey, you mentioned earlier that you**
11 **applied elemental sulfur or gypsum to your trees to**
12 **help reduce the impacts of salinity. Do you apply**
13 **those soil amendments to your trees every year?**

14 A. Yes.

15 **Q. Do you apply those soil amendments even when**
16 **you receive a full allotment?**

17 A. Yes, I did it as part of my regular routine.

18 **Q. And, Mr. Ivey, did you used to excavate your**
19 **soils when you first started farming pecan trees?**

20 A. Our first excavation -- I actually put in
21 drain plow on 110 acres in about the -- let me think
22 here, probably around '84, so that was the first time
23 we did any sub trenching. That was with tile. They
24 don't use that too much in our area. I think where
25 the honorable judge is from, they may use it up there,

1 but they don't use it around here too much. But other
2 than that, the excavator came probably about late '80s
3 before I started using it.

4 **MR. OGAZ:** Thank you, Mr. Ivey. I have
5 no further questions.

6 **THE WITNESS:** Okay.

7 **JUDGE MELLOY:** Any redirect?

8 **MS. KLAHN:** Just one, Your Honor.

9 **REDIRECT EXAMINATION**

10 **BY MS. KLAHN:**

11 **Q. Mr. Ivey, Mr. Ogaz asked you whether you had**
12 **drilled eight wells since around 2000. Do you recall**
13 **that question?**

14 **A. Yes, ma'am.**

15 **Q. Were the wells that you drilled since 2000**
16 **actually re-drills of the original wells that your**
17 **family had put in in the '50s?**

18 **A. Three of them were. I tried to save the**
19 **three 19 -- around the 1950 era wells, and I -- I was**
20 **not very lucky. I could not save any. I have**
21 **neighbors that can save one out of every two or one**
22 **out of three. I could not save any of those three.**
23 **So, yes, three of those wells are re-drills. They're**
24 **--**

25 **Q. So --**

1 A. Yeah.

2 **Q. And so four of them were new?**

3 A. Yes.

4 **Q. Okay.**

5 A. Well --

6 **Q. So that's a total of seven. That's what you**
7 **testified.**

8 A. Right.

9 **Q. So I was just trying to do the math.**

10 A. I had originally eight. One has already been
11 capped so...

12 **Q. Okay. So -- but the impression I was afraid**
13 **was left was that you had 15 wells. Do you have 15**
14 **wells?**

15 A. No. Well, it'd be nice. Well, I have four
16 wells, and they -- the volume on my wells, we -- I
17 don't have a 2,000 gallon per minute well. That's
18 what everybody tries to get. I wish I had one or two
19 of those. My good wells are about 1,500. I have one
20 well that's about 800 gallons per minute, and a farmer
21 will tell you 2,000 is what you're trying to get every
22 time in our valley. We do not get those big flows.
23 Plus, they're very poor quality. My area of this
24 valley, like I said, every -- all the neighbors who
25 have all tried to find water, we can't find good water

1 here. It is what it is.

2 Q. Okay. I was just trying to get the number
3 right.

4 A. Yeah.

5 Q. Thank you.

6 A. Okay.

7 MS. KLAHN: I don't have any further
8 questions, Your Honor. Thank you.

9 JUDGE MELLOY: Mr. Ogaz, do you have
10 anything further?

11 MR. OGAZ: No, thank you, Your Honor.

12 JUDGE MELLOY: All right. Thank you,
13 Mr. Ivey. We appreciate your testimony, and you're
14 excused. Thank you very much.

15 THE WITNESS: Thank you.

16 JUDGE MELLOY: All right. I assume
17 that's -- that's it for today, and we're not going to
18 try to -- well, it's 20 to 5:00 our time, so let me
19 just ask where are we going in terms of the schedule
20 next week? What do you think you're going to be able
21 to get -- how many are you going to get through next
22 week?

23 MS. KLAHN: Well, we expect to get
24 through Mr. Blair -- Dr. Blair and Mr. Reyes on
25 Monday, and Mr. Rios on Tuesday, and I believe

1 Mr. Balliew comes after Mr. Rios. I don't have the --
2 I don't have our list in front of me. I apologize.

3 **JUDGE MELLOY:** We have Blair, Rios,
4 Balliew, Cortez, and then Miltenberger.

5 **MS. KLAHN:** Right. So I'm pretty sure
6 by the end of the week, we will either be finished
7 with everybody but Miltenberger or we'll be starting
8 Miltenberger.

9 **JUDGE MELLOY:** You may start
10 Miltenberger by Thursday?

11 **MS. KLAHN:** Actually, I forgot. We only
12 have four days. No, I think we will probably start
13 Miltenberger on Monday, the 18th. We anticipate that
14 Mr. Cortez could take some time.

15 **JUDGE MELLOY:** And what is Cortez?
16 What's his --

17 **MR. DUBOIS:** Our assumption, Your Honor,
18 is Mr. Filiberto Cortez is the Reclamation -- former
19 Reclamation employee who we're calling as a witness,
20 and we assume he will be on Thursday and probably will
21 take all day on Thursday with cross.

22 **JUDGE MELLOY:** Okay. And do you think
23 you can get through Miltenberger in one day or is that
24 -- is he going to be a multi-day witness?

25 **MS. KLAHN:** I think we're thinking one

1 day, and if -- if Ms. Barfield is handling that
2 witness. Ms. Barfield, if that's not correct, pipe
3 in. She says it depends on cross.

4 **JUDGE MELLOY:** At this point, do you
5 anticipate calling any of your may-call witnesses?

6 **MS. KLAHN:** No, sir.

7 **JUDGE MELLOY:** So that means New Mexico
8 should be prepared to start putting on witnesses a
9 week from Tuesday. Depending on what happens with
10 Miltenberger, we may not get there or may be midday on
11 Tuesday, but you should at least start -- plan on
12 Tuesday, put your witnesses on. And you're going to
13 put on your historian as your very first witness; is
14 that right, Mr. Ogaz?

15 **MR. OGAZ:** Yes, Your Honor.

16 **JUDGE MELLOY:** So I have historians back
17 to back. All right. Anything else we need to talk
18 about? If not, I will see everybody on Monday then.
19 Thank you, everyone.

20 **MS. KLAHN:** Thank you, Your Honor.

21 **MR. OGAZ:** Thanks, Your Honor.

22 **MR. DUBOIS:** Thank you, Your Honor.

23 (The proceedings adjourned at 4:44 p.m.)
24
25

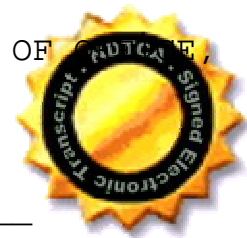
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