

**IN THE DISTRICT COURT OF THE FOURTH JUDICIAL DISTRICT  
OF THE STATE OF IDAHO, IN AND FOR THE COUNTY OF ADA**

IDAHO GROUND WATER  
APPROPRIATORS, INC.,

Petitioner,

vs.

IDAHO DEPARTMENT OF WATER  
RESOURCES, and GARY SPACKMAN  
in his capacity as the Director of the Idaho  
Department of Water Resources.

Respondents.

Case No. CV01-23-13173

IN THE MATTER OF THE  
DISTRIBUTION OF WATER TO  
VARIOUS WATER RIGHTS HELD BY  
AND FOR THE BENEFIT OF A&B  
IRRIGATION DISTRICT, AMERICAN  
FALLS RESERVOIR DISTRICT #2,  
BURLEY IRRIGATION DISTRICT,  
MILNER IRRIGATION DISTRICT,  
MINIDOKA IRRIGATION DISTRICT,  
NORTH SIDE CANAL COMPANY,  
AND TWIN FALLS CANAL COMPANY

**AGENCY HEARING TRANSCRIPT ON APPEAL**

---

Judicial Review from the Idaho Department of Water Resources  
Gary Spackman, Director, Presiding

---

RAÚL R. LABRADOR  
ATTORNEY GENERAL

SCOTT L. CAMPBELL  
Chief of Energy and Natural Resources  
Division

GARRICK L. BAXTER, ISB No. 6301  
KAYLEEN R. RICHTER, ISB No. 11258  
Deputy Attorneys General  
Idaho Department of Water Resources  
P.O. Box 83720  
Boise, Idaho 83720-0098  
Telephone: (208) 287-4800  
Facsimile: (208) 287-6700  
[garrick.baxter@idwr.idaho.gov](mailto:garrick.baxter@idwr.idaho.gov)  
[kayleen.richter@idwr.idaho.gov](mailto:kayleen.richter@idwr.idaho.gov)

*Attorneys for Respondents*

Sarah A. Klahn  
Maximilian C. Bricker  
SOMACH SIMMONS & DUNN, P.C.  
1155 Canyon Blvd., Suite 110  
Boulder, CO 80302  
Telephone: (303) 449-2834  
[sklahn@somachlaw.com](mailto:sklahn@somachlaw.com)  
[mbricker@somachlaw.com](mailto:mbricker@somachlaw.com)

*Attorneys for City of Pocatello*

John K. Simpson  
Travis L. Thompson  
MARTEN LAW LLP  
163 Second Ave. West  
P.O. Box 63  
Twin Falls, Idaho 83303-0063  
Telephone: (208) 733-0700  
[jsimpson@martenlaw.com](mailto:jsimpson@martenlaw.com)  
[tthompson@martenlaw.com](mailto:tthompson@martenlaw.com)

*Attorneys for A&B Irrigation District,  
Burley Irrigation District, Milner  
Irrigation District, North Side Canal  
Company and Twin Falls Canal Company*

Thomas J. Budge  
Elisheva M. Patterson  
RACINE OLSON, PLLP  
201 E. Center St. / P.O. Box 1391  
Pocatello, Idaho 83204  
Telephone: (208) 232-6101  
Facsimile: (208) 232-6109  
[tj@racineolson.com](mailto:tj@racineolson.com)  
[elisheva@racineolson.com](mailto:elisheva@racineolson.com)

*Attorneys for Petitioner*

W. Kent Fletcher  
FLETCHER LAW OFFICE  
P.O. BOX 248  
Burley, Idaho 83318  
Telephone: (208) 678-3250  
[wkf@pmt.org](mailto:wkf@pmt.org)

*Attorney for American Falls Reservoir  
District #2 and Minidoka Irrigation  
District*

Dylan Anderson  
DYLAN ANDERSON LAW PLLC  
P.O. Box 35  
Rexburg, Idaho 83440  
Telephone: (208) 684-7701  
[dylan@dylanandersonlaw.com](mailto:dylan@dylanandersonlaw.com)

*Attorney for Bingham Groundwater  
District (BGWD)*

Skyler C. Johns  
Nathan M. Olsen  
Steven L. Taggart  
OLSEN TAGGART PLLC  
P.O. Box 3005  
Idaho Falls, ID 83403-3005  
Telephone: (208) 552-6442  
Facsimile: (208) 524-6095  
[sjohns@olsentaggart.com](mailto:sjohns@olsentaggart.com)  
[nolsen@olsentaggart.com](mailto:nolsen@olsentaggart.com)  
[staggart@olsentaggart.com](mailto:staggart@olsentaggart.com)

*Attorneys for Bonneville-Jefferson Ground  
Water District*

Candice M. McHugh  
Chris M. Bromley  
MCHUGH BROMLEY, PLLC  
380 S. 4th St., Ste. 103  
Boise, ID 83702  
Telephone: (208) 287-0991  
Facsimile: (208) 287-0864  
[cmchugh@mchughbromley.com](mailto:cmchugh@mchughbromley.com)  
[cbromley@mchughbromley.com](mailto:cbromley@mchughbromley.com)

*Attorneys for the Cities of Bliss, Burley,  
Carey, Declo, Dietrich, Gooding,  
Hazelton, Heyburn, Jerome, Paul,  
Richfield, Rupert, Shoshone, and Wendell*

BEFORE THE DEPARTMENT OF WATER RESOURCES  
OF THE STATE OF IDAHO

IN THE MATTER OF DISTRIBUTION OF )  
WATER TO VARIOUS WATER RIGHTS )  
HELD BY OR FOR THE BENEFIT OF A&B ) DOCKET NO.  
IRRIGATION DISTRICT, AMERICAN ) CM-DC-2010-001  
FALLS RESERVOIR DISTRICT #2, )  
BURLEY IRRIGATION DISTRICT, )  
MILNER IRRIGATION DISTRICT, )  
MINIDOKA IRRIGATION DISTRICT, )  
NORTH SIDE CANAL COMPANY, AND )  
TWIN FALLS CANAL COMPANY )  
\_\_\_\_\_ )

BEFORE

HEARING OFFICER: GARY SPACKMAN

VOLUME I

Date: June 6, 2023 - 9:03 a.m.  
Location: Idaho Department of Water Resources  
322 East Front Street  
Boise, Idaho

REPORTED BY:

COLLEEN P. DOHERTY, CSR 345

Notary Public

## 1 APPEARANCES:

2 For the City of Pocatello:

3 SOMACH SIMMONS &amp; DUNN, P.C.

4 BY MS. SARAH A. KLAHN

5 MR. MAXIMILIAN BRICKER

6 1155 Canyon Street, Suite 110

7 Boulder, Colorado 80302

8 sklahn@somachlaw.com

9 mbricker@somachlaw.com

10 For the Cities of Bliss, Burley, Carey, Declo, Dietrich,

11 Gooding, Hazelton, Heyburn, Jerome, Paul, Richfield,

12 Rupert, Shoshone, and Wendell:

13 McHUGH BROMLEY, PLLC

14 BY MS. CANDICE M. McHUGH (Present Remotely)

15 BY MR. CHRIS M. BROMLEY

16 380 South 4th Street, Suite 103

17 Boise, Idaho 83702

18 cmchugh@mchughbromley.com

19 cbromley@mchughbromley.com

20 Attorney for City of Idaho Falls and City of Ammon:

21 HOLDEN, KIDWELL, HAHN &amp; CRAPO, PLLC

22 BY MR. ROBERT L. HARRIS

23 1000 Riverwalk Drive, Suite 200

24 Idaho Falls, Idaho 83405-0130

25 rharris@holdenlegal.com

## 1 APPEARANCES (Continued):

2 For Idaho Ground Water Appropriators, Inc.:

3 RACINE OLSON, PLLP

4 MR. THOMAS J. BUDGE

5 BY MS. ELISHEVA M. PATTERSON

6 201 E. Center Street

7 Pocatello, Idaho 83204

8 tj@racineolson.com

9 elisheva@racineolson.com

10 For Ground Water Districts:

11 RIGBY ANDRUS &amp; RIGBY LAW, PLLC

12 BY MR. JERRY R. RIGBY

13 25 North Second East

14 Rexburg, Idaho 83440-0250

15 jrigby@rex-law.com

16 For Bonneville-Jefferson Ground Water District:

17 OLSEN TAGGART PLLC

18 SKYLER C. JOHNS

19 1449 E 17th Street

20 Idaho Falls, Idaho 83403

21 sjohns@olsentaggart.com

22

23

24

25

APPEARANCES (Continued):

For Bingham Ground Water District:

DYLAN ANDERSON LAW

BY MR. DYLAN ANDERSON

P.O. Box 35

Rexburg, Idaho 83440

dylan@dylanandersonlaw.com

For the Surface Water Coalition, Twin Falls Canal  
Company, North Side Canal Company, and Milner Irrigation  
District, A & B, Burley Irrigation District:

MARTEN LAW

BY MR. JOHN K. SIMPSON

BY MR. TRAVIS L. THOMPSON

101 S. Capitol Boulevard, Suite 305

Boise, Idaho 83701-2139

jsimpson@martenlaw.com

tthompson@martenlaw.com

For the Minidoka Irrigation District, AFRD#2:

FLETCHER LAW OFFICE

BY MR. W. KENT FLETCHER

1200 Overland Avenue

Burley, Idaho 83318-0248

wkf@pmt.org

APPEARANCES (Continued)

For the Department of Water Resources:

OFFICE OF ATTORNEY GENERAL

IDAHO DEPARTMENT OF WATER RESOURCES

BY MR. GARRICK BAXTER (Present Remotely)

BY MR. PETER WOOD

322 E. Front Street

Boise, Idaho 83720-0098

[garrick.baxter@idwr.idaho.gov](mailto:garrick.baxter@idwr.idaho.gov)

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25



## I N D E X

## W I T N E S S E S

		PAGE
	TESTIMONY OF JENNIFER SUKOW	
	Direct Examination by Mr. Wood	37
	Cross-Examination by Ms. McHugh	39
	Cross-Examination by Ms. Klahn	60
	Cross-Examination by Mr. Budge	63
	Cross-Examination by Mr. Harris	88
	Cross-Examination by Mr. Anderson	95
	Cross-Examination by Mr. Simpson	96
	Redirect Examination by Mr. Wood	103
	TESTIMONY OF DAVID COLVIN	
	Direct Examination by Mr. Thompson	106
	Cross-Examination by Mr. Bricker	110
	Cross-Examination by Mr. Budge	116
	TESTIMONY OF MATTHEW "MATT" ANDERS	
	Direct Examination by Wood	119
	Cross-Examination by Ms. Klahn	124
	Cross-Examination by Mr. Anderson	150
	Cross-Examination by Mr. Harris	161
	Cross-Examination by Mr. Budge	166
	Cross-Examination by Mr. Bromley	213

## I N D E X (Continued)

	PAGE
TESTIMONY OF MATTHEW "MATT" ANDERS	
Cross-Examination by Ms. McHugh	216
Cross-Examination by Mr. Thompson	219
Redirect Examination by Mr. Wood	222
Recross-Examination by Mr. Budge	224

## E X H I B I T S

EXHIBIT NO. AND DESCRIPTION	MARKED	RECEIVED
Exh 300 - 4/21/2023 Fifth Amended Final Order	40	59
Exh 301 - 4/21/2023 Final Order Regarding April 2023 Forecast Supply	42	59
Exh 318 - 11/28/2022 IDWR, SWC Methodology	48	51
Exh 305 - 4/20/2022 Final Order Regarding April 2022 Forecast Supply	57	59
Exh 914 - 20221223 IDWR Preliminary Recommendations	65	
Exh 197 - Attachment 1 - IGWA Proportionate Share Modeling	76	

## I N D E X (Continued)

## E X H I B I T S

3	EXHIBIT NO. AND DESCRIPTION	MARKED	RECEIVED
4	Exh 929 - Depo Exhibit 18, CM	80	
5	Rules		
6	Exh 126 - Depo Exhibit 8,	84	
7	20230503 Baxter Email Re: GWD		
8	Mitigation Obligations		
9	Exh 3 - Ground Water Expert	107	109
10	Report - 2023 Methodology		
11	Exh 306 (Exh 135) - 4/19/2016	116	135- 135
12	Fourth Amended Final Order		306- 149
13	Exh 324 - 2/19/2015 Proposed	133	148
14	Modification to Method for		
15	Determining Reasonable In-Season		
16	Demand (Anders Dep Exhibit 13)		
17	Exh 325 - 12/1/2022 Proposed	137	148
18	Modification to Method for		
19	Determining Reasonable In-Season		
20	Demand (Anders Dep Exhibit 14)		
21	Exh 362 - Copy of Contract	145	
22	Between State Board of Land		
23	Commissioners and Twin Falls		
24	Land & Water Company, 1/2/1903		
25			

## I N D E X (Continued)

## E X H I B I T S

3	EXHIBIT NO. AND DESCRIPTION	MARKED	RECEIVED
4	Exh 914 - 20221212 IDWR Prelim	157	
5	Recommendation		
6	Exh 915 - 20230116 Cities	179	180
7	Comments on SWC Methodology		
8	Recommendation		
9	Exh 916 - 20230116 Lynker Memo	179	180
10	Re: IDWR Staff Recommendations		
11	Exh 103 - 2015 Technical Memo	182	186
12	from Liz Cresto and Anders to		
13	the Director		
14	Exh 901 - 20221117 Forecast	184	
15	Supply SWC TWG		
16	Exh 928 - Depo Ex 17, 20221201	202	
17	NRT Metric SWC TWG 12/1/22 with		
18	Supplemental Slides		
19	Exh 929 - Depo Exhibit 18, CM	207	
20	Rules		
21	Exh 118 - 20230116 SWC Comments	219	230
22	to IDWR Re: Methodology Update		
23			
24			
25			

1           THE HEARING OFFICER: Welcome everyone, old  
2 acquaintances. I have to characterize most of you in  
3 that category. We're set up a little differently than  
4 we normally set up. And I'm not sure I like it. Many  
5 of you seem to be in distant view from this location.  
6 So it seemed to me, we needed at least in the past have  
7 been a little more intimate in another set up. We  
8 arranged the furniture this way, because we have some  
9 people participating electronically online in remote  
10 locations, and we want to make sure that everybody can  
11 see the screens, including the Hearing Officer and  
12 reporter. So that's the reason for the change.

13           This is the time and place scheduled for a  
14 hearing regarding the issuance of a Fifth Methodology  
15 Order in the Surface Water Coalition delivery call case.  
16 And probably the first matter of business is to  
17 introduce everyone here and call roll.

18           So let's start, and we have a court reporter  
19 here, that is familiar to many. Colleen, if you would  
20 introduce yourself. And then we'll go across the front  
21 and go row by row.

22           THE REPORTER: Colleen Doherty, with M&M Court  
23 Reporting.

24           THE HEARING OFFICER: I might just add that  
25 Colleen has been participating in enough of these

1 hearings that she probably is developed some expertise  
2 in the vernacular of water. And so we appreciate M&M  
3 Court Reporting and their help.

4 I'm Gary Spackman, the Director of the Idaho  
5 Department of Water Resources.

6 MR. WOOD: Pete Wood, attorney for the  
7 Department.

8 THE HEARING OFFICER: Let's start with you,  
9 Travis, and then wind through.

10 MR. THOMPSON: Travis Thompson with Marten  
11 Law, attorney for A & B Irrigation District, et al.

12 MR. FLETCHER: Kent Fletcher, attorney for  
13 Minidoka Irrigation District, and American Falls  
14 Reservoir District No. 2.

15 MR. BRICKER: Max Bricker with Somach Simmons  
16 & Dunn, on behalf of the City of Pocatello.

17 MS. KLAHN: Sarah Klahn with the Somach  
18 Simmons & Dunn, also for the City of Pocatello.

19 MR. BROMLEY: Chris Bromley with McHugh  
20 Bromley for the Coalition of the Cities, the Cities, et  
21 al.

22 MR. HARRIS: Rob Harris with Holden, Kidwell,  
23 Hahn & Crapo, on behalf of the City of Idaho Falls.

24 MR. CONTOR: Bryce Contor at Rocky Mountain  
25 Environmental with the Idaho Ground Water District.

1           MR. SULLIVAN: And I'm Greg Sullivan with  
2 Spronk Water Engineers on behalf of the ESPA Cities, and  
3 the City of Pocatello.

4           MR. JOHNS: I'm Skyler Johns with Olsen  
5 Taggart, and I represent Bonneville-Jefferson Ground  
6 Water District.

7           MR. ANDERSON: Dylan Anderson, Bingham Ground  
8 Water District.

9           MR. BUDGE: TJ Budge with Racine Olson, Idaho  
10 Ground Water Appropriators.

11          MS. PATTERSON: Elisheva Patterson, Racine  
12 Olson, also with the Idaho Ground Water Appropriators.

13          MR. SIMPSON: Good morning. John Simpson with  
14 Marten Law, with A & B Irrigation District, et al.

15          MR. COLVIN: Dave Colvin with LRE Water  
16 representing IGWA.

17          MR. RIGBY: Jerry Rigby, Ribgy Andrus & Rigby,  
18 representing three of ground water districts in IGWA.

19          THE HEARING OFFICER: Then in the back if  
20 you'll speak up loudly.

21          MS. SUKOW: Jennifer Sukow, Idaho Department  
22 of Water Resources.

23          MS. FERGUSON: Kara Ferguson, Idaho Department  
24 of Water Resources.

25          MR. ANDERS: Matt Anders, IDWR.

1 MR. JACKSON: Al Jackson with the Bingham  
2 Ground Water District.

3 THE HEARING OFFICER: Thank you, Al.

4 Okay. Now, we need to call roll for those who  
5 are participating remotely. So let's start. And I'll  
6 just look at the screen. Sarah, are you there?

7 MS. McHUGH: Thank you. You mean, Candice.

8 THE HEARING OFFICER: Candice, did you speak?

9 MS. McHUGH: Yeah. I wasn't sure if you meant  
10 Sarah or Candice. Because we have Candice and Sophia, I  
11 think who are remote.

12 THE HEARING OFFICER: And we have some others  
13 who are listening in. I don't think I'll call the roll  
14 for all of those folks. Are there other attorneys who  
15 are participating? And we have at least one expert  
16 witness participating.

17 MS. SIGSTEDT: Sophia Sigstedt with Lynker on  
18 behalf of IGWA.

19 THE HEARING OFFICER: Thank you, Sophia.

20 Okay. I don't know unless there is a need for  
21 me to call for others who may be listening in. So the  
22 instructions that we sent out regarding electronic  
23 participation would be that Candice McHugh and Sophia  
24 will be participating in the hearing and either will  
25 examine or offer testimony remotely. Everyone else is



1 just listening in, and those folks are not participants  
2 in the hearing. And you will be muted for the entirety  
3 of the hearing. So that's the instruction. And it's a  
4 management requirement for me. Otherwise we would have  
5 too many people speaking, and those who are not at least  
6 officially parties to this matter.

7 Okay. Let me just check and see if we have  
8 everyone. I know there are attorneys --

9 MS. McHUGH: Director, this is Candice. Can I  
10 ask --

11 THE HEARING OFFICER: Yes, Candice.

12 MS. McHUGH: I don't know when everyone is  
13 speaking if they make objections or something like that.  
14 Travis and Kent were fairly, I could hear them fairly  
15 well, but Max, Chris, I couldn't hear them, or Jerry  
16 Rigby very well. So just kind of wanted to make sure  
17 people were by the mics.

18 THE HEARING OFFICER: Okay. Well, Candice,  
19 since you raised this issue. So we have a room  
20 microphone that's set up, I think overhead for the  
21 attorneys. But when an attorney is examining a witness,  
22 we would like you to come forward. There is a table in  
23 front. And you can deposit your exhibits or other  
24 materials on the table. You have a choice of either  
25 examining from the lectern or the table, itself. There

1 is a microphone set up in each of those. And the  
2 witness will be here to my right.

3 So hopefully the physical arrangement will  
4 promote a verbal dialogue that everybody can hear. But  
5 if there are objections from the attorneys, we'll ask  
6 that you speak up very loudly, so that the microphone  
7 will pick up your voice. And so those participating  
8 remotely can hear, and the court reporter can record the  
9 objection and any of the exchange. So we'll have to be  
10 mindful of the need to be outspoken in these discussions  
11 today.

12 All right. Let me just look at this list  
13 again. The Bureau of Reclamation is not represented,  
14 but they've been observers more than anything. Okay. I  
15 think we have all of the parties represented today.

16 All right. There are some preliminary matters  
17 that we need to talk about. And some either requests or  
18 petitions that are pending in front of the Hearing  
19 Officer right now. So there is a request for issuance  
20 of a subpoena to Mat Weaver and Tony Olenichak to  
21 testify as witnesses -- hello -- maybe just a vocal  
22 glitch.

23 And so there is a request that the Hearing  
24 Officer or the Director issue subpoenas for Mat Weaver  
25 and Tony Olenichak. And because of the timing of those

1 requests, and because of the nature of the testimony at  
2 least is as anticipated. I have prepared or am  
3 preparing an order denying that request to issue  
4 subpoenas to those two folks. And I'll issue that  
5 shortly and will distribute it by hand.

6 I also have a motion to limit testimony that's  
7 pending. And the ground water users, I don't think have  
8 had a response or an opportunity to respond. That  
9 motion I think came in within the last couple of days.  
10 Is there some desire on the part of the petitioners and  
11 the ground -- the other -- well, I shouldn't say the  
12 ground water users, although I think that's who might  
13 oppose the motion.

14 Petitioners, do you wish to orally present any  
15 information at this stage?

16 MR. THOMPSON: This is Travis Thompson,  
17 Director. Just briefly. We filed this yesterday after  
18 looking at the list of the witnesses, proposed  
19 testimony, and exhibits. And I guess similar to prior  
20 hearings in this matter where parties have requested a  
21 hearing on the Director's order, in this case the Fifth  
22 Order and the As-Applied Order, we think that the scope  
23 of that hearing should be limited to those issues  
24 identified there.

25 It looks like to me that we're attempting to

1 go back and redo an administrative hearing we had in  
2 2008. That was then subject to a final order and then  
3 judicial review. We attached a copy of Judge Wildman's  
4 decision to Exhibit A to our motion that comprehensively  
5 addresses the methodology.

6 So that was the basis for our motion. I don't  
7 have real specifics right now. But I guess as we go  
8 through this hearing, we would like a standing objection  
9 that if we go beyond the scope of those two orders and  
10 issues that are pertinent before the Department, that we  
11 would limit that. Thank you.

12 THE HEARING OFFICER: Responses? Mr. Budge.

13 MR. BUDGE: Thank you, Director. TJ Budge on  
14 behalf of the IGWA, Idaho Ground Water Appropriators. I  
15 guess to begin, the parties did file their statements of  
16 issues in this case a month ago. So it's a bit peculiar  
17 that we got this served on us the day before the hearing  
18 as we're traveling to Boise. We have not had a lot of  
19 time to prepare for it. But I do want to share just a  
20 few thoughts.

21 If we're going to follow the Coalitions line  
22 of reasoning, then the transition from a transient  
23 steady state to a transient state model is res judicata.  
24 A transient state model was at issue in the earlier  
25 hearing in the context of carryover storage. And so

1 it's certainly something the parties were aware of. It  
2 was an issue that could have been litigated in that  
3 proceeding. And if that is barred by res judicata, then  
4 that component of the Fifth Methodology Order must, you  
5 know, be reversed.

6 Also, acreage was litigated in that prior  
7 proceeding, and the Department accepted the acreage  
8 evidence presented by the junior ground water users. We  
9 were successful in that. And that would also be  
10 res judicata.

11 So if we're going to go that way, we really  
12 have to identify what issues are on the table, because  
13 it's not a one-way street. You don't get to change just  
14 the components that you like, and then claim it's  
15 res judicata, so the components you don't like. That's  
16 probably not the right approach. And the reason is is  
17 that the methodology order is required by law to be  
18 based on the best science available. And science  
19 changes, facts change, circumstances change. It's not a  
20 traditional court order that is locked in place forever.  
21 It's more of a living document.

22 And so if we're going to look at more recent  
23 data, if we're going to consider changes in science,  
24 then we have the ability to look at all components of  
25 the methodology and see, is there a compelling reason to

1 change any of the components based on experience,  
2 science, and recent data.

3 So for those reasons, we'd ask that the court  
4 deny the motion, or the Director deny the motion.

5 THE HEARING OFFICER: Other responses?

6 Mr. Harris.

7 MR. HARRIS: Thank you, Director. Ralph  
8 Harris on behalf of the City of Idaho Falls. Just to  
9 add to what TJ said, we haven't had the chance to  
10 research the matter in depth.

11 But I would draw the Director's attention to  
12 the Idaho Supreme Court case of Erickson versus Amoth,  
13 which provides the following. Generally the doctrine of  
14 res judicata extends only to facts and conditions as  
15 they existed at the time the judgment was rendered. And  
16 ordinarily res judicata does not apply where there were  
17 changed conditions and new facts, which did not exist at  
18 the time of prior judgment.

19 The general view is that where after the  
20 rendition of a judgment, subsequent events occur  
21 creating a new legal situation, or altering the legal  
22 rights relations of the litigants, the judgment may  
23 thereby be precluded from operating as an estoppel.

24 As Mr. Thompson mentioned, the original order  
25 was issued in 2008. There have been change

1 circumstances. In fact, I believe you indicated that  
2 was one of the primary reasons you were looking at  
3 updating the Fifth Methodology Order. And so for that  
4 reason, we think all issues are on the table here today.  
5 Thank you.

6 THE HEARING OFFICER: Other statements?

7 MR. ANDERSON: Yes.

8 THE HEARING OFFICER: Dylan, Mr. Anderson.

9 MR. ANDERSON: Just briefly, Director. One of  
10 the things that was called out specifically was  
11 something that we intend to introduce as part of Bingham  
12 Ground Water refers to, you know, the economic impacts.  
13 And the Clear Springs Food, Inc. case was cited in that.  
14 And I just wanted to just go on into that case. It  
15 introduced, or the Springs Food case quoted the AFRD  
16 case.

17 And it just said somewhere between the  
18 absolute right to use a decreed water right and an  
19 obligation not to waste it, and to protect the public's  
20 interest in this valuable commodity lies an area for the  
21 exercise of discretion by the Director. In that sense,  
22 the court recognized some discretion by the Director to  
23 look at the reasonableness of diversions, look at the  
24 reasonableness of what's required by the senior water  
25 right holder. I think that the changes contemplated in

1 the Fifth Methodology certainly would change the  
2 reasonableness required by the Department in a sense if  
3 you are potentially curtailing ten-fold acreage. The  
4 economic impact is increased ten-fold, or actually even  
5 exponentially more than ten-fold as it compounds. And  
6 so I think that is certainly relevant data for the  
7 Department to have, and to understand, and consider in  
8 their reasonableness calculations.

9 The sections that were quoted are not  
10 necessarily pertaining to limiting any economic  
11 information before the Department. And certainly the  
12 Supreme Court didn't deem it inadmissible or completely  
13 irrelevant. They just simply didn't use that  
14 information for that particular argument.

15 So we'd join in the rest of the arguments  
16 already stated. Thank you, Director.

17 THE HEARING OFFICER: Other statements?

18 Okay. As I understood what you presented,  
19 Mr. Thompson, you were asking for a standing objection.  
20 As I look through the list of witnesses and also the  
21 issues, it seems to me that many of the witnesses may be  
22 called to testify about the economic impacts of  
23 curtailment. And as I read -- well, first of all, as I  
24 look at the methodology order and component facts that  
25 contribute to the development and to the writing of the



1 Fifth Methodology Order, economics was not a part of the  
2 underlying facts that were considered. And, in fact,  
3 the decisions as I read them that have been issued,  
4 stated that economic impact and a comparative analysis  
5 of economics is not part of prior appropriation  
6 administration.

7 And so I guess what I'm trying to say is, the  
8 testimony that I receive in this particular hearing will  
9 be limited to the factual components that were a part of  
10 the development and writing of the Fifth Methodology  
11 Order. And economics were not a part of those facts.

12 And, in fact, as I read the court decisions,  
13 the court has said that the economic comparison would  
14 actually frustrate and thwart the administration of  
15 water under the prior appropriation doctrine. And so I  
16 will cut short in the examination, presentation on the  
17 respective economic benefits or the economic impacts of  
18 possible curtailment under the Fifth Methodology Order.

19 Now, there may be other areas that exploration  
20 that are outside of the methodology order, itself, and  
21 those areas if there is examination regarding those  
22 areas, I will allow objections. And will rule on those  
23 objections depending on the relevance to the Fifth  
24 Methodology Order.

25 So I'm trying to at least set some boundaries

1 as to the scope of examination. And there may be other  
2 areas beyond economics. But it seemed to me that at  
3 least the focus on economic issues in looking at the  
4 list of witnesses and the issues is not appropriate in  
5 this particular hearing. Okay?

6 All right. I don't know that I have any other  
7 issues that are pending right now. There may be some  
8 additional motions that the parties want to offer, and  
9 bring before the Hearing Officer at this point. Are  
10 there motions, and pre-hearing motions that the parties  
11 wish to offer up?

12 Wow. You're an agreeable crowd.

13 All right. Let's talk about exhibit  
14 numbering. There is a little confusion about it. There  
15 were specific ranges of numbers that each of the parties  
16 were assigned. And I think there has been some  
17 adjustment in that numbering.

18 Mr. Budge, you may have gone over your range  
19 that was my understanding. But I think the parties had  
20 recognized that renumbering. But I think just recently  
21 there has been an attempt to try to consolidate  
22 exhibits.

23 And I just want to know how the parties want  
24 to address that attempted consolidation.

25 Elesheva.

1 MS. PATTERSON: Good morning, Director. Yes,  
2 as you can see behind you, there is a lot of paper. And  
3 so IGWA filed its initial disclosures. We exceeded our  
4 allotted range. And so we also used the 800 numbers.  
5 Later after all of the initial disclosures were made,  
6 our staff went through and tried to identify common  
7 exhibits and numbered those as 900, which were unique,  
8 in an attempt to save paper and try to simplify things.  
9 And so we have disclosed that to all the parties. I  
10 have not received any objection to the amended pre-trial  
11 disclosures. But will respond to them if there is any  
12 objections.

13 THE HEARING OFFICER: What do the parties want  
14 to do?

15 Mr. Fletcher?

16 MR. FLETCHER: Director, it might be helpful  
17 to just recite, if you remember, I don't know if you  
18 remember the ranges that go to each classification. So  
19 that the Director is aware of that.

20 MS. PATTERSON: IGWA was assigned the 100 to  
21 199 numbers. And so we do have documents that range  
22 from Exhibit No. 100 to 199. Some of those have been  
23 removed. And now are labeled as common exhibits. And  
24 then we also have exhibits labeled 800 to 837. And  
25 again, some of those in the amended pre-trial disclosure

1 were removed. And so this will not be a continuous  
2 list, but all documents are uniquely identified for the  
3 record. And common hearing exhibits --

4 MS. McHUGH: Elesheva, this is Candice. Did  
5 you send us that? In my examination, I just have four  
6 exhibits that I refer to in the 300 series. I'm  
7 guessing that they have now been renumbered to the 900  
8 series. But I think I'm just going to keep them with  
9 the 300 series, because I'm at a little bit of  
10 disadvantage not having paper to be able to look  
11 through, or I could just tell you what they are, and  
12 someone could tell me if they are the 900 series, and I  
13 can change the exhibit numbers, but...

14 MS. PATTERSON: So that is one issue --

15 MS. McHUGH: I think that might be confusing.

16 MS. PATTERSON: That is one issue with the  
17 common exhibits. So IGWA did send out an amended  
18 exhibit list where we had removed from our exhibits  
19 those that became common. But I don't know that the  
20 Cities and other parties were able to do so. But I  
21 think as long as we're all identifying, you know, our  
22 submitted document, we can keep the record straight.

23 And, Candice, you can use the common exhibits  
24 if you would like. And I can try to send you an updated  
25 numbering for those to keep things simple.

1           THE HEARING OFFICER: Let me just add that  
2 Sarah Tschohl, a paralegal in our office, she has  
3 compiled a list of exhibits for me. And she has  
4 identified those exhibits that were also designated as  
5 common exhibits.

6           And for the benefit of Candice McHugh, I don't  
7 show any of the McCain Foods exhibits as being common  
8 exhibits at least in my summary.

9           MS. PATTERSON: I think that's correct. We  
10 had some exhibits that were common with  
11 Bonneville-Jefferson and with the Cities exhibits. But  
12 I don't think we had any in common with the McCain Foods  
13 or the Coalition.

14           THE HEARING OFFICER: So, Candice, in answer  
15 to your question, at least in my summary, your exhibits  
16 are numbered 600 through 604. And none of them are  
17 common exhibits.

18           MS. McHUGH: Thank you, Mr. Director. First  
19 of all, well, I think the Amalgamated's were 600 through  
20 604, or I mean McCain's. And Amalgamated's were 700 to  
21 703. But I will be examining Jennifer using Coalition  
22 exhibits 300, 301, 305, and 318. And I think those are  
23 probably Coalition of Cities or -- yeah, the Cities  
24 Exhibits 300, 301, 305, and 318. And those are the four  
25 exhibits I was specifically talking about.

1 THE HEARING OFFICER: Well, some of those are  
2 common.

3 MS. McHUGH: Right.

4 MS. PATTERSON: Candice, if you want to refer  
5 to -- Candice, if you want --

6 MS. McHUGH: Tell me what number to refer to,  
7 and I'm good with it.

8 MS. PATTERSON: I think since we'll be moving  
9 into Jennifer Sukow's --

10 (Interruption had in the proceeding.)

11 THE HEARING OFFICER: Sarah Tschohl, are you  
12 there? Somebody wasn't muted.

13 MR. HARRIS: I think it's Katie, whoever Katie  
14 is.

15 THE HEARING OFFICER: I don't know who Katie  
16 is.

17 MS. PATTERSON: Yeah, Katie, please mute your  
18 mic.

19 THE HEARING OFFICER: Sarah, can you impose  
20 your draconian hand and mute Katie?

21 MS. PATTERSON: I think she addressed the  
22 issue.

23 THE HEARING OFFICER: Okay.

24 MS. PATTERSON: Candice, what I was going to  
25 suggest since we're starting out with Ms. Sukow first,

1 and your exhibits that you referenced for the Cities are  
2 responsive to that portion of the testimony. Please use  
3 those. And we'll just, if we have follow up, we'll  
4 refer to the Cities exhibits as IGWA reserve the right  
5 to use any exhibits produced by any party.

6 THE HEARING OFFICER: Okay. So without any  
7 objection, we'll introduce, if we can, the numbered  
8 exhibits that have been identified as common with the  
9 numbering identified by IGWA in the 900 series. Is that  
10 acceptable to everyone? And I could supply this  
11 cross-reference list if people want this list. If it  
12 would be beneficial, we could copy it?

13 MR. BROMLEY: That would be.

14 MS. KLAHN: Yes.

15 THE HEARING OFFICER: So at the first break,  
16 I'll ask to have this copied and distributed to all of  
17 the parties. And we'll be able to refer to a common  
18 list of exhibits if that's okay, Elesheva?

19 MS. PATTERSON: Yes. Thank you, Director.

20 THE HEARING OFFICER: Mr. Thompson.

21 MR. THOMPSON: Just to clarify. We're  
22 stipulating to the numbering, and not the actual  
23 exhibits themselves; is that correct?

24 THE HEARING OFFICER: That's correct.

25 MR. THOMPSON: Okay.

1           THE HEARING OFFICER: My next question was,  
2 have the parties stipulated to the admission of any of  
3 the exhibits that have been identified? And if they  
4 haven't, maybe there is an opportunity as we go through  
5 to stipulate to the admission of some of those. It  
6 would speed up the hearing significantly if for every  
7 exhibit, we didn't have to move for admission.

8           MR. THOMPSON: I think that would be our  
9 intent to try and do that. We haven't gone through the  
10 entire list of the other parties yet. But the ones  
11 we'll admit to, we'll stipulate to.

12           THE HEARING OFFICER: Okay. All right. I  
13 have in front of me -- I'll change subjects and not talk  
14 about exhibits, unless there is more discussion  
15 regarding the exhibits, numbering, and possible  
16 stipulation.

17           All right. I want to move to a proposed  
18 witness schedule that has been offered to the parties.  
19 And at least my understanding is there has been some  
20 discussion about the witnesses, and the order in which  
21 they'll be called. And I want to refer back to a  
22 discussion about the days that were scheduled for  
23 hearing.

24           It was my intent that we would attempt to  
25 finish this hearing in four days, on Friday. And then



1 Saturday was reserved for any spillover. And I have on  
2 this list six witnesses for Saturday, the 10th of June.  
3 And I want everybody to know, that I intend to try and  
4 finish on Friday. Because I don't want to have an  
5 incomplete hearing come Saturday.

6 And so I will compress this list of witnesses  
7 and the days that the witnesses will appear and testify.  
8 And if I find that we're getting behind, I will hold you  
9 over. And we will start early. Because I want to  
10 ensure that we finish, and at least attempt to finish by  
11 Friday.

12 And if you can keep me apprised of some of  
13 these witnesses who may or may not testify as we proceed  
14 through the hearing, I would appreciate it. I don't  
15 want to hold you over, and then finish on Thursday at  
16 noon. It would be great, I guess. But I want everybody  
17 to know that I want to finish. And my goal is to finish  
18 on Friday.

19 MS. KLAHN: Mr. Director.

20 THE HEARING OFFICER: Yes.

21 MS. KLAHN: Sarah Klahn for the City of  
22 Pocatello. On the list that you have, Sophia Sigstedt  
23 and Greg Sullivan, the order there is flipped. So  
24 Mr. Sullivan will go before Sophia, and after  
25 Mr. Barlogi, just an FYI.

1           THE HEARING OFFICER: That would be great.  
2     And I appreciate the parties honestly coordinating and  
3     figuring out who will be available on which days, so  
4     that we can accommodate people as best we can. So I  
5     appreciate everybody's efforts. And there may need to  
6     be some adjustment because of availability or  
7     unavailability.

8           We had to get Jennifer Sukow excused from jury  
9     duty by the way, and issue her a subpoena. So that she  
10    could then go present it to the folks at the county, so  
11    that she could be here.

12           Candice, were you wanting to say something?

13           MS. McHUGH: Yes. I'm sorry. I think there  
14    is just a slight delay. And you kind of addressed it.  
15    I just wanted to note for the record that McCain's  
16    witness, Scott King, and Amalgamated's is Dean Delorey,  
17    they are available Friday. So they need to go on  
18    Friday. Mr. King might have a little more flexibility,  
19    but he's checking his schedule. But Mr. Delorey does  
20    not. So regardless, I would ask that they be set for  
21    Friday. I expect their testimony to be less than ten  
22    minutes. So it would be really quick.

23           THE HEARING OFFICER: Okay. I also notice on  
24    the screen that Katie continues to appear. And I'm  
25    assuming that means that she is not muted.

1 Candice is now there. But Katie was on the  
2 screen earlier. So I would ask whoever Katie is, will  
3 you please mute your microphone.

4 And, Sarah Tschohl, if you can control with  
5 the Draconian hand, I would appreciate it as well.

6 Mr. Fletcher, you had a comment.

7 MR. FLETCHER: I just wanted to clarify the  
8 switch in witness order. Is Greg Sullivan going before  
9 Delorey?

10 MS. KLAHN: No. No. Sophia and Greg are  
11 switching. That's all.

12 MR. FLETCHER: Okay. Thank you.

13 THE HEARING OFFICER: Okay.

14 MR. THOMPSON: Mr. Director, one point on that  
15 list. We do have Justin Temple at some point, probably  
16 Friday, not very long, ten minutes. But that will be  
17 added.

18 THE HEARING OFFICER: I expect to have some  
19 flexibility in this witness schedule. Particularly if  
20 I'm trying to compress. So if the parties will just  
21 keep me apprised of what's happening, and keep everybody  
22 else apprised, then we'll be able to keep to a  
23 semi-rigid schedule. Again, I appreciate everybody's  
24 efforts.

25 Okay. Are there other matters we need to take

1 up this morning?

2 Let's talk about the order of questioning. So  
3 because this is a hearing that a Hearing Officer and the  
4 Director initiated, and because at least the  
5 Department's witnesses do not have documents that they  
6 prepared, and specifically for the hearing, itself.  
7 Often the Hearing Officer will ask for a staff memo.

8 We will have then the Department witnesses  
9 testify at least as in timing as closely as possible to  
10 the beginning of the hearing. Then what I'll do is I'll  
11 ask the Surface Water Coalition to question the  
12 Department witness shortly after to the extent that  
13 there are questions. And then allow the other parties  
14 to question the Department witness. And then we'll  
15 circle back and allow what I would characterize as  
16 redirect based on the questions that are asked.

17 Now, if that's not an order that the parties  
18 want to follow, I want to hear about it today.  
19 Particularly from the Surface Water Coalition, if you  
20 think it compromises your ability to question the  
21 witnesses.

22 MR. FLETCHER: Just a comment. Mr. Director,  
23 most of the questions are going to be raised by the  
24 ground water users. And until they ask their questions,  
25 we can try to cover the areas we think they're concerned

1 about it. But it might be more efficient to let them  
2 question the witness, and then let us address those  
3 issues.

4 THE HEARING OFFICER: And I don't oppose your  
5 proposal.

6 MR. FLETCHER: I think that would be more  
7 efficient. I mean, obviously, we're not the ones  
8 contesting most of the issues in the matter.

9 THE HEARING OFFICER: Any other thoughts?

10 All right. Well, based on your suggestion,  
11 Mr. Fletcher, we'll have the Department witness  
12 introduced. And some preliminary information brought  
13 into the record or offered by the deputy attorney  
14 general here today, Pete Wood. And then we'll ask the  
15 ground water users and the other parties aligned with  
16 them to question the Department witness. And then there  
17 will be an opportunity for questioning.

18 And then I don't know how to characterize  
19 this, whether it's redirect or recross. It's really not  
20 either, I suppose in the examination of the Department  
21 witnesses. But the ground water users will have two  
22 opportunities. And the Surface Water Coalition will  
23 have two opportunities. And then we'll be done.

24 MR. FLETCHER: Thank you.

25 THE HEARING OFFICER: Fair enough?

1 MR. FLETCHER: Yes.

2 THE HEARING OFFICER: And then I would expect  
3 with the other witnesses, that we follow a more  
4 traditional method of examination. Where the witness  
5 testifies, and then there is an opportunity for  
6 cross-examination, and redirect, and recross. So it's  
7 only with the Department witnesses that I think there is  
8 an anomalous presentation of testimony.

9 Okay. Other matters we need to talk about?

10 Pete, any matters?

11 MR. WOOD: Not that I can think of.

12 THE HEARING OFFICER: Okay. I'm ready for the  
13 first witness. Again, let me remind everybody, as you  
14 examine, I want you to come forward. Assume either a  
15 seat at the table or standing at the lectern, and then  
16 you can examine from either place. The witness will be  
17 here, seated to my right.

18 TJ?

19 MR. BUDGE: Yes. Director, there is one more  
20 pretrial matter I forgot about. I think counsel did as  
21 well. But counsel for the parties did stipulate that  
22 the expert witnesses would be qualified as such without  
23 needing to go through, you know, their background, and  
24 demonstrate their capabilities to testify as experts.

25 THE HEARING OFFICER: Yes. Thanks for raising

1 and identifying the stipulation. So I will accept the  
2 stipulation. I'm well acquainted I think with most of  
3 the experts, if not all of the experts, who will testify  
4 today. And I appreciate the pre-hearing stipulation  
5 that will encourage efficiency.

6 MR. FLETCHER: Yes.

7 THE HEARING OFFICER: Mr. Fletcher.

8 MR. FLETCHER: On that issue, Mr. Director, we  
9 stipulated to a designated list of expert witnesses. We  
10 did not stipulate to a Mr. Olson. And I'm not sure we  
11 stipulated to Jaxon for everything as an expert on  
12 everything he put in his report, Jaxon Higgs. But the  
13 rest of the experts I can think of, I believe we can  
14 stipulate to their admission as experts. And the ground  
15 water users clarified that to be to the matters  
16 contained in their reports.

17 THE HEARING OFFICER: Okay. Clarification  
18 accepted, TJ.

19 MR. BUDGE: Yes.

20 THE HEARING OFFICER: All right. Anything  
21 else?

22 Jennifer Sukow, if you'll come forward,  
23 please.

24 JENNIFER SUKOW,  
25 first duly sworn to tell the truth relating to said

1 cause, testified as follows:

2 THE HEARING OFFICER: Thank you. Please be  
3 seated.

4 Mr. Wood, you may examine Ms. Sukow.

5 DIRECT EXAMINATION

6 QUESTIONS BY MR. WOOD:

7 Q. Hello, Ms. Sukow. Can you please state and  
8 spell your name for the record.

9 A. Jennifer Sukow, J-e-n-n-i-f-e-r, S-u-k-o-w.

10 Q. And what is your educational background?

11 A. I have a bachelor's degree in environmental  
12 geology and technology from the University of North  
13 Dakota, and a master's of science in civil engineering  
14 from Utah State University.

15 Q. And you are a licensed professional engineer  
16 and geologist in Idaho; is that correct?

17 A. Yes.

18 Q. And you were currently employed at the Idaho  
19 Department of Water Resources?

20 A. Yes.

21 Q. And how long have you worked for the  
22 Department?

23 A. About 15 years.

24 Q. And you are currently a technical engineer for  
25 the hydrology section?



1 A. Yes.

2 Q. And how long have you been in that position?

3 A. About 13 years.

4 Q. I would like to turn to the Fifth Methodology  
5 Order. Are you familiar with that document?

6 A. Yes.

7 Q. And some of the data in the Fifth Methodology  
8 Order you know a lot about; is that right?

9 A. Some of it, yes.

10 Q. And you played a role in developing some of  
11 that information?

12 A. Some of the findings of fact, yes.

13 Q. And that is why the Department has selected  
14 you to be a witness today; is that correct?

15 A. That's my understanding.

16 Q. And you were aware that on May 5th, 2023, the  
17 Director issued a notice advising the parties of two  
18 topic areas that you might testify today about?

19 A. Yes.

20 Q. And those two topic areas are the following:  
21 The first is steady state modeling versus transient  
22 state modeling, simulations for the ESPA. And the  
23 second is calculations of curtailment priority dates for  
24 the Surface Water Coalition's delivery call. Does that  
25 sound correct?

1 A. Yes.

2 Q. And do you have any concerns that you're  
3 unqualified to discuss those topics here today?

4 A. No.

5 MR. WOOD: The Department has no further  
6 questions at this time.

7 THE HEARING OFFICER: Thank you, Mr. Wood.

8 All right. Ground water users, is there an  
9 order of examination that you prefer?

10 MS. McHUGH: Mr. Director, this is Candice. I  
11 think I'm slated to go first.

12 THE HEARING OFFICER: Okay. Ms. McHugh.

13 MS. McHUGH: Just for some efficiency, could I  
14 have the witness handed the Coalition of Cities'  
15 exhibits No. 300, the binder for that?

16 MR. WOOD: Was it 300 through 313?

17 MS. McHUGH: 300 and then through 318.

18 THE HEARING OFFICER: The witness has the  
19 documents in front of her.

20 MS. McHUGH: Okay. Thank you.

21 CROSS-EXAMINATION

22 QUESTIONS BY MS. McHUGH:

23 Q. Good morning, Jennifer. Candice McHugh on  
24 behalf of the Coalition of Cities and McCain Foods. If  
25 you could look at the binder, and grab Exhibit 300.

1 (Exhibit 300 marked.)

2 Q. (BY MS. MCHUGH) If you could identify Exhibit  
3 300?

4 MR. THOMPSON: Director, this is the --

5 THE HEARING OFFICER: Just a moment, Candice.

6 MS. MCHUGH: Okay.

7 MR. THOMPSON: This is our first overlap. I  
8 think this is IGWA's common 918. And if you just want  
9 to use that once, or admit it twice in the record. I'm  
10 confused on what we're going to do?

11 THE HEARING OFFICER: So should we refer to  
12 this as 918?

13 MS. MCHUGH: Okay. We can --

14 THE HEARING OFFICER: And one of the concerns  
15 I have is that the exhibits, themselves, and the  
16 documents, themselves, don't bear those numbers; do  
17 they? It's only --

18 MS. PATTERSON: Not the 900s.

19 MR. THOMPSON: The 900s do. They are all  
20 Bates stamped.

21 MS. KLAHN: We could substitute.

22 MS. MCHUGH: The other option, not to belabor  
23 the record, but if you give her Exhibit NO. 918, 919,  
24 and 920. And if someone could tell me what 900 series  
25 the April 2022 forecast supply order is, I could also

1 use that 900 number. But I just don't -- from the  
2 descriptions, from IGWA's descriptions, I can't tell  
3 what 900 number that is.

4 MR. BUDGE: So Candice 918 is the Fifth  
5 Methodology Order.

6 MS. McHUGH: Uh-huh.

7 MR. BUDGE: And 919 is the As-Applied Order.

8 MS. McHUGH: Right. I'm looking for -- I know  
9 that. I need the April 2022 As-Applied Order number in  
10 the 900 series.

11 THE HEARING OFFICER: All right. Let's go off  
12 the record.

13 (Off the record.)

14 THE HEARING OFFICER: Are we ready to go back  
15 on? We're recording again. Thank you, Colleen.

16 All right. Candice, if you will refer to the  
17 exhibits you want the witness to review. And we're  
18 expecting exhibits in the 300 series.

19 MS. McHUGH: Great. Thank you.

20 Q. (BY MS. McHUGH) Good morning, Jennifer.  
21 We'll start again. In front of you, you should have  
22 Exhibit No. 300. Can you identify that document?

23 A. It's the "Fifth Amended Final Order Regarding  
24 Methodology for Determining Material Injury to  
25 Reasonable In-Season Demand and Reasonable Carryover."

1 (Exhibit 301 marked.)

2 Q. (BY MS. MCHUGH) Okay. And if you could just  
3 flip in that binder to Exhibit 301, and identify that  
4 exhibit?

5 A. It's the "Final Order Regarding April 2023  
6 Forecast Supply."

7 Q. And can you just provide a brief explanation  
8 as to what your role was in creating Exhibits 300 and  
9 Exhibit 301?

10 A. In Exhibit 300, I assisted with writing  
11 findings of fact relating to the ESPA ground water flow  
12 model and calculation of a curtailment priority date for  
13 the delivery call. And in Exhibit 301, I did the  
14 calculations of the curtailment priority date and the  
15 proportionate shares for A & B and IGWA. And I inserted  
16 that information in the draft of the order.

17 Q. Okay. And so if I understand you correctly,  
18 once the Director determined that there was shortage to  
19 Twin Falls Canal Company, you determined that December  
20 31st, 1953 would be the appropriate curtailment date; is  
21 that correct?

22 A. That's correct.

23 Q. And the expectation was if water users junior  
24 to the December 31st, 1953 were curtailed, you would  
25 expect approximately 75,000 acre-feet of water would

1 accrue to Twin Falls Canal Company; is that correct?

2 A. We would predict with the model that  
3 approximately 75,000 acre-feet would accrue to the near  
4 Blackfoot to Minidoka reach between May 1 and September  
5 30th of this irrigation season.

6 Q. Okay. And Twin Falls Canal Company's water  
7 supply is supplied by that reach of the river; is that  
8 true?

9 A. Yes, they have a natural flow that is diverted  
10 from that reach of the river.

11 Q. Okay. And in determining the curtailment  
12 date, and the amount of water that would accrue to the  
13 Twin Falls Canal Company, you used the model in a  
14 transient mode; is that true?

15 A. Yes, I did a transient simulation as described  
16 in the Fifth Methodology Order.

17 Q. Okay. And if you could look at Exhibit 300 on  
18 page 2. And do you see the paragraph there that says  
19 that the Department has had additional, and many years  
20 to understand the impact of applying steady state  
21 modeling? Do you see that paragraph there?

22 A. Yes.

23 Q. And you didn't write this paragraph; did you?

24 A. No, I didn't write it. I think I was asked to  
25 look at it, and I edited a couple words in one of the

1 sentences just to make it technically correct.

2 Q. Okay. When you first started with the  
3 Department roughly 13 years ago, you knew the difference  
4 in impacts when you started with the Department between  
5 the output from a steady state model and a transient  
6 state model; is that correct?

7 A. Yes.

8 Q. And your predecessor Allan Wylie also knew the  
9 difference in model output between a steady state output  
10 and a transient model output; correct?

11 A. Yes.

12 Q. And changing from a steady state model to a  
13 transient model to predict curtailment date, wasn't a  
14 decision in the Fifth Methodology Order, Exhibit 300,  
15 based on technical information; was it?

16 A. Well, I was asked to prepare technical  
17 information about the change from steady state to  
18 transient, and I did present that technical information  
19 to the technical working group and the Director.

20 Q. I guess my question is, the change from going  
21 from a steady state model that had happened for the  
22 prior at least 13 years since you've been with the  
23 Department, to this year to the move to a transient  
24 model, the impetus for that was not a technical  
25 decision; correct?

1           A. It was the Director's decision. I do not know  
2 what the impetus was.

3           Q. Do you believe that it was a technical  
4 decision?

5           A. I don't know.

6           Q. Do you recall the deposition that I took of  
7 you a couple of weeks ago, Jennifer?

8           A. Yes.

9           Q. And in that deposition I asked what the  
10 impetus was for changing from a steady state model to a  
11 transient model in 2023. Do you recall that?

12          A. Not specifically.

13          Q. Okay. Well, we'll come back to that in a  
14 minute. Were you told why the administrative decision  
15 to change from a steady state model to a transient model  
16 was implemented in 2023?

17          A. My understanding is that it is because of  
18 direction that the -- direction from the court that the  
19 water needs to be provided during the irrigation season  
20 at the time and place that it's needed.

21          Q. And who told you that it was the court that  
22 directed that change?

23          A. I believe Gary Spackman said that.

24          Q. When we first were at the Department, you  
25 understood that the ESPAM model was a transient model;



1 is that true?

2 A. The ESPAM model can run simulations in steady  
3 state or in transient.

4 Q. Okay. And the ESPAM model has always been  
5 able to run a transient output; correct?

6 A. Yes, previous versions of ESPAM could also run  
7 a transient simulation.

8 Q. And the current version of the ESPAM model, do  
9 you recall when it was implemented or created?

10 A. I'm sorry. Can you repeat the question?

11 Q. Yep. The current version of the ESPAM model  
12 it's -- maybe I'll do it this way, is 2.2; is that true?

13 A. Yes.

14 Q. And ESPAM2.2 when did it first exist?

15 A. It was finalized in May of 2021.

16 Q. The current version of ESPAM2 is finalized in  
17 May of 2021. And the prior version was ESPAM2.1;  
18 correct?

19 A. Yes.

20 Q. And when was ESPAM2.1 finalized?

21 A. It was either the end of 2012 or early in  
22 2013.

23 Q. Okay. So roughly in 2013 when ESPAM2.1 was  
24 updated from the prior version, it was calibrated using  
25 monthly stress periods in half-month time steps; is that

1 true?

2 A. Yes.

3 Q. And the current version of ESPAM2.2 also uses  
4 monthly stress periods in half-month time steps;  
5 correct?

6 A. Yes.

7 Q. So prior to 2023, the model was capable of  
8 predicting an in-season amount of water that could be  
9 expected in the near Blackfoot to Minidoka reach; is  
10 that true?

11 A. Yes.

12 Q. Because the current version has been able to  
13 do that since roughly 2013; correct?

14 A. Well, I wouldn't say the current version, but  
15 the previous version, 2.1 could, yes.

16 Q. Okay. But there is nothing that changed  
17 between 2.1 and the 2.2 version that makes the monthly  
18 stress period and the half-month time step different  
19 from a transient model standpoint?

20 A. The time discretization did not change between  
21 ESPAM Version 2.1 and ESPAM Version 2.2.

22 Q. So effectively ESPAM2.2 has always been a  
23 transient model?

24 A. I'm sorry. Repeat that?

25 Q. So ESPAM 2 and 2.1 -- we'll just say it this

1 way. So ESPAM2.1 and ESPAM2.2 has always been a  
2 transient model; correct?

3 A. They were both calibrated as transient models,  
4 yes.

5 Q. Okay. In 2023, you understood the difference  
6 between the model output for transient versus steady  
7 state output; correct?

8 A. Yes.

9 Q. And you also understood in 2013, ten years  
10 prior, the difference between the model output for  
11 transient versus steady state output; correct?

12 A. Yes.

13 Q. And since 2013, there were curtailment orders  
14 in the surface water delivery call; correct?

15 A. Yes.

16 Q. Yet they all used the steady state output;  
17 isn't that true?

18 A. Yes, a steady state simulation was used.

19 Q. Okay. Even though ESPAM2.1 starting in 2013  
20 through 2021 had the monthly stress periods and  
21 half-month time steps capable of being ran in the  
22 transient mode?

23 A. Yes.

24 (Exhibit 318 marked.)

25 Q. (BY MS. MCHUGH) Could I have you look at

1 Exhibit 318. Jennifer, can you identify this exhibit?

2 A. It's a presentation titled "Surface Water  
3 Coalition Methodology - calculation of priority dates  
4 for curtailment of ground water users."

5 Q. Is it a PowerPoint presentation that you  
6 prepared?

7 A. Yes.

8 Q. And the date being November 28, 2022?

9 A. Yes.

10 Q. And did you provide this PowerPoint  
11 presentation to the Surface Water Coalition technical  
12 working group?

13 A. Yes.

14 Q. Jennifer, is the exhibit in front of you, does  
15 it have page numbers on it or slide numbers?

16 A. No.

17 Q. Okay. And so for ease of examination, I'm  
18 going to have you like have to thumb through, and I will  
19 say like Slide 6, which would essentially be the sixth  
20 page of that exhibit. Does that make sense?

21 A. Yes.

22 Q. Okay. And if you would just look at that  
23 Exhibit 318, is it complete? Is it completely your  
24 PowerPoint presentation, are all the slides in that?

25 A. I don't know. I don't have every page

1 memorized, so I wouldn't be able to just be able to look  
2 at it and know what was missing.

3 Q. Fair enough. Okay. Can you tell me how many  
4 pages it is, just so I'm making sure we have the same  
5 exhibit?

6 A. I have 22 pages.

7 Q. Okay. And mine has 22 pages, so we're good.  
8 Okay. Before we get into the actual pages there, just a  
9 little bit of background. Are you aware that there has  
10 been a moratorium on new wells without mitigation, so  
11 new wells on the Eastern Snake Plain Aquifer since the  
12 early 1990s?

13 A. Yes.

14 Q. So almost all the wells that withdraw water  
15 from the Eastern Snake Plain Aquifer have been pumping  
16 for at least 30 years, and some much longer than that;  
17 correct?

18 A. I believe that's correct, yes.

19 Q. Okay. And if you could look at Slide No. 6 of  
20 your Exhibit 318. And Slide No. 6 is a graph that talks  
21 about, that shows the steady state conditions. Is that  
22 what you see there?

23 A. It's the time to reach the steady state  
24 response.

25 Q. Okay. And isn't it true that between 90

1 percent and 99 percent of the impacts of all ESPA  
2 pumping on the Snake River flows have been realized?

3 A. Yes.

4 Q. And that's what this Slide No. 6 of Exhibit  
5 318 shows that; correct?

6 A. Yes, it states that in the bullet.

7 MS. MCHUGH: Okay. At this point, I guess I  
8 would offer Exhibit 318 as an exhibit, or an offer into  
9 the record.

10 THE HEARING OFFICER: Any objections?

11 Hearing none, the document marked as Exhibit  
12 318 is received into evidence.

13 (Exhibit 318 received into evidence.)

14 Q. (BY MS. MCHUGH) Jennifer, continuing on with  
15 Exhibit 318, if you could look at Slide No. 13.

16 THE HEARING OFFICER: Ms. McHugh, it might be  
17 helpful rather than just giving us numbers, if somehow  
18 we can identify a title on the page, since the pages are  
19 not numbered.

20 MS. MCHUGH: Yes, fair enough.

21 Q. (BY MS. MCHUGH) So on Slide 13, can you read  
22 the title of that page?

23 A. "Comparison of priority dates calculated for  
24 April demand shortfall forecasts for May 1 curtailment."

25 Q. And if you recall, and if you need to look

1 back at Exhibit 301, which is the 2023 As-Applied Order.  
2 Do you recall the amount of water that was forecasted to  
3 be short in the 2022 season?

4 A. Yes.

5 Q. And that number is roughly 75,000 acre-feet;  
6 is that right?

7 A. Yeah, 75,200 acre-feet.

8 Q. Okay. And if you look at page No. 13, it  
9 says, "Comparison of priority dates calculated." If you  
10 look at that graph, based on this slide, curtailment of  
11 wells junior to sometime in the mid-1980s would produce  
12 roughly 75,200 acre-feet to the near Blackfoot to  
13 Minidoka reach of the Snake River in steady state; is  
14 that right?

15 A. Can you --

16 Q. If you look at the yellow line?

17 A. So, yeah, if you are looking at the yellow  
18 line, a steady state curtailment, which would be a  
19 continuous curtailment to the same date every year with  
20 a priority date in the mid-1980s would produce  
21 approximately 75,000 acre-feet.

22 Q. So in other words, would you agree that if  
23 wells junior to the mid-1980s had never started pumping,  
24 there would be an additional 75,200 acre-feet in the  
25 river in 2023?

1           A. Assuming all other aquifer and recharge and  
2 discharge occurred the same over those years, then, yes,  
3 there should be approximately that additional volume in  
4 the reach, in the river reach.

5           Q. And as a result, without the pumping of those  
6 wells junior to the mid-1980s, there would be no  
7 forecast shortage for the Surface Water Coalition  
8 members in 2023; correct?

9           A. Yes.

10          Q. Okay. I'm just going to switch gears for a  
11 brief moment. In roughly August of 2022, the Director  
12 notified the parties that he was convening a technical  
13 working group regarding the Surface Water Coalition  
14 delivery call; is that your understanding?

15          A. Yes.

16          Q. And how were you notified or told that there  
17 was going to be this technical working group?

18          A. I was told by Matt Anders.

19          Q. Okay. And did you know which people were told  
20 or asked to, or invited to be part of the technical  
21 working group?

22          A. No.

23          Q. Who made the decision on who would be invited  
24 to participate in the technical working group?

25          A. I don't know.



1 Q. And when did you first become aware of who was  
2 invited to participate in the technical working group?

3 A. I don't know that I was ever aware of who was  
4 invited. My only knowledge is of who was in attendance  
5 when I gave the presentation. And I doubt that I even  
6 recall who all was in attendance. But I am aware of  
7 some of the attendees.

8 Q. Okay. And when you gave your presentation,  
9 which I think you are referring to Exhibit 318, the  
10 PowerPoint. Did you do that via Zoom, or some other  
11 remote meeting format?

12 A. I gave the presentation from our conference  
13 rooms. But there were some attendees in person and some  
14 that were participating remotely.

15 Q. Okay. And then did you provide the PowerPoint  
16 presentation to the technical working group via the  
17 Department's website; is that how people got the  
18 information?

19 A. I presented it in the meeting, and I  
20 believe -- and I gave a PDF version to Matt Anders, that  
21 I believe he sent out to the technical working group.  
22 But I did not personally send it out.

23 Q. Okay. Coming back to Slide 13 in Exhibit 318.  
24 This year the Director predicted that approximately  
25 75,200 acre-feet of shortfall was going to Twin Falls

1 Canal Company. If you look at your graph there on Slide  
2 13 of Exhibit 318, it shows the difference in the number  
3 of acres that would be curtailed using a transient model  
4 versus a steady state model; correct?

5 A. Yes, you can determine that information by  
6 comparing the different points on this graph.

7 Q. Okay. And then I think in your presentation  
8 you also -- well, let's just stick with this slide  
9 first. If you look at the graph there, it shows that in  
10 order to get 75,000 acre-feet to Twin Falls Canal  
11 Company using a steady state model, the number of acres  
12 that would be curtailed is approximately 75,000 acres.  
13 Do you see that, or would you agree with that?

14 A. If you curtailed to the mid-1980s, the acres  
15 curtailed would be somewhere in that ballpark, yes.

16 Q. Okay. And that would show roughly 75,000  
17 acre-feet to the near Blackfoot to Minidoka reach;  
18 correct?

19 A. Well, it would show that that would get  
20 there -- that that would be the long-term annual average  
21 if that curtailment occurred continuously every year.

22 Q. Okay. And if you also look at that graph, in  
23 order to get 75,000 acre-feet of water to Twin Falls  
24 Canal Company during this season in a transient state  
25 model, it would require the curtailment of approximately

1 700,000 acres; is that correct?

2 A. That's correct.

3 Q. So nearly ten times as many acres; correct?

4 A. Roughly, yes.

5 Q. Okay. Were there any discussions on whether  
6 that was a reasonable outcome?

7 A. I think that was discussed, yes.

8 Q. And was it discussed with you?

9 A. To some extent, yes.

10 Q. And the conclusion was what?

11 A. The conclusion I think is evident in the  
12 Director's order was that the conclusion was that the  
13 requirement is to get the water to the reach during this  
14 irrigation season and that that was the deciding factor.

15 Q. Okay. So you agree that in order to get  
16 75,000 acre-feet of water to Twin Falls Canal Company  
17 during this irrigation season needing to curtail 700,000  
18 acres is a reasonable outcome?

19 THE HEARING OFFICER: Okay. Ms. McHugh, I  
20 will insert and just state that this line of questioning  
21 is not one that Ms. Sukow is qualified to answer.

22 And I'll instruct the witness not to answer  
23 the question. That was not her assignment in developing  
24 the data and producing the report that she produced.

25 MS. McHUGH: Okay.

1 (Exhibit 305 marked.)

2 Q. (BY MS. MCHUGH) Ms. Sukow, could I have you  
3 look at Exhibit 305. And can you identify Exhibit 305  
4 for the record?

5 A. "Final Order Regarding April 2022 Forecast  
6 Supply."

7 Q. And did you assist the Director in preparing  
8 any portion of the April '22 forecast supply?

9 A. I calculated a curtailment priority date using  
10 the ESPA ground water flow model, and I calculated, I  
11 believe in this one, yes, a proportionate share for  
12 A & B Irrigation District.

13 Q. Okay. And if I'm correct, the Director  
14 predicted that Twin Falls Canal Company would be short  
15 approximately 162,000 acre-feet in that order; is that  
16 correct?

17 A. It says 162,600 acre-feet.

18 Q. Okay. And if you look at Exhibit 318, back to  
19 Slide No. 13. How many acres would be curtailed in a  
20 steady state model run to supply 162,000 acre-feet of  
21 shortage?

22 A. It's somewhere around 150,000 to 170,000 acres  
23 perhaps.

24 Q. Okay. And if you were to run that same number  
25 with transient model output, how many acres would be

1 curtailed, approximately?

2 A. Approximately 940,000 acres.

3 Q. Okay. And if you could turn to Slide No. 15.  
4 If I'm looking at Slide No. 15 -- do you have that  
5 there?

6 A. Yes.

7 Q. And could you give me the title of that slide?

8 A. "Predicted response to May 1 curtailment of  
9 water rights junior to October 11, 1900."

10 Q. And this slide shows that if you curtailed  
11 back to a 1900 priority date, the April to September  
12 accrual to the reach that supplies Twin Falls Canal  
13 Company would be approximately 97,700 acre-feet; is that  
14 correct?

15 A. Yes.

16 Q. Isn't it true that if you curtail all the  
17 ground water users starting May 1st of any given year,  
18 that the maximum amount of water that accrued that  
19 season would be 97,700 acre-feet to that reach?

20 A. That is the predicted volume to accrue from  
21 curtailing all of the ground water users junior to  
22 October 11th, 1900 within the area of common ground  
23 water supply.

24 MS. McHUGH: Okay. I don't have any further  
25 questions. Thank you, Jennifer.

1 THE HEARING OFFICER: Okay. Thank you,  
2 Ms. McHugh.

3 MS. McHUGH: I would just ask that Exhibits  
4 300, 301, and 305 be admitted. I realize they are the  
5 Director's orders in this case, and then the order from  
6 last year. But I think for ease of examining it is  
7 helpful to have them in as exhibits.

8 THE HEARING OFFICER: Any objection to the  
9 admission of the documents marked as Exhibit 301, 302,  
10 and 305?

11 MR. FLETCHER: No objections.

12 THE HEARING OFFICER: Hearing no objections,  
13 documents numbered 301, 302, 305 are received into  
14 evidence.

15 MR. BRICKER: I just want to clarify.

16 THE HEARING OFFICER: Yes.

17 MR. BRICKER: Was it 300 to 301, or 301 and  
18 302?

19 THE HEARING OFFICER: I'm sorry. I'm assuming  
20 that it's 300, 301 --

21 MS. McHUGH: 300, 301, and 305.

22 THE HEARING OFFICER: And 305. And I  
23 misstated. Thank you.

24 (Exhibits 300, 301, 305 received into  
25 evidence.)

1 THE HEARING OFFICER: Okay. Anything further,  
2 Ms. McHugh?

3 MS. McHUGH: Nothing further. Thank you.

4 THE HEARING OFFICER: Okay. Thank you.

5 It's 10:30. We've been engaged for an  
6 hour-and-a-half. Do you the parties want a break,  
7 should we continue with another set of questions?  
8 Anybody?

9 Let's forge ahead. Who's next.

10 MS. KLAHN: I have a couple of questions. I  
11 was trying to send them to Candice, but it didn't work.

12 THE HEARING OFFICER: Ms. Klahn.

13 CROSS-EXAMINATION

14 QUESTIONS BY MS. KLAHN:

15 Q. Good morning, Jennifer. My name is Sarah  
16 Klahn. I represent the City of Pocatello. I wanted to  
17 ask you about some things related to the modeling  
18 questions that Candice was asking you. And I want to  
19 back up a step and ask you a little bit about model  
20 calibration. Is that something you are involved with?

21 A. Yes.

22 Q. Okay. In the framework of model calibration,  
23 is one of the inputs you use to compile the return flows  
24 associated with Twin Falls Canal Company?

25 A. Indirectly they are used to calculate. Their

1 return flows are used in the calculation of the Kimberly  
2 to King Hill reach gain, which is used in the  
3 calibration.

4 Q. Okay. And is that because the calibration  
5 involves understanding reach gains that come from ESPA  
6 discharges versus reach gains that accrue from return  
7 flows from the south side, where Twin Falls is located?

8 A. Yes.

9 Q. Okay. So when you are compiling these, you  
10 would subtract them from the reach gains coming from the  
11 north side in order to get the correct relationship; is  
12 that true?

13 A. No, that's not correct.

14 Q. Okay. Can you tell me what is correct?

15 A. So the reach gain from the north side the  
16 target for that is calculated by taking the inflow gage  
17 at Kimberly, the outflow -- and so the river flow at  
18 Kimberly, the river flow at King Hill going out of that  
19 reach. And then adding or deducting adjustments for all  
20 of the other surface flows that occur in between there,  
21 and the inflow from the south side.

22 Q. Okay.

23 A. So it's not an adjustment to the ESPA  
24 discharge. The ESPA discharge is the reach gain. It's  
25 just used to calculate how much of what's in the river



1 in that reach, you know, there is other components in  
2 the river flows at that reach. So we have to adjust to  
3 them, adjust those out to know what our target is for  
4 the ESPA discharge.

5 Q. Okay. Thank you for that explanation. Can  
6 you confirm that the total amount of return flows  
7 associated with Twin Falls Canal Company that you're  
8 using in that manipulation you just described, is  
9 between about 300,000 and 400,000 during the irrigation  
10 season?

11 A. I don't recall. I would have to look at my  
12 spreadsheet to -- I don't have that number, that volume  
13 memorized.

14 Q. Have you evaluated any long-term trends in  
15 Twin Falls return flows as part of your calibration  
16 efforts for the model?

17 A. Oh, we don't need to do that for the model,  
18 because we're looking at the past. So we just look at  
19 the measured data that occurred and subtract that off  
20 when we're calculating the reach gain.

21 Q. But in the spreadsheet you are describing, it  
22 would include sources of water from the Twin Falls  
23 system that are contributing the return flows?

24 A. Well, it includes the measurements made at the  
25 locations where those returns occur.

1 Q. Is seasonality any part of the evaluation that  
2 you do when you are doing that?

3 A. Well, we use monthly data, so the seasonality  
4 is inherent in those monthly averages.

5 MS. KLAHN: Okay. Thank you. That's all I  
6 have.

7 THE HEARING OFFICER: Okay. Further  
8 questions? I thought I saw a hand up.

9 Mr. Budge.

10 CROSS-EXAMINATION

11 QUESTIONS BY MR. BUDGE:

12 Q. Thank you, Ms. Sukow. I'm TJ Budge, on behalf  
13 of the Idaho Ground Water Appropriators. I will try not  
14 to duplicate the questions you got from Ms. McHugh.

15 Jennifer, you are the lead ground water  
16 modeler with the Department?

17 A. That's not officially my title, but...

18 Q. Did you provide all of the modeling work that  
19 was utilized in the Fifth Methodology Order?

20 A. I provided the modeling work that was  
21 presented to the technical working group and the  
22 Director that was used I think as a basis for that, yes.

23 Q. Was there other modeling work that was created  
24 in the Department that you did not provide to the  
25 technical working group?

1 A. No.

2 Q. Okay. And if the Director wanted to know any  
3 modeling issues related to the Fifth Methodology Order,  
4 you're the one who would have produced that information?

5 A. To my knowledge, yes.

6 Q. Okay. In terms of the initiation of the  
7 review of the Fourth Methodology Order, that decision  
8 came from the Director; correct?

9 A. I'm sorry. Repeat the question.

10 Q. The decision to review the Fourth Methodology  
11 Order, that came from the Director?

12 A. That's my understanding.

13 Q. You didn't tell the Director that there had  
14 been some change in the modeling data that necessitated  
15 a change to the methodology order?

16 A. No.

17 Q. And the modeling work that you did on the  
18 Fourth Methodology Order, that came at the direction of  
19 the Director or Matt Anders?

20 A. I was directed by Matt Anders to do that, yes.

21 Q. Okay. So if Matt told you to do some type of  
22 modeling, then you performed that at his direction?

23 A. Yes, and he was the one who communicated to me  
24 what the Director wanted me to model.

25 Q. Understood. And if Matt told you not to do

1 some type of modeling, then you would not have done  
2 that?

3 A. He told me what modeling -- or told me what  
4 questions they wanted to address, and I did the  
5 modeling. I wasn't directed not to do any modeling.

6 Q. Got you. You did not go outside the scope of  
7 the instructions that Matt had given you?

8 A. No.

9 (Exhibit 914 marked.)

10 Q. (BY MR. BUDGE) Okay. If you could turn to  
11 Exhibit 914.

12 THE HEARING OFFICER: We should have two  
13 common exhibit binders. 914, Mr. Budge?

14 MR. BUDGE: Yes.

15 Q. (BY MR. BUDGE) Jennifer, do you recognize  
16 that document?

17 A. Yes.

18 Q. Could you read the title for the record?

19 A. "Comments on behalf" -- oh, I might be  
20 on -- what did you say?

21 Q. 914.

22 A. Okay. Never mind. "Comments on Behalf of the  
23 Coalition of Cities and the City of Pocatello on the  
24 Idaho Department of Resources Summary of Recommended  
25 Technical Revisions to the Fourth Amended Final Order

1 Regarding Methodology for Determining Material Injury to  
2 Reasonable In-Season Demand and Reasonable Carryover for  
3 the Surface Water Coalition," by Kara Ferguson and Matt  
4 Anders, on December 23, 2022.

5 MR. BUDGE: Okay. Director, could we go off  
6 the record for a moment?

7 THE HEARING OFFICER: Yes.

8 (Off the record.)

9 MR. BUDGE: Back on the record.

10 Q. (BY MR. BUDGE) Jennifer, before we went off  
11 the record, you had read the title of what I think is  
12 Exhibit 915; is that correct?

13 A. That's correct.

14 Q. Why don't you go ahead and read the title of  
15 914?

16 A. "Summary of Recommended Technical Revisions to  
17 the Fourth Amended Final Order Regarding Methodology for  
18 Determining Material Injury to Reasonable In-Season  
19 Demand and Reasonable Carryover for the Surface Water  
20 Coalition."

21 Q. Do you recognize that document?

22 A. Yes.

23 Q. Is this a document the Department staff  
24 prepared in connection with its work on the Fifth  
25 Methodology Order?

1           A. It was prepared by Kara Ferguson and Matt  
2 Anders.

3           Q. And you did not participate in drafting that  
4 document?

5           A. I did not draft or edit the document.

6           Q. Okay. If you could turn to Exhibit 318?  
7 Jennifer, this is the presentation that you gave to the  
8 technical working group; is that right?

9           A. That's correct.

10          Q. And my understanding is that this  
11 presentation, along with the underlying data that was  
12 posted to the Department's website, that consists of all  
13 of the modeling work you did related to development of  
14 the Fifth Methodology Order?

15          A. Yes.

16          Q. Okay. You didn't do any modeling work after  
17 that presentation was given, but prior to the issuance  
18 of the Fifth Methodology Order?

19          A. Not for this issue, no.

20          Q. What issues did you do modeling work?

21          A. Well, I'm doing modeling work all the time.  
22 That was a pretty vague question.

23          Q. Not related to the Fifth Methodology Order?

24          A. Not related to the Fifth Methodology Order.

25          Q. Thank you, I appreciate that. I'm going to

1 shift gears just briefly.

2 During your deposition we discussed an  
3 irrigated lands dataset that's used in the ESPA model;  
4 correct?

5 A. Yes, I believe we did.

6 Q. And can you explain what that dataset consists  
7 of?

8 A. The irrigated lands datasets that we're  
9 currently using in model calibration are developed by  
10 IDWR's GIS staff. And they delineate what -- they  
11 delineate lands as being either irrigated, or  
12 semi-irrigated or non-irrigated by using a variety of  
13 data sources.

14 Q. What are the data sources they utilize to make  
15 those designations?

16 A. Some of the data sources are the CDL common  
17 land unit polygons. They use Landsat photography. They  
18 use aerial photography. They use, I should say, Landsat  
19 images. I believe they sometimes refer to the metric ET  
20 images. I don't do that work myself. So there may be  
21 other data sources that I'm not aware of that they look  
22 at.

23 Q. Okay. And that dataset identifies for each  
24 irrigated field, whether it's ground water irrigated or  
25 whether it's irrigated or non-irrigated?

1           A. Yes, they have three classifications;  
2 irrigated, non-irrigated, or semi-irrigated, which means  
3 part of it might be irrigated and part of it not. There  
4 are areas where typically there are developed areas.  
5 You might have a subdivision with houses and lawns and  
6 roads. And it's too time consuming an effort to  
7 delineate each of those little polygons. So they lump  
8 them altogether.

9           Q. How is this dataset used in the aquifer model?

10          A. It is used to calculate aquifer recharge and  
11 discharge in conjunction with ET data and precipitation  
12 data. So it's used to calculate the irrigation demand.

13          Q. Could that dataset be used within a particular  
14 geographic area just to identify the total number of  
15 irrigated acres?

16          A. Yes.

17          Q. And is that the best dataset available for use  
18 in the model for the purpose for which it's used?

19          A. That is the best dataset we have for model  
20 calibration, yes.

21          Q. Okay. Let me ask you about another component  
22 of the model that we discussed during your deposition,  
23 which you referred to as the ground water fraction.  
24 Could you describe what that term means?

25          A. So the ground water source fraction is so



1 some -- you know, some of the irrigated lands have only  
2 surface water supply. Some have only ground water  
3 supply. But some have both, and we call that mixed  
4 source. And within that mixed source, we need to  
5 estimate what fraction of that is supplied by surface  
6 water, and what fraction is supplied by ground water.

7 Q. And how is that dataset created?

8 A. The original dataset and the -- I guess I  
9 should clarify that dataset also includes zeros and ones  
10 for things that are entirely supplied by surface water  
11 ask ground water. That dataset was initially produced  
12 by IWRRRI for a previous version of ESPAM. So I don't  
13 have direct knowledge of how they produced it.

14 Q. Okay. And how is that dataset used in ESPAM?

15 A. It is used to -- the irrigation demand that we  
16 calculate from the irrigated lands ET and precipitation,  
17 it is used to assign that to either surface water  
18 diversions or ground water pumping. So it's used to  
19 estimate, you know, which source of supply provides  
20 that.

21 Q. Okay. And is that the best dataset available  
22 to you for use in the model for distinguishing between  
23 land that's irrigated with surface water, ground water,  
24 or a combination?

25 A. It is the best dataset we have, yeah.

1 Q. Okay. I want to just ask a few follow-up  
2 questions about the change from a steady state to  
3 transient state application of the model in this case  
4 just to make sure I understand.

5 The model was capable of being used in a  
6 transient state at the time the Fourth Methodology Order  
7 was issued?

8 A. Yes.

9 Q. Could the model also be run at a transient  
10 state when the Third Methodology Order was issued?

11 A. Yes.

12 Q. How about the Second Methodology Order?

13 A. I think you may be getting beyond what -- I  
14 don't know the dates of those orders. If there was a  
15 version of ESPAM available at those dates, then it was  
16 capable of running the transient simulation.

17 Q. Okay. So if ESPAM was utilized, then it was  
18 capable of being run in a transient state?

19 A. Yes.

20 Q. Okay. So the Director's decision to change  
21 from a steady state to transient state was not based on  
22 a change in model capabilities; correct?

23 A. The model capabilities with respect to being  
24 able to run a transient simulation did not change.

25 Q. Okay. So it would have been a policy decision

1 of the Director?

2 A. Yes.

3 Q. Let me just ask a few questions about the  
4 presentation you gave to the technical working group. I  
5 believe you have that in front of you. It's Exhibit  
6 318. If you'll please turn to page 20 of that exhibit.  
7 And this slide is labeled "Comparison of priority dates  
8 calculated using transient and steady state analyses."  
9 Do you have the that in front of you, Jennifer?

10 A. Yes.

11 Q. As I understand this slide, it provides a  
12 comparison of the number of acres that would be  
13 curtailed under a steady state application of the model  
14 versus a transient state application of the model under  
15 different curtailment scenarios?

16 A. Yes.

17 Q. And this data was prepared to show those who  
18 participated in the technical working group, that a  
19 transient state application results in exponentially  
20 more acres being curtailed in response to a predicted  
21 demand shortfall than under a steady state; is that  
22 correct?

23 A. It is approximately one order of magnitude,  
24 yes.

25 Q. Okay. Let me have you go back to page 15 of

1 that exhibit. This slide is titled "Predicted response  
2 to May 1 curtailment of water rights junior to October  
3 11, 1900." Yes?

4 A. Okay. Just to clarify, because there is two  
5 in a row that have that title. Is it the bar chart or  
6 the line graph?

7 Q. The line graph.

8 A. Okay.

9 Q. And thank you for that clarification. I  
10 appreciate that.

11 Ms. McHugh may have asked you this, so I don't  
12 mean to be repetitious. But can you explain why the  
13 date October 11th, 1900 is selected?

14 A. I asked Matt Anders what the, you know,  
15 controlling priority date was. And my understanding  
16 from him is that Twin Falls Canal Company and North Side  
17 Canal Company have natural flow rights to the Snake  
18 River with that priority date. So any ground -- you  
19 know, there is some small amount of ground water use  
20 that is senior to that. And, obviously, they weren't  
21 included in the curtailment scenarios, because they are  
22 senior to the delivery call water right.

23 Q. The number of ground water rights senior to  
24 that 1900 date is very, very small; is that right?

25 A. It's pretty small.

1 Q. Generally speaking, a 1900 curtailment date  
2 will result in curtailment of every ground water right  
3 from the Eastern Snake Plain Aquifer?

4 A. Well, again, like I said, there are some that  
5 are senior, and there are some that are outside the area  
6 of common ground water supply, which would not be  
7 subject to administration and so -- but it would  
8 be -- it would be a very large percentage of -- yes.

9 Q. And you've got a slide. I don't have the  
10 number in front of me. But a slide that shows that with  
11 an October 11th, 1900 curtailment date, there would be  
12 941,400 curtailed acres; is that right?

13 A. That sounds right. What I recall is it's  
14 approximately 941,000. Yeah, 941,400.

15 Q. Okay. So just to connect the dots. Your  
16 transient modeling shows that anytime there is a  
17 predicted demand shortfall of 97,700 acre-feet or more,  
18 in the absence of mitigation, you would have curtailment  
19 of 941,400 acres?

20 A. Approximately, yes.

21 Q. Okay. Let me have you flip forward again to  
22 page 20. We reviewed this a moment ago. But on the  
23 right side of the table, it compares the number of acres  
24 that would be curtailed under the transient state  
25 application of the model versus a steady state. These

1 are aquifer wide figures, or maybe to be more precise,  
2 this is the area within -- this is within the area of  
3 common ground water supply?

4 A. Yes.

5 Q. Did you analyze what the transient state reach  
6 gains would be from curtailment ground water district by  
7 ground water district before the Fifth Methodology Order  
8 was issued?

9 A. Not for this, not in connection with the Fifth  
10 Methodology Order.

11 Q. Had you done that in connection with other  
12 modeling work?

13 A. And I can't recall exactly what I did. But I  
14 was asked to do some modeling in support of the  
15 settlement discussions between the parties. And I  
16 recall I was asked to do something by ground water  
17 district. And I don't recall exactly what I did, or how  
18 it would or would not fit in with what you just asked in  
19 your question. But it was not for this proceeding.

20 Q. Okay. Were you aware prior to when the Fifth  
21 Methodology Order was issued, were you aware of the  
22 different transient state impacts by ground water  
23 district on the near Blackfoot to Minidoka reach?

24 A. I mean, yes, I'm aware of different impacts  
25 from different locations in the aquifer, certainly.

1 (Exhibit 197 marked.)

2 Q. (BY MR. BUDGE) Let me have you turn to  
3 Exhibit 197. Jennifer, do you recognize this document?  
4 It's labeled "Attachment 1, IGWA Proportionate Share  
5 Modeling, May 2023 Curtailment"?

6 A. I believe I did see this in one of the expert  
7 reports that was submitted.

8 Q. This was a document prepared by Jaxon Higgs.  
9 And I just want to ask if you are familiar with any of  
10 the data that's in here. And maybe what I'll do is I'll  
11 just note in the column labeled "IDWR Portion of April  
12 2023 Predicted Demand Shortfall," there is actually two  
13 columns there. There is an acre-foot column and a  
14 percentage column. And if you go to the bottom of the  
15 acre-foot column, you'll see the figure 63,645  
16 acre-feet. Do you see that figure?

17 A. Yes.

18 Q. You understand that that represents IGWA's  
19 proportionate share of the total predicted demand  
20 shortfall of 75,200 acre-feet?

21 A. Yes.

22 Q. And then if you go to the next block of  
23 columns on the right, kind of in the middle of the  
24 spreadsheet. There is a column that says, "Transient  
25 May to September Impact." And that's showing the May to

1 September reach gains from near Blackfoot to Minidoka  
2 reach from curtailment in each of those districts. Do  
3 you see that column?

4 A. I see that column.

5 Q. Are you familiar with the data that's shown in  
6 that column that shows the reach gains attributable to  
7 curtailment within each ground water district?

8 A. I did not develop that, those columns. That  
9 analysis I believe was done by Jaxon.

10 Q. Is this an analysis that you've done  
11 independently for other purposes, or it's just part of  
12 your general modeling work for the Department?

13 A. I have not done that analysis for -- I did not  
14 do that analysis for this priority date, no.

15 Q. Okay. Have you done that for other  
16 curtailment dates?

17 A. I don't think I did it for any curtailment  
18 dates, no.

19 Q. Have you done that analysis in any other  
20 context?

21 A. Again, I did some sort of analysis by ground  
22 water district for the discussions in the settlement  
23 talks. And I don't recall exactly what I did. I did  
24 not review that in preparation for this hearing.

25 Q. Okay. So I understand this is Jaxon's



1 analysis. But if you look at that column, maybe we'll  
2 go to the bottom line for North Snake Ground Water  
3 District. It shows that curtailment of every water  
4 right junior to 1900 in North Snake Ground Water  
5 District would curtail 217,000 acre-feet. And the  
6 transient benefit to near Blackfoot to Minidoka reach  
7 from May to September would be 0.06 acre-feet.

8           Were you generally familiar, or did you  
9 understand prior to when the Fifth Methodology Order was  
10 issued, that curtailment of water rights in North Snake  
11 Ground Water District would provide essentially no reach  
12 gains to the Coalition?

13           A. During this irrigation season, I didn't do the  
14 analysis. But, yes, you would expect that.

15           Q. Okay. So Jaxon's figures are consistent with  
16 your general understanding of the transient impacts by  
17 ground water district?

18           A. Yes, they are consistent with my general  
19 understanding. Yes.

20           Q. Thank you. During your work related to  
21 development of the Fifth Methodology Order, did you ever  
22 inform Matt Anders or the Director that curtailment in  
23 places like North Snake, Henry's Fork, Madison are  
24 likely or at least predicted to provide little if any  
25 benefit to the Coalition?

1           A. Well, they will provide benefits in future  
2 years in years of -- so they do provide long-term  
3 benefits. And they do have long-term impacts on the  
4 water in the river reach. So if you don't include them,  
5 then you are putting the -- you are basically shifting  
6 the responsibility for the shortfall to those users that  
7 are closest to the reach, and have the most immediate  
8 impact, even though the impacts have been caused by  
9 decades of pumping of people that are also further away.  
10 So we did have some discussion about that at some point.

11           Q. Okay. And as part of that discussion, did you  
12 explain that there wouldn't be any benefit in terms of  
13 mitigating the predicted demand shortfall for 2023?

14           A. I don't recall whether or not we specifically  
15 discussed that.

16           Q. Okay. So to your knowledge was information  
17 provided to the Director before he issued the Fifth  
18 Methodology Order that would have made him aware that  
19 curtailment in North Snake Ground Water District, Carey  
20 Valley Ground Water District, Henry's Fork Ground Water  
21 District, and Madison Ground Water District would  
22 provide no reach gain benefits to the Coalition in 2023?

23           A. I was not asked to provide any analysis by  
24 ground water districts for the Fifth Methodology Order.  
25 So, no, he would not have had that specific information

1 by ground water district.

2 Q. Okay. Aside from that information being  
3 specific to a ground water district, did you advise the  
4 Director that just generally speaking curtailment in  
5 these further away locations would not provide any  
6 benefit to the Coalition in 2023?

7 A. I don't recall.

8 Q. To your knowledge the Director did not have  
9 the benefit of this type of information before him when  
10 he issued the Fifth Methodology Order?

11 A. I don't know.

12 (Exhibit 929 marked.)

13 Q. (BY MR. BUDGE) Okay. Let me have you turn  
14 next to the Exhibit 929. Jennifer, this is a copy of  
15 IDAPA 37.03.11, the Rules for Conjunctive Management of  
16 Surface and Ground Water Resources. Do you have that in  
17 front of you?

18 A. Yes.

19 Q. We refer to these generally as the Conjunctive  
20 Management Rules. Are you familiar with these rules?

21 A. To some extent.

22 Q. I'm just going to draw your attention to page  
23 4 -- excuse me -- page 5. Do you see Rule 20.03?

24 A. Yes.

25 Q. If you can just take a moment to read Rules

1 20.03 and 20.04. And let me know if you are familiar  
2 with these rules?

3 A. (Witness complying.) I'm familiar with them  
4 to the extent that I'm aware they exist.

5 Q. Okay. I'll draw your attention to the last  
6 sentence in Rule 20.03, and I'll read that. It says,  
7 "An appropriator is not entitled to command the entirety  
8 of large volumes of water in a surface or ground water  
9 source to support his appropriation contrary to the  
10 public policy of reasonable use of water as described in  
11 this rule."

12 Were you asked to do any ground water modeling  
13 related to the disparity and -- let me strike that  
14 question.

15 Did this rule ever come up in your discussions  
16 with Matt Anders or other Department staff relative to  
17 the development of the Fifth Methodology Order?

18 A. I did not discuss those types of legal aspects  
19 with them, no.

20 Q. Okay. And Rule 20.04 refers to the futile  
21 call doctrine. Did that ever come up in your  
22 discussions with Matt Anders or other Department staff  
23 relative to the development of the Fifth Methodology  
24 Order?

25 A. Not that I recall, no.

1 Q. So you performed no analysis of the magnitude  
2 of curtailment compared to the predicted benefit to the  
3 Surface Water Coalition?

4 A. Well, I did present the magnitude of  
5 curtailment compared to the benefit of curtailment.  
6 That data are in Exhibit 318.

7 Q. Okay. Aside from page 20 of Exhibit 318, you  
8 didn't do any other analysis that compares the magnitude  
9 of curtailment to the predicted benefit to the  
10 Coalition?

11 A. No.

12 Q. Are you familiar with the concept of a  
13 trimline that has been used in delivery calls?

14 A. Yes.

15 Q. Can you explain what you understand that term  
16 to mean?

17 A. My understanding is it's an area designation  
18 that identifies -- it identifies an area beyond which  
19 the impacts of pumping are de minimis to the reach of  
20 interest.

21 Q. Okay. Did the concept of a trimline ever come  
22 up in your work related to the Fifth Methodology Order?

23 A. Again, I don't recall discussing a trimline  
24 with respect to this proceeding.

25 Q. So you didn't ask Matt Anders or the Director

1 if that's something you should look into?

2 A. Not that I recall.

3 Q. And neither of them instructed you not to  
4 evaluate trimlines?

5 A. No, I don't recall receiving any instruction  
6 about trimlines.

7 Q. Okay. Let me next have you turn to Exhibit  
8 301. This is what we called an As-Applied Order of the  
9 April 2023 As-Applied Order. I believe Ms. McHugh asked  
10 you some questions about this document. This is  
11 something you are familiar with, Ms. Sukow?

12 A. Yes.

13 Q. If you'll flip to page 5. At the bottom of  
14 page 5 there is a footnote, Footnote 5. And it  
15 identifies the proportionate mitigation obligation of  
16 IGWA as 63,645 acre-feet. Is that a calculation that  
17 you made using the model?

18 A. Yes.

19 Q. As you know IGWA is made up of several ground  
20 water districts. Before the Fourth Methodology Order  
21 was issued, had you calculated each individual ground  
22 water districts proportionate share of that 63,645  
23 acre-foot figure?

24 A. I don't refer to it as a proportionate share,  
25 because they did not -- they didn't have mitigation

1 plans. But our attorney, Garrick Baxter, asked me to  
2 calculate the percentage of IGWA's proportionate share  
3 that could be assigned to each ground water district, I  
4 believe, in a response to a request that was made by  
5 yourself or one of the other attorneys.

6 Q. Yes. Thank you.

7 (Exhibit 126 marked.)

8 Q. (BY MR. BUDGE) If you could turn to Exhibit  
9 126.

10 A. I don't have that one.

11 MR. FLETCHER: 126?

12 MR. BUDGE: Yes, 126.

13 Q. (BY MR. BUDGE) Jennifer, what I have in front  
14 of me is Exhibit 126 is an email from Garrick Baxter to  
15 myself and others. And the subject line says, "Request  
16 to delineate proportionate shares of mitigation  
17 obligation." Do you see that?

18 A. Sorry. Say that again.

19 Q. The Exhibit 126 that I have up is an email  
20 from Garrick Baxter to myself and others --

21 A. Yes.

22 Q. -- is that what you see?

23 A. Yes. Yes.

24 Q. Okay. In that email there is a table that  
25 shows the ground water districts, and their

1 proportionate percentages in acre-feet with respect to  
2 the 63,645 acre-foot mitigation obligation of IGWA. Do  
3 you see that table?

4 A. Yes.

5 Q. Did you generate the data that's shown in this  
6 table?

7 A. Yes.

8 Q. Okay. And you mentioned a moment ago that you  
9 were asked by Mr. Baxter to apportion out IGWA's  
10 mitigation obligation, the 63,000 acre-feet figure among  
11 the ground water districts. Does this reflect your  
12 analysis in that regard?

13 A. Yes.

14 Q. That middle column that has acre-feet figures  
15 totaling 63,645 acre-feet. I want to ask you some  
16 questions about that. And we can continue to use North  
17 Snake Ground Water District as an example. But on that  
18 bottom row for North Snake, it shows that its portion of  
19 the 63,645 acre-feet is 3,262 acre-feet. Does this  
20 table indicate that curtailment of every water right  
21 within North Snake junior to December 30th, 1953, that  
22 would produce a transient state reach gain to the  
23 Surface Water Coalition of 3,262 acre-feet?

24 A. No, it does not.

25 Q. What does this column represent then?



1           A. So this is not -- this column is not looking  
2 at the benefit of curtailment. This column is looking  
3 at what their share of the demand shortfall is if they  
4 are going to mitigate by providing storage water. And  
5 the shortfall is the result -- this year's shortfall is  
6 the result of decades of pumping. So if they are going  
7 to mitigate by providing storage water, then their share  
8 of the demand shortfall is based on their long-term  
9 impact.

10           Q. Okay.

11           A. Not what will happen as a result of curtailing  
12 starting this May.

13           Q. Okay. And the demand shortfall predicted in  
14 the As-Applied Order that's a predicted demand shortfall  
15 for the 2023 irrigation season; correct?

16           A. Yes.

17           Q. And under this approach to allocating that  
18 predicted demand shortfall. Some ground water districts  
19 such as North Snake would have to provide more water as  
20 mitigation than the Coalition would receive from  
21 curtailment. And other ground water districts would  
22 have to provide less water as mitigation than the  
23 Coalition would receive from curtailment?

24           A. I don't think that's true as far as the  
25 Department's concerned. IGWA's proportionate share is

1 63,645 acre-feet. And the Department, I don't think,  
2 has a say in how you decide to split that up. You asked  
3 us to provide a breakdown, and I did it by this method.  
4 And Garrick sent it to you as a courtesy. But we are  
5 not telling you that that's how you have to split up the  
6 proportionate share.

7 Q. Yeah. And I appreciate that. And I don't  
8 actually even mean to be critical of the method. It's  
9 just one method; right? It's not the only method. And  
10 I just wanted to highlight that under this method in the  
11 proportionate mitigation obligations don't match up with  
12 the transient modeled reach gains?

13 A. No, they do not.

14 MR. BUDGE: Okay. Thank you, Jennifer. I  
15 don't have any further questions.

16 THE HEARING OFFICER: Okay. Thank you,  
17 Mr. Budge.

18 Do we want to take a break?

19 MR. FLETCHER: Yes.

20 THE WITNESS: I could use a restroom break, if  
21 I'm allowed to ask.

22 THE HEARING OFFICER: Yes. Let's break for  
23 ten minutes. We'll be back at 11:30.

24 (Recess.)

25 THE HEARING OFFICER: Back on the record,

1 Colleen. All right. We are recording again.

2 More questions of Ms. Sukow. Mr. Harris.

3 CROSS-EXAMINATION

4 QUESTIONS BY MR. HARRIS:

5 Q. Ms. Sukow, I'm Rob Harris, attorney for the  
6 City of Idaho Falls. I have just some follow-up  
7 questions to some of your prior testimony.

8 Mr. Budge talked to you about the IDWR  
9 irrigated lands datasets. Could you just explain to me  
10 what those are again?

11 A. They are delineation of -- a land use  
12 delineation done by IDWR GIS staff that delineates land  
13 units --

14 MR. BAXTER: Sorry, Director. We're not able  
15 to hear Ms. Sukow online.

16 THE WITNESS: Sorry. I had my microphone off.

17 THE HEARING OFFICER: Okay. Are we okay?  
18 Let's try.

19 THE WITNESS: The irrigated lands datasets are  
20 delineations of land use by IDWR's GIS staff, where they  
21 delineate land unit boundaries, and then classify them  
22 as either irrigated, non-irrigated, or semi-irrigated.

23 Q. (BY MR. HARRIS) And so those are hand  
24 digitized maps of irrigated acres; correct?

25 A. Correct, yes.

1 Q. And those irrigated lands datasets are used to  
2 calibrate the ESPAM model; correct?

3 A. They are used in calculation of the water  
4 budget input data that's used in the calibration, yes.

5 Q. So the answer is, yes, they are used in your  
6 model calibration?

7 A. They are used in the model calibration, yes.

8 Q. To the best of your knowledge, is there  
9 anything else that they are used for within IDWR?

10 A. There probably is, but I'm not specifically  
11 aware.

12 Q. When you say "probably," what makes you say  
13 that?

14 A. I have the general impression that I am not  
15 the only one that uses them.

16 Q. Okay. You testified about calibrating the  
17 ground water model and minusing out return flows from  
18 the Twin Falls Canal Company return flows; is that  
19 correct?

20 A. I said that they are used in the calculation  
21 of the Kimberly to King Hill reach gain target.

22 Q. Okay. And so you used river gaging  
23 information to help with that calibration; correct? Or  
24 I should ask, do you use river gage information for that  
25 calibration of --

1           A. We use river gage information in the  
2 calculation of reach gains. So that's to calculate an  
3 observation, a physical observation of how much of the  
4 river flow is coming from the aquifer.

5           Q. And do you also do that in the near Blackfoot  
6 to Minidoka reach?

7           A. Yes.

8           Q. So could you just generally explain how you  
9 calibrate model runs to what's actually seen or measured  
10 in the Snake River from near Blackfoot to Minidoka?

11          A. So we have -- during the model calibration we  
12 have model input data that we use that, you know, we put  
13 aquifer recharge and discharge in. And then we try to  
14 match observations. And in model calibration, there are  
15 adjustable parameters, like aquifer transmissivity,  
16 specific yield, and some other components that are  
17 adjusted to best match observed data. So some of that  
18 observed data is aquifer head, some of it is aquifer  
19 interaction with the river. So places where the aquifer  
20 either discharges to the river or receives recharge from  
21 the river. And those observations of reach gain are  
22 used as calibration targets.

23          Q. So let me just to make sure I understand, let  
24 me use a hypothetical. Let's say that there is 5,000  
25 cfs measured in the river. How do you determine how

1 much of that is from snow melt versus reach gains from  
2 ground water in that reach?

3 A. You take all of the known surface components  
4 and account for them. So you have your measured inflow  
5 on the upstream end of your reach. Your measured  
6 outflow on the downstream end of your reach. You have  
7 diversions from the reach that you account for. You  
8 have surface return flows that you account for. And  
9 also you might have tributary surface streams that you  
10 have a measurement that you account for. So you just  
11 account for all those surface inflows and outflows. And  
12 then you have a residual. And the residual is your best  
13 estimate of the contribution of ground water to that  
14 reach.

15 Q. I see. And in terms of the measurements that  
16 you use in that calibration, do you obtain that  
17 information from Water District 1 and its watermaster,  
18 Tony Olenichak?

19 A. Some of it.

20 Q. When you say "some of it," is there anything  
21 specifically that you recall that you would obtain from  
22 him?

23 A. The diversion data are obtained from the Water  
24 District 01 records.

25 Q. You had mentioned too, though, that you will

1 look at water supply from other tributary basins in your  
2 calibration. Did I understand your testimony correctly?

3 A. In a few cases there is a tributary stream,  
4 for example, you know, the Malad River, for example,  
5 above the springs. There is flow in that river, and we  
6 have to account for that when we calculate the reach  
7 gains. Lower Salmon Falls Creek is another example of  
8 that.

9 Q. But I want to focus more on the near Blackfoot  
10 to Minidoka. Do you or did you in your calculations, do  
11 you look at flows out of either Willow Creek, the  
12 Blackfoot Basin, or the Portneuf Basins in that  
13 calibration?

14 A. Yes, I know the Portneuf is in that  
15 calibration or that calculation. The reach gains above  
16 Minidoka are actually calculated for me by another staff  
17 member. I do have a list of all the inflows and  
18 outflows that are accounted for, but I don't have them  
19 memorized.

20 Q. Who is that other staff member who calculates  
21 those reach gains?

22 A. Ethan Geisler, Guys-ler. I'm not sure how to  
23 pronounce his last name.

24 Q. And he works for the Department?

25 A. Yes.

1 Q. Is he a modeler as well?

2 A. No.

3 Q. Okay. You were asked before about the model  
4 runs that were presented in your PowerPoint  
5 presentation. I don't need you to refer to it. But  
6 just a follow-up question. In any of the model runs  
7 that you did for curtailment, were any ground water  
8 rights removed from those runs?

9 A. I'm sorry. Could you say that question again?

10 Q. Yeah. In the model runs that you performed,  
11 you didn't take out like, for example, A & B Irrigation  
12 District's ground water rights in those simulations?  
13 They were all just ground water rights on the Eastern  
14 Snake Plain Aquifer within the area of common ground  
15 water supply; is that right?

16 A. For the simulations that were presented for  
17 the various curtailment dates?

18 Q. Correct.

19 A. Yes. So anything within the area of common  
20 ground water supply junior to those curtailment dates,  
21 yeah.

22 Q. Yeah. And I just want to make sure that it  
23 included all ground water rights in there for any  
24 specific reason that there were any that were left out.  
25 None were left out on these curtailment runs?



1           A. Yeah, I -- well, so we have -- yeah. Anything  
2 that's in our irrigation POD file, and anything that's  
3 in the municipal files.

4           Q. Just a couple follow-up questions. In the  
5 methodology order there is an April forecast supply  
6 methodology. And I just want to ask, did you provide  
7 any technical information on the forecasted supply that  
8 only looks at the unregulated flow at Heise?

9           A. I'm sorry. Say that again.

10          Q. Well, in the methodology order, there is a  
11 part that forecast the water supply. Are you familiar  
12 with that part of the order where it looks at the  
13 unregulated flow at the Heise gage on the Snake River.

14          A. No, I didn't participate in that.

15          Q. And that's really my question. Is you weren't  
16 asked to provide any technical information on that part  
17 of the order; were you?

18          A. No.

19          Q. But as far as the technical aspects that you  
20 were asked to participate in, did you have any  
21 discussions on those technical aspects with Mat Weaver  
22 or other Department staff?

23          A. I probably did. I don't have a specific  
24 recollection.

25          Q. Okay. When you say "you probably did," what

1 makes you say that?

2 A. I'm sure we just -- I mean, we discussed what  
3 I was going to present to the technical working group.

4 MR. HARRIS: Okay. I have no further  
5 questions. Thank you.

6 THE HEARING OFFICER: Further questions by the  
7 ground water users of Ms. Sukow?

8 Okay. Let's shift.

9 MR. ANDERSON: Director, very, very quick.

10 Mr. Anderson.

11 CROSS-EXAMINATION

12 QUESTIONS BY MR. ANDERSON:

13 Q. Jennifer, when did you first learn that the  
14 Fifth Methodology Order was going to move from steady  
15 state to transient?

16 A. I don't know when Gary made a final decision  
17 on it. I know when I was asked to provide information  
18 on it. And that was -- that was for the technical  
19 working group.

20 Q. So after the technical working group, the next  
21 time you knew that it was actually going to change to  
22 transient, was when it came out in April, or did you  
23 know before the issuance of the order that it was going  
24 to?

25 A. I knew when I was asked to assist with

1 preparing the draft order.

2 Q. And when was that?

3 A. I don't recall exactly. Not that long before  
4 it came out.

5 Q. A few weeks, a month?

6 A. I don't recall.

7 Q. You don't recall. But when you were asked to  
8 prepare the draft order to assist in the preparation,  
9 you knew then that it was going to move from steady  
10 state to transient?

11 A. Yes.

12 MR. ANDERSON: Okay. I don't have any further  
13 questions.

14 THE HEARING OFFICER: All right. Thank you.

15 With no further questions from the ground  
16 water users, we'll shift to the Surface Water Coalition.  
17 Mr. Simpson, you stood up. Are you the examiner?

18 MR. SIMPSON: An examiner, Mr. Director. So I  
19 thank you for that acknowledgment.

20 CROSS-EXAMINATION

21 QUESTIONS BY MR. SIMPSON:

22 Q. Good morning, Ms. Sukow. My name is John  
23 Simpson. I represent A & B Irrigation District, et al.,  
24 with Mr. Thompson. I just have a couple follow-up  
25 questions for you.

1           If you could turn to Exhibit 318 from which  
2 you testified to before. And I believe that's your  
3 slide presentation from November. And, Jennifer, if you  
4 could just look at pages 21 and 22. I believe those are  
5 your conclusions; is that correct?

6           A. That's correct.

7           Q. Those are your conclusions from the modeling  
8 you produced as a part of that presentation in November;  
9 correct?

10          A. Correct.

11          Q. As you sit here today, are those still your  
12 conclusions that you would represent to the Hearing  
13 Officer and to the parties in terms of the modeling  
14 exercise you completed in the comparison between steady  
15 state and transient?

16          A. Yes.

17          Q. Okay. And then if you would look at page 6 of  
18 that presentation. And that's the graph that you  
19 testified to earlier regarding examination by  
20 Ms. McHugh. Do you see the paragraphs in the middle of  
21 the graph regarding the "Less than 15 percent of the  
22 steady state impacts of a single-season curtailment are  
23 realized." Do you see that language in that graph, that  
24 insert?

25          A. Yes.

1 Q. Okay. And that's your conclusion; correct?

2 A. Yes, that's --

3 Q. Yes.

4 A. -- data from the analyses.

5 Q. Right. So that would support your conclusions  
6 on page 21 and 22, that the basis for why steady state  
7 analysis is not appropriate for short-term river reach  
8 gains; is that correct?

9 A. Well, I think beyond that, because the steady  
10 state simulations do not simulate the short-term  
11 curtailments that are prescribed in the Surface Water  
12 Coalition methodology.

13 Q. Okay.

14 A. But the difference in volume is just the  
15 result of doing something that does simulate the  
16 short-term curtailment.

17 Q. Right. So if you utilize the steady state  
18 model run, you are just not going to realize the amount  
19 of water into the reach to mitigate for the identified  
20 injury in the Fifth Methodology As-Applied Order;  
21 correct?

22 A. Not within this irrigation season.

23 Q. And so then the second item is in response to  
24 questions by Ms. Klahn regarding the south side returns  
25 and the consideration of those south side flow returns.

1 Do you recall that testimony?

2 A. Yes.

3 Q. Okay. And those numbers identified by  
4 Ms. Klahn that you testified to, were those estimates of  
5 the ground water recharge contribution from irrigation  
6 on the North Side Canal Company system?

7 A. I believe she was asking me about inflows from  
8 the south side.

9 Q. From the south side. With respect to those  
10 south side return flows, and the numbers you've  
11 testified to, or were asked about. Were those in  
12 response to the estimations, calculations regarding the  
13 estimated ground water return flows from irrigation on  
14 the Twin Falls system; do you recall?

15 A. Oh, I think you said north side, and I was  
16 confused.

17 Q. If I did, I apologize.

18 A. No, they are measured flows in the return  
19 channels, which are on the south side deeply incised.  
20 And in a previous version of ESPAM, we were estimating  
21 those based on a water budget method, which is I think  
22 what you are asking about. But I determined that our  
23 measurements were giving us the same volume. And then  
24 having the actual measurements is much better for  
25 calculating the reach gain, because it accounts for the

1 seasonality.

2 Before we had been averaging it. But with the  
3 measurements, we're actually able to account for the  
4 monthly seasonality, which gave us -- allowed us to  
5 remove a fair amount of noise from our reach gain  
6 calibration target.

7 Q. So those south side return flows that you are  
8 discussing, were those only the Twin Falls return flows,  
9 or did those include some other tributaries to the Snake  
10 River on the south side of the river?

11 A. Well, there is Lower Salmon Falls Creek,  
12 which, you know, we deduct out the total flow in Lower  
13 Salmon Falls Creek. Some of that is from return flows,  
14 but we don't really care whether it's from return flows  
15 or other surface flows. We just deduct off the entire  
16 creek flow.

17 Q. Okay.

18 A. And then there is also return flows from  
19 surface return flows from the north side that we deduct  
20 off?

21 Q. Correct.

22 A. Yeah.

23 Q. And then Mr. Budge was asking you about a  
24 calculation that you did with respect to dividing up the  
25 IGWA's proportionate share under the Footnote 5, I

1 believe, of the As-Applied Order. Do you recall that  
2 testimony?

3 A. Yes.

4 Q. I'm not sure if I fully appreciated the  
5 calculation you made. But my understanding is that your  
6 method that you utilized, and this was your proposed  
7 method, acknowledged the long-term impacts of each  
8 ground water district on the Blackfoot to Minidoka  
9 reach. And then once that percentage was calculated,  
10 then it was utilized in the calculation of the  
11 responsibility of each ground water district of the  
12 total for IGWA; is that correct?

13 A. Well, and again, that was provided as a  
14 courtesy, and the Department is not telling them, IGWA  
15 what each ground water districts responsibility is. But  
16 it is just an apportioning of it based on their  
17 long-term impacts.

18 Q. Right. And with respect to your work under  
19 Exhibit 318, you weren't asked whether or not to  
20 consider, when you looked at the curtailment scenarios  
21 and transient curtailment, and the number of acres to be  
22 curtailed as you've testified here today, whether or not  
23 any of those acres were the subject of ongoing  
24 mitigation plans or stipulated agreements; were you?

25 A. I'm sorry. Say that again.



1 Q. Well, simply your work that you did for  
2 Exhibit 318, the modeling you produced in November.  
3 Didn't consider whether or not any of the ground water  
4 acres that you identified that would be subject to  
5 curtailment, were part of an existing or an approved  
6 mitigation plan?

7 A. No.

8 MR. SIMPSON: Okay. That's all the questions  
9 I have. Thank you.

10 THE HEARING OFFICER: Any other questions from  
11 the Surface Water Coalition?

12 Mr. Fletcher, you represent clients  
13 independent of Mr. Simpson.

14 MR. FLETCHER: Yeah, I don't have any  
15 additional questions. Thank you.

16 THE HEARING OFFICER: Okay. Thank you.

17 All right. So let's now characterize the next  
18 examination as a redirect. So let's just go in the same  
19 order as previously followed.

20 Ms. McHugh, questions?

21 MS. MCHUGH: I have no redirect. Thank you.

22 THE HEARING OFFICER: Ms. Klahn?

23 MS. KLAHN: No, Your Honor.

24 THE HEARING OFFICER: Any of the others who  
25 questioned, further questions of Ms. Sukow?

1 MR. WOOD: I've got a question, Director.

2 THE HEARING OFFICER: Okay. Mr. Wood.

3 REDIRECT EXAMINATION

4 QUESTIONS BY MR. WOOD:

5 Q. Jennifer, do you recall Mr. Budge asking you a  
6 couple questions about trimline?

7 A. Yes.

8 Q. And in your professional opinion would a  
9 trimline be appropriate in this delivery call?

10 MR. BUDGE: Objection; foundation.

11 THE HEARING OFFICER: Sustained.

12 Mr. Wood, would you just lay a foundation with  
13 her.

14 Q. (BY MR. WOOD) Jennifer, do you recall  
15 Mr. Budge asking you a few questions about a trimline?

16 A. Yes.

17 Q. And what is a trimline?

18 A. I believe I answered that for Mr. Budge. But  
19 it's a delineation of an area where pumping has a larger  
20 than de minimis impact on the reach of interest.

21 Q. And so in this context, was your understanding  
22 of Mr. Budge's question whether or not you were asked to  
23 employ a trimline in this situation?

24 A. I think that's probably a fair  
25 characterization, yes.

1 Q. And in your opinion --

2 MR. BUDGE: Objection. It misstates the  
3 testimony.

4 THE HEARING OFFICER: Well, I'll allow an  
5 opportunity to clarify, if you want.

6 Answer the question, please. If you remember  
7 the question.

8 Q. (BY MR. WOOD) I'll put it this way.  
9 Ms. Sukow, what was your understanding of why Mr. Budge  
10 was asking you about a trimline?

11 A. I don't know why he was asking me about a  
12 trimline.

13 Q. Would a trimline in your professional opinion  
14 be appropriate for this delivery call?

15 MR. BUDGE: Objection. Mr. Director, may I  
16 comment.

17 THE HEARING OFFICER: What's the basis of the  
18 objection, Mr. Budge?

19 MR. BUDGE: In violation of the Director's  
20 order limiting the scope of testimony. So what I asked  
21 Ms. Sukow is if she had done any analysis or provided  
22 any information to the Director. I understood we can't  
23 ask her opinions on legal and policy issues based on the  
24 Director's order, and so I did not ask those questions.  
25 I just asked what analyses information she had provided

1 to the Director. So I don't think we can be in a  
2 position where we can't ask questions about the thinking  
3 and the group process. But then the Department can't  
4 ask those questions.

5 THE HEARING OFFICER: Okay. Mr. Budge,  
6 Mr. Wood, I will sustain the objection at least at this  
7 point in time. But anticipating that there will be  
8 further development and testimony regarding a timeline,  
9 and Ms. Sukow may be recalled and the question may be  
10 posed to her at that time.

11 Thank you, Mr. Wood.

12 MR. WOOD: Thank you.

13 THE HEARING OFFICER: Okay. Further questions  
14 of Ms. Sukow anybody?

15 All right. Well, the timing is perfect I  
16 guess. It's the lunch hour. So thank you, Ms. Sukow.  
17 And thank you, Colleen. So let's recess for lunch. And  
18 come back at what time; 1:00? We'll be back, convene at  
19 1:00. Thank you.

20 (Lunch recess.)

21 THE HEARING OFFICER: We're back on the  
22 record, Colleen. One suggestion before we start. Some  
23 participating remotely have observed that it's difficult  
24 to hear objections. You are farther away from the  
25 microphone system. If you could speak up, and it might

1 help if you stand up. There is a microphone in the  
2 ceiling somewhere there.

3 Okay. Is it my understanding that Mr. Colvin  
4 is the next witness?

5 Mr. Colvin, if you would come forward, please.

6 DAVID COLVIN,

7 first duly sworn to tell the truth relating to said  
8 cause, testified as follows:

9 THE HEARING OFFICER: Mr. Thompson, you may  
10 examine Mr. Colvin.

11 MR. THOMPSON: Director, there should be a  
12 Surface Water Coalition binder exhibits. Probably the  
13 smallest skinniest ones back there. If you wouldn't  
14 mind getting those out.

15 DIRECT EXAMINATION

16 QUESTIONS BY MR. THOMPSON:

17 Q. Dave, could you state and spell your name for  
18 the record, please?

19 A. My name is Dave Colvin, spelled D-a-v-e, or  
20 David, David, Colvin, C-o-l-v-i-n.

21 Q. And where do you presently work?

22 A. I work at LRE Water in Denver, Colorado.

23 Q. And what is your occupation?

24 A. I'm the ground water team leader, principal  
25 hydrogeologist with the firm.

1 (Exhibit 3 marked.)

2 Q. (BY MR. THOMPSON) And in that binder we have  
3 in front of you, we have what's marked as Exhibit 3.  
4 Could you describe that, please?

5 A. That's Exhibit 3 is my expert report for the  
6 Fifth Methodology Order and this hearing.

7 Q. And is your CV attached to that exhibit?

8 A. It is.

9 Q. And does that CV generally describe your  
10 education and work history?

11 A. Yes, it does.

12 Q. Have you been qualified as an expert witness  
13 before IDWR in prior cases?

14 A. I have.

15 Q. Are you a member of the Eastern Hydrologic  
16 Modeling Committee?

17 A. Yes, I am.

18 Q. And did you participate in the technical  
19 working group last fall?

20 A. I did, yes.

21 Q. And can you generally describe what you were  
22 asked to do with that report identified as Exhibit 3?

23 A. I was asked to review the Fifth Methodology  
24 Order and this year's As-Applied Order for steps 1  
25 through 3, and look at the ground water modeling issues

1 in particular, and evaluate the procedures that were  
2 implemented, and formulate my opinions.

3 Q. And do you want to describe your general  
4 conclusions or just refer to those in the report?

5 A. Yeah. So in my report on page 2, I have a  
6 summary of opinions. And so maybe I'll just run through  
7 those opinions. And then the rest of my report goes  
8 into greater detail. But in summary, I started with  
9 Opinion No. 1, stating that ESPAM, specifically Version  
10 2.2 is the widely accepted as the best available  
11 scientific tool for evaluating regional ESPA hydrology,  
12 particularly reach gain impacts due to curtailing ground  
13 water pumping.

14 Opinion No. 2 was that the steady state use of  
15 ESPAM for curtailment analysis in particular is  
16 inappropriate due to the methodology's requirement for  
17 in-season benefits from curtailment. And so the  
18 in-season timing component renders a steady state model  
19 ineffective and inappropriate for modeling curtailment  
20 benefits. No. 3 is that the transient superposition  
21 model for ESPAM2.2 is the appropriate model for  
22 calculating the reach gain benefits from curtailing  
23 junior ground water pumping.

24 No. 4 is that regardless of prior approaches  
25 from other methodology orders, that transient is the

1 proper approach for the Fifth Methodology Order. No. 5  
2 is that transient modeling of ESPA has been happening  
3 for over ten years for various other applications of  
4 ground water modeling.

5 And then No. 6 is that specific to the steady  
6 state modeling that Ms. Sukow described for  
7 proportionate share analysis of the demand shortfalls.  
8 That that steady state modeling is appropriate for that  
9 use, but only when it is applied to mitigation  
10 requirements that might be covered by direct delivery of  
11 surface water. And that that steady state modeling has  
12 no bearing on the ground water curtailment approach to  
13 mitigation.

14 Q. Thank you.

15 MR. THOMPSON: We would move to admit Exhibit  
16 3 into the record.

17 THE HEARING OFFICER: Any objection to the  
18 admission of this document?

19 Hearing no objection the document marked as  
20 Exhibit 3 is received into evidence.

21 (Exhibit 3 received into evidence.)

22 MR. THOMPSON: And we would tender Mr. Colvin  
23 as an expert on the subjects addressed in that report  
24 for cross-examination. Thank you.

25 THE HEARING OFFICER: Thank you, Mr. Thompson.



1 Cross-examination? I want to call you, Max.  
2 What's your last name.

3 MR. BRICKER: Bricker.

4 THE HEARING OFFICER: Mr. Bricker, you may  
5 examine the witness.

6 MR. BRICKER: Thank you.

7 CROSS-EXAMINATION

8 QUESTIONS BY MR. BRICKER:

9 Q. Good afternoon, Mr. Colvin. How are you  
10 doing?

11 A. Great.

12 Q. Good. Okay. Would you agree that the  
13 Department uses ESPAM to determine which ground water  
14 users must be curtailed or must supply mitigation water  
15 to offset the predicted shortfall to the Surface Water  
16 Coalition?

17 A. Yes.

18 Q. Okay. Now, in your report, Exhibit 3, it's  
19 your opinion that transient modeling is the most  
20 appropriate mechanism to determine the actual increase  
21 in Snake River flow in the near Blackfoot to Minidoka  
22 reach that would occur in the first year of curtailment;  
23 right?

24 A. Yes.

25 Q. And you've also stated that the results from

1 the steady state run overestimated the curtailment  
2 benefits by more than an order of magnitude; right?

3 A. For in-season benefits, yes.

4 Q. Okay. And you've also stated that the steady  
5 state model curtailment results have been clearly  
6 demonstrated to be a grievous error; right?

7 A. Yes.

8 Q. But Department staff has been aware of the  
9 technical differences between the steady state and the  
10 transient modeling runs for many years now; right?

11 A. I can't speak for their awareness, but I would  
12 presume so.

13 Q. Okay. And the Department could have been  
14 using transient model runs before 2023; correct?

15 A. Yes.

16 Q. So is it fair to say that the use of the  
17 steady state runs in modeling was not in error, but was  
18 made as a policy decision?

19 A. I wouldn't be able to speculate on policy  
20 decisions.

21 Q. Okay. And you are aware as was asked of  
22 Ms. Sukow, that there has been a moratorium on new wells  
23 without mitigation since the early '90s; right?

24 A. Yes.

25 Q. So almost all wells have been pumping for at

1 least some 30 years now; correct?

2 A. Approximately.

3 Q. And looking at Exhibit 318, which was the  
4 presentation by Ms. Sukow from last November.

5 A. Yes. Okay. I've got it.

6 Q. All right.

7 A. Do you have a page number you are referencing?

8 Q. I'm looking for it myself. You know what,  
9 perhaps it isn't in this. It might be elsewhere. But  
10 would you agree that over 90 to 99 percent of the impact  
11 of pumping on the ESPA has been realized?

12 A. You must -- I think you might be referring to  
13 page 6.

14 Q. Let's see. Yes, in fact, there it is.

15 A. Okay. Can you restate your question?

16 Q. Would you agree that 90 to 99 percent of  
17 pumping impacts on the ESPA have been realized at that  
18 particular river reach?

19 A. Approximately, yes.

20 Q. So wouldn't you agree that given that, a  
21 steady state curtailment run is a reasonable estimate of  
22 the current impact on Snake River flows in that reach  
23 resulting from the current and prior pumping of those  
24 curtailed wells?

25 MR. THOMPSON: Objection; a compound question.

1 Q. (BY MR. BRICKER) Would you agree that a  
2 steady state curtailment run is a reasonable estimate of  
3 the current impact on Snake River flows resulting from  
4 current and prior pumping of curtailed runs -- or wells?

5 Excuse me.

6 A. No.

7 Q. Okay. All right. Would you agree that the  
8 predicted shortfall in 2023 is 75,200 acre-feet?

9 A. That's what was in the Fifth Methodology  
10 Order -- or the As-Applied Order, yes.

11 Q. Okay. So looking back at that Exhibit 318,  
12 looking at page 13, the "Comparison priority dates  
13 calculated for DS forecasts," the first of those two  
14 pages. Curtailment of wells junior to sometime in the  
15 mid-1980s would produce 75,200 acre-feet in the near  
16 Blackfoot to Minidoka reach based on steady state  
17 modeling; right?

18 A. It's hard to see in this graph here, but it  
19 seems about right.

20 Q. Sometime in the mid to late '80s?

21 A. Sure.

22 Q. So in other words, the current and prior  
23 pumping of wells junior to the mid-1980s is currently  
24 depleting the near Blackfoot to Minidoka reach by about  
25 75,200 acre-feet given that slide; right?

1           A. That would be the impact on the reach gains  
2 there, so, yes.

3           Q. Okay. So if the wells junior to the mid-1980s  
4 had not started pumping, there would be an additional  
5 75,200 acre-feet in the river at that reach in 2023;  
6 right?

7           A. If they had never started pumping, that would  
8 be about the increase in reach gains, yes.

9           Q. Okay. So as a result, if the pumping of the  
10 wells junior to the mid-1980s did not happen, there  
11 would be no forecast shortage to the Surface Water  
12 Coalition members; right, in 2023?

13           A. That's possible. And a very different  
14 analysis than curtailment.

15           Q. Okay. Would you agree that it may be unduly  
16 burdensome to curtail wells senior to the mid-1980s if  
17 it were that those wells senior did not cause the 75,200  
18 acre-foot shortage in 2023?

19           A. I haven't evaluated the burden of curtailment,  
20 but the impacts to reach gains are due to the cumulative  
21 pumping across the ESPA for many decades. And so you  
22 can apportion it how you want, which is essentially what  
23 IDWR did with their proportionate share analysis  
24 but -- I guess can you restate your question?

25           Q. Sure. It was does it seem unduly burdensome

1 to force wells senior to the mid-1980s to be curtailed  
2 if they were not the cause of the 75,200 acre-foot  
3 shortage in 2023?

4 A. Well, again, I haven't evaluated the burden of  
5 curtailment compared to being involved in an agreement  
6 or mitigating by some other measure. So I guess I don't  
7 know.

8 Q. How about instead of to force curtailment, but  
9 to require mitigation water from?

10 A. Again, I haven't reviewed the burden of what  
11 forced mitigation would require. So I don't really know  
12 how to answer that question.

13 Q. How about if you change burden to, is it fair  
14 to require mitigation or curtailment of those rights?

15 A. I guess I don't know what you mean by "fair."  
16 But according to prior appropriation, if you mean is it  
17 a priority date; is that fair? And I think under prior  
18 appropriation administration, a priority date that  
19 returns the demand shortfall to the Surface Water  
20 Coalition is fair.

21 MR. BRICKER: Thank you. I have no further  
22 questions.

23 THE HEARING OFFICER: Further  
24 cross-examination?

25 Mr. Budge.

## 1 CROSS-EXAMINATION

2 QUESTIONS BY MR. BUDGE:

3 Q. Good afternoon, Mr. Colvin. Do you mind if I  
4 call you "David"?

5 A. That's fine.

6 Q. I have just a few questions.

7 (Exhibit 306 marked.)

8 Q. (BY MR. BUDGE) First, if I could have you  
9 turn to Exhibit 306.

10 A. Okay.

11 Q. What's that document title that you are  
12 looking at?13 A. This is the Fourth Amended Final Order  
14 Regarding Methodology for Determining Material Injury to  
15 Reasonable In-Season Demand and Reasonable Carryover."16 Q. Thank you. That's the right one. I refer to  
17 that as the Fourth Methodology Order. Were you working  
18 for the Surface Water Coalition back when that was  
19 issued?

20 A. No, I was not.

21 Q. When did you begin working for the Coalition?

22 A. I believe it was 2019 --

23 Q. Okay.

24 A. -- maybe 2018.

25 Q. And what type of work have you done for the

1 Coalition since then?

2 A. Evaluation of Eastern Snake Plain Aquifer  
3 hydrology related to transfers or the agreement with  
4 IGWA, monitoring the Eastern Snake Hydrologic Modeling  
5 Committee and participating there, being involved in  
6 technical work groups related to the sentinel well  
7 tracking, and recharge planning, various other  
8 activities on the plain.

9 Q. Is the methodology order that we're discussing  
10 here, is that within the purview of the representation  
11 you provide for the Coalition?

12 A. Yes.

13 Q. And you mentioned that you participate on the  
14 Eastern Snake Hydrologic Modeling Committee?

15 A. Yes.

16 Q. Did you participate in the 2015 technical  
17 working group that the Department held regarding the  
18 methodology order?

19 A. I did not.

20 Q. Okay. Back to that exhibit you've got in  
21 front of you. If you could flip to page 35?

22 A. Okay.

23 Q. About halfway down, there is a heading that  
24 says "Order." And then it begins walking through the  
25 steps of the methodology order. I assume you are



1 familiar with all of the steps?

2 A. Yes.

3 Q. Step 1, which you are familiar with, requires  
4 members of the Coalition to report annually their  
5 irrigated acreage to the Department. Are you familiar  
6 with that step?

7 A. Yes.

8 Q. As a consultant for the Coalition, has the  
9 Coalition or any member of the Coalition ever asked you  
10 to help them evaluate the irrigated acres within their  
11 service area?

12 A. No, that's kind of out of my specialty. I'm  
13 more ground water focused.

14 Q. Got you. Are there people in your firm that  
15 have that type of expertise?

16 A. There are.

17 Q. But that's not something the Coalition has  
18 ever asked for your help with?

19 A. No.

20 Q. Have they ever shared with you the reports  
21 that they submit to the Department, where they report  
22 their irrigated acreage?

23 A. Not shared with me directly. I've seen them  
24 posted, though.

25 Q. Okay. But that's not a component of the

1 methodology that they've consulted your advice in  
2 relation to?

3 A. No.

4 MR. BUDGE: Okay. I don't have any further  
5 questions.

6 THE HEARING OFFICER: Further examination of  
7 Mr. Colvin?

8 Okay. Any redirect, Mr. Thompson?

9 MR. THOMPSON: I don't have any.

10 THE HEARING OFFICER: Mr. Colvin, you are off  
11 easy.

12 THE WITNESS: Okay.

13 (Witness excused.)

14 THE HEARING OFFICER: Now, I understand the  
15 next witness in the list is Matt Anders, an employee of  
16 the Department.

17 If you'd come forward, Matt.

18 MATTHEW "MATT" ANDERS,  
19 first duly sworn to tell the truth relating to said  
20 cause, testified as follows:

21 THE HEARING OFFICER: Mr. Wood, you may  
22 examine.

23 DIRECT EXAMINATION

24 QUESTIONS BY MR. WOOD:

25 Q. Hello, Mr. Anders.

1 A. Hello.

2 Q. Can you please state and spell your name for  
3 the record.

4 A. My name is Matthew Anders. I go by Matt,  
5 M-a-t-t, A-n-d-e-r-s.

6 Q. And what is your educational background?

7 A. I have a bachelor's in geology from Gustavus  
8 Adolphus College, and a master's in geology from Utah  
9 State University.

10 Q. And you're a licensed professional geologist  
11 in Idaho; is that correct?

12 A. I am.

13 Q. And you are currently employed at the Idaho  
14 Department of Water Resources?

15 A. I am.

16 Q. And how long have you worked for the  
17 Department?

18 A. Worked a total of 18 years. I was a  
19 contractor for about the first three. And then I worked  
20 for the Department directly for about 15.

21 Q. And you are the technical services bureau  
22 chief; is that correct?

23 A. I am.

24 Q. And how long have you been in that position?

25 A. About four months.

1 Q. And what are your duties as the technical  
2 services bureau chief?

3 A. I either oversee directly or indirectly staff  
4 from the hydrology section and the GIS section.

5 Q. I would like to turn your attention to the  
6 Fifth Methodology Order.

7 A. Okay.

8 Q. Are you familiar with that document?

9 A. Yes.

10 Q. And some of that document you know quite a bit  
11 about?

12 A. Yep, I do.

13 Q. And that you even played a role in developing  
14 some of that data?

15 A. Yes, I did.

16 Q. And this is why you've been called as a  
17 witness here today?

18 A. I believe so, yes.

19 Q. And you are aware that the Department has  
20 identified nine topics for you to testify; is that  
21 correct?

22 A. Yes.

23 Q. And I'm going list those line, and let me know  
24 if this is correct. Okay?

25 A. Okay.

1 Q. Baseline year, forecast supply, surface water  
2 irrigated acres, crop water needs. I am going to try  
3 hard not to screw this one up -- near real-time mapping  
4 evapotranspiration of high resolution with internalized  
5 calibration?

6 A. It's evaporation, but, yes.

7 Q. See, I knew I wouldn't do it right. All  
8 right.

9 Project efficiency?

10 A. Yes.

11 Q. Reasonable carryover?

12 A. Yes.

13 Q. Twin Falls Canal Company's increase in  
14 diversions?

15 A. Yes.

16 Q. And that 2023 technical working group  
17 meetings?

18 A. Yes.

19 Q. Do you have any concerns that you were  
20 unqualified to discuss those topics here today?

21 A. No, I do not.

22 Q. One additional issue, Mr. Anders. You brought  
23 to our attention some shapefiles that were not included  
24 in the original, I guess we'll call it, a data dump on  
25 May 5th; is that correct?

1 A. Correct.

2 Q. And as I understand it, we provided to the  
3 parties the 2022 shapefiles for Minidoka and Milner.  
4 And what we meant to provide was the 2023 shapefiles; is  
5 that correct?

6 A. Correct.

7 Q. And the 2023 shapefiles are what is used in  
8 the Fifth Methodology Order?

9 A. Yes.

10 Q. And those numbers are correct?

11 A. The methodology order, the acres that we used,  
12 they are correct, yes.

13 Q. And you provided a zip file that had those two  
14 files in them; is that correct?

15 A. Yes, I did.

16 Q. And we provided those to the parties this  
17 morning. Did you have you an opportunity to look at  
18 those files and ensure their accuracy?

19 A. Before I gave them to you, I inspected them,  
20 yes.

21 Q. Okay. And do you think they are a reasonable  
22 representation of what those shapefiles are, the  
23 accuracy of the shapefiles?

24 A. Yes, I do.

25 MR. WOOD: And with that, Director, we would

1 move to admit the Minidoka and Milner 2023 shapefiles.

2 THE HEARING OFFICER: I assume that what you  
3 are asking me to do is take official notice of them?

4 MR. WOOD: Or take official notice of them,  
5 sure.

6 THE HEARING OFFICER: Any objection from the  
7 parties?

8 Okay. I will take official notice of the 2023  
9 shapefiles from Milner and Minidoka as represented.

10 Thank you, Mr. Wood.

11 MR. WOOD: The Department has no further  
12 questions for Mr. Anders.

13 THE HEARING OFFICER: Okay. Examination of  
14 Mr. Anders by the ground water users?

15 Ms. Klahn, I see you turning in your seat.

16 MS. KLAHN: That's right.

17 THE HEARING OFFICER: Welcome to the podium.

18 CROSS-EXAMINATION

19 QUESTIONS BY MS. KLAHN:

20 Q. Good afternoon, Mr. Anders. I'm Sarah Klahn,  
21 representing the City of Pocatello. And it's nice to  
22 see you in person after seeing you on Zoom for two days.

23 I wanted to start by asking you some questions  
24 about the Fifth Methodology Order. You should have a  
25 notebook up there with a 300 series of exhibits in it.

1 And you would be looking at Exhibit 300?

2 A. Binder one of Exhibit 300. And you said tab  
3 300?

4 Q. Yes.

5 A. Yes, I have it.

6 Q. Okay. And let's turn, if you would, in  
7 Exhibit 300 to page 12. Starting at paragraph 29, there  
8 is a section of the order related to project efficiency.  
9 And that's one of the topics you were disclosed for;  
10 right?

11 A. Yes, it's at the bottom of the page.

12 Q. I wanted to ask you about the statement at the  
13 bottom of the page there. The statement in paragraph 29  
14 says, "Project efficiency is the ratio of total  
15 volumetric crop water needs within a Surface Water  
16 Coalition entity's boundary and the total volume of  
17 water diverted by that entity to satisfy its crop  
18 needs." The second sentence says, "It is the same  
19 concept as efficiency, which was presented at the  
20 hearing."

21 What's your understanding of what was  
22 presented at the hearing? Or let's start with, which  
23 hearing are we talking about; do you know?

24 A. I don't know.

25 Q. Okay. So this wasn't a sentence that you have



1 any knowledge of?

2 A. No, I didn't add that sentence.

3 Q. Okay. Well, let's flip over then to page 13.  
4 And there is an equation at the top of the page. And  
5 above that equation is some narrative about the  
6 relationships that are contained in project efficiency.  
7 And I want to ask you about those. So the first  
8 component listed there is "seepage loss." Do you see  
9 that?

10 A. I do.

11 Q. What is seepage loss in your understanding?

12 A. As water is -- after it's been diverted and is  
13 being sent or conveyed to get to the place of use for  
14 the water, there are losses out of the canals. Maybe  
15 they are unlined. There is some small amount of  
16 evaporation. If there happens to be vegetation, they  
17 may be pulling. So it is kind of any losses in route to  
18 where the water is going to be applied.

19 Q. Okay. The second item listed there is on-farm  
20 application losses. And the first example is deep  
21 percolation. Do you have an understanding of what that  
22 means?

23 A. To me, deep percolation is when the soil  
24 becomes saturated, because you are applying water. And  
25 you get infiltration down below the root zone, so the

1 plants can no longer access it. And it may stay there,  
2 or it may go farther all the way to the aquifer,  
3 depending how much water is available.

4 Q. Okay. The second is "field runoff" listed  
5 there in that parenthetical at the top of page 13. How  
6 would you characterize "field runoff"?

7 A. To me, that's over land flow. So it's on the  
8 surface of the land. Either the water is applied too  
9 quickly, and it can't infiltrate, or the soil is  
10 saturated. But in any either case, the water is running  
11 off to someplace outside of the field.

12 Q. Okay. And then the third item there listed is  
13 "system operational losses," and the parenthetical is  
14 "(return flows)." How is that different in your  
15 understanding from the other seepage and the on-farm  
16 application losses?

17 A. I think of return flows as at the end of the  
18 system, there is water that's needed to get to deliver  
19 water to the end of the system. And there is always  
20 excess water there. That water, I think where return  
21 flow, the term comes from, either returns to the  
22 original source or a different source of water.

23 Q. Okay. Now, the sentence up there at the top  
24 of the page of page 13, goes on to say, "system  
25 operational losses for which data is not obtainable by

1 the Department." Do you see that?

2 A. I do.

3 Q. But the Department has data associated with  
4 Twin Falls Canal Company return flows; isn't that right?

5 A. We have some of the return flows monitored  
6 through our Eastern Snake Plain's spring and return flow  
7 monitoring program. But we don't have everything  
8 monitored.

9 Q. Were you in the room this morning when  
10 Ms. Sukow testified?

11 A. I was.

12 Q. And you heard her testify about the  
13 incorporation of Twin Falls Canal Company return flow  
14 data to calibrate the model?

15 A. Yeah, I heard her say that.

16 Q. Okay. And so your understanding is that the  
17 Department has some Twin Falls return flow data, but  
18 there is more that you don't have?

19 A. I think there are some return flows that are  
20 small enough that were not -- we have decided not to  
21 monitor.

22 Q. And are you aware that the return flows  
23 associated with Twin Falls Canal Company operations are  
24 in the neighborhood of 300,000 to 400,000 acre-feet a  
25 year?

1 MR. THOMPSON: I'm going to object to that  
2 question; characterization, foundation.

3 MS. KLAHN: I asked him if he was aware.

4 THE HEARING OFFICER: Overruled.

5 THE WITNESS: I'm not sure I knew that it was  
6 that exact number. I've seen numbers, presentations  
7 where they've talked about it, but I don't remember that  
8 number specifically.

9 Q. (BY MS. KLAHN) All right. Let's talk for a  
10 minute about that equation at the top of page 13. Could  
11 you sort of just walk us through how the calculation  
12 works, what each of the variables are?

13 A. Sure. The  $E_p$  is the project efficiency. And  
14 that is equal to the crop water need, divided by the  
15 demand or the diversion, the  $Q$ , the discharge of the  
16 diversion. Crop water need is composed of, we use  $ET$ ,  
17 we use precipitation, we use acres to calculate that.  
18 The diversions are, those are directly measured that we  
19 take from water right accounting.

20 Q. Okay.

21 A. From Water District 1.

22 Q. From Water District 1?

23 A. Yeah.

24 Q. Okay. So tell me if this is correct from a  
25 mathematical perspective. As the irrigation diversions

1 go up, the project efficiency will go down. As the  
2 denominator gets larger, the project efficiency gets  
3 smaller; is that true?

4 A. If the crop water need stays the same, yes.

5 Q. Okay. In your work with the Department on the  
6 methodology order, have you done any evaluation of  
7 whether the project deficiencies that you are measuring  
8 using this calculation are reasonable?

9 A. When we're doing our calculations, we are  
10 always doing, you know, quality control, quality  
11 assurance to see if the numbers make sense. And that's  
12 on a technical level. You know, did it compare to  
13 previous years, or compared to the previous month, is it  
14 a reasonable number? So all of our calculations go  
15 through that. We make our calculations. And Kara  
16 Ferguson and I switch and review each other's data. So  
17 just on the reasonableness of the calculations, yes, on  
18 a numbers basis we're looking at.

19 Q. You were the lead of the technical work group  
20 in November and December of 2022; is that right?

21 A. Yeah, correct.

22 Q. And there was some discussion there of project  
23 efficiency and the methods that the Department uses to  
24 calculate those. Do you recall that?

25 A. Yeah, I gave a presentation on project

1 efficiency.

2 Q. And Greg Sullivan, one of the consultants for  
3 the Cities in this proceeding, provided some input on  
4 alternative ways of looking at project efficiency using  
5 the same kind of calculation that the Department was  
6 using, but made some suggestions about other ways to  
7 look at it. Do you recall that?

8 A. My recollection of, at the technical working  
9 group, he presented us some graphs looking at the  
10 relationship between crop water need and project  
11 efficiency. I don't remember at that time that he made  
12 a proposal about different ways to calculate it. But he  
13 did in his expert report at a later date. He may have  
14 stated that at the technical working group. I don't  
15 remember it. But I do remember it from his technical,  
16 his expert report.

17 Q. During the technical work group process was  
18 there any conversation internally in the Department  
19 about taking another look at how to do project  
20 efficiencies, keeping in mind that you want to use this  
21 kind of equation, but to try and I mean get a more  
22 meaningful project efficiency measure?

23 A. We, on a technical level, we have discussed,  
24 you know, the accuracy of the project efficiency, and  
25 where errors may come in that calculation. But we

1 haven't gone down the road of like proposing, or even  
2 working out possible ways to calculate it differently.

3 Q. Thank you. Could we turn now to page 10 of  
4 Exhibit 300, please? And you'll recall during our  
5 deposition, I had quite a log of questions for you on  
6 acreage?

7 A. Yes.

8 Q. So based on the table that's shown in Exhibit  
9 300, paragraph 22, the Department used the Twin Falls  
10 Canal Company 2013 shapefile for purposes of Twin Falls  
11 Canal Company acreage in this Fifth Methodology Order;  
12 correct?

13 A. Yes.

14 Q. And I think you've testified during your  
15 deposition, that this Twin Falls Canal Company acreage  
16 shown in the table does contain hardened acres. Do you  
17 recall that?

18 A. Yes.

19 Q. In other words, hardened acres would mean they  
20 can't be irrigated?

21 A. Yeah, correct.

22 Q. And we also talked during your deposition  
23 about the Department's previous reliance in earlier  
24 methodology orders on lower numbers for Twin Falls Canal  
25 Company acres. Do you recall that?

1           A. Yes, I believe it was about 183,000, and I  
2 think they came from SPF.

3           Q. I think that's right.

4           (Exhibit 324 marked.)

5           Q. (BY MS. KLAHN) So let's take a look at some  
6 of those values. I would like you to find in that same  
7 notebook, I think in that same notebook, it should be  
8 Exhibit 324.

9           A. No, this one only goes to 313.

10          Q. I guess it's in, we'll guess, Volume 2.

11          MR. WOOD: It should be in that.

12          THE WITNESS: Could you repeat the number I'm  
13 looking for?

14          Q. (BY MS. KLAHN) Sure. It should be a 2015  
15 PowerPoint that you prepared.

16          A. Yep, I'm to Exhibit 324.

17          Q. Okay. Could you identify that, please, for  
18 the record?

19          A. The title -- well, it looks like it is a  
20 printout of a PowerPoint presentation titled "Proposed  
21 Modification to Method Determining Reasonable In-Season  
22 Demand for the Surface Water Coalition: Irrigated Acres  
23 for SWC Members, Presented to the SWC Methodology  
24 Technical Working Group by Matt Anders, February 19,  
25 2015."



1 Q. Okay. Let's turn, the pages are not numbered.  
2 I believe it's page 3. There is a table.

3 A. "Summary of irrigated acres" is the bullet?

4 Q. Correct. And I want to draw your attention to  
5 the bottom row of the table there, which shows the SPF  
6 acres you referenced a minute ago, 183,589. So in 2013,  
7 if we go all the way over to the right, "2013 RISD,"  
8 what does that column represent?

9 A. That is acres that we used for the 2013 order  
10 for the reasonable in-season demand calculation.

11 Q. Okay. So that number was used in 2013. The  
12 same number was used in 2015; wasn't it?

13 A. Reviewing what we call the calculator, it  
14 looked like that number was use from 2010 to 2014.

15 Q. 2014?

16 A. Yeah.

17 Q. You didn't use it in 2015?

18 A. When I looked at the calculator, we changed it  
19 in 2015.

20 Q. Okay.

21 A. But that's based on what I see in the  
22 calculator.

23 Q. Okay. Can I hand you -- or I'm not going to  
24 hand you, because hopefully you have it in front of you.  
25 We're looking at the IGWA notebook, Exhibit 135.

1 (Exhibit 135/306 marked.)

2 MS. KLAHN: TJ, any idea if that is Volume 1,  
3 2, or 10?

4 MR. BUDGE: The numbers are on the binder.

5 THE WITNESS: They are in the common exhibits.

6 MS. KLAHN: No, it's in IGWA 135.

7 MR. SIMPSON: It's the same as 306.

8 MS. KLAHN: Yes.

9 THE WITNESS: I'm at Exhibit 135.

10 Q. (BY MS. KLAHN) Thank you. Would you identify  
11 Exhibit 135 for the record, please?

12 A. It says it's the "Fourth Amended Final Order  
13 Regarding Methodology for Determining Material Injury to  
14 Reasonable In-Season Demand and Reasonable Carryover."

15 Q. And then let's turn to the last page.  
16 Actually, let's turn to page 39.

17 MR. FLETCHER: Sarah, for the record, it's  
18 already been admitted under a different number.

19 MS. KLAHN: Oh, it has. I apologize. I  
20 missed that.

21 MR. FLETCHER: Well, we don't want any  
22 confusion.

23 MS. KLAHN: Well, let's keep using 135, but I  
24 won't admit it. How is that? I will start talking  
25 about it as 306.

1 MR. FLETCHER: I just thought we should have  
2 it on the record, it has been marked as 306.

3 Q. (BY MS. KLAHN) Okay. Let's not switch the  
4 exhibit notebooks.

5 A. Okay.

6 Q. But I'm going to refer to this as Exhibit 306?

7 A. Okay.

8 MS. KLAHN: Thank you, Kent.

9 THE WITNESS: I forgot the page number.

10 Q. (BY MS. KLAHN) 39.

11 A. All right. I am there.

12 Q. And that this Fourth Methodology Order is the  
13 final order signed by the Director; correct?

14 A. Yes, it appears to be.

15 Q. Okay. Now, I would like you to look through  
16 the Fourth Methodology Order, Exhibit 306, and find the  
17 paragraph where the Twin Falls Canal Company acres used  
18 in the Fourth Methodology Order are identified. And I'm  
19 not meaning to belabor the suspense. I can't find a  
20 spot in there, which it is identified, which is why I  
21 wanted you to look at it, and see if that's accurate?

22 A. I believe that that's accurate.

23 Q. Okay.

24 A. And that we started that table which was new  
25 in the Fifth Amended Methodology Order of adding the

1 acres.

2 Q. Okay.

3 A. Generally, I think we add the acres, I can't  
4 remember, it's either for each year in the April or the  
5 July in the as-applied. They weren't in the fourth  
6 amended, I believe.

7 Q. Okay. That's fair. All right. And so this  
8 Fourth Methodology Order was signed by Director Spackman  
9 in 2016. So by 2016, you were still using the 2013  
10 shapefile number of 194,000 acres or so for Twin Falls  
11 Canal Company; correct?

12 A. I believe, yeah, we were.

13 (Exhibit 325 marked.)

14 Q. (BY MS. KLAHN) Now, let's switch over and  
15 take a look at Exhibit 325.

16 A. Yes I've got it.

17 Q. And could you identify Exhibit 325 for the  
18 record, please?

19 A. It looks like a printout of a PowerPoint  
20 titled "Proposed Modification to Method for Determining  
21 Reasonable In-Season Demand for the Surface Water  
22 Coalition: Use of the Near Real-Time Metric," Presented  
23 by Ethan Geisler, Kara Ferguson, and Matt Anders, on  
24 December 1st, 2022.

25 Q. And I apologize, these pages are not numbered,

1 but I believe it's page 19. There is a table that's  
2 titled "Surface Water Coalition Irrigated Acres." Could  
3 you find that, please?

4 A. I think I'm on that. The first table or the  
5 first column is "SWC Member," and the last one is  
6 "Methodology Acres"?

7 Q. Correct. Thank you.

8 A. Okay.

9 Q. So let's talk about each column for a minute.  
10 So the first column is "SWC Member," as you said. The  
11 second column is titled "Created by SWC for IDWR PPU."  
12 What does that stand for?

13 A. It's the source of the shapefile. Whether it  
14 was created by a Surface Water Coalition member or sent  
15 to us, or it was created by us during the Snake River  
16 Basin Adjudication. "PPU" stands for permissible place  
17 of use.

18 Q. Then the next column, "Date of Shapefile,"  
19 what does that tell us?

20 A. If it was submitted by the Surface Water  
21 Coalition, it was the year that we received it. If it  
22 was a permissible place of use, they all have a 2010.  
23 That was my understanding of when they were created.

24 Q. Okay.

25 A. Or maybe last updated. Maybe not created, but

1 the last version.

2 Q. The next column is the "Shapefile Acres."  
3 That's self-explanatory; would you agree?

4 A. Agreed.

5 Q. The next column is "If Remove Nonirrigated  
6 Acres With 2011 Irrigated Lands Dataset." What does  
7 that column represent?

8 A. I'm on a different table. I'm on "CDL  
9 Processing Acres." Am I on the wrong one?

10 Q. Yeah, you are on the wrong one. And that's  
11 probably my fault.

12 A. Well, wait. Three pages later, there is  
13 another table.

14 Q. Let's do that one.

15 A. Okay. The same, and it says, "If Removed  
16 Nonirrigated Acres with 2011 Irrigated Lands Dataset."

17 Q. Right. And so for purposes of the record, we  
18 should be on page 22 of that exhibit, I think?

19 MR. FLETCHER: It was page 19.

20 MS. KLAHN: Is it page 19. It was correct.  
21 Okay.

22 THE WITNESS: Okay.

23 Q. (BY MS. KLAHN) Sorry.

24 A. I was just -- I didn't count. I just went to  
25 it.

1 Q. That's okay. That's all right. So let's  
2 stick with that column. What does it stand for?

3 A. Those are the acres, if we did a GIS analysis  
4 using the 2011 IDWR irrigated lands dataset, if we  
5 removed all the polygons in the 2011 dataset. All that  
6 area under the non-irrigated from the shapefiles that  
7 they list here, either PPU or from the Surface Water  
8 Coalition.

9 Q. Okay. And focusing on Twin Falls Canal  
10 Company, if we look at the bottom row, the difference in  
11 acres, the Surface Water Coalition's shapefile is  
12 194,727. If you remove the non-irrigated acres with the  
13 2011 irrigated lands dataset, it goes to 179,486; is  
14 that right?

15 A. Correct.

16 Q. And then the next column over is titled, "If  
17 Remove Non-Irrigated Acres with 2017 Irrigated Lands  
18 Dataset." What does that tell us?

19 A. The same thing as we did with the -- or the  
20 same process with the 2011 irrigated lands dataset. We  
21 did it with the 2017 irrigated lands dataset.

22 Q. Okay. And then the final column is the column  
23 that has been of acres that has been used in the  
24 methodology order since the Fourth Methodology Order?

25 A. Yes, I think it's since the third. The third

1 came out in 2015.

2 Q. Okay.

3 A. I think that's what we've used those acres  
4 since then, or Twin Falls specifically since then.

5 Q. Okay. And before we go on, let's just stop  
6 for the record. What is the IDWR irrigated lands  
7 dataset?

8 A. Jennifer was asked this same question. I  
9 thought she gave a good answer. It is a -- hopefully, I  
10 can give the same answer. It is a dataset that we  
11 prepare here at IDWR. We use -- we prepare it by hand.  
12 We use several different types of data to create  
13 polygons on the Eastern Snake Plain, and then classify  
14 them as irrigated, non-irrigated, or semi-irrigated.

15 Q. Okay. The Twin Falls Canal Company row that  
16 we've been looking at shows two acreage numbers that are  
17 derived from using the 2011 and 2017 irrigated lands  
18 dataset that are roughly 13,000 acres smaller than  
19 what's used in the methodology order; correct?

20 A. Yeah, roughly.

21 Q. And Ms. Sukow testified this morning that the  
22 IDWR irrigated lands dataset is used to calibrate the  
23 model. Were you aware of that?

24 A. I was aware of that, yes.

25 Q. And yet, during your deposition you testified



1 that you didn't think the irrigated lands dataset was  
2 sufficient to satisfy the clear and convincing standard.

3 Do you recall that?

4 A. I do recall that.

5 Q. And in 2017, soon after, you issued the Fourth  
6 Methodology Order, you had a brand-new irrigated lands  
7 dataset. So why not incorporate that into the  
8 methodology and use that instead of the larger shapefile  
9 number?

10 A. So until -- so since about 2015, I haven't  
11 been using the irrigated lands dataset at all. So it  
12 wasn't a consideration when, in 2017, that I would use  
13 that. I wasn't using one to remove the non-irrigated  
14 acres. Which was an oversight on my part, because at  
15 the same time I was doing that, I was working on the  
16 near real-time metric and removing the irrigated  
17 acres -- or the non-irrigated acres with the irrigated  
18 lands dataset. So it was an inconsistency between  
19 processes I had going.

20 Q. Would you agree the Department's hand  
21 digitized maps that are created using the irrigated  
22 lands dataset process are highly accurate?

23 A. I think they are highly accurate for the year  
24 that they are created for.

25 Q. So in an ideal world, there would be a new

1 irrigated lands dataset every year, and that's what you  
2 would use in the methodology order?

3 A. To use your term "ideal world," yes.

4 Q. And in the meantime, the dataset you are using  
5 is at least ten years old. And you would acknowledge  
6 that there is hardened acres incorporated in it; right?

7 A. Correct.

8 Q. So right now, the difference between the 2017  
9 irrigated lands dataset and the methodology acres is  
10 roughly, what; eight, nine percent difference?

11 A. Okay. Rough math, sure.

12 Q. Yes. At some point as the technical lead on  
13 the methodology analyses, is there a threshold at which  
14 you say, we simply can't use this 2013 dataset anymore  
15 from Twin Falls, because it's simply too inaccurate  
16 based on what our hand digitizing is showing?

17 A. Until we get something that passes, or that I  
18 feel passes the, or achieves the clear and convincing, I  
19 think we're going to use that. The clear and convincing  
20 by Judge Wildman of, if you are going to reduce the  
21 acres, you have to be clear and convincing.

22 Q. So the standard isn't really clear and  
23 convincing, it's whether or not Judge Wildman has  
24 blessed it; is that fair?

25 A. I don't know the answer to that.

1 Q. So for purposes of the Fifth Methodology  
2 Order, have you done any investigations into Twin Falls  
3 Canal Company return flows?

4 A. Not as part of the order.

5 Q. You had a conversation with Mr. Barlogi, who's  
6 the manager of Twin Falls Canal Company, about their  
7 return flows at some point, though; didn't you?

8 A. I don't think I've ever talked to him, that I  
9 remember.

10 Q. About return flows and their impact on the  
11 Murphy gage flows?

12 A. I stand corrected. As part of the Swan Falls  
13 technical working group and work we were doing there, I  
14 think -- I can't remember exactly. I may have sat in on  
15 a call with Collin Macheel with Mr. Barlogi. I'm not  
16 sure on that. I've talked to Collin several times about  
17 return flows at Twin Falls. I can't remember if I sat  
18 in on a call or not.

19 Q. Well, Mr. Barlogi testified he was on a call  
20 with you in January of this year about Twin Falls Canal  
21 Company return flows. And the timing to me was  
22 interesting, because it was when the methodology order  
23 was being, I guess, being drafted. So that's the source  
24 of my question.

25 In your experience, have you evaluated whether

1 Twin Falls Canal Company return flows contribute to Swan  
2 Falls gage flows -- or sorry -- Murphy gage flows?

3 A. Yes. And I think that's what that call was  
4 about. As we were preparing data to present to the Swan  
5 Falls Technical Working Group, that was going on at the  
6 same time. We have calculated the contribution at the  
7 Murphy gage for what they call the adjusted average  
8 daily flow at Swan Falls.

9 Q. Let me ask you another question related to the  
10 Twin Falls Canal Company.

11 MS. KLAHN: Let's mark this as Exhibit 362.

12 (Exhibit 362 marked.)

13 Q. (BY MS. KLAHN) So, Mr. Anders, you've been  
14 handed Exhibit 362, which is a contract between the  
15 Idaho State Board of Land Commissioners and Twin Falls:  
16 Land & Water Company, dated January 2nd, 1903. And I'll  
17 represent to you that this is the basis for one of Twin  
18 Falls Canal Company's water rights. I would like you to  
19 take a look in here at the section --

20 Well, first of all, have you ever seen this?

21 A. No.

22 Q. And so are you familiar with the fact that  
23 this describes five-eighths of an inch delivery as the  
24 basis for deliveries of water under the Twin Falls Canal  
25 Company water right?

1           A. No.

2           MR. THOMPSON: Director, I'll object to this  
3 exhibit. I guess we need inquiry that it represents the  
4 water rights of the canal company. Those rights have  
5 been decreed. And I think they are in the Department's  
6 files.

7           THE HEARING OFFICER: Well, these questions  
8 are foundational. I'll overrule the objection at least  
9 for the moment, Ms. Klahn.

10          Q. (BY MS. KLAHN) So if you haven't seen this  
11 contract before, you are not familiar with the fact that  
12 there is a term in here that requires rotation of  
13 deliveries at the Twin Falls Canal Company?

14          A. I'm not familiar with that.

15          Q. And so when you're doing your evaluations for  
16 baseline year for the Twin Falls Canal Company, you  
17 don't consider any of this kind of information; isn't  
18 that right?

19          A. No.

20          MS. KLAHN: Okay. That's all I have.

21          I would like to move for admission of Exhibit  
22 362, 325, and 324.

23          THE HEARING OFFICER: Any objection?

24          MR. THOMPSON: Yeah, I'll object to this  
25 exhibit, again. Ms. Klahn, is characterizing it as

1 conditions of the water right, and how it should be  
2 delivered. This is not the partial decree in the SRBA.  
3 It doesn't have any sort of general provisions for  
4 administration relating to this contract.

5 So what she's offering it for is a  
6 mischaracterization of the water right that's been  
7 decreed, in descriptive by the state laws.

8 MS. KLAHN: Mr. Director, if I may be heard?

9 THE HEARING OFFICER: Sure.

10 MS. KLAHN: We can before tomorrow morning,  
11 produce the SRBA related documents relating to these  
12 kinds of elements of the water right. Originally in  
13 2012, I think it was, the City of Pocatello filed a  
14 protest against the Twin Falls Canal Company claims in  
15 the SRBA asserting the delivery be related to  
16 five-eighths instead of three-quarters, some stuff  
17 happened. We entered into a stipulation with Twin Falls  
18 about the fact that this would not be decided in the  
19 SRBA. That these were elements of administration.

20 So these are elements that we're asserting  
21 should be taken into consideration, because they aren't  
22 on the face of the partial decree, and that was by  
23 agreement. And if you if you'd like to reserve, and  
24 wait for something to be provided, we're happy to do  
25 that.

1 MR. BUDGE: Just one comment.

2 THE HEARING OFFICER: Mr. Budge.

3 MR. BUDGE: Director, if you want to look at  
4 the SRBA filing that Ms. Klahn is referring to, it's  
5 Exhibit 179. And it's an SF5 filed with the SRBA court.  
6 So it is the type of document that the Department would  
7 typically take judicial notice of.

8 THE HEARING OFFICER: My reaction is this,  
9 Mr. Budge, and, Ms. Klahn. I would take notice of the  
10 decrees. I would take notice of the SF5. But do I take  
11 notice of a contract document that's been presented to  
12 me, that I know nothing about, and Mr. Anders knows  
13 nothing about, and receive this into evidence. I mean,  
14 it needs to have foundation. And Mr. Anders is not the  
15 witness by, or through whom this document should be  
16 presented.

17 So I'll receive into evidence exhibits marked  
18 as Exhibits 324 and 325. And I won't allow what's been  
19 marked as Exhibit 362 into evidence at this time.

20 MS. KLAHN: Thank you.

21 (Exhibits 324 and 325 received into evidence.)

22 THE HEARING OFFICER: It can be re-offered if  
23 there is sufficient foundation, Ms. Klahn.

24 MS. KLAHN: Okay. Thank you.

25 MR. FLETCHER: So excuse me. You admitted 324

1 and what was the other one?

2 MS. KLAHN: 325.

3 THE HEARING OFFICER: 325.

4 MR. FLETCHER: Thank you.

5 THE HEARING OFFICER: They were presentations  
6 by Matt Anders to the Surface Water Coalition technical  
7 working group.

8 Mr. Budge?

9 MR. BUDGE: One housekeeping item, did Exhibit  
10 306 get admitted into evidence?

11 THE REPORTER: No, I don't have it.

12 MS. KLAHN: I misunderstood, Mr. Fletcher. I  
13 thought he said it had been used and admitted. So I'll  
14 offer Exhibit 306 as well.

15 THE HEARING OFFICER: So 306 is being offered  
16 as 306, not as a combined exhibit?

17 MS. KLAHN: Yes.

18 THE HEARING OFFICER: Any objection to the  
19 admission of Exhibit 306?

20 Hearing no objection, the document marked as  
21 Exhibit 306 is received into evidence.

22 (Exhibit 306 received into evidence.)

23 THE HEARING OFFICER: Further examination of  
24 Mr. Anders?

25 Mr. Anderson.



1     ///

2                                   CROSS-EXAMINATION

3     QUESTIONS BY MR. ANDERSON:

4             Q.   How are you doing, Matt?

5             A.   Good.   Thank you.

6             Q.   You should have the methodology order exhibit.

7     Is that still in front of you, 300?

8             MR. FLETCHER:   301.

9             Q.   (BY MR. ANDERSON)   301.

10            A.   301.

11            THE HEARING OFFICER:   I think it's 300; isn't  
12     it?

13            MR. ANDERSON:   I thought it was 300.

14            MR. FLETCHER:   You mean, the Fifth  
15     Methodology?

16            MR. ANDERSON:   I'm sorry.   Yes, the Fifth  
17     Methodology.   The As-Applied is 301.

18            MR. FLETCHER:   Yes.

19            THE WITNESS:   Yes, I have 300.

20            Q.   (BY MR. ANDERSON)   Would you go to paragraph  
21     9, and it kind of goes on to page 4 there.   I am more  
22     curious about the last two sentences there.   It says it  
23     starts with "an above average diversion year."

24            A.   On page 4.   Okay.

25            Q.   Yeah.   At the top of page 4.

1 A. Yes, I see it.

2 Q. Would you mind just reading that sentence for  
3 us?

4 A. Sure. "An above average diversion year or  
5 years selected as the baseline year should also  
6 represent a year or years of above average temperatures  
7 and reference ET, and below average precipitation to  
8 ensure that increased diversions were a function of crop  
9 water need and not other factors."

10 Q. Could you help me understand what those other  
11 factors might be?

12 A. I'm not sure.

13 Q. Okay. So then is it safe to conclude that an  
14 above average diversion year wouldn't matter whether it  
15 was above average temperatures, if they divert, they  
16 divert? If you cannot identify what other factors it  
17 might be, why does it need to be above average  
18 temperatures?

19 A. Well, I don't quite understand the question.

20 Q. Well, I'm just trying to understand the  
21 methodology order as it's stated. It gives the list of  
22 factors in choosing the baseline year. And it says "to  
23 ensure that the increase in diversions were from a crop  
24 water need and not other factors." I don't know either.  
25 I'm trying to understand what those other factors are?

1 But I've asked and answer -- I'm not trying to put you  
2 on the spot and make you come up with an answer. If you  
3 don't know what those other factors are, that's fine.

4 A. Okay.

5 Q. Do you believe there are other factors without  
6 naming them?

7 A. Not that I can think of.

8 Q. Okay. Let's go to paragraph No. 28.

9 A. On page 12, correct?

10 Q. Yes. Okay. There is a quote here at the end  
11 of 28. And I'll read it this time. I won't put  
12 everything on you. It says, "The concept of a baseline  
13 is that it is adjustable as weather conditions or  
14 practices change, and that those adjustments will occur  
15 in an orderly, understood protocol." Are you with me on  
16 the same --

17 A. I did see that sentence. Yes.

18 Q. So I have a question. Did weather conditions  
19 change in the last seven years to prompt a change in the  
20 baseline year?

21 A. I don't think significantly.

22 Q. Did practices change?

23 A. I think the crop mix, crop type, and maybe  
24 some harvesting methods may have changed in that time.

25 Q. Okay. And maybe you can just direct me, which

1 part of the methodology order looks specifically at that  
2 crop mix and --

3 A. The crop mix is part of the crop water need  
4 calculation.

5 Q. Okay. Do you calculate the change in that  
6 crop water need, and evaluate it as a requirement to  
7 update the baseline year?

8 A. Could you restate that question?

9 Q. Sure. Sure. Maybe I can rephrase it and give  
10 a little foundation for it.

11 The concept of baseline year as it says, it's  
12 adjusted as whether conditions change or practices  
13 change. So my question is, do you evaluate the crop  
14 water need and determine these practices changes?

15 A. We are evaluating the crop water need. We are  
16 also over time watching, especially over the last few  
17 years, watching the baseline year to see if it still  
18 meets the criteria.

19 Q. Understand. And could you explain just the  
20 orderly and understood protocol for changing a baseline  
21 year?

22 A. The only way a baseline year could be changed  
23 is through an order issued by the Director.

24 Q. The crop water need that you are talking about  
25 that you say, the practices changes would show up in the

1 crop water need; is that correct?

2 A. They can.

3 Q. They can?

4 A. Yeah.

5 Q. Is there any other way that they could be  
6 manifested?

7 A. I think changes in crop type or crop mix that  
8 are being grown can show up in diversion. It can show  
9 up in project efficiency. These are all pieces that  
10 we're calculating.

11 Q. But you don't look specifically for changes in  
12 practice, those will just show up as a difference in  
13 efficiency; correct?

14 A. Yeah, we're not specifically tracking -- I  
15 think I see now. We're not specifically tracking what  
16 are their harvesting practices or things like that. We  
17 are watching the crop. We do calculate the crop mix.  
18 But you are right, that changes in practices, we would  
19 only see like the secondary effect of that. It would  
20 show up in some kind of number that we're calculating.

21 Q. I want to talk to you a little bit. I'm kind  
22 of confused about the clear and convincing standard that  
23 you apply to the crop water acres --

24 A. Yes.

25 Q. -- or the irrigated acres? Sorry. Not a

1 crop water acres.

2 A. Yes.

3 Q. What data, I guess, that you would consider  
4 needs to meet that clear and convincing standard?

5 A. I think it has to -- the data have to be  
6 timely and accurate. And when I say "timely" --

7 THE HEARING OFFICER: Go ahead.

8 THE WITNESS: When I say timely, to use a term  
9 used by Ms. Klahn, is it would be really nice to have it  
10 in-season, but that's impractical.

11 Q. (BY MR. ANDERSON) Okay.

12 A. So as soon as we could get, you know,  
13 something recent. That's what I mean by timely.

14 Q. Not to nitpick you. That's still a different  
15 standard than clear and convincing. I'm trying to  
16 understand the clear and convincing standard that you  
17 apply to the irrigated acres. You said it wasn't clear  
18 and convincing. Maybe you could explain what part of  
19 the study that the Department did was unclear first?

20 A. You are talking the 2017 irrigated lands  
21 dataset?

22 Q. Yes, I believe that's what Ms. Klahn was  
23 talking about when you gave that answer.

24 A. Okay. So the part of that to me is that was  
25 created in 2017. So while it has the accuracy, I think

1 the timeliness of that dataset does not meet the  
2 standard of clear and convincing. You can open that  
3 dataset and see acres that are considered non-irrigated.  
4 Overlay it on a recent air photo, maybe a 2021 or  
5 something a 2022, and see that it is irrigated.

6 So to me, that's not convincing that those  
7 acres should be removed. They said in the 2017, that  
8 dataset indicates that they should be removed. But if  
9 we look at recent air photos. It shouldn't be. They  
10 are irrigated.

11 Q. And the Department has done those studies,  
12 recent studies of irrigated acres?

13 A. It was just a preliminary analysis to see what  
14 does it look like compared to current conditions, the  
15 2017. So we did not do a full-blown project or analysis  
16 of it. It was more of a preliminary.

17 Q. And with that study, did you find acres that  
18 were considered irrigated back then, but are no longer  
19 appearing to be irrigated acres?

20 A. I didn't identify any, but I would say it's  
21 likely that there are exactly that.

22 Q. Is there any other data or evidence that you  
23 think needs to meet a clear and convincing standard that  
24 you did not consider in this methodology order, because  
25 it did not meet that standard?

1 A. Can you repeat that question?

2 Q. That was a little bad. I'll take that.

3 Is there any data or information that you  
4 didn't consider as part of this methodology order,  
5 because you felt it didn't reach that clear and  
6 convincing standard?

7 A. I think that the supplemental ground water is  
8 the same, is in the same category that to adjust the  
9 acres downward, it needs to be clear and convincing.

10 Q. Okay. But all the other data that you used,  
11 you felt was clear and convincing?

12 A. I'm not sure that that standard is applied to  
13 everything. When Judge Wildman, at least the piece that  
14 I have read, was talking about irrigated acres, not the  
15 methodology as a whole.

16 Q. Okay. I understand. I want to talk a little  
17 bit maybe about the recommendations.

18 (Exhibit 914 marked.)

19 Q. (BY MR. ANDERSON) This is Exhibit 914. You  
20 know, I don't know that we even need to take the time to  
21 even get it out. I'm going to reference it. 914, I'll  
22 represent was the recommendations in December that the  
23 Department made. It was a one-page document. You are  
24 familiar with that; correct?

25 A. For the technical working group?



1 Q. Yes.

2 A. Yes, I am familiar with that. Yes.

3 Q. Yes. And that didn't recommend a move to  
4 transient; correct?

5 A. No, it did not.

6 Q. And if you need to look at it for reference,  
7 you can. But that's all I'm going to touch on it.

8 A. No, it did not.

9 Q. When did it first become evident to you, that  
10 the new methodology order, the Fifth Methodology Order  
11 was going to move to transient?

12 A. The official time is when the Director signed  
13 it.

14 Q. All right. Now, I understand that there may  
15 have been discussions. But when do you, for example, I  
16 assume you saw drafts of the order prior to it being  
17 signed and released?

18 A. Yes, correct.

19 Q. When did you first see a draft of the order  
20 that switched to transient?

21 A. The first draft of the order that I saw was  
22 sometime in late January. I can't remember if that  
23 draft had proposed language to move to transient. But  
24 at that time that the draft was given to technical  
25 staff, to Jennifer and Kara and I, so soon after. If it

1 didn't have it at that point, late January, it would  
2 have had it soon after. We were editing it actively at  
3 that point.

4 Q. And did you from your edits from that draft,  
5 did you add in the language regarding the move to  
6 transient?

7 A. No, that would have been Jennifer Sukow.

8 Q. Okay. But in a draft that you returned to the  
9 Director, did that have the language showing a move to  
10 transient?

11 A. Yes, there would have been -- I don't know the  
12 timing of it exactly, but it -- when we would have given  
13 him drafts that had that recommendation in it, or  
14 proposed language in it for that.

15 Q. Were you aware of any settlement negotiations  
16 going on between the Surface Water Coalition and ground  
17 water users at the time the Fifth Methodology Order was  
18 being prepared?

19 A. I don't remember if there were negotiations  
20 going on. I remember that there was some through the  
21 summer. And I thought they ended in the fall, but  
22 that's what I remember.

23 MR. FLETCHER: I'm going to object. I don't  
24 know the relevancy of that question to this proceeding.

25 THE HEARING OFFICER: Sustained.

1 Q. (BY MR. ANDERSON) I'm going to wrap it up  
2 here pretty soon. Can we go back to the methodology  
3 order, No. 300?

4 A. Okay. I have it.

5 Q. We're going to go to paragraph 30.

6 A. On page 13?

7 Q. Yes. I kind of want you just to walk me  
8 through a process, if you can. On paragraph 30, it  
9 references a Q sub D. How do you refer to that  
10 internally. Do you just say, "QD"?

11 A. We just call it diversions. But what it is  
12 discharge from diversions. The "Q" is discharge. And  
13 the "D" indicates it's from diversions.

14 Q. Okay. When you look at it, though, I  
15 appreciate your reference to calling it diversions. But  
16 it's actually a specific type of diversions; correct?  
17 You could look right above paragraph 30 if you --

18 A. It says above it, "QD" is defined as  
19 "irrigation entity diversion of water specifically put  
20 to beneficial use for the growing crops within the  
21 irrigation entity."

22 Q. So there is a slight difference in QD than  
23 just diversions; correct, or does the Department see no  
24 difference?

25 A. I think there is a difference. Here we are

1 referring to their entire diversions, the seepage loss,  
2 everything. What they diverted at their headgates.

3 Q. Okay. And that's how the Department sees QD  
4 is just diversions?

5 A. In the methodology?

6 Q. Yes.

7 A. Elsewhere? I don't know.

8 MR. ANDERSON: I don't think I have any  
9 further questions.

10 THE WITNESS: Okay.

11 THE HEARING OFFICER: Thank you, Mr. Anderson.

12 MR. ANDERSON: Thank you.

13 THE HEARING OFFICER: Further questions of  
14 Mr. Anders?

15 Mr. Harris.

16 CROSS-EXAMINATION

17 QUESTIONS BY MR. HARRIS:

18 Q. Mr. Anders, my name is Rob Harris. I  
19 represent the City of Idaho Falls. I don't think we've  
20 met before. But in the list that was read by Mr. Wood  
21 earlier. I understand that you are the person that the  
22 Department is designated to testify about the forecast  
23 supply; is that right?

24 A. You are correct.

25 Q. Okay. And you have in front of you Exhibit

1 300, which is the Fifth Methodology Order?

2 A. I do.

3 Q. Could you turn to page 18 for me?

4 A. What page?

5 Q. Page 18, paragraph 49?

6 A. Did you say, paragraph 49?

7 Q. Yes.

8 A. Okay. I'm there.

9 Q. Okay. As I understand the order when the  
10 Department or the Director looks at the forecast supply,  
11 he is looking at a prediction of the unregulated inflow  
12 volume at the Heise gage as of April 1st; is that right?

13 A. Yes.

14 Q. Okay. And that forecast is prepared by who?

15 A. We get that forecast from the Bureau of  
16 Reclamation, who does a joint -- what they call the  
17 joint forecast, with the Army Corps of Engineers.

18 Q. Okay. And Heise gage is generally located  
19 where on the Snake River; do you know?

20 A. It's located by Palisades. I don't know the  
21 exact mile, how many miles, but between Palisades and  
22 Idaho Falls generally speaking.

23 Q. So it's predicting the inflow in the watershed  
24 above that gage; correct?

25 A. The unregulated flow means if there were no

1 reservoir operations going on, how much would be there,  
2 so, yes.

3 Q. Are you familiar with some of the other  
4 watersheds of the tributary streams or basins in eastern  
5 Idaho?

6 A. A little familiar.

7 Q. Are you familiar with the Willow Creek  
8 drainage?

9 A. Somewhat.

10 Q. Okay. It's the drainage where Ririe Reservoir  
11 is located. How about the Blackfoot River drainage.

12 A. Not as familiar with that one.

13 Q. Okay.

14 A. But I know roughly where it is.

15 Q. The Blackfoot River comes below where the  
16 Heise gage would be; would you agree with that?

17 A. I believe it comes in from the east.

18 Q. The same with Willow Creek?

19 A. Yes, I believe my geography is right. They  
20 both come in from the east below Heise.

21 Q. Also the Portneuf River drainage; correct?

22 A. More familiar there. It comes in from the  
23 southeast, but also -- yes.

24 Q. And those are all tributary streams to the  
25 Snake River; correct?

1 A. I believe so, yes.

2 Q. And what is the source of the water right for  
3 the Twin Falls Canal Company; do you know?

4 A. The Snake River.

5 Q. The Snake River. And so these tributary  
6 basins come in above Twin Falls Canal Company's points  
7 of diversion; do you agree?

8 A. Yes.

9 Q. Okay. Are you familiar with the snow water  
10 equivalency maps that the Department posts routinely  
11 during the non-irrigation season?

12 A. Yes, I am.

13 Q. Okay. How are you familiar with those?

14 A. They are prepared by the NRCS. We take their  
15 data, and we create maps. And then we post it on our  
16 web page.

17 Q. And were you aware on the snow equivalency map  
18 for April 3rd, that the percentage snow pack in the  
19 Portneuf basin was 216 percent?

20 A. I knew it was very high. I didn't know the  
21 exact number.

22 Q. Did you know in the Blackfoot River drainage,  
23 it was at 186 percent?

24 A. Again, I knew it was high, not the exact  
25 number.

1 Q. The same for Willow Creek at 178 percent?

2 A. Again, I knew it was high, but not the exact  
3 number.

4 Q. Was there ever any discussion within the  
5 Department to look at these other basins, in addition to  
6 the unregulated flow at Heise, forecast as part of the  
7 water supply to the Surface Water Coalition?

8 A. We didn't have any discussions about adding  
9 them to our regressions or adding them some way to the  
10 joint forecast, no.

11 Q. But you would agree, it would provide water to  
12 the water supply of the Twin Falls Canal Company;  
13 correct?

14 A. Among others. They can supply water to the  
15 reservoirs. They can supply water to anybody below  
16 there that's in priority. But Twin Falls is among those  
17 water users.

18 Q. And the Portneuf River, for example, flows  
19 directly into American Falls Reservoir; correct?

20 A. Yeah, uh-huh.

21 Q. But that wasn't considered in the revised  
22 methodology order at all looking at anomalous snow pack  
23 situations and tributary basins?

24 A. No, we didn't do any review like that.

25 Q. In paragraph 49, there is also some discussion



1 about shifting one, was it one standard deviation in the  
2 forecast supply? Did I understand that correctly?

3 A. We calculate the supply. And then shift it  
4 down by one standard deviation, yes.

5 Q. Is that something that you recommended to be  
6 done?

7 A. That method was developed around 2014 or '15.  
8 My best guess is that was recommended by Liz Cresto.

9 Q. I'm sorry. Who is that?

10 A. Liz Cresto was formerly a hydrologist with  
11 IDWR, and she worked on the methodology. And her  
12 portion, or the portion she worked on was the forecast  
13 supply.

14 MR. HARRIS: I have no further questions.  
15 Thank you.

16 THE WITNESS: Thank you.

17 THE HEARING OFFICER: Thank you, Mr. Harris.

18 Further questions of Mr. Anders?

19 Mr. Budge.

20 CROSS-EXAMINATION

21 QUESTIONS BY MR. BUDGE:

22 Q. Thank you. Mr. Anders, I'm TJ Budge. I  
23 represent IGWA. Do you mind if I call you Matt today?

24 A. Sure, that would be great.

25 Q. All right. Matt, I want to follow up with

1 just some questions that Mr. Harris asked that piqued my  
2 curiosity. And maybe I didn't follow that. But I think  
3 I understood that the forecast supply, the joint  
4 forecast that goes into the forecast supply does not  
5 take into account inflows from the Portneuf or Blackfoot  
6 River basin?

7 A. That forecast is prepared by the Bureau of  
8 Reclamation and the Army Corps of Engineers. I'm not  
9 familiar with everything that they consider, or how they  
10 calculate it. But my understanding it's the flow,  
11 unregulated flow at Heise.

12 Q. Okay. So I want to ask a few follow-up  
13 questions. If that forecast doesn't take into account  
14 the Portneuf, or, you know, the Blackfoot River basins,  
15 is there anything else in the methodology that would  
16 account for the inflow from the Portneuf on a year like  
17 this?

18 A. I'm unsure what you mean by "account for."

19 Q. Are you aware that the Portneuf River basin  
20 had record snow pack this winter?

21 A. I knew it was high, yes.

22 Q. Yeah. And I'm from Pocatello, so this is, you  
23 know, close to home. But are you aware of the flooding  
24 that's been going on there for the last month or so?

25 A. I was not.

1 Q. Well, I'll just represent that the Portneuf  
2 had the highest snow water equivalent in Idaho this  
3 year. And it was record for the Portneuf basin. And  
4 there has been flooding for the last month in the lower  
5 Portneuf basin.

6 And so my question is, do you know if there is  
7 anything in the methodology order that would take into  
8 account that excess inflow on a year like this, that's  
9 coming in from the Portneuf?

10 A. We don't do an adjustment, or something on the  
11 forecast -- or on the joint forecast.

12 Q. Okay. And it's a genuine question, because I  
13 don't know that either. But I appreciate your answer.  
14 If there is no adjustment, then, you know, the record  
15 inflow or excess inflow would that become a windfall to  
16 the Surface Water Coalition or be accounted for in some  
17 other way?

18 MR. THOMPSON: I'll object to the form of the  
19 question.

20 THE HEARING OFFICER: Overruled.

21 THE WITNESS: I don't know about a windfall  
22 for Twin Falls Canal Company. It would be captured and  
23 delivered like any other tributary, or captured in the  
24 reservoirs. It would become part of the water supply.  
25 Who's going to benefit from that? It depends on which

1 reservoir is filling, what space is filling, who's in  
2 priority.

3 Q. (BY MR. BUDGE) Fair enough. Let me move back  
4 to the questions I had planned on asking you. But I  
5 appreciate that explanation. That's helpful. I will  
6 try not to duplicate questions that others have asked.

7 I understand that you have worked on prior  
8 versions of the methodology order?

9 A. I worked on the Third and the Fourth, yes.

10 Q. Okay. And then in respect to reviewing the  
11 Fourth and preparing the Fifth, you are the lead  
12 Department staff member overseeing the technical aspect  
13 of that review?

14 A. Yes.

15 Q. My understanding is that you took directions  
16 from the Director in terms of which analyses to perform.  
17 And then you would make those assignments to Jennifer  
18 Sukow and other staff members to perform those analyses?

19 A. Definitely took direction from the Director  
20 about what he wanted us to look at. When we started the  
21 review, I was not either directly or indirectly  
22 supervising Jennifer. I was supervising Kara.

23 Q. Okay. And your review began in the summer of  
24 2021?

25 A. We started reviewing in 2020.

1 Q. 2020.

2 A. Fall of 2020, that check-in review on it, on  
3 the methodology.

4 Q. And that continued through 2021 and then into  
5 '22, until the Director's assignment in August of '22  
6 that he was going to proceed with amending the  
7 methodology order?

8 A. Not continuous. We worked for a few months  
9 reviewing it, and presenting our results to the Director  
10 between maybe October and February -- October 2020 and  
11 February 2021. And then we, Kara and I may have been  
12 working a little bit on our own, individually.

13 But there was no formal kind of check-in  
14 review going on, until fall of 2022, or I should say,  
15 late summer, when we started talking about it again. We  
16 had been talking about it on and off in there, but  
17 that's when in August, that's when the Director issued  
18 we needed to convene the technical working group.

19 Q. What components of the methodology did you  
20 work on in the fall of 2020, and then into the winter of  
21 2021?

22 A. Originally we were looking at baseline year,  
23 we were looking at forecast supply, and we were looking  
24 at near real-time metric.

25 Q. And I understand that a main impetus for

1 reviewing the Fourth Methodology Order was just the  
2 passage of time, and additional data that had been  
3 developed since 2016?

4 A. That was part of it. We were also -- one of  
5 the variables that we used for forecast supply is Box  
6 Canyon at after -- we issued the Third Methodology Order  
7 in 2015. And then the USGS did a shift on that gage  
8 that spring. And we were unsure about what that did to  
9 our regression that we were using for forecast. So we  
10 have been -- we had been watching that on and off for  
11 years.

12 In 2020, we became concerned again about is  
13 Box Canyon performing the way we want it to? And then  
14 the passage of time on the baseline year, was that still  
15 meeting all the criteria?

16 Q. And Box Canyon is part of the regression  
17 equation used to predict forecast supplying?

18 A. It is. Not for all the companies, but  
19 specifically it is for Twin Falls Canal Company, which  
20 is the one that has the first shortfall. So we watch  
21 that closely.

22 Q. Okay. And the deterioration in that  
23 regression equation in the R-squared value was one of  
24 the impetuses for reviewing the Fourth Methodology Order  
25 then?

1           A. Yes, that's an indicator of, is the regression  
2 performing the way we want it to be?

3           Q. Okay. So there wasn't some type of emergency  
4 circumstance that forced the Department to review the  
5 Fourth Methodology Order?

6           A. Not that I remember.

7           Q. Okay. You participated in the August 5th,  
8 2022 status conference, where the Director announced  
9 publicly that the Department was going to review the  
10 Fourth Methodology Order?

11          A. Yes, I was present.

12          Q. And do you recall from that, that I raised a  
13 concern about how this proceeding would comply with due  
14 process?

15          A. I remember you talking. I don't remember what  
16 you said.

17          Q. It must not have been that memorable.

18          A. Sorry.

19          Q. Are you aware that there was subsequent  
20 correspondence between myself and Garrick Baxter about  
21 holding a hearing, and complying with due process in the  
22 Administrative Procedures Act?

23          A. No, I'm not aware.

24          Q. Was there any discussion among technical staff  
25 as to whether the Department would hold a hearing before

1 or after issuing the Fifth Methodology Order?

2 A. Say that again. Please repeat that question?

3 Q. Yeah. Was there any discussion among the  
4 Department staff, about whether the Department would  
5 hold a hearing before or after issuing the Fifth  
6 Methodology Order?

7 A. I hate to do this again. When you say  
8 "hearing," were you talking about on the Fifth  
9 Methodology Order, or were you still talking about the  
10 August 5th? I'm confused which one you are talking  
11 about. A hearing for each one?

12 Q. I apologize for not asking clear questions.  
13 So the hearing we're holding today on the Fifth  
14 Methodology Order. Was there ever any discussion as to  
15 whether an evidentiary hearing would be held before,  
16 versus after the Fifth Methodology Order was issued?

17 A. Not with me.

18 Q. Okay. Let me ask you to turn to Exhibit 914.  
19 In fact, you don't need to turn to it. This is the  
20 preliminary recommendation document that you and Kara  
21 Ferguson authored?

22 A. Yes.

23 Q. You are very familiar with that.

24 A. Yes.

25 Q. That document is titled a recommendation



1 concerning the Fifth Methodology Order. Ultimately, was  
2 that a recommendation to the Director?

3 A. Yeah, I believe that is. It's from Kara and I  
4 to the Director.

5 Q. Okay. And did the Director contribute to  
6 reviewing and editing that recommendation before it was  
7 published?

8 A. Yes.

9 Q. That's dated, I think, was it December 23rd?  
10 What's the date on that?

11 A. That sounds familiar. It was right before  
12 Christmas. Yeah.

13 Q. And that followed the technical working group  
14 presentations that were made in November and December;  
15 correct?

16 A. Yeah. I think the last technical working  
17 group meeting was about a week before that.

18 Q. Okay. So as of the time of that  
19 recommendation, all of the technical presentations to  
20 outside consultants had been completed?

21 A. Yes.

22 Q. And we heard Jennifer this morning testify  
23 that she didn't really do any modeling related to the  
24 Fifth Methodology Order, you know, after our technical  
25 presentation was made; is that correct?

1 A. I don't know.

2 Q. Okay. Had the technical review of the Fourth  
3 Methodology Order essentially been complete by the time  
4 you issued the December 23rd recommendation document?

5 A. I would call the preliminary was complete.  
6 That's what I would call that. There was additional  
7 review. And as we were drafting the order, talking  
8 about different aspects of it, and things changed. So I  
9 would say that's more of kind of like the preliminary  
10 portion was done.

11 Q. Was the subsequent review a discussion of the  
12 technical work that was presented in November or  
13 December, or did the Department continue to perform  
14 additional analyses that, you know, had not been  
15 presented in November, December?

16 A. I don't think there were -- there were  
17 additional analyses that we worked on after the  
18 technical working group.

19 Q. What did those consist of?

20 A. The ones that I remember the most, were  
21 centered around reasonable carryover. When we presented  
22 that to the technical working group, we actually  
23 realized about halfway through the technical working  
24 group, that we hadn't planned on modifying reasonable  
25 carryover. But then we realized, or I realized that the

1 baseline year is part of that calculation. So that we  
2 were going to have to take a look at reasonable  
3 carryover.

4 And we -- that was during the technical  
5 working group. So the way that I presented it there  
6 was, if we just inserted the 2018 baseline year in the  
7 reasonable carryover calculation. Here's what  
8 you -- here's the results. And here would be the impact  
9 on how often we would have a reasonable carryover  
10 shortfall.

11 After we got the comments, and after we were  
12 into the drafting, we started doing additional analyses  
13 looking at the reasonable carryover.

14 Q. Okay. Was there an updated PowerPoint  
15 presentation or some other type of report that reflected  
16 the additional carryover review that you conducted?

17 A. No, we did not send anything out.

18 Q. Okay. Was there something generated  
19 internally within the Department, or was it more just  
20 verbal discussions?

21 A. There were several meetings. There were  
22 proposed drafts, or proposed language in the order,  
23 conversations about it. And then ultimately, what our  
24 final decision is in the order.

25 Q. Understood. Any other components of the

1 methodology that you continued to conduct additional  
2 analyses on after December 23rd?

3 A. I can't remember the date on the email. Kara  
4 sent -- Kara Ferguson sent out some additional analysis  
5 about kind of follow up for additional variables on the  
6 forecast supply. I want to say that came out late  
7 December, after that summary.

8 Q. Okay.

9 A. But that was to the technical working group,  
10 mailed out to everybody.

11 Q. So that email went to the folks that were  
12 invited to those November, December technical working  
13 group --

14 A. Correct. Everybody that was on our list that  
15 we sent everything to, that would have gone out to all  
16 of those.

17 Q. Okay.

18 A. I can't remember the date on it, but I think  
19 it was after the 23rd, when that went out.

20 Q. Okay. So other than the email that you just  
21 mentioned that Kara sent out, and the additional  
22 carryover analysis. All the other technical work had  
23 essentially been completed by the end of 2022?

24 A. I think on irrigated acres, based on input  
25 from the technical working group, I calculated -- I

1 think I did some additional work on the irrigated acres  
2 to calculate what they would be, with the new  
3 shapefiles, and like the 2023 shapefiles. So I had to  
4 do some additional work there. I also worked on Milner,  
5 which is why we released that one.

6 Q. Got you. When you say the 2023 acres, is that  
7 based on the acreage that the Coalition reported in 2023  
8 under Step 1 of the methodology?

9 A. Yeah.

10 Q. Okay.

11 A. We received a new shapefile. And I -- for  
12 Minidoka. And I recalculated the acres for Milner.

13 Q. Okay. And Twin Falls Canal reported the same  
14 acreage in '23 as they have since 2013; correct?

15 A. They sent us a letter. I don't remember if  
16 the acreage is in that letter, or if they just say it  
17 hasn't changed five percent from our previous year. I'm  
18 not sure of that.

19 Q. Okay. You didn't go run the methodology based  
20 on the other acreage figures for Twin Falls that were  
21 discussed earlier today? And what I mean by that, I'll  
22 clarify. Is in the technical working group presentation  
23 where it shows the irrigated lands, dataset acres, and  
24 the metric acres that were around 179,000 or 180,000.  
25 You didn't run the methodology based on those acreage

1 figures?

2 A. No, I used the 194 number for the methodology.

3 Q. Okay. Thank you.

4 (Exhibits 915 and 916 marked.)

5 Q. (BY MR. BUDGE) Let me have you open the  
6 common exhibits binder, and turn to Exhibits 915 and  
7 916.

8 A. So, yep, I'm on 915.

9 Q. And is 915, the comments that Sophia Sigstedt  
10 with Lynker Technology submitted to the technical  
11 working group, I think that was January 16th?

12 A. Yeah, they are from Heidi Netter and Greg  
13 Sullivan, 915.

14 Q. I've got those backwards. So 915 are the  
15 comments from Spronk Water Engineers?

16 A. That's what I have.

17 Q. Okay.

18 A. Yep.

19 Q. And then 916 are the comments from Sophie  
20 Sigstedt with Lynker Technology?

21 A. Yep, that's true.

22 Q. Are you familiar with those documents?

23 A. Yes, I am.

24 Q. Just describe briefly what those are?

25 A. So these are the comments provided. 915 is

1 the comments by Spronk Water Engineers related to the  
2 information that we presented in the technical working  
3 group and the summary. And the same is true for 916,  
4 but this one is from Sophia Sigstedt of Lynker  
5 Technology.

6 Q. Thank you. And these comments were solicited  
7 by Department staff as part of the technical working  
8 group process?

9 A. Yeah, they were.

10 Q. And they were kept by the Department, among  
11 its records, considered in connection with developing  
12 the Fifth Methodology Order?

13 A. Yes, we reviewed them in our process.

14 MR. BUDGE: I would move to admit Exhibits 915  
15 and 916.

16 THE HEARING OFFICER: Any objection to the  
17 admission of these documents?

18 With no objection -- well, it seems odd to me  
19 that they are coming in through Mr. Anders, and not the  
20 experts, themselves, who will testify. But they are the  
21 documents marked as Exhibits 915 and 916 are received  
22 into evidence.

23 (Exhibits 915 and 916 received into evidence.)

24 Q. (BY MR. BUDGE) Matt, did you review those  
25 documents when they came in?

1 A. Yes.

2 Q. And did you communicate those to the Director,  
3 and bring to his attention the issues raised in those  
4 documents?

5 A. Yeah, we did.

6 Q. Let me shift gears back to a discussion we had  
7 a moment ago about forecast supply. And we talked about  
8 the degradation of the regression equation used for Twin  
9 Falls Canal Company.

10 My understanding is that the forecast supply  
11 for Twin Falls Canal was based on a regression analysis  
12 comparing natural flow of the Snake River near Heise to  
13 the natural flow diverted by each Surface Water  
14 Coalition entity; is that accurate?

15 A. I think there is an additional variable there,  
16 predictor. I think it's Box Canyon. I would have to  
17 look at the -- for Twin Falls Canal Company, I would  
18 have to look at the order to make sure.

19 Q. Okay. Can you just summarize their regression  
20 equation as you understand it, utilized to predict Twin  
21 Falls Canal Company's forecast supply?

22 A. I think it's the unregulated flow at Heise.  
23 And I think November through March flow at Box Canyon is  
24 the other variable.

25 Q. Okay. And you mentioned that one of the



1 reasons that the Department undertook a review of the  
2 Fourth Methodology Order is due to concerns with the  
3 reliability of that predictive tool?

4 A. Yes. Is that tool, or is that regression  
5 accurate still.

6 (Exhibit 103 marked.)

7 Q. (BY MR. BUDGE) Okay. If you'll turn to  
8 Exhibit 103. That's in one of the binders of IGWA's  
9 exhibits.

10 A. 103 for me is the 2015 technical memo from Liz  
11 Cresto and I, to the Director.

12 Q. That's correct. Thank you. I'm sure you  
13 recognize this document, since you are one of the  
14 authors?

15 A. Yep, I recognize it.

16 Q. Just explain briefly what this document is?

17 A. So in two-thousand- -- I think all the  
18 meetings were in 2015. We held a series of technical  
19 working group meetings with the consultants and  
20 representatives of the parties. And we talked about  
21 several topics. And based on those, or kind of  
22 that -- those meetings, Liz and I wrote this technical  
23 memo to the Director.

24 In addition to this technical memo, I think  
25 attached to it, were comments if the consultants of the

1 different parties wanted to submit comments, that we  
2 attached them to this. And I believe they all did. I  
3 can't remember.

4 Q. I believe they may be attached.

5 A. Yes.

6 Q. Okay.

7 A. I see them attached here.

8 Q. If I look at the introductory paragraph at the  
9 bottom of that, it identifies three specific issues that  
10 the Director had tasked Department staff with  
11 evaluating. And Issue No. 1 is "Revising the natural  
12 flow forecast methods for Twin Falls Canal Company."

13 Can you explain what was going on at that  
14 time, and why Department staff had been tasked with  
15 analyzing this?

16 A. I don't remember exactly why we were tasked  
17 with that. But in the fall of 2014, we received a court  
18 ruling that listed several things that we had to adjust  
19 or look at in the methodology. This may have been one  
20 of them.

21 Q. Okay.

22 A. I don't remember.

23 Q. So does the simple fact that that action item  
24 was being assigned for review and improvement, indicate  
25 that there were some concerns with the reliability of

1 the natural forecast methods that had been used at that  
2 time?

3 A. I'm not sure. But I would expect that there  
4 was some concern with the way we were doing it.

5 Q. But you don't remember whether there was  
6 concerns with that at that time or not?

7 A. I don't at that time.

8 Q. Okay. Has the Department had concerns with  
9 Twin Falls' forecast regression for some time now?

10 A. We've been concerned about it, I'll speak,  
11 since 2015, since we issued the Third Methodology Order.  
12 We've been concerned and monitoring that forecast.  
13 We're seeing a degradation or a downward decline in the  
14 R-squared for that one.

15 (Exhibit 901 marked.)

16 Q. (BY MR. BUDGE) Let me have you turn next to  
17 Exhibit 901.

18 A. Okay. I have that, 901.

19 Q. So I'll read the title "Evaluation of Method  
20 for Determining Material Injury to Reasonable In-Season  
21 Demand and Reasonable Carryover: April and July  
22 Forecast Supply," presented by Kara Ferguson, dated  
23 November 17th, 2022. Is that the one you are looking  
24 at?

25 A. I am.

1 Q. Do you recognize that document?

2 A. Yep, I do.

3 Q. Is that a copy of the presentation that  
4 Ms. Ferguson gave to the technical working group this  
5 last November of 2022?

6 A. I didn't memorize the presentation, but it  
7 does look like the slides that she gave.

8 Q. Okay. If you'll turn to page 9 of that  
9 exhibit?

10 A. Yep, the page number at the top, Exhibit 901,  
11 page 9.

12 Q. I'm going to bookmark that just for a moment.

13 MR. BUDGE: Director, I'm going to take a step  
14 back and move to admit Exhibit 103, which is the 2015  
15 staff memo we discussed a moment ago.

16 THE HEARING OFFICER: Any objection?

17 Hearing no objection, the document marked as  
18 Exhibit 901; is that correct, Mr. Budge?

19 MR. BUDGE: 103.

20 THE HEARING OFFICER: I'm sorry. 103. Wait a  
21 minute.

22 MR. BUDGE: We're on 901 currently. But I'm  
23 stepping to the prior exhibit. I failed to move for its  
24 admission while we were discussing it.

25 THE HEARING OFFICER: Okay. Let me work

1 through that again. So you've moved for admission of  
2 document marked as Exhibit 103. Any objection?

3 Hearing no objection, the document marked as  
4 Exhibit 103 is received into evidence.

5 (Exhibit 103 received into evidence.)

6 MR. BUDGE: Okay. Thank you.

7 Q. (BY MR. BUDGE) And, Matt, thanks for the  
8 detour there.

9 Let's go back to Exhibit 901. If you could  
10 flip to page 9 of that exhibit?

11 A. Yep, I'm there.

12 Q. Are you familiar with this page of the  
13 exhibit?

14 A. Yes, I am.

15 Q. And can you explain what that table on page 9  
16 shows?

17 A. So the top half of that slide talks about how  
18 we -- what the multi-linear regression that we're using  
19 for AFRD2, BID, Minidoka, North Side, Twin Falls Canal  
20 Company, and then it provides the equation.

21 And then the table at the bottom is by each  
22 one of those members, it's showing what the adjusted  
23 R-square value was in 2014 when we established it, or  
24 2015. I think the order was signed in 2015. And then  
25 it shows the progression of the R-squared for each one

1 of those, in 2016, 2018, 2020, and 2022.

2 Q. And can you explain the significance of an  
3 R-squared value, what that term refers to?

4 A. It is a statistic that's calculated with  
5 regressions that help users understand how much of the  
6 variability that regression equation is accounting for.  
7 Generally speaking, the ranges between one and negative  
8 one. As you get closer to one or negative one, that's a  
9 better value. So in this case the higher values, the  
10 higher decimal values that you see here are a better  
11 result.

12 Q. And when you say "better," it means that the  
13 regression equation is more accurately predicting  
14 supply, the higher the number?

15 A. Yeah, generally speaking, yes.

16 Q. And we can see that for the first for SWC  
17 members, AFRD2, BID, Minidoka and North Side Canal  
18 Company, the R-squared value has remained relatively  
19 constant. But for Twin Falls it has declined over time.  
20 Do you see that?

21 A. I do see that.

22 Q. You testified earlier that the Department has  
23 had some concerns about the regression equation for Twin  
24 Falls Canal. Is this representative of the Department's  
25 concern?

1           A. Yes, this is it. The reduction in that number  
2 from 2014 to 2022 is our concern.

3           Q. And you testified that the Department started  
4 in 2020 to begin looking at certain components of the  
5 methodology. Is this one of the components that you  
6 started reviewing early on?

7           A. Yes, this is one of the first ones we were  
8 looking at, forecast supply. Specifically Box Canyon  
9 was, but we looked at other things. But we were for  
10 sure looking at Box Canyon.

11          Q. Okay. Explain why you were looking at Box  
12 Canyon?

13          A. We, as I said earlier, we developed the  
14 regressions -- Liz Cresto developed these regressions in  
15 2014 and 2015. And then we issued the order in April.  
16 And then there was a shift on that gage at Box Canyon.  
17 And we were unsure what that meant. We had developed  
18 the regressions before that. We were unsure what that  
19 meant to our regressions now. Are we going to  
20 accurately predict. So that was the first. It's been  
21 in our minds since then about, did something change?  
22 Can we rely on the regressions that we built? So we had  
23 that concern since right away, since day one almost  
24 after we issued the order.

25          Q. So Box Canyon may be one of the contributing

1 factors that's causing the degradation in the R-squared?

2 A. It could be, yes.

3 Q. Do you have any other ideas what might be  
4 contributing to that?

5 A. The only other variable is Heise, and it's  
6 working for the other companies. Maybe for some reason,  
7 it's not working for Twin Falls. But it seems like it's  
8 Box Canyon.

9 Q. Okay. Is it possible that the model, itself,  
10 for Twin Falls Canal just needs to be changed?

11 A. It's possible. And we would consider if we  
12 could find another predictor variable that works better  
13 that we would change it.

14 Q. Okay. Has the Department evaluated  
15 alternative models for Twin Falls?

16 A. At this point, our recommendation was that we  
17 would keep watching it, and see if it continues to  
18 degrade. So we've done -- I think Kara did three, maybe  
19 three variables looking at possible alternatives. But  
20 nothing extensive at this point.

21 Q. Okay. Let me have you turn to Exhibit 916,  
22 which you might still have in front of you. We reviewed  
23 that one earlier today.

24 A. The Lynker comments?

25 Q. Yes.



1 A. From Sophia?

2 Q. Yes.

3 A. Okay.

4 Q. If you turn to page 4 of that exhibit, I think  
5 it's --

6 MR. FLETCHER: Did you say 915.

7 MR. BUDGE: 916.

8 MR. FLETCHER: Thank you.

9 Q. (BY MR. BUDGE) It's that top paragraph,  
10 No. 2.

11 A. Yep, I see it.

12 Q. Okay. That's not the paragraph, actually.  
13 Under the heading "Section 2: Forecasting Natural Flow  
14 Supply." You've read this document, Matt?

15 A. Yes.

16 Q. You may remember that in the second paragraph  
17 underneath that heading, "Section 2," and you can review  
18 it, it's in front of you. That Lynker Technology or  
19 Sophia Sigstedt had proposed an alternative  
20 recommendation in 2015, a different approach to modeling  
21 forecast supply for Twin Falls Canal.

22 Are you familiar with this part of Sophie's  
23 report?

24 A. Yes, I am familiar that that's what she's  
25 stated, yes.

1 Q. Did you recall that Sophia had made an  
2 alternative proposal in 2015?

3 A. I did not remember that proposal.

4 Q. Okay. Do you know if the Department has done  
5 any work to evaluate the proposal that Sophia suggested  
6 in 2015?

7 A. Not to this point that I know of.

8 Q. Okay. Do you recall advising the Director  
9 that Sophia had proposed an alternative mechanism to  
10 forecast supply for Twin Falls?

11 A. I don't think I passed that recommendation  
12 along to the Director.

13 Q. Matt, let me have you turn to Exhibit 300,  
14 which is the Fourth Methodology Order?

15 A. Okay. I'm there.

16 Q. And then turn to page 9.

17 A. Okay. I'm on page 9.

18 Q. If you look down to paragraph 19, it's under a  
19 heading "Irrigation Practices." And the sentence in  
20 that paragraph states that, "Current condition should be  
21 represented by: (a) the net area of the irrigated  
22 crops." And then I'm not going to read B and C.

23 A. Okay.

24 Q. But in terms of net area of irrigated crops,  
25 do you understand that to mean that current conditions

1 should represent actual irrigated acreage?

2 A. I think that's what "net" means there, the  
3 irrigated acres.

4 Q. Okay. And you've been asked a number of  
5 questions earlier about different irrigated land  
6 datasets. The 2011 irrigated lands dataset, the 2017,  
7 near real-time metric dataset, and then there was an  
8 analysis done by SPF water engineers in 2009. You are  
9 familiar with those different acreage representations?

10 A. Yep.

11 Q. And for Twin Falls Canal Company each of those  
12 analyses showed actual irrigated acres around 180,000  
13 acres total?

14 A. More or less, somewhere --

15 Q. More or less?

16 A. -- between 180, 179, 183, somewhere in that  
17 range.

18 Q. Right in there?

19 A. Yes.

20 Q. After the 2017 irrigated lands dataset came  
21 out -- well, let me back up. Can you explain how  
22 irrigated acreage is utilized in the model to predict  
23 reasonable in-season demand?

24 A. Yes. So --

25 Q. Let me clarify. I said used in the model. I

1 meant used in the methodology.

2 A. Okay. That's what I was going to answer  
3 anyway. So when we calculate crop water need, the  
4 equation is we take the ET, and we subtract off the  
5 effective precipitation. And then we take the ET by  
6 crop type, and multiply it by the acres of each crop  
7 type that we have calculated with the crop mix.

8 Q. Okay.

9 A. And then -- go ahead.

10 And then with the crop water need, we divide  
11 that by project efficiency, and that becomes the  
12 reasonable in-season demand on a monthly basis.

13 Q. So if irrigated acreage goes up, the demand  
14 prediction goes up. And if irrigated acres goes down,  
15 the demand prediction goes down?

16 A. If crop water need -- I guess if the ET and  
17 everything else is held constant, that is true.

18 Q. Okay. After the 2017 irrigated lands dataset  
19 came out, and that one showed for Twin Falls Canal  
20 180,956 acres. Did the Department approach Twin Falls  
21 Canal Company and ask them to justify the higher number  
22 that they had been reporting, the 194,000 acre number?

23 A. Not that I know of.

24 Q. After the 2021 near real-time metric dataset  
25 came out that also showed around 179,000 acres

1 irrigated, do you know if the Department approached Twin  
2 Falls at that point and asked them to justify their  
3 higher figure?

4 A. Not that I know of.

5 Q. The 194,000 acre-foot figure acre figure the  
6 Twin Falls Canal Company reports, that's based on 2013  
7 shapefile, I believe; is that right?

8 A. Yes, they submitted us a shapefile. We do  
9 some GIS analysis on it to remove overlaps or anything  
10 outside the service area.

11 Q. Okay. On that shapefile you said you remove  
12 overlaps. Can you explain what that consists of?

13 A. If there is two polygons in a shapefile that  
14 overlap, those acres will be double counted.

15 Q. Okay. Did the Department take that 2013  
16 shapefile, and also remove hardened acres from that  
17 shapefile?

18 A. No.

19 Q. Okay. The 2017 irrigated lands dataset, I  
20 understood from Jennifer Sukow's testimony, that it does  
21 go kind of field by field and removes hardened acres; is  
22 that correct?

23 A. That dataset has three classifications in it.  
24 In the irrigated, it takes out any hardened acres.  
25 That's usually just fields. But the semi-irrigated will

1 have, as Jennifer explained, will have farmsteads, or  
2 maybe a subdivision, where there are a mixture of  
3 hardened acres and irrigated acres in there.

4 Q. As of 2017, is it your view that that 2017  
5 irrigated lands dataset would have been more accurate  
6 than the 2013 shapefile?

7 A. Can you restate the question?

8 Q. Yes. Once the 2017 irrigated lands dataset  
9 was completed, at that time do you agree that it would  
10 have provided a more accurate representation of  
11 irrigated acres than the 2013 shapefile?

12 A. I think so, yes.

13 Q. And I understand that a metric dataset was  
14 completed in 2017; is that correct?

15 A. I'm not sure what you mean by a metric  
16 dataset?

17 Q. Excuse me. 2021.

18 A. When I saw that on -- I don't know where I saw  
19 that -- on a table that came in or something. I think  
20 what that is, is when we were doing the real-time  
21 metric, we were removing the irrigated acres -- or the  
22 non-irrigated acres, using the 2011 irrigated lands  
23 dataset for consistency.

24 I think that's where that number comes from.  
25 It wasn't generated by near real-time metric. It was us

1 in our processing removing the acres. And what was left  
2 may have been reported by as 2021 acres in the technical  
3 working group. But it was actually, I'm pretty sure, it  
4 was done with the 2011 irrigated lands dataset.

5 Q. Okay. Let me have you turn to Exhibit 325.

6 THE HEARING OFFICER: Mr. Budge, how much  
7 longer do you have with Mr. Anders? I think I need to  
8 call for a break here. We've been at this probably --

9 MR. BUDGE: I've got probably a half an hour.  
10 And I don't mind taking a break.

11 THE HEARING OFFICER: All right. Let's take a  
12 break for 15 minutes. And come back at 3:40.

13 (Recess.)

14 THE HEARING OFFICER: Let's start.

15 MR. BUDGE: Back on the record.

16 Q. (BY MR. BUDGE) Okay. Matt, let's shift  
17 gears. And let me have you turn to Exhibit 300, which  
18 is the Fifth Methodology Order. And when you get there,  
19 you can turn to page 10.

20 A. Okay. I'm on page 10.

21 Q. If you look at paragraph 23, that's a finding  
22 of fact in the methodology order that deals with  
23 supplemental ground water use. Are you familiar with  
24 that paragraph?

25 A. Yes, I am.

1 Q. The second sentence, and I'll read that. It  
2 says, "Supplemental ground water is a factor the  
3 Director can consider in the context of a delivery  
4 call." It then cites a district court decision. And  
5 then it says, "At this time, the information submitted  
6 or available to the Department is insufficient to  
7 determine the extent of supplemental irrigation on lands  
8 within the service areas of SWC entities."

9 During the Department's technical review of  
10 the Fourth Methodology Order, was any effort made to  
11 evaluate supplemental ground water use?

12 A. No.

13 Q. The Department does have a database of all  
14 surface water and ground water rights; correct?

15 A. Yes, we do.

16 Q. And the Department has a WMIS database that  
17 keeps track of all ground water diversions and surface  
18 water diversions?

19 A. I don't think that database has all ground  
20 water diversions. I believe it just has the ground  
21 water diversions that have some kind of measurement  
22 order on them that require them to be measured.

23 Q. Okay. I appreciate the clarification. So  
24 there are some, you know, small domestic rights and  
25 other comparatively small water rights that aren't being



1 measured and reported in WMIS?

2 A. Yes.

3 Q. But in terms of irrigation rights, any  
4 irrigation right larger than five acres essentially is  
5 being reported in WMIS; correct?

6 A. I don't believe all irrigation rights in  
7 Idaho, ground water irrigation rights greater than five  
8 acres are in that database. I think they have to have a  
9 measurement order or something to get them in that  
10 database.

11 Q. The water rights on the -- the ground water  
12 rights from the ESPA within the area of common ground  
13 water supply, do you understand that they do have a  
14 measurement order?

15 A. Yes.

16 Q. Okay. So the ground water rights that are  
17 affected by this delivery call, their diversions would  
18 be in the WMIS database?

19 A. I believe they are.

20 Q. Okay. Could the Department utilize place of  
21 use shapefiles, water right conditions, and diversion  
22 data to analyze supplemental ground water use within the  
23 Surface Water Coalition entities?

24 A. I think that you could start the analysis with  
25 those pieces of data, the water rights, and the WMIS I

1 pumping data. I don't think you can get all the way to  
2 clear and convincing with those two pieces of data.

3 Q. What else would you need?

4 A. Those -- I think you need to talk to the  
5 individual water users or some fraction of them to try  
6 to get an idea of how they are using the water. Some of  
7 those systems are complicated. They have well water in  
8 with surface water shares. You have to understand the  
9 system about where the water is being applied, and when  
10 it's being applied. And I don't think you can get that  
11 without talking to the users, at least on some level.

12 Q. Yeah. So the Department does have the metric  
13 database that's calculating ET?

14 A. Yes.

15 Q. And we do have surface and ground water  
16 delivery records. So between irrigated acreage, ET,  
17 surface water and ground water deliveries, is it not  
18 possible to calculate, at least to the extent we're  
19 able, the supplemental ground water use?

20 A. We don't know where the shares are going  
21 inside the service areas, you know, for the companies,  
22 where they are applying the water. I think, yeah, I  
23 don't think you can get the clear and convincing without  
24 talking to the users just on a remote sensing type of  
25 analysis.

1 Q. Well, I'm not asking about legal standards --

2 A. Okay.

3 Q. -- clear and convincing evidence. So  
4 disregard what the legal standard is?

5 A. Okay.

6 Q. I'm just saying, technically does the  
7 Department have a way to do that? Because we heard  
8 Jennifer Sukow say that, yes, they do that in the model?

9 A. In the model, they have a dataset that they  
10 are using.

11 Q. Okay. Could we use that same dataset in the  
12 methodology order?

13 A. Theoretically, we could.

14 Q. Okay. If that's all we've got, that's the  
15 best we've got, could we use that?

16 A. When I say "theoretically" we could use that  
17 dataset. I don't think that dataset achieves or meets  
18 the clear and convincing, again.

19 Q. Okay. But --

20 A. You've told me not to do that.

21 Q. -- setting that aside. I'm just asking  
22 technically, is that the best data you've got today?

23 A. That dataset is -- my understanding of that  
24 dataset was, it was originally created before the SRBA,  
25 based on water rights. And at that time, IDWR was

1 tracking surface and ground water on the water rights.  
2 That's a very old dataset. We haven't updated it since.  
3 So theoretically we could use that dataset. It may be  
4 the best dataset we have. It's not the best dataset.

5 Q. Yeah. I'm going to think of it kind of like  
6 the R-squared for Twin Falls. It's not that great. But  
7 it might be the best thing we've got. Is that a fair  
8 analogy?

9 A. Those are such vastly different datasets.  
10 When you say that for Twin Falls Canal Company for that  
11 regression, we have been working on that. We have been  
12 updating that. You are talking about a very old dataset  
13 here in my mind. Perhaps those might be the best  
14 dataset we have.

15 Q. Okay. Because the methodology does not  
16 account for supplemental -- actually, let me strike that  
17 question. I'm going to take a step back.

18 You are aware that many of lands within the  
19 surface water entities do have supplemental ground water  
20 rights?

21 A. I do know they do have supplemental ground  
22 water rights. How many? I don't know.

23 Q. But we know there is ground water being used  
24 to irrigate some the lands within the surface water  
25 entities; right?

1           A. I think there are likely lands that are ground  
2 water only within the Surface Water Coalition service  
3 areas. And what we would call a supplemental, where  
4 there is surface water and ground water used on the same  
5 land. Yeah, I think they are in there.

6           Q. And so when the methodology order does not  
7 take into account supplemental ground water use, the  
8 effect of that is an assumption that all of the land  
9 within each Surface Water Coalition entity, is irrigated  
10 solely with surface water; correct?

11          A. Yeah, that is the way that we're doing that.

12          Q. And if in reality there is ground water being  
13 used to irrigate some of those lands, then by not taking  
14 into account supplemental ground water use, the  
15 methodology effectively overstates surface water demand  
16 within the Surface Water Coalition entities?

17          A. I think so. It would over calculate, yes.

18               (Exhibit 928 marked.)

19          Q. (BY MR. BUDGE) Okay. Let me turn your  
20 attention next to Exhibit 928. Matt, I'm actually going  
21 to change numbers on you. Let's go to 907.

22          A. Okay. I have that presentation.

23          Q. I apologize for the delay. I'm not pulling up  
24 the slide that I expected. I've got a typo in my notes.  
25 That was a mistake on my part.

1 I am going to go back to Exhibit 928. This is  
2 a PowerPoint presentation. It is titled "Proposed  
3 Modification and Method for Determining Reasonable  
4 In-Season Demand for Surface Water Coalition Use of the  
5 Real-Time Metric," by Ethan Geisler, Kara Ferguson, and  
6 Matt Anders, dated December 1st, 2022.

7 Is that what you are looking at, Matt?

8 A. I am.

9 Q. Do you recognize this as one of the working  
10 group presentations given last December?

11 A. Yes.

12 Q. Why don't you flip to the last slide, Slide  
13 No. 22. It's labeled "SWC Methodology Acres." And it  
14 lists what I understand are the number of acres utilized  
15 for each Surface Water Coalition member in the  
16 methodology order.

17 A. Yep, I'm on page 22.

18 Q. And is that what that slide reflects?

19 A. Yes, for the 2022 irrigation season.

20 Q. Okay. And under "SWC Member," A & B, there is  
21 an asterisk. And then there are some notes down at the  
22 bottom it says asterisk "A & B acres include," and there  
23 is a "1-14, 14,637 acres." Can you explain what that  
24 refers to?

25 A. That is -- so this bullet is our notes, are my

1 notes about how we got the irrigated acres for A & B.  
2 So the first bullet under "A & B acres include:" 1-14  
3 is the water right. And the 14,637 is the number of  
4 acres.

5 Q. So A & B owns water right number 1-14. And  
6 that water right authorizes the irrigation of 14,637  
7 acres?

8 A. Yes.

9 Q. And then in the table, it shows that the  
10 methodology order is using 15,924 acres. Do your other  
11 notes explain the difference there?

12 A. Yes. So the second bullet, it's "beneficial  
13 use claims," and then it lists the series of water  
14 rights there. And then the number of acres for those.  
15 And then the final bullet is enlargement. It lists two  
16 water rights, and then 1175.2 for acres. So A & B if  
17 you add those three numbers together, they should -- the  
18 14,637, the 111, and the 1,175, it should total up to  
19 15,924 in the upper table.

20 Q. Do you know what priority rights are in the  
21 beneficial use claims in the enlargement water rights?

22 A. I do not.

23 Q. Are you familiar with enlargement water rights  
24 generally?

25 A. Very, very generally.

1 Q. Okay. I'll just represent that enlargement  
2 rights have an effective priority date of 1994, which is  
3 junior to probably all of the ground water rights that  
4 are at risk of curtailment under the methodology order.

5 And so my next question is, has there been  
6 discussion within the Department staff as to whether the  
7 methodology should be run based on the 14,637 acre  
8 figure instead of the 15,924 acre figure?

9 A. No, we haven't had any discussions about that.

10 Q. Okay. If, as I represented, the enlargement  
11 rights are junior to the ground water rights of IGWA and  
12 others, do you agree that it would probably be important  
13 or appropriate to make that adjustment, and run the  
14 methodology based on the 14,637 acre figure?

15 A. I don't know. I would have to investigate it  
16 further.

17 Q. Okay. Fair enough. Let me ask a few  
18 follow-up questions about the Director's move from the  
19 steady state to a transient state model. Are you aware  
20 of the settlement agreement between IGWA and the Surface  
21 Water Coalition related to the Coalition's delivery  
22 call?

23 A. Yes, I'm aware of it.

24 Q. Are you aware that there is an ongoing dispute  
25 between them concerning the breach of that agreement?



1 A. Also aware of that, yes.

2 Q. Did that ever come up in your discussions  
3 concerning the Fifth Methodology Order?

4 A. No, not that I remember.

5 Q. Okay. Are you aware that IGWA and the  
6 Coalition were involved in settlement negotiations this  
7 last February?

8 MR. FLETCHER: Director, I'm going to object,  
9 again, to the same line of questioning I objected to  
10 earlier. I'm not sure whether this is relevant.

11 THE HEARING OFFICER: Sustained.

12 Q. (BY MR. BUDGE) Matt, let me ask, I've just  
13 got a few more questions. I'm almost done. So I  
14 appreciate your patience.

15 Is it your understanding, Matt, that the  
16 change in the baseline year from the Fourth Methodology  
17 to the Fifth Methodology would result in much larger and  
18 more frequent demand shortfall predictions?

19 A. In April.

20 Q. In April?

21 A. It will increase the shortfall predictions.

22 Q. Okay.

23 A. In July, we also use the baseline year. So it  
24 will likely increase July, not for certain. But it will  
25 likely do that as well.

1 Q. Okay. And then as the demand shortfall  
2 becomes larger and more frequent, that translates into  
3 larger and more frequent curtailments of junior ground  
4 water rights in the absence of mitigation?

5 A. In April and July.

6 Q. In April and July?

7 A. Yes.

8 Q. And you understood that when you change from a  
9 steady state to transient state curtailment, you end up  
10 with exponentially more acres being curtailed under the  
11 Fifth Methodology Order than what have occurred under  
12 the Fourth?

13 A. I don't know about exponentially. But it is a  
14 larger acreage that's curtailed.

15 (Exhibit 929 marked.)

16 Q. (BY MR. BUDGE) Okay. Let me have you turn to  
17 the Conjunctive Management Rules, and that's Exhibit  
18 929.

19 A. Okay. I have the rules.

20 Q. Are you familiar with the Conjunctive  
21 Management Rules?

22 A. Generally.

23 Q. If you'll scroll down to, I believe, it's page  
24 4, Rule 20. I'll just give you a moment to read rules  
25 20.03 and Rule 20.04.

1 A. Did you say page 4?

2 MR. WOOD: Page 5.

3 Q. (BY MR. BUDGE) It's page 5. My mistake.

4 A. Page 5. I'm sorry?

5 Q. Yes.

6 A. Okay.

7 Q. Yes, just take a moment to refresh your memory  
8 as to 20.03 and 20.04.

9 A. Okay.

10 Q. At the bottom of 20.03, there is a statement,  
11 "An appropriator is not entitled to command the entirety  
12 of large volumes of water in a surface or ground water  
13 source to support his appropriation contrary to the  
14 public policy of reasonable use of water as described in  
15 this rule."

16 Are you familiar with that concept?

17 A. A little bit familiar.

18 Q. Okay. Looking in 20.04, there is a reference  
19 to the futile call doctrine. The second sentence says,  
20 "The principle of the futile call applies to the  
21 distribution of water under these rules."

22 Are you familiar with the futile call  
23 doctrine?

24 A. Yes, I am.

25 Q. Okay. And then next I'm going to have you

1 scroll down to Rule 40.03. It's on page 9.

2 A. "Reasonable Exercise of Rights."

3 Q. Yeah. Go ahead and review that?

4 A. (Witness complying.) Okay.

5 Q. And so just to summarize 40.03, just explains  
6 that the Director will consider reasonable use of water  
7 under Conjunctive Management Rules. And so my question,  
8 were the concepts we just reviewed, were these ever  
9 brought up in connection with the technical work that  
10 you did in connection with the Fifth Methodology Order  
11 or the As-Applied Order?

12 A. Not that I remember.

13 Q. There wasn't any discussion of how -- let me  
14 strike that question.

15 You weren't given any instructions from the  
16 Director to perform technical analyses related to those  
17 concepts?

18 A. No, I was not.

19 Q. Are you familiar with how the Department  
20 applies the futile call doctrine in surface water  
21 systems?

22 A. Yes, I am.

23 Q. Can you just explain briefly how that's  
24 applied?

25 A. If a water user makes, in my layman's terms,

1 if a water user makes a water call, if the water cannot  
2 be delivered to that user, it's considered futile, and  
3 the call is not honored or made.

4 Q. Okay. Have you been involved just personally,  
5 in water distribution where the futile call doctrine is  
6 applied in Idaho?

7 A. I don't know if they apply it. But the  
8 closest would be in the Big Lost for the water righted  
9 county. They argue every year about, can we get water  
10 down below the Darlington Sinks. I don't know if they  
11 use the futile call. But they are always talking about  
12 it.

13 Q. Okay. Do you know if there is any like time  
14 parameters that are utilized in the Big Lost to evaluate  
15 whether a call is futile or not?

16 A. I don't remember off the top of my head if  
17 they use a parameter.

18 Q. Okay. Who within the Department would be most  
19 qualified to testify as to that?

20 MR. THOMPSON: I guess I'll lodge an objection  
21 here, Director. I guess the surface water  
22 administration around the state, and how futile call is  
23 applied to specific basins, I think is irrelevant to  
24 this proceeding.

25 THE HEARING OFFICER: I'll overrule the

1 objection.

2 But, Mr. Budge, I wonder about the relevance  
3 of the question. But I'll ask Mr. Anders to answer it.

4 THE WITNESS: Probably somebody in the water  
5 compliance Bureau. They deal with watermasters, and  
6 rules, futile calls, things like that.

7 Q. (BY MR. BUDGE) Okay. And, Director, I only  
8 have a couple questions on this topic.

9 Are you familiar with the application of the  
10 futile call doctrine in the Teton River basin?

11 A. I am not.

12 Q. Okay. Would Tony Olenichak be most suited to  
13 explain how it works in that context?

14 A. If it's in Water District 1, he would be the  
15 person to talk to as the watermaster.

16 Q. Okay. That's all the questions I have in that  
17 regard. Just a few more questions.

18 Has the Department conducted any analysis of  
19 just the long-term effects of the beneficial use of  
20 water from the ESPA as a result of the changes made in  
21 the Fifth Methodology Order?

22 A. No.

23 Q. Has the Department attempted to quantify the  
24 additional beneficial use that would occur within  
25 members of the Surface Water Coalition as a result of

1 changes made in the methodology order?

2 A. Not that I know of.

3 Q. Are you familiar with the concept of a  
4 trimline that's been used in other delivery calls?

5 A. I've heard of the trimline, yes.

6 Q. Okay. What's your understanding of the  
7 concept?

8 A. It is a geographic area used in modeling.

9 Q. Did that term ever come up in connection with  
10 your work on the Fifth Methodology Order?

11 A. No.

12 Q. So to your knowledge, none of the Department  
13 technical staff asked if there should be some evaluation  
14 of trimlines?

15 A. It's related to modeling. I don't remember  
16 any conversations, but I am not involved in all of the  
17 conversations related to modeling.

18 MR. BUDGE: Okay. That's all the questions I  
19 have. Thank you, Matt.

20 THE WITNESS: Thank you.

21 THE HEARING OFFICER: Thank you, Mr. Budge.

22 Further questions from the ground water group?  
23 Mr. Bromley.

24 MS. McHUGH: Yes. Oh, is Mr. Bromley going to  
25 do it?

1 THE HEARING OFFICER: Mr. Bromley is standing  
2 halfway to the podium.

3 MS. MCHUGH: Okay.

4 THE HEARING OFFICER: I could ask Mr. Bromley  
5 if he wants to yield.

6 MR. BROMLEY: I've got to take a shot,  
7 Director.

8 THE HEARING OFFICER: Okay.

9 CROSS-EXAMINATION

10 QUESTIONS BY MR. BROMLEY:

11 Q. Hi, Chris Bromley on behalf of the Coalition  
12 of the Cities. Matt, I just have a couple questions  
13 here.

14 So Exhibit 300, which is the Fifth Methodology  
15 Order, if you could turn to that?

16 A. Yes.

17 Q. And let's look at page 18.

18 A. Did you say 18?

19 Q. Yes, I did.

20 A. Okay. I'm on page 18.

21 Q. Great. And we've got paragraphs 49 and 50.  
22 And when I look at paragraph 49, it's talking about  
23 predicting natural flow to members of the Surface Water  
24 Coalition. And when I look at paragraph 50, I see that  
25 it's talking about predicting storage allocations for



1 each member of the Coalition. Would you agree with  
2 that?

3 A. Yes.

4 Q. Great. So in Footnote 15, I see that there  
5 were a series of meetings held in the winter of '22-'23  
6 with parties' technical consultants to discuss potential  
7 updates to the methodology order. And you are looking  
8 at trying to better predict Surface Water Coalition  
9 water supplies in April. That's what I take from that  
10 footnote; is that correct?

11 A. Yeah, that's accurate.

12 Q. Did you have any discussions with Water  
13 District 1 about how to improve the forecasting?

14 A. Not about how to improve the forecasting.

15 Q. How about to improve looking at storage water  
16 allocations?

17 A. We normally in the as-applied process, are  
18 talking to them about what they think the reservoirs are  
19 going to fill to what rights they are going to fill.  
20 And we don't ask them for an official opinion. But we  
21 do ask them for what they think is going to happen. And  
22 then we factor that into our storage allocations.

23 Q. Okay. In the as-applied?

24 A. In the as-applied, yes.

25 Q. Great. And then let's go back to Exhibit 928.

1 That was one that TJ was talking with you about. It was  
2 a technical working group document. And it was the last  
3 page in that exhibit, to make it easier to flip through.

4 A. So I'm at 928.

5 Q. The last page of 928; correct?

6 A. Okay. Page 22 for me.

7 Q. Correct, that's what I have.

8 A. Okay.

9 Q. "SWC Methodology Acres" is the title of the  
10 slide?

11 A. Yep.

12 Q. And at the bottom, Mr. Budge was asking you  
13 about these enlargement acres. And I believe I heard  
14 you say, you didn't know what enlargement acres were; is  
15 that correct?

16 A. Generally that's correct, yes.

17 Q. So do you know has the Department backed out  
18 any other enlargement acres, or are these the only ones  
19 that have been identified?

20 A. In terms of the methodology acres that we use,  
21 these are the only enlargement acres that I remember.  
22 There may be enlargement in the other one. I just  
23 listed these, because they were confusing to me about  
24 how we got to the 15,924.

25 Q. Okay. And that makes sense. So you don't

1 know then how many enlargement acres are within these  
2 other companies --

3 A. I do not.

4 Q. -- within in an irrigated area?

5 A. Sorry. I do not.

6 MR. BROMLEY: Okay. Thank you. I have no  
7 further questions.

8 THE HEARING OFFICER: Any further questions?

9 MS. McHUGH: Yes, Mr. Director, this is  
10 Candice. I just have a couple clarification questions.

11 THE HEARING OFFICER: Okay. Go ahead.

12 MS. McHUGH: And I had to switch to my  
13 headphones. So can everybody hear me okay?

14 THE HEARING OFFICER: You are audible.

15 MS. McHUGH: Okay. Great.

16 CROSS-EXAMINATION

17 QUESTIONS BY MS. McHUGH:

18 Q. Matt, my understanding from your testimony is  
19 that you've been involved with two different technical  
20 working groups, at least one relative to the Surface  
21 Water Coalition methodology orders, one in 2015, and one  
22 in 2022; is that correct?

23 A. Yes.

24 Q. Has there been any others relative to this  
25 Surface Water Coalition delivery call that you've been

1 involved in?

2 A. No other technical working groups that I can  
3 think of.

4 Q. Okay. And how are those technical working  
5 groups compiled, like who gets invited?

6 A. I don't remember on the 2015 technical working  
7 group. But for, we'll call it the 2022 technical  
8 working group, I asked the Director for guidance on who  
9 should be invited.

10 Q. And what were you instructed as far as who  
11 should be invited?

12 A. The response from the Director was to ask the  
13 parties who they wanted to attend.

14 Q. And by the "parties," do you mean the parties  
15 that had already been part of the Surface Water  
16 Coalition delivery call that dated back to 2008, 2009  
17 time frame?

18 A. Yeah, I think so. The Surface Water  
19 Coalition, IGWA, and the Cities are who I talked to.

20 Q. Okay. And when does that invitation get sent  
21 out, and by what method?

22 A. My best estimate is in September, the Director  
23 at the status -- or at a status conference, said we were  
24 going to have a technical working group. So probably  
25 early September is when, or late August maybe, I emailed

1 the attorneys or the legal counsel for the different  
2 parties, and asked them who they wanted to attend the  
3 technical working group.

4 Q. Okay. And that was in 2022?

5 A. Yeah.

6 Q. Okay. And can you tell me what suggestions  
7 from the 2022 technical working group, did you recommend  
8 that be implemented in the Fifth Methodology Order, from  
9 non-Department employees? I should clarify.

10 A. I can't think of -- I don't think we used any  
11 or implemented any of the recommendations from the  
12 technical working group.

13 Q. And what -- any datasets or any kind of  
14 technical information, other than methods, did you  
15 recommend from the technical working group?

16 A. I didn't quite understand that question.  
17 Could you repeat it?

18 Q. I understood you to say that you didn't  
19 implement any suggestions as to like a method from the  
20 technical working group. And I was following up just to  
21 clarify. Did you use any improved data, or datasets,  
22 or, you know, that kind of information that was provided  
23 from the technical working group?

24 A. I don't think so.

25 Q. Okay. In the 2015 technical working group,

1 what suggestions from the 2015 technical working group,  
2 did you implement or recommend be used in the  
3 methodology?

4 A. I don't remember the recommendations from the  
5 different consultants at that point.

6 Q. Okay. But you think that you may have taken  
7 some from the outside consultants and incorporated into  
8 the methodology?

9 A. I don't know.

10 MS. MCHUGH: I don't have any further  
11 questions.

12 THE HEARING OFFICER: Okay. Further questions  
13 from the ground water group? I don't see any hands  
14 raised.

15 So let's shift. And I think now the Surface  
16 Water Coalition, if you wish to question Mr. Anders, you  
17 may examine.

18 Mr. Thompson.

19 CROSS-EXAMINATION

20 QUESTIONS BY MR. THOMPSON:

21 Q. Good afternoon, Mr. Anders, Travis Thompson  
22 for A & B, et al. Just a couple questions.

23 (Exhibit 118 marked.)

24 Q. (BY MR. THOMPSON) So if you could turn to  
25 Exhibit 118. Would you please identify that for the

1 record?

2 A. Did you say 118?

3 Q. Correct.

4 A. I'm there.

5 Q. Do you recognize that document?

6 A. Yes.

7 Q. And were those comments submitted by  
8 consultants for the Surface Water Coalition?

9 A. Yes, they were.

10 Q. And did the Department consider those comments  
11 and others submitted by other consultants?

12 A. Yes, we did.

13 Q. I'm going to go back to a few questions on is  
14 it the irrigated land dataset that the Department  
15 created?

16 A. Yes.

17 Q. And you said they did one in 2011 and 2017?

18 A. Yes.

19 Q. And are those different staff that created  
20 those?

21 A. I think it was created by the same staff. But  
22 I'm not totally sure on that. They would have been IDWR  
23 staff.

24 Q. And that's a snapshot of a single year; is  
25 that correct?

1           A. Yeah. They are designed to just identify the  
2 irrigated, non-irrigated, and semi-irrigated for that  
3 year.

4           Q. And do staff ground proof those estimates with  
5 individual irrigators?

6           A. I don't know.

7           Q. How about individual canal companies or  
8 irrigation districts?

9           A. I also don't know.

10          Q. I think you testified earlier that you agreed  
11 that certain lands that show up irrigated one year, may  
12 not be irrigated the next; is that true?

13          A. That is true.

14          Q. And vice versa, non-irrigated lands may not be  
15 not irrigated one year, but irrigated the next?

16          A. Also true.

17          Q. You said those data land sets --

18          A. Irrigated lands dataset.

19          Q. Irrigated lands dataset. Sorry. Three  
20 categories, we've got an irrigated, non-irrigated, and  
21 semi-irrigated?

22          A. Correct.

23          Q. And do each of those categories have specific  
24 numbers of acres?

25          A. I don't understand the question.



1 Q. I think we talked about at least the example  
2 for Twin Falls Canal Company, the 2017 dataset had a  
3 number of like 179,000. Do you know if that was the  
4 irrigated lands dataset for that year?

5 A. Each -- we can calculate the acres for each  
6 one of those categories. The 179 was what was left, the  
7 number of acres, irrigated acres left in the shapefile  
8 from Twin Falls Canal Company after we removed the  
9 non-irrigated using the irrigated lands dataset.

10 Q. So it would include semi-irrigated?

11 A. Yes, that would include semi-irrigated.

12 MR. THOMPSON: That's all the questions I  
13 have. Thank you.

14 THE WITNESS: Thank you.

15 MR. FLETCHER: No questions.

16 THE HEARING OFFICER: All right. Let's circle  
17 back again.

18 Mr. Wood, do you have any questions?

19 MR. WOOD: Just a couple.

20 REDIRECT EXAMINATION

21 QUESTIONS BY MR. WOOD:

22 Q. Hi, Matt. Do you recall testifying earlier  
23 about using Twin Falls Canal Company's irrigated acres  
24 dataset?

25 A. I do.

1 Q. And do you recall attorneys for the ground  
2 water users suggesting that the Department should use  
3 Twin Falls Canal Company's irrigation acre dataset  
4 rather than the decreed acres?

5 A. I didn't understand the question there.

6 Q. Do you recall a suggestion that the Department  
7 should use Twin Falls Canal Company's irrigated acres,  
8 rather than their decreed acres?

9 A. I think what they were recommending was we use  
10 the irrigated acres after we removed the non-irrigated  
11 with the irrigated lands dataset.

12 Q. That's a better way to put it. In your  
13 opinion, what would it take from a staffing perspective  
14 to implement the dataset as suggested by the ground  
15 water users?

16 A. Those irrigated lands datasets take about one  
17 year of staff time to make, to review and to do the  
18 edits. So we would have to dedicate quite -- I mean, if  
19 we wanted to do it in the current irrigation season, we  
20 would have a lot of staff time trying to get it done in  
21 time to be used with the methodology. If we did a year  
22 like the previous year, we would still have to exert a  
23 lot of effort to get it created.

24 Q. So are staffing issues one of the reasons that  
25 the dataset wasn't used?



1           First, regarding the regression equation for  
2 Twin Falls Canal Company, you were asked whether the  
3 current regression formula still accurately predicts the  
4 forecast supply? Do you recall that question?

5           A. I do.

6           Q. Accuracy is a matter of degree; right?

7           A. Okay.

8           Q. So you would agree that the prediction is  
9 becoming less accurate over time?

10          A. I think that's what the R-squared is telling  
11 us, that statistic, yes.

12          Q. So your testimony is, in your opinion, it's  
13 not become so inaccurate, that you can't use it at all?

14          A. Not yet.

15          Q. Okay. But that time could come?

16          A. It might come. It might -- we have seen them  
17 stabilize. It might stabilize where it is. It might go  
18 up a little bit. We don't really know.

19          Q. Okay. Next, just about the staffing required  
20 to create an irrigated lands dataset. When you answered  
21 that it takes a lot of work. You are talking about  
22 creating a new irrigated lands dataset?

23          A. Yes, I think they often start with the  
24 previous one. But to create a new one, it is a lot of  
25 staff time to update the lines, and to do all the

1 analysis. We are experimenting with ways to automate  
2 that. We don't have it to the point where we think we  
3 have the accuracy that we want to yet. If we could get  
4 to an automated method, we might be able to get one for  
5 every year. We don't know yet, but we are experimenting  
6 with it.

7 Q. Okay. And once the 2017 dataset was created,  
8 it certainly could have been implemented in the  
9 methodology in, say, 2018?

10 A. Well, I don't know when that dataset was  
11 finished. For example, they're working on 2021 right  
12 now. So it would have been at some point after. And if  
13 it takes a year, it probably would have been a couple of  
14 years after when it became available. I'm just  
15 estimating. I don't know when exactly they started on  
16 that one. But there is a lag there by at least a year  
17 and maybe more.

18 Q. I understand. Are you familiar with the near  
19 real-time metric dataset?

20 A. I am.

21 Q. And that dataset also, if I understood  
22 Ms. Sukow, also can tend to delineate irrigated versus  
23 non-irrigated acres?

24 A. Yeah, it's showing ET, or actual ET on the  
25 ground. So, yeah, it can indicate whether something is

1 irrigated or not.

2 Q. And that dataset I believe is available  
3 annually?

4 A. The metric dataset or the near real-time  
5 metric?

6 Q. Let's start with the near real-time metric.

7 A. Right now we're in testing mode with the near  
8 real-time metric to see if we can do it on schedule.  
9 But we need further methodology. So that one, I don't  
10 know if we have 2022. But up to that point, we were  
11 getting it like July 5th, August, September, so we had  
12 that one real-time, yes.

13 For metric, I don't know if they've done all  
14 the years for metric, because they make that decision  
15 after the season is over and based on the cloud cover.  
16 Clouds are difficult for, to get a good metric dataset  
17 if you've got a lot of clouds. So I don't know what  
18 years they have done.

19 They don't always -- for example, we did  
20 real-time metric, but they didn't do metric for all  
21 those years that we did near real-time.

22 Q. So it sounds like there are tools available or  
23 under development that are going to enable more frequent  
24 evaluation of irrigated acres using metric or the data  
25 lands, the irrigated lands dataset?

1 A. I think there is things, yeah, developing.

2 Q. And in terms of the staffing, it wouldn't be  
3 hard to plug a different acreage figure into the  
4 methodology order, that could be done, you know, with a  
5 push of the button. The staffing you are talking about  
6 is creating a new dataset, or an updated dataset?

7 A. You are correct.

8 Q. So the Department could today rerun the  
9 methodology with the figures from the 2017 irrigated  
10 lands dataset, and that would not take a lot of time?

11 A. No, you are correct, that would be easy.

12 Q. And they could do the same with the most  
13 recent metric or near real-time metric data?

14 A. Once we have the number, it's easy to plug  
15 into the calculator.

16 MR. BUDGE: Okay. That's all I've got.

17 Thanks, Matt.

18 THE WITNESS: Thank you.

19 THE HEARING OFFICER: Further questions from  
20 the ground water group?

21 And one more chance for questions from the  
22 Surface Water Coalition. Any further questions?

23 Apparently not. Okay. We are finished with  
24 Matt Anders.

25 (Witness dismissed.)

1 THE HEARING OFFICER: It is 4:30. I don't see  
2 Jay Barlogi in the gallery. So I'm assuming that Jay is  
3 next; is that correct?

4 MR. THOMPSON: Yes, Director. I've been in  
5 communication with him and have him online if that's an  
6 option. I guess depending on what the parties want to  
7 do?

8 THE HEARING OFFICER: What's the preference of  
9 the parties?

10 Mr. Bromley?

11 MR. BROMLEY: Well, I was going to take the  
12 primary lead of questioning of Mr. Barlogi. I do have  
13 some physical exhibits. And he's not here to look at  
14 those.

15 THE HEARING OFFICER: Are we expecting  
16 Mr. Barlogi in person tomorrow?

17 MR. THOMPSON: Yes.

18 MR. FLETCHER: He will be here in the morning.

19 THE HEARING OFFICER: Well, I think we're on  
20 schedule, and maybe just a little ahead looking at the  
21 list of witnesses, so perhaps --

22 MR. ANDERSON: Just as a --

23 THE HEARING OFFICER: Mr. Anderson?

24 MR. ANDERSON: Just as a way to save time, I  
25 have a matter that I could take up just quickly



1 regarding the order that you made this morning. It's a  
2 little off-the-cuff, but just a couple minutes. If it's  
3 okay?

4 THE HEARING OFFICER: Okay. That would be  
5 fine. But as Mr. Anderson is coming forward, it appears  
6 to me that we're at a logical breaking point. And maybe  
7 we ought to adjourn following Mr. Anderson's  
8 presentation.

9 MR. THOMPSON: Could we move to admit Exhibit  
10 118?

11 THE HEARING OFFICER: Pardon me?

12 MR. THOMPSON: Could we move to admit Exhibit  
13 118?

14 MR. FLETCHER: That was the Surface Water  
15 Coalition comments on the recommendations to the  
16 technical working group.

17 THE HEARING OFFICER: Prepared by Dave Colvin  
18 and Dave Shaw, I think so.

19 MR. FLETCHER: I think, yeah.

20 THE HEARING OFFICER: Yes. Any objection to  
21 admitting the document marked as Exhibit 118?

22 Seeing no objection, the document marked as  
23 Exhibit 118 is received into evidence.

24 (Exhibit 118 received into evidence.)

25 MR. ANDERSON: Thank you, Director. Just as a

1 way of utilizing our time wisely, and this is a little  
2 off-the-cuff given the order that was this morning. I  
3 am just doing a brief, ask the Director to reconsider  
4 the order regarding economic benefit, just some really  
5 small discussion regarding that. And then in the  
6 alternative, just offer an informal offer of proof here,  
7 if that's okay?

8 THE HEARING OFFICER: Go ahead.

9 MR. ANDERSON: In the Fifth Methodology Order,  
10 Exhibit 300, I believe, which we've been talking about.  
11 There are conclusions, specifically conclusions No. 6.  
12 And it talks about the public interest, full economic  
13 benefit and optimum development of water resources for  
14 the public interest. It talks about full economic  
15 development in the result of the optimum development of  
16 water resources. The policy of securing the maximum use  
17 and benefit and least wasteful use of the state water  
18 resources applies to both the surface water and ground  
19 water. And I'm kind of paraphrasing a little bit. But  
20 these are all quotes from cases in the sixth finding in  
21 the methodology order.

22 The issue I think is the lack of facts cited  
23 to support that finding. I think the lack of facts is  
24 what the Department relied on earlier in making an order  
25 that the methodology didn't address economic issues.

1 And so it was beyond the scope to address those at this  
2 hearing.

3 I think the lack of facts cited in making this  
4 finding of No. 6 is a reason why economic issues should  
5 be permitted into this hearing, to bolster the facts,  
6 and bolster the evidence in making that finding.

7 Whether or not the Department gives them whatever weight  
8 the Department wants, I certainly think it's within the  
9 public interest to do so. I would argue that perhaps  
10 the decision of the Department to go with steady state  
11 in the first place rather than change of methodology  
12 order to be con-transient in itself has some inherent  
13 economic aspects. So I would just ask the court to  
14 reconsider.

15 In the alternative, rather than do a formal  
16 offer of proof, I think that in this case an informal  
17 offer of proof would be streamlined and everyone would  
18 appreciate it, just given the fact that we have an  
19 expert that would be traveling from out of town to do  
20 that formal offer of proof. And I think it was Judge  
21 Stegner, when he was a judge said that an informal offer  
22 of proof is appropriate when the attorney presenting it  
23 is not simply conclusory stating the summary of facts  
24 that will be presented, and is not hypothetically  
25 stating facts that may be presented.

1           Here we have a simple expert report. And so I  
2 would just like to informally submit that as an offer of  
3 proof in the alternative that the Department wouldn't  
4 reconsider its decision on excluding economic testimony.

5           THE HEARING OFFICER: Okay. Thank you, Mr.  
6 Anderson.

7           I'm certain the Surface Water Coalition wants  
8 to respond. Mr. Thompson, Mr. Fletcher.

9           MR. FLETCHER: Director, we agree with the  
10 Director's ruling on this issue. We were surprised by  
11 the issues people wanted to raise in this methodology.  
12 A lot of these issues were raised in the earlier  
13 methodology. There is multiple cases dealing with this  
14 issue. And it's not a matter of wanting economic harm  
15 to the various parties in order to determine who should  
16 receive the water under the priority doctrine. And so  
17 we agree with how the Director ruled on this issue this  
18 morning.

19           MR. ANDERSON: A 30 second rebuttal.

20           THE HEARING OFFICER: Sure, Mr. Anderson.

21           MR. ANDERSON: And I agree, it's not  
22 necessarily about weighing the harm between the parties.  
23 But when you have such an exorbitant curtailment at  
24 stake, it's certainly relevant for the Department to  
25 take that into consideration in the public interest and

1 use of the resource. It has nothing to do with the  
2 economic benefit or realization of the two parties and  
3 comparing them. It's just something that the Department  
4 is within its discretion as the courts' have said to  
5 consider.

6 THE HEARING OFFICER: All right. Well,  
7 thanks, Mr. Anderson. I'll at least take the motion,  
8 and I'll characterize it as a motion, under advisement.  
9 And rule on it tomorrow morning when we start.

10 I will tell you, though, that I have read the  
11 motion in limine, or the motion to limit, and have at  
12 least reviewed the citations and the quotes. And have  
13 some memory of those decisions that were issued by the  
14 court related to whether the Department could consider  
15 the economic benefits as part of determining whether a  
16 junior, or the holders of junior-priority water rights  
17 should be curtailed.

18 And I thought at least one of those quotes was  
19 telling, because the court essentially said that the  
20 Department should not be reviewing. And the Director  
21 should not be reviewing the respective economic benefits  
22 of water use. And delving into the actual financial  
23 standing and books of the various parties. And the  
24 warning I think from the courts was that it would  
25 compromise the prior appropriation doctrine. And the

1 expected administration of water rights under the prior  
2 appropriation doctrine.

3 So I'll take it under advisement with I guess  
4 some reluctance. But I'll look at it, and rule on it in  
5 the morning.

6 Okay. Anything else we need to talk about?

7 MS. McHUGH: Mr. Director, this is Candice.  
8 This doesn't have to be on the record. It is just a  
9 housekeeping piece.

10 THE HEARING OFFICER: Well, go ahead. We're  
11 on the record.

12 MS. McHUGH: Okay. Fair enough. I'm  
13 traveling by air tomorrow for the most part, and so just  
14 as a courtesy to the Director and the parties, I won't  
15 be participating the full day remotely. But just kind  
16 of wanted you to know that I'm not missing in action.  
17 If all of the sudden I'm off, it is because I'm actually  
18 traveling tomorrow.

19 THE HEARING OFFICER: All right. Thanks for  
20 the heads up, Candice.

21 So what time should we start in the morning?  
22 Do you want to start at 9:00? Do you want to start at  
23 8:30? What's the preference? Do you want to start at  
24 7:30?

25 MS. KLAHN: How about 9:00?

1 THE HEARING OFFICER: 9:00.

2 MR. FLETCHER: 9:00 is fine.

3 THE HEARING OFFICER: All right. Let's start  
4 at 9:00 a.m. tomorrow morning. Thanks for the help from  
5 everyone here. And we'll adjourn for the night. So  
6 let's go off the record and then review the exhibits.

7 (Hearing adjourned at 4:46 p.m.)

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

## 1 REPORTER'S CERTIFICATE

2 I, COLLEEN P. DOHERTY, CSR No. 345, Certified  
3 Shorthand Reporter, certify:

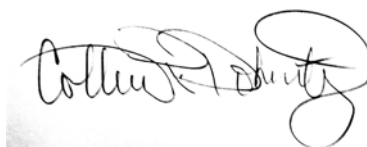
4 That the foregoing proceedings were taken  
5 before me at the time and place therein set forth, at  
6 which time the witness was put under oath by me;

7 That the testimony and all objections made were  
8 recorded stenographically by me and transcribed by me or  
9 under my direction;

10 That the foregoing is a true and correct record  
11 of all testimony given, to the best of my ability;

12 I further certify that I am not a relative or  
13 employee of any attorney or party, nor am I financially  
14 interested in the action.

15 IN WITNESS WHEREOF, I set my hand and seal this  
16 16th day of June, 2023.

17  
18  
19 

20  
21 COLLEEN P. DOHERTY, CSR 345

22 Notary Public

23 P.O. Box 2636

24 Boise, Idaho 83701-2636

25 My commission expires September 7, 2023.



/	<b>acknowledge (1)</b> 143:5	<b>21:4;22:14;76:12;87:8; 90:9;92:16;95:21;100:3;</b>	<b>Adolphus (1)</b> 120:8
/// (1) 150:1	<b>acknowledged (1)</b> 101:7	<b>135:16;160:16;175:22; 190:12;196:3;201:16; 202:20;235:17</b>	<b>advice (1)</b> 119:1
<b>A</b>	<b>acknowledgment (1)</b> 96:19	<b>add (7)</b> 10:24;19:9;26:1;126:2; 137:3;159:5;204:17	<b>advise (1)</b> 80:3
<b>ability (2)</b> 18:24;33:20	<b>acquaintances (1)</b> 10:2	<b>added (1)</b> 32:17	<b>advisement (2)</b> 234:8;235:3
<b>able (14)</b> 25:10,20;28:17;32:22; 46:5;47:12;50:1,1;71:24; 88:14;100:3;111:19;199:19; 226:4	<b>acquainted (1)</b> 36:2	<b>adding (4)</b> 61:19;136:25;165:8,9	<b>advising (2)</b> 38:17;191:8
<b>above (13)</b> 92:5,15;126:5;150:23; 151:4,6,14,15,17;160:17,18; 162:24;164:6	<b>acre (6)</b> 193:22;194:5;205:7,8,14; 223:3	<b>addition (2)</b> 165:5;182:24	<b>aerial (1)</b> 68:18
<b>absence (2)</b> 74:18;207:4	<b>acreage (21)</b> 18:6,7;21:3;118:5,22; 132:6,11,15;141:16;178:7, 14,16,20,25;192:1,9,22; 193:13;199:16;207:14;228:3	<b>additional (21)</b> 23:8;43:19;52:24;53:3; 102:15;114:4;122:22;171:2; 175:6,14,17;176:12,16; 177:1,4,5,21;178:1,4;181:15; 211:24	<b>affected (1)</b> 198:17
<b>absolute (1)</b> 20:18	<b>acre-feet (36)</b> 42:25;43:3;52:5,7,12,21, 24;54:25;55:10,17,23;56:16; 57:15,17,20;58:13,19;74:17; 76:16,20;78:5,7;83:16;85:1, 10,14,15,19,19,23;87:1; 113:8,15,25;114:5;128:24	<b>address (5)</b> 23:24;34:2;65:4;231:25; 232:1	<b>AFRD (1)</b> 20:15
<b>accept (1)</b> 36:1	<b>acres (122)</b> 55:3,11,12,14;56:1,3,18; 57:19,22,25;58:2;69:15; 72:12,20;74:12,19,23;88:24; 101:21,23;102:4;118:10; 122:2;123:11;129:17; 132:16,19,25;133:22;134:3, 6,9;136:17;137:1,3,10;138:2, 6;139:2,6,9,16;140:3,11,12, 17,23;141:3,18;142:14,17, 17;143:6,9,21;154:23,25; 155:1,17;156:3,7,12,17,19; 157:9,14;177:24;178:1,6,12, 23,24;192:3,12,13;193:6,14, 20,25;194:14,16,21,24; 195:3,3,11,21,22;196:1,2; 198:4,8;203:13,14,22,23; 204:1,2,4,7,10,14,16;207:10; 215:9,13,14,18,20,21;216:1; 221:24;222:5,7,7,23;223:4,7, 8,10;226:23;227:24	<b>addressed (3)</b> 27:21;31:14;109:23	<b>AFRD2 (2)</b> 186:19;187:17
<b>acceptable (1)</b> 28:10	<b>acres-foot (7)</b> 76:13,15;83:23;85:2; 114:18;115:2;194:5	<b>addresses (1)</b> 17:5	<b>afternoon (4)</b> 110:9;116:3;124:20; 219:21
<b>accepted (3)</b> 18:7;36:18;108:10	<b>access (1)</b> 127:1	<b>adjourn (2)</b> 230:7;236:5	<b>again (30)</b> 15:13;24:25;32:23;35:13; 41:15,21;74:4,21;77:21; 82:23;84:18;88:1,10;93:9; 94:9;101:13,25;115:4,10; 146:25;164:24;165:2; 170:15;171:12;173:2,7; 186:1;200:18;206:9;222:17
<b>access (1)</b> 127:1	<b>accommodate (1)</b> 31:4	<b>adjourned (1)</b> 236:7	<b>against (1)</b> 147:14
<b>accommodate (1)</b> 31:4	<b>according (1)</b> 115:16	<b>Adjudication (1)</b> 138:16	<b>ago (8)</b> 17:16;44:3;45:7;74:22; 85:8;134:6;181:7;185:15
<b>according (1)</b> 115:16	<b>account (15)</b> 91:4,7,8,10,11;92:6;100:3; 167:5,13,16,18;168:8; 201:16;202:7,14	<b>adjust (4)</b> 62:2,3;157:8;183:18	<b>agree (22)</b> 52:22;55:13;56:15; 110:12;112:10,16,20;113:1, 7;114:15;139:3;142:20; 163:16;164:7;165:11;195:9; 205:12;214:1;225:8;233:9, 17,21
<b>account (15)</b> 91:4,7,8,10,11;92:6;100:3; 167:5,13,16,18;168:8; 201:16;202:7,14	<b>accounted (2)</b> 92:18;168:16	<b>adjustable (2)</b> 90:15;152:13	<b>agreeable (1)</b> 23:12
<b>accounted (2)</b> 92:18;168:16	<b>accounting (2)</b> 129:19;187:6	<b>adjusted (4)</b> 90:17;145:7;153:12; 186:22	<b>Agreed (2)</b> 139:4;221:10
<b>accounting (2)</b> 129:19;187:6	<b>accounts (1)</b> 99:25	<b>adjustment (6)</b> 23:17;31:6;61:23;168:10, 14;205:13	<b>agreement (5)</b> 115:5;117:3;147:23; 205:20,25
<b>accounts (1)</b> 99:25	<b>accrual (1)</b> 58:12	<b>administrative (3)</b> 17:1;45:14;172:22	<b>agreements (1)</b> 101:24
<b>accrue (5)</b> 43:1,3,12;58:20;61:6	<b>accrued (1)</b> 58:18	<b>admission (11)</b> 29:2,5,7;36:14;59:9; 109:18;146:21;149:19; 180:17;185:24;186:1	<b>ahead (9)</b> 60:9;66:14;155:7;193:9; 209:3;216:11;229:20;231:8; 235:10
<b>accrued (1)</b> 58:18	<b>accuracy (6)</b> 123:18,23;131:24;155:25; 225:6;226:3	<b>admit (9)</b> 29:11;40:9;109:15;124:1; 135:24;180:14;185:14; 230:9,12	<b>air (3)</b> 156:4,9;235:13
<b>accuracy (6)</b> 123:18,23;131:24;155:25; 225:6;226:3	<b>accurate (11)</b> 136:21,22;142:22,23; 155:6;181:14;182:5;195:5, 10;214:11;225:9	<b>admitted (5)</b> 59:4;135:18;148:25; 149:10,13	<b>al (7)</b> 11:11,21;12:14;13:1,3; 96:23;219:22
<b>accurate (11)</b> 136:21,22;142:22,23; 155:6;181:14;182:5;195:5, 10;214:11;225:9	<b>accurately (5)</b> 187:13;188:20;224:9,11; 225:3	<b>admitting (1)</b> 230:21	<b>aligned (1)</b> 34:15
<b>accurately (5)</b> 187:13;188:20;224:9,11; 225:3	<b>achieves (2)</b> 143:18;200:17	<b>actually (16)</b>	<b>Allan (1)</b> 44:8

<p><b>allocating (1)</b> 86:17</p> <p><b>allocations (3)</b> 213:25;214:16,22</p> <p><b>allotted (1)</b> 24:4</p> <p><b>allow (5)</b> 22:22;33:13,15;104:4; 148:18</p> <p><b>allowed (2)</b> 87:21;100:4</p> <p><b>almost (4)</b> 50:14;111:25;188:23; 206:13</p> <p><b>along (2)</b> 67:11;191:12</p> <p><b>altering (1)</b> 19:21</p> <p><b>alternative (8)</b> 131:4;189:15;190:19; 191:2,9;231:6;232:15;233:3</p> <p><b>alternatives (1)</b> 189:19</p> <p><b>although (1)</b> 16:12</p> <p><b>altogether (1)</b> 69:8</p> <p><b>always (7)</b> 46:4;47:22;48:1;127:19; 130:10;210:11;227:19</p> <p><b>Amalgamated's (3)</b> 26:19,20;31:16</p> <p><b>Amended (11)</b> 7:11;24:10,25;25:17; 41:23;65:25;66:17;116:13; 135:12;136:25;137:6</p> <p><b>amending (1)</b> 170:6</p> <p><b>American (2)</b> 11:13;165:19</p> <p><b>among (6)</b> 85:10;165:14,16;172:24; 173:3;180:10</p> <p><b>Amoth (1)</b> 19:12</p> <p><b>amount (9)</b> 43:12;47:8;52:2;58:18; 62:6;73:19;98:18;100:5; 126:15</p> <p><b>analogy (1)</b> 201:8</p> <p><b>analyses (12)</b> 72:8;98:4;104:25;143:13; 169:16,18;175:14,17; 176:12;177:2;192:12;209:16</p> <p><b>analysis (31)</b> 22:4;77:9,10,13,14,19,21; 78:1,14;79:23;82:1,8;85:12; 98:7;104:21;108:15;109:7; 114:14,23;140:3;156:13,15; 177:4,22;181:11;192:8; 194:9;198:24;199:25; 211:18;226:1</p>	<p><b>analyze (2)</b> 75:5;198:22</p> <p><b>analyzing (1)</b> 183:15</p> <p><b>ANDERS (40)</b> 7:2;12:25,25;53:18;54:20; 64:19,20;66:4;67:2;73:14; 78:22;81:16,22;82:25; 119:15,18,25;120:4;122:22; 124:12,14,20;133:24; 137:23;145:13;148:12,14; 149:6,24;161:14,18;166:18, 22;180:19;196:7;203:6; 211:3;219:16,21;228:24</p> <p><b>A-n-d-e-r-s (1)</b> 120:5</p> <p><b>ANDERSON (32)</b> 12:7,7;20:7,8,9;95:9,10, 12;96:12;149:25;150:3,9,13, 16,20;155:11;157:19;160:1; 161:8,11,12;229:22,23,24; 230:5,25;231:9;233:6,19,20, 21;234:7</p> <p><b>Anderson's (1)</b> 230:7</p> <p><b>Andrus (1)</b> 12:17</p> <p><b>announced (1)</b> 172:8</p> <p><b>annual (1)</b> 55:20</p> <p><b>annually (2)</b> 118:4;227:3</p> <p><b>anomalous (2)</b> 35:8;165:22</p> <p><b>answered (2)</b> 103:18;225:20</p> <p><b>anticipated (1)</b> 16:2</p> <p><b>anticipating (1)</b> 105:7</p> <p><b>anymore (1)</b> 143:14</p> <p><b>apologize (5)</b> 99:17;135:19;137:25; 173:12;202:23</p> <p><b>Apparently (1)</b> 228:23</p> <p><b>appear (2)</b> 30:7;31:24</p> <p><b>appearing (1)</b> 156:19</p> <p><b>appears (2)</b> 136:14;230:5</p> <p><b>application (8)</b> 71:3;72:13,14,19;74:25; 126:20;127:16;211:9</p> <p><b>applications (1)</b> 109:3</p> <p><b>applied (9)</b> 109:9;126:18;127:8; 157:12;199:9,10;209:24; 210:6,23</p>	<p><b>applies (3)</b> 208:20;209:20;231:18</p> <p><b>apply (4)</b> 19:16;154:23;155:17; 210:7</p> <p><b>applying (3)</b> 43:20;126:24;199:22</p> <p><b>apportion (2)</b> 85:9;114:22</p> <p><b>apportioning (1)</b> 101:16</p> <p><b>appreciate (16)</b> 11:2;30:14;31:2,5;32:5,23; 36:4;67:25;73:10;87:7; 160:15;168:13;169:5; 197:23;206:14;232:18</p> <p><b>appreciated (1)</b> 101:4</p> <p><b>apprised (3)</b> 30:12;32:21,22</p> <p><b>approach (6)</b> 18:16;86:17;109:1,12; 190:20;193:20</p> <p><b>approached (1)</b> 194:1</p> <p><b>approaches (1)</b> 108:24</p> <p><b>appropriate (10)</b> 23:4;42:20;98:7;103:9; 104:14;108:21;109:8; 110:20;205:13;232:22</p> <p><b>appropriation (8)</b> 22:5,15;81:9;115:16,18; 208:13;234:25;235:2</p> <p><b>appropriator (2)</b> 81:7;208:11</p> <p><b>Appropriators (4)</b> 12:10,12;17:14;63:13</p> <p><b>approved (1)</b> 102:5</p> <p><b>approximately (16)</b> 42:25;43:3;52:21;53:3; 54:24;55:12,25;57:15;58:1, 2,13;72:23;74:14,20;112:2, 19</p> <p><b>April (23)</b> 7:13,18;40:25;41:9;42:5; 51:24;57:5,8;58:11;76:11; 83:9;94:5;95:22;137:4; 162:12;164:18;184:21; 188:15;206:19,20;207:5,6; 214:9</p> <p><b>Aquifer (17)</b> 50:11,15;53:1;69:9,10; 74:3;75:1,25;90:4,13,15,18, 18,19;93:14;117:2;127:2</p> <p><b>area (19)</b> 20:20;58:22;69:14;74:5; 75:2,2;82:17,18;93:14,19; 103:19;118:11;140:6; 191:21,24;194:10;198:12; 212:8;216:4</p> <p><b>areas (12)</b> 22:19,21,22;23:2;33:25; 38:18,20;69:4,4;197:8; 199:21;202:3</p>	<p><b>argue (2)</b> 210:9;232:9</p> <p><b>argument (1)</b> 21:14</p> <p><b>arguments (1)</b> 21:15</p> <p><b>Army (2)</b> 162:17;167:8</p> <p><b>around (7)</b> 57:22;166:7;175:21; 178:24;192:12;193:25; 210:22</p> <p><b>arranged (1)</b> 10:8</p> <p><b>arrangement (1)</b> 15:3</p> <p><b>As-Applied (16)</b> 16:22;41:7,9;52:1;83:8,9; 86:14;98:20;101:1;107:24; 113:10;150:17;209:11; 214:17,23,24</p> <p><b>as-applieds (1)</b> 137:5</p> <p><b>Aside (3)</b> 80:2;82:7;200:21</p> <p><b>aspect (1)</b> 169:12</p> <p><b>aspects (5)</b> 81:18;94:19,21;175:8; 232:13</p> <p><b>asserting (2)</b> 147:15,20</p> <p><b>assign (1)</b> 70:17</p> <p><b>assigned (4)</b> 23:16;24:20;84:3;183:24</p> <p><b>assignment (2)</b> 56:23;170:5</p> <p><b>assignments (1)</b> 169:17</p> <p><b>assist (3)</b> 57:7;95:25;96:8</p> <p><b>assisted (1)</b> 42:10</p> <p><b>associated (4)</b> 60:24;62:7;128:3,23</p> <p><b>Assume (4)</b> 35:14;117:25;124:2; 158:16</p> <p><b>assuming (4)</b> 31:25;53:1;59:19;229:2</p> <p><b>assumption (1)</b> 202:8</p> <p><b>assurance (1)</b> 130:11</p> <p><b>asterisk (2)</b> 203:21,22</p> <p><b>attached (6)</b> 17:3;107:7;182:25;183:2, 4,7</p>
---	--	--	--

<b>Attachment (2)</b> 7:22;76:4	<b>away (4)</b> 79:9;80:5;105:24;188:23	84:1,14,20;85:9;88:14; 172:20	65:13;182:8
<b>attempt (4)</b> 23:21;24:8;29:24;30:10	<b>B</b>	<b>bear (1)</b> 40:16	<b>Bingham (3)</b> 12:7;13:1;20:11
<b>attempted (2)</b> 23:24;211:23	<b>bachelor's (2)</b> 37:11;120:7	<b>bearing (1)</b> 109:12	<b>bit (12)</b> 17:16;25:9;50:9;60:19; 121:10;154:21;157:17; 170:12;208:17;224:4; 225:18;231:19
<b>attempting (1)</b> 16:25	<b>back (37)</b> 12:19;17:1;29:21;33:15; 41:14;45:13;52:1;54:23; 57:18;58:11;60:19;66:9; 72:25;87:23,25;105:18,18, 21;106:13;113:11;116:18; 117:20;156:18;160:2;169:3; 181:6;185:14;186:9;192:21; 196:12,15;201:17;203:1; 214:25;217:16;220:13; 222:17	<b>became (3)</b> 25:19;171:12;226:14	<b>Blackfoot (20)</b> 43:4;47:9;52:12;55:17; 75:23;77:1;78:6;90:5,10; 92:9,12;101:8;110:21; 113:16,24;163:11,15; 164:22;167:5,14
<b>attend (2)</b> 217:13;218:2	<b>backed (1)</b> 215:17	<b>become (5)</b> 54:1;158:9;168:15,24; 225:13	<b>Blackfoot (20)</b> 43:4;47:9;52:12;55:17; 75:23;77:1;78:6;90:5,10; 92:9,12;101:8;110:21; 113:16,24;163:11,15; 164:22;167:5,14
<b>attendance (2)</b> 54:4,6	<b>background (4)</b> 35:23;37:10;50:9;120:6	<b>becomes (3)</b> 126:24;193:11;207:2	<b>block (1)</b> 76:22
<b>attendees (2)</b> 54:7,13	<b>backwards (1)</b> 179:14	<b>becoming (1)</b> 225:9	<b>blended (1)</b> 143:24
<b>attention (8)</b> 19:11;80:22;81:5;121:5; 122:23;134:4;181:3;202:20	<b>bad (1)</b> 157:2	<b>begin (3)</b> 17:15;116:21;188:4	<b>block (1)</b> 76:22
<b>attorney (8)</b> 11:6,11,12;14:21;34:13; 84:1;88:5;232:22	<b>ballpark (1)</b> 55:15	<b>beginning (1)</b> 33:10	<b>Board (1)</b> 145:15
<b>attorneys (7)</b> 13:14;14:8,21;15:5;84:5; 218:1;223:1	<b>bar (1)</b> 73:5	<b>begins (1)</b> 117:24	<b>Boise (1)</b> 17:18
<b>attributable (1)</b> 77:6	<b>Barlogi (7)</b> 30:25;144:5,15,19;229:2, 12,16	<b>behalf (11)</b> 11:16,23;12:2;13:18; 17:14;19:8;39:24;63:12; 65:19,22;213:11	<b>bolster (2)</b> 232:5,6
<b>audible (1)</b> 216:14	<b>barred (1)</b> 18:3	<b>below (6)</b> 126:25;151:7;163:15,20; 165:15;210:10	<b>Bonneville-Jefferson (2)</b> 12:5;26:11
<b>August (7)</b> 53:11;170:5,17;172:7; 173:10;217:25;227:11	<b>based (27)</b> 18:18;19:1;33:16;34:10; 44:15;52:10;71:21;86:8; 99:21;101:16;104:23; 113:16;132:8;134:21; 143:16;177:24;178:7,19,25; 181:11;182:21;194:6; 200:25;205:7,14;224:8; 227:15	<b>behind (2)</b> 24:2;30:8	<b>bookmark (1)</b> 185:12
<b>authored (1)</b> 173:21	<b>basically (1)</b> 79:5	<b>belabor (2)</b> 40:22;136:19	<b>books (1)</b> 234:23
<b>authorizes (1)</b> 204:6	<b>Baseline (17)</b> 122:1;146:16;151:5,22; 152:12,20;153:7,11,17,20, 22;170:22;171:14;176:1,6; 206:16,23	<b>beneficial (6)</b> 28:12;160:20;204:12,21; 211:19,24	<b>both (4)</b> 48:3;70:3;163:20;231:18
<b>authors (1)</b> 182:14	<b>basin (8)</b> 92:12;138:16;164:19; 167:6,19;168:3,5;211:10	<b>benefit (15)</b> 26:6;78:6,25;79:12;80:6,9; 82:2,5,9;86:2;168:25;231:4, 13,17;234:2	<b>bottom (13)</b> 76:14;78:2;83:13;85:18; 125:11,13;134:5;140:10; 183:9;186:21;203:22; 208:10;215:12
<b>automate (1)</b> 226:1	<b>basins (8)</b> 92:1,12;163:4;164:6; 165:5,23;167:14;210:23	<b>benefits (11)</b> 22:17;79:1,3,22;108:17, 20,22;111:2,3;234:15,21	<b>boundaries (2)</b> 22:25;88:21
<b>automated (1)</b> 226:4	<b>basis (8)</b> 17:6;63:22;98:6;104:17; 130:18;145:17,24;193:12	<b>best (18)</b> 18:18;31:4;69:17,19; 70:21,25;89:8;90:17,91:12; 108:10;166:8;200:15,22; 201:4,4,7,13;217:22	<b>boundary (1)</b> 125:16
<b>availability (1)</b> 31:6	<b>Bates (1)</b> 40:20	<b>better (7)</b> 99:24;187:9,10,12;189:12; 214:8;223:12	<b>Box (11)</b> 171:5,13,16;181:16,23; 188:8,10,11,16,25;189:8
<b>available (12)</b> 18:18;31:3,17;69:17; 70:21;71:15;108:10;127:3; 197:6;226:14;227:2,22	<b>Baxter (6)</b>	<b>beyond (6)</b> 17:9;23:2;71:13;82:18; 98:9;232:1	<b>brand-new (1)</b> 142:6
<b>average (9)</b> 55:20;145:7;150:23;151:4, 6,7,14,15,17		<b>BID (2)</b> 186:19;187:17	<b>breach (1)</b> 205:25
<b>averages (1)</b> 63:4		<b>Big (2)</b> 210:8,14	<b>break (8)</b> 28:15;60:6;87:18,20,22; 196:8,10,12
<b>averaging (1)</b> 100:2		<b>binder (8)</b> 39:15,25;42:3;106:12; 107:2;125:2;135:4;179:6	<b>breakdown (1)</b> 87:3
<b>aware (33)</b> 18:1;24:19;38:16;50:9; 54:1,3,6;68:21;75:20,21,24; 79:18;81:4;89:11;111:8,21; 121:19;128:22;129:3; 141:23,24;159:15;164:17; 167:19,23;172:19,23; 201:18;205:19,23,24;206:1,5		<b>binders (2)</b>	<b>breaking (1)</b> 230:6
<b>awareness (1)</b> 111:11			<b>BRICKER (11)</b> 11:15,15;59:15,17;110:3, 3,4,6,8;113:1;115:21

<p><b>bring (2)</b> 23:9;181:3</p> <p><b>BROMLEY (14)</b> 11:19,19,20;28:13;212:23, 24;213:1,4,6,10,11;216:6; 229:10,11</p> <p><b>brought (3)</b> 34:12;122:22;209:9</p> <p><b>Bryce (1)</b> 11:24</p> <p><b>Budge (84)</b> 7:6;12:9,9;17:12,13,13; 23:18;35:19;36:19;41:4,7; 63:9,11,12;65:10,13,14,15; 66:5,9,10;76:2;80:13;84:8, 12,13;87:14,17;88:8;100:23; 103:5,10,15,18;104:2,9,15, 18,19;105:5;115:25;116:2,8; 119:4;135:4;148:1,2,3,9; 149:8,9;166:19,21,22;169:3; 179:5;180:14,24;182:7; 184:16;185:13,18,19,22; 186:6,7;190:7,9;196:6,9,15, 16;202:19;206:12;207:16; 208:3;211:2,7;212:18,21; 215:12;224:21,23;228:16</p> <p><b>Budge's (1)</b> 103:22</p> <p><b>budget (2)</b> 89:4;99:21</p> <p><b>built (1)</b> 188:22</p> <p><b>bullet (6)</b> 51:6;134:3;203:25;204:2, 12,15</p> <p><b>burden (4)</b> 114:19;115:4,10,13</p> <p><b>burdensome (2)</b> 114:16,25</p> <p><b>Bureau (6)</b> 15:13;120:21;121:2; 162:15;167:7;211:5</p> <p><b>business (1)</b> 10:16</p> <p><b>button (1)</b> 228:5</p>	<p><b>calculating (6)</b> 62:20;99:25;108:22; 154:10,20;199:13</p> <p><b>calculation (19)</b> 42:12;49:3;61:1;83:16; 89:3,20;90:2,92:15;100:24; 101:5,10;129:11;130:8; 131:5,25;134:10;153:4; 176:1,7</p> <p><b>calculations (9)</b> 21:8;38:23;42:14;92:10; 99:12;130:9,14,15,17</p> <p><b>calculator (4)</b> 134:13,18,22;228:15</p> <p><b>calibrate (4)</b> 89:2;90:9;128:14;141:22</p> <p><b>calibrated (2)</b> 46:24;48:3</p> <p><b>calibrating (1)</b> 89:16</p> <p><b>calibration (21)</b> 60:20,22;61:3,4;62:15; 68:9;69:20;89:4,6,7,23,25; 90:11,14,22;91:16;92:2,13, 15;100:6;122:5</p> <p><b>call (47)</b> 10:15,17;13:4,13,21; 38:24;42:13;48:14;53:14; 70:3;73:22;81:21;103:9; 104:14;110:1;116:4;122:24; 134:13;144:15,18,19;145:3, 7;160:11;162:16;166:23; 175:5,6;196:8;197:4;198:17; 202:3;205:22;208:19,20,22; 209:20;210:1,3,5,11,15,22; 211:10;216:25;217:7,16</p> <p><b>called (5)</b> 20:10;21:22;29:21;83:8; 121:16</p> <p><b>calling (1)</b> 160:15</p> <p><b>calls (3)</b> 82:13;211:6;212:4</p> <p><b>cam (1)</b> 51:18</p> <p><b>came (14)</b> 16:9;64:8,11,18;95:22; 96:4;133:2;141:1;177:6; 180:25;192:20;193:19,25; 195:19</p> <p><b>can (91)</b> 10:10;14:9,23;15:4,8,8; 24:2;25:13,22,23,24;27:19; 28:7;30:12;31:4,4;32:4; 33:25;35:11,16;36:13,13; 37:7;40:13;41:22;42:7;46:2, 10;49:1;50:3;51:21;52:15; 55:5;57:3;61:14;62:5;68:6; 73:12;80:25;82:15;85:16; 105:1;107:21;112:15; 114:22,24;120:2;127:1; 134:23;141:10;147:10; 148:22;152:7,25;153:9;</p>	<p>154:2,3,8,8;156:2;157:1; 158:7;160:2,8;165:14,15; 181:19;183:13;186:15; 187:2,16;188:22;190:17; 192:21;194:12;195:7; 196:19;197:3;199:1,10,23; 203:23;209:23;210:9; 216:13;217:2;218:6;222:5; 226:22,25;227:8</p> <p><b>Canal (70)</b> 42:19;43:1,6,13;55:1,10, 24;56:16;57:14;58:12;60:24; 62:7;73:16,17;89:18;99:6; 122:13;128:4,13,23;132:10, 11,15,24;136:17;137:11; 140:9;141:15;144:3,6,20; 145:1,10,18,24;146:4,13,16; 147:14;164:3,6;165:12; 168:22;171:19;178:13; 181:9,11,17,21;183:12; 186:19;187:17,24;189:10; 190:21;192:11;193:19,21; 194:6;201:10;221:7;222:2,8, 23;223:3,7;224:5,10,12; 225:2</p> <p><b>canals (1)</b> 126:14</p> <p><b>Candice (27)</b> 13:7,8,10,10,23;14:9,11, 18;25:4,23;26:6,14;27:4,5, 24;31:12;32:1;39:10,23; 40:5;41:4,16;60:11,18; 216:10;235:7,20</p> <p><b>Canyon (11)</b> 171:6,13,16;181:16,23; 188:8,10,12,16,25;189:8</p> <p><b>capabilities (3)</b> 35:24;71:22,23</p> <p><b>capable (5)</b> 47:7;48:21;71:5,16,18</p> <p><b>captured (2)</b> 168:22,23</p> <p><b>care (1)</b> 100:14</p> <p><b>Carey (1)</b> 79:19</p> <p><b>carryover (16)</b> 17:25;41:25;66:2,19; 116:15;122:11;135:14; 175:21,25;176:3,7,9,13,16; 177:22;184:21</p> <p><b>case (13)</b> 10:15;16:21;17:16;19:12; 20:13,14,15,16;59:5;71:3; 127:10;187:9;232:16</p> <p><b>cases (4)</b> 92:3;107:13;231:20; 233:13</p> <p><b>categories (3)</b> 221:20,23;222:6</p> <p><b>category (2)</b> 10:3;157:8</p> <p><b>cause (5)</b></p>	<p>37:1;106:8;114:17;115:2; 119:20</p> <p><b>caused (1)</b> 79:8</p> <p><b>causing (1)</b> 189:1</p> <p><b>CDL (2)</b> 68:16;139:8</p> <p><b>ceiling (1)</b> 106:2</p> <p><b>centered (1)</b> 175:21</p> <p><b>certain (4)</b> 188:4;206:24;221:11; 233:7</p> <p><b>certainly (8)</b> 18:1;21:1,6,11;75:25; 226:8;232:8;233:24</p> <p><b>cfs (1)</b> 90:25</p> <p><b>chance (2)</b> 19:9;228:21</p> <p><b>change (35)</b> 10:12;18:13,19,19;19:1, 25;21:1;25:13;29:13;44:17, 20;45:15,22;47:20;64:14,15; 71:2,20,22,24;95:21;115:13; 152:14,19,19,22;153:5,12, 13;188:21;189:13;202:21; 206:16;207:8;232:11</p> <p><b>changed (8)</b> 19:17;47:16;134:18; 152:24;153:22;175:8; 178:17;189:10</p> <p><b>changes (10)</b> 18:19,23;20:25;153:14,25; 154:7,11,18;211:20;212:1</p> <p><b>changing (3)</b> 44:12;45:10;153:20</p> <p><b>channels (1)</b> 99:19</p> <p><b>characterization (2)</b> 103:25;129:2</p> <p><b>characterize (6)</b> 10:2;33:15;34:18;102:17; 127:6;234:8</p> <p><b>characterizing (1)</b> 146:25</p> <p><b>chart (1)</b> 73:5</p> <p><b>check (1)</b> 14:7</p> <p><b>check-in (2)</b> 170:2,13</p> <p><b>checking (1)</b> 31:19</p> <p><b>chief (2)</b> 120:22;121:2</p> <p><b>choice (1)</b> 14:24</p> <p><b>choosing (1)</b> 151:22</p> <p><b>Chris (3)</b></p>
<p style="text-align: center;"><b>C</b></p> <p><b>calculate (21)</b> 60:25;61:25;69:10,12; 70:16;84:2;90:2;92:6; 129:17;130:24;131:12; 132:2;153:5;154:17;166:3; 167:10;178:2;193:3;199:18; 202:17;222:5</p> <p><b>calculated (14)</b> 51:23;52:9;57:9,10;61:16; 72:8;83:21;92:16;101:9; 113:13;145:6;177:25;187:4; 193:7</p> <p><b>calculates (1)</b> 92:20</p>			

<p>11:19;14:15;213:11 <b>Christmas (1)</b> 174:12 <b>circle (2)</b> 33:15;222:16 <b>circumstance (1)</b> 172:4 <b>circumstances (2)</b> 18:19;20:1 <b>citations (1)</b> 234:12 <b>cited (3)</b> 20:13;231:22;232:3 <b>cites (1)</b> 197:4 <b>Cities (14)</b> 11:20,20;12:2;25:20; 26:11,23,23;28:1,4;39:24; 65:23;131:3;213:12;217:19 <b>Cities' (1)</b> 39:14 <b>City (12)</b> 11:16,18,23;12:3;19:8; 30:21;60:16;65:23;88:6; 124:21;147:13;161:19 <b>civil (1)</b> 37:13 <b>claim (1)</b> 18:14 <b>claims (3)</b> 147:14;204:13,21 <b>Clarification (4)</b> 36:17;73:9;197:23;216:10 <b>clarified (1)</b> 36:15 <b>clarify (10)</b> 28:21;32:7;59:15;70:9; 73:4;104:5;178:22;192:25; 218:9,21 <b>classification (1)</b> 24:18 <b>classifications (2)</b> 69:1;194:23 <b>classify (2)</b> 88:21;141:13 <b>Clear (21)</b> 20:13;142:2;143:18,19,21, 22;154:22;155:4,15,16,17; 156:2,23;157:5,9,11;173:12; 199:2,23;200:3,18 <b>clearly (1)</b> 111:5 <b>clients (1)</b> 102:12 <b>close (1)</b> 167:23 <b>closely (2)</b> 33:9;171:21 <b>closer (1)</b> 187:8 <b>closest (2)</b> 79:7;210:8 <b>cloud (1)</b></p>	<p>227:15 <b>Clouds (2)</b> 227:16,17 <b>Coalition (77)</b> 10:15;11:20;26:13,21,23; 33:11,19;34:22;39:14,24; 49:3,11;53:7,13;65:23;66:3, 20;78:12,25;79:22;80:6; 82:3,10;85:23;86:20,23; 96:16;98:12;102:11;106:12; 110:16;114:12;115:20; 116:18,21;117:1,11;118:4,8, 9,9,17;125:16;133:22; 137:22;138:2,14,21;140:8; 149:6;159:16;165:7;168:16; 178:7;181:14;198:23;202:2, 9,16;203:4,15;205:21;206:6; 211:25;213:11,24;214:1,8; 216:21,25;217:16,19; 219:16;220:8;228:22; 230:15;233:7 <b>Coalitions (1)</b> 17:21 <b>Coalition's (3)</b> 38:24;140:11;205:21 <b>Colleen (7)</b> 10:19,22,25;41:15;88:1; 105:17,22 <b>College (1)</b> 120:8 <b>Collin (2)</b> 144:15,16 <b>Colorado (1)</b> 106:22 <b>column (26)</b> 76:11,13,14,15,24;77:3,4, 6;78:1;85:14,25;86:1,2; 134:8;138:5,9,10,11,18; 139:2,5,7;140:2,16,22,22 <b>columns (3)</b> 76:13,23;77:8 <b>COLVIN (14)</b> 12:15,15;106:3,5,6,10,19, 20;109:22;110:9;116:3; 119:7,10;230:17 <b>C-o-l-v-i-n (1)</b> 106:20 <b>combination (1)</b> 70:24 <b>combined (1)</b> 149:16 <b>Coming (6)</b> 54:23;61:10;90:4;168:9; 180:19;230:5 <b>command (2)</b> 81:7;208:11 <b>comment (4)</b> 32:6;33:22;104:16;148:1 <b>Comments (15)</b> 65:19,22;176:11;179:9,15, 19,25;180:1,6;182:25;183:1; 189:24;220:7,10;230:15 <b>Commissioners (1)</b></p>	<p>145:15 <b>Committee (3)</b> 107:16;117:5,14 <b>commodity (1)</b> 20:20 <b>common (25)</b> 24:6,23;25:3,17,19,23; 26:5,7,10,12,17;27:2;28:8, 17;40:8;58:22;65:13;68:16; 74:6;75:3;93:14,19;135:5; 179:6;198:12 <b>communicate (1)</b> 181:2 <b>communicated (1)</b> 64:23 <b>communication (1)</b> 229:5 <b>companies (5)</b> 171:18;189:6;199:21; 216:2;221:7 <b>Company (55)</b> 42:19;43:1,13;55:1,11,24; 56:16;57:14;58:13;60:24; 62:7;73:16,17;89:18;99:6; 128:4,13,23;132:10,11,15, 25;136:17;137:11;140:10; 141:15;144:3,6,21;145:1,10, 16,25;146:4,13,16;147:14; 164:3;165:12;168:22; 171:19;181:9,17;183:12; 186:20;187:18;192:11; 193:21;194:6;201:10;222:2, 8;224:10,12;225:2 <b>Company's (9)</b> 43:6;122:13;145:18; 164:6;181:21;222:23;223:3, 7;224:5 <b>comparative (1)</b> 22:4 <b>comparatively (1)</b> 197:25 <b>compare (1)</b> 130:12 <b>compared (5)</b> 82:2,5;115:5;130:13; 156:14 <b>compares (2)</b> 74:23;82:8 <b>comparing (3)</b> 55:6;181:12;234:3 <b>comparison (7)</b> 22:13;51:23;52:9;72:7,12; 97:14;113:12 <b>compelling (1)</b> 18:25 <b>compile (1)</b> 60:23 <b>compiled (2)</b> 26:3;217:5 <b>compiling (1)</b> 61:9 <b>complete (3)</b> 49:23;175:3,5</p>	<p><b>completed (5)</b> 97:14;174:20;177:23; 195:9,14 <b>completely (2)</b> 21:12;49:23 <b>compliance (1)</b> 211:5 <b>complicated (1)</b> 199:7 <b>comply (1)</b> 172:13 <b>complying (3)</b> 81:3;172:21;209:4 <b>component (6)</b> 18:4;21:24;69:21;108:18; 118:25;126:8 <b>components (12)</b> 18:14,15,24;19:1;22:9; 62:1;90:16;91:3;170:19; 176:25;188:4,5 <b>composed (1)</b> 129:16 <b>compound (1)</b> 112:25 <b>compounds (1)</b> 21:5 <b>comprehensively (1)</b> 17:4 <b>compress (2)</b> 30:6;32:20 <b>compromise (1)</b> 234:25 <b>compromises (1)</b> 33:20 <b>concept (8)</b> 82:12,21;125:19;152:12; 153:11;208:16;212:3,7 <b>concepts (2)</b> 209:8,17 <b>concern (5)</b> 172:13;184:4;187:25; 188:2,23 <b>concerned (6)</b> 33:25;86:25;171:12; 184:10,12;224:13 <b>concerning (3)</b> 174:1;205:25;206:3 <b>concerns (8)</b> 39:2;40:14;122:19;182:2; 183:25;184:6,8;187:23 <b>conclude (1)</b> 151:13 <b>conclusion (4)</b> 56:10,11,12;98:1 <b>conclusions (7)</b> 97:5,7,12;98:5;108:4; 231:11,11 <b>conclusory (1)</b> 232:23 <b>condition (1)</b> 191:20 <b>conditions (10)</b> 19:14,17;50:21;147:1;</p>
--	--	---	---

<p>152:13,18;153:12;156:14; 191:25;198:21 <b>conduct (1)</b> 177:1 <b>conducted (2)</b> 176:16;211:18 <b>conference (3)</b> 54:12;172:8;217:23 <b>confidence (1)</b> 224:16 <b>confirm (1)</b> 62:6 <b>confused (4)</b> 40:10;99:16;154:22; 173:10 <b>confusing (2)</b> 25:15;215:23 <b>confusion (2)</b> 23:14;135:22 <b>conjunction (1)</b> 69:11 <b>Conjunctive (5)</b> 80:15,19;207:17,20;209:7 <b>connect (1)</b> 74:15 <b>connection (7)</b> 66:24;75:9,11;180:11; 209:9,10;212:9 <b>consider (15)</b> 18:23;21:7;101:20;102:3; 146:17;155:3;156:24;157:4; 167:9;189:11;197:3;209:6; 220:10;234:5,14 <b>consideration (4)</b> 98:25;142:12;147:21; 233:25 <b>considered (6)</b> 22:2;156:3,18;165:21; 180:11;210:2 <b>consist (1)</b> 175:19 <b>consistency (1)</b> 195:23 <b>consistent (2)</b> 78:15,18 <b>consists (3)</b> 67:12;68:6;194:12 <b>consolidate (1)</b> 23:21 <b>consolidation (1)</b> 23:24 <b>constant (2)</b> 187:19;193:17 <b>consultant (1)</b> 118:8 <b>consultants (9)</b> 131:2;174:20;182:19,25; 214:6;219:5,7;220:8,11 <b>consulted (1)</b> 119:1 <b>consuming (1)</b> 69:6 <b>contain (1)</b></p>	<p>132:16 <b>contained (2)</b> 36:16;126:6 <b>contemplated (1)</b> 20:25 <b>contesting (1)</b> 34:8 <b>context (5)</b> 17:25;77:20;103:21; 197:3;211:13 <b>continue (3)</b> 60:7;85:16;175:13 <b>Continued (3)</b> 7:1;170:4;177:1 <b>continues (2)</b> 31:24;189:17 <b>continuing (1)</b> 51:14 <b>continuous (3)</b> 25:1;52:19;170:8 <b>continuously (1)</b> 55:21 <b>CONTOR (2)</b> 11:24,24 <b>contract (4)</b> 145:14;146:11;147:4; 148:11 <b>contractor (1)</b> 120:19 <b>con-transient (1)</b> 232:12 <b>contrary (2)</b> 81:9;208:13 <b>contribute (3)</b> 21:25;145:1;174:5 <b>contributing (3)</b> 62:23;188:25;189:4 <b>contribution (3)</b> 91:13;99:5;145:6 <b>control (2)</b> 32:4;130:10 <b>controlling (1)</b> 73:15 <b>convene (2)</b> 105:18;170:18 <b>convening (1)</b> 53:12 <b>conversation (2)</b> 131:18;144:5 <b>conversations (3)</b> 176:23;212:16,17 <b>conveyed (1)</b> 126:13 <b>convincing (20)</b> 142:2;143:18,19,21,23; 154:22;155:4,15,16,18; 156:2,6,23;157:6,9,11;199:2, 23;200:3,18 <b>coordinating (1)</b> 31:2 <b>copied (1)</b> 28:16 <b>copy (4)</b></p>	<p>17:3;28:12;80:14;185:3 <b>Corps (2)</b> 162:17;167:8 <b>corrected (1)</b> 144:12 <b>correctly (3)</b> 42:17;92:2;166:2 <b>correspondence (1)</b> 172:20 <b>counsel (3)</b> 35:20,21;218:1 <b>count (1)</b> 139:24 <b>counted (1)</b> 194:14 <b>county (2)</b> 31:10;210:9 <b>couple (16)</b> 16:9;43:25;45:7;60:10; 94:4;96:24;103:6;211:8; 213:12;216:10;219:22; 222:19;224:17,24;226:13; 230:2 <b>court (19)</b> 10:18,22;11:3;15:8;18:20; 19:3,12;20:22;21:12;22:12, 13;45:18,21;148:5;183:17; 197:4;232:13;234:14,19 <b>courtesy (3)</b> 87:4;101:14;235:14 <b>courts (1)</b> 234:24 <b>courts' (1)</b> 234:4 <b>cover (2)</b> 33:25;227:15 <b>covered (1)</b> 109:10 <b>Crapo (1)</b> 11:23 <b>create (4)</b> 141:12;164:15;225:20,24 <b>created (17)</b> 46:9;63:23;70:7;138:11, 14,15,23,25;142:21,24; 155:25;200:24;220:15,19, 21;223:23;226:7 <b>creating (4)</b> 19:21;42:8;225:22;228:6 <b>Creek (8)</b> 92:7,11;100:11,13,16; 163:7,18;165:1 <b>Cresto (4)</b> 166:8,10;182:11;188:14 <b>criteria (2)</b> 153:18;171:15 <b>critical (1)</b> 87:8 <b>crop (31)</b> 122:2;125:15,17;129:14, 16;130:4;131:10;151:8,23; 152:23,23;153:2,3,3,6,13,15, 24;154:1,7,7,17,17,23;155:1;</p>	<p>193:3,6,6,7,10,16 <b>crops (3)</b> 160:20;191:22,24 <b>Cross-Examination (21)</b> 7:3,4;35:6;39:21;60:13; 63:10;88:3;95:11;96:20; 109:24;110:1,7;115:24; 116:1;124:18;150:2;161:16; 166:20;213:9;216:16;219:19 <b>cross-reference (1)</b> 28:11 <b>crowd (1)</b> 23:12 <b>cumulative (1)</b> 114:20 <b>curiosity (1)</b> 167:2 <b>curious (1)</b> 150:22 <b>current (16)</b> 46:8,11,16;47:3,12,14; 112:22,23;113:3,4,22; 156:14;191:20,25;223:19; 225:3 <b>currently (6)</b> 37:18,24;68:9;113:23; 120:13;185:22 <b>curtail (4)</b> 56:17;58:16;78:5;114:16 <b>curtailed (20)</b> 42:24;55:3,12,14,15; 57:19;58:1,10;72:13,20; 74:12,24;101:22;110:14; 112:24;113:4;115:1;207:10, 14;234:17 <b>curtailing (5)</b> 21:3;58:21;86:11;108:12, 22 <b>curtailment (71)</b> 21:23;22:18;38:23;42:12, 14,20;43:11;44:13;48:13; 49:4;51:24;52:10,18,19; 55:21,25;57:9;58:8;72:15; 73:2,21;74:1,2,11,18;75:6; 76:5;77:2,7,16,17;78:3,10, 22;79:19;80:4;82:2,5,5,9; 85:20;86:2,21,23;93:7,17,20, 25;97:22;98:16;101:20,21; 102:5;108:15,17,19;109:12; 110:22;111:1,5;112:21; 113:2,14;114:14,19;115:5,8, 14;205:4;207:9;233:23 <b>curtailments (2)</b> 98:11;207:3 <b>cut (1)</b> 22:16 <b>CV (2)</b> 107:7,9</p>
<b>D</b>			
<p><b>daily (1)</b> 145:8</p>			

<b>Dakota (1)</b> 37:13	<b>de (2)</b> 82:19;103:20	189:18	119:16;120:14,17,20;
<b>Darlington (1)</b> 210:10	<b>deal (1)</b> 211:5	<b>degrading (2)</b> 224:14,15	121:19;124:11;128:1,3,17;
<b>data (51)</b> 18:23;19:2;21:6;38:7; 56:24;62:19;63:3;64:14; 67:11;68:13,14,16,21;69:11, 12;72:17;76:10;77:5;82:6; 85:5;89:4;90:12,17,18; 91:23;98:4;121:14;122:24; 127:25;128:3,14,17;130:16; 141:12;145:4;155:3,5; 156:22;157:3,10;164:15; 171:2;198:22,25;199:1,2; 200:22;218:21;221:17; 227:24;228:13	<b>dealing (1)</b> 233:13	<b>degree (2)</b> 37:11;225:6	130:5,23;131:5,18;132:9; 148:6;155:19;156:11; 157:23;160:23;161:3,22; 162:10;164:10;165:5; 169:12;172:4,9,25;173:4,4; 175:13;176:19;180:7,10; 182:1;183:10,14;184:8; 187:22;188:3;189:14;191:4; 193:20;194:1,15;197:6,13, 16;198:20;199:12;200:7; 205:6;209:19;210:18; 211:18,23;212:12;215:17; 220:10,14;223:2,6;228:8; 231:24;232:7,8,10;233:3,24; 234:3,14,20
<b>database (7)</b> 197:13,16,19;198:8,10,18; 199:13	<b>deals (1)</b> 196:22	<b>delay (2)</b> 31:14;202:23	<b>Department's (9)</b> 33:5;54:17;67:12;86:25; 132:23;142:20;146:5; 187:24;197:9
<b>dataset (90)</b> 68:3,6,23;69:9,13,17,19; 70:7,8,9,11,14,21,25;139:6, 16;140:4,5,13,18,20,21; 141:7,10,18,22;142:1,7,11, 18,22;143:1,4,9,14;155:21; 156:1,3,8;178:23;192:6,7,20; 193:18,24;194:19,23;195:5, 8,13,16,23;196:4;200:9,11, 17,17,23,24;201:2,3,4,4,12, 14;220:14;221:18,19;222:2, 4,9,24;223:3,11,14,25;224:2; 225:20,22;226:7,10,19,21; 227:2,4,16,25;228:6,6,10	<b>decade (3)</b> 79:9;86:6;114:21	<b>delineate (6)</b> 68:10,11;69:7;84:16; 88:21;226:22	<b>depending (3)</b> 22:23;127:3;229:6
<b>datasets (9)</b> 68:8;88:9,19;89:1;192:6; 201:9;218:13,21;223:16	<b>December (17)</b> 42:19,24;66:4;85:21; 130:20;137:24;157:22; 174:9,14;175:4,13,15;177:2, 7,12;203:6,10	<b>delineates (1)</b> 88:12	<b>depends (1)</b> 168:25
<b>date (25)</b> 42:12,14,20;43:12;44:13; 49:8;52:19,20;57:9;58:11; 73:13,15,18,24;74:1,11; 77:14;115:17,18;131:13; 138:18;174:10;177:3,18; 205:2	<b>decide (1)</b> 87:2	<b>delineation (3)</b> 88:11,12;103:19	<b>depleting (1)</b> 113:24
<b>dated (5)</b> 145:16;174:9;184:22; 203:6;217:16	<b>decided (2)</b> 128:20;147:18	<b>delineations (1)</b> 88:20	<b>deposit (1)</b> 14:23
<b>dates (12)</b> 38:23;49:3;51:23;52:9; 71:14,15;72:7;77:16,18; 93:17,20;113:12	<b>deciding (1)</b> 56:14	<b>deliver (1)</b> 127:18	<b>deposition (8)</b> 45:6,9;68:2;69:22;132:5, 15,22;141:25
<b>Dave (5)</b> 12:15;106:17,19;230:17, 18	<b>decimal (1)</b> 187:10	<b>delivered (3)</b> 147:2;168:23;210:2	<b>depth (1)</b> 19:10
<b>D-a-v-e (1)</b> 106:19	<b>decision (18)</b> 17:4;44:14,25;45:1,4,14; 53:23;64:7,10;71:20,25; 95:16;111:18;176:24;197:4; 227:14;232:10;233:4	<b>deliveries (3)</b> 145:24;146:13;199:17	<b>deputy (1)</b> 34:13
<b>DAVID (4)</b> 106:6,20,20;116:4	<b>decisions (4)</b> 22:3,12;111:20;234:13	<b>delivery (19)</b> 10:15;38:24;42:13;48:14; 53:14;73:22;82:13;103:9; 104:14;109:10;145:23; 147:15;197:3;198:17; 199:16;205:21;212:4; 216:25;217:16	<b>derived (1)</b> 141:17
<b>day (3)</b> 17:17;188:23;235:15	<b>decline (1)</b> 184:13	<b>Delorey (3)</b> 31:16,19;32:9	<b>describe (6)</b> 69:24;107:4,9,21;108:3; 179:24
<b>days (6)</b> 16:9;29:22,25;30:7;31:3; 124:22	<b>declined (1)</b> 187:19	<b>delving (1)</b> 234:22	<b>described (5)</b> 43:15;62:8;81:10;109:6; 208:14
	<b>decree (2)</b> 147:2,22	<b>Demand (33)</b> 41:25;51:24;66:2,19; 69:12;70:15;72:21;74:17; 76:12,19;79:13;86:3,8,13,14, 18;109:7;115:19;116:15; 129:15;133:22;134:10; 135:14;137:21;184:21; 192:23;193:12,13,15; 202:15;203:4;206:18;207:1	<b>describes (1)</b> 145:23
	<b>decrees (1)</b> 148:10	<b>demonstrate (1)</b> 35:24	<b>describing (1)</b> 62:21
	<b>dedicate (1)</b> 223:18	<b>demonstrated (1)</b> 111:6	<b>DESCRIPTION (1)</b> 7:9
	<b>deduct (3)</b> 100:12,15,19	<b>denominator (1)</b> 130:2	<b>descriptions (2)</b> 41:2,2
	<b>deducting (1)</b> 61:19	<b>Denver (1)</b> 106:22	<b>descriptive (1)</b> 147:7
	<b>deem (1)</b> 21:12	<b>deny (2)</b> 19:4,4	<b>designated (3)</b> 26:4;36:9;161:22
	<b>deep (2)</b> 126:20,23	<b>denying (1)</b> 16:3	<b>designation (1)</b> 82:17
	<b>deeply (1)</b> 99:19	<b>Department (115)</b> 11:5,7;12:21,23;17:10; 18:7;21:2,7,11;33:8,12,14; 34:11,16,20;35:7;37:19,22; 38:13;39:5;43:19;44:3,4,23; 45:24;63:16,24;65:24;66:23; 77:12;81:16,22;87:1;92:24; 94:22;101:14;105:3;110:13; 111:8,13;117:17;118:5,21;	<b>designations (1)</b> 68:15
	<b>deficiencies (1)</b> 130:7		<b>designed (1)</b> 221:1
	<b>defined (1)</b> 160:18		<b>desire (1)</b>
	<b>Definitely (1)</b> 169:19		
	<b>degradation (3)</b> 181:8;184:13;189:1		
	<b>degrade (1)</b>		

16:10 <b>detail (1)</b> 108:8 <b>deterioration (1)</b> 171:22 <b>determine (7)</b> 55:5;90:25;110:13,20; 153:14;197:7;233:15 <b>determined (3)</b> 42:18,19;99:22 <b>Determining (11)</b> 41:24;43:11;66:1,18; 116:14;133:21;135:13; 137:20;184:20;203:3;234:15 <b>detour (1)</b> 186:8 <b>develop (1)</b> 77:8 <b>developed (8)</b> 11:1;68:9;69:4;166:7; 171:3;188:13,14,17 <b>developing (5)</b> 38:10;56:23;121:13; 180:11;228:1 <b>development (11)</b> 21:25;22:10;67:13;78:21; 81:17,23;105:8;227:23; 231:13,15,15 <b>deviation (2)</b> 166:1,4 <b>dialogue (1)</b> 15:4 <b>difference (14)</b> 44:3,9;48:5,10;55:2;98:14; 140:10;143:8,10;154:12; 160:22,24,25;204:11 <b>differences (1)</b> 111:9 <b>different (25)</b> 47:18;55:6;72:15;75:22, 24,25;114:13;127:14,22; 131:12;135:18;139:8; 141:12;155:14;175:8;183:1; 190:20;192:5,9;201:9; 216:19;218:1;219:5;220:19; 228:3 <b>differently (2)</b> 10:3;132:2 <b>difficult (2)</b> 105:23;227:16 <b>digitized (2)</b> 88:24;142:21 <b>digitizing (1)</b> 143:16 <b>DIRECT (6)</b> 37:5;70:13;106:15; 109:10;119:23;152:25 <b>directed (3)</b> 45:22;64:20;65:5 <b>direction (5)</b> 45:18,18;64:18,22;169:19 <b>directions (1)</b> 169:15	<b>directly (6)</b> 118:23;120:20;121:3; 129:18;165:19;169:21 <b>Director (97)</b> 11:4;14:9;15:24;16:17; 17:13;19:4,7;20:9,21,22; 21:16;24:1,16,19;26:18; 28:19;30:19;32:14;33:4,22; 35:19;36:8;38:17;39:10; 40:4;42:18;44:19;53:11; 54:24;57:7,13;63:22;64:2,8, 11,13,19,24;66:5;72:1; 78:22;79:17;80:4,8;82:25; 88:14;95:9;96:18;103:1; 104:15,22;105:1;106:11; 123:25;136:13;137:8;146:2; 147:8;148:3;153:23;158:12; 159:9;162:10;169:16,19; 170:9,17;172:8;174:2,4,5; 181:2;182:11,23;183:10; 185:13;191:8,12;197:3; 206:8;209:6,16;210:21; 211:7;213:7;216:9;217:8,12, 22;229:4;230:25;231:3; 233:9,17;234:20;235:7,14 <b>Director's (11)</b> 16:21;19:11;45:1;56:12; 59:5;71:20;104:19,24;170:5; 205:18;233:10 <b>disadvantage (1)</b> 25:10 <b>discharge (9)</b> 53:2;61:24,24;62:4;69:11; 90:13;129:15;160:12,12 <b>discharges (2)</b> 61:6;90:20 <b>disclosed (2)</b> 24:9;125:9 <b>disclosure (1)</b> 24:25 <b>disclosures (3)</b> 24:3,5,11 <b>discretion (3)</b> 20:21,22;234:4 <b>discretization (1)</b> 47:20 <b>discuss (4)</b> 39:3;81:18;122:20;214:6 <b>discussed (9)</b> 56:7,8;68:2;69:22;79:15; 95:2;131:23;178:21;185:15 <b>discussing (4)</b> 82:23;100:8;117:9;185:24 <b>discussion (16)</b> 29:14,20,22;79:10,11; 130:22;165:4,25;172:24; 173:3,14;175:11;181:6; 205:6;209:13;231:5 <b>discussions (13)</b> 15:10;56:5;75:15;77:22; 81:15,22;94:21;158:15; 165:8;176:20;205:9;206:2; 214:12	<b>dismissed (1)</b> 228:25 <b>disparity (1)</b> 81:13 <b>dispute (1)</b> 205:24 <b>disregard (1)</b> 200:4 <b>distant (1)</b> 10:5 <b>distinguishing (1)</b> 70:22 <b>distribute (1)</b> 16:5 <b>distributed (1)</b> 28:16 <b>distribution (2)</b> 208:21;210:5 <b>District (37)</b> 11:11,13,14,25;12:6,8,14; 13:2;57:12;75:6,7,17,23; 77:7,22;78:3,5,11,17;79:19, 20,21,21;80:1,3;84:3;85:17; 91:17,24;96:23;101:8,11; 129:21,22;197:4;211:14; 214:13 <b>districts (11)</b> 12:18;77:2;79:24;83:20, 22;84:25;85:11;86:18,21; 101:15;221:8 <b>District's (1)</b> 93:12 <b>diversion (10)</b> 91:23;129:15,16;150:23; 151:4,14;154:8;160:19; 164:7;198:21 <b>diversions (21)</b> 20:23;70:18;91:7;122:14; 129:18,25;151:8,23;160:11, 12,13,15,16,23;161:1,4; 197:17,18,20,21;198:17 <b>divert (2)</b> 151:15,16 <b>diverted (5)</b> 43:9;125:17;126:12; 161:2;181:13 <b>divide (1)</b> 193:10 <b>divided (1)</b> 129:14 <b>dividing (1)</b> 100:24 <b>doctrine (11)</b> 19:13;22:15;81:21;208:19, 23;209:20;210:5;211:10; 233:16;234:25;235:2 <b>document (37)</b> 18:21;25:22;38:5;41:22; 51:11;65:16;66:21,23;67:4, 5;76:3,8;83:10;109:18,19; 116:11;121:8,10;148:6,11, 15;149:20;157:23;173:20, 25;175:4;182:13,16;185:1,	17;186:2,3;190:14;215:2; 220:5;230:21,22 <b>documents (13)</b> 24:21;25:2;33:5;39:19; 40:16;59:9,13;147:11; 179:22;180:17,21,25;181:4 <b>Doherty (1)</b> 10:22 <b>domestic (1)</b> 197:24 <b>done (25)</b> 34:23;65:1;75:11;77:9,10, 13,15,19;88:12;104:21; 116:25;130:6;144:2;156:11; 166:6;175:10;189:18;191:4; 192:8;196:4;206:13;223:20; 227:13,18;228:4 <b>dots (1)</b> 74:15 <b>double (1)</b> 194:14 <b>doubt (1)</b> 54:5 <b>down (12)</b> 117:23;126:25;130:1; 132:1;166:4;191:18;193:14, 15;203:21;207:23;209:1; 210:10 <b>downstream (1)</b> 91:6 <b>downward (3)</b> 157:9;184:13;224:13 <b>draconian (2)</b> 27:20;32:5 <b>draft (10)</b> 42:16;67:5;96:1,8;158:19, 21,23,24;159:4,8 <b>drafted (1)</b> 144:23 <b>drafting (3)</b> 67:3;175:7;176:12 <b>drafts (3)</b> 158:16;159:13;176:22 <b>drainage (5)</b> 163:8,10,11,21;164:22 <b>draw (4)</b> 19:11;80:22;81:5;134:4 <b>DS (1)</b> 113:13 <b>due (6)</b> 108:12,16;114:20;172:13, 21;182:2 <b>duly (3)</b> 36:25;106:7;119:19 <b>dump (1)</b> 122:24 <b>Dunn (2)</b> 11:16,18 <b>duplicate (2)</b> 63:14;169:6 <b>during (19)</b> 45:19;55:24;56:13,17; 62:9;68:2;69:22;78:13,20;
---	---	---	--



<p>90:11;131:17;132:4,14,22; 138:15;141:25;164:11; 176:4;197:9 <b>duties (1)</b> 121:1 <b>duty (1)</b> 31:9 <b>Dylan (2)</b> 12:7;20:8</p>	<p>36:5;39:13;122:9;125:8, 14,19;126:6;129:13;130:1,2, 23;131:1,4,11,22,24;154:9, 13;193:11 <b>efficient (2)</b> 34:1,7 <b>effort (3)</b> 69:6;197:10;223:23 <b>efforts (3)</b> 31:5;32:24;62:16 <b>eight (1)</b> 143:10 <b>either (21)</b> 13:24;14:24;15:17;34:20; 35:14,16;46:21;68:11;70:17; 88:22;90:20;92:11;121:3; 127:8,10,21;137:4;140:7; 151:24;168:13;169:21 <b>electronic (1)</b> 13:22 <b>electronically (1)</b> 10:9 <b>elements (3)</b> 147:12,19,20 <b>Elesheva (3)</b> 23:25;25:4;28:18 <b>Elisheva (1)</b> 12:11 <b>else (8)</b> 13:25;32:22;36:21;89:9; 167:15;193:17;199:3;235:6 <b>elsewhere (2)</b> 112:9;161:7 <b>email (6)</b> 84:14,19,24;177:3,11,20 <b>emailed (1)</b> 217:25 <b>emergency (1)</b> 172:3 <b>employ (1)</b> 103:23 <b>employed (2)</b> 37:18;120:13 <b>employee (1)</b> 119:15 <b>employees (1)</b> 218:9 <b>enable (1)</b> 227:23 <b>encourage (1)</b> 36:5 <b>end (8)</b> 46:21;91:5,6;127:17,19; 152:10;177:23;207:9 <b>ended (1)</b> 159:21 <b>engaged (1)</b> 60:5 <b>engineer (2)</b> 37:15,24 <b>engineering (1)</b> 37:13 <b>Engineers (6)</b></p>	<p>12:2;162:17;167:8; 179:15;180:1;192:8 <b>enlargement (11)</b> 204:15,21,23;205:1,10; 215:13,14,18,21,22;216:1 <b>enough (8)</b> 10:25;34:25;50:3;51:20; 128:20;169:3;205:17;235:12 <b>ensure (4)</b> 30:10;123:18;151:8,23 <b>entered (1)</b> 147:17 <b>entire (3)</b> 29:10;100:15;161:1 <b>entirely (1)</b> 70:10 <b>entirety (3)</b> 14:2;81:7;208:11 <b>entities (5)</b> 197:8;198:23;201:19,25; 202:16 <b>entitled (2)</b> 81:7;208:11 <b>entity (5)</b> 125:17;160:19,21;181:14; 202:9 <b>entity's (1)</b> 125:16 <b>Environmental (2)</b> 11:25;37:11 <b>Ep (1)</b> 129:13 <b>equal (1)</b> 129:14 <b>equation (16)</b> 126:4,5;129:10;131:21; 171:17,23;181:8,20;186:20; 187:6,13,23;193:4;224:6,9; 225:1 <b>equivalency (2)</b> 164:10,17 <b>equivalent (1)</b> 168:2 <b>Erickson (1)</b> 19:12 <b>error (2)</b> 111:6,17 <b>errors (1)</b> 131:25 <b>ESPA (17)</b> 12:2;38:22;42:11;51:1; 57:10;61:5,23,24;62:4;68:3; 108:11;109:2;112:11,17; 114:21;198:12;211:20 <b>ESPAM (18)</b> 45:25;46:2,4,6,8,11;47:21, 21,25;70:12,14;71:15,17; 89:2;99:20;108:9,15;110:13 <b>ESPAM2 (1)</b> 46:16 <b>ESPAM2.1 (5)</b> 46:17,20,23;48:1,19 <b>ESPAM2.2 (5)</b></p>	<p>46:14;47:3,22;48:1;108:21 <b>especially (1)</b> 153:16 <b>essentially (7)</b> 49:19;78:11;114:22; 175:3;177:23;198:4;234:19 <b>established (1)</b> 186:23 <b>estimate (6)</b> 70:5,19;91:13;112:21; 113:2;217:22 <b>estimated (1)</b> 99:13 <b>estimates (2)</b> 99:4;221:4 <b>estimating (2)</b> 99:20;226:15 <b>estimations (1)</b> 99:12 <b>estoppel (1)</b> 19:23 <b>et (17)</b> 11:11,20;12:14;68:19; 69:11;70:16;96:23;129:16; 151:7;193:4,5,16;199:13,16; 219:22;226:24,24 <b>Ethan (3)</b> 92:22;137:23;203:5 <b>evaluate (8)</b> 83:4;108:1;118:10;153:6, 13;191:5;197:11;210:14 <b>evaluated (5)</b> 62:14;114:19;115:4; 144:25;189:14 <b>evaluating (3)</b> 108:11;153:15;183:11 <b>evaluation (6)</b> 63:1;117:2;130:6;184:19; 212:13;227:24 <b>evaluations (1)</b> 146:15 <b>evaporation (2)</b> 122:6;126:16 <b>evapotranspiration (1)</b> 122:4 <b>even (9)</b> 21:4;48:19;54:5;79:8; 87:8;121:13;132:1;157:20, 21 <b>events (1)</b> 19:20 <b>everybody (9)</b> 10:10;15:4;30:3,16;32:21; 35:13;177:10,14;216:13 <b>everybody's (2)</b> 31:5;32:23 <b>everyone (8)</b> 10:1,17;13:25;14:8,12; 28:10;232:17;236:5 <b>evidence (23)</b> 18:8;51:12,13;59:14,25; 109:20,21;148:13,17,19,21; 149:10,21,22;156:22;180:22,</p>
<b>E</b>			
<p><b>earlier (15)</b> 17:24;32:2;97:19;132:23; 161:21;178:21;187:22; 188:13;189:23;192:5; 206:10;221:10;222:22; 231:24;233:12 <b>early (6)</b> 30:9;46:21;50:12;111:23; 188:6;217:25 <b>ease (2)</b> 49:17;59:6 <b>easier (1)</b> 215:3 <b>east (2)</b> 163:17,20 <b>Eastern (11)</b> 50:11,15;74:3;93:13; 107:15;117:2,4,14;128:6; 141:13;163:4 <b>easy (3)</b> 119:11;228:11,14 <b>economic (20)</b> 20:12;21:4,10,22;22:4,13, 17,17;23:3;231:4,12,14,25; 232:4,13;233:4,14;234:2,15, 21 <b>economics (4)</b> 22:1,5,11;23:2 <b>edit (1)</b> 67:5 <b>edited (1)</b> 43:25 <b>editing (2)</b> 159:2;174:6 <b>edits (2)</b> 159:4;223:18 <b>education (1)</b> 107:10 <b>educational (2)</b> 37:10;120:6 <b>effect (2)</b> 154:19;202:8 <b>effective (2)</b> 193:5;205:2 <b>effectively (2)</b> 47:22;202:15 <b>effects (1)</b> 211:19 <b>efficiencies (1)</b> 131:20 <b>efficiency (19)</b></p>			

<p>23;186:4,5;200:3;230:23,24; 232:6 <b>evident (2)</b> 56:11;158:9 <b>evidentiary (1)</b> 173:15 <b>exact (5)</b> 129:6;162:21;164:21,24; 165:2 <b>exactly (9)</b> 75:13,17;77:23;96:3; 144:14;156:21;159:12; 183:16;226:15 <b>Examination (19)</b> 7:5;22:16,21;23:1;25:5; 34:20;35:4;37:5;39:9;49:17; 97:19;102:18;103:3;106:15; 119:6,23;124:13;149:23; 222:20 <b>examine (8)</b> 13:25;35:14,16;37:4; 106:10;110:5;119:22;219:17 <b>examiner (2)</b> 96:17,18 <b>examining (4)</b> 14:21,25;26:21;59:6 <b>example (11)</b> 85:17;92:4,4,7;93:11; 126:20;158:15;165:18; 222:1;226:11;227:19 <b>exceeded (1)</b> 24:3 <b>excess (3)</b> 127:20;168:8,15 <b>exchange (1)</b> 15:9 <b>excluding (1)</b> 233:4 <b>excuse (4)</b> 80:23;113:5;148:25; 195:17 <b>excused (2)</b> 31:8;119:13 <b>exercise (3)</b> 20:21;97:14;209:2 <b>exert (1)</b> 223:22 <b>Exh (6)</b> 7:10,12,15,17,20,22 <b>EXHIBIT (153)</b> 7:9;17:4;23:13;24:22; 25:13,18;29:7;39:25;40:1,2, 23;41:22;42:1,3,4,9,10,13; 43:17;44:14;48:24;49:1,1, 14,20,23;50:5,20;51:4,8,8, 11,13,15;52:1;54:9,23;55:2; 57:1,3,3,18;59:9;65:9,11,13; 66:12;67:6;72:5,6;73:1;76:1, 3;80:12,14;82:6,7;83:7;84:7, 8,14,19;97:1;101:19;102:2; 107:1,3,5,7,22;109:15,20,21; 110:18;112:3;113:11;116:7, 9;117:20;125:1,2,7;132:4,8;</p>	<p>133:4,8,16;134:25;135:1,9, 11;136:4,6,16;137:13,15,17; 139:18;145:11,12,14;146:3, 21,25;148:5,19;149:9,14,16, 19,21,22;150:6;157:18,19; 161:25;173:18;182:6,8; 184:15,17;185:9,10,14,18, 23;186:2,4,5,9,10,13;189:21; 190:4;191:13;196:5,17; 202:18,20;203:1;207:15,17; 213:14;214:25;215:3; 219:23,25;230:9,12,21,23, 24;231:10 <b>exhibits (55)</b> 14:23;16:19;23:22;24:7, 23,24;25:3,6,17,18,23;26:3, 4,5,7,8,10,11,15,17,22,24,25; 28:1,4,5,8,18,23;29:3,14,15; 39:15;40:15;41:17,18;42:8; 59:3,7,24;106:12;124:25; 135:5;148:17,18,21;179:4,6, 6;180:14,21,23;182:9; 229:13;236:6 <b>exist (3)</b> 19:17;46:14;81:4 <b>existed (1)</b> 19:15 <b>existing (1)</b> 102:5 <b>exorbitant (1)</b> 233:23 <b>expect (6)</b> 31:21;32:18;35:2;42:25; 78:14;184:3 <b>expectation (1)</b> 42:23 <b>expected (3)</b> 47:9;202:24;235:1 <b>expecting (2)</b> 41:18;229:15 <b>experience (2)</b> 19:1;144:25 <b>experimenting (2)</b> 226:1,5 <b>expert (12)</b> 13:15;35:22;36:9,11;76:6; 107:5,12;109:23;131:13,16; 232:19;233:1 <b>expertise (2)</b> 11:1;118:15 <b>experts (6)</b> 35:24;36:3,3,13,14;180:20 <b>explain (19)</b> 68:6;73:12;79:12;82:15; 88:9;90:8;153:19;155:18; 182:16;183:13;186:15; 187:2;188:11;192:21; 194:12;203:23;204:11; 209:23;211:13 <b>explained (1)</b> 195:1 <b>explains (1)</b> 209:5</p>	<p><b>explanation (3)</b> 42:7;62:5;169:5 <b>exploration (1)</b> 22:19 <b>exponentially (4)</b> 21:5;72:19;207:10,13 <b>extends (1)</b> 19:14 <b>extensive (1)</b> 189:20 <b>extent (6)</b> 33:12;56:9;80:21;81:4; 197:7;199:18</p> <hr/> <p style="text-align: center;"><b>F</b></p> <hr/> <p><b>face (1)</b> 147:22 <b>fact (13)</b> 20:1;22:2,12;38:12;42:11; 112:14;145:22;146:11; 147:18;173:19;183:23; 196:22;232:18 <b>factor (3)</b> 56:14;197:2;214:22 <b>factors (9)</b> 151:9,11,16,22,24,25; 152:3,5;189:1 <b>facts (12)</b> 18:19;19:14,17;21:24; 22:2,11;231:22,23;232:3,5, 23,25 <b>factual (1)</b> 22:9 <b>failed (1)</b> 185:23 <b>Fair (16)</b> 34:25;50:3;51:20;100:5; 103:24;111:16;115:13,15,17, 20;137:7;143:24;169:3; 201:7;205:17;235:12 <b>fairly (2)</b> 14:14,14 <b>fall (6)</b> 107:19;159:21;170:2,14, 20;183:17 <b>Falls (98)</b> 11:13,23;19:8;42:19;43:1, 6,13;54:25;55:10,23;56:16; 57:14;58:12;60:24;61:7; 62:7,15,22;73:16;88:6; 89:18;92:7;99:14;100:8,11, 13;122:13;128:4,13,17,23; 132:9,10,15,24;136:17; 137:10;140:9;141:4,15; 143:15;144:2,6,12,17,20; 145:1,2,5,8,10,15,18,24; 146:13,16;147:14,17; 161:19;162:22;164:3,6; 165:12,16,19;168:22; 171:19;178:13,20;181:9,11, 17,21;183:12;186:19; 187:19,24;189:7,10,15;</p>	<p>190:21;191:10;192:11; 193:19,20;194:2,6;201:6,10; 222:2,8,23;223:3,7;224:5,10, 12;225:2 <b>Falls' (1)</b> 184:9 <b>familiar (45)</b> 10:19;38:5;76:9;77:5; 78:8;80:20;81:1,3;82:12; 83:11;94:11;118:1,3,5; 121:8;145:22;146:11,14; 157:24;158:2;163:3,6,7,12, 22;164:9,13;167:9;173:23; 174:11;179:22;186:12; 190:22,24;192:9;196:23; 204:23;207:20;208:16,17, 22;209:19;211:9;212:3; 226:18 <b>far (3)</b> 86:24;94:19;217:10 <b>farmsteads (1)</b> 195:1 <b>farther (2)</b> 105:24;127:2 <b>fault (1)</b> 139:11 <b>February (4)</b> 133:24;170:10,11;206:7 <b>feel (1)</b> 143:18 <b>felt (2)</b> 157:5,11 <b>FERGUSON (11)</b> 12:23,23;66:3;67:1; 130:16;137:23;173:21; 177:4;184:22;185:4;203:5 <b>few (14)</b> 17:20;71:1;72:3;92:3; 96:5;103:15;116:6;153:16; 167:12;170:8;205:17; 206:13;211:17;220:13 <b>field (6)</b> 68:24;127:4,6,11;194:21, 21 <b>fields (1)</b> 194:25 <b>Fifth (70)</b> 7:10;10:14;16:21;18:4; 20:3;21:1;22:1,10,18,23; 38:4,7;41:4,23;43:16;44:14; 63:19;64:3;66:24;67:14,18, 23,24;75:7,9,20;78:9,21; 79:17,24;80:10;81:17,23; 82:22;95:14;98:20;107:6,23; 109:1;113:9;121:6;123:8; 124:24;132:11;136:25; 144:1;150:14,16;158:10; 159:17;162:1;169:11;173:1, 5,8,13,16;174:1,24;180:12; 196:18;206:3,17;207:11; 209:10;211:21;212:10; 213:14;218:8;231:9 <b>figure (11)</b></p>
--	--	--	--

76:15,16;83:23;85:10;  
194:3,5,5;205:8,8,14;228:3  
**figures (6)**  
75:1;78:15;85:14;178:20;  
179:1;228:9  
**figuring (1)**  
31:3  
**file (3)**  
17:15;94:2;123:13  
**filed (4)**  
16:17;24:3;147:13;148:5  
**files (4)**  
94:3;123:14,18;146:6  
**filing (1)**  
148:4  
**fill (2)**  
214:19,19  
**filling (2)**  
169:1,1  
**Final (16)**  
7:11,12,17;17:2;41:23;  
42:5;57:5;65:25;66:17;  
95:16;116:13;135:12;  
136:13;140:22;176:24;  
204:15  
**finalized (3)**  
46:15,16,20  
**financial (1)**  
234:22  
**find (7)**  
30:8;133:6;136:16,19;  
138:3;156:17;189:12  
**finding (5)**  
196:21;231:20,23;232:4,6  
**findings (2)**  
38:12;42:11  
**fine (4)**  
116:5;152:3;230:5;236:2  
**finish (7)**  
29:25;30:4,10,10,15,17,17  
**finished (2)**  
226:11;228:23  
**firm (2)**  
106:25;118:14  
**first (39)**  
10:16;21:23;26:18;27:25;  
28:15;35:13;36:25;38:21;  
39:11;40:7;44:2;45:24;  
46:14;54:1;55:9;95:13;  
106:7;110:22;113:13;116:8;  
119:19;120:19;126:7,20;  
138:4,5,10;145:20;155:19;  
158:9,19,21;171:20;187:16;  
188:7,20;204:2;225:1;  
232:11  
**fit (1)**  
75:18  
**five (3)**  
178:17;198:4,7  
**five-eighths (2)**  
145:23;147:16  
**Fletcher (41)**  
11:12,12;24:15,16;32:6,7,

12;33;22;34:6,11,24;35:1;  
36:6,7,8;59:11;84:11;87:19;  
102:12,14;135:17,21;136:1;  
139:19;148:25;149:4,12;  
150:8,14,18;159:23;190:6,8;  
206:8;222:15;229:18;  
230:14,19;233:8,9;236:2  
**flexibility (2)**  
31:18;32:19  
**flip (8)**  
42:3;74:21;83:13;117:21;  
126:3;186:10;203:12;215:3  
**flipped (1)**  
30:23  
**flooding (2)**  
167:23;168:4  
**flow (33)**  
42:11;43:9;57:10;61:17,  
18;73:17;90:4;92:5;94:8,13;  
98:25;100:12,16;110:21;  
127:7,21;128:6,13,17;145:8;  
162:25;165:6;167:10,11;  
181:12,13,22,23;183:12;  
190:13;213:23;224:10,12  
**flows (41)**  
51:2;60:23;61:1,7,20;62:2,  
6,15,23;89:17,18;91:8;  
92:11;99:10,13,18;100:7,8,  
13,14,15,18,19;112:22;  
113:3;127:14,17;128:4,5,19,  
22;144:3,7,10,11,17,21;  
145:1,2,2;165:18  
**focus (2)**  
23:3;92:9  
**focused (1)**  
118:13  
**focusing (1)**  
140:9  
**folks (5)**  
13:14;14:1;16:4;31:10;  
177:11  
**follow (7)**  
17:21;28:3;33:18;35:3;  
166:25;167:2;177:5  
**followed (2)**  
102:19;174:13  
**following (4)**  
19:13;38:20;218:20;230:7  
**follows (3)**  
37:1;106:8;119:20  
**follow-up (7)**  
71:1;88:6;93:6;94:4;  
96:24;167:12;205:18  
**Food (2)**  
20:13,15  
**Foods (3)**  
26:7,12;39:24  
**footnote (5)**  
83:14,14;100:25;214:4,10  
**force (2)**  
115:1,8  
**forced (2)**  
115:11;172:4

**Forecast (44)**  
7:13,18;40:25;42:6;53:7;  
57:5,8;94:5,11;114:11;  
122:1;161:22;162:10,14,15,  
17;165:6,10;166:2,12;167:3,  
4,4,7,13;168:11,11;170:23;  
171:5,9,17;177:6;181:7,10,  
21;183:12;184:1,9,12,22;  
188:8;190:21;191:10;225:4  
**forecasted (2)**  
52:2;94:7  
**Forecasting (3)**  
190:13;214:13,14  
**forecasts (2)**  
51:24;113:13  
**forever (1)**  
18:20  
**forge (1)**  
60:9  
**forgot (2)**  
35:20;136:9  
**Fork (2)**  
78:23;79:20  
**form (1)**  
168:18  
**formal (3)**  
170:13;232:15,20  
**format (1)**  
54:11  
**formerly (1)**  
166:10  
**formula (1)**  
225:3  
**formulate (1)**  
108:2  
**forward (7)**  
14:22;35:14;36:22;74:21;  
106:5;119:17;230:5  
**foundation (6)**  
103:10,12;129:2;148:14,  
23;153:10  
**foundational (1)**  
146:8  
**four (4)**  
25:5;26:24;29:25;120:25  
**Fourth (29)**  
64:7,10,18;65:25;66:17;  
71:6;83:20;116:13,17;  
135:12;136:12,16,18;137:5,  
8;140:24;142:5;169:9,11;  
171:1,24;172:5,10;175:2;  
182:2;191:14;197:10;  
206:16;207:12  
**fraction (5)**  
69:23,25;70:5,6;199:5  
**frame (1)**  
217:17  
**framework (1)**  
60:22  
**frequent (4)**  
206:18;207:2,3;227:23  
**Friday (8)**  
29:25;30:4,11,18;31:17,

18,21;32:16  
**front (19)**  
10:20;14:23;15:18;29:13;  
39:19;41:21;49:14;72:5,9;  
74:10;80:17;84:13;107:3;  
117:21;134:24;150:7;  
161:25;189:22;190:18  
**frustrate (1)**  
22:14  
**full (3)**  
231:12,14;235:15  
**full-blown (1)**  
156:15  
**fully (1)**  
101:4  
**function (1)**  
151:8  
**furniture (1)**  
10:8  
**further (36)**  
39:5;58:24;60:1,3;63:7;  
79:9;80:5;87:15;95:4,6;  
96:12,15;102:25;105:8,13;  
115:21,23;119:4,6;124:11;  
149:23;161:9,13;166:14,18;  
205:16;212:22;216:7,8;  
219:10,12;224:18,19;227:9;  
228:19,22  
**futile (12)**  
81:20;208:19,20,22;  
209:20;210:2,5,11,15,22;  
211:6,10  
**future (1)**  
79:1  
**FYI (1)**  
30:25

**G**

**gage (14)**  
61:16;89:24;90:1;94:13;  
144:11;145:2,2,7;162:12,18,  
24;163:16;171:7;188:16  
**gaging (1)**  
89:22  
**gain (12)**  
61:2,15,24;62:20;79:22;  
85:22;89:21;90:21;99:25;  
100:5;108:12,22  
**gains (17)**  
61:5,6,10;75:6;77:1,6;  
78:12;87:12;90:2;91:1;92:7,  
15,21;98:8;114:1,8,20  
**gallery (1)**  
229:2  
**Garrick (5)**  
84:1,14,20;87:4;172:20  
**Gary (3)**  
11:4;45:23;95:16  
**gave (13)**  
54:5,8,12,20;67:7;72:4;  
100:4;123:19;130:25;141:9;  
155:23;185:4,7

<p><b>gears (5)</b> 53:10;68:1;181:6;196:17; 224:4</p> <p><b>Geisler (3)</b> 92:22;137:23;203:5</p> <p><b>general (8)</b> 19:19;34:14;77:12;78:16, 18;89:14;108:3;147:3</p> <p><b>Generally (17)</b> 19:13;74:1;78:8;80:4,19; 90:8;107:9,21;137:3;162:18, 22;187:7,15;204:24,25; 207:22;215:16</p> <p><b>generate (1)</b> 85:5</p> <p><b>generated (2)</b> 176:18;195:25</p> <p><b>genuine (1)</b> 168:12</p> <p><b>geographic (2)</b> 69:14;212:8</p> <p><b>geography (1)</b> 163:19</p> <p><b>geologist (2)</b> 37:16;120:10</p> <p><b>geology (3)</b> 37:12;120:7,8</p> <p><b>gets (3)</b> 130:2,2;217:5</p> <p><b>GIS (6)</b> 68:10;88:12,20;121:4; 140:3;194:9</p> <p><b>given (11)</b> 58:17;65:7;67:17;112:20; 113:25;158:24;159:12; 203:10;209:15;231:2;232:18</p> <p><b>gives (2)</b> 151:21;232:7</p> <p><b>giving (2)</b> 51:17;99:23</p> <p><b>glitch (1)</b> 15:22</p> <p><b>goal (1)</b> 30:17</p> <p><b>goes (10)</b> 108:7;127:24;133:9; 140:13;150:21;167:4; 193:13,14,14,15</p> <p><b>Good (16)</b> 12:13;24:1;27:7;39:23; 41:20;50:7;60:15;96:22; 110:9,12;116:3;124:20; 141:9;150:5;219:21;227:16</p> <p><b>grab (1)</b> 39:25</p> <p><b>graph (12)</b> 50:20;52:10;55:1,6,9,22; 73:6,7;97:18,21,23;113:18</p> <p><b>graphs (1)</b> 131:9</p> <p><b>great (10)</b> 30:16;31:1;41:19;110:11; 166:24;201:6;213:21;214:4,</p>	<p>25;216:15</p> <p><b>greater (2)</b> 108:8;198:7</p> <p><b>Greg (6)</b> 12:1;30:23;32:8,10;131:2; 179:12</p> <p><b>grievous (1)</b> 111:6</p> <p><b>Ground (133)</b> 11:25;12:5,7,10,12,18; 13:2;16:7,11,12;17:14;18:8; 20:12;33:24;34:15,21;36:14; 39:8;42:11;49:4;57:10; 58:17,21,22;63:13,15;68:24; 69:23,25;70:2,6,11,18,23; 73:18,19,23;74:2,6;75:3,6,7, 16,22;77:7,21;78:2,4,11,17; 79:19,20,20,21,24;80:1,3,16; 81:8,12;83:19,21;84:3,25; 85:11,17;86:18,21;89:17; 91:2,13;93:7,12,13,14,20,23; 95:7;96:15;99:5,13;101:8, 11,15;102:3;106:24;107:25; 108:12,23;109:4,12;110:13; 118:13;124:14;157:7; 159:16;196:23;197:2,11,14, 17,19,20;198:7,11,12,16,22; 199:15,17,19;201:1,19,21, 23;202:1,4,7,12,14;205:3,11; 207:3;208:12;212:22; 219:13;221:4;223:1,14; 224:20;226:25;228:20; 231:18</p> <p><b>group (65)</b> 44:19;49:12;53:13,17,21, 24;54:2,16,21;63:21,25; 67:8;72:4,18;95:3,19,20; 105:3;107:19;117:17; 122:16;130:19;131:9,14,17; 133:24;144:13;145:5;149:7; 157:25;170:18;174:13,17; 175:18,22,24;176:5;177:9, 13,25;178:22;179:11;180:3, 8;182:19;185:4;196:3; 203:10;212:22;215:2;217:7, 8,24;218:3,7,12,15,20,23,25; 219:1,13;224:20;228:20; 230:16</p> <p><b>groups (4)</b> 117:6;216:20;217:2,5</p> <p><b>growing (1)</b> 160:20</p> <p><b>grown (1)</b> 154:8</p> <p><b>guess (24)</b> 16:19;17:7,15;22:7;30:16; 44:20;51:7;70:8;105:16; 114:24;115:6,15;122:24; 133:10,10;144:23;146:3; 155:3;166:8;193:16;210:20, 21;229:6;235:3</p> <p><b>guessing (1)</b> 25:7</p>	<p><b>guidance (1)</b> 217:8</p> <p><b>Gustavus (1)</b> 120:7</p> <p><b>Guys-ler (1)</b> 92:22</p> <hr/> <p style="text-align: center;"><b>H</b></p> <hr/> <p><b>Hahn (1)</b> 11:23</p> <p><b>half (2)</b> 186:17;196:9</p> <p><b>half-month (4)</b> 46:25;47:4,18;48:21</p> <p><b>halfway (3)</b> 117:23;175:23;213:2</p> <p><b>hand (10)</b> 16:5;27:20;32:5;63:8; 88:23;134:23,24;141:11; 142:20;143:16</p> <p><b>handed (2)</b> 39:14;145:14</p> <p><b>hands (1)</b> 219:13</p> <p><b>happen (3)</b> 86:11;114:10;214:21</p> <p><b>happened (2)</b> 44:21;147:17</p> <p><b>happening (2)</b> 32:21;109:2</p> <p><b>happens (2)</b> 126:16;224:17</p> <p><b>happy (1)</b> 147:24</p> <p><b>hard (3)</b> 113:18;122:3;228:3</p> <p><b>hardened (7)</b> 132:16,19;143:6;194:16, 21,24;195:3</p> <p><b>harm (2)</b> 233:14,22</p> <p><b>Harris (17)</b> 11:22,22;19:6,7,8;27:13; 88:2,4,5,23;95:4;161:15,17, 18;166:14,17;167:1</p> <p><b>harvesting (2)</b> 152:24;154:16</p> <p><b>hate (1)</b> 173:7</p> <p><b>head (2)</b> 90:18;210:16</p> <p><b>headgates (1)</b> 161:2</p> <p><b>heading (4)</b> 117:23;190:13,17;191:19</p> <p><b>headphones (1)</b> 216:13</p> <p><b>heads (1)</b> 235:20</p> <p><b>hear (8)</b> 14:14,15;15:4,8;33:18; 88:15;105:24;216:13</p>	<p><b>heard (7)</b> 128:12,15;147:8;174:22; 200:7;212:5;215:13</p> <p><b>HEARING (202)</b> 10:1,11,14,24;11:8;12:19; 13:3,8,12,19,24;14:2,3,11, 18;15:18,23;16:21,23;17:1,8, 12,17,25;19:5;20:6,8;21:17; 22:8;23:5,9;24:13;25:3;26:1, 14;27:1,11,15,19,23;28:6,15, 20,24;29:1,6,12,23,25;30:5, 14,20;31:1,23;32:13,18;33:3, 3,6,7,10;34:4,9,25;35:2,12, 25;36:7,17,20;37:2,39;7,12, 18;40:5,11,14;41:11,14; 51:10,11,16;56:19;59:1,8,12, 12,16,19,22;60:1,4,12;63:7; 65:12;66:7;77:24;87:16,22, 25;88:17;95:6;96:14;97:12; 102:10,16,22,24;103:2,11; 104:4,17;105:5,13,21;106:9; 107:6;109:17,19,25;110:4; 115:23;119:6,10,14,21; 124:2,6,13,17;125:20,22,23; 129:4;146:7,23;147:9;148:2, 8,22;149:3,5,15,18,20,23; 150:11;155:7;159:25; 161:11,13;166:17;168:20; 172:21,25;173:5,8,11,13,15; 180:16;185:16,17,20,25; 186:3;196:6,11,14;206:11; 210:25;212:21;213:1,4,8; 216:8,11,14;219:12;222:16; 224:19;228:19;229:1,8,15, 19,23;230:4,11,17,20;231:8; 232:2,5;233:5,20;234:6; 235:10,19;236:1,3,7</p> <p><b>hearings (2)</b> 11:1;16:20</p> <p><b>Heidi (1)</b> 179:12</p> <p><b>Heise (11)</b> 94:8,13;162:12,18;163:16, 20;165:6;167:11;181:12,22; 189:5</p> <p><b>held (5)</b> 117:17;173:15;182:18; 193:17;214:5</p> <p><b>hello (4)</b> 15:21;37:7;119:25;120:1</p> <p><b>help (8)</b> 11:3;89:23;106:1;118:10, 18;151:10;187:5;236:4</p> <p><b>helpful (4)</b> 24:16;51:17;59:7;169:5</p> <p><b>Henry's (2)</b> 78:23;79:20</p> <p><b>Here's (2)</b> 176:7,8</p> <p><b>Hi (2)</b> 213:11;222:22</p> <p><b>Higgs (2)</b> 36:12;76:8</p>
--	---	--	--

<p><b>high (5)</b> 122:4;164:20,24;165:2; 167:21</p> <p><b>higher (5)</b> 187:9,10,14;193:21;194:3</p> <p><b>highest (1)</b> 168:2</p> <p><b>highlight (1)</b> 87:10</p> <p><b>highly (2)</b> 142:22,23</p> <p><b>Hill (3)</b> 61:2,18;89:21</p> <p><b>history (1)</b> 107:10</p> <p><b>hold (4)</b> 30:8,15;172:25;173:5</p> <p><b>Holden (1)</b> 11:22</p> <p><b>holder (1)</b> 20:25</p> <p><b>holders (1)</b> 234:16</p> <p><b>holding (2)</b> 172:21;173:13</p> <p><b>home (1)</b> 167:23</p> <p><b>honestly (1)</b> 31:2</p> <p><b>Honor (1)</b> 102:23</p> <p><b>honored (1)</b> 210:3</p> <p><b>hopefully (3)</b> 15:3;134:24;141:9</p> <p><b>hour (2)</b> 105:16;196:9</p> <p><b>hour-and-a-half (1)</b> 60:6</p> <p><b>housekeeping (2)</b> 149:9;235:9</p> <p><b>houses (1)</b> 69:5</p> <p><b>hydrogeologist (1)</b> 106:25</p> <p><b>Hydrologic (3)</b> 107:15;117:4,14</p> <p><b>hydrologist (1)</b> 166:10</p> <p><b>hydrology (4)</b> 37:25;108:11;117:3;121:4</p> <p><b>hypothetical (1)</b> 90:24</p> <p><b>hypothetically (1)</b> 232:24</p>	<p>163:5;168:2;198:7;210:6</p> <p><b>IDAPA (1)</b> 80:15</p> <p><b>idea (2)</b> 135:2;199:6</p> <p><b>ideal (2)</b> 142:25;143:3</p> <p><b>ideas (1)</b> 189:3</p> <p><b>identified (14)</b> 16:24;25:2;26:4;28:8,9; 29:3;98:19;99:3;102:4; 107:22;121:20;136:18,20; 215:19</p> <p><b>identifies (5)</b> 68:23;82:18,18;83:15; 183:9</p> <p><b>identify (16)</b> 18:12;24:6;40:2;41:22; 42:3;49:1;51:18;57:3;69:14; 133:17;135:10;137:17; 151:16;156:20;219:25;221:1</p> <p><b>identifying (2)</b> 25:21;36:1</p> <p><b>IDWR (17)</b> 7:15,20;12:25;76:11;88:8, 12;89:9;107:13;114:23; 138:11;140:4;141:6,11,22; 166:11;200:25;220:22</p> <p><b>IDWR's (2)</b> 68:10;88:20</p> <p><b>IGWA (25)</b> 7:22;12:16,18;13:18; 17:14;24:3,20;25:17;28:4,9; 42:15;76:4;83:16,19;85:2; 101:12,14;117:4;134:25; 135:6;166:23;205:11,20; 206:5;217:19</p> <p><b>IGWA's (8)</b> 40:8;41:2;76:18;84:2; 85:9;86:25;100:25;182:8</p> <p><b>images (2)</b> 68:19,20</p> <p><b>immediate (1)</b> 79:7</p> <p><b>impact (13)</b> 21:4;22:4;43:20;76:25; 79:8;86:9;103:20;112:10,22; 113:3;114:1;144:10;176:8</p> <p><b>impacts (17)</b> 20:12;21:22;22:17;44:4; 51:1;75:22,24;78:16;79:3,8; 82:19;97:22;101:7,17; 108:12;112:17;114:20</p> <p><b>impetus (4)</b> 44:24;45:2,10;170:25</p> <p><b>impetuses (1)</b> 171:24</p> <p><b>implement (3)</b> 218:19;219:2;223:14</p> <p><b>implemented (6)</b> 45:16;46:9;108:2;218:8, 11;226:8</p>	<p><b>important (1)</b> 205:12</p> <p><b>impose (1)</b> 27:19</p> <p><b>impractical (1)</b> 155:10</p> <p><b>impression (1)</b> 89:14</p> <p><b>improve (3)</b> 214:13,14,15</p> <p><b>improved (1)</b> 218:21</p> <p><b>improvement (1)</b> 183:24</p> <p><b>inaccurate (2)</b> 143:15;225:13</p> <p><b>inadmissible (1)</b> 21:12</p> <p><b>inappropriate (2)</b> 108:16,19</p> <p><b>Inc (1)</b> 20:13</p> <p><b>inch (1)</b> 145:23</p> <p><b>incised (1)</b> 99:19</p> <p><b>include (7)</b> 62:22;79:4;100:9;203:22; 204:2;222:10,11</p> <p><b>included (3)</b> 73:21;93:23;122:23</p> <p><b>includes (2)</b> 62:24;70:9</p> <p><b>including (1)</b> 10:11</p> <p><b>incomplete (1)</b> 30:5</p> <p><b>inconsistency (1)</b> 142:18</p> <p><b>incorporate (1)</b> 142:7</p> <p><b>incorporated (2)</b> 143:6;219:7</p> <p><b>incorporation (1)</b> 128:13</p> <p><b>increase (6)</b> 110:20;114:8;122:13; 151:23;206:21,24</p> <p><b>increased (2)</b> 21:4;151:8</p> <p><b>independent (1)</b> 102:13</p> <p><b>independently (1)</b> 77:11</p> <p><b>indicate (3)</b> 85:20;183:24;226:25</p> <p><b>indicated (1)</b> 20:1</p> <p><b>indicates (2)</b> 156:8;160:13</p> <p><b>indicating (1)</b> 224:14</p> <p><b>indicator (1)</b></p>	<p>172:1</p> <p><b>Indirectly (3)</b> 60:25;121:3;169:21</p> <p><b>individual (4)</b> 83:21;199:5;221:5,7</p> <p><b>individually (1)</b> 170:12</p> <p><b>ineffective (1)</b> 108:19</p> <p><b>infiltrate (1)</b> 127:9</p> <p><b>infiltration (1)</b> 126:25</p> <p><b>inflow (9)</b> 61:16,21;91:4;162:11,23; 167:16;168:8,15,15</p> <p><b>inflows (4)</b> 91:11;92:17;99:7;167:5</p> <p><b>inform (1)</b> 78:22</p> <p><b>informal (3)</b> 231:6;232:16,21</p> <p><b>informally (1)</b> 233:2</p> <p><b>information (31)</b> 16:15;21:11,14;34:12; 38:11;42:16;44:15,17,18; 54:18;55:5;64:4;79:16,25; 80:2,9;89:23,24;90:1;91:17; 94:7,16;95:17;104:22,25; 146:17;157:3;180:2;197:5; 218:14,22</p> <p><b>inherent (2)</b> 63:4;232:12</p> <p><b>initial (2)</b> 24:3,5</p> <p><b>initially (1)</b> 70:11</p> <p><b>initiated (1)</b> 33:4</p> <p><b>initiation (1)</b> 64:6</p> <p><b>Injury (7)</b> 41:24;66:1,18;98:20; 116:14;135:13;184:20</p> <p><b>input (4)</b> 89:4;90:12;131:3;177:24</p> <p><b>inputs (1)</b> 60:23</p> <p><b>inquiry (1)</b> 146:3</p> <p><b>In-Season (17)</b> 41:25;47:8;66:2,18; 108:17,18;111:3;116:15; 133:21;134:10;135:14; 137:21;155:10;184:20; 192:23;193:12;203:4</p> <p><b>insert (2)</b> 56:20;97:24</p> <p><b>inserted (2)</b> 42:15;176:6</p> <p><b>inside (1)</b> 199:21</p>
<b>I</b>			
<p><b>Idaho (24)</b> 11:4,23,25;12:9,12,21,23; 17:14;19:8,12;37:16,18; 63:13;65:24;88:6;120:11,13; 145:15;161:19;162:22;</p>			

<p><b>inspected (1)</b> 123:19</p> <p><b>instead (4)</b> 115:8;142:8;147:16;205:8</p> <p><b>instruct (1)</b> 56:22</p> <p><b>instructed (2)</b> 83:3;217:10</p> <p><b>instruction (2)</b> 14:3;83:5</p> <p><b>instructions (3)</b> 13:22;65:7;209:15</p> <p><b>insufficient (1)</b> 197:6</p> <p><b>intend (2)</b> 20:11;30:3</p> <p><b>intent (2)</b> 29:9,24</p> <p><b>interaction (1)</b> 90:19</p> <p><b>interest (7)</b> 20:20;82:20;103:20; 231:12,14;232:9;233:25</p> <p><b>interesting (1)</b> 144:22</p> <p><b>internalized (1)</b> 122:4</p> <p><b>internally (3)</b> 131:18;160:10;176:19</p> <p><b>Interruption (1)</b> 27:10</p> <p><b>intimate (1)</b> 10:7</p> <p><b>into (50)</b> 20:14;27:9;34:13;50:8; 51:8,12,13;59:13,24;83:1; 98:19;108:8;109:16,20,21; 142:7;144:2;147:17,21; 148:13,17,19,21;149:10,21, 22;165:19;167:4,5,13;168:7; 170:4,20;176:12;180:22,23; 186:4,5;202:7,14;207:2; 214:22;219:7;228:3,15; 230:23,24;232:5;233:25; 234:22</p> <p><b>introduce (4)</b> 10:17,20;20:11;28:7</p> <p><b>introduced (2)</b> 20:15;34:12</p> <p><b>introductory (1)</b> 183:8</p> <p><b>investigate (1)</b> 205:15</p> <p><b>investigations (1)</b> 144:2</p> <p><b>invitation (1)</b> 217:20</p> <p><b>invited (8)</b> 53:20,23;54:2,4;177:12; 217:5,9,11</p> <p><b>involved (8)</b> 60:20;115:5;117:5;206:6; 210:4;212:16;216:19;217:1</p>	<p><b>involves (1)</b> 61:5</p> <p><b>irrelevant (2)</b> 21:13;210:23</p> <p><b>irrigate (2)</b> 201:24;202:13</p> <p><b>irrigated (106)</b> 68:3,8,11,24,24,25;69:2,3, 15;70:1,16,23;88:9,19,22,24; 89:1;118:5,10,22;122:2; 132:20;133:22;134:3;138:2; 139:6,16;140:4,13,17,20,21; 141:6,14,17,22;142:1,6,11, 16,17,21;143:1,9;154:25; 155:17,20;156:5,10,12,18, 19;157:14;177:24;178:1,23; 191:21,24;192:1,3,5,6,12,20, 22;193:13,14,18;194:1,19, 24;195:3,5,8,11,21,22;196:4; 199:16;202:9;204:1;216:4; 220:14;221:2,11,12,15,15, 18,19,20;222:4,7,9,23;223:7, 10,11,16;225:20,22;226:22; 227:1,24,25;228:9</p> <p><b>Irrigation (33)</b> 11:11,13;12:14;43:5; 45:19;56:14,17;57:12;62:9; 69:12;70:15;78:13;86:15; 93:11;94:2;96:23;98:22; 99:5,13;129:25;160:19,21; 191:19;197:7;198:3,4,6,7; 203:19;204:6;221:8;223:3, 19</p> <p><b>irrigators (1)</b> 221:5</p> <p><b>issuance (4)</b> 10:14;15:19;67:17;95:23</p> <p><b>issue (18)</b> 14:19;15:24;16:3,4;17:24; 18:2;25:14,16;27:22;31:9; 36:8;67:19;122:22;183:11; 231:22;233:10,14,17</p> <p><b>issued (22)</b> 19:25;22:3;38:17;71:7,10; 75:8,21;78:10;79:17;80:10; 83:21;116:19;142:5;153:23; 170:17;171:6;173:16;175:4; 184:11;188:15,24;234:13</p> <p><b>issues (22)</b> 16:23;17:10,16;18:12; 20:4;21:21;23:3,4,7;34:3,8; 64:3;67:20;104:23;107:25; 181:3;183:9;223:24;231:25; 232:4;233:11,12</p> <p><b>issuing (2)</b> 173:1,5</p> <p><b>item (5)</b> 98:23;126:19;127:12; 149:9;183:23</p> <p><b>IWRRI (1)</b> 70:12</p>	<p style="text-align: center;"><b>J</b></p> <p><b>JACKSON (2)</b> 13:1,1</p> <p><b>January (5)</b> 144:20;145:16;158:22; 159:1;179:11</p> <p><b>Jaxon (4)</b> 36:11,12;76:8;77:9</p> <p><b>Jaxon's (2)</b> 77:25;78:15</p> <p><b>Jay (2)</b> 229:2,2</p> <p><b>Jennifer (37)</b> 12:21;26:21;27:9;31:8; 36:22,24;37:9;39:23;41:20; 45:7;49:1,14;51:14;58:25; 60:15;63:15;65:15;66:10; 67:7;72:9;76:3;80:14;84:13; 87:14;95:13;97:3;103:5,14; 141:8;158:25;159:7;169:17, 22;174:22;194:20;195:1; 200:8</p> <p><b>J-e-n-n-i-f-e-r (1)</b> 37:9</p> <p><b>Jerry (2)</b> 12:17;14:15</p> <p><b>John (2)</b> 12:13;96:22</p> <p><b>JOHNS (2)</b> 12:4,4</p> <p><b>join (1)</b> 21:15</p> <p><b>joint (5)</b> 162:16,17;165:10;167:3; 168:11</p> <p><b>Judge (6)</b> 17:3;143:20,23;157:13; 232:20,21</p> <p><b>judgment (4)</b> 19:15,18,20,22</p> <p><b>judicata (6)</b> 17:23;18:3,10,15;19:14,16</p> <p><b>judicial (2)</b> 17:3;148:7</p> <p><b>July (7)</b> 137:5;184:21;206:23,24; 207:5,6;227:11</p> <p><b>June (1)</b> 30:2</p> <p><b>junior (20)</b> 18:8;42:23;52:11,23;53:6; 58:9,21;73:2;78:4;85:21; 93:20;108:23;113:14,23; 114:3,10;205:3,11;207:3; 234:16</p> <p><b>junior-priority (1)</b> 234:16</p> <p><b>jury (1)</b> 31:8</p> <p><b>justify (2)</b> 193:21;194:2</p>	<p><b>Justin (1)</b> 32:15</p> <p style="text-align: center;"><b>K</b></p> <p><b>Kara (16)</b> 12:23;66:3;67:1;130:15; 137:23;158:25;169:22; 170:11;173:20;174:3;177:3, 4,21;184:22;189:18;203:5</p> <p><b>Katie (8)</b> 27:13,13,15,17,20;31:24; 32:1,2</p> <p><b>keep (9)</b> 25:8,22,25;30:12;32:21, 21,22;135:23;189:17</p> <p><b>keeping (1)</b> 131:20</p> <p><b>keeps (1)</b> 197:17</p> <p><b>Kent (3)</b> 11:12;14:14;136:8</p> <p><b>kept (1)</b> 180:10</p> <p><b>Kidwell (1)</b> 11:22</p> <p><b>Kimberly (4)</b> 61:1,17,18;89:21</p> <p><b>kind (23)</b> 14:16;31:14;76:23; 118:12;126:17;131:5,21; 146:17;150:21;154:20,21; 160:7;170:13;175:9;177:5; 182:21;194:21;197:21; 201:5;218:13,22;231:19; 235:15</p> <p><b>kinds (1)</b> 147:12</p> <p><b>King (5)</b> 31:16,18;61:2,18;89:21</p> <p><b>Klahn (56)</b> 11:17,17;28:14;30:19,21, 21;32:10;40:21;60:10,12,14, 16;63:5;98:24;99:4;102:22, 23;124:15,16,19,20;129:3,9; 133:5,14;135:2,6,8,10,19,23; 136:3,8,10;137:14;139:20, 23;145:11,13;146:9,10,20, 25;147:8,10;148:4,9,20,23, 24;149:2,12,17;155:9,22; 235:25</p> <p><b>knew (11)</b> 44:3,8;95:21,25;96:9; 122:7;129:5;164:20,24; 165:2;167:21</p> <p><b>knowledge (8)</b> 54:4;64:5;70:13;79:16; 80:8;89:8;126:1;212:12</p> <p><b>known (1)</b> 91:3</p> <p><b>knows (1)</b> 148:12</p>
--	--	---	---

<b>L</b>	<p>95:13 <b>least (29)</b> 10:6;13:15;14:5;16:2; 22:25;23:3;26:8,15;29:19; 30:10;33:4,9;44:22;50:16; 78:24;105:6;112:1;143:5; 146:8;157:13;199:11,18; 216:20;222:1;226:16; 231:17;234:7,12,18</p> <p><b>lectern (2)</b> 14:25;35:15</p> <p><b>left (5)</b> 93:24,25;196:1;222:6,7</p> <p><b>legal (7)</b> 19:21,21;81:18;104:23; 200:1,4;218:1</p> <p><b>less (6)</b> 31:21;86:22;97:21;192:14, 15;225:9</p> <p><b>letter (2)</b> 178:15,16</p> <p><b>level (3)</b> 130:12;131:23;199:11</p> <p><b>licensed (2)</b> 37:15;120:10</p> <p><b>lies (1)</b> 20:20</p> <p><b>likely (5)</b> 78:24;156:21;202:1; 206:24,25</p> <p><b>limine (1)</b> 234:11</p> <p><b>limit (3)</b> 16:6;17:11;234:11</p> <p><b>limited (2)</b> 16:23;22:9</p> <p><b>limiting (2)</b> 21:10;104:20</p> <p><b>line (10)</b> 17:21;52:16,18;56:20; 73:6,7;78:2;84:15;121:23; 206:9</p> <p><b>lines (1)</b> 225:25</p> <p><b>list (24)</b> 15:12;16:18;21:20;23:4; 25:2,18;26:3;28:11,11,18; 29:10;30:2,6,22;32:15;36:9; 92:17;119:15;121:23;140:7; 151:21;161:20;177:14; 229:21</p> <p><b>listed (6)</b> 126:8,19;127:4,12;183:18; 215:23</p> <p><b>listening (3)</b> 13:13,21;14:1</p> <p><b>lists (3)</b> 203:14;204:13,15</p> <p><b>litigants (1)</b> 19:22</p> <p><b>litigated (2)</b> 18:2,6</p> <p><b>little (22)</b></p>	<p>10:3,7;23:14;25:9;31:18; 50:9;60:19;69:7;78:24; 153:10;154:21;157:2,16; 163:6;170:12;208:17;224:4; 225:18;229:20;230:2;231:1, 19</p> <p><b>living (1)</b> 18:21</p> <p><b>Liz (5)</b> 166:8,10;182:10,22; 188:14</p> <p><b>located (4)</b> 61:7;162:18,20;163:11</p> <p><b>location (1)</b> 10:5</p> <p><b>locations (4)</b> 10:10;62:25;75:25;80:5</p> <p><b>locked (1)</b> 18:20</p> <p><b>lodge (1)</b> 210:20</p> <p><b>log (1)</b> 132:5</p> <p><b>logical (1)</b> 230:6</p> <p><b>long (7)</b> 25:21;32:16;37:21;38:2; 96:3;120:16,24</p> <p><b>longer (4)</b> 50:16;127:1;156:18;196:7</p> <p><b>long-term (8)</b> 55:20;62:14;79:2,3;86:8; 101:7,17;211:19</p> <p><b>look (67)</b> 13:6;15:12;18:22,24; 20:23,23;21:20,24;25:10; 39:25;43:17,25;48:25;49:22; 50:1,19;51:15,25;52:8,10,16; 55:1,9,22;57:3,18;62:11,18; 68:21;78:1;83:1;92:1,11; 97:4,17;107:25;123:17; 131:7,19;133:5;136:15,21; 137:15;140:10;145:19; 148:3;154:11;156:9,14; 158:6;160:14,17;165:5; 169:20;176:2;181:17,18; 183:8,19;185:7;191:18; 196:21;213:17,22,24; 229:13;235:4</p> <p><b>looked (4)</b> 101:20;134:14,18;188:9</p> <p><b>looking (38)</b> 16:18;20:2;23:3;41:8; 52:17;58:4;62:18;86:1,2; 112:3,8;113:11,12;116:12; 125:1;130:18;131:4,9; 133:13;134:25;141:16; 162:11;165:22;170:22,23, 23;176:13;184:23;188:4,8, 10,11;189:19;203:7;208:18; 214:7,15;229:20</p> <p><b>looks (7)</b> 16:25;94:8,12;133:19;</p>	<p>137:19;153:1;162:10</p> <p><b>loss (3)</b> 126:8,11;161:1</p> <p><b>losses (6)</b> 126:14,17,20;127:13,16,25</p> <p><b>Lost (2)</b> 210:8,14</p> <p><b>lot (10)</b> 17:18;24:2;38:8;223:20, 23;225:21,24;227:17; 228:10;233:12</p> <p><b>loudly (2)</b> 12:20;15:6</p> <p><b>Lower (5)</b> 92:7;100:11,12;132:24; 168:4</p> <p><b>LRE (2)</b> 12:15;106:22</p> <p><b>lump (1)</b> 69:7</p> <p><b>lunch (3)</b> 105:16,17,20</p> <p><b>Lynker (6)</b> 13:17;179:10,20;180:4; 189:24;190:18</p>
		<b>M</b>	
		<p><b>M&amp;M (2)</b> 10:22;11:2</p> <p><b>Macheel (1)</b> 144:15</p> <p><b>Madison (2)</b> 78:23;79:21</p> <p><b>magnitude (5)</b> 72:23;82:1,4,8;111:2</p> <p><b>mailed (1)</b> 177:10</p> <p><b>main (1)</b> 170:25</p> <p><b>makes (6)</b> 47:17;89:12;95:1;209:25; 210:1;215:25</p> <p><b>making (4)</b> 50:4;231:24;232:3,6</p> <p><b>Malad (1)</b> 92:4</p> <p><b>management (6)</b> 14:4;80:15,20;207:17,21; 209:7</p> <p><b>manager (1)</b> 144:6</p> <p><b>manifested (1)</b> 154:6</p> <p><b>manipulation (1)</b> 62:8</p> <p><b>Many (15)</b> 10:4,19;14:5;21:21;43:19; 50:3;56:3;57:19,25;111:10; 114:21;162:21;201:18,22; 216:1</p> <p><b>map (1)</b> 164:17</p>	

<p><b>mapping (1)</b> 122:3</p> <p><b>maps (4)</b> 88:24;142:21;164:10,15</p> <p><b>March (1)</b> 181:23</p> <p><b>mark (1)</b> 145:11</p> <p><b>MARKED (36)</b> 7:9;40:1;42:1;48:24; 51:11;57:1;59:9;65:9;76:1; 80:12;84:7;107:1,3;109:19; 116:7;133:4;135:1;136:2; 137:13;145:12;148:17,19; 149:20;157:18;179:4; 180:21;182:6;184:15; 185:17;186:2,3;202:18; 207:15;219:23;230:21,22</p> <p><b>Marten (2)</b> 11:10;12:14</p> <p><b>master's (2)</b> 37:13;120:8</p> <p><b>Mat (3)</b> 15:20,24;94:21</p> <p><b>match (3)</b> 87:11;90:14,17</p> <p><b>Material (6)</b> 41:24;66:1,18;116:14; 135:13;184:20</p> <p><b>materials (1)</b> 14:24</p> <p><b>math (1)</b> 143:11</p> <p><b>mathematical (1)</b> 129:25</p> <p><b>MATT (43)</b> 7:2;12:25;53:18;54:20; 64:19,20,21,25;65:7;66:3; 67:1;73:14;78:22;81:16,22; 82:25;119:15,17,18;120:4; 133:24;137:23;149:6;150:4; 166:23,25;180:24;186:7; 190:14;191:13;196:16; 202:20;203:6,7;206:12,15; 212:19;213:12;216:18; 222:22;224:24;228:17,24</p> <p><b>M-a-t-t (1)</b> 120:5</p> <p><b>matter (10)</b> 10:16;14:6;16:20;19:10; 34:8;35:20;151:14;225:6; 229:25;233:14</p> <p><b>matters (5)</b> 15:16;32:25;35:9,10;36:15</p> <p><b>MATTHEW (3)</b> 7:2;119:18;120:4</p> <p><b>Max (3)</b> 11:15;14:15;110:1</p> <p><b>maximum (2)</b> 58:18;231:16</p> <p><b>may (59)</b> 13:21;19:22;21:21;22:19; 23:1,7,18;30:13,13;31:5;</p>	<p>37:4;38:16;43:4;46:15,17; 51:24;58:8,17;68:20;71:13; 73:2,11;76:5,25,25;78:7; 86:12;104:15;105:9,9;106:9; 110:4;114:15;119:21; 122:25;126:17;127:1,2; 131:13,25;144:14;147:8; 152:24;158:14;170:11; 183:4,19;188:25;190:16; 196:2;201:3;215:22;219:6, 17;221:11,14;224:14,15; 232:25</p> <p><b>maybe (26)</b> 15:21;29:4;46:12;75:1; 76:10;78:1;108:6;116:24; 126:14;138:25,25;152:23, 25;153:9;155:18;156:4; 157:17;167:2;170:10;189:6, 18;195:2;217:25;226:17; 229:20;230:6</p> <p><b>McCain (3)</b> 26:7,12;39:24</p> <p><b>McCain's (2)</b> 26:20;31:15</p> <p><b>McHugh (60)</b> 7:3;11:19;13:7,9,23;14:9, 12;25:4,15;26:6,18;27:3,6; 31:13;39:10,12,13,17,20,22, 23;40:2,6,13,22;41:6,8,19, 20;42:2;48:25;51:7,14,16,20, 21;56:19,25;57:2;58:24; 59:2,3,21;60:2,3;63:14; 73:11;83:9;97:20;102:20,21; 212:24;213:3;216:9,12,15, 17;219:10;235:7,12</p> <p><b>mean (21)</b> 13:7;26:20;34:7;73:12; 75:24;82:16;87:8;95:2; 115:15,16;131:21;132:19; 148:13;150:14;155:13; 167:18;178:21;191:25; 195:15;217:14;223:18</p> <p><b>meaning (1)</b> 136:19</p> <p><b>meaningful (1)</b> 131:22</p> <p><b>means (7)</b> 31:25;69:2,24;126:22; 162:25;187:12;192:2</p> <p><b>meant (5)</b> 13:9;123:4;188:17,19; 193:1</p> <p><b>meantime (1)</b> 143:4</p> <p><b>measure (2)</b> 115:6;131:22</p> <p><b>measured (9)</b> 62:19;90:9,25;91:4,5; 99:18;129:18;197:22;198:1</p> <p><b>measurement (4)</b> 91:10;197:21;198:9,14</p> <p><b>measurements (5)</b> 62:24;91:15;99:23,24;</p>	<p>100:3</p> <p><b>measuring (1)</b> 130:7</p> <p><b>mechanism (2)</b> 110:20;191:9</p> <p><b>meet (4)</b> 155:4;156:1,23,25</p> <p><b>meeting (4)</b> 54:11,19;171:15;174:17</p> <p><b>meetings (6)</b> 122:17;176:21;182:18,19, 22;214:5</p> <p><b>meets (2)</b> 153:18;200:17</p> <p><b>melt (1)</b> 91:1</p> <p><b>member (11)</b> 92:17,20;107:15;118:9; 138:5,10,14;169:12;203:15, 20;214:1</p> <p><b>members (9)</b> 53:8;114:12;118:4; 133:23;169:18;186:22; 187:17;211:25;213:23</p> <p><b>memo (5)</b> 33:7;182:10,23,24;185:15</p> <p><b>memorable (1)</b> 172:17</p> <p><b>memorize (1)</b> 185:6</p> <p><b>memorized (3)</b> 50:1;62:13;92:19</p> <p><b>memory (2)</b> 208:7;234:13</p> <p><b>mentioned (6)</b> 19:24;85:8;91:25;117:13; 177:21;181:25</p> <p><b>met (1)</b> 161:20</p> <p><b>method (17)</b> 35:4;87:3,8,9,9,10;99:21; 101:6,7;133:21;137:20; 166:7;184:19;203:3;217:21; 218:19;226:4</p> <p><b>Methodology (178)</b> 7:16;10:14;17:5;18:4,17, 25;20:3;21:1,24;22:1,10,18, 20,24;38:4,7;41:5,24;43:16; 44:14;49:3;63:19;64:3,7,10, 15,18;66:1,17,25;67:14,18, 23,24;71:6,10,12;75:7,10,21; 78:9,21;79:18,24;80:10; 81:17,23;82:22;83:20;94:5, 6,10;95:14;98:12,20;107:6, 23;108:25;109:1;113:9; 116:14,17;117:9,18,25; 119:1;121:6;123:8,11; 124:24;130:6;132:11,24; 133:23;135:13;136:12,16,18, 25;137:8;138:6;140:24,24; 141:19;142:6,8;143:2,9,13; 144:1,22;150:6,15,17; 151:21;153:1;156:24;157:4,</p>	<p>15;158:10,10;159:17;160:2; 161:5;162:1;165:22;166:11; 167:15;168:7;169:8;170:3,7, 19;171:1,6,24;172:5,10; 173:1,6,9,14,16;174:1,24; 175:3;177:1;178:8,19,25; 179:2;180:12;182:2;183:19; 184:11;188:5;191:14;193:1; 196:18,22;197:10;200:12; 201:15;202:6,15;203:13,16; 204:10;205:4,7,14;206:3,16, 17;207:11;209:10;211:21; 212:1,10;213:14;214:7; 215:9,20;216:21;218:8; 219:3,8;223:21;226:9;227:9; 228:4,9;231:9,21,25;232:11; 233:11,13</p> <p><b>methodology's (1)</b> 108:16</p> <p><b>methods (5)</b> 130:23;152:24;183:12; 184:1;218:14</p> <p><b>metric (26)</b> 68:19;137:22;142:16; 170:24;178:24;192:7; 193:24;195:13,15,21,25; 199:12;203:5;226:19;227:4, 5,6,8,13,14,16,20,20,24; 228:13,13</p> <p><b>mic (1)</b> 27:18</p> <p><b>microphone (7)</b> 14:20;15:1,6;32:3;88:16; 105:25;106:1</p> <p><b>mics (1)</b> 14:17</p> <p><b>mid (1)</b> 113:20</p> <p><b>mid-1980s (11)</b> 52:11,20,23;53:6;55:14; 113:15,23;114:3,10,16;115:1</p> <p><b>middle (3)</b> 76:23;85:14;97:20</p> <p><b>might (27)</b> 10:24;16:12;24:16;25:15; 31:18;34:1;38:18;51:16; 65:19;69:3,5;91:9;105:25; 109:10;112:9,12;151:11,17; 189:3,22;201:7,13;225:16, 16,17,17;226:4</p> <p><b>mile (1)</b> 162:21</p> <p><b>miles (1)</b> 162:21</p> <p><b>Milner (5)</b> 123:3;124:1,9;178:4,12</p> <p><b>mind (8)</b> 65:22;106:14;116:3; 131:20;151:2;166:23; 196:10;201:13</p> <p><b>mindful (1)</b> 15:10</p> <p><b>minds (1)</b></p>
--	---	--	--



<p>188:21 <b>mine (1)</b> 50:7 <b>Minidoka (22)</b> 11:13;43:4;47:9;52:13; 55:17;75:23;77:1;78:6;90:6; 10:92:10,16;101:8;110:21; 113:16,24;123:3;124:1,9; 178:12;186:19;187:17 <b>minimis (2)</b> 82:19;103:20 <b>minusing (1)</b> 89:17 <b>minute (5)</b> 45:14;129:10;134:6; 138:9;185:21 <b>minutes (5)</b> 31:22;32:16;87:23; 196:12;230:2 <b>mischaracterization (1)</b> 147:6 <b>missed (1)</b> 135:20 <b>missing (2)</b> 50:2;235:16 <b>misstated (1)</b> 59:23 <b>misstates (1)</b> 104:2 <b>mistake (2)</b> 202:25;208:3 <b>misunderstood (1)</b> 149:12 <b>mitigate (3)</b> 86:4,7;98:19 <b>mitigating (2)</b> 79:13;115:6 <b>mitigation (20)</b> 50:10;74:18;83:15,25; 84:16;85:2,10;86:20,22; 87:11;101:24;102:6;109:9, 13;110:14;111:23;115:9,11, 14;207:4 <b>mix (6)</b> 152:23;153:2,3;154:7,17; 193:7 <b>mixed (2)</b> 70:3,4 <b>mixture (1)</b> 195:2 <b>mode (3)</b> 43:14;48:22;227:7 <b>model (82)</b> 17:23,24;42:12;43:2,13; 44:5,6,9,10,12,13,21,24; 45:10,11,15,15,25,25;46:2,4, 8,11;47:7,19,23;48:2,6,10; 55:3,4,11,25;57:10,20,25; 60:19,22;62:16,17;64:24; 68:3,9;69:9,18,19,22;70:22; 71:3,5,9,22,23;72:13,14; 74:25;83:17;89:2,6,7,17; 90:9,11,12,14;93:3,6,10;</p>	<p>98:18;108:18,21,21;111:5, 14;128:14;141:23;189:9; 192:22,25;200:8,9;205:19 <b>modeled (1)</b> 87:12 <b>modeler (2)</b> 63:16;93:1 <b>Modeling (48)</b> 7:23;38:21,22;43:21; 60:17;63:18,20,23;64:3,14, 17,22;65:1,3,5,5;67:13,16, 20,21;74:16;75:12,14;76:5; 77:12;81:12;97:7,13;102:2; 107:16,25;108:19;109:2,4,6, 8,11;110:19;111:10,17; 113:17;117:4,14;174:23; 190:20;212:8,15,17 <b>models (2)</b> 48:3;189:15 <b>Modification (3)</b> 133:21;137:20;203:3 <b>modifying (1)</b> 175:24 <b>moment (12)</b> 40:5;53:11;66:6;74:22; 80:25;85:8;146:9;181:7; 185:12,15;207:24;208:7 <b>monitor (1)</b> 128:21 <b>monitored (2)</b> 128:5,8 <b>monitoring (3)</b> 117:4;128:7;184:12 <b>month (5)</b> 17:16;96:5;130:13; 167:24;168:4 <b>monthly (8)</b> 46:25;47:4,17;48:20;63:3, 4;100:4;193:12 <b>months (2)</b> 120:25;170:8 <b>moratorium (2)</b> 50:10;111:22 <b>more (41)</b> 10:7;15:14;18:21,22;21:5; 29:14;31:18;34:1,6;35:3,19; 72:20;74:17;75:1,86:19; 88:2;92:9;111:2;118:13; 128:18;131:21;150:21; 156:16;163:22;175:9; 176:19;187:13;192:14,15; 195:5,10;206:13,18;207:2,3, 10;211:17;224:17;226:17; 227:23;228:21 <b>morning (20)</b> 12:13;24:1;33:1;39:23; 41:20;60:15;96:22;123:17; 128:9;141:21;147:10; 174:22;229:18;230:1;231:2; 233:18;234:9;235:5,21; 236:4 <b>most (11)</b> 10:2;33:23;34:8;36:2;</p>	<p>79:7;110:19;175:20;210:18; 211:12;228:12;235:13 <b>motion (11)</b> 16:6,9,13;17:4,6;19:4,4; 234:7,8,11,11 <b>motions (3)</b> 23:8,10,10 <b>Mountain (1)</b> 11:24 <b>move (20)</b> 29:7,17;44:23;95:14;96:9; 109:15;124:1;146:21;158:3, 11,23;159:5,9;169:3;180:14; 185:14,23;205:18;230:9,12 <b>moved (1)</b> 186:1 <b>moving (1)</b> 27:8 <b>much (10)</b> 50:16;61:25;90:3;91:1; 99:24;127:3;163:1;187:5; 196:6;206:17 <b>multi-linear (1)</b> 186:18 <b>multiple (1)</b> 233:13 <b>multiply (1)</b> 193:6 <b>municipal (1)</b> 94:3 <b>Murphy (3)</b> 144:11;145:2,7 <b>must (5)</b> 18:4;110:14,14;112:12; 172:17 <b>mute (3)</b> 27:17,20;32:3 <b>muted (3)</b> 14:2;27:12;31:25 <b>myself (5)</b> 68:20;84:15,20;112:8; 172:20</p>	<p>122:3;137:22;142:16; 170:24;181:12;192:7; 193:24;195:25;226:18; 227:4,6,7,21;228:13 <b>nearby (1)</b> 56:3 <b>necessarily (2)</b> 21:10;233:22 <b>necessitated (1)</b> 64:14 <b>need (38)</b> 13:4,20;15:10,17;31:5,17; 32:25;35:9;41:9;51:25; 62:17;70:4;93:5;129:14,16; 130:4;131:10;146:3;151:9, 17,24;153:3,6,14,15,24; 154:1;157:20;158:6;173:19; 193:3,10,16;196:7;199:3,4; 227:9;235:6 <b>needed (4)</b> 10:6;45:20;127:18;170:18 <b>needing (2)</b> 35:23;56:17 <b>needs (9)</b> 45:19;122:2;125:15,18; 148:14;155:4;156:23;157:9; 189:10 <b>negative (2)</b> 187:7,8 <b>negotiations (3)</b> 159:15,19;206:6 <b>neighborhood (1)</b> 128:24 <b>neither (1)</b> 83:3 <b>net (3)</b> 191:21,24;192:2 <b>Netter (1)</b> 179:12 <b>new (14)</b> 19:17,21;50:10,11;111:22; 136:24;142:25;158:10; 178:2,11;224:2;225:22,24; 228:6 <b>next (21)</b> 29:1;60:9;76:22;80:14; 83:7;95:20;102:17;106:4; 119:15;138:18;139:2,5; 140:16;184:16;202:20; 205:5;208:25;221:12,15; 225:19;229:3 <b>nice (2)</b> 124:21;155:9 <b>night (1)</b> 236:5 <b>nine (2)</b> 121:20;143:10 <b>nitpick (1)</b> 155:14 <b>noise (1)</b> 100:5 <b>non-Department (1)</b> 218:9</p>
<b>N</b>			
<p></p>	<p></p>	<p><b>name (10)</b> 37:8;60:15;92:23;96:22; 106:17,19;110:2;120:2,4; 161:18 <b>naming (1)</b> 152:6 <b>narrative (1)</b> 126:5 <b>natural (10)</b> 43:9;73:17;181:12,13; 183:11;184:1;190:13; 213:23;224:10,12 <b>nature (1)</b> 16:1 <b>near (27)</b> 43:3;47:9;52:12;55:17; 75:23;77:1;78:6;90:5,10; 92:9;110:21;113:15,24;</p>	<p></p>

<p><b>none (4)</b> 26:16;51:11;93:25;212:12</p> <p><b>Nonirrigated (2)</b> 139:5,16</p> <p><b>non-irrigated (18)</b> 68:12,25;69:2;88:22; 140:6,12,17;141:14;142:13, 17;156:3;195:22;221:2,14, 20;222:9;223:10;226:23</p> <p><b>non-irrigation (1)</b> 164:11</p> <p><b>noon (1)</b> 30:16</p> <p><b>normally (2)</b> 10:4;214:17</p> <p><b>North (18)</b> 37:12;61:11,15;73:16; 78:2,4,10,23;79:19;85:16,18, 21;86:19;99:6,15;100:19; 186:19;187:17</p> <p><b>note (2)</b> 31:15;76:11</p> <p><b>notebook (4)</b> 124:25;133:7,7;134:25</p> <p><b>notebooks (1)</b> 136:4</p> <p><b>notes (5)</b> 202:24;203:21,25;204:1, 11</p> <p><b>notice (9)</b> 31:23;38:17;124:3,4,8; 148:7,9,10,11</p> <p><b>notified (2)</b> 53:12,16</p> <p><b>November (13)</b> 49:8;97:3,8;102:2;112:4; 130:20;174:14;175:12,15; 177:12;181:23;184:23;185:5</p> <p><b>NRCS (1)</b> 164:14</p> <p><b>number (46)</b> 27:6;41:1,3,9;52:5;55:2, 11;57:24;62:12;69:14;72:12; 73:23;74:10,23;101:21; 112:7;129:6,8;130:14; 133:12;134:11,12,14; 135:18;136:9;137:10;142:9; 154:20;164:21,25;165:3; 179:2;185:10;187:14;188:1; 192:4;193:21,22;195:24; 203:14;204:3,5,14;222:3,7; 228:14</p> <p><b>numbered (7)</b> 24:7;26:16;28:7;51:19; 59:13;134:1;137:25</p> <p><b>numbering (6)</b> 23:14,17;25:25;28:9,22; 29:15</p> <p><b>numbers (20)</b> 23:15;24:4,21;25:13; 40:16;49:15,15;51:17;99:3, 10;123:10;129:6;130:11,18; 132:24;135:4;141:16;</p>	<p>202:21;204:17;221:24</p> <p style="text-align: center;"><b>O</b></p> <p><b>object (6)</b> 129:1;146:2,24;159:23; 168:18;206:8</p> <p><b>objected (1)</b> 206:9</p> <p><b>objection (29)</b> 15:9;17:8;21:19;24:10; 28:7;59:8;103:10;104:2,15, 18;105:6;109:17,19;112:25; 124:6;146:8,23;149:18,20; 180:16,18;185:16,17;186:2, 3;210:20;211:1;230:20,22</p> <p><b>objections (9)</b> 14:13;15:5;22:22,23; 24:12;51:10;59:11,12; 105:24</p> <p><b>obligation (5)</b> 20:19;83:15;84:17;85:2,10</p> <p><b>obligations (1)</b> 87:11</p> <p><b>observation (2)</b> 90:3,3</p> <p><b>observations (2)</b> 90:14,21</p> <p><b>observed (3)</b> 90:17,18;105:23</p> <p><b>observers (1)</b> 15:14</p> <p><b>obtain (2)</b> 91:16,21</p> <p><b>obtainable (1)</b> 127:25</p> <p><b>obtained (1)</b> 91:23</p> <p><b>obviously (2)</b> 34:7;73:20</p> <p><b>occupation (1)</b> 106:23</p> <p><b>occur (6)</b> 19:20;61:20;62:25; 110:22;152:14;211:24</p> <p><b>occurred (4)</b> 53:2;55:21;62:19;207:11</p> <p><b>October (7)</b> 58:9,22;73:2,13;74:11; 170:10,10</p> <p><b>odd (1)</b> 180:18</p> <p><b>off (17)</b> 41:11,13;62:19;66:5,8,10; 88:16;100:15,20;119:10; 127:11;170:16;171:10; 193:4;210:16;235:17;236:6</p> <p><b>offer (13)</b> 13:25;23:8,11;51:8,8; 149:14;231:6,6;232:16,17, 20,21;233:2</p> <p><b>offered (3)</b> 29:18;34:13;149:15</p>	<p><b>offering (1)</b> 147:5</p> <p><b>office (1)</b> 26:2</p> <p><b>OFFICER (160)</b> 10:1,11,24;11:8;12:19; 13:3,8,12,19;14:11,18;15:19, 24;17:12;19:5;20:6,8;21:17; 23:9;24:13;26:1,14;27:1,11, 15,19,23;28:6,15,20,24;29:1, 12;30:20;31:1,23;32:13,18; 33:3,7;34:4,9,25;35:2,12,25; 36:7,17,20;37:2;39:7,12,18; 40:5,11,14;41:11,14;51:10, 16;56:19;59:1,8,12,16,19,22; 60:1,4,12;63:7;65:12;66:7; 87:16,22,25;88:17;95:6; 96:14;97:13;102:10,16,22, 24;103:2,11;104:4,17;105:5, 13,21;106:9;109:17,25; 110:4;115:23;119:6,10,14, 21;124:2,6,13,17;129:4; 146:7,23;147:9;148:2,8,22; 149:3,5,15,18,23;150:11; 155:7;159:25;161:11,13; 166:17;168:20;180:16; 185:16,20,25;196:6,11,14; 206:11;210:25;212:21; 213:1,4,8;216:8,11,14; 219:12;222:16;224:19; 228:19;229:1,8,15,19,23; 230:4,11,17,20;231:8;233:5, 20;234:6;235:10,19;236:1,3</p> <p><b>official (5)</b> 124:3,4,8;158:12;214:20</p> <p><b>officially (2)</b> 14:6;63:17</p> <p><b>offset (1)</b> 110:15</p> <p><b>off-the-cuff (2)</b> 230:2;231:2</p> <p><b>Often (3)</b> 33:7;176:9;225:23</p> <p><b>old (4)</b> 10:1;143:5;201:2,12</p> <p><b>Olenichak (4)</b> 15:20,25;91:18;211:12</p> <p><b>Olsen (1)</b> 12:4</p> <p><b>Olson (3)</b> 12:9,12;36:10</p> <p><b>once (6)</b> 40:9;42:18;101:9;195:8; 226:7;228:14</p> <p><b>one (88)</b> 13:15;20:2,9;25:14,16; 32:14;35:19;40:14;43:25; 56:21;57:11;60:23;64:4,23; 72:23;76:6;84:5,10;87:9; 89:15;105:22;116:16;122:3, 22;125:2,9;131:2;133:9; 138:5;139:9,10,14;142:13; 145:17;148:1;149:1,9;</p>	<p>163:12;166:1,1,4;171:4,20, 23;173:10,11;178:5;180:4; 181:25;182:8,13;183:19; 184:14,23;186:22,25;187:7, 8,8,8;188:5,7,23,25;189:23; 193:19;203:9;215:1,22; 216:20,21,21;220:17;221:11, 15;222:6;223:16,24;224:1,2; 225:24,24;226:4,16;227:9, 12;228:21;234:18</p> <p><b>one-page (1)</b> 157:23</p> <p><b>ones (7)</b> 29:10;34:7;70:9;106:13; 175:20;188:7;215:18</p> <p><b>one-way (1)</b> 18:13</p> <p><b>on-farm (2)</b> 126:19;127:15</p> <p><b>ongoing (2)</b> 101:23;205:24</p> <p><b>online (3)</b> 10:9;88:15;229:5</p> <p><b>only (19)</b> 19:14;35:7;40:17;54:4; 70:1,2;87:9;89:15;94:8; 100:8;109:9;133:9;153:22; 154:19;189:5;202:2;211:7; 215:18,21</p> <p><b>open (2)</b> 156:2;179:5</p> <p><b>operating (1)</b> 19:23</p> <p><b>operational (2)</b> 127:13,25</p> <p><b>operations (2)</b> 128:23;163:1</p> <p><b>opinion (9)</b> 103:8;104:1,13;108:9,14; 110:19;214:20;223:13; 225:12</p> <p><b>opinions (4)</b> 104:23;108:2,6,7</p> <p><b>opportunities (2)</b> 34:22,23</p> <p><b>opportunity (6)</b> 16:8;29:4;34:17;35:5; 104:5;123:17</p> <p><b>oppose (2)</b> 16:13;34:4</p> <p><b>optimum (2)</b> 231:13,15</p> <p><b>option (2)</b> 40:22;229:6</p> <p><b>orally (1)</b> 16:14</p> <p><b>Order (201)</b> 7:11,12,17;10:15;16:3,21, 22,22;17:2;18:4,17,20; 19:24;20:3;21:24;22:1,11, 18,20,24;29:20;30:23;32:8; 33:2,17;38:5,8;39:9;40:25; 41:5,7,9,23;42:5,16;43:16;</p>
---	---	---	---

<p>44:14;52:1;55:10,23;56:12,15;57:5,15;59:5;61:11; 63:19;64:3,7,11,15,18;65:25; 66:17,25;67:14,18,23,24; 71:6,10,12;72:23;75:7,10,21; 78:9,21;79:18,24;80:10; 81:17,24;82:22;83:8,9,20; 86:14;94:5,10,12,17;95:14, 23;96:1,8;98:20;101:1; 102:19;104:20,24;107:6,24, 24;109:1;111:2;113:10,10; 116:13,17;117:9,18,24,25; 121:6;123:8,11;124:24; 125:8;130:6;132:11;134:9; 135:12;136:12,13,16,18,25; 137:8;140:24,24;141:19; 142:6;143:2;144:2,4,22; 150:6;151:21;153:1,23; 156:24;157:4;158:10,10,16, 19,21;159:17;160:3;162:1,9; 165:22;168:7;169:8;170:7; 171:1,6,24;172:5,10;173:1,6, 9,14,16;174:1,24;175:3,7; 176:22,24;180:12;181:18; 182:2;184:11;186:24; 188:15,24;191:14;196:18, 22;197:10,22;198:9,14; 200:12;202:6;203:16; 204:10;205:4;206:3;207:11; 209:10,11;211:21;212:1,10; 213:15;214:7;218:8;224:25; 228:4;230:1;231:2,4,9,21,24; 232:12;233:15</p> <p><b>orderly (2)</b> 152:15;153:20</p> <p><b>orders (7)</b> 17:9;48:13;59:5;71:14; 108:25;132:24;216:21</p> <p><b>ordinarily (1)</b> 19:16</p> <p><b>original (4)</b> 19:24;70:8;122:24;127:22</p> <p><b>Originally (3)</b> 147:12;170:22;200:24</p> <p><b>others (10)</b> 13:12,21;84:15,20;102:24; 165:14;169:6;205:12; 216:24;220:11</p> <p><b>other's (1)</b> 130:16</p> <p><b>Otherwise (1)</b> 14:4</p> <p><b>ought (1)</b> 230:7</p> <p><b>out (38)</b> 13:22;20:10;25:17;27:25; 31:3;54:21,22;61:18;62:3; 85:9;89:17;92:11;93:11,24, 25;95:22;96:4;100:12; 106:14;118:12;126:14; 132:2;141:1;157:21;176:17; 177:4,6,10,15,19,21;192:21; 193:19,25;194:24;215:17;</p>	<p>217:21;232:19</p> <p><b>outcome (2)</b> 56:6,18</p> <p><b>outflow (2)</b> 61:17;91:6</p> <p><b>outflows (2)</b> 91:11;92:18</p> <p><b>output (11)</b> 44:5,9,9,10;46:5;48:6,7,10, 11,16;57:25</p> <p><b>outside (7)</b> 22:20;65:6;74:5;127:11; 174:20;194:10;219:7</p> <p><b>outspoken (1)</b> 15:10</p> <p><b>over (17)</b> 23:18;30:9,15;53:2;109:3; 112:10;126:3;127:7;134:7; 137:14;140:16;153:16,16; 187:19;202:17;225:9;227:15</p> <p><b>overestimated (1)</b> 111:1</p> <p><b>overhead (1)</b> 14:20</p> <p><b>overlap (2)</b> 40:7;194:14</p> <p><b>overlaps (2)</b> 194:9,12</p> <p><b>Overlay (1)</b> 156:4</p> <p><b>overrule (2)</b> 146:8;210:25</p> <p><b>Overruled (2)</b> 129:4;168:20</p> <p><b>oversee (1)</b> 121:3</p> <p><b>overseeing (1)</b> 169:12</p> <p><b>oversight (1)</b> 142:14</p> <p><b>overstates (1)</b> 202:15</p> <p><b>own (1)</b> 170:12</p> <p><b>owns (1)</b> 204:5</p>	<p>190:4;191:16,17;196:19,20; 203:17;207:23;208:1,2,3,4; 209:1;213:17,20;215:3,5,6</p> <p><b>pages (10)</b> 50:4,6,7,8;51:18;97:4; 113:14;134:1;137:25;139:12</p> <p><b>Palisades (2)</b> 162:20,21</p> <p><b>paper (3)</b> 24:2,8;25:10</p> <p><b>paragraph (25)</b> 43:18,21,23;125:7,13; 132:9;136:17;150:20;152:8; 160:5,8,17;162:5,6;165:25; 183:8;190:9,12,16;191:18, 20;196:21,24;213:22,24</p> <p><b>paragraphs (2)</b> 97:20;213:21</p> <p><b>paralegal (1)</b> 26:2</p> <p><b>parameter (1)</b> 210:17</p> <p><b>parameters (2)</b> 90:15;210:14</p> <p><b>paraphrasing (1)</b> 231:19</p> <p><b>Pardon (1)</b> 230:11</p> <p><b>parenthetical (2)</b> 127:5,13</p> <p><b>part (37)</b> 16:10;20:11;22:1,5,9,11; 53:20;62:15;63:1;69:3,3; 77:11;79:11;94:11,12,16; 97:8;102:5;142:14;144:4,12; 153:1,3;155:18,24;157:4; 165:6;168:24;171:4,16; 176:1;180:7;190:22;202:25; 217:15;234:15;235:13</p> <p><b>partial (2)</b> 147:2,22</p> <p><b>participants (1)</b> 14:1</p> <p><b>participate (8)</b> 53:24;54:2;67:3;94:14,20; 107:18;117:13,16</p> <p><b>participated (2)</b> 72:18;172:7</p> <p><b>participating (11)</b> 10:9,25;13:5,15,16,24; 15:7;54:14;105:23;117:5; 235:15</p> <p><b>participation (1)</b> 13:23</p> <p><b>particular (7)</b> 21:14;22:8;23:5;69:13; 108:1,15;112:18</p> <p><b>Particularly (3)</b> 32:19;33:19;108:12</p> <p><b>parties (44)</b> 14:6;15:15;16:20;17:15; 18:1;23:8,10,15,19,23;24:9, 13;25:20;28:17;29:2,10,18;</p>	<p>31:2;32:20;33:13,17;34:15; 35:21;38:17;53:12;60:6; 75:15;97:13;123:3,16;124:7; 182:20;183:1;217:13,14,14; 218:2;229:6,9;233:15,22; 234:2,23;235:14</p> <p><b>parties' (1)</b> 214:6</p> <p><b>party (1)</b> 28:5</p> <p><b>passage (2)</b> 171:2,14</p> <p><b>passed (1)</b> 191:11</p> <p><b>passes (2)</b> 143:17,18</p> <p><b>past (2)</b> 10:6;62:18</p> <p><b>patience (1)</b> 206:14</p> <p><b>PATTERSON (14)</b> 12:11,11;24:1,20;25:14, 16;26:9;27:4,8,17,21,24; 28:19;40:18</p> <p><b>PDF (1)</b> 54:20</p> <p><b>peculiar (1)</b> 17:16</p> <p><b>pending (3)</b> 15:18;16:7;23:7</p> <p><b>people (10)</b> 10:9;14:5,17;28:11;31:4; 53:19;54:17;79:9;118:14; 233:11</p> <p><b>percent (10)</b> 51:1,1;97:21;112:10,16; 143:10;164:19,23;165:1; 178:17</p> <p><b>percentage (5)</b> 74:8;76:14;84:2;101:9; 164:18</p> <p><b>percentages (1)</b> 85:1</p> <p><b>percolation (2)</b> 126:21,23</p> <p><b>perfect (1)</b> 105:15</p> <p><b>perform (4)</b> 169:16,18;175:13;209:16</p> <p><b>performed (3)</b> 64:22;82:1;93:10</p> <p><b>performing (2)</b> 171:13;172:2</p> <p><b>perhaps (5)</b> 57:23;112:9;201:13; 229:21;232:9</p> <p><b>period (1)</b> 47:18</p> <p><b>periods (3)</b> 46:25;47:4;48:20</p> <p><b>permissible (2)</b> 138:16,22</p> <p><b>permitted (1)</b></p>
	<b>P</b>		
	<p><b>pack (3)</b> 164:18;165:22;167:20</p> <p><b>PAGE (73)</b> 7:2;43:18;49:15,20,25; 51:18,22;52:8;72:6,25; 74:22;80:22,23;82:7;83:13, 14;97:17;98:6;108:5;112:7, 13;113:12;117:21;125:7,11, 13;126:3,4;127:5,24,24; 129:10;132:3;134:2;135:15, 16;136:9;138:1;139:18,19, 20;150:21,24,25;152:9; 160:6;162:3,4,5;164:16; 185:8,10,11;186:10,12,15;</p>		

<p>232:5 <b>person (5)</b> 54:13;124:22;161:21; 211:15;229:16 <b>personally (2)</b> 54:22;210:4 <b>perspective (2)</b> 129:25;223:13 <b>pertaining (1)</b> 21:10 <b>pertinent (1)</b> 17:10 <b>Pete (3)</b> 11:6;34:14;35:10 <b>petitioners (2)</b> 16:10,14 <b>petitions (1)</b> 15:18 <b>photo (1)</b> 156:4 <b>photography (2)</b> 68:17,18 <b>photos (1)</b> 156:9 <b>physical (3)</b> 15:3;90:3;229:13 <b>pick (1)</b> 15:7 <b>piece (2)</b> 157:13;235:9 <b>pieces (3)</b> 154:9;198:25;199:2 <b>piqued (1)</b> 167:1 <b>place (9)</b> 10:13;18:20;35:16;45:20; 126:13;138:16,22;198:20; 232:11 <b>places (2)</b> 78:23;90:19 <b>Plain (7)</b> 50:11,15;74:3;93:14; 117:2,8;141:13 <b>Plain's (1)</b> 128:6 <b>plan (1)</b> 102:6 <b>planned (2)</b> 169:4;175:24 <b>planning (1)</b> 117:7 <b>plans (2)</b> 84:1;101:24 <b>plants (1)</b> 127:1 <b>played (2)</b> 38:10;121:13 <b>please (19)</b> 27:17;28:2;32:3;36:23; 37:2,7;72:6;104:6;106:5,18; 107:4;120:2;132:4;133:17; 135:11;137:18;138:3;173:2; 219:25</p>	<p><b>plug (2)</b> 228:3,14 <b>pm (1)</b> 236:7 <b>Pocatello (9)</b> 11:16,18;12:3;30:22; 60:16;65:23;124:21;147:13; 167:22 <b>POD (1)</b> 94:2 <b>podium (2)</b> 124:17;213:2 <b>point (20)</b> 23:9;32:14,15;51:7;79:10; 105:7;143:12;144:7;159:1,3; 189:16,20;191:7;194:2; 219:5;224:16;226:2,12; 227:10;230:6 <b>points (2)</b> 55:6;164:6 <b>policy (7)</b> 71:25;81:10;104:23; 111:18,19;208:14;231:16 <b>polygons (5)</b> 68:17;69:7;140:5;141:13; 194:13 <b>portion (7)</b> 28:2;57:8;76:11;85:18; 166:12,12;175:10 <b>Portneuf (13)</b> 92:12,14;163:21;164:19; 165:18;167:5,14,16,19; 168:1,3,5,9 <b>posed (1)</b> 105:10 <b>position (3)</b> 38:2;105:2;120:24 <b>possible (9)</b> 22:18;29:15;33:9;114:13; 132:2;189:9,11,19;199:18 <b>post (1)</b> 164:15 <b>posted (2)</b> 67:12;118:24 <b>posts (1)</b> 164:10 <b>potential (1)</b> 214:6 <b>potentially (1)</b> 21:3 <b>PowerPoint (11)</b> 49:5,10,24;54:10,15;93:4; 133:15,20;137:19;176:14; 203:2 <b>PPU (3)</b> 138:11,16;140:7 <b>practice (1)</b> 154:12 <b>practices (8)</b> 152:14,22;153:12,14,25; 154:16,18;191:19 <b>precipitation (5)</b> 69:11;70:16;129:17;</p>	<p>151:7;193:5 <b>precise (1)</b> 75:1 <b>precluded (1)</b> 19:23 <b>predecessor (1)</b> 44:8 <b>predict (7)</b> 43:2;44:13;171:17; 181:20;188:20;192:22;214:8 <b>predicted (18)</b> 54:24;57:14;58:8,20; 72:20;73:1;74:17;76:12,19; 78:24;79:13;82:2,9;86:13, 14,18;110:15;113:8 <b>predicting (6)</b> 47:8;162:23;187:13; 213:23,25;224:11 <b>prediction (4)</b> 162:11;193:14,15;225:8 <b>predictions (2)</b> 206:18,21 <b>predictive (1)</b> 182:3 <b>predictor (2)</b> 181:16;189:12 <b>predicts (2)</b> 224:9;225:3 <b>prefer (1)</b> 39:9 <b>preference (2)</b> 229:8;235:23 <b>pre-hearing (2)</b> 23:10;36:4 <b>Preliminary (8)</b> 7:21;15:16;34:12;156:13, 16;173:20;175:5,9 <b>preparation (2)</b> 77:24;96:8 <b>prepare (5)</b> 17:19;44:16;96:8;141:11, 11 <b>prepared (13)</b> 16:2;33:6;49:6;66:24; 67:1;72:17;76:8;133:15; 159:18;162:14;164:14; 167:7;230:17 <b>preparing (5)</b> 16:3;57:7;96:1;145:4; 169:11 <b>prescribed (1)</b> 98:11 <b>present (7)</b> 16:14;31:10;44:18;82:4; 95:3;145:4;172:11 <b>presentation (30)</b> 22:16;35:8;49:2,5,11,24; 54:5,8,12,16;55:7;67:7,11, 17;72:4;93:5;97:3,8,18; 112:4;130:25;133:20; 174:25;176:15;178:22; 185:3,6;202:22;203:2;230:8 <b>presentations (5)</b></p>	<p>129:6;149:5;174:14,19; 203:10 <b>presented (21)</b> 18:8;21:18;54:19;63:21; 93:4,16;125:19,22;131:9; 133:23;137:22;148:11,16; 175:12,15,21;176:5;180:2; 184:22;232:24,25 <b>presenting (2)</b> 170:9;232:22 <b>presently (1)</b> 106:21 <b>presume (1)</b> 111:12 <b>pretrial (1)</b> 35:20 <b>pre-trial (2)</b> 24:10,25 <b>pretty (4)</b> 67:22;73:25;160:2;196:3 <b>previous (10)</b> 46:6;47:15;70:12;99:20; 130:13,13;132:23;178:17; 223:22;225:24 <b>previously (1)</b> 102:19 <b>primary (2)</b> 20:2;229:12 <b>principal (1)</b> 106:24 <b>principle (1)</b> 208:20 <b>printout (2)</b> 133:20;137:19 <b>prior (26)</b> 16:19;18:6;19:18;22:5,15; 44:22;46:17,24;47:7;48:10; 67:17;75:20;78:9;88:7; 107:13;108:24;112:23; 113:4,22;115:16,17;158:16; 169:7;185:23;234:25;235:1 <b>priority (21)</b> 38:23;42:12,14;49:3; 51:23;52:9,20;57:9;58:11; 72:7;73:15,18;77:14;113:12; 115:17,18;165:16;169:2; 204:20;205:2;233:16 <b>probably (19)</b> 10:16;11:1;18:16;26:23; 32:15;89:10,12;94:23,25; 103:24;106:12;139:11; 196:8,9;205:3,12;211:4; 217:24;226:13 <b>procedures (2)</b> 108:1;172:22 <b>proceed (2)</b> 30:13;170:6 <b>proceeding (9)</b> 18:3,7;27:10;75:19;82:24; 131:3;159:24;172:13;210:24 <b>process (10)</b> 105:3;131:17;140:20; 142:22;160:8;172:14,21;</p>
---	---	---	---

<p>180:8,13;214:17 <b>processes (1)</b> 142:19 <b>Processing (2)</b> 139:9;196:1 <b>produce (5)</b> 52:11,20;85:22;113:15; 147:11 <b>produced (7)</b> 28:5;56:24;64:4;70:11,13; 97:8;102:2 <b>producing (1)</b> 56:24 <b>professional (4)</b> 37:15;103:8;104:13; 120:10 <b>program (1)</b> 128:7 <b>progression (1)</b> 186:25 <b>Project (18)</b> 122:9;125:8,14;126:6; 129:13;130:1,2,7,22,25; 131:4,10,19,22,24;154:9; 156:15;193:11 <b>promote (1)</b> 15:4 <b>prompt (1)</b> 152:19 <b>pronounce (1)</b> 92:23 <b>proof (7)</b> 221:4;231:6;232:16,17,20, 22;233:3 <b>proper (1)</b> 109:1 <b>Proportionate (17)</b> 7:23;42:15;57:11;76:4,19; 83:15,22,24;84:2,16;85:1; 86:25;87:6,11;100:25;109:7; 114:23 <b>proposal (5)</b> 34:5;131:12;191:2,3,5 <b>proposed (12)</b> 16:18;29:17;101:6; 133:20;137:20;158:23; 159:14;176:22,22;190:19; 191:9;203:2 <b>proposing (1)</b> 132:1 <b>protect (1)</b> 20:19 <b>protest (1)</b> 147:14 <b>protocol (2)</b> 152:15;153:20 <b>provide (21)</b> 42:7;49:10;54:15;63:18, 24;78:11,24;79:1,2,22,23; 80:5;86:19,22;87:3;94:6,16; 95:17;117:11;123:4;165:11 <b>provided (14)</b> 45:19;63:20;79:17;</p>	<p>101:13;104:21,25;123:2,13, 16;131:3;147:24;179:25; 195:10;218:22 <b>provides (4)</b> 19:13;70:19;72:11;186:20 <b>providing (2)</b> 86:4,7 <b>provisions (1)</b> 147:3 <b>public (6)</b> 81:10;208:14;231:12,14; 232:9;233:25 <b>publicly (1)</b> 172:9 <b>public's (1)</b> 20:19 <b>published (1)</b> 174:7 <b>pulling (2)</b> 126:17;202:23 <b>pumping (22)</b> 50:15;51:2;52:23;53:5; 70:18;79:9;82:19;86:6; 103:19;108:13,23;111:25; 112:11,17,23;113:4,23; 114:4,7,9,21;199:1 <b>purpose (1)</b> 69:18 <b>purposes (4)</b> 77:11;132:10;139:17; 144:1 <b>purview (1)</b> 117:10 <b>push (1)</b> 228:5 <b>put (7)</b> 36:12;90:12;104:8;152:1, 11;160:19;223:12 <b>putting (1)</b> 79:5</p>	<p><b>quotes (3)</b> 231:20;234:12,18  <b>R</b>  <b>R-2 (1)</b> 224:8 <b>Racine (2)</b> 12:9,11 <b>raise (1)</b> 233:11 <b>raised (6)</b> 14:19;33:23;172:12; 181:3;219:14;233:12 <b>raising (1)</b> 35:25 <b>Ralph (1)</b> 19:7 <b>ran (1)</b> 48:21 <b>range (4)</b> 23:18;24:4,21;192:17 <b>ranges (3)</b> 23:15;24:18;187:7 <b>rather (5)</b> 51:17;223:4,8;232:11,15 <b>ratio (1)</b> 125:14 <b>reach (66)</b> 43:4,7,10;47:9;50:23; 52:13;53:4,4;55:17;56:13; 58:12,19;61:2,5,6,10,15,19, 24;62:1,2,20;75:5,23;77:1,2, 6;78:6,11;79:4,7,22;82:19; 85:22;87:12;89:21;90:2,6, 21;91:1,2,5,6,7,14;92:6,15, 21;98:7,19;99:25;100:5; 101:9;103:20;108:12,22; 110:22;112:18,22;113:16, 24;114:1,5,8,20;157:5 <b>reaction (1)</b> 148:8 <b>read (18)</b> 21:23;22:3,12;51:21; 65:18;66:11,14;80:25;81:6; 152:11;157:14;161:20; 184:19;190:14;191:22; 197:1;207:24;234:10 <b>reading (1)</b> 151:2 <b>ready (2)</b> 35:12;41:14 <b>real (1)</b> 17:7 <b>reality (1)</b> 202:12 <b>realization (1)</b> 234:2 <b>realize (2)</b> 59:4;98:18 <b>realized (7)</b> 51:2;97:23;112:11,17; 175:23,25,25</p>	<p><b>really (11)</b> 18:11;31:22;34:19;94:15; 100:14;115:11;143:22; 155:9;174:23;225:18;231:4 <b>real-time (17)</b> 122:3;137:22;142:16; 170:24;192:7;193:24; 195:20,25;203:5;226:19; 227:4,6,8,12,20,21;228:13 <b>reason (7)</b> 10:12;18:16,25;20:4; 93:24;189:6;232:4 <b>Reasonable (36)</b> 41:25,25;56:6,18;66:2,2, 18,19;81:10;112:21;113:2; 116:15,15;122:11;123:21; 130:8,14;133:21;134:10; 135:14,14;137:21;175:21, 24;176:2,7,9,13;184:20,21; 192:23;193:12;203:3; 208:14;209:2,6 <b>reasonableness (5)</b> 20:23,24;21:2,8;130:17 <b>reasoning (1)</b> 17:22 <b>reasons (5)</b> 19:3;20:2;182:1;223:24; 224:1 <b>rebuttal (1)</b> 233:19 <b>recalculated (1)</b> 178:12 <b>recall (42)</b> 45:6,11;46:9;51:25;52:2; 54:6;62:11;74:13;75:13,16, 17;77:23;79:14;80:7;81:25; 82:23;83:2,5;91:21;96:3,6,7; 99:1,14;101:1;103:5,14; 130:24;131:7;132:4,17,25; 142:3,4;172:12;191:1,8; 222:22;223:1,6;224:4;225:4 <b>recalled (1)</b> 105:9 <b>receive (6)</b> 22:8;86:20,23;148:13,17; 233:16 <b>RECEIVED (20)</b> 7:9;24:10;51:12,13;59:13, 24;109:20,21;138:21; 148:21;149:21,22;178:11; 180:21,23;183:17;186:4,5; 230:23,24 <b>receives (1)</b> 90:20 <b>receiving (1)</b> 83:5 <b>recent (7)</b> 18:22;19:2;155:13;156:4, 9,12;228:13 <b>recently (1)</b> 23:20 <b>Recess (4)</b> 87:24;105:17,20;196:13</p>
	<b>Q</b>		
	<p><b>QD (4)</b> 160:10,18,22;161:3 <b>qualified (4)</b> 35:22;56:21;107:12; 210:19 <b>quality (2)</b> 130:10,10 <b>quantify (1)</b> 211:23 <b>quick (2)</b> 31:22;95:9 <b>quickly (2)</b> 127:9;229:25 <b>quite (5)</b> 121:10;132:5;151:19; 218:16;223:18 <b>quote (1)</b> 152:10 <b>quoted (2)</b> 20:15;21:9</p>		

<p><b>recharge (6)</b> 53:1;69:10;90:13,20;99:5; 117:7</p> <p><b>recite (1)</b> 24:17</p> <p><b>Reclamation (3)</b> 15:13;162:16;167:8</p> <p><b>recognize (8)</b> 65:15;66:21;76:3;182:13, 15;185:1;203:9;220:5</p> <p><b>recognized (2)</b> 20:22;23:20</p> <p><b>recollection (2)</b> 94:24;131:8</p> <p><b>recommend (4)</b> 158:3;218:7,15;219:2</p> <p><b>recommendation (10)</b> 159:13;173:20,25;174:2,6, 19;175:4;189:16;190:20; 191:11</p> <p><b>Recommendations (6)</b> 7:21;157:17,22;218:11; 219:4;230:15</p> <p><b>Recommended (4)</b> 65:24;66:16;166:5,8</p> <p><b>recommending (1)</b> 223:9</p> <p><b>reconsider (3)</b> 231:3;232:14;233:4</p> <p><b>record (37)</b> 15:8;25:3,22;31:15;34:13; 37:8;40:9,23;41:12,13;51:9; 57:4;65:18;66:6,8,9,11; 87:25;105:22;106:18; 109:16;120:3;133:18; 135:11,17;136:2;137:18; 139:17;141:6;167:20;168:3, 14;196:15;220:1;235:8,11; 236:6</p> <p><b>recording (2)</b> 41:15;88:1</p> <p><b>records (3)</b> 91:24;180:11;199:16</p> <p><b>recross (2)</b> 34:19;35:6</p> <p><b>Recross-Examination (2)</b> 7:6;224:22</p> <p><b>Redirect (9)</b> 7:5;33:16;34:19;35:6; 102:18,21;103:3;119:8; 222:20</p> <p><b>redo (1)</b> 17:1</p> <p><b>reduce (1)</b> 143:20</p> <p><b>reduction (1)</b> 188:1</p> <p><b>refer (16)</b> 25:6;27:4,6;28:4,17;29:21; 40:11;41:16;68:19;80:19; 83:24;93:5;108:4;116:16; 136:6;160:9</p> <p><b>reference (5)</b></p>	<p>151:7;157:21;158:6; 160:15;208:18</p> <p><b>referenced (2)</b> 28:1;134:6</p> <p><b>references (1)</b> 160:9</p> <p><b>referencing (1)</b> 112:7</p> <p><b>referred (1)</b> 69:23</p> <p><b>referring (4)</b> 54:9;112:12;148:4;161:1</p> <p><b>refers (4)</b> 20:12;81:20;187:3;203:24</p> <p><b>reflect (1)</b> 85:11</p> <p><b>reflected (1)</b> 176:15</p> <p><b>reflects (1)</b> 203:18</p> <p><b>refresh (1)</b> 208:7</p> <p><b>regard (2)</b> 85:12;211:17</p> <p><b>Regarding (25)</b> 7:13,18;10:14;13:22; 22:21;29:15;41:23;42:5; 53:13;57:5;66:1,17;97:19, 21;98:24;99:12;105:8; 116:14;117:17;135:13; 159:5;225:1;230:1;231:4,5</p> <p><b>regardless (2)</b> 31:20;108:24</p> <p><b>regional (1)</b> 108:11</p> <p><b>regression (19)</b> 171:9,16,23;172:1;181:8, 11,19;182:4;184:9;186:18; 187:6,13,23;201:11;224:5,9, 15;225:1,3</p> <p><b>regressions (7)</b> 165:9;187:5;188:14,14,18, 19,22</p> <p><b>related (21)</b> 60:17;64:3;67:13,23,24; 78:20;81:13;82:22;117:3,6; 125:8;145:9;147:11,15; 174:23;180:1;205:21; 209:16;212:15,17;234:14</p> <p><b>relating (6)</b> 36:25;42:11;106:7; 119:19;147:4,11</p> <p><b>relation (1)</b> 119:2</p> <p><b>relations (1)</b> 19:22</p> <p><b>relationship (2)</b> 61:11;131:10</p> <p><b>relationships (1)</b> 126:6</p> <p><b>relative (4)</b> 81:16,23;216:20,24</p> <p><b>relatively (1)</b></p>	<p>187:18</p> <p><b>released (2)</b> 158:17;178:5</p> <p><b>relevance (2)</b> 22:23;211:2</p> <p><b>relevancy (1)</b> 159:24</p> <p><b>relevant (3)</b> 21:6;206:10;233:24</p> <p><b>reliability (2)</b> 182:3;183:25</p> <p><b>reliance (1)</b> 132:23</p> <p><b>relied (1)</b> 231:24</p> <p><b>reluctance (1)</b> 235:4</p> <p><b>rely (1)</b> 188:22</p> <p><b>remained (1)</b> 187:18</p> <p><b>remember (35)</b> 24:17,18;104:6;129:7; 131:11,15,15;137:4;144:9, 14,17;158:22;159:19,20,22; 172:6,15,15;175:20;177:3, 18;178:15;183:3,16,22; 184:5;190:16;191:3;206:4; 209:12;210:16;212:15; 215:21;217:6;219:4</p> <p><b>remind (1)</b> 35:13</p> <p><b>remote (4)</b> 10:9;13:11;54:11;199:24</p> <p><b>remotely (6)</b> 13:5,25;15:8;54:14; 105:23;235:15</p> <p><b>remove (8)</b> 100:5;139:5;140:12,17; 142:13;194:9,11,16</p> <p><b>removed (10)</b> 24:23;25:1,18;93:8; 139:15;140:5;156:7,8;222:8; 223:10</p> <p><b>removes (1)</b> 194:21</p> <p><b>removing (3)</b> 142:16;195:21;196:1</p> <p><b>rendered (1)</b> 19:15</p> <p><b>renders (1)</b> 108:18</p> <p><b>rendition (1)</b> 19:20</p> <p><b>renumbered (1)</b> 25:7</p> <p><b>renumbering (1)</b> 23:20</p> <p><b>re-offered (1)</b> 148:22</p> <p><b>repeat (7)</b> 46:10;47:24;64:9;133:12; 157:1;173:2;218:17</p>	<p><b>repetitious (1)</b> 73:12</p> <p><b>rephrase (1)</b> 153:9</p> <p><b>report (16)</b> 36:12;56:24;107:5,22; 108:4,5,7;109:23;110:18; 118:4,21;131:13,16;176:15; 190:23;233:1</p> <p><b>reported (5)</b> 178:7,13;196:2;198:1,5</p> <p><b>reporter (5)</b> 10:12,18,22;15:8;149:11</p> <p><b>Reporting (3)</b> 10:23;11:3;193:22</p> <p><b>reports (4)</b> 36:16;76:7;118:20;194:6</p> <p><b>represent (16)</b> 12:5;60:16;85:25;96:23; 97:12;102:12;134:8;139:7; 145:17;151:6;157:22; 161:19;166:23;168:1;192:1; 205:1</p> <p><b>representation (3)</b> 117:10;123:22;195:10</p> <p><b>representations (1)</b> 192:9</p> <p><b>representative (1)</b> 187:24</p> <p><b>representatives (1)</b> 182:20</p> <p><b>represented (5)</b> 15:13,15;124:9;191:21; 205:10</p> <p><b>representing (3)</b> 12:16,18;124:21</p> <p><b>represents (2)</b> 76:18;146:3</p> <p><b>request (5)</b> 15:19,23;16:3;84:4,15</p> <p><b>requested (1)</b> 16:20</p> <p><b>requests (2)</b> 15:17;16:1</p> <p><b>require (5)</b> 55:25;115:9,11,14;197:22</p> <p><b>required (4)</b> 18:17;20:24;21:2;225:19</p> <p><b>requirement (4)</b> 14:4;56:13;108:16;153:6</p> <p><b>requirements (1)</b> 109:10</p> <p><b>requires (2)</b> 118:3;146:12</p> <p><b>rerun (1)</b> 228:8</p> <p><b>res (6)</b> 17:23;18:3,10,15;19:14,16</p> <p><b>research (1)</b> 19:10</p> <p><b>reserve (2)</b> 28:4;147:23</p> <p><b>reserved (1)</b></p>
--	---	--	--

<p>30:1 <b>Reservoir (5)</b> 11:14;163:1,10;165:19; 169:1 <b>reservoirs (3)</b> 165:15;168:24;214:18 <b>residual (2)</b> 91:12,12 <b>resolution (1)</b> 122:4 <b>resource (1)</b> 234:1 <b>Resources (10)</b> 11:5;12:22,24;37:19; 65:24;80:16;120:14;231:13, 16,18 <b>respect (7)</b> 71:23;82:24;85:1;99:9; 100:24;101:18;169:10 <b>respective (2)</b> 22:17;234:21 <b>respond (3)</b> 16:8;24:11;233:8 <b>response (9)</b> 16:8;50:24;58:8;72:20; 73:1;84:4;98:23;99:12; 217:12 <b>Responses (2)</b> 17:12;19:5 <b>responsibility (3)</b> 79:6;101:11,15 <b>responsive (1)</b> 28:2 <b>rest (3)</b> 21:15;36:13;108:7 <b>restate (4)</b> 112:15;114:24;153:8; 195:7 <b>restroom (1)</b> 87:20 <b>result (12)</b> 53:5;74:2;86:5,6,11;98:15; 114:9;187:11;206:17; 211:20,25;231:15 <b>resulting (2)</b> 112:23;113:3 <b>results (5)</b> 72:19;110:25;111:5; 170:9;176:8 <b>return (34)</b> 60:23;61:1,6;62:6,15,23; 89:17,18;91:8;99:10,13,18; 100:7,8,13,14,18,19;127:14, 17,20;128:4,5,6,13,17,19,22; 144:3,7,10,17,21;145:1 <b>returned (1)</b> 159:8 <b>returns (5)</b> 62:25;98:24,25;115:19; 127:21 <b>reverse (1)</b> 224:25 <b>reversed (1)</b></p>	<p>18:5 <b>review (27)</b> 17:3;41:17;64:7,10;77:24; 107:23;130:16;165:24; 169:13,21,23;170:2,14; 172:4,9;175:2,7,11;176:16; 180:24;182:1;183:24; 190:17;197:9;209:3;223:17; 236:6 <b>reviewed (6)</b> 74:22;115:10;180:13; 189:22;209:8;234:12 <b>Reviewing (10)</b> 134:13;169:10,25;170:9; 171:1,24;174:6;188:6; 234:20,21 <b>revised (1)</b> 165:21 <b>Revising (1)</b> 183:11 <b>Revisions (2)</b> 65:25;66:16 <b>Ribgy (1)</b> 12:17 <b>RIGBY (4)</b> 12:17,17,17;14:16 <b>right (106)</b> 15:2,12,16,19;17:7;18:16; 20:18,18,25;23:6,7,13;27:3; 28:4;29:12,17;34:10;35:17; 36:20;38:8;39:8;41:8,11,16; 52:6,14;67:8;73:22,24;74:2, 12,13,23;76:23;78:4;85:20; 87:9;88:1;93:15;96:14;98:5, 17;101:18;102:17;105:15; 110:23;111:2,6,10,23;112:6; 113:7,17,19,25;114:6,12; 116:16;122:7,8;124:16; 125:10;128:4;129:9,19; 130:20;133:3;134:7;136:11; 137:7;139:17;140:1,14; 143:6,8;145:25;146:18; 147:1,6,12;154:18;158:14; 160:17;161:23;162:12; 163:19;164:2;166:25; 174:11;188:23;192:18; 194:7;196:11;198:4,21; 201:25;204:3,5,6;222:16; 225:6;226:11;227:7;234:6; 235:19;236:3 <b>righted (1)</b> 210:8 <b>rights (42)</b> 19:22;58:9;73:2,17,23; 78:10;93:8,12,13,23;115:14; 145:18;146:4,4;197:14,24, 25;198:3,6,7,11,12,16,25; 200:25;201:1,20,22;204:14, 16,20,21,23;205:2,3,11,11; 207:4;209:2;214:19;234:16; 235:1 <b>Ririe (1)</b> 163:10</p>	<p><b>RISD (1)</b> 134:7 <b>risk (1)</b> 205:4 <b>river (47)</b> 43:7,10;51:2;52:13,25; 53:4;61:17,18,25;62:2; 73:18;79:4;89:22,24;90:1,4, 10,19,20,21,25;92:4,5;94:13; 98:7;100:10,10;110:21; 112:18,22;113:3;114:5; 138:15;162:19;163:11,15,21, 25;164:4,5,22;165:18;167:6, 14,19;181:12;211:10 <b>road (1)</b> 132:1 <b>roads (1)</b> 69:6 <b>Rob (3)</b> 11:22;88:5;161:18 <b>Rocky (1)</b> 11:24 <b>role (3)</b> 38:10;42:8;121:13 <b>roll (3)</b> 10:17;13:4,13 <b>room (2)</b> 14:19;128:9 <b>rooms (1)</b> 54:13 <b>root (1)</b> 126:25 <b>rotation (1)</b> 146:12 <b>Rough (1)</b> 143:11 <b>roughly (12)</b> 44:3;46:23;47:13;52:5,12; 53:11;55:16;56:4;141:18,20; 143:10;163:14 <b>route (1)</b> 126:17 <b>routinely (1)</b> 164:10 <b>row (7)</b> 10:21,21;73:5;85:18; 134:5;140:10;141:15 <b>R-square (1)</b> 186:23 <b>R-squared (9)</b> 171:23;184:14;186:25; 187:3,18;189:1;201:6; 224:13;225:10 <b>rule (12)</b> 22:22;80:23;81:6,11,15, 20;207:24,25;208:15;209:1; 234:9;235:4 <b>ruled (1)</b> 233:17 <b>Rules (12)</b> 80:15,20,20,25;81:2; 207:17,19,21,24;208:21; 209:7;211:6</p>	<p><b>ruling (2)</b> 183:18;233:10 <b>run (17)</b> 46:2,5,6;57:20,24;71:9,18, 24;98:18;108:6;111:1; 112:21;113:2;178:19,25; 205:7,13 <b>running (2)</b> 71:16;127:10 <b>runoff (2)</b> 127:4,6 <b>runs (10)</b> 90:9;93:4,6,8,10,25; 111:10,14,17;113:4</p> <hr/> <p style="text-align: center;"><b>S</b></p> <hr/> <p><b>safe (1)</b> 151:13 <b>Salmon (3)</b> 92:7;100:11,13 <b>same (32)</b> 50:4;52:19;53:2;57:24; 99:23;102:18;125:18;130:4; 131:5;133:6,7;134:12;135:7; 139:15;140:19,20;141:8,10; 142:15;145:6;152:16;157:8, 8;163:18;165:1;178:13; 180:3;200:11;202:4;206:9; 220:21;228:12 <b>Sarah (11)</b> 11:17;13:6,10;26:2;27:11, 19;30:21;32:4;60:15;124:20; 135:17 <b>sat (2)</b> 144:14,17 <b>satisfy (2)</b> 125:17;142:2 <b>saturated (2)</b> 126:24;127:10 <b>Saturday (3)</b> 30:1,2,5 <b>save (2)</b> 24:8;229:24 <b>saw (5)</b> 63:8;158:16,21;195:18,18 <b>saying (1)</b> 200:6 <b>scenarios (3)</b> 72:15;73:21;101:20 <b>schedule (6)</b> 29:18;31:19;32:19,23; 227:8;229:20 <b>scheduled (2)</b> 10:13;29:22 <b>science (5)</b> 18:18,18,23;19:2;37:13 <b>scientific (1)</b> 108:11 <b>scope (6)</b> 16:22;17:9;23:1;65:6; 104:20;232:1 <b>Scott (1)</b></p>
---	---	---	--

<p>31:16 <b>screen (3)</b> 13:6;31:24;32:2 <b>screens (1)</b> 10:11 <b>screw (1)</b> 122:3 <b>scroll (2)</b> 207:23;209:1 <b>season (15)</b> 43:5;45:19;52:3;55:24; 56:14,17;58:19;62:10;78:13; 86:15;98:22;164:11;203:19; 223:19;227:15 <b>seasonality (4)</b> 63:1,3;100:1,4 <b>seat (2)</b> 35:15;124:15 <b>seated (2)</b> 35:17;37:3 <b>second (12)</b> 38:23;71:12;98:23; 125:18;126:19;127:4; 138:11;190:16;197:1; 204:12;208:19;233:19 <b>secondary (1)</b> 154:19 <b>section (7)</b> 37:25;121:4,4;125:8; 145:19;190:13,17 <b>sections (1)</b> 21:9 <b>securing (1)</b> 231:16 <b>seeing (3)</b> 124:22;184:13;230:22 <b>seem (2)</b> 10:5;114:25 <b>seemed (2)</b> 10:6;23:2 <b>seems (4)</b> 21:21;113:19;180:18; 189:7 <b>seepage (4)</b> 126:8,11;127:15;161:1 <b>sees (1)</b> 161:3 <b>selected (3)</b> 38:13;73:13;151:5 <b>self-explanatory (1)</b> 139:3 <b>semi-irrigated (9)</b> 68:12;69:2;88:22;141:14; 194:25;221:2,21;222:10,11 <b>semi-rigid (1)</b> 32:23 <b>send (6)</b> 25:5,17,24;54:22;60:11; 176:17 <b>senior (8)</b> 20:24;73:20,22,23;74:5; 114:16,17;115:1 <b>sense (5)</b></p>	<p>20:21;21:2;49:20;130:11; 215:25 <b>sensing (1)</b> 199:24 <b>sent (11)</b> 13:22;54:21;87:4;126:13; 138:14;177:4,4,15,21; 178:15;217:20 <b>sentence (10)</b> 81:6;125:18,25;126:2; 127:23;151:2;152:17; 191:19;197:1;208:19 <b>sentences (2)</b> 44:1;150:22 <b>sentinel (1)</b> 117:6 <b>September (8)</b> 43:4;58:11;76:25;77:1; 78:7;217:22,25;227:11 <b>series (12)</b> 25:6,8,9,12;28:9;40:24; 41:10,18;124:25;182:18; 204:13;214:5 <b>served (1)</b> 17:17 <b>service (5)</b> 118:11;194:10;197:8; 199:21;202:2 <b>services (2)</b> 120:21;121:2 <b>set (8)</b> 10:3,4,7;14:20;15:1;22:25; 31:20;60:7 <b>sets (1)</b> 221:17 <b>setting (1)</b> 200:21 <b>settlement (5)</b> 75:15;77:22;159:15; 205:20;206:6 <b>seven (1)</b> 152:19 <b>several (6)</b> 83:19;141:12;144:16; 176:21;182:21;183:18 <b>SF5 (2)</b> 148:5,10 <b>shapefile (17)</b> 132:10;137:10;138:13,18; 139:2;140:11;142:8;178:11; 194:7,8,11,13,16,17;195:6, 11;222:7 <b>shapefiles (12)</b> 122:23;123:3,4,7,22,23; 124:1,9;140:6;178:3,3; 198:21 <b>Share (15)</b> 7:23;17:19;57:11;76:4,19; 83:22,24;84:2;86:3,7,25; 87:6;100:25;109:7;114:23 <b>shared (2)</b> 118:20,23 <b>shares (4)</b></p>	<p>42:15;84:16;199:8,20 <b>Shaw (1)</b> 230:18 <b>shift (9)</b> 68:1;95:8;96:16;166:3; 171:7;181:6;188:16;196:16; 219:15 <b>shifting (2)</b> 79:5;166:1 <b>short (3)</b> 22:16;52:3;57:14 <b>shortage (6)</b> 42:18;53:7;57:21;114:11, 18;115:3 <b>shortfall (23)</b> 51:24;54:25;72:21;74:17; 76:12,20;79:6,13;86:3,5,5,8, 13,14,18;110:15;113:8; 115:19;171:20;176:10; 206:18,21;207:1 <b>shortfalls (1)</b> 109:7 <b>shortly (2)</b> 16:5;33:12 <b>short-term (3)</b> 98:7,10,16 <b>shot (1)</b> 213:6 <b>show (10)</b> 26:7;55:16,19;72:17; 153:25;154:8,8,12,20;221:11 <b>showed (3)</b> 192:12;193:19,25 <b>showing (5)</b> 76:25;143:16;159:9; 186:22;226:24 <b>shown (4)</b> 77:5;85:5;132:8,16 <b>shows (17)</b> 50:21;51:5;55:2,9;58:10; 74:10,16;77:6;78:3;84:25; 85:18;134:5;141:16;178:23; 186:16,25;204:9 <b>side (19)</b> 61:7,11,15,21;73:16; 74:23;98:24,25;99:6,8,9,10, 15,19;100:7,10,19;186:19; 187:17 <b>signed (5)</b> 136:13;137:8;158:12,17; 186:24 <b>significance (1)</b> 187:2 <b>significantly (2)</b> 29:6;152:21 <b>SIGSTEDT (7)</b> 13:17,17;30:22;179:9,20; 180:4;190:19 <b>similar (1)</b> 16:19 <b>Simmons (2)</b> 11:15,18 <b>simple (3)</b></p>	<p>25:25;183:23;233:1 <b>simplify (1)</b> 24:8 <b>simply (5)</b> 21:13;102:1;143:14,15; 232:23 <b>SIMPSON (9)</b> 12:13,13;96:17,18,21,23; 102:8,13;135:7 <b>simulate (2)</b> 98:10,15 <b>simulation (5)</b> 43:15;46:7;48:18;71:16,24 <b>simulations (5)</b> 38:22;46:2;93:12,16;98:10 <b>single (1)</b> 220:24 <b>single-season (1)</b> 97:22 <b>Sinks (1)</b> 210:10 <b>sit (1)</b> 97:11 <b>situation (2)</b> 19:21;103:23 <b>situations (1)</b> 165:23 <b>six (1)</b> 30:2 <b>sixth (2)</b> 49:19;231:20 <b>skinniest (1)</b> 106:13 <b>Skyler (1)</b> 12:4 <b>slated (1)</b> 39:11 <b>slide (29)</b> 49:15,19;50:19,20;51:4, 15,21;52:10;54:23;55:1,8; 57:19;58:3,4,7,10;72:7,11; 73:1;74:9,10;97:3;113:25; 186:17;202:24;203:12,12, 18;215:10 <b>slides (2)</b> 49:24;185:7 <b>slight (2)</b> 31:14;160:22 <b>small (8)</b> 73:19,24,25;126:15; 128:20;197:24,25;231:5 <b>smaller (2)</b> 130:3;141:18 <b>smallest (1)</b> 106:13 <b>Snake (33)</b> 50:11,15;51:2;52:13; 73:17;74:3;78:2,4,10,23; 79:19;85:17,18,21;86:19; 90:10;93:14;94:13;100:9; 110:21;112:22;113:3;117:2, 4,14;128:6;138:15;141:13; 162:19;163:25;164:4,5;</p>
---	--	---	--



<p>181:12 <b>snapshot (1)</b> 220:24 <b>snow (7)</b> 91:1;164:9,17,18;165:22; 167:20;168:2 <b>soil (2)</b> 126:23;127:9 <b>solely (1)</b> 202:10 <b>solicited (1)</b> 180:6 <b>Somach (2)</b> 11:15,17 <b>Somebody (2)</b> 27:12;211:4 <b>somehow (1)</b> 51:17 <b>someone (2)</b> 25:12;40:24 <b>someplace (1)</b> 127:11 <b>sometime (4)</b> 52:11;113:14,20;158:22 <b>sometimes (1)</b> 68:19 <b>Somewhat (1)</b> 163:9 <b>somewhere (6)</b> 20:17;55:15;57:22;106:2; 192:14,16 <b>soon (5)</b> 142:5;155:12;158:25; 159:2;160:2 <b>Sophia (14)</b> 13:10,17,19,23;30:22,24; 32:10;179:9;180:4;190:1,19; 191:1,5,9 <b>Sophie (1)</b> 179:19 <b>Sophie's (1)</b> 190:22 <b>sorry (21)</b> 31:13;46:10;47:24;59:19; 64:9;84:18;88:14,16;93:9; 94:9;101:25;139:23;145:2; 150:16;154:25;166:9; 172:18;185:20;208:4;216:5; 221:19 <b>sort (3)</b> 77:21;129:11;147:3 <b>sound (1)</b> 38:25 <b>sounds (3)</b> 74:13;174:11;227:22 <b>source (11)</b> 69:25;70:4,4,19;81:9; 127:22,22;138:13;144:23; 164:2;208:13 <b>sources (5)</b> 62:22;68:13,14,16,21 <b>south (10)</b> 61:7,21;98:24,25;99:8,9,</p>	<p>10,19;100:7,10 <b>southeast (1)</b> 163:23 <b>space (1)</b> 169:1 <b>Spackman (3)</b> 11:4;45:23;137:8 <b>speak (6)</b> 12:20;13:8;15:6;105:25; 111:11;184:10 <b>speaking (7)</b> 14:5,13;74:1;80:4;162:22; 187:7,15 <b>specialty (1)</b> 118:12 <b>specific (11)</b> 23:15;79:25;80:3;90:16; 93:24;94:23;109:5;160:16; 183:9;210:23;221:23 <b>specifically (18)</b> 20:10;26:25;33:6;45:12; 79:14;89:10;91:21;108:9; 129:8;141:4;153:1;154:11, 14,15;160:19;171:19;188:8; 231:11 <b>specifics (1)</b> 17:7 <b>speculate (1)</b> 111:19 <b>speed (1)</b> 29:6 <b>spell (3)</b> 37:8;106:17;120:2 <b>spelled (1)</b> 106:19 <b>SPF (3)</b> 133:2;134:5;192:8 <b>spillover (1)</b> 30:1 <b>split (2)</b> 87:2,5 <b>spot (2)</b> 136:20;152:2 <b>spreadsheet (3)</b> 62:12,21;76:24 <b>spring (2)</b> 128:6;171:8 <b>Springs (3)</b> 20:13,15;92:5 <b>Spronk (3)</b> 12:2;179:15;180:1 <b>SRBA (7)</b> 147:2,11,15,19;148:4,5; 200:24 <b>stabilize (2)</b> 225:17,17 <b>staff (31)</b> 24:6;33:7;66:23;68:10; 81:16,22;88:12,20;92:16,20; 94:22;111:8;121:3;158:25; 169:12,18;172:24;173:4; 180:7;183:10,14;185:15; 205:6;212:13;220:19,21,23;</p>	<p>221:4;223:17,20;225:25 <b>staffing (5)</b> 223:13,24;225:19;228:2,5 <b>stage (1)</b> 16:15 <b>stake (1)</b> 233:24 <b>stamped (1)</b> 40:20 <b>stand (4)</b> 106:1;138:12;140:2; 144:12 <b>standard (14)</b> 142:2;143:22;154:22; 155:4,15,16;156:2,23,25; 157:6,12;166:1,4;200:4 <b>standards (1)</b> 200:1 <b>standing (5)</b> 17:8;21:19;35:15;213:1; 234:23 <b>standpoint (1)</b> 47:19 <b>stands (1)</b> 138:16 <b>start (19)</b> 10:18;11:8;13:5;30:9; 41:21;105:22;124:23; 125:22;135:24;196:14; 198:24;225:23;227:6;234:9; 235:21,22,22,23;236:3 <b>started (14)</b> 44:2,4;52:23;108:8;114:4, 7;136:24;169:20,25;170:15; 176:12;188:3,6;226:15 <b>starting (5)</b> 27:25;48:19;58:17;86:12; 125:7 <b>starts (1)</b> 150:23 <b>state (78)</b> 17:23,23,24;37:7,14; 38:21,22;43:20;44:5,6,9,12, 17,21;45:10,15;46:3;48:7,11, 16,18;50:21,23;52:13,18; 55:4,11,24;56:20;57:20; 71:2,3,6,10,18,21,21;72:8,13, 14,19,21;74:24,25;75:5,22; 85:22;95:15;96:10;97:15,22; 98:6,10,17;106:17;108:14, 18;109:6,8,11;111:1,5,9,17; 112:21;113:2,16;120:2,9; 145:15;147:7;205:19,19; 207:9,9;210:22;231:17; 232:10 <b>stated (7)</b> 21:16;22:4;110:25;111:4; 131:14;151:21;190:25 <b>statement (3)</b> 125:12,13;208:10 <b>statements (3)</b> 17:15;20:6;21:17 <b>states (2)</b></p>	<p>51:6;191:20 <b>stating (3)</b> 108:9;232:23,25 <b>statistic (2)</b> 187:4;225:11 <b>status (3)</b> 172:8;217:23,23 <b>stay (1)</b> 127:1 <b>stays (1)</b> 130:4 <b>steady (50)</b> 17:23;38:21;43:20;44:5,9, 12,17,21;45:10,15;46:2;48:6, 11,16,18;50:21,23;52:13,18; 55:4,11;57:20;71:2,21;72:8, 13,21;74:25;95:14;96:9; 97:14,22;98:6,9,17;108:14, 18;109:5,8,11;111:1,4,9,17; 112:21;113:2,16;205:19; 207:9;232:10 <b>Stegner (1)</b> 232:21 <b>step (7)</b> 47:18;60:19;118:3,6; 178:8;185:13;201:17 <b>stepping (1)</b> 185:23 <b>steps (6)</b> 46:25;47:4;48:21;107:24; 117:25;118:1 <b>stick (2)</b> 55:8;140:2 <b>still (14)</b> 97:11;137:9;150:7; 153:17;155:14;171:14; 173:9;182:5;189:22;223:22; 224:9,11,15;225:3 <b>stipulate (5)</b> 29:5,11;35:21;36:10,14 <b>stipulated (4)</b> 29:2;36:9,11;101:24 <b>stipulating (1)</b> 28:22 <b>stipulation (5)</b> 29:16;36:1,2,4;147:17 <b>stood (1)</b> 96:17 <b>stop (1)</b> 141:5 <b>storage (6)</b> 17:25;86:4,7;213:25; 214:15,22 <b>straight (1)</b> 25:22 <b>stream (1)</b> 92:3 <b>streamlined (1)</b> 232:17 <b>streams (3)</b> 91:9;163:4,24 <b>street (1)</b> 18:13</p>
---	--	--	--

<p><b>stress (4)</b> 46:25;47:4,18;48:20</p> <p><b>strike (3)</b> 81:13;201:16;209:14</p> <p><b>studies (2)</b> 156:11,12</p> <p><b>study (2)</b> 155:19;156:17</p> <p><b>stuff (1)</b> 147:16</p> <p><b>sub (1)</b> 160:9</p> <p><b>subdivision (2)</b> 69:5;195:2</p> <p><b>subject (5)</b> 17:2;74:7;84:15;101:23; 102:4</p> <p><b>subjects (2)</b> 29:13;109:23</p> <p><b>submit (3)</b> 118:21;183:1;233:2</p> <p><b>submitted (8)</b> 25:22;76:7;138:20; 179:10;194:8;197:5;220:7, 11</p> <p><b>subpoena (2)</b> 15:20;31:9</p> <p><b>subpoenas (2)</b> 15:24;16:4</p> <p><b>subsequent (3)</b> 19:20;172:19;175:11</p> <p><b>substitute (1)</b> 40:21</p> <p><b>subtract (3)</b> 61:10;62:19;193:4</p> <p><b>successful (1)</b> 18:9</p> <p><b>sudden (1)</b> 235:17</p> <p><b>sufficient (2)</b> 142:2;148:23</p> <p><b>suggest (1)</b> 27:25</p> <p><b>suggested (2)</b> 191:5;223:14</p> <p><b>suggesting (1)</b> 223:2</p> <p><b>suggestion (3)</b> 34:10;105:22;223:6</p> <p><b>suggestions (4)</b> 131:6;218:6,19;219:1</p> <p><b>suited (1)</b> 211:12</p> <p><b>SUKOW (33)</b> 12:21,21;27:25;31:8; 36:22,24;37:4,7,9;56:21; 57:2;63:12;83:11;88:2,5,15; 95:7;96:22;102:25;104:9,21; 105:9,14,16;109:6;111:22; 112:4;128:10;141:21;159:7; 169:18;200:8;226:22</p> <p><b>S-u-k-o-w (1)</b> 37:9</p>	<p><b>Sukow's (2)</b> 27:9;194:20</p> <p><b>SULLIVAN (7)</b> 12:1,1;30:23,24;32:8; 131:2;179:13</p> <p><b>summarize (2)</b> 181:19;209:5</p> <p><b>summary (10)</b> 26:8,15;65:24;66:16; 108:6,8;134:3;177:7;180:3; 232:23</p> <p><b>summer (3)</b> 159:21;169:23;170:15</p> <p><b>superposition (1)</b> 108:20</p> <p><b>supervising (2)</b> 169:22,22</p> <p><b>supplemental (13)</b> 157:7;196:23;197:2,7,11; 198:22;199:19;201:16,19, 21;202:3,7,14</p> <p><b>supplied (4)</b> 43:7;70:5,6,10</p> <p><b>supplies (2)</b> 58:12;214:9</p> <p><b>Supply (49)</b> 7:14,19;28:10;40:25;42:6; 43:7;57:6,8,20;58:23;70:2,3, 19;74:6;75:3;92:1;93:15,20; 94:5,7,11;110:14;122:1; 161:23;162:10;165:7,12,14, 15;166:2,3,13;167:3,4; 168:24;170:23;171:5;177:6; 181:7,10,21;184:22;187:14; 188:8;190:14,21;191:10; 198:13;225:4</p> <p><b>supplying (1)</b> 171:17</p> <p><b>support (5)</b> 75:14;81:9;98:5;208:13; 231:23</p> <p><b>suppose (1)</b> 34:20</p> <p><b>Supreme (2)</b> 19:12;21:12</p> <p><b>sure (37)</b> 10:4,10;13:9;14:16;36:10; 50:4;71:4;90:23;92:22; 93:22;95:2;101:4;113:21; 114:25;124:5;129:5,13; 133:14;143:11;144:16; 147:9;151:4,12;153:9,9; 157:12;166:24;178:18; 181:18;182:12;184:3; 188:10;195:15;196:3; 206:10;220:22;233:20</p> <p><b>Surface (86)</b> 10:15;33:11,19;34:22; 38:24;48:14;49:2,11;53:7, 13;61:20;66:3,19;70:2,5,10, 17,23;80:16;81:8;82:3; 85:23;91:3,8,9,11;96:16; 98:11;100:15,19;102:11;</p>	<p>106:12;109:11;110:15; 114:11;115:19;116:18; 122:1;125:15;127:8;133:22; 137:21;138:2,14,20;140:7, 11;149:6;159:16;165:7; 168:16;181:13;197:14,17; 198:23;199:8,15,17;201:1, 19,24;202:2,4,9,10,15,16; 203:4,15;205:20;208:12; 209:20;210:21;211:25; 213:23;214:8;216:20,25; 217:15,18;219:15;220:8; 228:22;230:14;231:18;233:7</p> <p><b>surprised (1)</b> 233:10</p> <p><b>suspense (1)</b> 136:19</p> <p><b>sustain (1)</b> 105:6</p> <p><b>Sustained (3)</b> 103:11;159:25;206:11</p> <p><b>Swan (4)</b> 144:12;145:1,4,8</p> <p><b>SWC (11)</b> 7:15;133:23,23;138:5,10, 11;187:16;197:8;203:13,20; 215:9</p> <p><b>switch (6)</b> 32:8;53:10;130:16;136:3; 137:14;216:12</p> <p><b>switched (1)</b> 158:20</p> <p><b>switching (2)</b> 32:11;224:4</p> <p><b>sworn (3)</b> 36:25;106:7;119:19</p> <p><b>system (9)</b> 62:23;99:6,14;105:25; 127:13,18,19,24;199:9</p> <p><b>systems (2)</b> 199:7;209:21</p>	<p>26:25;125:23;135:24; 153:24;155:20,23;157:14; 170:15,16;172:15;173:8,9, 10;175:7;199:11,24;201:12; 210:11;213:22,25;214:18; 215:1;225:21;228:5;231:10</p> <p><b>talks (5)</b> 50:20;77:23;186:17; 231:12,14</p> <p><b>target (4)</b> 61:16;62:3;89:21;100:6</p> <p><b>targets (1)</b> 90:22</p> <p><b>tasked (3)</b> 183:10,14,16</p> <p><b>team (1)</b> 106:24</p> <p><b>technical (99)</b> 37:24;44:15,16,18,19,24; 45:3;49:11;53:12,17,20,24; 54:2,16,21;63:21,25;65:25; 66:16;67:8;72:4,18;94:7,16, 19,21;95:3,18,20;107:18; 111:9;117:6,16;120:21; 121:1;122:16;130:12,19; 131:8,14,15,17,23;133:24; 143:12;144:13;145:5;149:6; 157:25;158:24;169:12; 170:18;172:24;174:13,16,19, 24;175:2,12,18,22,23;176:4; 177:9,12,22,25;178:22; 179:10;180:2,7;182:10,18, 22,24;185:4;196:2;197:9; 209:9,16;212:13;214:6; 215:2;216:19;217:2,4,6,7,24; 218:3,7,12,14,15,20,23,25; 219:1;230:16</p> <p><b>technically (3)</b> 44:1;200:6,22</p> <p><b>technology (5)</b> 37:12;179:10,20;180:5; 190:18</p> <p><b>telling (4)</b> 87:5;101:14;225:10; 234:19</p> <p><b>temperatures (3)</b> 151:6,15,18</p> <p><b>Temple (1)</b> 32:15</p> <p><b>ten (7)</b> 31:21;32:16;48:9;56:3; 87:23;109:3;143:5</p> <p><b>tend (1)</b> 226:22</p> <p><b>tender (1)</b> 109:22</p> <p><b>ten-fold (3)</b> 21:3,4,5</p> <p><b>term (8)</b> 69:24;82:15;127:21; 143:3;146:12;155:8;187:3; 212:9</p> <p><b>terms (10)</b></p>
<b>T</b>			
	<p><b>tab (1)</b> 125:2</p> <p><b>table (25)</b> 14:22,24,25;18:12;20:4; 35:15;74:23;84:24;85:3,6, 20;132:8,16;134:2,5;136:24; 138:1,4;139:8,13;186:15,21; 195:19;204:9,19</p> <p><b>Taggart (1)</b> 12:5</p> <p><b>talk (12)</b> 15:17;23:13;29:13;33:2; 35:9;129:9;138:9;154:21; 157:16;199:4;211:15;235:6</p> <p><b>talked (9)</b> 88:8;129:7;132:22;144:8, 16;181:7;182:20;217:19; 222:1</p> <p><b>talking (25)</b></p>		

64:6;79:12;91:15;97:13; 169:16;191:24;198:3; 209:25;215:20;228:2 <b>testified (17)</b> 37:1;89:16;97:2,19;99:4, 11;101:22;106:8;119:20; 128:10;132:14;141:21,25; 144:19;187:22;188:3;221:10 <b>testifies (1)</b> 35:5 <b>testify (14)</b> 15:21;21:22;30:7,13;33:9; 35:24;36:3;38:18;121:20; 128:12;161:22;174:22; 180:20;210:19 <b>testifying (2)</b> 222:22;224:5 <b>TESTIMONY (20)</b> 7:2;13:25;16:1,6,19;22:8; 28:2;31:21;35:8;88:7;92:2; 99:1;101:2;104:3,20;105:8; 194:20;216:18;225:12;233:4 <b>testing (1)</b> 227:7 <b>Teton (1)</b> 211:10 <b>Thanks (6)</b> 35:25;186:7;228:17; 234:7;235:19;236:4 <b>Theoretically (3)</b> 200:13,16;201:3 <b>thereby (1)</b> 19:23 <b>thinking (1)</b> 105:2 <b>Third (7)</b> 71:10;127:12;140:25,25; 169:9;171:6;184:11 <b>Thompson (41)</b> 7:4;11:10,10;16:16,16; 19:24;21:19;28:20,21,25; 29:8;32:14;40:4,7,19;96:24; 106:9,11,16;107:2;109:15, 22,25;112:25;119:8,9;129:1; 146:2,24;168:18;210:20; 219:18,20,21,24;222:12; 229:4,17;230:9,12;233:8 <b>though (7)</b> 48:19;79:8;91:25;118:24; 144:7;160:14;234:10 <b>thought (7)</b> 63:8;136:1;141:9;149:13; 150:13;159:21;234:18 <b>thoughts (2)</b> 17:20;34:9 <b>three (10)</b> 12:18;69:1;120:19; 139:12;183:9;189:18,19; 194:23;204:17;221:19 <b>three-quarters (1)</b> 147:16 <b>threshold (1)</b> 143:13	<b>thumb (1)</b> 49:18 <b>Thursday (1)</b> 30:15 <b>thwart (1)</b> 22:14 <b>timeliness (1)</b> 156:1 <b>timely (4)</b> 155:6,6,8,13 <b>times (2)</b> 56:3;144:16 <b>timing (6)</b> 15:25;33:9;105:15; 108:18;144:21;159:12 <b>title (12)</b> 51:18,22;58:7;63:17; 65:18;66:11,14;73:5;116:11; 133:19;184:19;215:9 <b>titled (9)</b> 49:2;73:1;133:20;137:20; 138:2,11;140:16;173:25; 203:2 <b>TJ (9)</b> 12:9;17:13;19:9;35:18; 36:18;63:12;135:2;166:22; 215:1 <b>today (19)</b> 15:11,15;20:4;33:18; 34:14;36:4;38:14,18;39:3; 97:11;101:22;121:17; 122:20;166:23;173:13; 178:21;189:23;200:22;228:8 <b>together (1)</b> 204:17 <b>told (10)</b> 45:14,21;53:16,18,19; 64:21,25;65:3,3;200:20 <b>tomorrow (6)</b> 147:10;229:16;234:9; 235:13,18;236:4 <b>Tony (4)</b> 15:20,25;91:18;211:12 <b>took (3)</b> 45:6;169:15,19 <b>tool (3)</b> 108:11;182:3,4 <b>tools (1)</b> 227:22 <b>top (9)</b> 126:4;127:5,23;129:10; 150:25;185:10;186:17; 190:9;210:16 <b>topic (3)</b> 38:18,20;211:8 <b>topics (5)</b> 39:3;121:20;122:20; 125:9;182:21 <b>total (10)</b> 62:6;69:14;76:19;100:12; 101:12;120:18;125:14,16; 192:13;204:18 <b>totaling (1)</b>	85:15 <b>totally (1)</b> 220:22 <b>touch (1)</b> 158:7 <b>town (1)</b> 232:19 <b>track (1)</b> 197:17 <b>tracking (4)</b> 117:7;154:14,15;201:1 <b>traditional (2)</b> 18:20;35:4 <b>transfers (1)</b> 117:3 <b>transient (65)</b> 17:22,23,24;38:21;43:14, 15,44;5,10,13,18,23;45:11, 15,25;46:3,5,7;47:19,23; 48:2,3,6,11,22;55:3,24; 57:25;71:3,6,9,16,18,21,24; 72:8,14,19;74:16,24;75:5,22; 76:24;78:6,16;85:22;87:12; 95:15,22;96:10;97:15; 101:21;108:20,25;109:2; 110:19;111:10,14;158:4,11, 20,23;159:6,10;205:19; 207:9 <b>transition (1)</b> 17:22 <b>translates (1)</b> 207:2 <b>transmissivity (1)</b> 90:15 <b>traveling (4)</b> 17:18;232:19;235:13,18 <b>Travis (5)</b> 11:9,10;14:14;16:16; 219:21 <b>trend (1)</b> 224:13 <b>trends (1)</b> 62:14 <b>tributaries (1)</b> 100:9 <b>tributary (8)</b> 91:9;92:1,3;163:4,24; 164:5;165:23;168:23 <b>tried (1)</b> 24:6 <b>trimline (14)</b> 82:13,21,23;103:6,9,15,17, 23;104:10,12,13;105:8; 212:4,5 <b>trimlines (3)</b> 83:4,6;212:14 <b>true (18)</b> 43:8,14;46:1,12;47:1,10; 48:17;50:25;58:16;61:12; 86:24;130:3;179:21;180:3; 193:17;221:12,13,16 <b>truth (3)</b> 36:25;106:7;119:19	<b>try (13)</b> 23:21;24:8;25:24;29:9; 30:3;33:25;63:13;88:18; 90:13;122:2;131:21;169:6; 199:5 <b>trying (10)</b> 22:7,25;32:20;60:11; 151:20,25;152:1;155:15; 214:8;223:20 <b>Tschohl (3)</b> 26:2;27:11;32:4 <b>turn (35)</b> 38:4;58:3;65:10;67:6; 72:6;76:2;80:13;83:7;84:8; 97:1;116:9;121:5;125:6; 132:3;134:1;135:15,16; 162:3;173:18,19;179:6; 182:7;184:16;185:8;189:21; 190:4;191:13,16;196:5,17, 19;202:19;207:16;213:15; 219:24 <b>turning (1)</b> 124:15 <b>twice (1)</b> 40:9 <b>Twin (85)</b> 42:19;43:1,6,13;54:25; 55:10,23;56:16;57:14;58:12; 60:24;61:7;62:7,15,22; 73:16;89:18;99:14;100:8; 122:13;128:4,13,17,23; 132:9,10,15,24;136:17; 137:10;140:9;141:4,15; 143:15;144:2,6,17,20;145:1, 10,15,17,24;146:13,16; 147:14,17;164:3,6;165:12, 16;168:22;171:19;178:13, 20;181:8,11,17,20;183:12; 184:9;186:19;187:19,23; 189:7,10,15;190:21;191:10; 192:11;193:19,20;194:1,6; 201:6,10;222:2,8,23;223:3,7; 224:5,10,12;225:2 <b>two (19)</b> 16:4;17:9;34:21,23;38:17, 20;65:12;73:4;76:12;113:13; 123:13;124:22;141:16; 150:22;194:13;199:2; 204:15;216:19;234:2 <b>two-thousand- (1)</b> 182:17 <b>type (14)</b> 64:21;65:1;80:9;116:25; 118:15;148:6;152:23;154:7; 160:16;172:3;176:15;193:6, 7;199:24 <b>types (2)</b> 81:18;141:12 <b>typically (2)</b> 69:4;148:7 <b>typo (1)</b> 202:24
---	--	--	---

<p style="text-align: center;"><b>U</b></p> <p><b>Ultimately (2)</b> 174:1;176:23</p> <p><b>unavailability (1)</b> 31:7</p> <p><b>unclear (1)</b> 155:19</p> <p><b>under (29)</b> 22:15,18;72:13,14,21; 74:24;86:17;87:10;100:25; 101:18;115:17;135:18; 140:6;145:24;178:8;190:13; 191:18;203:20;204:2;205:4; 207:10,11;208:21;209:7; 227:23;233:16;234:8;235:1, 3</p> <p><b>underlying (2)</b> 22:2;67:11</p> <p><b>underneath (1)</b> 190:17</p> <p><b>understood (14)</b> 21:18;45:25;48:5,9;64:25; 104:22;152:15;153:20; 167:3;176:25;194:20;207:8; 218:18;226:21</p> <p><b>undertook (1)</b> 182:1</p> <p><b>unduly (2)</b> 114:15,25</p> <p><b>unique (1)</b> 24:7</p> <p><b>uniquely (1)</b> 25:2</p> <p><b>unit (2)</b> 68:17;88:21</p> <p><b>units (1)</b> 88:13</p> <p><b>University (3)</b> 37:12,14;120:9</p> <p><b>unless (2)</b> 13:20;29:14</p> <p><b>unlined (1)</b> 126:15</p> <p><b>unqualified (2)</b> 39:3;122:20</p> <p><b>unregulated (7)</b> 94:8,13;162:11,25;165:6; 167:11;181:22</p> <p><b>unsure (4)</b> 167:18;171:8;188:17,18</p> <p><b>up (54)</b> 10:3,4,7;12:20;14:20;15:1, 6,7;23:11;28:3;29:6;33:1; 60:19;63:8;81:15,21;82:22; 83:19;84:19;87:2,5,11; 96:17;100:24;105:25;106:1; 122:3;124:25;127:23;130:1; 152:2;153:25;154:8,9,12,20; 160:1;166:25;177:5;192:21; 193:13,14;202:23;204:18; 206:2;207:9;209:9;212:9;</p>	<p>218:20;221:11;225:18; 227:10;229:25;235:20</p> <p><b>update (2)</b> 153:7;225:25</p> <p><b>updated (6)</b> 25:24;46:24;138:25; 176:14;201:2;228:6</p> <p><b>updates (1)</b> 214:7</p> <p><b>updating (2)</b> 20:3;201:12</p> <p><b>upper (1)</b> 204:19</p> <p><b>upstream (1)</b> 91:5</p> <p><b>use (79)</b> 20:18;21:13;25:23;28:2,5; 40:9;41:1;60:23;63:3;68:17, 18,18;69:17;70:22;73:19; 81:10;85:16;87:20;88:11,20; 89:24;90:1,12,24;91:16; 108:14;109:9;111:16; 126:13;129:16,17,17; 131:20;134:14,17;137:22; 138:17,22;141:11,12;142:8, 12;143:2,3,14,19;155:8; 160:20;196:23;197:11; 198:21,22;199:19;200:11,15, 16;201:3;202:7,14;203:4; 204:13,21;206:23;208:14; 209:6;210:11,17;211:19,24; 215:20;218:21;223:2,7,9; 225:13;231:16,17;234:1,22</p> <p><b>used (60)</b> 24:4;43:13;48:16,18; 60:25;61:1,2,25;63:22;68:3; 69:9,10,12,13,18;70:14,15, 17,18;71:5;82:13;89:1,3,4,5, 7,9,20,22;90:22;123:7,11; 132:9;134:9,11,12;136:17; 140:23;141:3,19,22;149:13; 155:9;157:10;171:5,17; 179:2;181:8;184:1;192:25; 193:1;201:23;202:4,13; 212:4,8;218:10;219:2; 223:21,25</p> <p><b>user (3)</b> 209:25;210:1,2</p> <p><b>users (25)</b> 16:7,12;18:8;33:24;34:15, 21;36:15;39:8;42:23;49:4; 58:17,21;79:6;95:7;96:16; 110:14;124:14;159:17; 165:17;187:5;199:5,11,24; 223:2,15</p> <p><b>uses (4)</b> 47:3;89:15;110:13;130:23</p> <p><b>USGS (1)</b> 171:7</p> <p><b>using (31)</b> 26:21;46:24;55:3,11;57:9; 62:8;68:9,12;72:8;83:17; 111:14;130:8;131:4,6;</p>	<p>135:23;137:9;140:4;141:17; 142:11,13,21;143:4;171:9; 186:18;195:22;199:6; 200:10;204:10;222:9,23; 227:24</p> <p><b>usually (1)</b> 194:25</p> <p><b>Utah (2)</b> 37:14;120:8</p> <p><b>utilize (3)</b> 68:14;98:17;198:20</p> <p><b>utilized (8)</b> 63:19;71:17;101:6,10; 181:20;192:22;203:14; 210:14</p> <p><b>utilizing (1)</b> 231:1</p> <p style="text-align: center;"><b>V</b></p> <p><b>vague (1)</b> 67:22</p> <p><b>Valley (1)</b> 79:20</p> <p><b>valuable (1)</b> 20:20</p> <p><b>value (6)</b> 171:23;186:23;187:3,9,18; 224:14</p> <p><b>values (3)</b> 133:6;187:9,10</p> <p><b>variability (1)</b> 187:6</p> <p><b>variable (4)</b> 181:15,24;189:5,12</p> <p><b>variables (4)</b> 129:12;171:5;177:5; 189:19</p> <p><b>variety (1)</b> 68:12</p> <p><b>various (5)</b> 93:17;109:3;117:7; 233:15;234:23</p> <p><b>vastly (1)</b> 201:9</p> <p><b>vegetation (1)</b> 126:16</p> <p><b>verbal (2)</b> 15:4;176:20</p> <p><b>vernacular (1)</b> 11:2</p> <p><b>versa (1)</b> 221:14</p> <p><b>version (18)</b> 46:8,11,16,17,24;47:3,12, 14,15,17,21,21;54:20;70:12; 71:15;99:20;108:9;139:1</p> <p><b>versions (2)</b> 46:6;169:8</p> <p><b>versus (11)</b> 19:12;38:21;48:6,11;55:4; 61:6;72:14;74:25;91:1; 173:16;226:22</p>	<p><b>via (2)</b> 54:10,16</p> <p><b>vice (1)</b> 221:14</p> <p><b>view (3)</b> 10:5;19:19;195:4</p> <p><b>violation (1)</b> 104:19</p> <p><b>vocal (1)</b> 15:21</p> <p><b>voice (1)</b> 15:7</p> <p><b>volume (9)</b> 53:3;58:20;62:12;98:14; 99:23;125:16;133:10;135:2; 162:12</p> <p><b>volumes (2)</b> 81:8;208:12</p> <p><b>volumetric (1)</b> 125:15</p> <p style="text-align: center;"><b>W</b></p> <p><b>wait (3)</b> 139:12;147:24;185:20</p> <p><b>walk (2)</b> 129:11;160:7</p> <p><b>walking (1)</b> 117:24</p> <p><b>wants (3)</b> 213:5;232:8;233:7</p> <p><b>warning (1)</b> 234:24</p> <p><b>waste (1)</b> 20:19</p> <p><b>wasteful (1)</b> 231:17</p> <p><b>watch (1)</b> 171:20</p> <p><b>watching (5)</b> 153:16,17;154:17;171:10; 189:17</p> <p><b>Water (348)</b> 10:15;11:2,5,25;12:2,6,8, 10,12,15,18,22,24;13:2;16:7, 12;17:14;18:8;20:12,18,24; 22:15;33:11,19,24;34:15,21, 22;36:15;37:19;38:24;39:8; 42:11,23,25;43:6,12;45:19; 47:8;48:14;49:2,4,11;50:14; 52:2;53:7,13;55:23;56:13, 16;57:10;58:9,17,18,21,23; 62:22;63:13,15;66:3,19; 68:24;69:23,25;70:2,2,6,6, 10,11,17,18,23,23;73:2,19, 22,23;74:2,6;75:3,6,7,16,22; 77:7,22;78:2,3,4,10,11,17; 79:4,19,20,20,21,24;80:1,3, 16;81:8,8,10,12;82:3;83:20, 22;84:3,25;85:11,17,20,23; 86:4,7,18,19,21,22;89:3,17; 91:2,13,17,23;92:1;93:7,12, 13,15,20,23;94:11;95:7;</p>
--	---	--	---

96:16,16;98:11,19;99:5,13, 21;101:8,11,15;102:3,11; 106:12,22,24;107:25;108:13, 23;109:4,11,12;110:13,14, 15;114:11;115:9,19;116:18; 118:13;120:14;122:1,2; 124:14;125:15,15,17;126:12, 14,18,24;127:3,8,10,18,19, 20,20,22;129:14,16,19,21, 22;130:4;131:10;133:22; 137:21;138:2,14,20;140:7, 11;145:16,18,24,25;146:4; 147:1,6,12;149:6;151:9,24; 153:3,6,14,15,24;154:1,2,3; 155:1;157:7;159:16,17; 160:19;164:2,9;165:7,7,11, 12,14,15,17;168:2,16,24; 179:15;180:1;181:13;192:8; 193:3,10,16;196:23;197:2, 11,14,14,17,18,20,21,25; 198:7,11,11,13,16,21,22,23, 25;199:5,6,7,8,9,15,17,17,19, 22;200:25;201:1,1,19,19,22, 23,24;202:2,2,4,4,7,9,10,12, 14,15,16;203:4,15;204:3,5,6, 13,16,21,23;205:3,11,21; 207:4;208:12,12,14,21; 209:6,20,25;210:1,1,1,5,8,9, 21;211:4,14,20,25;212:22; 213:23;214:8,9,12,15; 216:21,25;217:15,18;219:13, 16;220:8;223:2,15;224:20; 228:20,22;230:14;231:13,16, 17,18,19;233:7,16;234:16, 22;235:1	45:7;96:5 <b>weighing (1)</b> 233:22 <b>weight (1)</b> 232:7 <b>Welcome (2)</b> 10:1;124:17 <b>wells (17)</b> 50:10,11,14;52:11,23; 53:6;111:22,25;112:24; 113:4,14,23;114:3,10,16,17; 115:1 <b>weren't (5)</b> 73:20;94:15;101:19; 137:5;209:15 <b>what's (15)</b> 20:24;32:21;61:25;90:9; 104:17;107:3;110:2;116:11; 125:21;141:19;148:18; 174:10;212:6;229:8;235:23 <b>whole (1)</b> 157:15 <b>Who's (4)</b> 60:9;144:5;168:25;169:1 <b>wide (1)</b> 75:1 <b>widely (1)</b> 108:10 <b>Wildman (3)</b> 143:20,23;157:13 <b>Wildman's (1)</b> 17:3 <b>Willow (4)</b> 92:11;163:7,18;165:1 <b>wind (1)</b> 11:9 <b>windfall (2)</b> 168:15,21 <b>winter (3)</b> 167:20;170:20;214:5 <b>wisely (1)</b> 231:1 <b>wish (3)</b> 16:14;23:11;219:16 <b>withdraw (1)</b> 50:14 <b>within (33)</b> 16:9;58:22;69:13;70:4; 75:2,2;77:7;85:21;89:9; 93:14,19;98:22;117:10; 118:10;125:15;160:20; 165:4;176:19;197:8;198:12, 22;201:18,24;202:2,9,16; 205:6;210:18;211:24;216:1, 4;232:8;234:4 <b>without (8)</b> 28:6;35:22;50:10;53:5; 111:23;152:5;199:11,23 <b>witness (49)</b> 13:16;14:21;15:2;29:18; 31:16;32:8,19;33:12,14; 34:2,11,16;35:4,13,16;38:14; 39:14,18;41:17;56:22;81:3;	87:20;88:16,19;106:4; 107:12;110:5;119:12,13,15; 121:17;129:5;133:12;135:5, 9;136:9;139:22;148:15; 150:19;155:8;161:10; 166:16;168:21;209:4;211:4; 212:20;222:14;228:18,25 <b>witnesses (19)</b> 15:21;16:18;21:20,21; 23:4;29:20;30:2,6,7,13;33:5, 8,21;34:21;35:3,7,22;36:9; 229:21 <b>WMIS (5)</b> 197:16;198:1,5,18,25 <b>wonder (1)</b> 211:2 <b>Wood (32)</b> 7:5;11:6,6;34:14;35:11; 37:4,6;39:5,7,16;103:1,2,4, 12,14;104:8;105:6,11,12; 119:21,24;123:25;124:4,10, 11;133:11;161:20;208:2; 222:18,19,21;224:18 <b>words (4)</b> 43:25;52:22;113:22; 132:19 <b>work (36)</b> 60:11;63:18,20,23;64:17; 66:24;67:13,16,20,21;68:20; 75:12;77:12;78:20;82:22; 101:18;102:1;106:21,22; 107:10;116:25;117:6;130:5, 19;131:17;144:13;170:20; 175:12;177:22;178:1,4; 185:25;191:5;209:9;212:10; 225:21 <b>windfall (2)</b> 37:21;120:16,18,19; 166:11,12;169:7,9;170:8; 175:17;178:4 <b>working (70)</b> 44:19;49:12;53:13,17,21, 24;54:2,16,21;63:21,25; 67:8;72:4,18;95:3,19,20; 107:19;116:17,21;117:17; 122:16;131:8,14;132:2; 133:24;142:15;144:13; 145:5;149:7;157:25;170:12, 18;174:13,16;175:18,22,23; 176:5;177:9,12,25;178:22; 179:11;180:2,7;182:19; 185:4;189:6,7;196:3;201:11; 203:9;215:2;216:20;217:2,4, 6,8,24;218:3,7,12,15,20,23, 25;219:1;226:11;230:16 <b>works (4)</b> 92:24;129:12;189:12; 211:13 <b>world (2)</b> 142:25;143:3 <b>Wow (1)</b> 23:12 <b>wrap (1)</b>	160:1 <b>write (2)</b> 43:23,24 <b>writing (3)</b> 21:25;22:10;42:10 <b>wrong (2)</b> 139:9,10 <b>wrote (1)</b> 182:22 <b>Wylie (1)</b> 44:8
<b>Y</b>			
			<b>year (50)</b> 44:23;52:19;54:24;55:21; 58:17;59:6;110:22;122:1; 128:25;137:4;138:21; 142:23;143:1;144:20; 146:16;150:23;151:4,5,6,14, 22;152:20;153:7,11,17,21, 22;167:16;168:3,8;170:22; 171:14;176:1,6;178:17; 206:16,23;210:9;220:24; 221:3,11,15;222:4;223:17, 21,22;224:2;226:5,13,16 <b>years (26)</b> 37:23;38:3;43:19;44:3,22; 48:9;50:16;53:2;79:2,2; 109:3;111:10;112:1;120:18; 130:13;143:5;151:5,6; 152:19;153:17;171:11; 224:17;226:14;227:14,18,21 <b>year's (2)</b> 86:5;107:24 <b>yellow (2)</b> 52:16,17 <b>Yep (14)</b> 46:11;121:12;133:16; 179:8,18,21;182:15;185:2, 10;186:11;190:11;192:10; 203:17;215:11 <b>yesterday (1)</b> 16:17 <b>yield (2)</b> 90:16;213:5
<b>Z</b>			
			<b>zeros (1)</b> 70:9 <b>zip (1)</b> 123:13 <b>zone (1)</b> 126:25 <b>Zoom (2)</b> 54:10;124:22
<b>0</b>			
			<b>0.06 (1)</b> 78:7 <b>01 (1)</b>

91:24	<b>15,924 (4)</b> 204:10,19;205:8;215:24	<b>1st (4)</b> 58:17;137:24;162:12; 203:6	<b>2021 (13)</b> 46:15,17;48:20;156:4; 169:24;170:4,11,21;193:24; 195:17;196:2;224:2;226:11
<b>1</b>	<b>150,000 (1)</b> 57:22	<b>2</b>	<b>2022 (27)</b> 7:18;40:25;41:9;49:8; 52:3;53:11;57:5;66:4;123:3; 130:20;137:24;156:5; 170:14;172:8;177:23; 184:23;185:5;187:1;188:2; 203:6,19;216:22;217:7; 218:4,7;224:2;227:10
<b>1 (17)</b> 7:22;43:4;51:24;58:8; 73:2;76:4;91:17;107:24; 108:9;118:3;129:21,22; 135:2;178:8;183:11;211:14; 214:13	<b>162,000 (2)</b> 57:15,20 <b>162,600 (1)</b> 57:17 <b>16th (1)</b> 179:11	<b>2 (10)</b> 11:14;43:18;47:25;108:5, 14;133:10;135:3;190:10,13, 17	<b>2023 (31)</b> 7:13;38:16;42:5;45:11,16; 47:7;48:5;52:1,25;53:8;76:5, 12;79:13,22;80:6;83:9; 86:15;111:14;113:8;114:5, 12,18;115:3;122:16;123:4,7; 124:1,8;178:3,6,7
<b>1,175 (1)</b> 204:18	<b>170,000 (1)</b> 57:22	<b>2.1 (4)</b> 47:15,17,21,25	<b>20221223 (1)</b> 7:20
<b>1:00 (2)</b> 105:18,19	<b>178 (1)</b> 165:1	<b>2.2 (4)</b> 46:12;47:17,21;108:10	<b>2023 (31)</b> 7:13;38:16;42:5;45:11,16; 47:7;48:5;52:1,25;53:8;76:5, 12;79:13,22;80:6;83:9; 86:15;111:14;113:8;114:5, 12,18;115:3;122:16;123:4,7; 124:1,8;178:3,6,7
<b>10 (4)</b> 132:3;135:3;196:19,20	<b>179 (3)</b> 148:5;192:16;222:6	<b>20 (4)</b> 72:6;74:22;82:7;207:24	<b>21 (2)</b> 97:4;98:6
<b>10:30 (1)</b> 60:5	<b>179,000 (3)</b> 178:24;193:25;222:3	<b>20.03 (6)</b> 80:23;81:1,6;207:25; 208:8,10	<b>216 (2)</b> 7:3;164:19
<b>100 (2)</b> 24:20,22	<b>179,486 (1)</b> 140:13	<b>20.04 (5)</b> 81:1,20;207:25;208:8,18	<b>217,000 (1)</b> 78:5
<b>103 (9)</b> 182:6,8,10;185:14,19,20; 186:2,4,5	<b>17th (1)</b> 184:23	<b>2008 (3)</b> 17:2;19:25;217:16	<b>219 (1)</b> 7:4
<b>10th (1)</b> 30:2	<b>18 (6)</b> 120:18;162:3,5;213:17,18, 20	<b>2009 (2)</b> 192:8;217:16	<b>22 (12)</b> 50:6,7;57:8;97:4;98:6; 132:9;139:18;170:5,5; 203:13,17;215:6
<b>11 (2)</b> 58:9;73:3	<b>180 (1)</b> 192:16	<b>2010 (2)</b> 134:14;138:22	<b>222 (1)</b> 7:5
<b>11/28/2022 (1)</b> 7:15	<b>180,000 (2)</b> 178:24;192:12	<b>2011 (11)</b> 139:6,16;140:4,5,13,20; 141:17;192:6;195:22;196:4; 220:17	<b>22-23 (1)</b> 214:5
<b>11:30 (1)</b> 87:23	<b>180,956 (1)</b> 193:20	<b>2012 (2)</b> 46:21;147:13	<b>224 (1)</b> 7:6
<b>111 (1)</b> 204:18	<b>183 (1)</b> 192:16	<b>2013 (18)</b> 46:22,23;47:13;48:9,13, 19;132:10;134:6,7,9,11; 137:9;143:14;178:14;194:6, 15;195:6,11	<b>23 (3)</b> 66:4;178:14;196:21
<b>1-14 (3)</b> 203:23;204:2,5	<b>183,000 (1)</b> 133:1	<b>2014 (7)</b> 134:14,15;166:7;183:17; 186:23;188:2,15	<b>23rd (4)</b> 174:9;175:4;177:2,19
<b>1175.2 (1)</b> 204:16	<b>183,589 (1)</b> 134:6	<b>2015 (23)</b> 117:16;133:14,25;134:12, 17,19;141:1;142:10;171:7; 182:10,18;184:11;185:14; 186:24,24;188:15;190:20; 191:2,6;216:21;217:6; 218:25;219:1	<b>28 (3)</b> 49:8;152:8,11
<b>118 (8)</b> 219:23,25;220:2;230:10, 13,21,23,24	<b>186 (1)</b> 164:23	<b>2016 (4)</b> 137:9,9;171:3;187:1	<b>29 (2)</b> 125:7,13
<b>11th (3)</b> 58:22;73:13;74:11	<b>19 (5)</b> 133:24;138:1;139:19,20; 191:18	<b>2017 (22)</b> 140:17,21;141:17;142:5, 12;143:8;155:20,25;156:7, 15;192:6,20;193:18;194:19; 195:4,4,8,14;220:17;222:2; 226:7;228:9	<b>2nd (1)</b> 145:16
<b>12 (2)</b> 125:7;152:9	<b>1900 (9)</b> 58:9,11,22;73:3,13,24; 74:1,11;78:4	<b>2018 (4)</b> 116:24;176:6;187:1;226:9	<b>3 (11)</b> 107:1,3,5,22,25;108:20; 109:16,20,21;110:18;134:2
<b>126 (6)</b> 84:7,9,11,12,14,19	<b>1903 (1)</b> 145:16	<b>2019 (1)</b> 116:22	<b>3,262 (2)</b> 85:19,23
<b>13 (15)</b> 38:3;44:3,22;51:15,21; 52:8;54:23;55:2;57:19; 113:12;126:3;127:5,24; 129:10;160:6	<b>194 (1)</b> 179:2	<b>2020 (8)</b> 169:25;170:1,2,10,20; 171:12;187:1;188:4	<b>3:40 (1)</b> 196:12
<b>13,000 (1)</b> 141:18	<b>194,000 (3)</b> 137:10;193:22;194:5		<b>30 (6)</b> 50:16;112:1;160:5,8,17; 233:19
<b>135 (5)</b> 134:25;135:6,9,11,23	<b>194,727 (1)</b> 140:12		<b>300 (39)</b>
<b>135/306 (1)</b> 135:1	<b>1953 (3)</b> 42:20,24;85:21		
<b>14,637 (6)</b> 203:23;204:3,6,18;205:7, 14	<b>197 (3)</b> 7:22;76:1,3		
<b>15 (9)</b> 37:23;58:3,4;72:25;97:21; 120:20;166:7;196:12;214:4	<b>199 (2)</b> 24:21,22 <b>1990s (1)</b> 50:12 <b>1994 (1)</b> 205:2		

<p>7:10;25:6,9;26:22,24; 39:15,16,17,25;40:1,3;41:18, 22;42:8,10;43:17;44:14; 59:4,17,20,21,24;124:25; 125:1,2,3,7;132:4,9;150:7, 11,13,19;160:3;162:1; 191:13;196:17;213:14; 231:10 <b>300,000 (2)</b> 62:9;128:24 <b>301 (21)</b> 7:12;26:22,24;42:1,3,9,13; 52:1;59:4,9,13,17,17,20,21, 24;83:8;150:8,9,10,17 <b>302 (3)</b> 59:9,13,18 <b>305 (12)</b> 7:17;26:22,24;57:1,3,3; 59:4,10,13,21,22,24 <b>306 (14)</b> 116:7,9;135:7,25;136:2,6, 16;149:10,14,15,16,19,21,22 <b>30th (2)</b> 43:5;85:21 <b>313 (2)</b> 39:16;133:9 <b>318 (26)</b> 7:15;26:22,24;39:17; 48:24;49:1,23;50:20;51:5,8, 12,13,15;54:9,23;55:2; 57:18;67:6;72:6;82:6,7;97:1; 101:19;102:2;112:3;113:11 <b>31st (2)</b> 42:20,24 <b>324 (7)</b> 133:4,8,16;146:22;148:18, 21,25 <b>325 (9)</b> 137:13,15,17;146:22; 148:18,21;149:2,3;196:5 <b>35 (1)</b> 117:21 <b>362 (5)</b> 145:11,12,14;146:22; 148:19 <b>37.03.11 (1)</b> 80:15 <b>39 (2)</b> 135:16;136:10 <b>3rd (1)</b> 164:18</p>	<p><b>4:46 (1)</b> 236:7 <b>40 (1)</b> 7:10 <b>40.03 (2)</b> 209:1,5 <b>400,000 (2)</b> 62:9;128:24 <b>42 (1)</b> 7:12 <b>48 (1)</b> 7:15 <b>49 (5)</b> 162:5,6;165:25;213:21,22</p> <p style="text-align: center;"><b>5</b></p> <p><b>5 (9)</b> 80:23;83:13,14,14;100:25; 109:1;208:2,3,4 <b>5,000 (1)</b> 90:24 <b>50 (2)</b> 213:21,24 <b>51 (1)</b> 7:15 <b>57 (1)</b> 7:17 <b>59 (3)</b> 7:10,12,17 <b>5th (5)</b> 38:16;122:25;172:7; 173:10;227:11</p> <p style="text-align: center;"><b>6</b></p> <p><b>6 (9)</b> 49:19;50:19,20;51:4; 97:17;109:5;112:13;231:11; 232:4 <b>600 (2)</b> 26:16,19 <b>604 (2)</b> 26:16,20 <b>63,000 (1)</b> 85:10 <b>63,645 (7)</b> 76:15;83:16,22;85:2,15, 19;87:1 <b>65 (1)</b> 7:20</p>	<p>42:25;43:3;52:5,21;55:10, 12,16,23;56:16 <b>75,200 (11)</b> 52:7,12,24;54:25;76:20; 113:8,15,25;114:5,17;115:2 <b>76 (1)</b> 7:22</p> <p style="text-align: center;"><b>8</b></p> <p><b>8:30 (1)</b> 235:23 <b>800 (2)</b> 24:4,24 <b>80s (1)</b> 113:20 <b>837 (1)</b> 24:24</p> <p style="text-align: center;"><b>9</b></p> <p><b>9 (8)</b> 150:21;185:8,11;186:10, 15;191:16,17;209:1 <b>9:00 (5)</b> 235:22,25;236:1,2,4 <b>90 (3)</b> 50:25;112:10,16 <b>900 (8)</b> 24:7;25:7,12;28:9;40:24; 41:1,3,10 <b>900s (2)</b> 40:18,19 <b>901 (7)</b> 184:15,17,18;185:10,18, 22;186:9 <b>907 (1)</b> 202:21 <b>90s (1)</b> 111:23 <b>914 (10)</b> 7:20;65:9,11,13,21;66:15; 157:18,19,21;173:18 <b>915 (12)</b> 66:12;179:4,6,8,9,13,14, 25;180:14,21,23;190:6 <b>916 (9)</b> 179:4,7,19;180:3,15,21,23; 189:21;190:7 <b>918 (4)</b> 40:8,12,23;41:4 <b>919 (2)</b> 40:23;41:7 <b>920 (1)</b> 40:24 <b>928 (6)</b> 202:18,20;203:1;214:25; 215:4,5 <b>929 (4)</b> 80:12,14;207:15,18 <b>940,000 (1)</b> 58:2 <b>941,000 (1)</b></p>	<p>74:14 <b>941,400 (3)</b> 74:12,14,19 <b>97,700 (3)</b> 58:13,19;74:17 <b>99 (3)</b> 51:1;112:10,16</p>
<b>4</b>	<b>7</b>		
<p><b>4 (8)</b> 80:23;108:24;150:21,24, 25;190:4;207:24;208:1 <b>4/20/2022 (1)</b> 7:17 <b>4/21/2023 (2)</b> 7:10,12 <b>4:30 (1)</b> 229:1</p>	<p><b>7:30 (1)</b> 235:24 <b>700 (1)</b> 26:20 <b>700,000 (2)</b> 56:1,17 <b>703 (1)</b> 26:21 <b>75,000 (9)</b></p>		

BEFORE THE DEPARTMENT OF WATER RESOURCES  
OF THE STATE OF IDAHO

IN THE MATTER OF DISTRIBUTION OF ) DOCKET NO.  
WATER TO VARIOUS WATER RIGHTS ) CM-DC-2010-001  
HELD BY OR FOR THE BENEFIT OF A&B )  
IRRIGATION DISTRICT, AMERICAN )  
FALLS RESERVOIR DISTRICT #2, )  
BURLEY IRRIGATION DISTRICT, )  
MILNER IRRIGATION DISTRICT, )  
MINIDOKA IRRIGATION DISTRICT, )  
NORTH SIDE CANAL COMPANY, AND )  
TWIN FALLS CANAL COMPANY )  
\_\_\_\_\_ )

BEFORE

HEARING OFFICER: GARY SPACKMAN

VOLUME II

Date: June 7, 2023, 9:02 a.m.

Location: Idaho Department of Water Resources  
322 East Front Street, 6th Floor

REPORTED BY:

ANDREA L. CHECK, CSR No. 748, RPR, CRR

Notary Public



A P P E A R A N C E S

For the Idaho Department of Water Resources:

Office of the Attorney General

Idaho Department of Water Resources

BY MR. PETER A. WOOD, ESQ.

322 East Front Street, Suite 648

Boise, Idaho 83720-0098

pete.wood@idwr.idaho.gov

For the City of Pocatello:

Somach Simmons & Dunn, P.C.

BY MS. SARAH A. KLAHN, ESQ.

& MR. MAXIMILIAN C. BRICKER, ESQ.

1155 Canyon Boulevard, Suite 110

Boulder, Colorado 80302

mbricker@somachlaw.com

For the Cities of Bliss, Burley, Carey, Declo, Dietrich,

Gooding, Hazelton, Heyburn, Jerome, Paul, Richfield,

Rupert, Shoshone, and Wendell:

McHugh Bromley, PLLC

BY MR. CHRIS M. BROMLEY, ESQ.

& MS. CANDICE M. MCHUGH, ESQ. (Remotely)

380 South 4th Street, Suite 103

Boise, Idaho 83702

cmchugh@mchughbromley.com

## A P P E A R A N C E S (Continued)

For the Surface Water Coalition, Twin Falls Canal  
Company, North Side Canal Company, and Milner Irrigation  
District, A&B, Burley Irrigation District:

Marten Law

BY MR. JOHN K. SIMPSON, ESQ.

& MR. TRAVIS L. THOMPSON, ESQ.

101 South Capitol Boulevard, Suite 305

Boise, Idaho 83702

jsimpson@martenlaw.com

tthompson@martenlaw.com

For the Minidoka Irrigation District, AFRD#2:

Fletcher Law Office

BY MR. W. KENT FLETCHER, ESQ.

1200 Overland Avenue

Burley, Idaho 83318-0248

wkf@pmt.org

For the City of Idaho Falls:

Holden, Kidwell, Hahn & Crapo

BY MR. ROBERT L. HARRIS, ESQ.

1000 Riverwalk Drive, Suite 200

P.O. Box 50130

Idaho Falls, ID 83405

rharris@holdenlegal.com

## A P P E A R A N C E S (Continued)

For Idaho Ground Water Appropriators, Inc.:

Racine Olson, PLLP

BY MR. THOMAS J. BUDGE, ESQ.

& MS. ELISHEVA M. PATTERSON, ESQ.

201 East Center Street

Pocatello, Idaho 83201

tj@racineolson.com

elisheva@racineolson.com

For Madison Ground Water District, Henry's Fork Ground  
Water District, Jefferson Clark Ground Water District:

Rigby, Andrus & Rigby Law, PLLC

BY MR. JERRY R. RIGBY, ESQ.

25 North 2nd East

Rexburg, Idaho 83440

jrigby@rex-law.com

For Bonneville-Jefferson Ground Water District:

Olsen Taggart, PLLC

BY MR. SKYLER C. JOHNS, ESQ.

P.O. Box 3005

Idaho Falls, Idaho 83403

sjohns@olsentaggart.com

A P P E A R A N C E S (Continued)

For Bingham Ground Water District:

Dylan Anderson Law

BY MR. DYLAN K. ANDERSON, ESQ.

P.O. Box 35

Rexburg, Idaho 83440

dylan@dylanandersonlaw.com

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

## I N D E X

## W I T N E S S E S

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

TESTIMONY OF JAY BARLOGI	PAGE
Direct Examination by Mr. Thompson	13
Cross-Examination by Mr. Bromley	24
Cross-Examination by Mr. Bricker	70
Cross-Examination by Mr. Budge	78
Cross-Examination by Mr. Anderson	99
Redirect Examination by Mr. Thompson	100
Recross-Examination by Mr. Budge	105
TESTIMONY OF GREGORY K. SULLIVAN	
Direct Examination by Ms. Klahn	111
Cross-Examination by Mr. Mr. Fletcher	198
Cross-Examination by Mr. Thompson	230
Cross-Examination by Mr. Budge	247
Redirect Examination by Ms. Klahn	253

I N D E X  
E X H I B I T S

NO.	MARKED	RECEIVED
SWC		
1 -	***	23
1A -	15	23
IDAHO FALLS, POCA TELLO, AND COALITION OF CITIES		
332 -	***	48
334 -	***	49
337 -	***	69
338 -	***	48
347A -	118	125
363 -	60	69
364 -	65	69
365 -	194	194
BINGHAM GROUND WATER DISTRICT		
400 - (Offer of Proof Only)	***	10

1 P R O C E E D I N G S

2  
3 HEARING OFFICER: So we're recording. We have  
4 a new court reporter this morning.

5 Will you introduce yourself, please.

6 COURT REPORTER: My name is Andrea Check.  
7 Good morning.

8 HEARING OFFICER: I'm sorry, Andrea. I cut  
9 you off. Go ahead.

10 COURT REPORTER: I'm Andrea Check. Good  
11 morning.

12 HEARING OFFICER: All right. Thanks  
13 everybody. Let's see. We need to turn microphones on,  
14 and maybe I'll turn this one on. I think we just leave  
15 these on so that we don't have to worry.

16 And we have a number of participants who are  
17 listening in remotely. I -- because -- well, it shows  
18 Candice McHugh is on, at least for a time.

19 MS. MCHUGH: Yes. I'll be here this morning.

20 HEARING OFFICER: Okay. Thank you, Candice.

21 All right. And as I scan the room, it looks  
22 like everyone else is here. We have at least one  
23 preliminary matter to address this morning, and that's  
24 an informal offer of proof that was presented or offered  
25 late yesterday.

1           And the offer of proof, Mr. Anderson, I  
2 understand, is that you want to have at least what's  
3 been marked as Exhibit 400 lodged in the record as an  
4 offer.

5           And this, at least, purports to be a report by  
6 Darryll Olsen regarding economic impacts surrounding  
7 water right, water supply restrictions.

8           And so I guess before I rule on this offer of  
9 proof, Surface Water Coalition, do you have any  
10 objection to this document being lodged but not being  
11 part of the record?

12           MR. FLETCHER: Well, it's my understanding  
13 it's being lodged for the purposes of the -- I think the  
14 term you used was "informal offer of proof"?

15           HEARING OFFICER: Yeah.

16           MR. FLETCHER: And for that purpose, I don't  
17 think we really have grounds for objection, but we would  
18 object to it being introduced as an exhibit.

19           HEARING OFFICER: So based on my review and  
20 the request for this document to be lodged as an offer  
21 of proof, I'll allow it to come in, not as an exhibit,  
22 but just as an offer of proof so that at least the  
23 document is there. And if there's -- the reviewing  
24 courts determine in some subsequent appeal that it  
25 should have been considered, then it won't have to come



1 back.

2 (Exhibit 400 received for offer of proof  
3 purposes only.)

4 HEARING OFFICER: Now, as part of this ruling,  
5 I guess, I think it's important to go back and just  
6 excerpt some of the prior decisions by the --

7 COURT REPORTER: Can you hang on for one  
8 second?

9 HEARING OFFICER: Sure.

10 COURT REPORTER: My machine just stopped.

11 HEARING OFFICER: I thought you were  
12 struggling with my inarticulate delivery.

13 COURT REPORTER: No. But I might need -- can  
14 we go off the record for one minute?

15 HEARING OFFICER: Sure. That would be fine.

16 (Break taken.)

17 HEARING OFFICER: Back on the record.

18 Thank you, Andrea.

19 Okay. Well, the court reporter has said that  
20 at least some of what was said she didn't capture, so  
21 let me see if I can rehabilitate.

22 So it's my understanding that there were  
23 actually two matters in front of me: One was a motion  
24 to reconsider my ruling that I would not accept evidence  
25 regarding the economic impacts of possible curtailment

1 resulting from the -- a delivery call and associated  
2 methodology order amendment and also an informal offer  
3 of proof.

4 And probably in the proper order of discussing  
5 in this matter, I ought to at least address the motion  
6 for reconsideration. And I'd just excerpted a couple of  
7 passages from the Clear Springs decision, Clear Springs  
8 Foods versus Spackman, issued in 2011 by the Idaho  
9 Supreme Court where the Court said that: "A delivery  
10 call cannot be denied on the grounds that curtailment of  
11 junior appropriators would result in substantial  
12 economic harm."

13 And then, further: "'Full economic  
14 development'" -- which was argued yesterday and  
15 referenced in the constitutional provisions -- "'Full  
16 economic development of underground water resources'  
17 does not mean that the groundwater appropriator who is  
18 producing the greater economic benefit or would suffer  
19 the greater economic loss is entitled to use of the  
20 groundwater when there is insufficient water for both  
21 the senior and junior appropriators. If that were the  
22 basis for allocating water in times of shortage, then  
23 water would be allocated among farmers based upon market  
24 prices and their respective crops and their expected  
25 yields."

1           And so from my perspective, this particular  
2 issue has been addressed by the courts previously. And,  
3 furthermore, it's not an issue that is part of the  
4 Methodology Order and the underlying facts that were  
5 considered in amending the Methodology Order.

6           So as a result, I'll again verbally deny the  
7 motion to reconsider, but I will allow the document to  
8 be -- the document marked as Exhibit 400 to be lodged in  
9 the -- or at least be lodged with the record but not  
10 part of the record if some reviewing tribunal wants to  
11 take this up and reverses my ruling on the presentation  
12 of evidence regarding economic harm and respective  
13 economic comparisons.

14           Okay.

15           MR. BAXTER: Director?

16           HEARING OFFICER: Yes?

17           MR. BAXTER: Could you turn your microphone  
18 on, please.

19           HEARING OFFICER: Oh, I'm sorry. Thank you.  
20 We've been on and off and on and off. Thank you.

21           Okay. Are there other matters we need to talk  
22 about this morning?

23           All right. We have a witness slated to be  
24 called. I think the next witness is Jay Barlogi.

25           Mr. Barlogi --

1           Is that correct, Mr. Thompson?

2           MR. THOMPSON: Yes.

3           HEARING OFFICER: Mr. Barlogi, if you'll come  
4 forward, please. If you'll raise your right hand.

5

6                           JAY BARLOGI,

7 called as a witness by the Surface Water Coalition,  
8 having been first duly sworn to tell the truth relating  
9 to said cause, testified as follows:

10

11           HEARING OFFICER: Thank you. You may assume  
12 the seat of discomfort.

13           Mr. Thompson?

14           MR. THOMPSON: Thank you. Travis Thompson for  
15 A&B Irrigation District, et al.

16

17                           DIRECT EXAMINATION

18           QUESTIONS BY MR. THOMPSON:

19           Q. Mr. Barlogi, can you please state and spell  
20 your name for the record.

21           A. Yeah, my name is Jay Barlogi. It's J-a-y, and  
22 the last name is B-a-r-l-o-g-i.

23           Q. And when did you start working for the  
24 Twin Falls Canal Company?

25           A. I started working in 1993.

1 Q. And what positions have you held since that  
2 time?

3 A. I started out as a ditch rider. I moved up to  
4 the East End watermaster, moved from there into the  
5 field supervisor position, and then moved from there  
6 into the general manager position.

7 Q. And if you could look behind you, I think  
8 there should be a binder of Surface Water Coalition  
9 exhibits.

10 A. Thank you.

11 Q. If I could have you look at Exhibit 1, please.

12 Can you generally describe that document for  
13 the record?

14 A. Yes. This is a document that I put together  
15 that is titled, "Direct Testimony of Jay Barlogi." It  
16 just kind of explains, more or less, how we operate at  
17 the Twin Falls Canal Company.

18 Q. And that's based upon your personal experience  
19 and work history with the company; is that correct?

20 A. Yes, sir.

21 Q. If you could turn to page 27 on that exhibit,  
22 please.

23 A. Okay. I'm there.

24 Q. And is there a graph that depicts Twin Falls  
25 Canal Company diversions 1988 through 2002?

1 A. Yes, sir.

2 Q. 2022. I'm sorry.

3 A. Yes, sir.

4 Q. And did you prepare that graph?

5 A. Yes, sir.

6 Q. What was the source of the data for that  
7 graph?

8 A. That source was Water District 1 accounting  
9 data.

10 Q. Director, if I might approach. I've got --

11 HEARING OFFICER: Yes.

12 MR. THOMPSON: -- a better copy marked as  
13 Exhibit 1A.

14 (Exhibit 1A marked.)

15 Q. (BY MR. THOMPSON) Jay, can you describe  
16 what's been marked as Exhibit 1A for the record, please.

17 A. Yes. This is a bar graph that I put together.  
18 This -- each bar represents an individual year from  
19 1998 -- or from 1988, rather, through 2022. And these  
20 are our annual diversions from April 1st through  
21 October 31st of each of those years since 1988.

22 Q. And is that just a larger version of that  
23 graph contained in your pretrial testimony at page 27?

24 A. Yes, sir.

25 Q. Jay, since 2010, can you just generally

1 describe how the company delivers water to its  
2 shareholders?

3 A. Certainly. We do it pretty much the same way  
4 we always have. We divert water out of Milner Dam. We  
5 divert it through our Shoestring Canal down to  
6 Murtaugh Lake, which is a recharge -- or not a recharge,  
7 but a re-regulating reservoir within the system. It  
8 flows out of there into our Main Line Canal around the  
9 Hansen Butte, where it hits forks where it bifurcates  
10 into the High Line and the Low Line Canal that run all  
11 the way to the west end of our system and both expire at  
12 Deep Creek.

13 Off of all of those canals, the Shoestring,  
14 the Main Line, the High Line, and the Low Line, there  
15 are over 1,000 miles of smaller canals that come off of  
16 those larger waterways where we divert water to our  
17 shareholders out of over 4,000 different headgates that  
18 we measure. As those individuals call in-season and ask  
19 for their water to be turned on, our ditch riders take  
20 those calls every morning between 7:00 and 7:30, and  
21 then they go out and start delivering that water. They  
22 go to one meter at a time, measure the appropriate  
23 amount out of the gate, lock it up, and go on to the  
24 next gate.

25 Q. And how about your maintenance activities, can

1 you just generally describe what the company does to  
2 maintain its system?

3 A. Sure. Maintenance activities have really kind  
4 of got, I guess, two seasons. Certainly during the  
5 irrigation season our maintenance activities are  
6 different than they are during the nonirrigation season.

7 During the irrigation season we have crews out  
8 right now with several different mowing tractors mowing  
9 weeds along the edges of the canals. As you can  
10 imagine, this time of year the weeds are beginning to  
11 grow, the grass is beginning to grow. It's important  
12 that we maintain that weed and grass growth, as it  
13 occludes the channels, forces us to push harder to get  
14 the water through to the end.

15 We also have multiple excavators that spend  
16 much of their time this time of year cleaning canals and  
17 cleaning sediment out of the bottoms of canals. As we  
18 start irrigating -- preirrigating bean ground this time  
19 of year, the sediment ponds at the ends of the fields  
20 and many of our water quality projects are beginning to  
21 fill up or starting to fill up. So those excavators are  
22 out right now cleaning canals, making sure the water  
23 flows freely through those canals.

24 As you can imagine, this time of year, it's  
25 early in the season, as we bring the water level in the



1 canals up, there's a leak that shows up here and there,  
2 and the excavators are out making those repairs.

3 Moss growth is beginning to accumulate in the  
4 waterways now. Generally, in the middle of June we have  
5 to treat the main canals. But certainly throughout the  
6 month of June we're putting chemicals in, and we're  
7 eradicating moss out of the system before the moss  
8 chokes the system up to the point that we cannot shove  
9 the water through to those water users at the end.

10 That's pretty much the extent of the -- well,  
11 that's a lot of what we do, anyway, this time of year.

12 During the nonirrigation season -- we  
13 typically have at least a large project or two during  
14 the nonirrigation season that can be -- that could be  
15 new lining projects, it could be new water quality  
16 projects.

17 And then we also do a lot of work on the  
18 bottoms of the canals throughout the year. As you go  
19 through the course of the season, as you can imagine,  
20 the channel ends up with silt berms here and there that  
21 need to get cleaned out, and we need to make sure that  
22 the water flows really well through those main canal  
23 systems.

24 We also have an extensive concrete program.  
25 We have over 10,000 concrete structures on our system,

1 so it's really, really important that we replace those  
2 on a regular basis. We always say if we replace 100 of  
3 those a year, I could overturn our inventory of concrete  
4 structures once every 100 years. So we do in excess of  
5 100 concrete structures a year and those concrete  
6 structures are --

7 COURT REPORTER: Mr. Barlogi, can you slow  
8 down just a little bit for me, please.

9 THE WITNESS: Sure.

10 Those concrete structures are typically  
11 measuring devices that we rehab or replace.

12 Several new ones come in every now and again  
13 as water deliveries have changed as the transition from  
14 gravity to sprinkler irrigation continues to be ongoing  
15 on the project.

16 Maintenance crews are also -- maintenance --  
17 the maintenance foreman and the field supervisor are  
18 also spending a lot of time during the offseason out  
19 working with water users. As they put sprinkler systems  
20 in, we make sure that the way those sprinkler systems  
21 are installed works well with our system and doesn't  
22 create adverse impacts.

23 Q. (BY MR. THOMPSON) So do you have dedicated  
24 staff for both maintenance and then water delivery  
25 operations?

1           A. Yes, sir.

2           Q. And it's fair to say that there really is no  
3 offseason for what you do in the canal?

4           A. No. No, there's not. No.

5           Q. And can you generally describe any larger  
6 projects since 2010 that have been implemented to help  
7 canal operations?

8           A. Certainly. We have -- we have -- since 2010  
9 and prior, we have an ongoing list of projects that we  
10 continue to try to identify and implement.

11                   We've put in several different lining  
12 projects. We've done lining projects on the  
13 Low Line Canal, on the High Line Canal, on the  
14 Shoestring Canal.

15                   We've done canal work in the bottom of the  
16 Main Line Canal. We've put in multiple different water  
17 quality facilities. We've put in several different new  
18 automated structures at the heads of some of these  
19 waterways, and a few of these have specific diversions  
20 within the canal system.

21                   Somewhere around 2010, 2011, we built the  
22 Kinyon Pond on the far west end of the system. That's  
23 somewhat of a re-regulating reservoir down on the far  
24 end of the High Line Canal.

25           Q. And those projects, would you characterize as

1 just helping you provide a level of service and delivery  
2 to your shareholders as you always have?

3 A. Absolutely. Yeah. It's all in the interest  
4 of providing a high level of service to our water users  
5 while operating the system prudently.

6 Bear in mind, most of these activities are all  
7 centered around the total capacity of the canal system.  
8 And if the capacity gets compromised, then we're  
9 operating with more risk than we need to be operating  
10 with.

11 So we manage the weeds, we manage the moss, we  
12 manage the flow in these waterways so as not to put any  
13 additional pressure on the banks and cause possible  
14 seeps or possible canal breaks throughout the season.

15 So we do everything we can to provide a high  
16 level of service to our water users while operating the  
17 system prudently.

18 MR. THOMPSON: That's all the questions I  
19 have, Director. I'll turn Mr. Barlogi over for  
20 cross-examination.

21 Oh, yeah, those two exhibits I would offer,  
22 Exhibits 1 and 1A, into the record.

23 HEARING OFFICER: Any objection to the  
24 documents marked as Exhibits 1 and 1A?

25 The attorneys for the groundwater users have

1 had a chance to, apparently, review this written  
2 testimony of Jay Barlogi and are comfortable with the  
3 admission of this document?

4 MR. BROMLEY: Yes.

5 HEARING OFFICER: Mr. Budge?

6 MR. BUDGE: I'm comfortable with it generally,  
7 but there's one item of hearsay that I would like to  
8 have stricken from it. It's on page 22. And it's  
9 lines 17 through 20. And it says, "Somewhere in the  
10 archives of historical information about the Twin Falls  
11 Canal Company a state engineer was quoted as saying,"  
12 and then there's a quote. So that component of the  
13 prefiled testimony I would move to be stricken; the rest  
14 of it I'm okay.

15 HEARING OFFICER: Mr. Thompson?

16 MR. THOMPSON: That's fine. I can ask  
17 Mr. Barlogi on redirect about that statement.

18 HEARING OFFICER: Okay. Well, normally, I'm  
19 reluctant to accept written testimony because I like to  
20 hear the testimony of the witness, but in the interest  
21 of time and recognizing that this hearing has been  
22 expedited and we're trying to finish as soon as  
23 possible, I'll allow testimony into the record with the  
24 qualification that the quoted material and the written  
25 testimony is excerpted or deleted out of the testimony.

1           And so with that qualification, I'll accept  
2 Exhibit 1 and Exhibit 1A into evidence.

3           (Exhibits 1 and 1A received.)

4           HEARING OFFICER: Mr. Budge.

5           MR. BUDGE: Just logistically, does that mean  
6 the Department will take the action of redacting that  
7 portion of the exhibit?

8           HEARING OFFICER: Well, at least right now,  
9 I'm anticipating that there might be further questions  
10 related to that language. So at least right now, I'll  
11 leave it there, and let's see where it goes, Mr. Budge.  
12 But please remind me as we go through their testimony,  
13 though. Thank you.

14          Okay. Mr. Bromley.

15          MR. BROMLEY: Thank you, Director.  
16 Chris Bromley on behalf of the Coalition of Cites.

17          Mr. Barlogi, I took your deposition in  
18 Twin Falls. And thank you for being here.

19          And I do want to say I appreciate both what  
20 the attorneys from Surface Water Coalition and  
21 Mr. Barlogi, Director, that they prepared the prefiled  
22 testimony. It's helped us speed this process up. I  
23 know, ordinarily, it's not something we would do, but in  
24 the interest of time, it is helpful. And Mr. Barlogi  
25 and I discussed all of these topics, really, at his

1 deposition. So when I read the prefiled testimony, it  
2 meshed with, you know, what we discussed at the  
3 deposition. So I appreciate that we were able to  
4 truncate that, so thank you.

5 HEARING OFFICER: Good. Thank you.

6

7

CROSS-EXAMINATION

8

QUESTIONS BY MR. BROMLEY:

9

10

11

12

Q. Okay. Mr. Barlogi, I'd like to talk first  
about Twin Falls Canal Company's shares. So according  
to your direct testimony, there are 202,690.93  
outstanding shares; is that correct?

13

A. Yes, sir.

14

15

Q. Okay. But Twin Falls Canal Company delivers  
to fewer than 200,000 acres; isn't that correct?

16

A. Yes, sir.

17

18

Q. Okay. What's the current assessment for the  
company?

19

A. Current maintenance fees per share?

20

Q. Yes, sir.

21

A. It's \$27.

22

23

Q. And how often does the company increase its  
assessments?

24

A. I would say as needed. I think this last

25

assessment increase was last year. I think -- I don't

1 know. I would tell you as needed. I don't think we'd  
2 had an increase prior to that for four or five years.

3 Q. What was the prior assessment fee? Do you  
4 recall?

5 A. 26.

6 Q. Okay. Is that generally what it goes up by, a  
7 dollar or so?

8 A. Yes.

9 Q. Thank you.

10 You stated in your deposition that the company  
11 operates on a continuous flow; is that correct?

12 A. Yes.

13 Q. And you'd agree, however, that every acre  
14 within the project isn't irrigated every day; correct?

15 A. Yes.

16 Q. You also stated in your deposition that the  
17 company doesn't require its farmers to rotate water with  
18 one another; is that correct?

19 A. Yes.

20 Q. But if Twin Falls rotated, wouldn't you agree  
21 that the supply would be extended?

22 A. No.

23 Q. Why is that?

24 A. Well, you suggested that they should be  
25 rotating water between farmers.



1 Q. That's correct. And if I didn't ask that well  
2 in the question, that is the question, that having  
3 farmers rotate water with one another. So, you know,  
4 Farmer A is on a Monday; Farmer B is on a Tuesday. They  
5 rotate with one another. So water is moving from field  
6 to field.

7 Do you follow that?

8 A. I do. And I think you need to understand our  
9 project a little bit. One farmer has likely got a field  
10 of hay and a field of grain and a field of corn and a  
11 field of potatoes and sugar beets, and he rotates within  
12 his farm. And that farmer is generally using his water  
13 every day throughout the irrigation season. And he's  
14 rotating within his own farm. The next farmer has a  
15 very similar situation throughout the project.

16 So, no, they don't rotate between farm --  
17 between farmers. They rotate within their farm.

18 Q. Correct. And you had said that farmers are  
19 not rotating with one another; so, you know, one farm is  
20 on, the next farm is off.

21 I'm asking you, wouldn't it extend the supply  
22 of water if Twin Falls Canal Company farmers were to  
23 rotate water with one another?

24 A. No.

25 Q. And why is that?

1           A. Well, I would say that on any given day, the  
2 diversion is meeting the needs of the farmers every day.  
3 So I don't know where there would be a place to rotate  
4 that water to.

5           Q. But not every acre is irrigated every day;  
6 correct?

7           A. Correct.

8           Q. So if demand is off on one field and demand is  
9 on on another field and farmers are rotating with one  
10 another, as we see in other parts of the state, it ought  
11 to reduce demand; correct?

12          A. Yeah. I suppose if there was a need to do  
13 that, but there is not a need to do that. Again, they  
14 rotate within their own farm to do that.

15          Q. Okay. How does the company track share  
16 ownership?

17          A. Well, it's tracked through the certificates.  
18 We have a program in the office, they call it "Magic,"  
19 who attracts -- who owns all of the shares within the  
20 project. As land sells, folks come in, we change the  
21 names on the certificates and transfer those shares to  
22 the new owners. Water moves from one farm to another.  
23 The certificate is changed to reflect the new point of  
24 diversion, the new place of use.

25          Q. Is that important for the ditch riders to

1 know?

2 A. Absolutely. Of course.

3 Q. How does the company track changes in place of  
4 use for shares?

5 A. Well, if the place of use changes, we call  
6 that a transfer. There is a transfer policy, and those  
7 folks will come in, and they will apply for the  
8 transfer. That paperwork then goes to the watermasters  
9 first who can look through the paperwork and identify if  
10 that transfer and physically moving that water from one  
11 place to another is feasible, or does it present a  
12 capacity issue? Does it present a flooding issue? Does  
13 it present a measurement issue at the headgate?

14 And if it does, of course, he will put his  
15 suggestions in there that this is not a very good  
16 transfer; and if it doesn't, then he will sign off on  
17 it. And then it goes to the board of directors, who  
18 reviews the application, compares it to the transfer  
19 policy, and if it complies with all of the parameters of  
20 the transfer policy, then they will approve it. If it  
21 doesn't, then they do not approve it.

22 Q. Thank you.

23 At your deposition, we discussed the  
24 percentage increase in sprinklers from 2008 to present.

25 Do you recall that discussion?

1 A. I do.

2 Q. I'll try and do a better job of finishing my  
3 question, and look at you.

4 A. I'll do better as well.

5 Q. Thank you, Mr. Barlogi.

6 Okay. So when we were discussing on that  
7 point, do you still agree that, in 2008, the percentage  
8 of fields that were irrigated by sprinkler was about  
9 25 percent?

10 A. Yeah. Yes, I do.

11 Q. Okay. And then in your deposition, we also  
12 talked, and I see it as well in your direct testimony,  
13 that you state the Twin Falls Canal Company is  
14 approximately 50 to 60 percent sprinkler irrigated now?

15 A. Yes.

16 Q. So if -- the company's approximately doubled  
17 the number of sprinklers on the project in the last  
18 15 years; is that correct?

19 A. Certainly doubled the percentage, yes.

20 Q. Okay. And as for conversion to drip  
21 irrigation, which we talked about in your deposition, we  
22 were discussing a 400-acre field that's now lettuce; is  
23 that correct?

24 A. Well, I think it's multiple different fields,  
25 but I think there is about 400 acres of lettuce on the

1 project this year.

2 Q. Okay. So Mr. Barlogi, let's look at  
3 Exhibit 332.

4 All right. Are you there, Mr. Barlogi?

5 A. Yes, sir.

6 Q. Do you recognize this exhibit?

7 A. I do.

8 Q. Okay. This was an exhibit we talked about at  
9 your deposition. And my understanding of this exhibit  
10 is that it explains what the deliveries are year by  
11 year, month by month, and day by day; is that correct?

12 A. What the rate of deliveries are, yes.

13 Q. Thank you.

14 And I notice the way that this exhibit has now  
15 been put together, it's kind of out of order in the  
16 years, but we've got years from -- oh, let's see -- 1990  
17 to, I think, about the present.

18 Is that what you see?

19 A. Yes.

20 Q. And so we can look at this -- and just to make  
21 it easy, we'll be on the first page. In the 1990 -- and  
22 I see -- and this was produced -- is yours produced in  
23 color?

24 A. Yes.

25 Q. Okay. Great.

1           So the blue represents three-quarters of a  
2 miner's inch -- is that correct? -- in 1990?

3           A. Yes, the .75 blue.

4           Q. Yes, sir.

5           And so in 1990, it was a delivery of .75, or  
6 three-quarters of a miner's inch, from the beginning to  
7 the end of the irrigation season; is that what that  
8 shows?

9           A. Yes.

10          Q. Thank you.

11          And so then in a year like 1992, just to keep  
12 it simple and we're on the same first page, the company  
13 started with a delivery of three-quarters of a miner's  
14 inch from April until May 3rd; correct?

15          A. Yes.

16          Q. And then shifted on May 4th to 0.625, which is  
17 the equivalent of five-eighths of a miner's inch;  
18 correct?

19          A. Yes.

20          Q. And then on May 18th through the rest of the  
21 season, the company then reduced to .5, which is half a  
22 miner's inch; correct?

23          A. Yes.

24          Q. Okay. And so we could go through that exhibit  
25 and look at all of these different years, but I don't

1 see a reason to do that.

2 The benefit of the exhibit, as I understood  
3 it, Mr. Barlogi, from the deposition, was this helps  
4 explain what the company was delivering to its farmers;  
5 true?

6 A. Yes.

7 Q. Thank you.

8 Okay. How much is the company delivering this  
9 season, today?

10 A. Currently, we are currently delivering  
11 three-quarters of an inch per share.

12 Q. Let's talk about cropping patterns.

13 Okay. What have you noticed, Mr. Barlogi,  
14 with cropping patterns over the last 15 years?

15 A. I think the main thing that we've noticed over  
16 the last 15 years has been related to the dairy  
17 industry. The dairy industry has moved into our area in  
18 a very big way, and so high-water-consumptive crops have  
19 moved in as the dairies are looking, constantly, for  
20 alfalfa and corn to feed the cows. So alfalfa and corn  
21 acres have increased significantly.

22 I would also add that with the sprinklers and  
23 the sprinkler ground continuing to convert from gravity  
24 to sprinkler has brought the potato market, I think,  
25 further into the project, historically.

1           I think currently there are significantly more  
2 potatoes grown on the project than there were  
3 historically.

4           Q. How many acres do you think are planted in  
5 alfalfa this year?

6           A. I wouldn't have any idea.

7           Q. How about corn?

8           A. No idea.

9           Q. How about potatoes?

10          A. No idea.

11          Q. But they've gone up, in your estimation?

12          A. Certainly.

13          Q. Okay. We talked in your deposition -- you  
14 were saying that there are farmers within Twin Falls  
15 Canal Company who are now getting five cuttings of hay;  
16 is that correct?

17          A. I think, again, they're trying to meet the  
18 demands of the dairy industry. So if they can get it,  
19 they will.

20          Q. And could you explain how that's possible?

21          A. Yeah, I can, to some extent. I'm not a  
22 farmer. I know that very often times as we get into the  
23 spring, the dairies have exhausted their supply of feed.  
24 So quite often you'll see a hay crop go off when it's  
25 not near as high as it used to be, but they'll move in



1 there with the green choppers, and they'll take off the  
2 crop really quick and get it to the dairy industry.

3 And you'll see the same kind of thing with  
4 that last cutting. So often the first and last cutting  
5 of those five cuttings aren't real big cuttings.

6 But, absolutely, the needs of the dairy  
7 industry drive the market.

8 Q. And what we talked about at your deposition  
9 was something I believe you were calling a "green chop."

10 So the hay, it's being cut, and it's being  
11 taken off the field almost immediately; is that correct?

12 A. Yes, sir.

13 Q. How long has that practice been going on?

14 A. Well, I would say that -- gosh, I don't know  
15 how long. It came in kind of with the dairies.

16 Q. And the former practice was to cut hay, you'd  
17 let it dry, you wouldn't irrigate the field.

18 Eventually, it would get baled, picked up in some way,  
19 and then water would be put back on 7 to 10 to 14 days  
20 later; is that right?

21 A. Yes.

22 Q. And that's changed now with the dairy  
23 industry?

24 A. Yes.

25 Q. Okay. Do you know how many acres are getting

1 five cuttings of hay?

2 A. I do not.

3 Q. And I believe you understand that the Director  
4 is now using the ESP model and what's referred to as  
5 "transient" as opposed to "steady state"?

6 A. Yes.

7 Q. And that's changed the curtailment date. And  
8 currently we have a 1953 curtailment date to produce  
9 75,200 acre-feet to Twin Falls.

10 Do you understand that?

11 A. Yes.

12 Q. Do you think it's reasonable to curtail  
13 groundwater rights junior to 1953 so some Twin Falls  
14 Canal Company farmers can get five cuttings of hay?

15 A. I guess I wouldn't prospect to what is  
16 reasonable.

17 Q. Do you think it's fair?

18 A. I guess I wouldn't argue fairness either.

19 Q. Let's talk about subdivisions, Mr. Barlogi.  
20 And if you could turn to Exhibit 334.

21 All right. Do you recall this exhibit?

22 A. Yes, I do.

23 Q. We talked about it at your deposition, and you  
24 agreed with me that, based on what's shown in the graph,  
25 that Twin Falls County has grown by 19 percent since

1 2010. Correct?

2 A. Yes.

3 Q. Okay. And you also stated during your  
4 deposition, Mr. Barlogi, that, in your opinion, most of  
5 the growth has been in the cities; is that correct?

6 A. Yes.

7 Q. So as to subdivisions, wouldn't you agree that  
8 rooftops, sidewalks, driveways, patios, and roads can't  
9 be irrigated?

10 A. Yes.

11 Q. Let's look at Exhibit 171. So you'll need  
12 another binder.

13 A. I'm sorry. Did you say 171?

14 Q. I did, yes.

15 Are you on Exhibit 171?

16 A. I am.

17 Q. And what's the title of that exhibit?

18 A. "Estimate of Non-Irrigated Acres Within  
19 Twin Falls Canal Company Service Area."

20 Q. And I'll represent to you, Mr. Barlogi, this  
21 was a document that was made an exhibit in the 2008  
22 hearing. It was prepared by SPF Water Engineering on  
23 behalf of the Idaho Ground Water Appropriators. And it  
24 was looking at exactly what it says in the title;  
25 nonirrigated acres.

1 MR. THOMPSON: Mr. Director, I'm just going to  
2 lodge an objection, I guess, to prior exhibits contained  
3 in the underlying record in this case. I think it's  
4 unduly repetitious to have to go through this again. We  
5 did this once, we don't need to go through every exhibit  
6 that's already been part of the record and what the  
7 Department has considered in developing the methodology.

8 MR. BROMLEY: If I may respond?

9 HEARING OFFICER: Sure.

10 MR. BROMLEY: Well, Director, you know, we  
11 heard from the Court that this is an ongoing delivery  
12 call. We have heard -- and I'll get to the point with  
13 Mr. Barlogi with some foundation -- that he has a belief  
14 that subdivisions require more water to be applied.

15 I'm not talking about specific acres, but we  
16 can certainly get to there, Step 1 requires that. But  
17 what I'm trying to get at is use of water within  
18 subdivisions with an exhibit that's in the record in  
19 this ongoing delivery call to establish foundation with  
20 Mr. Barlogi about his opinions that subdivisions use as  
21 much or more water than an irrigated field.

22 HEARING OFFICER: So let me understand,  
23 Mr. Thompson. This document titled "Estimate of  
24 Non-Irrigated Acres Within Twin Falls Canal Company  
25 Service Area" is a document that was previously

1 submitted in a delivery call proceeding for the  
2 Methodology Order?

3 MR. THOMPSON: It was submitted in the 2008  
4 hearing considered by the hearing officer,  
5 Justice Schroeder, at that time, part of the record for  
6 that proceeding.

7 HEARING OFFICER: So your objection is that  
8 this document shouldn't come into the record because  
9 it's already previously been considered?

10 MR. THOMPSON: That would be my objection.

11 HEARING OFFICER: Okay. I'll overrule the  
12 objection. I don't see harm in this document being in  
13 the record again.

14 Mr. Bromley, go ahead.

15 MR. BROMLEY: Thank you, Director. It already  
16 is part of the record, and we're trying to make it  
17 easier by pulling documents that are, in our opinion,  
18 helpful.

19 Q. (BY MR. BROMLEY) So, Mr. Barlogi, let's look  
20 at page 36.

21 MR. THOMPSON: Chris, Bates stamp, please?

22 MR. BROMLEY: As far as I know, it's 36,  
23 Travis. I don't see a Bates stamp on it. I see, at the  
24 bottom of Exhibit 171, dash, page 36. And it's page 36  
25 on the PDF, too.

1 Q. (BY MR. BROMLEY) Are you there, Mr. Barlogi?

2 A. I am.

3 Q. And when I look at this, I see what, you know,  
4 I would call a typical subdivision with curbed streets  
5 and cul-de-sacs and roads.

6 Is that what you see?

7 A. I do.

8 Q. I see at the bottom it's called out as  
9 "Figure 6, Urban Subdivision 3 (North Pointe)"?

10 A. [Witness nods head.]

11 Q. Okay. So we're on the same page, then.

12 So in your deposition and in your direct  
13 testimony you stated that subdivisions require the same  
14 amount of water or more.

15 Do you recall that testimony?

16 A. I do.

17 Q. Is this your opinion as to subdivisions, or  
18 has Twin Falls Canal Company done any studies to prove  
19 this?

20 A. I would say currently this is not an opinion,  
21 this is a fact. As I told you in the conversation we  
22 had last week, if you develop land within the City of  
23 Twin Falls, they require that you have a share per acre.

24 So what my company does is when a water user  
25 calls and orders his water on, I'm obligated to turn on

1 the amount of water that he has, which is a share per  
2 acre.

3 Q. Okay. So have you done any studies that show  
4 that use of water in subdivisions -- so looking, again,  
5 at this page 36 -- with many fewer acres that cannot be  
6 irrigated, as you agreed with me previously, due to  
7 rooftops, streets, sidewalks, and such -- what studies  
8 do you have that show that use of water in a subdivision  
9 is more intensive than on an irrigated farm?

10 A. I don't think canal company -- this canal  
11 company doesn't do that kind of study, no.

12 Q. Okay. Thank you.

13 So on page 27 of your direct testimony -- and  
14 then Mr. Thompson gave us -- I think it's now marked  
15 1A --

16 MR. BROMLEY: Travis --

17 MR. THOMPSON: Yes.

18 MR. BROMLEY: -- is that right?

19 Q. (BY MR. BROMLEY) -- which is this graph that  
20 Mr. Thompson had marked as Exhibit 1A.

21 It's now a loose -- yeah, we don't need to go  
22 into the binder. Helpful to pull that out.

23 So looking at Exhibit 1A, it seems to be, in  
24 what you were saying, that the company diverts at a  
25 fairly consistent rate of 1.1 million acre-feet;

1 correct?

2 A. Yes.

3 Q. And so I'll just represent to you,  
4 Mr. Barlogi, that if the company's diverting  
5 1.1 million acre-feet for irrigation of 190,000 acres,  
6 the volume of water that's available per acre -- just  
7 simple math division -- is approximately 5.8 acre-feet.

8 Would you accept that as correct?

9 A. Yes.

10 Q. Thanks.

11 So if a subdivision reduces the irrigated area  
12 by half and Twin Falls Canal Company farmers are using  
13 up to 5.8 acre-feet -- that's what we were just  
14 discussing -- you're saying subdivisions are using at  
15 least 11.6 acre-feet?

16 A. I'm saying that they are entitled to the same  
17 diversion rate.

18 No, they are not using that. No, that's not  
19 what I'm saying.

20 Q. So if the irrigated area is half -- let's  
21 start it this way, if a 40-acre field is taking  
22 5.8 acre-feet of water, the subdivision has contracted  
23 that space by half due to hardening of acres, only half  
24 of those acres are receiving the same volume of water,  
25 which would be 11.86 acre-feet; correct?



1 A. Yes.

2 Q. Let's talk about return flows, Mr. Barlogi.  
3 So you stated in your direct testimony, and we also  
4 discussed in your deposition, the Twin Falls Canal  
5 Company tracks return flows; correct?

6 A. Yes.

7 Q. And I'd like to just talk about what that's  
8 made up of. So when the company is tracking return  
9 flows, does that include local runoff?

10 A. To some extent.

11 Q. How about coulees?

12 A. As they are a part of our system, yes.

13 Q. Okay. And what about the tributaries?

14 A. I assume you're talking about Rock Creek, and  
15 we do not monitor those, no.

16 Q. But if those were monitored and water was  
17 going into them off of the project, that would be  
18 something that would be part of a return flow?

19 A. We monitor the location where the system  
20 spills into the tributary, not the tributary.

21 Q. Great. Thank you.

22 So at your deposition, you said you spoke with  
23 Matt Anders about the company's return flows to the  
24 Snake River below Milner.

25 Do you recall that testimony?

1           A. Yes.

2           Q. And in your deposition, you stated that  
3 Twin Falls was returning a significant percentage of  
4 water.

5                   Do you recall that testimony?

6           A. No, I'm going to argue your words. I don't  
7 believe I stated that we were returning a significant  
8 amount of water. I think I said in my testimony that a  
9 pie chart that we had seen suggested that we were, off  
10 of our return flows, spilling significantly more water  
11 than we feel that we are.

12           Q. Okay. And thank you for correcting me on  
13 that, Mr. Barlogi. That's what I also see in your  
14 testimony, that you were having a discussion with  
15 Mr. Anders about what, in your words, he was looking at  
16 as a significant percentage, and you were having a  
17 discussion with Mr. Anders about you didn't think it was  
18 that much?

19           A. Yes.

20           Q. Whatever it was that Mr. Anders was showing  
21 you?

22           A. [Witness nods head.]

23           Q. So is it true that Twin Falls is returning in  
24 excess of 150,000 acre-feet per season?

25           A. I don't know. I don't know that I've totaled

1 it per season.

2 Q. Okay. And I'll represent to you -- and  
3 testimony will come in later -- but would it surprise  
4 you that Twin Falls Canal Company is returning in excess  
5 of 300,000 acre-feet per irrigation season?

6 A. Yes, I don't believe that number.

7 Q. Okay. Do you know if the return flow  
8 information that you discussed with Mr. Anders was  
9 incorporated into the Methodology Order?

10 A. No, I don't believe it had anything to do with  
11 it.

12 Q. And how many power plants are within  
13 Twin Falls Canal Company's boundary?

14 A. I would -- I'm going to throw a number out  
15 there and tell you ten.

16 Q. What was the most recent power plant that was  
17 constructed?

18 A. The most recent one is the Midway Power Plant.

19 Q. Do you recall when that was built?

20 A. Yeah, I want to tell you 2005, '6, '7-ish.

21 Q. Okay. And let's turn to Exhibit 338.

22 MR. THOMPSON: Mr. Director, before we start,  
23 I will object to this exhibit. I can explain why if  
24 you'd like.

25 HEARING OFFICER: Okay. Well, it's a

1 preliminary objection. I'll allow counsel to try to lay  
2 a foundation, and then I'll anticipate an objection  
3 forthcoming.

4 Mr. Bromley?

5 MR. BROMLEY: It was a deposition exhibit.  
6 I'll work through this.

7 Q. (BY MR. BROMLEY) Mr. Barlogi, you recall this  
8 exhibit?

9 A. I do.

10 Q. And at your deposition, you discussed this  
11 exhibit with Mr. Johnson [sic]; correct?

12 A. Yes.

13 Q. Okay. And you highlighted the power revenue  
14 in yellow; correct?

15 A. Well, I highlighted what I understand to be  
16 the power revenue. Typically, when I look through these  
17 documents, I have my accountant beside me.

18 Q. So you're aware of what this document is? You  
19 understand the document?

20 A. No, not thoroughly.

21 Q. So the yellow that you highlighted, what did  
22 you highlight? We discussed this at your deposition  
23 that you were highlighting revenue that the company was  
24 realizing from hydropower generation; correct?

25 A. Yes, that was the attempt, but we struggled as

1 we went through it and as we highlighted, but that was  
2 the attempt.

3 Q. So what were the struggles?

4 A. Well, for example, you can see Twin Falls  
5 Energy Midway reimbursement. We're not certain that  
6 that was revenue or whether that was expense that came  
7 back as a result of costs incurred.

8 Q. And your counsel can clean this up, I suppose,  
9 on redirect. We've produced this exhibit previously.

10 The more water the Twin Falls Canal Company  
11 returns, the more power revenue the company will  
12 realize; correct?

13 A. You know, our three big producers are  
14 South Forks Hydro, Midway Power, and Lower Low Line.  
15 Those are power plants that we own or are partners in.  
16 Those are the meat of all the income.

17 As I told you, there are probably another  
18 seven other projects in the system. We don't receive  
19 royalties from all of them. Some of them we do. They  
20 are privately owned. They are much smaller plants.  
21 And, yes, they exist on the tail ends or the returns of  
22 those drains. And so, absolutely, if there's more water  
23 there, they produce more, which makes our -- I believe  
24 we receive about half a percent from a base value as  
25 royalty from those.

1 Q. Thank you.

2 MR. BROMLEY: I'll offer Exhibit 338.

3 HEARING OFFICER: Mr. Thompson?

4 MR. THOMPSON: Yeah, I'll just object to the  
5 relevance, I guess. The economic issue has already been  
6 addressed by the Director. You know, if we want to get  
7 profit and loss statements from every water user, we can  
8 certainly do that. It's beyond the scope of this  
9 proceeding. Mr. Barlogi testified to the fact that they  
10 do receive income from hydropower operations incidental  
11 to the irrigation deliveries. Putting this type of  
12 exhibit in the record is irrelevant.

13 HEARING OFFICER: Mr. Bromley?

14 MR. BROMLEY: It doesn't have anything to do  
15 with the economic benefit between how much revenue a  
16 groundwater user would realize if allowed to stay on  
17 versus the economic benefit that a surface water user  
18 realizes by being able to stay on. That's the economic  
19 issue that's being discussed at Clear Springs. It's not  
20 this.

21 HEARING OFFICER: Mr. Barlogi, is this  
22 document a document from Twin Falls Canal Company  
23 records?

24 THE WITNESS: This document is a document that  
25 was created by our accountant; and yes, this is -- comes

1 from us.

2 HEARING OFFICER: Mr. Thompson, I agree with  
3 Mr. Bromley. The purpose of this is not to compare  
4 economic benefits or detriments from possible  
5 curtailment. My understanding is the purpose of this  
6 document is at least to show that there may be some  
7 incentive for additional diversions of water not  
8 necessary for irrigation, and, as a result, I'll receive  
9 it into evidence.

10 So the document marked as Exhibit 338 is  
11 received into evidence.

12 (Exhibit 338 received.)

13 MR. BROMLEY: Thank you, Director. And before  
14 I go on to the next topic, let me go back and let's  
15 offer and admit the exhibits that we've discussed.

16 So we had Exhibit 332, which were the headgate  
17 deliveries. This was the colorful document that showed  
18 three-quarters, five-eighths, half-inch. Offer that for  
19 admission.

20 HEARING OFFICER: Any objection?

21 Hearing no objection, the document marked as  
22 Document 332 is received into evidence.

23 (Exhibit 332 received.)

24 MR. BROMLEY: The next one that we talked  
25 about was Exhibit 334, which was a population graph of

1 Twin Falls County, with Mr. Barlogi agreeing with what  
2 the graph shows, which is the county has grown by  
3 19 percent since 2020. I would offer that into  
4 evidence.

5 HEARING OFFICER: Any objection?

6 MR. THOMPSON: Yeah, I'll object to this  
7 exhibit. There's no foundation.

8 MR. BROMLEY: Well, Director, it's a document  
9 that's sourced off the internet with what says census  
10 data. That's kind of the best that we can do.  
11 Mr. Barlogi didn't disagree with me that Twin Falls  
12 County has grown.

13 THE WITNESS: Can I offer a comment?

14 MR. BROMLEY: No.

15 HEARING OFFICER: I'll receive the document  
16 into evidence. So the document marked as Exhibit 334 is  
17 received into evidence.

18 (Exhibit 334 received.)

19 MR. BROMLEY: Okay. That brings me up to  
20 current, Director.

21 Q. (BY MR. BROMLEY) Mr. Barlogi, I'd like to  
22 talk about irrigated area. So at your deposition, you  
23 said you were familiar with government programs like CRP  
24 and CREP that pay farmers money to fallow the fields.

25 Do you recall that testimony?



1 A. I do.

2 Q. And you stated that -- in your deposition  
3 testimony -- that the company doesn't keep track of  
4 acres that are enrolled in these programs; correct?

5 A. Yes.

6 Q. Wouldn't it be helpful for the company to know  
7 which acres are enrolled in these programs?

8 A. I am somewhat of the opinion that there are no  
9 acres enrolled in those programs on our tract or we  
10 would be aware of them.

11 Q. Okay. But in your deposition, you said that  
12 the company doesn't keep track of these acres. I  
13 suppose that's a different question than: Are there  
14 acres like that enrolled within the tract?

15 A. Yeah, I suppose it's relative. If there are  
16 no acres enrolled, then, no, we don't keep track of  
17 them.

18 Q. So your opinion is there are no acres enrolled  
19 in CRP or CREP within your tract?

20 A. That is my opinion.

21 Q. Let's say, though, that there were acres  
22 enrolled in those programs within the company's  
23 irrigation boundary. Don't you think it would be worth  
24 knowing that you have fallowed acres within the tract?

25 A. Certainly, if there were.

1 Q. And at your deposition, we talked about your  
2 familiarity with farmers who irrigate a field for a year  
3 or two, and then idle that field in order to rebuild  
4 soil health.

5 Do you recall that testimony?

6 A. No, I do not. I do not recall talking about  
7 fields that laid idle for a couple of years.

8 Q. You're not familiar with farmers who irrigate  
9 a field for a number of years, take the crop off, and  
10 let the field rehabilitate itself through nature by not  
11 having a crop on it for a year?

12 A. I am not, no.

13 Q. Wouldn't it be helpful for the company to know  
14 which fields are idled?

15 MR. THOMPSON: Objection; asked and answered.

16 MR. BROMLEY: The question I asked was as to  
17 CRP and CREP. The question I'm asking now, Director, is  
18 as to idling the fields.

19 HEARING OFFICER: I'll allow the question.

20 THE WITNESS: Assuming there were fields  
21 idled, of course it would.

22 Q. (BY MR. BROMLEY) So an idled field or a field  
23 enrolled in CRP or CREP has no water demand; true?

24 A. Again, I have no familiarity with lands that  
25 are enrolled in CREP.

1 Q. But if a field is idled, it's not being  
2 irrigated, it doesn't have a water demand; correct?

3 A. It certainly doesn't have a crop water need,  
4 yes.

5 Q. Does Twin Falls Canal Company keep track of  
6 strip malls, big-box stores, and industrial parks that  
7 have been built within the project boundary?

8 A. We do not.

9 Q. And isn't it true that acres that are hardened  
10 for commercial and industrial developments have no water  
11 demand?

12 A. No, not completely.

13 Q. And what is the water demand?

14 A. Many and most of the commercial developments  
15 still have some green space around them that has a water  
16 demand.

17 Q. So a rooftop, a parking lot, sidewalks,  
18 they're not receiving water; correct?

19 A. No.

20 Q. Mr. Barlogi, it was discussed during your  
21 deposition that you're familiar with the Department's  
22 requirement and the methodology, which is referred to as  
23 "Step 1," that the company state annually how many acres  
24 it's irrigating.

25 Do you recall that?

1           A. I do.

2           Q. And in your deposition you stated you didn't  
3 know how many acres Twin Falls Canal Company's  
4 irrigating; correct?

5           A. Yes.

6           Q. At your deposition, Mr. Budge, on behalf of  
7 IGWA, provided you with copies of each letter that the  
8 company has sent to the Department over the years  
9 regarding the company's irrigated area for purposes of  
10 the Methodology Order.

11                   Do you recall that line of questioning?

12           A. Yes.

13           Q. And Exhibit 337 -- if you could turn to  
14 that -- do you recognize those documents?

15           A. Yes.

16           Q. And those are the documents that you went  
17 through with Mr. Budge; correct?

18           A. Yes.

19           Q. So if Twin Falls Canal Company doesn't keep  
20 track of the number of acres that it's irrigating, how  
21 is it that the company can provide the Department with  
22 an accurate count of the number of acres that are being  
23 irrigated each year?

24           A. We are required to represent whether or not  
25 our acreage has changed by more than 5 percent every

1 year. 5 percent of 194,000 is nearly 10,000 acres.  
2 It's very easily -- easy to know that we have not  
3 changed anything to the tune of 10,000 acres. We very  
4 carefully monitor transfers in water that moves within  
5 the project.

6 There are changes, there is development there,  
7 but 10,000 acres equates to about 15 square miles.  
8 There's been development in our area, but there hasn't  
9 been anywhere close to that kind of development in our  
10 area.

11 Q. You told me, Mr. Barlogi, that you don't know  
12 how many acres the company is irrigating; correct?

13 A. Yes.

14 Q. At your deposition, Mr. Barlogi, I asked you  
15 what the company's goals are in the delivery call.

16 Do you recall that question?

17 A. Not that specifically, no.

18 Q. And your answer to my question, Mr. Barlogi,  
19 was that the company has no goals.

20 Do you recall that answer?

21 A. So I don't specifically remember that specific  
22 question.

23 Q. Okay. I'm going to hand you, Mr. Barlogi,  
24 your deposition transcript.

25 MR. BROMLEY: If I may?

1 HEARING OFFICER: Yes.

2 MR. BROMLEY: Thank you.

3 Q. (BY MR. BROMLEY) Okay. Mr. Barlogi, that is  
4 the unsealed -- now-unsealed copy of your deposition  
5 transcript. I'd ask you to turn to page 57.

6 Are you on page 57?

7 A. I am.

8 Q. Line 7, I'm going to read.

9 "What are the surface water -- actually, let  
10 me ask it this way: What are Twin Falls Canal Company's  
11 goals in this methodology proceeding that we're in?"

12 That's lines 7 through 10.

13 MR. THOMPSON: I'll object to that.

14 Are you reading the deposition, or are you  
15 making up the question as you go?

16 What does it say, Chris?

17 MR. BROMLEY: I'm reading the deposition,  
18 Travis. Do you have the deposition transcript in front  
19 of you?

20 MR. THOMPSON: You said "Surface Water  
21 Coalition."

22 MR. BROMLEY: Travis, do you want to read it  
23 with me right here?

24 MR. THOMPSON: You changed it. I'm just  
25 curious --

1 MR. BROMLEY: No, Travis. I'm reading what  
2 the deposition transcript says. Why don't you come here  
3 and look at it with me.

4 MR. THOMPSON: No, that's fine.

5 HEARING OFFICER: All right.

6 MR. THOMPSON: I thought you said "Twin Falls  
7 Canal Company."

8 HEARING OFFICER: So do we have --

9 MR. BROMLEY: Travis --

10 HEARING OFFICER: -- an objection?

11 COURT REPORTER: Hey, guys --

12 HEARING OFFICER: Do we have an objection?

13 MR. BROMLEY: Come read it.

14 Q. (BY MR. BROMLEY) Do you see, Mr. Barlogi --  
15 Sorry, Director.

16 HEARING OFFICER: I'm assuming the purpose of  
17 these questions are to either to refresh the memory of  
18 the witness or to impeach the witness, one or the other.

19 MR. BROMLEY: One or the other.

20 HEARING OFFICER: So let's read directly from  
21 the deposition.

22 MR. BROMLEY: That's what I'm doing, Director.

23 HEARING OFFICER: Okay. I don't have it in  
24 front of me, so I'm just, again, reminding you.

25 Q. (BY MR. BROMLEY) So, Mr. Barlogi, let's look

1 at line 7, page 57. And let's read along.

2 "Question: Okay. That's fine. What are the  
3 surface water -- actually, let me ask it this way: What  
4 are Twin Falls Canal Company's goals in this methodology  
5 proceeding that we're in?"

6 Would you please read your answer on line 14?

7 A. On line 14, I said: "I don't believe we have  
8 any goals" --

9 Q. Thank you.

10 A. -- "I don't believe it's our work."

11 But that is not the question that you asked  
12 me.

13 Q. So the question I asked you are what are the  
14 goals of Twin Falls Canal Company, which is --

15 A. In the surface water delivery call, that's the  
16 question you asked me here today.

17 Q. I'm asking you what Twin Falls Canal Company's  
18 goals are in this proceeding.

19 You just stated to me that you did not recall  
20 me asking you that question.

21 A. Because you didn't ask me -- you asked me what  
22 are the Twin Falls Canal Company's goals in the Surface  
23 Water Coalition call -- or in the -- you didn't ask me  
24 the same question that's in my transcript.

25 Q. So let's ask you that same question again



1 that's in the transcript.

2 What are your goals?

3 A. We don't have any goals. The methodology is  
4 not our product.

5 Q. Okay. So since Twin Falls Canal Company has  
6 no goals in the delivery call and since Twin Falls Canal  
7 Company doesn't know how many acres it's irrigating, how  
8 is it reasonable for Twin Falls Canal Company to curtail  
9 groundwater rights?

10 MR. THOMPSON: Objection; argumentative.

11 HEARING OFFICER: This is cross-examination.  
12 I'll allow the question to stand.

13 THE WITNESS: Again, you said we don't have  
14 any -- in the delivery call -- we do have goals in the  
15 delivery call. This is the methodology. That's not the  
16 question that I answered. The question is related to  
17 the surface water delivery call.

18 Q. (BY MR. BROMLEY) I would say it's one and the  
19 same.

20 Let's move on to the --

21 A. I would disagree.

22 MR. FLETCHER: I object. That's not a  
23 question, that's a statement. This is getting  
24 argumentative.

25 HEARING OFFICER: Okay. Well, let's move on.

1 MR. BROMLEY: I was moving on, Director.

2 HEARING OFFICER: Good.

3 Q. (BY MR. BROMLEY) Mr. Barlogi, I'd like to  
4 talk about Murtaugh Lake. You had mentioned that in  
5 your direct testimony again, with Counsel, this morning  
6 about how the system works.

7 Do you recall talking about Murtaugh Lake in  
8 your deposition?

9 A. I do.

10 Q. And you mentioned this morning -- you called  
11 it a "re-regulating reservoir." You also mentioned  
12 that -- some "recharge."

13 So when did Twin Falls Canal Company begin  
14 recharging in Murtaugh Lake?

15 A. So I'm going to guess. I think -- I think  
16 last year was, I want to tell you, maybe our eighth or  
17 ninth year of recharge. So I would say somewhere  
18 around, yeah, 2015-ish.

19 Q. Okay. So after we talked at your deposition,  
20 I went back and looked at the water right records of the  
21 Department just to see what the water right was that was  
22 going to go along with this recharge project. And what  
23 I found was a filing in 2020 that's numbered 45-14537.  
24 And that's an application filed by the company for  
25 recharge.

1 Does that sound about right?

2 A. Yeah. That's over my head. I don't --

3 Q. So let me hand you, Mr. Barlogi --

4 MR. BROMLEY: Director, if I might?

5 HEARING OFFICER: Yes.

6 MR. BROMLEY: So I think we're at Exhibit 363.

7 Andrea, is that --

8 MS. KLAHN: 362.

9 MR. BROMLEY: 362?

10 MS. KLAHN: I don't think that -- yeah.

11 MR. BROMLEY: Okay. That one was -- you  
12 attempted to --

13 MS. KLAHN: Yeah, it wasn't in.

14 MR. BROMLEY: Okay. Should we mark this 362,  
15 then?

16 Let me mark this as 363.

17 (Discussion off the record.)

18 (Exhibit 363 marked.)

19 Q. (BY MR. BROMLEY) Just take a moment to  
20 familiarize yourself with that document, Mr. Barlogi.

21 A. Okay.

22 Q. All right. So I see when I look at this that  
23 it's an application for groundwater recharge. I see  
24 that in line 5.

25 Do you see that?

1 A. Yes.

2 Q. Okay. And it's from a source of Dry Creek, a  
3 tributary to the Snake River, in line 3?

4 A. Yes.

5 Q. Okay. And is this what we were talking about?  
6 This is likely the recharge right that you're using?

7 A. I think this recharge right came into play  
8 with it. I think we used Idaho Water Resource Board  
9 water right to recharge with.

10 Q. Okay. It's a document you filed with the  
11 Department for recharge, though; correct?

12 A. Yes.

13 Q. And I see on page 2 that you signed it?

14 A. Yes.

15 Q. That's your signature?

16 Do you know how much water is lost to seepage  
17 at Murtaugh?

18 A. I do not, off the top of my head, no. I mean,  
19 it is -- it is accounted for every year with the Idaho  
20 Water Resource Board recharge program.

21 Q. Okay. And I know, from experience with the  
22 board, that they're pretty particular about where they  
23 recharge. So I would assume it's probably a good amount  
24 that's lost, do you think?

25 A. Yeah, I think it's significant or they

1 wouldn't support it.

2 Q. So I see Dry Creek is listed as the source for  
3 this right; correct?

4 A. Yes.

5 Q. And I looked on a map, because I wasn't real  
6 familiar with the area, but what I was seeming to see is  
7 it looks like there's another source that comes in which  
8 is called Big Cottonwood Creek?

9 A. News to me.

10 Q. Okay. Yeah, the map had something coming in  
11 called Big Cottonwood Creek. If you don't know about  
12 it, I don't either.

13 Okay. And at your deposition, Mr. Barlogi,  
14 you said that since you've been recharging and when  
15 Twin Falls turns on for the irrigation season, you  
16 haven't had to fill Murtaugh in some years.

17 Do you recall that?

18 A. Yes.

19 Q. So Murtaugh, then, is -- it's filling with  
20 water from Dry Creek, some of that water is for  
21 irrigation, but then because Murtaugh Lake is filled  
22 when the irrigation season is starting in some of those  
23 years, that Dry Creek water is being used for  
24 irrigation; correct?

25 A. Yeah, I suppose so.

1 Q. There isn't a bypass channel around  
2 Murtaugh Lake from Dry Creek, is there?

3 A. No.

4 Q. So let's turn to page 2 of this document.

5 And I see in line 11, you say "see Attachment  
6 A" in a few places; and line 12, you see "Attachment A"  
7 in a few places.

8 Do you see that?

9 A. I do.

10 Q. Great.

11 So then when I go into Attachment A, and I go  
12 to the page that has some -- it's the second page in, so  
13 the first page of Attachment A looks like a legal  
14 description table. And then the second page, I see  
15 No. 10, "Supplemental Information," "11a & c,  
16 Supplemental Information."

17 Do you see that?

18 It would be on page 4 of the paper.

19 Yeah, there you go.

20 A. Okay.

21 Q. So in "11a & c Supplemental Information,"  
22 three lines down, I see that it stated, "Twin Falls  
23 Canal Company as part of Carey Act filing 1900 that  
24 allowed for construction of these facilities."

25 Do you see that?

1 A. Yes, 11a & c.

2 Q. And then the page after that, there's a map of  
3 Murtaugh Lake; is that what that is?

4 A. Yes.

5 Q. And then the page after that, I see a document  
6 that's called "Contract."

7 Do you see that?

8 A. Yes.

9 Q. Okay. And this was attached by you to this  
10 document seeking a recharge water right at Dry Creek.

11 So on the -- and read to me what it says at  
12 the top of that document.

13 A. Of the contract?

14 Q. Yes.

15 A. It says: "Between State Board of Land  
16 Commissioners and Twin Falls Land & Water Company dated  
17 January 2nd, 1903."

18 Q. Thank you.

19 So I see a few headings on this first page.  
20 And then when I turn to the second page, I see some more  
21 headings -- the "Price of Water Rights" is one, "Water  
22 Right Dedicated" is another -- and I'd like to talk  
23 about the "Water Right Dedicated" piece.

24 And because that's pretty small font -- my  
25 eyes are getting worse the more of these that I do -- I

1 made a copy of -- trying to increase this so that people  
2 can read it.

3 HEARING OFFICER: So, Mr. Bromley, I'm trying  
4 to manage time a little closer today. How much longer  
5 do you have with Mr. Barlogi?

6 MR. BROMLEY: This is my last set of  
7 questions.

8 HEARING OFFICER: Okay. All right. Great.

9 MR. BROMLEY: Just five minutes, maybe.

10 HEARING OFFICER: Great.

11 (Exhibit 364 marked.)

12 Q. (BY MR. BROMLEY) Okay. Do you have  
13 Exhibit 364, Mr. Barlogi?

14 A. I do.

15 Q. Is that easier to read?

16 A. Yes.

17 Q. It is for me, too.

18 So let's look at this "Water Right Dedicated,"  
19 and let's break it into parts. So starting at the word  
20 "Ninth."

21 Do you see that?

22 A. I do.

23 Q. And then from "Ninth" there's a colon, and  
24 then there's another colon after the word "to-wit."

25 Do you see that?



1           A. Yes.

2           Q. Okay. So at that second colon right after  
3 "to-wit," let's read from there. So starting with "One  
4 eightieth."

5           A. Okay.

6           Q. And would you read starting at "One  
7 eightieth"?

8           A. [As read] "One eightieth of a second foot  
9 allotted to each acre represented thereby, and carrying  
10 capacity of the canal sufficient thereof."

11          Q. Okay. So I'll represent to you that one  
12 eightieth of a cfs is the equivalent of five-eighths of  
13 a miner's inch.

14                 So right after, then, you ended at "therefor."  
15 That was a perfect place to stop. Would you read from  
16 "the water to be delivered"?

17          A. "The water to be delivered from the canal  
18 during each and every irrigation season, said amount to  
19 be measured at or within one half-mile of the place of  
20 intended use in such quantities and at such times as the  
21 condition of the soil, crops and weather may determine  
22 but according to such rules and regulations based upon a  
23 system of distribution of water to the irrigators in  
24 turn and by rotation as will be best" -- "as will best  
25 protect and serve the interests of all users of water

1 from this canal system."

2 Q. Okay. And then read that last sentence, and  
3 that's the last of it I'd like you to read.

4 A. "It is agreed that said system of distribution  
5 by rotation shall be devised by the said party of the  
6 second part and used by it during the period while it  
7 retains the management of said system, and that it shall  
8 meet the approval of the State Engineer."

9 Q. Okay. Thank you, Mr. Barlogi.

10 So is the company measuring from one half --  
11 or I should say at or within a half-mile of the place of  
12 intended use? Is that where you measure?

13 A. Yeah. Yeah. I would say by and large, yes,  
14 almost exclusively, yes.

15 Q. Great.

16 And then as to this system of rotation that  
17 you've stated and that you read in the last sentence,  
18 the company is not rotating; correct?

19 A. Well, I believe we are rotating. I would say  
20 this document was prepared in 1902. In 1902, a typical  
21 farm was 40 or 80 acres. That's not the case anymore.  
22 These farmers have all bought up the neighbors' farms  
23 and bought up the neighbors' farms to where the typical  
24 farm is now 800, 1,000 acres of those farms that,  
25 historically, per this document, were 40-acre farms, and

1 they are now rotating amongst all of those 40-acre  
2 farms. But it does all exist within one farm.

3 Q. And when we looked at -- well, let me say it  
4 this way: When we started at the beginning, maybe a  
5 little ways in, when I asked you how much water  
6 Twin Falls Canal Company is delivering this season, you  
7 said three-quarters of an inch; correct?

8 A. Yes.

9 Q. That's more than five-eighths?

10 A. Yes. I would also suggest that the time that  
11 this document was prepared, the system was envisioned to  
12 encompass 240,000 acres. That didn't come into  
13 fruition, but that's what we were decreed for, was the  
14 water for the 240,000. Since then we are down to 194;  
15 so, arguably, there's some balance there between  
16 five-eighths and three-quarters.

17 MR. BROMLEY: We could have some further  
18 discussion about the contract, but I'm going to leave it  
19 there, Director.

20 I would then move for the admission of these  
21 last two exhibits that we've discussed --

22 363 and 364, Andrea?

23 HEARING OFFICER: Any objection to the  
24 admission of these documents?

25 The documents marked as -- and, again, correct

1 me -- 363, is that correct, and 364, Mr. Bromley?

2 MR. BROMLEY: That is correct, Director.

3 HEARING OFFICER: -- are received into  
4 evidence.

5 (Exhibits 363 and 364 received.)

6 MR. BROMLEY: And then the one other one that  
7 I have on my list, just to clean up, is 337.

8 These were the letters, Mr. Barlogi, that we  
9 looked at that your counsel has sent in to the  
10 Department over the years as the irrigated area under  
11 Step 1 of the Methodology Order.

12 Director, I would offer those at this time.

13 HEARING OFFICER: Any objection to the  
14 admission of these documents?

15 Okay. The documents or document marked as  
16 Exhibit 337 is received into evidence.

17 (Exhibit 337 received.)

18 MR. BROMLEY: I have nothing further. Thank  
19 you.

20 HEARING OFFICER: Thank you, Mr. Bromley.

21 MR. BROMLEY: Thank you, Mr. Barlogi.

22 HEARING OFFICER: Let's break for 15 minutes.  
23 Let's come back at five to the hour.

24 (Break taken.)

25 HEARING OFFICER: We're back recording.

1           Okay. Next examiner, Mr. Bricker. Go ahead.

2           MR. BRICKER: Thank you, Director.

3  
4                                   CROSS-EXAMINATION

5           QUESTIONS BY MR. BRICKER:

6           Q. Hello, Mr. Barlogi.

7           A. Hello.

8           Q. Nice to meet you -- or to see you in person.

9           I want to begin with some return flows. So  
10          does Twin Falls Canal Company track the entirety of its  
11          diversions that return to the Snake River above ground  
12          surface; in other words, spill back into the river?

13          A. Yes, in a manner of speaking.

14          Q. And the amount of the company's spills haven't  
15          significantly changed since 2010, have they?

16          A. No.

17          Q. Now, if the company were to take measures to  
18          reduce the amount of spills, thus, using that water  
19          before it leaves the system, couldn't the company  
20          thereby reduce its diversions?

21          A. Well, I think we do take measures to limit the  
22          amount of water that goes over those spills to the best  
23          extent possible. Operational spill is required at the  
24          ends of all of those laterals.

25          Q. Are there further measures that could be taken

1 to reduce them further?

2 A. If there are and we haven't already undertaken  
3 those measures, it's because we haven't identified them  
4 yet, and we certainly would if we saw them. We do  
5 everything we can to minimize the amount of spill.

6 Q. Fair enough.

7 All right. Does Twin Falls Canal Company want  
8 the Fifth Methodology Order to accurately represent its  
9 reasonable in-season demands?

10 A. Well, certainly, I would think so.

11 Q. Can we pull up Exhibit 1, that's your prefiled  
12 testimony. And while we're at it, also Exhibit 300,  
13 which is the Fifth Methodology Order.

14 So beginning with your prefiled testimony, can  
15 you please turn to page 27 of Exhibit 1.

16 A. Okay.

17 Q. On lines 8 to 14 therein, you state that the  
18 company's diversions have stayed around  
19 1,100,000 acre-feet per year over the last 30 years;  
20 right?

21 A. Yes.

22 Q. But that's not consistent with the data  
23 presented in the Fifth Methodology Order on page 12, is  
24 it?

25 MR. THOMPSON: I guess I'll object to the form

1 of the question as those two pieces of information  
2 representing the same time periods. I don't think they  
3 do.

4 HEARING OFFICER: Well, I'll at least sustain  
5 the objection.

6 Mr. Bricker, just asking for more foundation,  
7 looking at the information in the Methodology Order.

8 MR. BRICKER: Sure.

9 Q. (BY MR. BRICKER) So isn't it true that the  
10 company's diversions from 2000 to 2021 averaged  
11 1,062,098 acre-feet?

12 A. I assume so. I haven't done that math myself,  
13 but that's what the document says.

14 Q. And that number is, roughly, 38,000 acre-feet  
15 less than what you claim the company's annual diversions  
16 to be around?

17 A. No, I don't believe that's accurate. I  
18 believe I clearly state that it is right around  
19 1.1 million. Some years a little less; some years a  
20 little more.

21 Q. Okay. But the Fifth Methodology Order states  
22 that the average diversions are 1,062,098 acre-feet?

23 A. Okay.

24 Q. Thank you.

25 Now, isn't it true that the Department uses

1 the company's 2018 diversions as the baseline in  
2 predicting the company's reasonable in-season demands?

3 A. You've got to restate that. Say it again.

4 Q. Isn't it true that the Department uses the  
5 company's 2018 diversions as the baseline for the  
6 company's reasonable in-season demand?

7 A. I believe that's accurate.

8 Q. Isn't it true, on page 12, that the company's  
9 baseline year demand under the Fifth Methodology is  
10 1,121,717 acre-feet?

11 A. That's what it says in the book, yes.

12 MR. BRICKER: Can we pull up Exhibit 306,  
13 please.

14 Q. (BY MR. BRICKER) Do you have it?

15 A. Yes, sir.

16 Q. Also on page 12, please.

17 Isn't it true that the company's baseline year  
18 demands under the Fourth Methodology Order were  
19 quantified as 1,060,011 acre-feet?

20 A. Yes, sir.

21 Q. Isn't it also true that the company's baseline  
22 year demands under the Second Methodology Order were  
23 quantified as 1,045,382 acre-feet?

24 MR. BRICKER: And I realize this is not in an  
25 exhibit before us, but I would ask the Director to take



1 official notice of that Second Methodology Order.

2 HEARING OFFICER: I don't have it in front of  
3 me, Mr. Bricker. It certainly is part of the record.  
4 So whatever numbers are there, you know, I'll review if  
5 there's a need to do it.

6 Q. (BY MR. BRICKER) Well, I will represent to  
7 you that under the Second Methodology Order Twin Falls  
8 Canal Company's baseline year demands were quantified as  
9 1,045,382 acre-feet.

10 Do you have any reason to deny that?

11 A. No.

12 Q. So isn't it true that the Department has  
13 increased Twin Falls Canal Company's baseline year  
14 demand by over 76,000 acre-feet since the Second  
15 Methodology Order?

16 I can read the numbers to you again if you'd  
17 like.

18 A. Well, I mean, I'll agree. That is somewhere  
19 around where the difference between those two numbers  
20 is, yes.

21 Q. Great. And the Department -- excuse me.  
22 Let's turn to Exhibit 301, page 3.

23 Isn't it true that the Department is  
24 predicting a shortfall for Twin Falls Canal Company in  
25 the magnitude of 75,200 acre-feet in 2023?

1 A. Yes.

2 Q. Isn't it also true that under the Second  
3 Methodology Order there would not be a shortfall  
4 predicted in this year, assuming that same baseline year  
5 demand?

6 A. I assume so. I have not done that math, I  
7 guess. I assume so.

8 Q. Great. Now, you've stated in your deposition  
9 that everything Twin Falls Canal Company does is in the  
10 interest of efficiency; is that correct?

11 A. Yes.

12 Q. And you've also stated that Twin Falls Canal  
13 Company's operations have absolutely become more  
14 efficient in the last two decades; correct?

15 A. Yes.

16 Q. And that's because the company has undertaken  
17 many projects, including lining canals and implementing  
18 automation into its operations; right?

19 A. Yes. Among other things.

20 Q. Turn back to Exhibit 300, please.

21 And I don't know if it's possible, but could  
22 you also have Exhibit 306 side by side?

23 MR. WOOD: What is the one that you want?

24 MR. BRICKER: Exhibit 300 and Exhibit 306.

25 MR. WOOD: What page?

1 MR. BRICKER: Page 14 in both.

2 MR. WOOD: Page 14?

3 MR. BRICKER: Correct, in both.

4 MR. WOOD: So here will be 306.

5 Q. (BY MR. BRICKER) Have you got those,  
6 Mr. Barlogi?

7 A. I do.

8 Q. Okay. So isn't it true that your assertion  
9 that Twin Falls Canal Company's project efficiencies  
10 have increased is not consistent with the difference  
11 between Twin Falls Canal Company's project efficiencies  
12 shown in the Fourth Methodology Order and the Fifth?

13 A. No, I don't, necessarily, believe that is  
14 true.

15 Q. If you look at those two tables, is Twin Falls  
16 Canal Company's project efficiency .35 in both?

17 A. Yes, it is.

18 Q. Thank you.

19 As we discussed a few minutes ago, the  
20 Department has predicted that the canal company will  
21 experience a shortfall in 2023; correct?

22 A. Yes.

23 Q. And the Department has predicted shortfalls in  
24 past years as well; correct?

25 A. Yes.

1 Q. Now, in your deposition, isn't it true you  
2 stated that it is not common for Twin Falls Canal  
3 Company shareholders to forgo planting crops because of  
4 a lack of water supply?

5 A. Yeah, I don't know if I said it quite that way  
6 or not. I would say that, typically, we have -- in my  
7 lifetime at the canal company, we have had more good  
8 water years than bad ones.

9 So, yeah, certainly. Typically, they don't  
10 forgo planting the crops that they would like to plant  
11 because, typically, we have a decent water supply.

12 Q. And, similarly, you've stated that you are not  
13 familiar with crops perishing within the canal company's  
14 project area because of inadequate water supply;  
15 correct?

16 A. No, I'm not.

17 Q. Could you turn to Exhibit 314, please. That's  
18 going to be page 224.

19 A. Okay.

20 Q. Do you see line 18 says, "I'm not familiar  
21 with crops perishing"?

22 A. Yes.

23 Q. Thank you. A few more questions.

24 You have stated that you haven't experienced  
25 Twin Falls Canal Company shareholders idling their land;

1 correct?

2 A. Yes.

3 Q. You also stated that there's typically a  
4 zero percent change in TFCC's irrigated acreage;  
5 correct?

6 A. Yes.

7 Q. So that must mean that the company must be --  
8 the project area of the company must be planted wall to  
9 wall, then, each year; right?

10 A. No.

11 Q. Can the company ascertain when certain lands  
12 are not irrigated in a given year?

13 A. Well, certainly, I think -- I think we would  
14 know, yes.

15 MR. BRICKER: Thank you.

16 No further questions, Director.

17 HEARING OFFICER: Okay. Thank you,  
18 Mr. Bricker.

19 Further questions, Mr. Budge?

20 MR. BUDGE: Thank you, Director.

21

22 CROSS-EXAMINATION

23 QUESTIONS BY MR. BUDGE:

24 Q. And thank you, Mr. Barlogi, for being here  
25 today.

1 Do you mind if I call you "Jay"?

2 A. No, that's fine.

3 Q. Jay, I'm going to try to avoid duplicating  
4 other questions you've been asked, but I do have a  
5 little overlap just because I want to clarify a few  
6 items.

7 First, you testified earlier about different  
8 delivery rates of the company, three-quarters of an inch  
9 per share and five-eighths-inch delivery.

10 I just want to clarify, that's per share of  
11 stock?

12 A. Yes.

13 Q. Twin Falls Canal Company does not deliver  
14 water on a per-acre basis; it's a per-share basis?

15 A. Yes.

16 Q. And I understand from your direct testimony,  
17 there's 202,690 total outstanding shares in the company?

18 A. Yes.

19 Q. And if we've got somewhere between 180- and  
20 194,000 irrigated acres, we end up with somewhere around  
21 1.1 share per acre on average?

22 A. Okay.

23 Q. In your prefiled testimony, you discussed the  
24 challenges that development is causing for your company,  
25 specifically the changes of farmland from ag into

1 residential, commercial, and industrial use.

2 Do you remember that part of your testimony?

3 A. Yes.

4 Q. This is something I'm sure you've witnessed  
5 firsthand during your time with the company?

6 A. Yes.

7 Q. And you're personally familiar with farmland  
8 that used to be irrigated that now has got commercial or  
9 industrial development on it?

10 A. Of course.

11 Q. Has this transition happened relatively  
12 continuously during your time with the company?

13 A. No -- well, yes, at some level there's always  
14 been something going on. Certainly, in the earlier  
15 years very little. In the last couple of years, as the  
16 economy has been so fluid, a lot more.

17 Q. Okay. So probably fair to say it's  
18 accelerated in the last decade or so?

19 A. Fair.

20 Q. I understand Twin Falls Canal Company has  
21 three irrigation water rights. The water right numbers  
22 on file with the Department are 1-209, 1-4, and 1-10.

23 Are you familiar with those water right  
24 numbers?

25 A. No, I'm not.

1 Q. Maybe what I'll have you do, Jay, is turn  
2 briefly to Exhibit 184.

3 A. Okay.

4 Q. And you can take a moment just to briefly  
5 review that document and the attachments.

6 Jay, have you had a chance to review that?

7 A. Yeah, briefly.

8 Q. That's a document filed in the Snake River  
9 Basin Adjudication. There's a joint stipulation to  
10 withdraw objections, and then there's some water right  
11 recommendations for Water Right Nos. 1-4, 1-10, and  
12 1-209.

13 A. Okay.

14 Q. Do you recognize those as Twin Falls Canal  
15 Company's irrigation water rights from the Snake River?

16 A. These are our natural flow water rights from  
17 the Snake River, yes.

18 Q. Okay. And you understand that, collectively,  
19 those three water rights authorize the irrigation of  
20 196,162 acres?

21 A. No, I don't know that, but...

22 Q. Okay. If you'll look at the second page of  
23 the exhibit, which is part of the stipulation, there's  
24 paragraph 3(a), and it reads, "Evidence relating to  
25 water right use after November 19th, 1987, was not at



1 issue in the adjudication. These water rights are  
2 decreed in the Snake River Basin Adjudication based on  
3 the extent of beneficial use that existed prior to or at  
4 the time of the commencement of the Adjudication on  
5 November 19th, 1987.

6 Do you see that?

7 A. I do.

8 Q. Do you understand that the decrees issued by  
9 the SRBA are based on the extent of irrigation in 1987?

10 A. Yes.

11 Q. And you would agree that there's been a  
12 significant number of acres removed from irrigation  
13 since that time?

14 A. No -- well, yes, significant is somewhat  
15 relative, but I would say that certainly for some of  
16 these industrial complexes, they retained 25 percent of  
17 their water shares, and the other 25 -- or the other  
18 75 percent were transferred to otherwise drylands.

19 Q. Okay. So as development has occurred, some  
20 land has been taken out of production, and some shares  
21 have been transferred to other farmers?

22 A. Yes.

23 Q. I understand.

24 I think you went over some of this with  
25 Mr. Bromley, but I just wanted to make sure it's clear

1 for me in the record. Twin Falls Canal Company does not  
2 maintain a record of the number of irrigated acres that  
3 it delivers water to annually?

4 A. No.

5 Q. So when farmland is developed or removed from  
6 production, there's not some book or other database that  
7 the company maintains to, you know, reflect that land  
8 being taken out of production?

9 A. Say that again, TJ.

10 Q. When farmland is developed and taken out of  
11 production, the company doesn't maintain any type of  
12 database where it keeps track of that land being taken  
13 out of production?

14 A. You know, I would suggest that some of that is  
15 likely in the Magic program that I talked about before.  
16 I'm not intimately familiar with the Magic program, but  
17 I do know that, you know, section-township-range  
18 information is there. So if we transfer water from one  
19 area to another, that certificate reflects that new  
20 section, township, and range. I believe you will find  
21 that in the Magic program as well.

22 Q. So you've got something that shows that -- if  
23 shares move from one delivery point to another?

24 A. Certainly, we track the shares.

25 Q. But you're not tracking the acres being taken

1 out of production?

2 A. No.

3 Q. Some Surface Water Coalition members maintain  
4 a GIS shapefile that they update annually with irrigated  
5 acres. That's not something that Twin Falls Canal  
6 Company does?

7 A. No.

8 Q. If you could turn to Exhibit 300 -- that's the  
9 Fifth Methodology Order -- and when you get there, flip  
10 to page 9.

11 A. Okay.

12 Q. Jay, have you read the Fifth Methodology Order  
13 before?

14 A. Yes.

15 Q. On page 9, there's a heading near the bottom  
16 titled "Irrigation Practices"?

17 A. Yes.

18 Q. And below that, there's a paragraph 19  
19 referring to the baseline year, and it says, "A baseline  
20 year must be recent enough to represent current  
21 irrigation practices. Current conditions should be  
22 represented by (a) the net area of irrigated crops," and  
23 then I won't read the rest.

24 Do you understand that the methodology  
25 utilizes irrigated acreage to calculate water demand for

1 Twin Falls Canal Company?

2 A. Yes.

3 Q. You understand that if Twin Falls Canal  
4 Company reports to the Department more irrigated acres  
5 than are actually irrigated, then the methodology will  
6 calculate more water demand than if the correct number  
7 of acres were used?

8 A. Yes.

9 Q. And that this will result, in turn, in  
10 additional curtailment of groundwater users or  
11 additional mitigation being required of groundwater  
12 users?

13 A. Yes.

14 Q. So you understand that having -- the  
15 Department having accurate acreage figures is very  
16 important to ensure that the Department does not impose  
17 excess curtailment?

18 A. Yes, I do.

19 Q. Okay. And you understand that groundwater  
20 users don't have access to Twin Falls Canal Company's  
21 water delivery database?

22 A. Yes.

23 Q. Okay. So you understand that groundwater  
24 users have to trust that Twin Falls Canal Company will  
25 provide accurate acreage data to the Department?

1 A. Yes.

2 Q. And I believe you testified earlier that you  
3 don't think the irrigated acres within Twin Falls Canal  
4 has varied by more than 5 percent since the 2013 figure?

5 A. Yes.

6 Q. But there's not a mechanism in place to track  
7 total irrigated acres with the company?

8 A. No.

9 Q. So in the future if it exceeds that threshold,  
10 the company won't really know when that happens?

11 A. Well, I disagree with that. I believe we  
12 would know. It's a large enough number that we  
13 certainly would know. The reason we haven't created  
14 shapefiles in recent years is because we know for  
15 certain that we are within the 5 percent very, very  
16 easily.

17 Q. And how do you know that for certain?

18 A. Again, as I represented earlier, 5 percent of  
19 194,000 is nearly 10,000 acres, nearly 15 square miles.  
20 Nothing close to that has happened.

21 Q. Let me reference -- I'm going to switch gears  
22 here and reference a portion of your prefiled testimony  
23 that talks about crops grown within the company's  
24 service area.

25 And you mentioned there's wheat, barley,

1 alfalfa, sugar beets, potatoes, dry beans, and corn.

2 I assume those are the primary crops?

3 A. Yes.

4 Q. Anything else would be on a small scale?

5 A. I'm sorry, I wasn't tracking everything that  
6 you said.

7 Q. Yeah. There may be some other greenhouse-type  
8 crops or something grown, but they would be very small?

9 A. Yes.

10 Q. What's your best estimate as to the percentage  
11 of the company's service area, on average, that's used  
12 to grow wheat and barley?

13 A. I don't have any idea.

14 Q. Is it a significant portion?

15 A. Yeah, yeah, I would say so.

16 Q. And I'm not a farmer, but I understand those  
17 crops are typically harvested in early August?

18 A. Yeah, I'm not a farmer either, but, yeah, I  
19 think you're right.

20 Q. And so when those crops are harvested, there  
21 would be a drop in irrigating acreage within the  
22 company's service area?

23 A. Not necessarily.

24 Q. Do those acres that were growing barley and  
25 wheat continue to be irrigated after they're harvested?

1           A. To some extent they do. A lot of times, the  
2 guys will irrigate the stubble to assist in the soil  
3 health to help the stubble break down. In recent years,  
4 we've seen some double cropping going on on the project.  
5 Furthermore, those acres that were under barley, that  
6 water has probably now been moved off of those acres and  
7 rotated around to the sugar beet crop or to the alfalfa  
8 crop or to the corn crop.

9           Q. Is it fair to say that the amount of  
10 irrigation that was occurring -- that occurs on wheat  
11 and barley acres declines on those acres collectively  
12 after those crops are harvested?

13           A. Yeah, I would say after a period of time, you  
14 know. Commonly during that time of year, every crop out  
15 there is needing water. So when the grain crops are  
16 done, it's very, very common for two or three weeks to  
17 see water users attempt to get caught up in areas where  
18 they were behind.

19           Once they begin to get caught up, if they had  
20 enough grain on their farm, you will see them reduce  
21 their delivery.

22           Q. And you explained earlier that the company  
23 doesn't do rotations, but individual stockholders can  
24 rotate their water supplies among their different fields  
25 on their farm?

1 A. Yes.

2 Q. Do most farmers take their diversion rate  
3 continuously through the irrigation system but have that  
4 type of rotating you discussed earlier?

5 A. Yes, more or less.

6 Q. And I understood from your deposition that the  
7 company, typically, delivers water from mid-April to  
8 mid-October?

9 A. We, typically, have water available for  
10 delivery from mid-April through mid-October, yes.

11 Q. And I understood from your deposition  
12 testimony that stockholders tell you in the spring when  
13 they're ready to turn on, and they tell you in the fall  
14 when they're ready to turn off?

15 A. Yes.

16 Q. I understand that Twin Falls Canal's water  
17 supply depends primarily on natural flow?

18 A. Yes.

19 Q. And when natural flow is sufficient to divert  
20 the full authorized diversion rate, I assume the  
21 company's going to take its full rate?

22 A. Well, likely. Likely -- I say that because,  
23 you know, 170 -- 170 cfs of our water right is a 1939  
24 water right. And that water right is never available  
25 when you get into July, which leaves us at 3,600 cfs



1 with a 1915 of 600 and a 1900 of 3,000. So, typically,  
2 our system maxes out at 3,650. So throughout the June,  
3 July, and August period, you can expect to see those  
4 kinds of numbers with our diversion; and if the natural  
5 flow will sustain that, absolutely, we will divert it  
6 and need it.

7 Q. Yeah. Okay.

8 I assume from a canal management standpoint,  
9 it's easier to manage the system and get water to  
10 everybody with the full 3,600 cfs diversion than if you  
11 had to cut back to 3,000 or something like that?

12 A. Yeah, certainly. Yes.

13 Q. You testified a little bit today and in your  
14 deposition about all the work Twin Falls Canal Company  
15 has done to make its system more efficient.

16 A. Yes.

17 Q. In your deposition, you explained that you've  
18 installed a lot of automation. I think you mentioned  
19 there were 60 automated sites now within the company?

20 A. Yes, ballpark.

21 Q. You explained that the Kinyon Pond was  
22 constructed in 2012 or '13, which enables you to manage  
23 the water supply more efficiently?

24 A. Yes.

25 Q. You described a large canal lining project on

1 the High Line Canal in 2019?

2 A. Yes.

3 Q. And two large-scale projects -- lining  
4 projects planned for 2023 and 2024?

5 A. I think we have one planned, not two.

6 Q. Oh, one planned. Okay. I may have  
7 misunderstood that.

8 And you also explained that if funding were  
9 available, Twin Falls Canal would develop additional  
10 project efficiencies?

11 A. We are always looking for opportunities.

12 Q. And so if groundwater users were willing to  
13 fund an engineering study to identify additional  
14 efficiencies available to the company, is that something  
15 you would welcome?

16 A. I wouldn't say we would at this point, no.

17 Q. If groundwater users were to fund actual  
18 improvements that had been identified, would you welcome  
19 their support?

20 MR. THOMPSON: I'm going to object to this  
21 line of questioning going beyond the scope of this  
22 proceeding, relevance.

23 HEARING OFFICER: Mr. Budge?

24 MR. BUDGE: I think it's well within the scope  
25 of the proceeding.

1 HEARING OFFICER: Well, I'm torn, but I think  
2 I'll sustain the objection, Mr. Budge.

3 Q. (BY MR. BUDGE) Let me ask just a few  
4 follow-up questions about sprinkler efficiencies.

5 I think we covered some of this, but if I  
6 understood correctly, the company's gone from about  
7 25 percent sprinkler to 50 to 60 percent sprinklers in  
8 the last 10 or 20 years?

9 A. That's our current estimate, yes.

10 Q. And when shareholders irrigate with  
11 sprinklers, they divert less water from the canal?

12 A. No.

13 Q. They apply just as much water per acre with  
14 sprinklers as they did with flood irrigation?

15 A. As I mentioned earlier, I'm not a farmer, I  
16 don't really know how they apply at all. I know that we  
17 continue to deliver the same amount.

18 I think on-farm efficiencies are certainly  
19 there. I think they have the ability to water their  
20 crops more efficiently, make better use of the water on  
21 the farm, and then move that water around to other  
22 crops.

23 Bear in mind, on our system one farmer is not  
24 growing just one great big hayfield. He's got  
25 hayfields. He's got cornfields. He's got grainfields.

1 So he may be able to more efficiently move his water  
2 around on his farm, but he still has a right, and we  
3 still deliver the same amount.

4 Q. You testified at your deposition that with the  
5 conversion from flood to sprinkler, there's less water  
6 that's accruing to waste ditches throughout the company?

7 A. Yes. Actually, I -- yeah, you know, the  
8 on-farm improved efficiencies, I believe, are there.  
9 The on-system efficiencies suffer.

10 Q. So when you say you deliver the same amount,  
11 what you're saying is you're making available to the  
12 stockholder the same amount of water, the three-quarters  
13 of an inch or five-eighths of an inch?

14 A. Yes.

15 Q. Does the company maintain meters at each  
16 delivery point to regulate how much water is diverted at  
17 each diversion point?

18 A. Yes, sir.

19 Q. And do those have totalizers on them?

20 A. Our meters are in the form of a concrete  
21 headgate that's measurable. They're not -- they're not  
22 electronic meters.

23 Q. You've got measuring devices, but not  
24 something that's keeping track of the total volume  
25 delivered --

1           A. No.

2           Q. -- each year?

3                   Okay. But -- well, let me ask you this: In  
4 your prefiled testimony, you have a statement that  
5 there's less return flow into the system from flood  
6 irrigation, and as a result -- and here's a quote -- "We  
7 simply have to bring more water into the system to  
8 supply those needs."

9                   Do you remember this part of your testimony?

10           A. Yeah, I remember that conversation and  
11 multiple parts of my testimony.

12           Q. And I'm referring to your prefiled testimony  
13 that's been admitted as Exhibit 1, I believe. And  
14 that's page 22, line 20.

15           A. So I would say that following that I believe  
16 there's a sentence that says that's simply not possible  
17 to just go get more water. We look at efficiencies and  
18 canal capacities as virtually synonyms. Our canal  
19 capacity doesn't allow us to just continually go to the  
20 head and get more and more water.

21                   So we've had to become more and more efficient  
22 in order to meet with those needs and meet with the  
23 deficit that we now experience because we don't receive  
24 that wastewater to redeliver time and time again.

25           Q. Now, your testimony is that when somebody

1 converts from flood to sprinkler that wastewater  
2 diminishes, but they're diverting just as much onto the  
3 fields as they did with flood irrigation?

4 A. Yes.

5 Q. Okay. So with flood irrigation there's water  
6 that would discharge into waste ditches. Some of those  
7 waste ditches return to the company's system, and others  
8 just discharge out of the system; correct?

9 A. Yes.

10 Q. So when somebody converts from flood to  
11 sprinkler, and there's less wastewater discharging out  
12 of the system, there's no water savings there for the  
13 company?

14 A. No. There's a water shortage that exists as a  
15 result of that.

16 Q. So converting to sprinkler -- what you're  
17 saying is it actually takes Twin Falls Canal Company  
18 more water for its patrons to irrigate their crops with  
19 sprinkler than with flood?

20 A. No. I'm saying it takes the company a higher  
21 level of efficiency to operate with sprinklers versus  
22 flood.

23 Q. So less water?

24 A. The same.

25 Q. The same water? No difference?

1           A. Right. 1.1 million.

2           Q. Diverts the same at the head, is what you're  
3 saying?

4           A. Yes.

5           Q. So if the whole company was in sprinkler, you  
6 would still want to divert the full 1.1 million  
7 acre-feet at the head?

8           A. We will strive to improve our efficiencies so  
9 that we can do that. As we lose that wastewater, it  
10 becomes a challenge.

11          Q. Let me ask you a few questions about  
12 subdivisions.

13                    You mentioned that subdivisions use as much  
14 water as the farmer used before the subdivision went in?

15          A. Yes.

16          Q. In your testimony, your prefiled testimony,  
17 you reported that most subdivisions divert most or all  
18 of their water between 5:00 and 10:00 a.m.?

19          A. No. I think they use most of their water  
20 between that. They divert it constantly.

21          Q. Where does it go when they're diverting it but  
22 not using it?

23          A. Back into our system or back into its  
24 historical waste path.

25          Q. Okay. So they divert it, they just don't use

1 it to grow landscaping and sod and stuff like that?

2 A. Right.

3 Q. So when you say subdivisions continue to  
4 divert just as much as before, the diversion hasn't  
5 changed, but the amount of crops grown -- considering  
6 sod a crop, that goes down. The amount of -- I'll do it  
7 this way: The amount of acres irrigated goes down, but  
8 the diversion stays the same?

9 A. Yes. There's hard-surface areas in there that  
10 aren't growing a crop.

11 Q. And then additional water comes back into the  
12 system through a waste ditch or whatever?

13 A. Yeah, it either comes back into the system or  
14 it goes back into a historical waste path and wastes  
15 beyond our system into the Snake River Canyon, the  
16 Rock Creek Canyon. Or in many cases they have built  
17 large storage ponds to store that capacity so that when  
18 the sprinklers all fire up at 5:00 o'clock tomorrow  
19 morning, there's been capacity built in order to sustain  
20 that need.

21 Q. Okay. Very good.

22 I've just got a few more questions, and it's  
23 about the hydropower facilities, and you covered some of  
24 this with Mr. Bromley.

25 I understand there's three facilities that



1 Twin Falls Canal Company is an owner and part-owner.  
2 It's Midway Power, Lower Low Line, and Twin Falls  
3 Energy.

4 Are those the three?

5 A. No. It's Midway Power and Lower Low Line we  
6 fully own, and we're partners in the South Forks Hydro.

7 Q. That's right. You explained that in your  
8 deposition, and I didn't get it straight. I apologize.

9 And then there's another seven plants that are  
10 owned by third parties?

11 A. Yes.

12 Q. You testified earlier today that most of these  
13 are at the tail end of drains?

14 A. Yes.

15 Q. And on some of the plants that Twin Falls  
16 doesn't own, they receive royalties from the third-party  
17 owner?

18 A. Yes.

19 Q. And I believe in your deposition you testified  
20 that Twin Falls has budgeted \$1.8 million from  
21 hydropower revenue in 2023?

22 A. There is that kind of revenue expected, and  
23 there are expenses associated with that as well.

24 Q. Okay. And that's just for the three plants  
25 that the company has ownership interest in?

1 A. No, I believe that's all of it.

2 Q. That includes the other plants as well?

3 A. I believe so.

4 MR. BUDGE: That's all the questions I've got.

5 Thanks.

6 HEARING OFFICER: Thank you, Mr. Budge.

7 Further questions from the groundwater group?

8 Redirect, Mr. Thompson.

9 MR. ANDERSON: Director, may I ask just one  
10 quick question? I'm sorry.

11 HEARING OFFICER: Of whom?

12 MR. ANDERSON: Of Jay. Sorry.

13 HEARING OFFICER: Sure.

14 MR. ANDERSON: Just real quick.

15 HEARING OFFICER: Yep. Come forward.

16 MR. ANDERSON: And I just will be quick.

17

18 CROSS-EXAMINATION

19 QUESTIONS BY MR. ANDERSON:

20 Q. I understand the objection and the sustaining  
21 of relevance on the question that was asked about  
22 technologies and efficiencies.

23 So my question is not what you would do or  
24 what you would allow groundwater districts to do, but I  
25 want to ask the question this way: Is there currently

1 factors or barriers to putting in new technologies into  
2 your system if those technologies existed?

3 A. No. We explore and entertain any new  
4 technology that comes along.

5 That being said, it's not all based -- all  
6 that it's cracked up to be.

7 Q. So other than the limitations of the  
8 technology itself, probably, there's no other factors,  
9 that you can think of, that would limit those  
10 technologies going in?

11 A. No.

12 MR. ANDERSON: Thank you. No further  
13 questions.

14 HEARING OFFICER: Thank you. Mr. Thompson.

15

16 REDIRECT EXAMINATION

17 QUESTIONS BY MR. THOMPSON:

18 Q. Mr. Barlogi, just a couple of questions on  
19 redirect here.

20 Can you turn to Exhibit 1. It should be in  
21 our small binder there in front of you.

22 A. Okay.

23 Q. Can you turn to page 22, please.

24 A. Okay. I am there.

25 Q. It's -- in lines 18 to 20 we have an objection

1 from the groundwater users as hearsay.

2 Can you just describe what you're discussing  
3 there?

4 A. Yes. I was just discussing the situation that  
5 we're talking about. As Twin Falls Canal Company has  
6 the opportunity to reuse each drop of water time after  
7 time after time as much of our -- all of our High Line  
8 ground, about 73,000 acres, wastes back into the  
9 Low Line. So all of that wastewater we get to recapture  
10 and reuse again. And then we deliver it, then, again,  
11 onto Low Line grounds that typically waste off of one  
12 farm back into our system. And we get to use it again  
13 and again and again.

14 It's part of our efficiency number within the  
15 company. And I was just citing a historical statement  
16 in one of the old documents of the canal company where a  
17 state engineer had made the comment that a drop of water  
18 is thoroughly exhausted by the Twin Falls Canal Company  
19 by the time they are done with it.

20 Q. So I guess you wouldn't have to rely upon that  
21 engineer's statement to know how that operation works?

22 A. No. Of course not, no.

23 Q. And do you also receive water from seeps and  
24 drain tiles?

25 A. Yes, sir.

1 Q. And what have you witnessed in regards to  
2 those flows, over time?

3 A. Well, seeps and drain tiles were installed  
4 originally between, I want to tell you, 1915 and 1930.  
5 We captured a huge amount of subsurface water and  
6 redirected it back into our system.

7 In recent years, certainly, that water supply  
8 has gone down, down, down. And the trajectory is still  
9 currently downward. We've seen a reduced amount of that  
10 water coming out of those seep tiles and tunnels.

11 Q. You heard some questions this morning about  
12 the hydropower projects within the canal company.

13 Does the canal company divert water from the  
14 Snake River only for hydropower purposes?

15 A. No. It's explicitly understood amongst all of  
16 our stockholders and amongst all of the power folks that  
17 those facilities exist incidental to irrigation demand.

18 Q. Can you turn to Exhibit 338.

19 A. I'm there.

20 Q. It's your testimony that these are annual  
21 income statements prepared by your accountant?

22 A. Yes.

23 Q. And would you agree that these statements do  
24 not show the company's annual expenses?

25 A. Yes, I would agree.

1 Q. And what are the company's annual expenses as  
2 far as an amount?

3 A. An amount?

4 Q. Yes.

5 A. Oh, for our total annual budget?

6 Q. Correct.

7 A. It is right between 7 and \$8 million this  
8 year.

9 Q. Mr. Bromley went through the attachment to the  
10 company's groundwater recharge water right application;  
11 it was a 1903 contract.

12 Do you remember that testimony?

13 A. Yes.

14 Q. You talked with Mr. Budge about the water  
15 rights the company has decreed, 1900 right for  
16 3,000 cfs.

17 So if that contract identified a water right  
18 for 3,400 cfs, what did the company actually get decreed  
19 over time?

20 I guess if there's a difference between your  
21 decree and that contract, what do you understand is your  
22 water right today?

23 A. Well, I understand my water right to be  
24 3,780 cfs of natural flow in the river with various  
25 states with my 245,000 acre-foot of storage water

1 stacked on top of that.

2 Q. And I'll just focus on the 1900 water right.  
3 Is it your understanding that the 1900 priority right is  
4 for 3,000 cfs; is that correct?

5 A. Yes.

6 Q. So if that contract identified 3,400, that  
7 would be inconsistent with your water right; is that  
8 true?

9 A. Yes.

10 Q. Can you turn to page Exhibit 314. I think  
11 that's your deposition transcript.

12 A. Okay.

13 Q. Page 224.

14 A. Okay.

15 Q. I think Mr. Bricker asked you about crops  
16 perishing, and you read, I think, that answer on line  
17 18; is that correct?

18 A. Yes.

19 Q. Can you read the rest of that answer, please.

20 A. From line 18: "Answer: I'm not familiar with  
21 crops perishing. I am familiar with complaints of  
22 reduced yields. Again, an inability to plant the crops  
23 that they would like to plant because they know it's  
24 going to be a short water year, so they go heavy on the  
25 grain, heavy on the wheat, heavy on the barley, and

1 forgo the corn and the high-priced alfalfa."

2 Q. I guess one last question, Mr. Barlogi. In  
3 terms of canal operations and efficiency, would you  
4 agree that the irrigated acreage within your project is  
5 not the only variable that affects that efficiency?

6 A. Absolutely.

7 MR. THOMPSON: That's all the questions I  
8 have. Thank you.

9 HEARING OFFICER: Thank you, Mr. Thompson.  
10 Recross by anybody in the groundwater users  
11 group?

12 Mr. Budge?

13

14 RE-CROSS-EXAMINATION

15 QUESTIONS BY MR. BUDGE:

16 Q. Mr. Barlogi, Mr. Thompson was just talking to  
17 you about how farmers utilize their water. You  
18 testified earlier that you're not a farmer and not  
19 intimately familiar with their irrigation practices?

20 A. [Witness nods head.]

21 Q. And your testimony just given a moment ago was  
22 that the farmers go heavy on the wheat and barley until  
23 they're harvested and then move that water to the corn  
24 and the sugar beets and things like that?

25 Was that your testimony?



1 A. Just now?

2 Q. Yeah.

3 A. No, I don't think that was the intent of that  
4 conversation. Are you talking about the conversation I  
5 just had with Mr. Thompson?

6 Q. Yes.

7 A. No, I don't think -- I think that's out of  
8 context.

9 Q. Okay. I must have misunderstood.

10 Is it your testimony that while a farmer is  
11 growing their barley and wheat, they irrigate their corn  
12 and sugar beets and potatoes less, and then once the  
13 grain and wheat is -- the barley and wheat is off, then  
14 they irrigate them more at that point?

15 A. That is not the -- that is not the  
16 conversation that Travis and I just had, no.

17 Q. Okay. So just so I understand -- and you  
18 would agree that the cash crops are the corn and the hay  
19 and the sugar beets, things like that?

20 A. [Witness nods head.]

21 Q. And so it's not your testimony that the  
22 farmers are, you know, shorting those crops' water until  
23 the wheat and barley is off; you're just saying once the  
24 wheat and barley's off, there's just that much more  
25 water that they can put on their other crops?

1           A. My testimony was that farmers forgo the  
2 planting of corn and potato acres because they know it's  
3 a short water supply year, and they plant more grain and  
4 more barley and forgo those acres of going into the more  
5 valuable crops of alfalfa and corn.

6           Q. You don't really know what the individual  
7 farmer's rotations are on Twin Falls Canal's system  
8 because you're not involved in their farming practices?

9           A. I know from a general perspective, but not  
10 intimately with each farmer, no.

11          Q. You know from hearsay?

12          A. Well, from hearsay and from -- I mean, you can  
13 see it from the road. When it's a big grain year  
14 because it's a short water year, you can see noticeably  
15 more grain on the project, noticeably less corn and  
16 alfalfa.

17           MR. BUDGE: Yeah, Director, I would move to  
18 strike the testimony about farmers' crop rotation  
19 practices. This witness is not qualified to testify why  
20 farmers grow one crop versus another.

21           HEARING OFFICER: I'll deny the motion to  
22 strike. My impression is that Mr. Barlogi man ages and  
23 observes what's happening out there. He may not know  
24 exactly field to field because he's not a farmer, but,  
25 nonetheless, he has sufficient exposure that his

1 testimony should be considered. Thank you.

2 Q. (BY MR. BUDGE) Mr. Barlogi, you understand  
3 that commodity prices vary from year to year?

4 A. Certainly.

5 Q. And that commodity prices may drive farmers'  
6 decisions to grow one crop versus another?

7 A. Certainly.

8 Q. Do you understand that certain types of crops  
9 must be rotated with other crops to maintain soil  
10 health?

11 A. Certainly.

12 Q. And certain crops are grown based on  
13 contractual obligations to food producers?

14 A. Certainly.

15 Q. And you don't know why a given farmer may grow  
16 one crop versus another crop from year to year?

17 A. Not from those perspectives that you just  
18 mentioned, no.

19 Q. Okay. And then just one follow-up question  
20 about the conversion from flood to sprinkler, which I'm  
21 still struggling to wrap my mind around.

22 Do you understand when somebody irrigates with  
23 flood irrigation, there's excess water on the field and  
24 that excess water either sinks into the aquifer or it  
25 drains off into a waste ditch?

1 A. Yes.

2 Q. And when somebody irrigates with sprinkler,  
3 there's much less or maybe no excess water that runs off  
4 or sinks into the ground?

5 A. Yes.

6 Q. But your testimony is that the sprinkler  
7 farmers in your company's service area divert just as  
8 much water from the canal as happened under flood  
9 irrigation?

10 A. Yes.

11 MR. BUDGE: Okay. Nothing further.

12 HEARING OFFICER: Further questions by the  
13 groundwater group?

14 All right. Our timing seems to be very good  
15 again today. It's noon. Are we finished with  
16 Mr. Barlogi, then?

17 Mr. Barlogi, you can go back to --

18 MR. THOMPSON: Yeah, just a quick question on  
19 that. I'd like to release him. We did have certain  
20 parties identify him as a witness. I assume all of his  
21 testimony has been taken this morning; he can go home?

22 THE WITNESS: Okay. Thank you.

23 HEARING OFFICER: So the question is whether  
24 Mr. Barlogi can be excused?

25 MR. THOMPSON: Yes.

1 HEARING OFFICER: So you're excused,  
2 Mr. Barlogi, to go back to managing and delivering  
3 water, an important thing to the patrons of Twin Falls  
4 Canal Company.

5 I think we have one matter pending.  
6 Mr. Budge, you asked if the Department would redact a  
7 portion of Mr. Barlogi's written testimony.

8 MR. BUDGE: Yeah. And then I didn't object  
9 when he quoted it, so we're going to let it slide.

10 HEARING OFFICER: So you want to let it go?

11 MR. BUDGE: I think the objection is still  
12 appropriate, that it's based on hearsay, but --

13 MR. FLETCHER: It's in the record.

14 MR. BUDGE: It's not that critical at this  
15 point.

16 HEARING OFFICER: All right. That simplifies  
17 the operation of a black pen.

18 Okay. We'll come back at 1:00. Thanks,  
19 everybody.

20 (Lunch break taken.)

21 HEARING OFFICER: We are back on the record  
22 after a lunch break.

23 Mr. Sullivan, you're next. Will you stand and  
24 raise your right hand, please.

25 ///

1                   GREGORY K. SULLIVAN, P.E.,  
2           called as a witness by the City of Pocatello, having  
3           been first duly sworn to tell the truth relating to said  
4           cause, testified as follows:

5  
6                   MS. TSCHOHL: Can you guys make sure the  
7           microphones are on?

8                   (Discussion held off the record.)

9                   HEARING OFFICER: Now, is that better, I hope?

10                  MS. TSCHOHL: Yes, we can hear you loud and  
11           clear.

12                  HEARING OFFICER: Okay. Good. Thank you,  
13           Sarah.

14                  All right. Mr. Sullivan has been sworn in.

15                  Ms. Klahn?

16                  MS. KLAHN: Thank you.

17

18                                 DIRECT EXAMINATION

19           QUESTIONS BY MS. KLAHN:

20                   Q. Good afternoon, Mr. Sullivan.

21                   A. Good afternoon.

22                   Q. I'm Sarah Klahn. I represent the City of  
23           Pocatello, and we're here to put on your expert report  
24           in this matter.

25                   Could you start by stating your name and

1 spelling it for the record, please.

2 A. Gregory K. Sullivan, G-r-e-g-o-r-y,  
3 S-u-l-l-i-v-a-n.

4 Q. And are you a consultant engaged by the Cities  
5 to present opinions in this matter?

6 A. Yes.

7 Q. What's your present professional position?

8 A. I'm the president of Spronk Water Engineers.

9 Q. And do you have any professional  
10 registrations?

11 A. Yeah, I'm a licensed professional engineer in  
12 Colorado, New Mexico, and Idaho.

13 Q. And I believe the parties have stipulated to  
14 your admission as an expert in this matter, so I don't  
15 want to go over all the things we normally would go over  
16 in that context.

17 But can you describe, in just a couple  
18 sentences, your general work experience?

19 A. For my entire career I've been working in  
20 water rights and water resources engineering; for my  
21 present company since 1990, and then for a different  
22 company for the five years prior to that.

23 So I've been working in this area of water  
24 resources, water rights, modeling groundwater for my  
25 whole career.

1 Q. And have you participated in the -- in prior  
2 delivery calls?

3 A. Yes, I have.

4 Q. Which ones?

5 A. I was -- I've been involved in the Surface  
6 Water Coalition delivery call since its beginning. And  
7 then I was also heavily involved in the A&B delivery  
8 call and the Rangen delivery call.

9 Q. And you have experience with the SRBA as well?

10 A. Yes. I've assisted numerous clients in filing  
11 for their claims and reviewing the claims, helping them  
12 get them adjudicated.

13 Q. Can tell us about your modeling experience in  
14 Idaho.

15 A. I've been a member of the Eastern Snake  
16 Hydrologic Modeling Committee since its inception and,  
17 actually, prior to that, the Idaho -- ITCH, the Idaho  
18 Technical Committee on Hydrology, that was the  
19 predecessor group.

20 And both of those -- one of the major tasks of  
21 both of those groups has been to sort of oversee and  
22 provide peer review on the development of the Eastern  
23 Snake Plain Aquifer model over the years.

24 Q. Thank you.

25 Who exactly are you representing in this



1 matter?

2 A. The City of Pocatello, the City of  
3 Idaho Falls, and the Coalition of Cities, which is 15  
4 smaller ESPA cities.

5 Q. And you mentioned that you've been working on  
6 the Surface Water delivery call for a number of years.

7 Were you involved in the original 2005 Surface  
8 Water delivery call?

9 A. Yes.

10 Q. Can you describe, in a general way, the  
11 investigations you conducted at that time?

12 A. Well, we compiled data, reviewed the  
13 voluminous data that was submitted by the parties, and  
14 then, importantly, we conducted a pretty thorough  
15 investigation of all of the Surface Water Coalition  
16 members. And that included reviewing, you know, a lot  
17 of their historical information, historical records.

18 We spent, like, three weeks in the field, you  
19 know, going through all of their systems, observing them  
20 and observing their water conveyance and delivery  
21 facilities involved, looking at their irrigation  
22 practices. It was quite extensive.

23 And that culminated in an analysis that was  
24 summarized in my original expert report of their  
25 operations during the period from -- I think it was 1990

1 to 2006.

2 Q. Okay. And have you produced an expert report  
3 in this matter?

4 A. Yes, I have.

5 Q. Okay. And that would -- is that Exhibit 347?  
6 Could you find that?

7 Now, Mr. Sullivan, I understand that you were  
8 out of the country immediately before the start of this  
9 hearing; is that right?

10 A. Yeah. I was in Spain and Morocco.

11 Q. And I believe that when you returned, you had  
12 a chance to review the report, which you had largely  
13 completed before you left; is that right?

14 A. Yes. I had a little bit of opportunity to  
15 work on it while I was away, but spotty internet  
16 connections and stuff like that. And so, yeah, I  
17 looked -- I was able to look at it in some more detail  
18 when I got back.

19 Q. And when you got back, did you discover that  
20 there were some errors -- editorial errors, primarily,  
21 in the report.

22 A. Yes, there's some things I would like to  
23 correct.

24 Q. Okay. And are you looking at Exhibit 347 that  
25 has the pages of errata? I just want to make sure we

1 have the current version in the exhibit binder.

2 MR. FLETCHER: Is this 347?

3 MS. KLAHN: 347A. Sorry.

4 THE WITNESS: I don't think it is.

5 MS. KLAHN: 347A, is there such a thing up  
6 there?

7 No, I know, but did we make a copy of it?

8 THE WITNESS: My copy has that.

9 MS. KLAHN: I know yours does.

10 MR. BROMLEY: I can get it printed.

11 MS. KLAHN: Let's just go off the record for a  
12 minute.

13 (Discussion held off the record.)

14 MS. KLAHN: Back on the record.

15 Q. (BY MS. KLAHN) So the conversation we just  
16 had off the record was about replacing 347 with 347A at  
17 the conclusion of your testimony.

18 However, Mr. Sullivan, did you have something  
19 to explain about the -- some of the errors maybe not  
20 being completely editorial?

21 A. There was a handful that were -- you know, I  
22 just missed a word. And, like, for example, the word  
23 "not" was in there and something -- in one of the  
24 statements; and that "not" should not have been there.

25 So that's substantive.

1 Q. Well, do you want to take a minute now and  
2 identify where that is so people can get in, if they  
3 have a paper copy of the old version, and change that?

4 A. I don't think I can do it thoroughly with what  
5 I have right here. I have, like, a redline on my  
6 computer.

7 Q. Well, we'll just keep going, then.

8 A. I'll try to remember if I see something.

9 MR. FLETCHER: Just to clarify this issue, the  
10 page numbers changed when you changed exhibit numbers.  
11 So it's going to be very -- is there anybody that has an  
12 extra copy or a copy of 347A that the witness can --

13 MR. WOOD: I can print one off if somebody  
14 emails it to me.

15 MR. BROMLEY: Yeah. So Max has it right here.  
16 Can he send it to you, Pete?

17 MR. WOOD: Okay. Email it to me, and I'll go  
18 print it.

19 MR. FLETCHER: Because otherwise this is going  
20 to be confusing.

21 MR. WOOD: Yeah, it's fine.

22 MR. BRICKER: What's your email?

23 MR. WOOD: pete.wood@idwr.

24 MS. KLAHN: Shall we take a five-minute recess  
25 maybe?

1 HEARING OFFICER: That would be fine.

2 (Break taken.)

3 (Exhibit 347A marked.)

4 HEARING OFFICER: All right. Back on the  
5 record.

6 Ms. Klahn.

7 MS. KLAHN: Thank you, Pete, for your help  
8 with that.

9 MR. WOOD: No problem.

10 Q. (BY MS. KLAHN) We're back on the record.

11 And, Mr. Sullivan, you've been presented with  
12 Exhibit 347A. And in that report, could you identify --  
13 we were just talking before we broke to get a copy of  
14 this, we were talking about your involvement in the  
15 other delivery call matters.

16 Does this 347A -- Exhibit 347A show the --  
17 have a list of the reports you've prepared in prior  
18 delivery call matters?

19 A. It does.

20 Q. Could you identify where that is?

21 A. It's on page 4. This isn't all the other  
22 delivery call matters, it's just the reports, like,  
23 related to this delivery call -- or the Surface Water  
24 Coalition.

25 Q. Yes, that's what I meant, in the Surface Water

1 Coalition delivery call. Okay. Thank you.

2 Do you still stand by the opinions in the  
3 prior reports?

4 A. I do.

5 Q. Do you still stand by the methods you used in  
6 the prior reports?

7 A. Yes.

8 Q. Have you updated any of those analyses?

9 A. I would have liked to, but there wasn't time.

10 Q. And then as far as your work in this case, you  
11 said you haven't updated your work from the last case,  
12 but have you identified changed conditions since you  
13 prepared the prior reports?

14 A. Yes.

15 Q. And what page is that on in your report?

16 A. It's the series of bullets near the bottom of  
17 page 2.

18 Q. And then one more sort of foundational  
19 question.

20 Were you involved in the 2022 technical work  
21 group process?

22 A. I was.

23 Q. How were you involved?

24 A. I received an invitation to that. And there  
25 was a series of meetings -- half a dozen meetings, I

1 think, that the Department hosted that I attended  
2 remotely. And then I presented some information at a  
3 couple of the meetings on a couple of the subjects. And  
4 then, ultimately, when the staff recommendation was  
5 issued, I reviewed that and submitted written comments  
6 to that.

7 Q. Okay. And just for the record, I'd ask you to  
8 take a look at Exhibit 316.

9 Is this the staff recommendation that you  
10 referred to?

11 A. Yes.

12 Q. And Exhibit 326, could you take a look at  
13 that? Is that the comments that you submitted in  
14 response to the staff recommendation?

15 A. 326, it looks like Sophia's comments.

16 Q. How about 327?

17 MR. BRICKER: I think it's 322.

18 MS. KLAHN: 322. Sorry.

19 THE WITNESS: Yes.

20 Q. (BY MS. KLAHN) So 322 are the comments that  
21 you and your colleagues at Spronk Water Engineers  
22 submitted in response to the technical work group?

23 A. Yeah, in response to the staff recommendation  
24 memo.

25 Q. I apologize. Yes, that's right. In response

1 to the staff memo.

2 Did you receive any feedback on your written  
3 comments from anybody at IDWR?

4 A. I did not.

5 Q. Now, let's take a look at Exhibit 300, which  
6 is the Fifth Methodology Order, and Exhibit 301, which  
7 is the As-Applied Order.

8 A. Okay.

9 Q. Have you previously reviewed Exhibit 300?

10 A. Yes.

11 Q. Were your comments submitted to the technical  
12 work group incorporated into the Fifth Methodology  
13 Order?

14 A. Not that I could tell.

15 Q. And as far as the hearing today on the two  
16 orders reflected in Exhibit 300 and 301, in your  
17 professional estimation, did you have adequate time to  
18 review the Fifth Methodology Order and the As-Applied  
19 Order to prepare for the hearing?

20 A. No. I mean, I did what I could, but there  
21 wasn't time to do all I would have liked to have done.

22 Q. So let's just -- for a high-level summary,  
23 let's talk about what work you were able to do.

24 And I believe if you turn to the table of  
25 contents in Exhibit 347A, that might be a guide for



1 your -- if you can give us an overview of what work you  
2 were able to do.

3 A. Yeah. So in addition to just reviewing the  
4 order and the Fifth Methodology and the As-Applied  
5 Order, then there was a number of issues that I  
6 identified that I ended up focusing on. And they're,  
7 basically, the subject of my expert report.

8 So that was looking at the new baseline year;  
9 looking at the updated project efficiencies for the  
10 Surface Water Coalition members; looking at the  
11 irrigated area that is used in the methodology;  
12 considering the supplemental groundwater as a potential  
13 source to the Surface Water Coalition members, which is  
14 a provision of the methodology; looked at the change  
15 from steady state to transient groundwater modeling for  
16 determination of the priority date of curtailment. So  
17 those are the main things I focused on.

18 Q. Okay. Could you identify the work you would  
19 have done if you'd had more time?

20 A. Well, I would have liked to have, you know,  
21 looked at the -- taken another -- a relook at the  
22 operations of the Surface Water Coalition members  
23 because there's been 15 years, roughly, since -- have  
24 elapsed since I last looked at them, and I know,  
25 anecdotally, there's been continued conversions to

1     sprinkler and canal lining and other automation, those  
2     things that we heard Jay Barlogi talk about today.

3             So I'd like to understand the extent of those  
4     things that have gone on. And then, you know, that  
5     would give me a good -- a better context, I guess, to  
6     then look at the records of what they've been using over  
7     that time and consider the sort of the reasonableness of  
8     their operations given what their efficiencies are. So  
9     that's one thing I would have liked to have done.

10            Q. Okay. The -- it has been 15 years since the  
11     2008 hearing, exactly 15 years almost.

12            How does the changes during that time -- how  
13     would the changes during that time inform your, I guess,  
14     opinions if you'd had the time to look at those changes,  
15     potentially?

16            A. Well, you know, for example, these updated  
17     project efficiencies, you know, I think by analyzing the  
18     Surface Water Coalition numbers, it would give me --  
19     operations over the last 15 years, that would give me a  
20     better ability to judge the reasonableness of those  
21     efficiencies and whether they're -- the revised  
22     efficiencies are consistent with the kind of facilities  
23     that they have and if the general, you know, industry  
24     standard of large -- of the operation of large  
25     irrigation systems.

1 MS. KLAHN: Now, I'd like to offer  
2 Exhibit 347A at this point just so I don't forget to do  
3 it.

4 HEARING OFFICER: Any objection?

5 MR. FLETCHER: I have an objection just to a  
6 couple of comments made by Mr. Sullivan where he's  
7 delving into the realm of judicial review. And,  
8 basically, I'm asking that certain portions of the  
9 report be stricken. They're very small, but one is on  
10 the bottom of page 6 and continues to page 7 where he  
11 talks about the findings of the Director to be arbitrary  
12 and no clear and convincing evidence.

13 On page 7, paragraph 2, he talks about the  
14 actions of the Director being arbitrary and capricious.

15 And in page 27, bullet point 3, he makes  
16 reference to Director's actions being arbitrary.

17 And those are standards for judicial review.  
18 They're really not an expert's standard dealing with  
19 data and data interpretation.

20 HEARING OFFICER: Ms. Klahn?

21 MS. KLAHN: Well, I would say what's sauce for  
22 the goose is sauce for the gander, and Mr. Brockway has  
23 similar statements in his report. I think that expert  
24 s, especially in the water realm, routinely make those  
25 kinds of statements. And I'm assuming the Director has

1 seen that before and will take it for what it's worth  
2 and that it's certainly not going to control any appeal  
3 that might be filed and heard by Judge Wildman. So I  
4 would say they're not the sort of thing that should be  
5 stricken, but if they are, then the same thing should  
6 come out of Dr. Brockway's report.

7 HEARING OFFICER: Well, and of course, I don't  
8 know what Dr. Brockway's report even says.

9 MS. KLAHN: Oh, I think all I'm asking for is  
10 a global rule, not just a groundwater-specific rule.

11 HEARING OFFICER: I'll overrule the objection.  
12 I don't think these references will affect my  
13 decision-making in any way. Overruled.

14 MS. KLAHN: So is the exhibit accepted, then?

15 MR. FLETCHER: I don't have an objection.

16 HEARING OFFICER: So the document marked as  
17 Exhibit 347A is received into evidence. Thank you,  
18 Ms. Klahn.

19 (Exhibit 347A received.)

20 MS. KLAHN: Thank you.

21 Q. (BY MS. KLAHN) Mr. Sullivan, let's start with  
22 baseline year investigations that you had time to do.

23 Could you describe your review of the baseline  
24 year that was selected for the Fifth Methodology Order?

25 A. While there was some discussion of that at the

1 technical working group, it was one of the things that  
2 was brought to us. And the basic proposal was -- or the  
3 information that they submitted to us and is described  
4 in their -- I think in the Fifth Methodology Order was  
5 that the previous baseline year, which was an average of  
6 diversions during 2006, 2008, and 2012, was no longer  
7 representative of a year of above-average diversions,  
8 and that's because there had been -- they recomputed the  
9 average with an additional six or eight years, so the  
10 average changed, and now that baseline year, which --  
11 '06, '08, '12 -- which was above average before now is  
12 just a tiny, tiny bit below average.

13 And so I endeavored, then, to just review that  
14 pretty simple data of the diversion data in relation to  
15 the new baseline year that was selected and just kind of  
16 verify or understand the math that went involved -- that  
17 was involved.

18 Q. Do you have a recollection of how much below  
19 average the post -- I'm going to call it '06/'08/'12  
20 baseline year was?

21 A. Yeah. Well, based on the information that was  
22 provided by the Department, the '06 -- I'll call it  
23 '6/'8/'12.

24 Q. Okay.

25 A. The '6/'8/'12 baseline year was

1 5,666 acre-feet per year less now than the average. So  
2 that's, you know, 5,600 acre-feet out of 3.2 million.  
3 So just a very, very small amount, .18 percent less.

4 Q. So was there a problem with the backup  
5 spreadsheet for the '6/'8/'12 change that IDWR provided?

6 A. Well, I did note that when I looked at the  
7 information that was provided where they computed the  
8 new long-term average, which was now using data from  
9 2000 to 2021, looking at the data within that  
10 spreadsheet, it looked like some of the numbers during  
11 the earlier part of the period had changed from what was  
12 used to compute the original '6/'8/'12 baseline, and I  
13 don't know why. Maybe that was provisional data that  
14 they updated, and it wasn't extensive, but there was  
15 some changes.

16 But, curiously, the Department was still using  
17 the original '6/'8/'12 value as the benchmark for  
18 comparison of the new average. That '6/'8/'12 benchmark  
19 was still from the old data, the uncorrected data, and I  
20 thought that was kind of -- I don't know if it was an  
21 oversight or intentional. But, anyways, when I plugged  
22 it -- I tried to recompute the '6/'8/'12 baseline with  
23 the new data, new diversion data, and it changed a  
24 little bit.

25 And now with the new '6/'8/'12 baseline -- or

1 with the updated diversion data, you know, is only now  
2 40 acre-feet less than the 2000 to 2021 average. So  
3 just a tiny -- the tiniest bit less.

4 Q. So is 40 acre-feet pretty small in comparison  
5 to the total diversions?

6 A. Yeah, very small. I mean, it represents -- I  
7 put this calculation -- it represents about five minutes  
8 of diversion of the Surface Water Coalition members'  
9 total diversions on average. So it's a tiny, tiny  
10 amount. But to be sure, it's still below average.

11 Q. So the -- did IDWR include 2022 data when they  
12 were calculating the comparison for the '6/'8/'12  
13 baseline year?

14 A. No, they didn't. And so that -- so that was  
15 something I thought might be interesting to look at, so  
16 I added on the data -- diversion data from 2022 and  
17 recomputed that long-term average, 2000 to 2022 now,  
18 instead of 2000 to 2021. And then when you compare that  
19 average to the updated '6/'8/'12 baseline year, then it  
20 turns out that '6/'8/'12 is still above average now.

21 Q. So based on your understanding of the  
22 Department's methodology for selecting a baseline year,  
23 if the average that's being compared to the old baseline  
24 year is greater, would it be appropriate to pick a new  
25 baseline year based on your understanding?

1           A. Well, I'm not sure if you -- maybe I  
2           misunderstood your question.

3           Q. Did I turn it around?

4           A. You might have turned it around. But I think  
5           if you include 2022 and then do that comparison,  
6           '6/'8/'12 will still qualify as a baseline year.

7           Q. That's what I was trying to get at. Thank  
8           you. Well, but a new baseline year was selected as  
9           2018.

10                   Do you recall what the total diversions were  
11           associated with 2018?

12           A. Yeah, it's 3,341,939 acre-feet.

13           Q. And what kind of increase is that over  
14           '6/'8/'12?

15           A. It's roughly 142,000 acre-feet more. So that  
16           tiny amount, you know, either 40 acre-feet or  
17           5,000 acre-feet, that the old baseline year fell below  
18           the average, resulted in this huge increase in the  
19           baseline year, 142,000 acre-feet. And that was kind of  
20           eye-opening.

21           Q. Did you analyze whether the surface water --  
22           well, let me ask you first: What was the diversion  
23           averaging period used in the Fourth Methodology Order?

24           A. I think it was 2000 to 20 --

25           Q. '14 sound right?



1 A. 2014, yes.

2 Q. Did you look at whether Surface Water  
3 Coalition member diversions increased since 2015?

4 A. I did, yes.

5 Q. And what was that amount?

6 A. Yeah, their diversions have increased on  
7 average by about 143,000 acre-feet.

8 Q. Which is --

9 A. So the diversions during the later period were  
10 143,000 acre-feet greater than the 2000-to-2014 period.

11 Q. And the 143,000 is pretty close to the 142,000  
12 increase in the baseline year from '06 -- '6/'8/'12 to  
13 2018; correct?

14 A. Yes, uh-huh.

15 Q. Did you find any analysis in the materials  
16 provided by IDWR or Exhibit 300 that suggested that IDWR  
17 had analyzed why Surface Water Coalition member  
18 diversions increased?

19 A. I haven't seen anything like that.

20 Q. Okay. Were you surprised that the diversions  
21 increased from 2015 forward?

22 A. Yes, I was.

23 Q. Why?

24 A. Well, I mean, just my -- as I mentioned  
25 earlier, you know, the continued sprinkler conversions,

1 these efficiency improvements, those kinds of things  
2 would suggest that, if anything, the diversions should  
3 have gone down, anything -- that they should have been  
4 able to get by with less, but they've been diverting  
5 more.

6 Q. Do you have any concerns about the process  
7 that's used to develop the baseline year given these  
8 findings?

9 A. Yes. It seems like there's this positive  
10 feedback loop, I will call it, that exists in the  
11 process, whereby, essentially, the more they divert, the  
12 higher the baseline year needs to be to keep the  
13 baseline year as a year above average, and so there's  
14 really a disincentive to become more efficient because,  
15 you know, the more they divert, the higher the baseline  
16 year, the more the groundwater users have to come up  
17 with mitigation water.

18 Q. Thank you.

19 Let's move to project efficiencies. Were you  
20 here yesterday when Mr. Anders testified?

21 A. I was, uh-huh.

22 Q. Did you hear his testimony about the  
23 calculation used in the Methodology Order to calculate  
24 project efficiencies -- I'm sorry, to calculate -- about  
25 the use of project efficiencies to determine monthly

1 crop water demand?

2 A. Yes.

3 Q. Do you agree with how IDWR uses the project  
4 efficiencies in that calculation Methodology Order?

5 A. No.

6 Q. Why not?

7 MR. THOMPSON: I'd like to lodge an objection  
8 here. Just briefly, I think the methodology itself,  
9 these calculations Ms. Klahn is talking about, have been  
10 established, have been subject to judicial review. I  
11 don't think they've changed in the Fifth Order to the  
12 extent that we're opening up the methodology to redo it.  
13 So to the extent that she's asking for testimony about a  
14 separate methodology, I think it's beyond the scope.

15 HEARING OFFICER: Ms. Klahn.

16 MS. KLAHN: Mr. Director, our intention is to  
17 offer some suggestions about how to use the existing  
18 process that the Department has to make it more  
19 reliable. And the ground that was plowed in 2007 --  
20 Mr. Sullivan will spend a little bit of time talking  
21 about why that was a good idea, but understanding, also,  
22 that that's not the direction the Department chose to  
23 go.

24 So when I ask if he agrees with how IDWR uses  
25 project efficiencies, it's to set up the testimony about

1 the improvements that he's proposing for the current  
2 approaches.

3 HEARING OFFICER: I think consistent in all of  
4 the discussions has been a theme that the Methodology  
5 Order was and is intended to be a dynamic document that  
6 would be subject to change and would change with better  
7 information, better data, and better analysis. And so  
8 as a result, I'll overrule the objection.

9 MS. KLAHN: Thank you.

10 HEARING OFFICER: Ms. Klahn -- or  
11 Mr. Sullivan, you may answer the question, if you  
12 remember it.

13 Q. (BY MS. KLAHN) I think the question was: Why  
14 don't you agree with how IDWR uses project efficiencies  
15 in the Methodology Order, generally?

16 A. Well, generally, it -- this is another one of  
17 these kind of feedback-loop things, that the historical  
18 diversions are used in determining the project  
19 efficiencies, and then the project efficiencies are used  
20 to determine the demand.

21 So it's kind of a self-fulfilling prophecy  
22 that the methodology that -- that the method will  
23 predict a demand that's equal to what they've been  
24 diverting. And so there's really no opportunity to  
25 interject and look at: Is what they're diverting

1 reasonable and consistent with industry standards, or do  
2 you never get to look at -- behind the curtain at the  
3 efficiency and the operation of the members?

4 So that's generally my concern.

5 And then, also, as I'll get into a little bit  
6 later, it presumes that crop water need is a good  
7 predictor of what they need to divert. And while, in  
8 theory, that is -- that would be true, and it's true of  
9 most systems, it doesn't seem to be true in this  
10 situation a lot of times, as we'll see, that they -- a  
11 lot of times these Surface Water Coalition members kind  
12 of divert what they divert no matter what the crop water  
13 need is.

14 So their diversions are kind of flat in  
15 relation to -- instead of going up with the crop water  
16 need.

17 So we'll get into that a little later.

18 Q. Okay. Well, I'm going to ask you to get into  
19 some of it a little bit right now.

20 First of all, when you talk about the IDWR  
21 calculation for project efficiency -- which, as  
22 Mr. Anders talked about yesterday, is crop water need  
23 times acres divided by diversions -- what kind of an  
24 efficiency is that, in your professional understanding?

25 A. Well, I've always called that an actual

1 efficiency.

2 Q. What's the result of an actual efficiency when  
3 you try and use it for administration?

4 A. Well, it does what I just talked about  
5 earlier. If you use the actual efficiencies, divide it  
6 into the crop water need, you're just going to get what  
7 they historically divert, more or less.

8 Q. And if you divert more, what happens to the  
9 efficiency number?

10 A. Then the efficiency goes lower, and then --  
11 and then you get back to the same diversion.

12 Q. How did you analyze Surface Water Coalition  
13 member efficiencies in your first expert report in 2007?

14 A. Well, I applied what I would characterize as  
15 an industry standard approach for assessment of  
16 irrigation systems -- that I've done myself in a lot of  
17 situations and I've seen done in a lot of other  
18 situations -- in terms of both analysis of the  
19 historical use of irrigation systems for purposes of  
20 water rights transfers.

21 You know, I've done a bunch of those. And the  
22 procedure for doing that -- well, let me back up.

23 There's been hundreds or thousands of those  
24 kind of transfer analyses -- historical use analyses  
25 done for transfers in Colorado where I've done a lot of

1 my work, and that is the basis. Analyzing the systems  
2 in that way and the way that I did here for the Surface  
3 Water Coalition is what is done for those transfers.

4 And so those are very, you know, high -- you  
5 know, high-value or involving, you know, very important  
6 decisions about historical use. And a lot of money is  
7 at stake and all that.

8 And these are the methodologies that are used  
9 to do that -- you know, figure out how much water is  
10 being consumed and how efficient, you know, these  
11 systems are.

12 And then also in modeling, too, I've used  
13 these kinds of methods to evaluate the operations of  
14 irrigation systems.

15 Q. So in those calculations that you've done in  
16 those other situations, did you calculate a monthly or a  
17 seasonal efficiency?

18 A. So when I do those kinds of analyses -- and  
19 the standard is typically to calculate a seasonal  
20 efficiency. And the reason for that is that if you're  
21 trying to vary the efficiencies monthly, then it brings  
22 into question some other things that may be going on,  
23 particularly -- which is water moving in and out of soil  
24 moisture to help meet the crop demands. And if you  
25 don't accurately account for that, then you can get some

1 kind of misleading or monthly efficiencies.

2 And so, typically, to overcome that we will  
3 use a seasonal efficiency. Even when we're doing a  
4 monthly calculation, the input to that will still be a  
5 seasonal efficiency. And it helps to round out some of  
6 those curious-looking results that you get.

7 And we've seen in the methodology here where  
8 you've got, like, these very, very low efficiencies in  
9 some of the shoulder months that make the method real  
10 sensitive to -- you know, a small change in a crop water  
11 need divided by a low efficiency all of a sudden results  
12 in a large change in the diversion demand.

13 Q. Is the method you're describing one that's  
14 been used by IDWR in any prior delivery calls?

15 A. Yes. You know, the method that I used in my  
16 original analysis of the Surface Water Coalition ended  
17 up being, essentially, what the Department used in  
18 evaluating the delivery call of the -- for the B unit of  
19 the A&B system. And, in that, they were looking at, you  
20 know, whether -- the supplies of water that they were  
21 able to pump from the wells in the B unit and deliver to  
22 the farms, whether that was a supply that was adequate  
23 to meet the demands for those lands.

24 And so in that situation, the Department  
25 determined what the conveyance losses were in getting



1 water to the farms. And those are all real short  
2 conveyance systems because they're only delivering water  
3 down some laterals from a well. So in that situation I  
4 think the conveyance losses were on the order of  
5 3 percent, say.

6 And then they looked at the on -- what the  
7 on-farm application efficiencies should be under a  
8 reasonable operation, and I think in total they ended up  
9 using a system efficiency -- or a project efficiency in  
10 A&B of about 75 percent. And that was, basically, the  
11 combination of the on-farm and the conveyance  
12 efficiency.

13 And that was used, then, to determine whether  
14 what they were able to deliver to the farm was enough to  
15 meet the crop water demand. And based on -- I think  
16 that was part of the reason that delivery call was  
17 denied was because there was a determination that they  
18 did have enough water.

19 Q. And the determination you're talking about, is  
20 that contained in an Idaho Department of Water Resources  
21 order dated January 29th, 2008?

22 A. That sounds right.

23 MS. KLAHN: Mr. Director, we'd ask you to take  
24 judicial notice of that Department document.

25 HEARING OFFICER: Any objection?

1           It is an order of the Department, so I'm  
2 willing to look at it. I'll take notice.

3           Q. (BY MS. KLAHN) Mr. Sullivan, let's go to  
4 figure -- let's go to your figures in Exhibit 347A. I'd  
5 like to start with Figure 3-1.

6           First of all, just let me just ask you: Does  
7 Figure 3-1 illustrate some of the testimony you've been  
8 giving about the concerns you have with the Department's  
9 use of the project efficiency crop water need  
10 determination?

11           HEARING OFFICER: What page are you on,  
12 Ms. Klahn?

13           MS. KLAHN: There's no page numbers at that  
14 point. If you go all the way through the report, it's  
15 right after the map. It's the first page of figures.

16           HEARING OFFICER: I found it. Thank you.

17           Q. (BY MS. KLAHN) Are you there?

18           A. Yes, I'm there.

19           Q. Do you remember my question?

20           A. You should read it again, if you wouldn't  
21 mind.

22           Q. Does Figure 3-1 illustrate some of the  
23 testimony you've been giving about your concerns with  
24 the Department's incorporation of project efficiency --  
25 the Department's methods of incorporating project

1 efficiency into the Methodology Order?

2 A. Yes.

3 Q. Could you talk about what we're -- what  
4 Figure 3-1 shows?

5 A. Okay. So this is just showing a -- project  
6 efficiency information that was provided by the  
7 Department and that was used as the basis for the --  
8 developing the monthly efficiencies -- project  
9 efficiencies that are used in the Methodology Order.

10 So on this page there's a -- several graphs.  
11 There's one graph for each of the Surface Water  
12 Coalition members. And the graphs depict project  
13 efficiency. That's the y-axis on each of these graphs.  
14 And it depicts monthly project efficiencies, at least  
15 for some of the data on here. So that's the months  
16 along the bottom.

17 And then the solid black line with the  
18 connecting -- the open white-and-black dots represents  
19 the monthly project efficiencies for each of the members  
20 that are used in the Methodology Order.

21 And then I also put on here, for reference  
22 purposes or comparison purposes, the dotted black line,  
23 which is the average of the monthly efficiencies used in  
24 the Methodology Order. And it's the same average number  
25 that I think is at the bottom of the table of monthly

1 efficiencies in the Fifth Methodology Order.

2 And then one more comparison I put in here is  
3 the blue line, and that's the -- what I term the  
4 "reasonable annual efficiency" or -- that I had  
5 previously determined for the Surface Water Coalition  
6 members based on my earlier work in my 2007 expert  
7 report.

8 Q. And what do you conclude from the figures we  
9 see -- the graphs we see on Figure 3-1?

10 A. Well, there's -- one thing is that, you  
11 know -- you can see the shape of these monthly  
12 efficiency curves are, you know -- with some exceptions,  
13 the efficiencies start out relatively low in the spring  
14 and then peak up in the middle of the irrigation season  
15 and then fall off quite a lot in some cases, in  
16 September and October.

17 The other thing I would note and just -- and  
18 compare in looking at -- comparing the dotted black line  
19 to the blue line is that in some cases the actual -- the  
20 actual efficiencies -- the actual project efficiencies  
21 represented by the average of the monthlies for some of  
22 the members it's pretty close to the number that I came  
23 up with previously.

24 So -- like for A&B, for example, they are  
25 operating at the level that -- near the level that I

1 thought they should be able to operate.

2 And -- but others -- you know, in cases where  
3 the dotted black line is quite a bit below what I had  
4 previously determined, then I think there's some room  
5 for improvement in some of those systems.

6 Q. Okay. Thank you.

7 Let's turn now to the next page, which is  
8 Figure 3-2. And would you talk about what we're seeing  
9 in Figure 3-2, please.

10 A. So this is just a depiction of some of the  
11 same information that was on Figure 3-1, and,  
12 specifically, the monthly project efficiencies for each  
13 of the members. And I just plotted them all on one  
14 graph here so that we could kind of see them next to --  
15 or on top of each other.

16 Q. So would some of these differences in project  
17 efficiency be related to the nature of the -- nature and  
18 size of the canal system?

19 A. Yeah, it would. Because, you know, as I  
20 talked about earlier, this project efficiency is,  
21 basically, the -- has two components, there's a  
22 conveyance loss component, or a conveyance efficiency,  
23 and then there's an on-farm efficiency. And the product  
24 of those is the project efficiency.

25 And so for the conveyance efficiency piece of

1 that, you know, it's -- it makes sense, and it's true,  
2 that for long -- for very long and large conveyance  
3 systems that have more miles of canal, they're going to  
4 have more seepage loss in delivering water. So you'd  
5 expect them -- those kind of systems -- like an AFRD2,  
6 for example, they're going to have a lot larger  
7 conveyance efficiency -- oh, wait, conveyance loss than  
8 would be a smaller system like A&B, for example.

9 So you would expect that these monthly  
10 efficiencies wouldn't be the same, necessarily, but I  
11 don't think all of the differences between these are due  
12 to conveyance efficiency. I think that some of -- and  
13 we'll get into this, I think, a little bit later -- but  
14 some of this difference is due to some of these systems  
15 in pulling up, basically, a higher level of management  
16 and so that they're able to just generally be operating  
17 more efficiently both, you know, in delivering water to  
18 the farms with less waste and then also the farmers  
19 taking -- you know, having to operate more carefully,  
20 you know, to meet their crop water needs.

21 For example, because some of these -- some of  
22 the Surface Water Coalition member systems set an annual  
23 allotment so the user has to operate within that  
24 allotment, and so there's kind of a built-in incentive  
25 to only take the water and use it when you need it.

1           But other systems that are more on demand,  
2     like Twin Falls, for example, they don't have an annual  
3     allotment, so, you know, they can take up to a rate of  
4     flow whenever they want to order it. So in those  
5     systems, there's not as much incentive to conserve  
6     water, and I think that kind of thing plays into the  
7     reason why some of these efficiencies are different.

8           Q. Thank you.

9           Let's look at Figure 3-3, please.

10          This is titled, "Reasonable and Actual Project  
11     Efficiencies 2008 Hearing vs. Fifth Methodology Order."

12          What is this showing us?

13          A. This is some more of that information that I  
14     had on the previous page with some additional  
15     information as well.

16          So in this graph now, and then this graph at  
17     the top, and then the numbers in the table below,  
18     it's -- you know, they're both the same information.  
19     I'm graphing the numbers. And what the graph shows is  
20     the annual project efficiencies or seasonal project  
21     efficiencies for each of the members and different  
22     depictions of that.

23          And then along the bottom, I just have --  
24     there are the members called out themselves.

25          And so the Fifth Methodology efficiency -- or

1 average -- the average efficiencies in the Fifth  
2 Methodology Order are the black dots joined by the black  
3 line.

4 And then the efficiencies that the average  
5 project -- actual project efficiency, so the comparable  
6 number that I determined for the Surface Water Coalition  
7 members for the 1990-to-2006 period that I analyzed  
8 earlier for the -- my 2007 expert report is shown with  
9 the red line.

10 And then I've also -- related to the red line  
11 is this pink area, and that pink area represents the  
12 range of annual efficiencies that I determined for each  
13 of the Surface Water Coalition members for that  
14 1990-to-2006. So they vary from year to year, so I've  
15 got the range reflects the minimum and the maximum, and  
16 I've shaded the area in between.

17 And then, finally, I have shown on here what  
18 I've termed the reasonable efficiency, and that's  
19 that -- the reasonable project efficiency that I had  
20 previously determined from that -- from my work in the  
21 original Surface Water Coalition delivery call.

22 Q. What conclusions do you draw from Figure 3-3?

23 A. Well, one, is when I compare that -- the red  
24 line to the black line, that shows that for -- you know,  
25 most of the Surface Water Coalition members, that black



1 line is less than the red line, and so that indicates  
2 their actual efficiencies have gone down since 1990 to  
3 2006. So I thought that was interesting.

4 That's going the opposite direction from what  
5 I would expect given these continued conversions to  
6 sprinkler, canal lining, better irrigation system  
7 operation technology, and that sort of thing.

8 The other thing that I would note from this is  
9 that my blue line, the reasonable efficiency line, is --  
10 you can see that the -- that red-shaded area, which is  
11 the range of efficiencies, kind of butts up to that blue  
12 line for most of the users. And so that -- that  
13 indicates that during 1990 to 2006, most of the -- or at  
14 least, roughly -- well, five of the seven members were  
15 shown an ability to operate at a reasonable level that I  
16 had determined previously and determined independently.

17 And so this is kind of a validation, I think,  
18 of the method that I used previously. But then, you  
19 know, the exceptions here are over here for North Side  
20 and Twin Falls, whose operations -- you know, historical  
21 operations during 1990 to 2006 fell well below what I  
22 thought they should be operating at.

23 Q. Have there been -- I think you've already  
24 answered this question, but just to close the loop here:  
25 Had there been time, would you have updated the

1 reasonable project efficiencies for the Surface Water  
2 Coalitions based on your -- based on their operations  
3 during the last 15 years?

4 A. Yes, I would have liked to have updated that  
5 blue line.

6 Q. And if you had updated it, what would you have  
7 done with that?

8 A. Well, I would have -- I would expect that, you  
9 know, with -- just for the simple issue of the continued  
10 conversions to sprinklers, they should have a higher  
11 on-farm efficiency. So just for that reason alone, I  
12 think the blue line should be going -- ticking up a  
13 little bit, and there may be other reasons that the --  
14 you know, for other efficiency improvements that the  
15 blue line ought to tick up a little.

16 Q. Now, in 2007 you were recommending that the  
17 Department incorporate efficiencies -- the reasonable  
18 project efficiencies as a way to -- as part of the  
19 administration of the Surface Water Coalition delivery  
20 call; correct?

21 A. That's right.

22 Q. And I want to just talk about that for just a  
23 second because, as I recall, there's a lot of hostility  
24 to that idea, and I wonder about whether you could  
25 explain how would you operationalize something like

1 that?

2 Are you talking about an army of Department of  
3 Water Resources employees going out and checking on  
4 Jay Barlogi when he decides to open a headgate, or are  
5 you talking about something different?

6 How would -- whether your old efficiency  
7 approach is used or whether the Department's current one  
8 is used, how would you operationalize that in context of  
9 the delivery call?

10 A. Well, you know, by -- back then and now, I'm  
11 not suggesting that the Surface Water Coalition members  
12 must operate at these levels. What I'm proposing under  
13 this methodology that the project efficiencies be  
14 evaluated as to whether they're reasonable and adjusted,  
15 if necessary -- or I think it would be necessary to  
16 adjust them. But even if you did that, it just becomes  
17 part of the analysis to determine whether they're short  
18 or not and then whether that shortage requires  
19 mitigation.

20 So if they want to continue to operate at a  
21 lower efficiency level because it's easier to operate  
22 their systems and they want to continue their customary  
23 ways, I have no objection with that. But it does bother  
24 me when junior groundwater users are forced to curtail  
25 in order to maintain that continued less-than-efficient

1 operation.

2 Q. Well, in your report, did you prepare an  
3 alternate approach to propose to the Department to  
4 determine project efficiencies for the Fifth Methodology  
5 Order?

6 A. I did. And so I developed an alternate  
7 approach. My preference would still be to -- my number  
8 one preference would be to use the -- you know, use  
9 these reasonable efficiencies or approach the problem in  
10 that way and consider the reasonableness of efficiencies  
11 and apply some industry standard techniques to determine  
12 efficiencies that are potentially more reasonable.

13 But if the Department doesn't want to go  
14 there, then I've developed an alternative that would  
15 kind of work within the current framework but apply some  
16 additional sort of analysis and checks for how those  
17 monthly efficiencies are used.

18 Q. Is that described on -- or does that start --  
19 that discussion start on page 14 of Exhibit 347A?

20 A. I think it's on 13.

21 Q. Page 13. Okay. I just wanted to note that  
22 for the record.

23 And then do you have some illustrations of the  
24 discussion that you have starting at page 13, maybe  
25 starting at Figure 3-4 in the back?

1           A. Yes. I prepared a series of graphs, so  
2 there's -- it's all the way from 3-4 to 3-18, 3-19. But  
3 within those, there's basically two sets of graphs. So  
4 in this first set of graphs that we're going to talk  
5 about, I've plotted the annual diversions of the Surface  
6 Water Coalition members during 2007 to 2021 against the  
7 annual crop water need.

8           Q. So this is -- we're looking at Figure 3-4  
9 right now; is that correct?

10          A. Yes.

11          Q. So what do you conclude from the plots that  
12 you created in Figure 3-4?

13          A. Well, so what I'm showing in Figure 3-4 is  
14 these are annual -- so it's the annual diversions  
15 plotted against the annual crop water need in a -- what  
16 I call a scatter plot, XY plot. And those are the dots  
17 that are shown for each of the Surface Water Coalition  
18 members.

19                 And then I've also drawn a trendline, best fit  
20 line, through the points, and that's the colored, dotted  
21 line that's the same color as the dots.

22                 And then for just comparison purposes, I also  
23 plotted this black line. What the black line is is  
24 taking the annual crop water need divided by the average  
25 annual efficiency in the Methodology Order.

1           So this depicts on an annual basis what you  
2 would compute as an annual diversion demand from the  
3 annual crop water need and the annual efficiency. And  
4 you can see, even -- we'll look at this on a monthly  
5 basis, too, in a minute -- but even on an annual basis,  
6 you can see that the black line for -- is, in all cases,  
7 steeper than the trendline, and in some cases much  
8 more -- some cases much more steep.

9           And so what that indicates is that this  
10 calculation involving crop water need and efficiency is,  
11 basically, predicting a diversion demand, and it's  
12 predicting a relationship between the diversion demand  
13 and the crop water need that is different than what is  
14 actually present in the data.

15           So the data shows -- you know, you can see  
16 this in an extreme way, you know, under AFRD2, for  
17 example, that their diversion -- and that's with the  
18 purple dots in the upper right -- that those purple dots  
19 and the line drawn through them are relatively flat.  
20 And so, you know, even when the crop water need is  
21 changing, they're just diverting, more or less, the  
22 same -- a similar amount every year; whereas, the black  
23 line would -- you know, and the Methodology Order  
24 suggests that it ought to be going up and down, and  
25 that's sort of an implied part of the Methodology Order.

1 Q. Okay. Do we need to look at each of the  
2 individual companies, Figures 3-5 through 3-11, or can  
3 you kind of maybe highlight a couple of them that are --

4 A. Yeah, we might do that, you know, flip through  
5 some of them.

6 One thing I would also say about Figure 3-4  
7 and point out is the amount of scatter in those dots.  
8 And so, you know, that as the crop water -- for the same  
9 crop water need there might be a diversion, you know,  
10 even for just using -- like, I don't know, what's a good  
11 one? -- Milner, for example, you know, with a crop water  
12 need of 30,000 acre-feet, we see that they diverted  
13 50,000 acre-feet in one year and then as much as  
14 65,000 acre-feet in another year. So you just have a  
15 lot of scatter in this data.

16 So then moving on --

17 Q. Why don't you pick out a company or a canal  
18 and let's --

19 A. Well, I think like A&B, for example, that's  
20 the next one, there's a -- you know, you can see that --  
21 and this is the same information on these next set of  
22 charts as I was just talking about, only in this case,  
23 it's annual -- I mean, it's monthly data for each of the  
24 users.

25 Q. And so you're starting with Figure 3-5?

1           A. Figure 3-5. So this is A&B. So here I'm  
2 plotting the monthly crop water need versus the monthly  
3 diversions, and I've got a graph for each month. So the  
4 graph in the upper-left is April, and then to the right  
5 is May, and then going down to the left is June, July,  
6 August, September, and October, finally, at the bottom.  
7 And each of those, again, I'm plotting, with the dots,  
8 the crop water need -- monthly crop water need versus  
9 monthly diversion and plotting a trendline through it.

10           And for A&B, you know, which is a user that I  
11 think operates pretty efficiently, you can see that  
12 there is a pretty good correlation between what they  
13 divert and the crop water need. And those trendlines  
14 are, you know, not too far off the theoretical line,  
15 which is the black line, you know, the crop water need  
16 divided by the project efficiency.

17           Q. Basically, the black line shows what is being  
18 administered --

19           A. Yes.

20           Q. -- correct?

21           Okay.

22           A. But for other of the users it's not -- it's  
23 different. And it can vary by month. And some months  
24 it line s up pretty good, and other months it could be  
25 way off.



1           So, like, for example, on the next one, the  
2 next graph, 3-6, when you look at May for AFRD2, you've  
3 got those orange dots, and the trendline through them  
4 has a much flatter slope than the black line would  
5 suggest.

6           And then just flipping through the rest of  
7 these BID, Milner, you see a similar looking situation  
8 where you've got -- sometimes the trendline lines up  
9 with the black line, but at other times it doesn't. And  
10 in a lot of cases you still have a lot of scatter, too.

11           Q. So does this -- what does this tell us about  
12 the crop water need divided by project efficiency term  
13 as a predictor of diversion demand? Or does it tell us  
14 anything?

15           A. Well, it doesn't -- it tells me that it's not  
16 a great predictor. It's not the -- you know, the crop  
17 water need divided by efficiency is not the only thing  
18 that's going into what they're diverting.

19           Q. So can we move now to Figure 3-12?

20           A. Well, I would just note, then, with the last  
21 couple of them, North Side and Twin Falls, you can  
22 see --

23           Q. And those are Figures 3-10 and 3-11? I  
24 apologize --

25           A. Yes, 3-10 and 3-11 where -- you know, and for

1 these users, you know, you see that -- quite a lot of  
2 mismatch in many or most of the months where what they  
3 divert is -- seems to be a lot less -- what they divert  
4 is a lot less sensitive to the crop water need than the  
5 relationship in the Methodology Order would suggest it  
6 ought to be, a black line.

7 Q. Now, I do have a question for you.

8 At the top of each of these graphs from 3-5 to  
9 3-11 there's some blue text that says: "Exclude Project  
10 Efficiency Outlier Months (>+/-2 Standard Deviations)."

11 What does that refer to?

12 A. Well, that's a filter that the Department had  
13 put on when they were -- when it was evaluating these  
14 monthly efficiencies, that it was excluding the  
15 outliers. So I follow that same procedure to also  
16 exclude those.

17 But that's a good point, in that there's  
18 values that are straying even further -- historical  
19 values that are straying even further from the data that  
20 I have plotted on here that aren't plotted.

21 Q. Okay. So can we move on to this next group of  
22 graphs starting at Figure 3-12?

23 A. Yes.

24 Q. So this is titled -- these are a series, I  
25 think, by company -- or member, rather, titled, "Annual

1 Project Efficiency v. Annual Crop Water Need."

2 What are we seeing in Figure 3-12 through  
3 3-19?

4 A. So this is a comparable set of graphs. So  
5 this first graph, 3-12, is one where I'm plotting the  
6 annual project efficiency versus the annual crop water  
7 need for -- and this is back on a graph where I've --  
8 this graph where I've got a separate graph on this  
9 figure for each of the Surface Water Coalition members,  
10 the seven members.

11 So I'm plotting their annual project  
12 efficiency computed from the data against the annual  
13 crop water need.

14 Q. Okay.

15 A. And then similar to the last discussion or the  
16 last set of figures I was discussing, then I have some  
17 additional figures where I show the monthly values for  
18 each of the Surface Water Coalition members on separate  
19 pages.

20 Q. So can we pick out some of the monthly graphs  
21 that have strong correlations between project efficiency  
22 and crop water need?

23 A. Yes, I can do that.

24 And then also I would note that for each of  
25 these trendlines drawn through the data, I've got the

1 equation for the trendline and also the R-squared value  
2 for how good of a fit that trendline is through the  
3 data.

4 And so when I -- I considered a good  
5 relationship is when the R-squared was at least -- was  
6 above .5.

7 Q. Okay.

8 A. And so you can go through these and --

9 Q. Why don't you pick one or two, based on your  
10 professional understanding, then, of which ones would be  
11 significant. And then --

12 A. Well, there's, you know -- like, on A&B you  
13 can see that, you know, there's -- like, April and June  
14 there doesn't seem to be much relationship.

15 Q. Tell us which figures you're looking at.

16 Sorry.

17 A. Oh, sorry. Figure 3-13.

18 Q. Okay.

19 A. Like, when you have a lot of spread in here,  
20 and there's not a good relationship, that suggests to me  
21 that they're operating probably at a higher level of  
22 efficiencies. And actually some of them vary -- the  
23 scatter that you're seeing in this plot, it reflects  
24 water that's going either into or coming out of soil  
25 moisture to meet the crop water need. And that's not

1 part of the calculated efficiency, and that would be a  
2 reason you'd get more scatter. If you could build that  
3 into the analysis, I think some of this would tighten  
4 up.

5 Q. So, actually, a poor R-squared in these  
6 graphs, 3-12 through 3-19, is an indicator of,  
7 potentially, good operational efficiency?

8 A. Probably operating at higher -- closer to the  
9 higher end.

10 Q. Okay.

11 A. Or at a more reasonable level.

12 Q. So if we go through these and find the graphs  
13 that have low R-squared, that would be an indication, in  
14 your professional opinion, that the operations are what?

15 A. Tend to be more efficient than not.

16 Q. So then if we go, for example, to 3-14, and we  
17 see AFRD No. 2 in July, R-squared .86, what does that  
18 tell you?

19 A. Well, so that tells me that their project  
20 efficiency is changing with the crop water need, which  
21 that, just by itself, doesn't make a whole lot of sense  
22 to me, that -- if you're operating at a reasonably high  
23 level of efficiency, your efficiency should be roughly  
24 the same or near the same regardless of what the crop --  
25 the variation in the crop water need has been in that

1 month.

2           And if the crop -- if the efficiency is going  
3 up as the crop water need or the crop consumptive use  
4 increases, that suggests to me that they're diverting an  
5 excess of what they need. And the reason the efficiency  
6 is going up is because the enumerator is just getting  
7 larger and larger with the higher crop water use.

8           Q. Okay. Well, before we tie a bow on this, what  
9 else -- is there anything else that you would like to  
10 mention about these tables, 3-12 through 3-19 -- I'm  
11 sorry, Figures 3-12 through 3-19?

12           A. Well, just -- I mean, just because -- you  
13 know, I did note, like, for some of the users like  
14 North Side and Twin Falls, who we've been talking a lot  
15 about, you know, turning to the Twin Falls page,  
16 Figure 3-19, you can see that there's a pretty strong  
17 relationship now for them -- for Twin Falls and an  
18 R-squared much greater than .5 in all of the months but  
19 April. That -- that suggests to me that Twin Falls is  
20 probably, you know, operating at -- diverting more water  
21 than they need, and the only reason their efficiency is  
22 changing is because that numerator is changing.

23           Q. And remind us what the numerator is again?

24           A. When you're computing the efficiency, it's  
25 the -- the crop irrigation requirement, the CIR, times

1 the acres, and that's the crop water need.

2 And so as -- you know, in a hotter, drier  
3 year, that -- the crop water need will be greater, so  
4 that numerator becomes greater.

5 But you can imagine -- just for a simple  
6 example, then, if they divert the same amount of water  
7 every year, just in a hypothetical, and the crop water  
8 need is different every year, and you're always  
9 diverting enough water that the numerator stays the same  
10 and -- no, wait -- the denominator stays the same and  
11 the numerator, the crop water need, is changing from  
12 year to year, then you'll get that perfect relationship;  
13 that the computed efficiency will go up in lockstep with  
14 the crop water need.

15 And that's a reflection of the actual  
16 efficiency, but it's also a reflection that they're not  
17 operating at a reasonably high efficiency level, at  
18 least in those years where the efficiency -- the  
19 computed efficiency is lower.

20 Q. Okay. Well, what would you propose that --  
21 what would you propose for the Department to do with all  
22 of this information?

23 A. Well, I guess, for one, I wish they would just  
24 consider it, you know, and apply some sort of -- take  
25 this information and think about what it reflects and

1 whether the efficiencies that are used in the  
2 methodology are reasonable or can be modified to  
3 consider this information.

4 And I have -- I've proposed a couple of  
5 alternatives as a couple of many potential things that  
6 you could do.

7 So what I propose, then, is based on this  
8 information that I was just talking about. It appears  
9 that at least for -- you know, for many of the members  
10 and in some or many of the months, there is a good  
11 relationship between the monthly project efficiency and  
12 the crop water need and -- even though I think it would  
13 be better to use that relationship just as a small fix  
14 than to just use a fixed average value in the  
15 Methodology Order.

16 And so what I propose, then, as one small fix  
17 would be that for the situations where we have an  
18 R-squared that's more than .5, that you would use that  
19 regression equation to compute the project efficiency.

20 Q. And what regression equation is that?

21 A. It's the regression equation that's shown on  
22 each of these -- in figures --

23 Q. So give us an example.

24 A. Yeah.

25 Q. Let's look at Figure 3-19, for example.



1           A. Okay. So let's go -- let's say for June --  
2 this is Twin Falls. So for June we have a -- that's the  
3 second graph down on the left. It's with the green  
4 dots.

5                       So that -- the trendline, that's the  
6 regression line I'm talking about. It has -- the  
7 equation for that line is over on the left with the  
8 R-squared of .781. So I would propose that you would  
9 use that line -- or that regression equation to compute  
10 the Twin Falls efficiency in June and for all of the  
11 other months that the R-squared is greater than .5.

12                      But I would also propose that in addition to  
13 that, that you would establish a floor, and you would  
14 allow -- the efficiency that you would compute would be  
15 no lower than the average. And so that would prevent,  
16 then, you from using, in the methodology, these very,  
17 very low efficiencies on the lower end.

18           Q. So give us an example of one that you think is  
19 too low?

20           A. Well, let's go to, like, September, for  
21 example. September has efficiencies that are ranging  
22 from -- you know, that's the -- with the purple dots  
23 ranging from, you know, roughly, 12 percent up to  
24 40 percent.

25                      So I would propose that you would use that

1 regression line, but you would have the floor for what  
2 you would compute, from that regression line, be the  
3 average, or at about 25 percent.

4 Q. Oh, the average of the purple dots in  
5 September --

6 A. Yeah.

7 Q. -- would be the floor?

8 A. Would be the floor.

9 And then you would go up on that line from  
10 there.

11 Q. Okay. And so if you use -- and the regression  
12 business is beyond me, I'll admit.

13 So if you're using the regression to compute  
14 the efficiency, what are you not using?

15 A. Well, you're not using just a fixed monthly  
16 value, average value, all the time.

17 Q. Which is what IDWR does now?

18 A. Yes. And so this would result in -- in months  
19 with a higher crop water need, you would use a higher  
20 efficiency. And that is -- you know, that's actually  
21 reflected in the historical data. So in that case, I'm  
22 not applying any of my reasonableness test or anything,  
23 I'm just working within the historical data.

24 Because what happens in the methodology now is  
25 that if you get -- if you use the average efficiency and

1 it's a year with a -- or a month with a relatively high  
2 crop water need, you compute that average efficiency  
3 into the crop water need, and you end up with a  
4 diversion that's actually greater -- a diversion demand  
5 that's greater than what they actually diverted in that  
6 year.

7 Q. Oh, I see.

8 A. So it inflates it to more than what they  
9 historically diverted.

10 Q. Okay. I see.

11 Now, did you prepare any kind of -- I'm going  
12 to call it a hindcast to evaluate this proposal?

13 A. Yeah. Well, there's one more piece that we  
14 didn't talk about, and that's what to do when the  
15 R-squared is less than .5.

16 Q. Oh, right. I'm sorry.

17 A. So when the R-squared is less than .5, then  
18 I'm proposing that -- well, let's not use a regression  
19 equation, but we can just use a fixed value -- but I  
20 would propose that we would -- rather than using the  
21 average value, we should use like a -- and I'm proposing  
22 the 75th percentile value. So it's a value on the, you  
23 know -- well, at the 75th percentile, so it's not the  
24 highest they've shown they can operate at, stepping back  
25 down, right in between the average and the highest

1 values.

2 Q. So could we look at Figure 3-16 for a minute,  
3 that's Milner. Milner has a mixture of months that are  
4 -- for which the R-squared is below .5 and above .5.

5 So using Milner as an example, would it be --  
6 would that mean that, for example, April where the  
7 R-squared is .13, what would you do in that month for  
8 purposes of an efficiency for the Methodology Order?

9 A. Well, in all of these when the R-squared is  
10 less than .5, you would just pick a value that's at the  
11 75th percentile level; so in other words, excludes the  
12 upper one-quarter of the highest efficiencies.

13 Q. So pick one of the blue dots that's between  
14 the 50 percent and the 100 percent?

15 A. Yeah. I mean, April is not -- April is sort  
16 of -- let's not talk about April. April is kind of a  
17 weird month, and particularly for some of these users,  
18 where the reason we get these efficiencies that are  
19 greater than 100 percent is in -- some of the -- in the  
20 early months is that you can have a situation where  
21 they're only diverting for part of the month. So you've  
22 got a partial month diversion compared to a full month  
23 crop demand, so when you do that division, you can end  
24 up more than 100 percent.

25 Q. Oh, I see.

1           A. And that's because, you know, some of the crop  
2 demand is being met by soil moisture that's stored over  
3 the winter or from the previous season. So that's  
4 why --

5           Q. Well, can we talk about June, then?

6           A. Yeah, June. So, you know, just eyeballing  
7 what the 75th percentile here might be through those  
8 points would be, you know, maybe 60 percent, 65 percent  
9 or something like that. So higher than the average but  
10 not as high as, you know, the 75 or 80 percent that  
11 they've shown they have operated at in the past.

12          Q. So the 75th percentile not the 75th percent?

13          A. Yeah, the 75th percentile.

14          Q. Okay. Can we move to Tables 3-1 and 3-2 to  
15 talk about the hindcast?

16          A. Yes.

17          Q. Okay.

18          A. So --

19          Q. Let's start with 3-1.

20          A. So I did a -- I did this hindcast analysis,  
21 but I just picked out -- I did it for two examples. I  
22 didn't have time to do it for all of the Surface Water  
23 Coalition members. So Table 3-1 is a summary of the  
24 results of the hindcast analysis that I did for the  
25 Twin Falls Canal Company.

1 Q. And let me just stop you and ask you to go  
2 through the columns, but when you get to Column 5, talk  
3 about how this matches up with past orders.

4 A. Okay. So what -- this table represents an  
5 annual summary of the analysis that I did. But the  
6 analysis is done on a monthly basis, so this is just  
7 adding up the monthly results into annual values.

8 Excuse me. So this was done for -- this  
9 analysis was done -- the hindcast analysis for 2007 to  
10 2021.

11 So in the first column is the annual, the sum  
12 of the monthly crop water need values or the annual crop  
13 water need, so that's the acres that the Surface Water  
14 Coalition members have reported times the CIR, crop  
15 irrigation requirement, for that month based on the  
16 crops that were grown and the like. So that's the same  
17 value that that reflected. These are the values being  
18 used by the Department.

19 The next column, which I guess is also  
20 Column 1, "Adjusted Historical Diversions." So these  
21 are the historical diversions that the Department used  
22 in their analysis. It says "adjusted" because they've  
23 been adjusted for the rentals and things for water that  
24 was diverted but not actually used for irrigation.

25 And then there's the -- this is the -- I have

1 the November 1 forecast supply so that -- the other  
2 thing that you should understand, and this reflects the  
3 hindcast analysis that would be done in November. So  
4 it's -- you're looking -- the forecast supply -- I mean,  
5 the supply is based not -- this is -- sorry.

6 Q. It's actual for the year?

7 A. It's actual for the year. And I'm using the  
8 term -- the column headings that the Department uses, so  
9 it's not really a November 1 forecast. Earlier in the  
10 year, it's partially a forecast. In the beginning of  
11 the year, it's wholly a forecast. But at November 1,  
12 you're using what they actually -- their actual natural  
13 flow diversions plus what their storage allocation was  
14 for that year, and that's their supply.

15 Q. So just to make sure it's clear, this 3-1 is  
16 based on an analysis that the Department does?

17 A. In part --

18 Q. Yeah.

19 A. -- and these first three columns I'm talking  
20 about is the Department's data.

21 Q. Okay. Thank you.

22 A. So then the next set of columns is titled --  
23 it's under the combined heading of "Annual RISD," or  
24 reasonable in-season demand, and so I computed that  
25 three different ways. So the first column, it's -- it's

1 the column with the "2" above it -- "CWN Divided By  
2 Methodology Order 5 Project Efficiencies." That's where  
3 I've computed the -- you know, on a monthly basis, I  
4 computed the diversion demand based on the crop water  
5 need divided by the Department's average monthly project  
6 efficiencies, and I did that for each month and then  
7 added them up in this table.

8 And importantly, though -- and I'll talk about  
9 this more in a little bit -- I'm using the current  
10 15-year average monthly project efficiencies that are in  
11 the Methodology Order in every year.

12 Q. Okay.

13 A. And that's a little different than what the  
14 Department did in its hindcast analysis, so keep that in  
15 mind.

16 And then under Column 3, this is one of the  
17 two alternative formulations that I had -- that I had  
18 proposed. So in this Column 3-1 is where I computed the  
19 monthly diversion demands based on the crop water need  
20 divided by the efficiency, and the efficiency was  
21 computed using that reference -- I'm sorry -- that  
22 regression equation. And then when the R-squared was  
23 less than .5, I used the Department's average monthly  
24 project efficiency.

25 Q. So Column 3 implements part of the discussion



1 we just had about the R-squared values on the  
2 Tables 3-12 to 19?

3 A. Yeah.

4 Q. Okay. Thanks.

5 A. And then Column 4 is the same except rather  
6 than -- in the months where the R-squared is less than  
7 .5, then I used the 75th percentile.

8 Q. More than .5, you mean?

9 A. No, when the R-squared is less than .5, I used  
10 the 75th percentile project efficiency instead of the  
11 average project efficiency. That's just the little  
12 difference between those two.

13 Q. Okay.

14 A. So then when you get -- the results, then, are  
15 shown over in the next set of columns. It's the  
16 "November 1 Reasonable in-Season Demand Shortfall." And  
17 here I've just calculated the shortage, which is based  
18 on Columns 2, 3, or 4 minus the forecast supply, which  
19 is the November 1 forecast supply column.

20 Q. I see. Okay.

21 A. And so in Column 5, this is what I get from  
22 the Methodology Order, and this is -- if you compare  
23 these numbers to the numbers that were in the  
24 Department's hindcast analysis, you'll see that they're  
25 the same, actually, in 2021 -- that shortage, the

1 179,066 -- but the Department has some different numbers  
2 in the above rows, and that's because the Department  
3 was -- used -- rather than -- the Department in their  
4 hindcast analysis didn't use the current methodology  
5 average efficiencies in every year.

6 They computed a new rolling average in some of  
7 the years, and then in the earlier years, they were  
8 using a fixed number that was based on a -- some prior  
9 number, prior average. So suffice it to say, anyways,  
10 that that's the reason why so many shortages -- the  
11 shortages that I have here are a little different than  
12 what the Department had computed.

13 Q. Okay. And --

14 A. And then just for -- then, for comparison  
15 purposes, then I've got the shortage for those two  
16 alternatives that I picked out -- that I had identified.  
17 And you can see that, in these cases when there's a  
18 shortage, by implementing just those very, like, modest  
19 changes to how you compute the efficiencies and, you  
20 know -- and those modest changes are still working  
21 within the efficiencies that the Surface Water Coalition  
22 members have been operating at. But just making some  
23 small changes, you can see that you get some, you know,  
24 fairly big swings or changes in some cases in what the  
25 shortage is.

1           And that's -- you know, that's indicative of  
2 just an overall observation that I have, is that this  
3 method is very sensitive to what you use for the project  
4 efficiencies just as a general matter because we're  
5 operating on the margin here when computing these -- you  
6 know, comparing this forecast supply to what their  
7 diversion demand is. So, you know, at that margin small  
8 changes in the efficiencies can make or break whether  
9 you have a shortage or not.

10           Q. Let's go on and look at Table 3-2. This is  
11 titled, "Summary of Annual Reasonable in-Season Demands  
12 and Shortages for AFRD2."

13                   What is this showing us, Table 3-2?

14           A. It's the same thing that I was -- for AFRD2  
15 that I was just talking about for Twin Falls. I went  
16 through the same analysis only this is for AFRD2.

17                   And, again, it shows that by implementing  
18 these modest changes that you can have some effect on  
19 the computed shortages.

20           Q. So do you have a summary opinion here about  
21 the modifications you've offered for the Department's  
22 use of the project efficiency values in the Methodology  
23 Order?

24           A. Well, you know, again, as I said earlier, my  
25 preference would be to apply a reasonableness test, as I

1 talked about, but maybe we're -- maybe we take baby  
2 steps. So at least it's just a small step in the right  
3 direction. I think the methodology would be improved by  
4 using -- employing the proposal that I have regarding  
5 the progression equation and 75th percentile  
6 efficiencies, to use those in the methodology rather  
7 than the averages that are currently being used.

8 Q. Let's switch gears and talk a little bit about  
9 irrigated area.

10 This probably is old news by now, but just  
11 remind us what are the irrigated acreage values used for  
12 in the Methodology Order?

13 A. Well, they're used in two different ways  
14 actually. They're used to compute the crop water need,  
15 like I was just talking about. So in each month in the  
16 methodology, you take the irrigated area times the CIR  
17 for that month, you know, based on the actual climate  
18 conditions, weather conditions in that month, to compute  
19 what the crop needs for each of the members. And  
20 that's -- that's part of determining the demand for the  
21 members.

22 And then the irrigated area is also used in  
23 the derivation of those project efficiencies because the  
24 historical project efficiencies are based on crop water  
25 need divided by -- historical crop water need divided by

1 historical diversions.

2 Q. So we've heard testimony from several  
3 witnesses about the irrigated acres numbers that are  
4 used by IDWR.

5 Is it your understanding that IDWR scrutinizes  
6 the acreage figures that are provided by the companies?

7 A. No. Based on what we heard, they really don't  
8 provide any scrutiny.

9 Q. And we've heard testimony that the acreage  
10 numbers are based on either a permanent place of use or  
11 shapefiles that were created some time ago; correct?

12 A. Yes.

13 Q. At the technical work group, did IDWR present  
14 their own analyses of irrigated areas?

15 A. They did. As kind of incidental to some of  
16 the information they were showing us, they had provided  
17 some analysis of irrigated area for each of the Surface  
18 Water Coalition members based on aerial imagery and  
19 remote sensing analysis of the members.

20 Q. Do you remember what years they were --  
21 presented their own data for?

22 A. It was 2011, 2017, and 2021.

23 Q. Okay. And do you recall how the Fifth  
24 Methodology Order acres compare with what IDWR's  
25 irrigated land set determined for 2011, 2017, and 2021?

1           A. Well, for some of them, they were -- you know,  
2 the methodology acres were, you know, close to or even  
3 less than the remote sense data. And I think that's  
4 because some of the remote sensing includes some  
5 additional areas or double-counted areas and all.

6           But for three of the users in particular, the  
7 methodology acres were significantly greater than the  
8 acreages that the Department had presented in their  
9 analysis. And those users are Burley, Minidoka, and  
10 Twin Falls.

11          Q. So -- and let's take Twin Falls as an example  
12 because we've talked a lot about Twin Falls the last few  
13 days.

14                 What would be the effect if the Methodology  
15 Order incorporated IDWR's irrigated lands set acreage  
16 instead of the shapefile Twin Falls provides?

17           A. Well, it depends. Because if you -- if you  
18 insert the revised acres, keep everything else the same,  
19 then you can easily see that you compute a lower crop  
20 water need. Take CIR times the lower acres divided by  
21 the same efficiency, you get a lower demand.

22                 And I say "it depends" because if you  
23 actually -- if you took the lower acres and then  
24 multiplied it by the CIR divided by the historical  
25 diversions and go recompute your efficiencies, then

1 you'd end up in the same place. Because if you took  
2 your lower acres, computed the lower efficiencies, and  
3 then stuck those lower efficiencies back in order, you'd  
4 end up with a diversion demand that's exactly the same.

5 Q. So it's kind of a feedback loop?

6 A. Yeah. And so that's why I say it depends.

7 And, to me, I mean, to put in lower acres and  
8 then to suggest, well, we'll just lower the efficiencies  
9 and move on, that doesn't make any sense to me.

10 Q. That's what the Surface Water Coalition  
11 expert, Chuck Brockway, suggests, though; right?

12 A. Yes.

13 Q. As the fix for all of this?

14 A. Yes.

15 Q. Just reduce the acres, but also recalculate  
16 the project efficiency.

17 But then they end up with the same demand --

18 A. Yeah.

19 Q. -- correct?

20 A. Yeah.

21 Q. Do you -- despite that problem, which you've  
22 talked about, I think, at some length related to your  
23 recommendations on how the Department could use project  
24 efficiencies differently, what would be -- would it be  
25 preferable for the Department to use its irrigated lands

1 dataset?

2 A. Yes. I mean, I think that data is far more  
3 reliable than what they're getting from the -- from the  
4 Surface Water Coalition members based on those old  
5 shapefiles with no scrutiny applied to it.

6 And I'd be reasonably certain that the acres  
7 that are determined by the Department are acceptable  
8 for -- to use in the methodology.

9 Q. So if there was to be a -- I mean, in the  
10 context of a challenge to the reliance on the shapefile,  
11 as an expert, then, you'd be comfortable relying on the  
12 IDWR dataset rather than the shapefile file dataset as  
13 far as showing acres that are actually irrigated?

14 A. Yes. And we heard some discussion that, well,  
15 maybe there's some examples in IDWR analysis that  
16 there'd been some acres that were misclassified or --  
17 well, I mean, you could fix those. Right?

18 I mean -- and if you were going to use the  
19 IDWR analysis, well, then provide it to everyone, and  
20 everyone can look at it and suggest where it be fixed,  
21 and we end up with a much, much better irrigated acres  
22 dataset to use in the analysis.

23 Q. So the Department runs the Methodology Order  
24 every year. Would they need to update the irrigated  
25 area dataset every year?



1 A. No, I don't think so.

2 Q. Why not?

3 A. Well, I mean, acres do change a little bit  
4 from -- can change from year to year. But, I mean, in  
5 my experience, and particularly for these and for large  
6 irrigation systems, there may be some long-term trends  
7 in acreage because of urbanization and things like that.

8 But for these particular members that all have  
9 excellent water supplies that they generally are  
10 irrigating, you know, largely as much as they can and --  
11 but not -- in all systems there's some lands that get  
12 fallowed for various reasons, but in my experience,  
13 while it's different lands that are going in and out of  
14 the fallowing, the overall amount of fallowing is  
15 roughly consistent from year to year.

16 Q. And, in fact, isn't that what we see in the  
17 20 -- comparing 2011, 2017, and 2021 irrigated lands  
18 datasets? They're pretty similar, aren't they?  
19 179,000, 187,000 for Twin Falls?

20 A. Yeah, they're all kind of in that same range,  
21 plus or minus a thousand acres or so. So that suggests  
22 to me that what the Department's doing is reliable and  
23 repeatable and should be used.

24 Q. Okay.

25 MS. KLAHN: Mr. Director, it's 3:00 o'clock,

1 and I have probably 30 minutes more. We can push  
2 through or we could take our afternoon break.

3 HEARING OFFICER: Thanks for the suggestion.  
4 I think we should break. We've been at it two hours.  
5 Let's break for 15 minutes. Come back at quarter after.

6 (Break taken.)

7 HEARING OFFICER: Back on the record. We're  
8 recording again after afternoon recess.

9 Ms. Klahn.

10 MS. KLAHN: Thank you.

11 Q. (BY MS. KLAHN) All right. Mr. Sullivan,  
12 let's switch gears and talk about your opinions related  
13 to the incorporation of supplemental groundwater  
14 considerations into the methodology.

15 How does the Fifth Methodology Order -- how  
16 does the Fifth Methodology Order consider supplemental  
17 groundwater?

18 A. Well, I think it's one of the -- supplemental  
19 groundwater uses is one of the things that can be  
20 considered in the methodology in terms of a supplemental  
21 supply or in the acres that are irrigated with  
22 supplemental groundwater.

23 So there's a framework to allow that to be --  
24 that sort of information to be utilized, but, to my  
25 knowledge, it never has.

1 Q. And supplemental groundwater is one of those  
2 things that the district court has said could be  
3 incorporated if the standard is clear and convincing  
4 evidence; correct? Is that your understanding?

5 A. Yes.

6 Q. Okay. Do you have an understanding of why  
7 IDWR hasn't attempted to incorporate supplemental  
8 groundwater use into the demand determinations?

9 A. Well, I think they've said that they just --  
10 they don't have an ability to do that or good enough  
11 information to do that. And I mean -- and they've been  
12 saying that for 15 years. And, you know, we've been,  
13 you know, asking about it and suggesting that it ought  
14 to be incorporated.

15 In fact, in a -- that was one of my specific  
16 comments that I gave in the 2015 technical working  
17 group, is that they consider that. And I suggested that  
18 again in the latest one, the 2021 technical working  
19 group.

20 And they keep saying they don't have enough  
21 information. And I think -- I mean, we've heard some  
22 testimony earlier that -- or based on some questioning  
23 earlier suggesting that -- I mean -- and I agree with  
24 this, the Department has water rights information --  
25 detailed water rights information, they have pumping

1 information. They have an ability to use that  
2 information to come up with reasonable estimates of  
3 supplemental groundwater use.

4 And, you know, it's not going to be perfect,  
5 but in this business nothing's ever perfect. And you  
6 can make reasonable estimates. And there's -- the  
7 problem is, now, by completely ignoring the supplemental  
8 irrigation we know there's a bias one way. We're not  
9 even attempting to correct that bias by considering the  
10 supplemental groundwater use that we know is occurring.

11 Q. And during the original Surface Water  
12 Coalition delivery call hearing in 2008, did the Surface  
13 Water Coalition members submit supplemental pumping  
14 information in relation to a request from the Director?

15 A. Yes. Director Gray requested a bunch of  
16 information from the Surface Water Coalition members;  
17 one piece of which was how much supplemental groundwater  
18 acreage they had or within their boundaries. And so  
19 the -- most of the members or all of the members did  
20 submit that information.

21 And I had tabulated that in my expert -- my  
22 original expert report. And that was information from  
23 them, so it seems like that would have been easy to use  
24 the information they submitted, but it wasn't used.

25 Q. Let's move on to talk a little bit about --

1 well, let me just close the loop on that.

2 Did you have time to do an evaluation of the  
3 supplemental groundwater use from the Surface Water  
4 Coalition?

5 A. No, I did not.

6 Q. Okay. So let's talk a little bit about the  
7 change in the Fifth Methodology Order from steady state  
8 to transient modeling.

9 How would you characterize the shift from  
10 steady state to transient groundwater modeling in the  
11 Fifth Methodology Order?

12 A. Well, it's a sea change in procedure, and it  
13 results in a drastic change in the priority date for  
14 curtailment compared to what was being done previously.

15 Q. Do you have an understanding of why IDWR made  
16 the shift in 2023 from steady state to transient?

17 A. Well, I think they gave three reasons. There  
18 were at least three reasons. One of which was that they  
19 had a better understanding of transient and steady state  
20 modeling and how they could be used in the methodology.

21 That struck me as kind of curious because --  
22 and I didn't quite understand that reasoning, because  
23 everyone is well aware of the difference between  
24 transient and steady state modeling and the use of the  
25 modeling and -- in the methodology. So it didn't seem

1 like there's anything new there.

2 I mean, so -- and then a second reason they  
3 gave is that now we have -- the ESPAM model is a monthly  
4 model, it has monthly stress periods, and so now it can  
5 be used in a transient way. But we've had a monthly  
6 model for a long time, and -- so why all of a sudden it  
7 should be now used for transient instead of steady  
8 state, that didn't -- I didn't quite understand that.

9 And then the last one was also one I  
10 questioned, I guess. And that was that they needed to  
11 determine curtailment dates with the steady state -- or  
12 the transient model so that curtailment would provide a  
13 backstop in providing wet water to the seniors in the  
14 event that the juniors don't mitigate -- don't mitigate  
15 enough -- and don't mitigate enough to meet the  
16 shortage.

17 And, I mean, to me, I didn't -- I don't  
18 know -- that doesn't make a -- well, I don't agree with  
19 that, I mean, for a number of reasons. I guess one is  
20 that I think if there's -- I mean -- and I'm not a  
21 lawyer, obviously, but if there's a mitigation order,  
22 there should be an expectation that the juniors will  
23 comply with it, and if they don't, there should be  
24 penalties for not complying with it, or curtailment.  
25 And that's the way it works where I come from in

1 Colorado.

2 And then, further, it's -- curtailment as the  
3 mechanism for conjunctive administration is horribly  
4 inefficient. You know, especially for an aquifer as  
5 vast as this, you have to curtail so much pumping to  
6 produce relatively little amounts to the seniors, you  
7 know, where they divert it, so...

8 Q. So in the Fifth Methodology Order, which I'm  
9 sorry -- I'm sorry, in Exhibit 301, which is the  
10 April 1st As-Applied Order, the curtailment date, I  
11 believe, is sometime in 1953; correct?

12 A. Yes.

13 Q. And so how much -- if curtailment was the  
14 reason for imposing the transient model approach, how  
15 much curtailment would it require to produce the  
16 75,000 -- approximately 75,000 acre-feet of shortage by  
17 curtailing to 1953 priority date?

18 A. Well, if I'm --

19 Q. Approximately?

20 A. Yeah. What I recall is that for that -- the  
21 curtailment run that Jennifer made to determine the 1953  
22 curtailment date, she was curtailing, roughly,  
23 700,000 acres of groundwater use and 1.7 million  
24 acre-feet of groundwater consumptive use. So curtailing  
25 1.7 million acre-feet of consumptive use to produce

1 75,000 acre-feet to the near Blackfoot to Minidoka  
2 reach. So I didn't do that math, but that's a very,  
3 very small percentage of the water that's curtailed  
4 that's going to reach that reach this year.

5 Q. So if you curtailed 700,000 acre-feet in order  
6 to achieve 75,000 acre-feet in the Blackfoot to Minidoka  
7 reach and the total CU curtailed is 1.4 million  
8 acre-feet, what happens to the other 1.325 million  
9 acre-feet of curtailed consumptive use? Where does that  
10 show up?

11 A. I think those numbers -- those are -- the  
12 numbers we talked about, that's not the right numbers.  
13 They're actually curtailing 1.7 million acre-feet.

14 Q. Okay. So 1.7 acre-feet, sorry.

15 A. So they're curtailing 1.7 million acre-feet,  
16 so 75,000 acre-feet will show up in the reach this year,  
17 and the other -- was it 1.625 million acre-feet? -- will  
18 either come back to different reaches this year,  
19 different reaches of the Snake River, or it will come  
20 back this winter, or the majority of it is just going to  
21 come back in future years.

22 So that 1.7 million acre-feet will come back  
23 to the river, and so -- you know, just -- then it sort  
24 of begs the question, well, what's going to happen with  
25 that water? And it seems to me that that, potentially,



1 just provides a windfall to all these other reaches and  
2 users and later in time, and so you -- and that doesn't  
3 seem a very good use of the resource. And that's why  
4 curtailment as a mechanism of conjunctive administration  
5 is not done.

6 Q. So what is the alternative? Is steady state  
7 the alternative to curtailment -- I'm sorry -- is  
8 curtailment based on steady state the alternative to  
9 curtailment based on transient modeling?

10 A. Well, I think you can use the steady state  
11 model to get there, but ultimately the solution is, you  
12 know, what is done routinely in Colorado and some other  
13 places, too, is you allow the juniors to keep pumping  
14 and then you require them to mitigate for their impacts.

15 And, you know, to be -- and, like, in places  
16 like Colorado when they come up with those replacement  
17 plans that are either judicially or administratively  
18 approved, those replacement plans need to be, you know,  
19 tested and proven that they can operate in wet years and  
20 dry years and all in order to be approved.

21 And if they don't -- if they can't function  
22 that way or don't have a way to get them -- reliably get  
23 the mitigation water they need, then they're not  
24 approved and those water users don't get to pump. So  
25 that's the safety net. You know, that prevents the

1 seniors from being injured and is way more efficient of  
2 the resource.

3 Q. Is the impact from curtailment under a  
4 transient model run disproportionate because of the  
5 moratorium on new wells in the ESPA?

6 A. Well, I think the moratorium provides -- the  
7 fact that there's been a moratorium in the ESPA since  
8 the early '90s presents some additional facts that  
9 make -- that are compelling to the use of the --  
10 continued use of the steady state modeling to determine  
11 the curtailment date. And that's because since that --  
12 because of the moratorium, you know, there's been,  
13 essentially, no new wells approved that -- since that  
14 time that -- and if they have been, then they have to  
15 mitigate for their impacts.

16 So, essentially, all of the wells that, you  
17 know -- prior to the moratorium order have been  
18 operating for at least 30 years and most of those wells  
19 for much longer than 30 years. So you have a situation  
20 where the current and prior pumping of virtually all of  
21 the wells in the Snake River Basin has reached a near  
22 steady state; and so, therefore, we can use steady  
23 state modeling to evaluate the current -- the impact of  
24 the current and prior pumping from the wells on the  
25 Snake River. And that, to me, is a -- would be a better

1 way to establish or determine the curtailment date, is  
2 going back to using the steady state modeling, because I  
3 think that is the correct way to do it.

4 Q. Can I ask you to turn to page 24 in your  
5 report, please.

6 A. Okay.

7 Q. And I believe this is a graph that Jennifer  
8 Sukow produced but that you incorporated; is that right?

9 A. Yes. I just cut and pasted this from one of  
10 her presentations that she gave to the -- during the  
11 November 28th, 2022, meeting in the technical working  
12 group.

13 Q. And this was actually something that was  
14 discussed in Jennifer's testimony, too, wasn't it?

15 A. Yes.

16 Q. Let's see here.

17 A. Is there a question about this?

18 Q. Yes, there is.

19 A. Oh.

20 Q. I'm just trying to find it in my notes.

21 A. Oh.

22 MR. FLETCHER: No pressure.

23 MS. KLAHN: Yeah, right.

24 Q. (BY MS. KLAHN) So based on this graph, the  
25 curtailment of pumping from wells junior to sometime in

1 the mid-1980s for steady state would produce  
2 75,200 acre-feet of water in the --

3 A. Which graph are we looking at? Sorry, I might  
4 be looking at the wrong one.

5 Q. I thought it was on the graph on page 24 of  
6 your report. I'll withdraw that question.

7 A. I think that question you were asking me was  
8 about --

9 Q. Page 26?

10 A. Yeah.

11 Q. All right. Let's go to page 26 of your  
12 report. Explain what's shown here on the graph on  
13 page 26 related to how you could produce -- how one  
14 could produce 75,200 acre-feet of water in the river  
15 from curtailment under the steady state approach.

16 A. Well, okay, so what this graph shows -- and  
17 when I talk about this graph, I'll be talking mainly  
18 about the yellow line and the orange line. So the  
19 yellow line represents the results of the steady state  
20 runs that Jennifer made. And so what this graph shows  
21 is that along the bottom -- the axis is labeled "Water  
22 Right Priority Date," and that's basically the  
23 curtailment date that she simulates, and each one of  
24 these dots is a separate run that she made.

25 And then the -- so -- and then on the y-axis,

1 that's the amount of water that's produced at the near  
2 Blackfoot to Minidoka reach resulting from curtailment.

3 And so the orange line is -- for the transient  
4 run -- represents the amount of water that's represented  
5 in the first year, I think May 1 to September 30 from  
6 curtailment in the first year. And so that's when --  
7 kind of squint a little bit. If you go to around 1953,  
8 and that -- the dot there is at about 75,000 acre-feet,  
9 and so that's where you go and you can figure out how  
10 much -- you curtail back to 1953, and in the first year,  
11 you'll get 75,000 acre-feet at the key reach.

12 And then -- and when you look at the steady  
13 state line, the yellow line, you can see that you only  
14 need to curtail back to sometime in the mid-'80s to get  
15 75,000 acre-feet. And that -- that will be -- that  
16 would produce 75,000 acre-feet at steady state, so after  
17 30, 40, 50 years it would take to get that much.

18 But that also represents -- that 75,000 --  
19 another way you can look at that is that the current  
20 and -- the current effect or the current depletion to  
21 the near Blackfoot to Minidoka reach today caused by  
22 wells junior to the mid-1980s is about 75,000 acre-feet.  
23 That's their -- the impact of those wells' current and  
24 prior pumping. And so had those wells not pumped, there  
25 would be 75,000 acre-feet more in the river.

1           So I think that's sort of an easy way --  
2           that's why I think the steady state modeling should be  
3           used, because with that way of thinking, you can say  
4           that, well, the -- that last 75,000 acre-feet of  
5           depletion is what created the shortage, and the users  
6           that are, you know, junior to the mid-'80s are the ones  
7           responsible or the ones that caused that and they should  
8           be the ones responsible for the mitigation. And, again,  
9           that's why I think steady state modeling is the right  
10          way, particularly in this situation, for determining the  
11          curtailment date.

12           Q.   Okay.  Thank you.

13                    Let me switch gears and let's cover some  
14           responses you might have to testimony we've heard.

15           MS. KLAHN:  Mr. Director, we're assuming that  
16           you prefer we put on rebuttal testimony to the extent we  
17           can in the case in chief, and so I just have a couple  
18           questions to him to react to other witnesses.

19           HEARING OFFICER:  That's great.  I think it  
20           will contribute to efficiency.

21           MS. KLAHN:  Well, efficiency is what we're  
22           after.

23           Q.   (BY MS. KLAHN)  One of the discussions we had  
24           at some length yesterday, I believe it was, was the  
25           nature and extent of Twin Falls Canal Company return

1 flows.

2 Do you recall that?

3 A. Yes.

4 Q. And I think we talked to both Department  
5 witnesses about whether they were aware of the  
6 Twin Falls Canal Company return flows and how much they  
7 were, and there was not really anything conclusive, I  
8 think, from that questioning. But the Department  
9 maintains a database of return flows for Twin Falls  
10 Canal Company?

11 A. Yeah, I mean, for all of the return flows to  
12 the river that's -- you know, they've -- over the years,  
13 they've -- they or other agencies have instrumented some  
14 of these return places to the river, draws or places  
15 where water collects and gets back in the river, because  
16 that information has been used in the groundwater  
17 modeling. It's good data. It helps you differentiate  
18 how much of the reach gains are due to water coming on,  
19 you know -- reaching the water -- river from the surface  
20 versus water that's coming through the underground and  
21 back to the river. And that's helpful information for  
22 the modeling.

23 Q. For purposes of determining what's  
24 attributable to reach gains from the aquifer versus  
25 other sources?

1 A. Yeah, for calibration particularly, yeah.

2 Q. I want to hand you this and ask you to  
3 identify it. Mr. Sullivan, would you identify this.

4 First of all, have you seen this before?

5 A. Yes, it was prepared under my direction.

6 Q. Okay. And what are -- what's the source of  
7 the information on here?

8 A. It's listed in footnote 5 there. It's daily  
9 data that's downloaded from IDWR's Aqua Info database.  
10 There's the URL code there. And so we had heard  
11 testimony from Jennifer Sukow --

12 Q. Well, wait. Let me just lay the foundation  
13 here so we can offer it.

14 So the data on here was from IDWR's database.  
15 This document was prepared at your direction.

16 MS. KLAHN: Mr. Director, I'd like to offer  
17 this as a demonstrative exhibit showing the --  
18 summarizing the data in IDWR's database related to  
19 Twin Falls Canal Company return flows since we've had so  
20 much testimony about that for purposes of clarifying the  
21 record.

22 HEARING OFFICER: You want to mark the  
23 document?

24 MS. KLAHN: Yes, please.

25 MR. FLETCHER 365?



1 MS. KLAHN: 365.

2 HEARING OFFICER: We'll mark the post exhibit.

3 COURT REPORTER: I'm sorry, what?

4 MS. KLAHN: Can we mark this as exhibit --

5 HEARING OFFICER: Mark it with an exhibit  
6 sticker.

7 (Exhibit 365 marked.)

8 MS. KLAHN: So I'd like to offer Exhibit 365.

9 HEARING OFFICER: Any objections?

10 Hearing none, the document marked as  
11 Exhibit 365 is received into evidence.

12 (Exhibit 365 received.)

13 Q. (BY MS. KLAHN) All right. Mr. Sullivan, you  
14 started to describe what 365 shows.

15 Could you do that now, please.

16 A. Yeah, so these are the annual summaries of the  
17 daily data that we downloaded from the IDWR database for  
18 the places where return flows are measured, you know,  
19 all along the Twin Falls service area from top to  
20 bottom. So they're all measurement points that are at  
21 or near the river at the bottom -- the lower end of  
22 Twin Falls near the river.

23 And they're color-coded, just for  
24 informational purposes, as the blue represents gauges  
25 that are on the coulees, or the kind of gullies that

1 intersect or go through or depressions that bisect -- or  
2 intersect a bunch of the canal service area for  
3 Twin Falls.

4 And then there's also -- the orange represents  
5 measurements that are actually on some of the  
6 tributaries that come through the Twin Falls area.

7 And then the gray is some other lines that are  
8 identified.

9 And then -- and for each of those in the  
10 footnotes there, we've identified specifically which  
11 gauges are in each of those different categories.

12 Q. So what's the difference between a coulee and  
13 a tributary gauge?

14 A. The tributary is, like, a known -- mainly a --  
15 what I identify as a tributary.

16 Q. Like a live stream?

17 A. Well, yeah. Or a creek or something that  
18 actually comes through.

19 And so there are return flows that improve to  
20 these creeks that go into the river. And then there's  
21 other of these coulees that are really not, like, a main  
22 tributary, but just a low spot in the Twin Falls area  
23 where water collects and comes out.

24 Q. Okay. And then one more question.

25 This morning Mr. Barlogi testified that the

1 conversions to sprinklers in the Twin Falls Canal  
2 Company had not changed demand, I believe. And he had  
3 some testimony about how losses couldn't be reused, and  
4 that's why the conversion to sprinklers didn't change  
5 demand.

6 Do you have a professional reaction to that?

7 A. Yeah. I disagree with that characterization.  
8 Because, in my experience, anytime you can improve the  
9 on-farm efficiency, you can make due with less water.

10 Now, it is true that with less efficient use  
11 you can have more runoff that can be reused in lower  
12 parts of the system. And there is some of that that  
13 does happen in Twin Falls.

14 But the issue is: I've never seen a system  
15 where you can reuse everything. So inevitably some of  
16 that -- you know, the return flow from the first use  
17 gets away from you, you know, through the groundwater or  
18 otherwise, and it can't be reused.

19 So in that process, yes, there's use and reuse  
20 and maybe a third use, but you're losing water every  
21 time that cycle happens.

22 And you're always going to be much better off  
23 making more efficient use and basically -- than  
24 delivering more first-use water and less reuse water.  
25 That will always be more efficient.

1           And, yeah, there will be less overall delivery  
2 to the users, but that's the way it should be. They  
3 don't need as much water if they're more efficient.

4           And so, you know, from a consumptive use  
5 basis, you can meet the same consumptive use with more  
6 efficient on-farm operations and, therefore, less water  
7 being diverted at the river heading.

8           Q. Okay. I think that's all the questions I have  
9 for you right now.

10           HEARING OFFICER: Thank you, Ms. Klahn.

11           Cross-examination?

12           MR. FLETCHER: Yeah, I guess. I hadn't  
13 thought of that.

14           Would it be better to see if there's any other  
15 groundwater questions first before I cross-examine?

16           HEARING OFFICER: Well, I was assuming that  
17 Ms. Klahn's -- this was Ms. Klahn's witness, and there  
18 wouldn't be follow-up, but I'm willing to ask that  
19 question.

20           Are there any of the groundwater user groups  
21 that want to question Mr. Sullivan further?

22           I see heads shaking no.

23           Mr. Fletcher, are you examining?

24           MR. FLETCHER: Yes. Thank you.

25           ///

## 1 CROSS-EXAMINATION

## 2 QUESTIONS BY MR. FLETCHER:

3 Q. Good afternoon, Mr. Sullivan.

4 A. Good afternoon, Mr. Fletcher.

5 Q. Nice seeing you again.

6 A. Likewise.

7 Q. We have participated in several of these  
8 hearings over the years.9 You mentioned in your direct examination that  
10 you've been involved in this water call since 2005, I  
11 guess; right?

12 A. Yes.

13 Q. And in 2007's hearing before the hearing  
14 officer, you rendered several opinions in your expert  
15 report; isn't that correct?

16 A. I did.

17 Q. And one of those opinions was that there was  
18 no injury occurring to the senior users; isn't that  
19 correct?20 A. Not quite. I think I'd identified some  
21 limited instances where there was some shortages.22 Q. You gave written direct testimony in that  
23 proceeding; is that correct?

24 A. Yeah, I think we did that.

25 Q. What's that?

1           A. Yes.

2           Q. And I believe the very last question you were  
3 asked -- I'll read it to you and see if you remember  
4 this -- was: "Did the Surface Water Coalition suffer  
5 injury during the 2005 and 2006 irrigation seasons?"

6           And your answer was: "No. The water budget  
7 analyses that are summarized in Exhibit 3023, together  
8 with the deposition testimony of the SWC managers, shows  
9 that the SWC members were not short of water in 2003 and  
10 did not suffer injury" -- or excuse me -- "2005 and did  
11 not suffer injury in 2005."

12           Do you recall that opinion?

13           A. Not specifically, but I'll take your word for  
14 it.

15           What I was referring to, I think, was I did an  
16 analysis over that longer period, and there were a  
17 handful of small shortages during that time.

18           Q. So your opinion in that case, ultimately, was  
19 not accepted by the hearing officer; is that correct?  
20 Your opinion concerning injury.

21           A. I don't recall.

22           Q. Well, did the hearing officer find that there  
23 was no injury?

24           A. No. No, he didn't. He didn't find any --

25           Q. He found there was injury; correct?

1           A. Right. Well, he found -- I don't remember the  
2 details, but he found that they needed to institute a  
3 methodology to address impacts and shortages.

4           Q. And you also rendered an opinion that the  
5 Department should use some sort of achievable farm  
6 efficiency formula; isn't that correct?

7           A. Yes.

8           Q. And that was rejected as well; correct?

9           A. At that time, yes.

10          Q. And you rendered an opinion that there should  
11 be no minimum carryover requirement in the Methodology  
12 Order; isn't that correct?

13          A. I think for purposes of -- well, in fact, yes.  
14 Yep.

15          Q. And that was rejected as well; correct?

16          A. Yes.

17          Q. And you also -- in your opinion, Twin Falls  
18 Canal Company's diversion rate should have been  
19 five-eighths of an inch per share; correct?

20          A. I think that's what it was at the time.  
21 Right?

22          Q. Well, the hearing officer accepted that.  
23 Do you recall this?

24          A. Yes.

25          Q. So if you don't remember this, I'm not trying

1 to stump you here.

2 A. I know.

3 Q. But that was overruled by Judge Melanson in  
4 July 24, 2009; correct?

5 A. I'll take your word for it.

6 MR. FLETCHER: I'll just direct the Director  
7 toward the July 24th, 2009, order on petition for  
8 judicial review issued by Judge Melanson, page 31.

9 Q. (BY MR. FLETCHER) You also advocated for an  
10 industry standard when it came to determining whether  
11 the projects were being efficient; correct?

12 A. Yes.

13 Q. And that was rejected as well; correct?

14 A. Is that the same question you just asked me  
15 before?

16 I was advocating for using industry standard  
17 efficiencies and the -- as I recall, the hearing officer  
18 decided he didn't have the ability to differentiate that  
19 information.

20 Q. So you agree that that was rejected by the  
21 hearing officer?

22 A. Ultimately, it was, yes.

23 Q. So in all of these call proceedings, you have  
24 been representing groundwater pumpers, correct, the  
25 cities?



1           A. Yes.

2           Q. And you feel that it's your position to  
3 minimize the amount of mitigation that's required by a  
4 groundwater pumper?

5           A. No. My -- I feel like I have a role here to  
6 help assist the Department in determining that if  
7 mitigation is required, that it's required in amounts  
8 that are really needed to alleviate real shortages.

9           Q. Well, let's talk about that for a minute.

10           One of the things you talked to your counsel  
11 about was the change by the Fifth Methodology Order  
12 As-Applied Order using transient analysis to determine a  
13 curtailment date versus steady state; correct?

14           A. Yes, we talked about that.

15           Q. Right. And you agree, I mean, in principle,  
16 that all groundwater rights on the Eastern Snake River  
17 Plain are junior -- or substantially all of the  
18 groundwater rights on the plain are junior to all of the  
19 surface water users; is that correct? Junior and prior?

20           A. Well, with that -- with that "substantially"  
21 qualifier.

22           Q. Okay. So your opinion is that steady state  
23 modeling should be used to determine the priority date  
24 of curtailment?

25           A. Yeah.

1 Q. Does steady state modeling for a curtailment  
2 date mitigate in-season demand shortfall?

3 A. Yes, if -- I mean, the modeling itself  
4 doesn't, but the modeling identifies the user -- the  
5 groundwater users that are responsible for causing the  
6 shortage, and it's those users that should mitigate the  
7 shortage.

8 Q. Well, let me ask my question a different way:  
9 If steady state is used in the modeling to determine a  
10 curtailment date, will the amount of shortfall  
11 determined by the order be fulfilled in that year?

12 A. If you are using curtailment for the mechanism  
13 for conjunctive administration, it would not.

14 But that is not the way you conjunctively  
15 administer groundwater. The use of the model to  
16 determine the curtailment date should be determining --  
17 the purpose of that should be determining the pool of  
18 users that are responsible for mitigating the impact.  
19 And the mitigation is what should be alleviating the  
20 shortage, not curtailment. Because, for the reasons I  
21 just talked about, curtailment is a very inefficient way  
22 of administering groundwater, and that's why it's not  
23 done in the West.

24 Q. That's a long answer to a "yes" or "no"  
25 question.

1           But the real point here is that steady state  
2 use will not provide water in-season to the injured  
3 party, the amount of water, the amount of injury?

4           A. Not if -- it would not if you only curtail  
5 back, like, to the mid-'80s. In the example I was  
6 giving, in the first year it won't.

7           Q. Do you agree with Jennifer Sukow's information  
8 that was on the chart that you referenced in your  
9 report, that only about 15 percent of the shortfall  
10 would be realized in the first year of mitigation?

11          A. I think the percentage is actually smaller  
12 than that. Because I think that 15 percent refers to  
13 the percent of water that ultimately will show up in  
14 that reach.

15           But if you look at that -- at the percentage  
16 as the percentage of the water curtailed, it's actually  
17 a much smaller percent.

18          Q. Well, I'm talking about the amount of injury  
19 that's determined.

20           According to her chart, 15 percent of the  
21 injury will show up in the first year of curtailment  
22 using steady state; correct?

23          A. Well, that's another way of asking the  
24 question you asked me before. Yeah, it won't -- the  
25 full 75,000 acre-feet would not show up in the first

1 year.

2 Q. About 15 percent will show up in the first  
3 year; correct?

4 A. If you only curtail back to 1980 -- the  
5 mid-'80s.

6 Q. Okay. So, in your opinion, an injured senior  
7 is only entitled to receive about 15 percent of the  
8 shortfall resulting from injury in one year in time,  
9 location, and amount.

10 MS. KLAHN: Objection; mischaracterizes  
11 testimony.

12 HEARING OFFICER: This is cross-examination.  
13 Overruled.

14 THE WITNESS: I think you mischaracterized my  
15 testimony.

16 Q. (BY MR. FLETCHER) What a surprise. Whose  
17 testimony, I'm not sure whose testimony?

18 A. Well, if I may explain.

19 Q. Sure.

20 A. In my mind, the proper way of conjunctive  
21 administration is to determine who has to mitigate, and  
22 we shouldn't be using curtailment as the way to  
23 mitigate, as the way to deliver the water to the  
24 seniors. We deliver them storage water, you know, the  
25 other kinds of mitigation that have been determined

1 previously. That is more targeted and more efficient,  
2 and it allows for a better use of the resource, it keeps  
3 the senior whole. And the curtailment analysis is just  
4 to determine who has to -- who has to provide the  
5 mitigation water, but the Surface Water Coalition gets  
6 their water.

7 Q. Yeah, I'm not disagreeing with you, and I  
8 don't think anyone is that if someone has a mitigation  
9 plan in place and it's effectively operating, then we're  
10 not talking about those people in this hearing; correct?

11 In fact, your client, the City of Pocatello  
12 and the other cities, have an effectively operating  
13 mitigation plan; correct?

14 A. They do.

15 Q. Right now?

16 A. Yes, they do.

17 Q. They've never breached that plan, have they?

18 A. No.

19 Q. They're not facing curtailment as a result of  
20 this hearing?

21 A. Well, they could ultimately if the  
22 curtailment -- or the shortage requirements become so  
23 much that it strains their mitigation supply. And so  
24 that's why it's in everyone's interest to make sure that  
25 the mitigation amounts that are necessary are truly

1 necessary to meet real shortages.

2 Q. Well, their obligation in their plan is capped  
3 at 9,000-some acre-feet; correct?

4 A. Yeah, but the plan doesn't last forever.

5 Q. So 30 years from now, or whenever that plan  
6 runs out, that's your concern for your clients?

7 A. That's one concern. I think our clients are  
8 interested in the viability of agriculture in the whole  
9 area, and so, you know, part of that viability is  
10 enhanced by maximizing the use of the resource.

11 Q. So I'm going to get back to the question you  
12 were working around earlier.

13 In your opinion, a senior should only receive  
14 15 percent of the injury at the time of injury by using  
15 steady state; correct?

16 A. I absolutely disagree with that  
17 characterization.

18 Q. But that would be the result if steady state  
19 was used for curtailment?

20 A. If that was used and you didn't require those  
21 users to mitigate, you just were relying on curtailment  
22 alone, you would be right. But that's not what would  
23 happen. And if those users can't mitigate, then they  
24 should be curtailed and not allowed to operate at all.

25 And that whole -- I mean, in my experience in

1 Colorado, that whole -- that creates an incentive for  
2 these users to develop these plans and mitigate, and  
3 that's what I've seen happening in Idaho for the most  
4 part. I mean, most users are on a plan; right?

5 Q. Isn't every user in this room in a mitigation  
6 plan?

7 A. Well --

8 Q. Every groundwater user in this room is a party  
9 to a mitigation plan; is that correct?

10 A. Yes, but those plans aren't necessarily  
11 forever, and some I understand are being renegotiated;  
12 and so, I mean, there's changes afoot.

13 Q. So as I understand your testimony, if they  
14 breach those plans, then they should be curtailed?

15 A. Yeah. Well, and even those plans -- yes, if  
16 they breach the plans, they should be curtailed, and  
17 those plans should be -- you know, should be reliable  
18 plans so that the risk of breaching is very low and  
19 doesn't fall on the shoulders of the seniors.

20 Q. A steady state use of the model does not  
21 predict an instantaneous response to the reach in  
22 question; correct?

23 A. Well, no run does.

24 Q. Now, as I understand your testimony about the  
25 1980s wells, first of all, none of those wells from the

1 1980s have been curtailed; correct?

2 A. Today.

3 Q. Today.

4 A. I don't know. I thought the -- I mean, I was  
5 out of the country for a while, but I thought that the  
6 Director had -- there was an order that he was going to  
7 curtail as of sometime in May. And maybe I just -- I  
8 don't know what happened since then.

9 Q. I missed that order the Director issued  
10 curtailing people to the mid-1980s.

11 The bottom line is that no one that's had a  
12 mitigation plan in place, none of the parties to this  
13 proceeding, have been curtailed; correct?

14 A. I think that's right.

15 Q. So for you to talk about if pumping had never  
16 occurred since 1980s, then 75,000 acre-feet would be in  
17 the reach this year and there would be no injury, that's  
18 just fantasy, isn't it?

19 A. No. That's just a different way of saying  
20 that the last 75,000 acre-feet of depletion that created  
21 the shortage was caused by the wells junior to the  
22 mid-'80s, and, therefore, they should be the ones  
23 responsible for mitigating it because they caused the  
24 problem.

25 Q. So your position, then, is only those wells



1 since the 1980s should be required to furnish all of the  
2 injury determination this year?

3 A. For this year. And next year if the shortages  
4 is more than -- maybe the curtailment date goes to, say,  
5 1970, then that pool of users should have to replace in  
6 that year.

7 Q. And if they can't furnish the water or won't  
8 enter into a mitigation plan, then what?

9 A. I think -- well, the way that -- I don't want  
10 to get too far out in front of my client or anything,  
11 but in Colorado, you have -- you can't pump unless you  
12 have a mitigation plan. So I don't know if that's --  
13 that's a solution, maybe there's other ways, too, but  
14 that's the way it works in Colorado.

15 Q. Yeah, I'm not disagreeing with that idea of  
16 yours. Trust me. I like it. But it's not what Idaho  
17 uses; isn't that correct?

18 A. That's correct. But my understanding also is  
19 that there's -- the amount of users that are operating  
20 without a plan is relatively small.

21 Q. So the -- under your 1980s theory, the 19 --  
22 for that water to appear in this reach, the  
23 75,000 acre-feet injury, the 1980s water rights and  
24 junior to that would have to be permanently curtailed;  
25 correct?

1 A. No. They would have to provide mitigation.

2 Q. Or provide mitigation?

3 A. Well, yeah, provide mitigation is --

4 Q. And if they don't provide mitigation, they  
5 would have to be permanently curtailed for that amount  
6 to appear in the reach?

7 A. The threat of curtailment is the stick to keep  
8 them mitigating.

9 Q. You know, you just won't answer the question.

10 The question is: If they don't mitigate, if  
11 they don't mitigate, your theory is they would be  
12 permanently curtailed so that that 75,000 acre-feet  
13 would show up in the reach; correct?

14 A. The point of curtailment is that they're not  
15 mitigated, and I'm not really looking at later stuff as  
16 when the water shows up or anything like that.

17 Q. Let's talk about your Colorado plan that you  
18 suggest to the Director in your report on pages 24 and  
19 25.

20 You've explained this two or three times that,  
21 under Colorado, the water user -- groundwater user is  
22 required to have a plan in place before the season ever  
23 starts; correct?

24 A. Yes.

25 Q. And it has to be approved?

1           A. Well, and I should say, not everywhere, but in  
2 most places in Colorado, they have to.

3           Q. And what are those plans called in Colorado?  
4 They're not mitigation plans, they're augmentations?

5           A. There's augmentation plans that are approved  
6 by the court, and then they have substitute supply plans  
7 that can be approved by the agency in some limited  
8 instances.

9           Q. And our conjunctive management rules don't  
10 talk about augmentation plans or substantive water  
11 plans; correct?

12          A. Yeah, but I've always viewed a mitigation plan  
13 as functionally the equivalent.

14          Q. So as I understand -- the way they do it in  
15 Colorado, those plans have to be in place before the  
16 irrigation season. Not only the plan has to be in  
17 place, but the supply of mitigation water has to be in  
18 place before the irrigation season; correct?

19          A. Yeah, or, you know, reasonably certain that it  
20 can be there.

21          Q. And that depletion caused by that groundwater  
22 user has to be delivered in time, location, and place  
23 under that replacement plan or whatever it's called?

24          A. Sufficient in time, location, and amount to --  
25 and such that it prevents injury. So it doesn't have to

1 exactly match the depletions, but it needs to get to the  
2 user before they're injured.

3 Q. And those plans do not cover 100 percent of  
4 the depletion?

5 A. Right. Because at times when there's -- the  
6 seniors have enough water, then there's not a mitigation  
7 plan.

8 Q. So it -- how is it determined each year how  
9 much should be covered under the replacement plan?

10 A. Well, there's routine accounting that's  
11 performed by these plans that is submitted, and it  
12 depends on, you know, how much water is available, how  
13 much the seniors are diverting, what the shutoff date is  
14 of the water rights and who's short and that sort of  
15 thing, and what depletions the juniors are creating.  
16 And it's become routine.

17 Q. Okay. When you say it's routine, who's doing  
18 that accounting?

19 A. Well, the accounting is done largely by the  
20 users and, you know, standard mechanisms have developed  
21 for reporting that information, and so the users do most  
22 of the work. It's submitted to the agency in a certain  
23 format so that it's relatively easy for the agency to  
24 review it, and it's also transparent because the users  
25 can review each other's accounting and make sure it's

1 all kosher. And it ends up working -- it's working very  
2 well, actually.

3 Q. So in addition to that requirement of having  
4 the water in place before the season starts, under the  
5 Colorado model that you're talking about, or method,  
6 those groundwater users are required to have telemetry  
7 on their meters or some sort of way to measure their  
8 diversions?

9 A. Well, similar to Idaho, there's -- in most  
10 areas, there's -- well, the groundwater users have to  
11 measure their use for -- sometimes they're allowed to  
12 calculate it, you know, with our data, but, yeah,  
13 there's typically measurement requirements.

14 Q. How often is it measured in Colorado?

15 A. Well, I mean, they're typically like a  
16 continuous meter, totalizing flowmeter, so it's  
17 measuring continuously. And then the reporting for  
18 these plans, it's typically monthly or annual.

19 Q. Yeah. Aren't there plans that require daily  
20 reporting?

21 A. For -- maybe a few, but not -- I mean, they  
22 may submit daily data, but ultimately, that's part of  
23 the -- you know, as input to the accounting. But  
24 ultimately, it's rolled up into sort of a balancing  
25 period that may be monthly or annual that they have to

1 balance --

2 Q. So monthly is more common than daily; is that  
3 what you're saying?

4 A. Well, it kind of -- it depends on the  
5 situation, you know, that -- yeah, it's kind of  
6 situation specific.

7 Q. To your knowledge, are the groundwater users  
8 in Idaho required to report, monthly, their diversions?

9 A. I don't think so, but I don't know.

10 Q. And aren't those meters calibrated every two  
11 years by a certified inspector?

12 A. In Colorado.

13 Q. In Colorado?

14 A. I think that that varies by basin.

15 Q. But, overall, those components of the Colorado  
16 plan, that's what you're recommending the Director  
17 adopt, that you've just talked about?

18 A. I mean, maybe some components. I haven't  
19 really thought that far ahead, but I think the -- there  
20 could be a mechanism developed that protects the senior  
21 and has, you know, accounting based on measured use and  
22 those sorts of things that could work here.

23 Q. Are all groundwater users in compliance with  
24 their replacement plans?

25 A. Where?

1 Q. In Colorado.

2 A. For the most part, yeah, or they get  
3 curtailed.

4 Q. So when you say they're curtailed, how are  
5 they curtailed?

6 A. That the sheriff comes out and tags their well  
7 and enjoins them from pumping.

8 Q. Okay. Does that have -- before that  
9 curtailment takes place, do you have to go through some  
10 kind of administrative proceeding?

11 A. Yes.

12 Q. I'd like to talk to you about your acreage  
13 just for a minute.

14 I'd like you to open page 19 of your report.

15 Exhibit 347A, I think; is that right?

16 And as I understand your recommendation to the  
17 Director, you're recommending that he use those acreage  
18 numbers that are in the column labeled, "2021 Acres"; is  
19 that correct?

20 A. Sorry. What page are you on?

21 Q. Page 19.

22 Let me double-check. Excuse me. Page 18.

23 A. Yeah. I mean, that was the most recent one  
24 or -- but, you know, the numbers are similar.

25 So I think that this would be a good place to

1 start for coming up with the acres.

2 Q. Yeah, it says in the report: "In my opinion,  
3 it would be more appropriate to use the 2021 acres for  
4 purposes of the demand calculations."

5 Correct?

6 A. Yeah.

7 Q. Have you totaled those acres in 2021 -- 2021?

8 A. And when I said that, I should have been  
9 clear. I meant for Burley and Minidoka and for  
10 Twin Falls.

11 Q. Well, that's not what your report says.

12 A. I should have been more clear.

13 Q. So that's a mistake. You only want to use --

14 A. Well, they shouldn't be able to -- you know,  
15 if they're irrigating more than their shapefile or more  
16 than they say they're irrigating, then that should be a  
17 consideration as well.

18 Q. Well, I don't disagree with you, I'm just  
19 reading what your report says.

20 A. Okay. I was --

21 Q. Because those 2021 acres total over  
22 618,000 acres; correct?

23 A. Well, there's -- if you look at, like,  
24 North Side -- I used to know the answer to this -- but  
25 there's some -- there's a reason why North Side says 220



1 in 2021 and not 154.

2 Q. Okay. My question is: The 2021 column adds  
3 up to over 618,000 acres; correct?

4 A. I haven't done the math.

5 Q. Well, the math can be done, but I would advise  
6 you that if you do the math, you're showing an increase  
7 in acreage of about 57,000 acres by using 2021?

8 A. I think using the actual acreage would reduce  
9 the overall acres.

10 Q. What goes into determining crop water need?

11 A. Irrigated area, the crops that are being  
12 grown, and the weather.

13 Q. And is the crop mix an important factor of  
14 that crop water need?

15 A. Yes.

16 Q. And, in your opinion, the more current that  
17 information is, the better?

18 A. Yes. I mean -- yeah, I mean, assuming we're  
19 trying to figure out what the crop water need is today,  
20 we should be using current data.

21 Q. Yeah. If you had 2023 data available, it  
22 should be used; correct?

23 A. Yes.

24 Q. And how is the Department doing that now; do  
25 you know?

1           A. Yeah. I think they're -- they're using what  
2 they call CDL information. So it's remote sense crop  
3 data. And that data is not available in real time,  
4 so -- or at least not readily available in a form it can  
5 be used. So I think they use data from the previous  
6 year.

7           Q. Are they averaging previous years.

8           A. Oh, you're right.

9           Q. Yeah, I'm not trying to stop you --

10          A. No, you're right.

11          Q. A lot of details in this stuff.

12          A. Yeah.

13          Q. They're averaging about three years to  
14 determine what this year's crop data mix is; is that  
15 correct? Or is it more than that?

16          A. It's -- yeah, three to five. I don't remember  
17 exactly.

18          Q. I'd like to talk to you about project  
19 efficiencies. A little bit of reality instead of  
20 theory.

21                 You toured these projects back in 2005 or '06.  
22 I don't know what year, but...

23                 So you're familiar with how they're actually  
24 laid out on the ground; correct?

25          A. Yes.

1 Q. And, Twin Falls, who -- everybody's after  
2 Twin Falls in this proceeding. Twin Falls has, what,  
3 100 miles of canals and about 1,000 miles of lateral  
4 ditches and other parts of its delivery system?

5 Sound right?

6 A. I don't know those exact statistics, but it's  
7 a large irrigation system.

8 Q. And when they design a system like Twin Falls,  
9 aren't they designing that system to carry peak demand,  
10 the amount -- the largest amount of water they need  
11 during the year to grow a crop?

12 A. They should be.

13 Q. And isn't that typically occurring in the  
14 months of June, July, and August when it's the hottest  
15 and all of the crops are growing, generally?

16 A. Typically.

17 Q. So your review, and I think the Department's  
18 review as well, shows when the demand is the highest and  
19 when the canals are near capacity, they're the most  
20 efficient. Wouldn't you agree with that? The project  
21 is most efficient?

22 A. I think that's what the -- the results, those  
23 monthly -- actual efficiencies that I calculate that are  
24 crop water need divided by diversion are at their  
25 highest in the mid-season.

1 Q. Right. And that's when the project efficiency  
2 is also the highest; correct?

3 A. And the reason that is, is because I think  
4 they're probably overdiverting in the other months when  
5 the demand is lower.

6 Q. That's what I want to talk to you about.

7 In the spring and fall, they still have to  
8 make deliveries to water users; correct?

9 A. Depending on how the company operates. But,  
10 yeah, I mean, they -- there's different mechanisms for  
11 ordering water, and they have to try to meet those  
12 deliveries.

13 Q. And using Twin Falls as an example, they may  
14 have to be delivering water still down 100 miles of  
15 canals and a 1,000 acres of lateral ditches?

16 A. Yeah.

17 Q. Even in the spring and fall; correct?

18 A. Correct.

19 Q. Now, that doesn't mean that every farm on that  
20 project is irrigating at that time; correct?

21 A. In the fall?

22 Q. In the fall or even in the early spring.

23 A. Well, the demand is generally less in the fall  
24 and the early spring.

25 Q. Some crops have been harvested by the fall;

1 correct?

2 A. Correct.

3 Q. But they still have to convey water to all  
4 their other water users on the system; correct?

5 A. But, overall, the demand is lower.

6 Q. I'm not talking about the demand; I'm talking  
7 about the fact they have to still convey water through  
8 their system to all other users.

9 A. Yeah, but the amount that's peeled off on the  
10 way is less because the demand is less.

11 Q. Okay. The headgate deliveries are less, is  
12 what you're talking about; correct?

13 A. Uh-huh.

14 Q. But you still have to push all that water  
15 through a system that was designed to carry the peak  
16 load of June, July, and August; correct?

17 A. Of course.

18 Q. And doesn't that effect those efficiencies in  
19 spring and fall?

20 A. You, typically, can see some lower  
21 efficiencies in the spring and fall, but I think to the  
22 extent to which these efficiencies have gotten so low  
23 are unreasonable.

24 Q. What I just described to you is true for  
25 almost all open-canal surface water systems; correct?

1 Their peak efficiencies -- project efficiencies tend to  
2 be in the midsummer, and their spring and fall  
3 efficiencies typically are lower?

4 A. Typically. But then the issue is: How much  
5 lower, okay, in the shoulder months?

6 Q. Well, Twin Falls -- do you know how many  
7 acre-feet per acre it delivers or that -- excuse me --  
8 how many acre-feet per acre does Twin Falls divert at  
9 the Snake River to deliver to it's 180- or 90,000 acres,  
10 whatever we're talking about?

11 A. What, 1.1 million divided by --

12 Q. I'll just throw a number out there, and you  
13 can tell me if you disagree.

14 Around 5.8 acre-feet, something in that  
15 neighborhood?

16 A. We can use that for an example.

17 Q. And you believe that's an unreasonable amount  
18 of acre-feet to deliver -- whether it's 180- or  
19 190,000 acre-feet -- over a system that's -- conveys  
20 water through, roughly, 1100 miles?

21 A. Well, I don't think you look at it that  
22 simply. And that's -- you would look at it in more  
23 detail.

24 Like, I've done that in the past, and I think  
25 that more detailed look shows that they're typically

1 diverting more than they need to.

2 Q. Well, it's my understanding --

3 A. And more than they -- and more than they would  
4 need to in comparison to -- in my experience, compared  
5 to other large irrigation systems that operate more  
6 efficiently.

7 Q. So what other irrigation system do you know  
8 that delivers water to close to 200,000 acres through  
9 lava soils and stretches -- well, you heard Mr. Barlogi  
10 talk about 10,000 acres covering, roughly, 15-square  
11 miles.

12 I mean, what other system are you talking  
13 about?

14 A. Well, there's -- I mean, I just got through  
15 with a long litigation in Texas v. New Mexico where, you  
16 know, analyzing the irrigation operations under the  
17 Rio Grande project. And those are huge systems, very  
18 long, hundreds of miles long, and they operate more  
19 efficiently than Twin Falls does.

20 Q. Have you looked at other irrigation systems in  
21 the Eastern Snake River Plain?

22 A. Well, all the Surface Water Coalition members.

23 Q. Have you looked at others up the river?

24 A. Not in this level of detail.

25 Q. Do you have any idea how many acre-feet per

1 acre those systems divert?

2 A. Well, they're not calling curtailing juniors,  
3 though.

4 Q. I understand. But you're talking about an  
5 industry standard or a reasonable diversion rate.

6 A. I'm talking about industry standard in the  
7 situation where there's conjunctive administration and  
8 curtailment going on.

9 Q. What is this industry standard that you're  
10 talking about? You don't put it in your report. What  
11 is the industry standard for Twin Falls Canal Company?

12 A. I don't understand the question.

13 Q. In your report, you say Twin Falls should be  
14 measuring against an industry standard; correct?

15 A. Well, I think when I use that terminology, I  
16 mean the reasonableness of their operation, vis-à-vis  
17 their irrigation efficiencies and all should be analyzed  
18 in an industry standard way where the efficiencies that  
19 they should be expected to operate at before juniors are  
20 curtailed, for their benefit, should be based on, you  
21 know, their reasonable conveyance efficiencies. And,  
22 you know, their conveyance efficiencies and conveyance  
23 losses are knowable. And the amount of waste that is  
24 running out, you know, just gets spilled through the  
25 waste gates or runs out into the canal is knowable.



1           And there are industry standards that large  
2 canal systems operate under with -- yeah, I agree with,  
3 you know, what Jay was saying, that there is a certain  
4 amount of waste that has to happen to operate these  
5 large systems; but there's also a limit or a point at  
6 which it becomes unreasonable. And it's certainly --  
7 it's easier to operate a canal system with more waste.  
8 You don't have to manage it as carefully.

9           But I think in a situation of conjunctive  
10 administration, there should be a reasonableness test  
11 before you curtail others.

12           So that's the conveyance efficiency piece.  
13 And then there's the on-farm efficiency piece, and  
14 industry standards on that is that there's certain  
15 efficiencies for gravity irrigation, sprinkler  
16 irrigation, that the users should be operating up to  
17 before juniors are curtailed.

18           And as I testified earlier, I'm not saying  
19 they have to, it's just that if you're requiring  
20 mitigation and curtailment, there should be an  
21 obligation in the calculation that you don't calculate a  
22 shortage until they are operating at that level.

23           Q. And in the 2007 hearing, the hearing officer  
24 and the Court found that the Surface Water Coalition --  
25 their operations were reasonable; isn't that correct?

1           A. I think the -- they did. I think the hearing  
2 officer chose not to engage in all the details of the  
3 analysis.

4           Q. Okay. So your -- the stuff you're talking  
5 about right now was rejected by the hearing officer?

6           A. Yes.

7           Q. On page 12 of your report, you make a  
8 statement where you say: "Declines in the average  
9 project efficiencies are due to these systems not being  
10 managed as well as they were in the past."

11                   What facts do you have to back that up? Have  
12 you -- do you have any evidence that the projects are  
13 not being managed properly?

14           A. Well, that's -- so that's based simply on  
15 that -- I forget the figure, but the figure where I had  
16 tabulated the average efficiencies that I found --  
17 actual efficiencies -- you know, crop water need divided  
18 by what they're actually diverting -- from my analysis  
19 using the data from, what is it, 1990 to 2006. And so  
20 that's -- that was a set of actual efficiencies for each  
21 of the members.

22                   And when I -- and when those actual  
23 efficiencies are now computed again with the more recent  
24 data, they're actually lower. And so, you know, what  
25 has changed that they should be lower and one -- you

1 know, apparently, they're not being managed as well  
2 because they're having to divert more water to meet  
3 their demands than they did in the past. So that was  
4 the basis for that statement.

5 Q. And you heard Mr. Barlogi's explanation for  
6 that; correct?

7 A. That they're converting to --

8 Q. Well, first of all, they aren't diverting that  
9 much more water, are they, at Twin Falls Canal Company?

10 A. When you do the math, the efficiencies are  
11 lower.

12 Q. They've been -- you saw his chart where it  
13 showed he was diverting about 1.1 million acre-feet for  
14 I don't know 20, 30 years?

15 A. Well, but it goes up and -- you know, about --  
16 but it goes up and down --

17 Q. Right.

18 A. -- and it's been more of late. I mean, that's  
19 why the baseline year has been going up.

20 Q. So that's an analytical analysis you did to  
21 come up with that determination they're not being  
22 managed as well. It's not based upon any facts;  
23 correct?

24 A. Facts?

25 Q. Dealing with observations of management?

1           A. I haven't done that.

2           Q. Do you believe that the Methodology Order  
3 should be used to protect seniors from injuries caused  
4 by junior diversions?

5           A. Yes.

6           Q. Do you agree that if injury is determined, the  
7 shortfall should be supplied in time, location, and  
8 amount that season?

9           A. Well, I still believe that they really  
10 shouldn't really have to pay it back. You know, make --  
11 pay back the depletion until, you know -- it could be  
12 sometime later if the users still have storage  
13 available. But under the methodology, there's some  
14 constraints on that. So I mean, if we're working within  
15 that constraints of the methodology, then, yeah, they  
16 should provide the water in the season or at the time of  
17 need.

18          Q. Thank you.

19                HEARING OFFICER: Mr. Thompson, I assume that  
20 Mr. Fletcher's cross-examination was sufficient, or do  
21 you want to ask some questions as well?

22                MR. THOMPSON: I have a few, Director, if  
23 that's okay.

24                ///

25                ///

## 1 CROSS-EXAMINATION

2 QUESTIONS BY MR. THOMPSON:

3 Q. Good afternoon, Mr. Sullivan. Travis Thompson  
4 for A&B Irrigation District, et al.

5 A. Good afternoon, Travis.

6 Q. Just a couple of questions. Kent covered  
7 quite a bit, so I won't go back over that.8 On page 6 to 7 of your report, you talk  
9 about -- I think you do a lot of comparison of an  
10 average year of diversions looking at 2000 to 2021; is  
11 that correct?

12 A. Yeah, that's what the Department did.

13 Q. And you just kind of compared that to the  
14 prior baseline year of '6/'8/'12?15 A. Yeah, I was just basically stating what the  
16 Department did for that particular piece of that.17 Q. So if we're looking at an average diversion,  
18 would you agree that that average diversion does not  
19 meet the methodologies criteria of an above average year  
20 of diversion?

21 A. The '06/'08/'12?

22 Q. I'm just -- whatever average we're talking  
23 about. We're just looking at a straight average.24 A. Yeah, as I testified earlier, I mean, if you  
25 still just use 2000 to 2021, it's 40 acre-feet short of

1 being above average.

2 Q. And the criteria in the order requires that  
3 you're above average diverting; would you agree?

4 A. It does.

5 Q. And are you familiar with the order on  
6 judicial review of the Methodology Order issued by  
7 Judge Wildman back in 2014?

8 A. I'm sure I read it.

9 Q. I guess would you agree that an average year  
10 of diversion does not meet the standard that he  
11 approved?

12 MS. KLAHN: Objection; the document speaks for  
13 itself.

14 THE WITNESS: I don't recall exactly --

15 HEARING OFFICER: Just a moment.

16 I'll allowing questioning in this area. I  
17 think it's important. If there's an objection, it's  
18 overruled.

19 Q. (BY MR. THOMPSON) I'm just curious.  
20 Arguments made in that case by Pocatello and IGWA were  
21 requesting that an average year be used.

22 Were you aware that those were rejected by the  
23 Court?

24 A. I'll take your word for it.

25 Q. I guess would you agree that the average of

1 the combined diversions for all Coalition members is not  
2 reflective of a standard of an above-average year for an  
3 individual Coalition member?

4 A. Yeah, I mean, that's different. It seemed  
5 like the methodology doesn't require it to be done user  
6 by user.

7 Q. And it's not average whether it's the  
8 Coalition or if it's a single user; is that correct?

9 A. I'm sorry, can you say that question again,  
10 please.

11 Q. The methodology does not require an average  
12 year; isn't that correct?

13 A. Above average.

14 Q. Yes.

15 A. Uh-huh.

16 Q. So you talked about increased diversions the  
17 last few years. Would you turn to Exhibit 300. I think  
18 that's the Fifth Methodology Order.

19 Could you turn to page 7, Mr. Sullivan.

20 A. Okay.

21 Q. And what is that table depicting?

22 A. The graph here?

23 Q. Yes.

24 A. It says: "April Through September Growing  
25 Degree Days."

1 Q. So would you agree that warmer climatic  
2 conditions could contribute to increased diversions in  
3 recent years?

4 A. They could.

5 Q. And based on that graph, have we seen a  
6 greater number of years with growing degrees higher than  
7 that average than the years prior? I'm going to look  
8 at, like, 2012 through '21.

9 A. Yeah, there's more years above average.

10 Q. How about more water consumptive use crops?  
11 Could that contribute to greater demand?

12 A. It could.

13 Q. So you talked about 2022 in your report.  
14 Would you agree that was a year of limited water supply  
15 for certain Coalition members?

16 A. I don't recall.

17 Q. Are you aware of reduced deliveries by certain  
18 Coalition members in 2022?

19 A. Reduced delivery?

20 Q. Yes.

21 A. I haven't studied that 2022 diversion data in  
22 detail.

23 Q. Or shortened irrigation seasons?

24 A. I don't know.

25 Q. So if that were the case, if those certain



1 members had reduced supplies in 2022, reduced  
2 deliveries, shortened irrigation seasons, would you  
3 agree that that year would not meet the Methodology  
4 Order's criteria for a baseline year?

5 A. I don't think I was suggesting that 2022 be a  
6 baseline year, but if I -- it could be used in computing  
7 the average over the period.

8 Q. Right. Which is not used by the methodology?

9 A. Well, the methodology does require, as I  
10 understand it, a computation of some average with which  
11 the baseline year is then compared to, to see if the  
12 baseline year is above average.

13 Q. Yeah, I think the criteria we talked about, it  
14 needed to reflect a year of above average to protect the  
15 senior at the outset?

16 A. Right.

17 Q. So would 2022 be above or below average?

18 A. I think it's probably below average, but  
19 maybe -- I don't know if I misunderstand or there's some  
20 misunderstanding, but I didn't propose that 2022 be a  
21 baseline year.

22 Q. No, that wasn't my question.

23 A. Oh, okay.

24 Q. Turn to page 7. I just have a statement I  
25 wanted to ask you about -- back in your report, I'm

1       sorry, Mr. Sullivan.

2                   So you make this statement about Twin Falls  
3 Canal Company's, I'll quote, legally established  
4 delivery rate.

5                   Do you see that?

6           A.   Yeah, on the second-to-last paragraph.

7           Q.   I think you testified earlier today that  
8 you're not an attorney; is that correct?

9           A.   That is correct.

10          Q.   So would you agree that you're not qualified  
11 to give an opinion on what the legally established  
12 delivery rate is?

13          A.   Well, I can -- I'm not a lawyer, but I can  
14 read documents and see where information comes from.

15          Q.   So you talked about looking at the Unit B part  
16 of the A&B project. Do you remember that testimony? I  
17 think it's in your report as well.

18          A.   Yes.

19          Q.   And would you consider that project to be  
20 similar to a large open canal system in Idaho?

21          A.   I mean, there's some similarities, but one  
22 difference is that the distance between the point of  
23 diversion and the point of delivery is typically pretty  
24 short, and there's some open canals up there, but  
25 there's a lot of piping too.

1 Q. And that system has a number of groundwater  
2 wells; do you recall?

3 A. I think at the time it was fully supplied by  
4 groundwater. I think maybe they get some surface water  
5 now.

6 Q. So I'll represent probably over 180 wells  
7 delivering water to individual farms.

8 Would you agree with that?

9 A. That sounds right.

10 Q. And so these large canal systems that we're  
11 looking at for the Surface Water Coalition, would you  
12 agree that they have a large diversion point at the  
13 Snake River not over hundreds of individual points of  
14 diversion?

15 A. Yes.

16 Q. And you talk about the Director's order in  
17 that case. Did you agree with the Director's and  
18 hearing officers' recommended diversion rate for A&B at  
19 three-quarters of an inch per acre?

20 A. No. I think that's probably too much.

21 Q. So you disagree with the finding and the  
22 order?

23 A. Yeah, I don't -- I haven't studied that part  
24 of the order in quite a while, so I'm a little fuzzy on  
25 that piece.

1 Q. Is the requirement for a water user to put  
2 water to beneficial use different when you are making a  
3 call as opposed to not making a call?

4 A. I think so, yeah.

5 Q. And is that based upon your experience in  
6 Idaho or other states?

7 A. I would answer in the context of Idaho, that  
8 in the context of the conjunctive management rules and  
9 the decisions that have been made, and all, that they're  
10 expected to be operating reasonably and without waste  
11 before they are curtailed -- or before juniors are  
12 curtailed on their behalf.

13 Q. And does that apply to surface-to-surface  
14 water right administration?

15 A. I don't know.

16 Q. So is a diversion rate of 5 to 7 acre-feet per  
17 acre reasonable for large open canal systems in Idaho?

18 A. It depends. It depends on what their  
19 conveyance losses are and what their on-farm irrigation  
20 application practices are.

21 Q. You have a per-acre-foot, per-acre standard as  
22 an industry standard?

23 A. No.

24 Q. Or would it be different for every entity?

25 A. It would vary.

1 Q. I'd like to talk to you about your  
2 supplemental groundwater testimony in your report,  
3 pages 20 to 21.

4 And you represent that table was provided by  
5 the Surface Water Coalition; is that correct?

6 A. Yes.

7 Q. And do you know if that information related to  
8 potential groundwater lands within their project or  
9 specific lands that were overlapped with surface water  
10 as well?

11 A. I don't remember the specifics of that.

12 Q. So would you agree that some of these projects  
13 cover vast areas of certain counties in southern Idaho?

14 A. Yes.

15 Q. Not every one of those users may have a  
16 surface water right; is that true?

17 A. That's true.

18 Q. Some may have groundwater?

19 A. There may be, uh-huh.

20 But I think that this information was  
21 represented as supplemental groundwater acreage by the  
22 canal companies, to my recollection.

23 Q. Have you compiled any information on  
24 supplemental groundwater rights since 2007?

25 A. No.

1 Q. Are you aware of any groundwater right  
2 transfers since that time?

3 A. Just in the ESPA.

4 Q. Yes?

5 A. Yes.

6 Q. Would that change the analysis of supplemental  
7 groundwater available within certain projects?

8 A. Yes. And I don't -- I wasn't necessarily  
9 advocating that these values be used, but they were put  
10 in here as an example that this information has been  
11 considered before and, for whatever reason, hasn't been  
12 considered for a long time. And if it is to be  
13 considered, would it make sense to use more recent data.

14 Q. How about groundwater rights enrolled in CREP  
15 since that time?

16 COURT REPORTER: Wait, I didn't hear that.  
17 Can you repeat that?

18 MR. THOMPSON: Groundwater rights enrolled in  
19 CREP, C-R-E-P.

20 THE WITNESS: I mean, if they're not  
21 delivering groundwater, then I don't think that should  
22 be considered as an alternate source. I suppose the  
23 lawyers may have some reason that legally it should be  
24 considered, but...

25 Q. (BY MR. THOMPSON) How about groundwater

1 rights used in mitigation plans, have you looked at  
2 those?

3 A. So what do you mean by that?

4 Q. Well, I just want to know if -- you haven't  
5 done any analysis on supplemental groundwater rights  
6 since that time, could those rights be not available  
7 today, not being used today, if they're in other  
8 programs?

9 A. Did you say enrolled in mitigation plans?

10 Q. Yes.

11 A. So the wells would still be in use?

12 Q. Maybe not. I don't know. That's the  
13 question.

14 A. It should be based on the wells that are -- I  
15 think that the wells that are actually in use.

16 Q. So do you know how long it takes the  
17 groundwater districts to compile their annual use of  
18 their members' groundwater rights?

19 A. I do not.

20 Q. One last question: Would the priority date of  
21 a supplemental groundwater right matter if it was  
22 subject to a curtailment order?

23 A. It might.

24 Q. I'd like to ask you a few final questions, I  
25 guess, looking at Exhibit 365.

1 Do you have that in front of you?

2 A. Yes.

3 Q. How many gauges did you query for these tables  
4 or graphs? I'll call them graphs.

5 A. Well, they're listed in the footnotes. I  
6 haven't counted them up.

7 Q. So the only ones that are totaled here are the  
8 ones actually listed --

9 A. Yes.

10 Q. -- in the notes?

11 A. Yes.

12 Q. How do you define the term "TFCC Return Flows"  
13 at the top?

14 A. I think that's the -- that's the sort of  
15 general terminology that's used -- that the Department  
16 has used. It's return flows coming off a tract, so it's  
17 measured water below that canal service area.

18 Q. So does it include water from other sources,  
19 not just irrigation return flow?

20 A. It could.

21 Q. So the orange tributary bars, are those  
22 natural streams?

23 A. Yes. So, I mean -- and as we heard  
24 Jay Barlogi talk -- testify earlier, there's -- some of  
25 their runoff off the waste or surface runoff goes into



1 tributaries.

2 Q. Certainly, during irrigation season that could  
3 be a component of that flow at that particular time?

4 A. Yes.

5 Q. How about runoff precipitation events?

6 A. It could be in high -- like it rained here  
7 last night.

8 Q. 3 inches, I think, at Crane Creek.

9 A. It was a lot. Almost as much as it rains down  
10 in Florida now, like that.

11 Q. Did you differentiate the irrigation return  
12 flows from other natural runoff in this graph?

13 A. I did.

14 Q. And it appears that some of these run  
15 year-round; is that correct?

16 A. Yes, there's some water in the winter.

17 Q. Are you aware of seeps in groundwater returns  
18 that might be included in these numbers?

19 A. Probably is some of that, yes.

20 MR. THOMPSON: That's all the questions I  
21 have.

22 HEARING OFFICER: Okay. Thank you,  
23 Mr. Thompson.

24 MR. THOMPSON: Oh, sorry. I've got a couple  
25 more.

1 HEARING OFFICER: Go ahead.

2 Q. (BY MR. THOMPSON) Getting back to your  
3 question on project efficiencies, would your proposed  
4 use of an efficiency regression with that  
5 75th percentile, essentially, disfavor seniors?

6 A. No.

7 Q. How so?

8 A. Because it would be using the efficiency  
9 values that they have shown to be able to operate at.

10 Q. At certain times? Is that correct?

11 A. Yeah, but I think it's entirely reasonable to  
12 be -- I'm not picking the very top, I'm just picking  
13 within the upper part of the range that they've shown  
14 they can operate at.

15 Q. So do you agree that large canal companies  
16 would need some sort of base level to operate their  
17 diversion system?

18 A. What do you mean, "base level"?

19 Q. Can they simply follow the ET curve seasonally  
20 or annually crop --

21 A. Well, that's why -- well, I'm not sure if I  
22 understand your question. But that's why these  
23 efficiencies are not 100 percent, and there's allowances  
24 for losses and inefficiencies.

25 Q. So do you agree there's beneficial diversions

1 of water to bear crops that go beyond just meeting the  
2 consumptive irrigation requirement of the plan?

3 A. When you're, like, storing water and soil  
4 moisture for subsequent use, yes.

5 Q. How about canal charging?

6 A. Yep. And that's the reason that the  
7 efficiencies -- the conveyance efficiency can be  
8 temporarily higher in the spring. Although, I  
9 understand, you know, canals like Twin Falls and some  
10 others run year-round now because of the recharge.

11 So maybe some of that charging part is not as  
12 big a deal as it used to be.

13 Q. I guess, are you aware of the location of  
14 Murtaugh Lake compared to the rest of the project on  
15 Twin Falls Canal Company?

16 A. It's up near the top.

17 Q. How about having an available steady supply of  
18 water, if that's how they deliver?

19 A. Can you be more specific on what you mean?

20 Q. Yeah. Do you consider that a beneficial  
21 diversion of water that goes just beyond meeting the  
22 crop water need for the plan?

23 A. I think that's part of the reason Twin Falls  
24 is so inefficient is because they -- their operational  
25 practice is to basically guarantee a rate of water to

1 their users rather than an allotment system. It's more  
2 typically used by these large systems, and it leads to a  
3 less efficient operation.

4 It's great for the users, and it's great if  
5 you have enough water, but you can -- a system can be  
6 operated more efficiently under an allotment system.  
7 There's incentives for saving water.

8 Q. So which entities are you referring to that  
9 use an allotment system?

10 A. I know some of the Surface Water Coalition  
11 members do, but I just -- I haven't -- and that's  
12 something we looked at back -- way back when. I just  
13 didn't have a chance to refresh myself on that.

14 Q. How about diverting water for chemigation and  
15 soil tillage, is that a beneficial use of water?

16 COURT REPORTER: Okay. Wait. Can you repeat  
17 your question?

18 Q. (BY MR. THOMPSON) Using water for chemigation  
19 or soil tillage, is that a beneficial use of water?

20 A. It's a beneficial use. I think it, you  
21 know -- and I don't know how much of that is happening,  
22 how big of a deal that is. I mean, if they're -- yeah,  
23 I don't know. It's a beneficial use, though.

24 MR. THOMPSON: Thank you. That's all I have.

25 HEARING OFFICER: Thank you, Mr. Thompson.

1           Redirect?

2           MR. BUDGE: Director, the cross-examination by  
3 Mr. Fletcher and especially -- and partly by  
4 Mr. Thompson went way outside of what's in  
5 Mr. Sullivan's expert report and what was offered in  
6 direct, so I would like to also ask a few follow-up  
7 questions.

8           HEARING OFFICER: Well, I'm not sure that I  
9 agree with you, that it went way outside the boundaries  
10 of direct.

11           I disagree, but I don't object to your asking  
12 some questions. But before you do, Mr. Budge, and  
13 before you come all the way forward, I want to give  
14 Ms. Klahn an opportunity to ask questions.

15           MS. KLAHN: I'd rather go after Mr. Budge  
16 because I don't know what he's going to say, if that's  
17 okay, Mr. Director.

18           HEARING OFFICER: Well, let's stay as long as  
19 we have to.

20           Mr. Budge.

21           MR. BUDGE: I'll be as quick as I can.

22           MR. FLETCHER: 30 minutes; right?

23           ///

24           ///

25           ///

CROSS-EXAMINATION

QUESTIONS BY MR. BUDGE:

Q. Thank you, Mr. Sullivan.

I want to follow up on some of the questions that were asked by Mr. Fletcher.

You'll recall there was a lot of questions about Colorado replacement water plans?

A. Yes.

Q. That is not something I am familiar with, but I assume they're governed by Colorado law?

A. Yes.

Q. And they're designed to accommodate Colorado water systems?

A. Yes.

Q. They're not governed by Idaho's conjunctive management rules?

A. No.

Q. And you're not advocating today that the Director replace the Fifth Methodology Order with --

COURT REPORTER: So, Mr. Budge, I'm going to need you to slow down, please.

MR. BUDGE: He's telling me to speed up.

COURT REPORTER: I can't get it, though.

HEARING OFFICER: No, I'm encouraging you to be more articulate.

1 MR. BUDGE: Touché.

2 MR. FLETCHER: More efficient and articulate.

3 Q. (BY MR. BUDGE) You're not advocating the  
4 Director replace the Fifth Methodology Order with a  
5 Colorado replacement water plan?

6 A. No.

7 Q. Let me ask you about a question Mr. Fletcher  
8 asked about some rulings by Judge Melanson related to  
9 the five-eighths-inch versus three-quarter-inch delivery  
10 for Twin Falls Canal Company.

11 Do you remember those questions?

12 A. Yes.

13 Q. Do you remember Mr. Fletcher asking if you  
14 knew that Judge Melanson had rejected or overruled the  
15 five-eighths-inch standard?

16 A. Yes.

17 Q. And your response was that you'll take  
18 Mr. Fletcher's word for it?

19 A. Yes.

20 Q. So the record's clear, you don't know  
21 whether -- that Judge Melanson accepted five-eighths  
22 inch or three-quarters of an inch?

23 A. No.

24 Q. And to the extent that's in the record, that  
25 would reflect Mr. Fletcher's testimony and not your own?

1 A. Yes.

2 Q. Mr. Fletcher asked you if there had been any  
3 curtailment of groundwater rights to date, and I believe  
4 your answer to that was, to your knowledge, no?

5 A. This year?

6 Q. I think it was to date.

7 A. To date this year; right?

8 Q. Yes. Was your answer with respect to this  
9 year alone?

10 A. Yes.

11 Q. Okay. You weren't referring to curtailment in  
12 prior years?

13 A. No.

14 Q. There was a dialog between you and  
15 Mr. Fletcher about who should be curtailed when the  
16 seniors are short of water.

17 You said something to the effect that those  
18 who caused the problem should be curtailed; is that  
19 right?

20 A. Yes.

21 Q. You also testified that curtailment is  
22 extremely inefficient in the conjunctive management  
23 context?

24 A. Very.

25 Q. And it should be a matter of last resort?



1 A. Yes.

2 Q. And so it's fair to say that your testimony  
3 has been that curtailment should only be pursued to meet  
4 genuine water needs by the senior?

5 A. Well, not exactly. I mean mitigation should  
6 be provided to meet genuine water need, and curtailment,  
7 like I say, is a -- at last resort. If the user doesn't  
8 want to mitigate, then they shouldn't be allowed to  
9 pump.

10 Q. And in terms of calculating mitigation  
11 obligations, mitigation should only be required to the  
12 extent the senior actually needs it to grow crops?

13 A. Yes.

14 Q. And did I understand your testimony that the  
15 Fifth Methodology Order has created no incentive for  
16 seniors to become more efficient in their water use?

17 A. That's correct.

18 Q. In fact, if I understood your testimony  
19 earlier, there's some incentive built into the  
20 methodology that encourages the seniors to divert more  
21 water than may be required for their crops?

22 A. Yes. There's this feedback loop that the more  
23 they divert, the more they're entitled to under the  
24 methodology.

25 Q. And then, lastly, there was some discussion

1 about prior court rulings involving reasonable use of  
2 water. And I think Mr. Fletcher represented that a  
3 prior decision found Twin Falls Canal's diversions to be  
4 reasonable.

5 Do you remember that?

6 A. Yes.

7 Q. Do you recall whether that decision was based  
8 on efficiency or just based on whether Twin Falls was  
9 wasting water?

10 A. I don't recall.

11 Q. And efficiency is a spectrum. You can be  
12 highly efficient or --

13 A. Absolutely.

14 Q. -- poorly efficient?

15 And the waste threshold, as you understand  
16 that, would be at the very bottom end of the spectrum?

17 A. Well, my understanding is that it's -- they're  
18 really two sides to the same coin, the way that it's  
19 evolved and put out in the conjunctive management rules  
20 and the decisions that are being made.

21 If you're operating with reasonable  
22 efficiency, you're not wasting, and if you're wasting,  
23 then you're not operating with reasonable efficiency.

24 I used to think there was, like, some multiple  
25 tiers, but I don't think that anymore.

1 Q. Does your analysis show that since 2008 when  
2 the Methodology Order was first developed and we last  
3 had an evidentiary hearing, that Twin Falls Canal  
4 Company and other members of the Surface Water Coalition  
5 are not demonstrating increased efficiency even though  
6 you would expect that given the improvements made to the  
7 canal system?

8 A. Yes, that's correct.

9 MR. BUDGE: That's all I've got. Thank you.

10 HEARING OFFICER: Mr. Budge, I want to  
11 compliment you on your articulate questioning of the  
12 witness.

13 MR. BUDGE: It's about time.

14 MS. KLAHN: It was a lot less than ten  
15 minutes, TJ.

16 HEARING OFFICER: I did not mean it as a  
17 personal shot at you, so please accept my apology.

18 I also want to observe in the -- as I scanned  
19 the document and as I listened to the testimony, that  
20 the expert report is replete with references that say  
21 "in Colorado" and "in Colorado" and "in Colorado," as  
22 well as the testimony. I'll just observe that I think  
23 there's a lot of reference there, but I won't draw any  
24 more conclusions than that.

25 So, Ms. Klahn, from Colorado, you may question

1 the witness from Colorado.

2 THE WITNESS: I'm not in Colorado anymore.

3 MS. KLAHN: He's from Florida now.

4 HEARING OFFICER: Florida now, huh?

5 MR. FLETCHER: I can't wait to hear what they  
6 do in Florida.

7 HEARING OFFICER: Following the water  
8 problems.

9 MR. FLETCHER: The drain ditch problems.

10 MS. KLAHN: You should see the returns flows  
11 down there.

12 HEARING OFFICER: Ms. Klahn?

13 MS. KLAHN: Thank you.

14

15 REDIRECT EXAMINATION

16 QUESTIONS BY MS. KLAHN:

17 Q. Just a couple of things.

18 The discussion you had with Mr. Fletcher about  
19 the project efficiency aspects of crop water need, do  
20 you recall that?

21 A. Yeah.

22 Q. And I feel like there might have been some  
23 confusion about what the Methodology Order calculates  
24 and what's shown in Figures 3-1, et cetera, versus what  
25 your conclusions are.

1           Could we take a look at that real quick?

2           A.   Sure.   3-1?

3           Q.   Yeah.   So in Figure 3-1, just to make sure the  
4 testimony is clear, you included on that figure your --  
5 I don't remember what the terminology is because I  
6 didn't bring the report up with me -- the efficiency  
7 number you calculated in 2007; is that right?

8           A.   Yeah, the seasonal efficiency.   That's the  
9 blue lines.

10          Q.   Right.   And that was for purposes of  
11 comparison with the actual efficiencies that the Surface  
12 Water Coalition is currently experiencing; is that  
13 right?

14          A.   That's one of the purposes, yes.

15          Q.   Okay.   There was a question about the --  
16 whether chemigation and soil tillage were beneficial  
17 uses; do you recall that?

18          A.   Yes.

19          Q.   Would you agree that chemigation and soil  
20 tillage are not part of the crop water need?

21          A.   I don't know.

22                MS. KLAHN:   And I think those are all the  
23 questions I have, Mr. Director.   Thank you.

24                HEARING OFFICER:   Thank you for being  
25 succinct.

1 Recross?

2 Recross, Mr. Fletcher?

3 MR. FLETCHER: No, I don't have any.

4 HEARING OFFICER: Mr. Thompson?

5 MR. THOMPSON: No. Thank you.

6 HEARING OFFICER: Okay. Are we finished with  
7 Mr. Sullivan?

8 MS. KLAHN: I think so.

9 HEARING OFFICER: It sounds like we are.

10 Okay. It's 5:00 o'clock. The timing of  
11 examination of counsel is admirable.

12 Do we want to call the next witness? I assume  
13 not?

14 So looking at the schedule, I assume that  
15 Sophia Sigstedt will be scheduled tomorrow morning to  
16 testify, is that right, Ms. Klahn?

17 MS. PATTERSON: That's correct.

18 HEARING OFFICER: Oh, wait a minute.

19 TJ?

20 MR. BUDGE: That's correct.

21 HEARING OFFICER: Do you want to start at  
22 9:00, everyone? Are we on schedule to finish on Friday,  
23 looking at the witness list?

24 MS. PATTERSON: I think we are, Director. We  
25 are only going to call one late witness, Mr. Carlquist.

1 And then I believe we just have a witness from  
2 Amalgamated, a witness from McCain, and then your expert  
3 witnesses.

4 I think that we can get Ms. Sigstedt and  
5 Mr. Contor done by midday tomorrow, leaving time in the  
6 afternoon for rebuttal.

7 MR. BUDGE: That's only if they'll be as  
8 succinct as I am.

9 MS. KLAHN: No, you're not succinct, I'm  
10 succinct.

11 HEARING OFFICER: And articulate.

12 MR. JOHNS: I can't make any promises about  
13 midday.

14 MR. FLETCHER: You're articulate, she's  
15 succinct.

16 HEARING OFFICER: Let's go off the record  
17 because we're devolving downward, I think. So let's go  
18 off the record.

19 So we'll adjourn until tomorrow at 9:00 a.m.

20

21 (Hearing adjourned at 5:03 p.m.)

22

23

24

25

REPORTER'S CERTIFICATE

I, ANDREA L. CHECK, CSR No. 748, Certified Shorthand Reporter, certify;

That the foregoing proceedings were taken before me at the time and place therein set forth, at which time the witness was put under oath;

That the testimony and all objections made were recorded stenographically by me and transcribed by me or under my direction;

That the foregoing is a true and correct record of all testimony given, to the best of my ability;

I further certify that I am not a relative or employee of any attorney or party, nor am I financially interested in the action.

IN WITNESS WHEREOF, I set my hand and seal this 19th day of June, 2023.

Andrea Check

ANDREA L. CHECK, CSR No. 748, RPR, CRR

Notary Public

P.O. Box 2636

Boise, Idaho 83701-2636

My Commission expires July 20, 2028.



	<b>177:7</b>	<b>40:5;41:5,23,24;50:4,7,9,12,14,16,18,21,24;52:9,23;53:3,20,22;54:1,3,7,12;58:7;67:21,24;68:12;79:20;81:20;82:12;83:2,25;84:5;85:4,7;86:3,7,19;87:24;88:5,6,11,11;97:7;101:8;107:2,4;134:23;160:1;167:13;174:3,24;175:2,7,18,20,23;176:2,7,15;177:6,13,16,21;178:3,21;179:21;184:23;216:18;217:1,3,7,21,22;218:3,7,9;221:15;223:9;224:8,10</b>	<b>Adjudication (4)</b> 81:9;82:1,2,4
<b>\$</b>	<b>accepted (4)</b> 125:14;199:19;200:22; 248:21	<b>Act (1)</b> 63:23	<b>adjust (1)</b> 148:16
<b>\$1.8 (1)</b> 98:20	<b>access (1)</b> 85:20	<b>action (1)</b> 23:6	<b>adjusted (4)</b> 148:14;167:20,22,23
<b>\$27 (1)</b> 24:21	<b>accommodate (1)</b> 247:12	<b>actions (2)</b> 124:14,16	<b>administer (1)</b> 203:15
<b>\$8 (1)</b> 103:7	<b>according (3)</b> 24:10;66:22;204:20	<b>activities (4)</b> 16:25;17:3,5;21:6	<b>administered (1)</b> 153:18
<b>&amp;</b>	<b>account (1)</b> 136:25	<b>actual (21)</b> 91:17;134:25;135:2,5; 141:19,20,20;144:10;145:5; 146:2;160:15;168:6,7,12; 173:17;218:8;220:23; 227:17,20,22;254:11	<b>administering (1)</b> 203:22
<b>&amp;gt;+-2 (1)</b> 155:10	<b>accountant (3)</b> 45:17;47:25;102:21	<b>actually (33)</b> 10:23;55:9;57:3;85:5; 93:7;95:17;103:18;113:17; 151:14;157:22;158:5; 163:20;164:4,5;167:24; 168:12;170:25;173:14; 175:23;177:13;185:13; 188:13;195:5,18;204:11,16; 214:2;219:23;227:18,24; 240:15;241:8;250:12	<b>administration (9)</b> 135:3;147:19;184:3; 186:4;203:13;205:21;225:7; 226:10;237:14
<b>/</b>	<b>accounted (1)</b> 61:19	<b>add (1)</b> 32:22	<b>administrative (1)</b> 216:10
<b>/// (7)</b> 110:25;197:25;229:24,25; 246:23,24,25	<b>accounting (7)</b> 15:8;213:10,18,19,25; 214:23;215:21	<b>added (2)</b> 128:16;169:7	<b>administratively (1)</b> 186:17
<b>[</b>	<b>accruing (1)</b> 93:6	<b>adding (1)</b> 167:7	<b>admirable (1)</b> 255:11
<b>[As (1)</b> 66:8	<b>accumulate (1)</b> 18:3	<b>addition (3)</b> 122:3;162:12;214:3	<b>admission (6)</b> 22:3;48:19;68:20,24; 69:14;112:14
<b>[sic] (1)</b> 45:11	<b>accurate (5)</b> 53:22;72:17;73:7;85:15,25	<b>additional (13)</b> 21:13;48:7;85:10,11;91:9; 13:97:11;126:9;144:14; 149:16;156:17;175:5;187:8	<b>admit (2)</b> 48:15;163:12
<b>[Witness (4)</b> 39:10;43:22;105:20; 106:20	<b>accurately (2)</b> 71:8;136:25	<b>address (3)</b> 8:23;11:5;200:3	<b>admitted (1)</b> 94:13
<b>A</b>	<b>achievable (1)</b> 200:5	<b>addressed (2)</b> 12:2;47:6	<b>adopt (1)</b> 215:17
<b>A&amp;B (13)</b> 13:15;113:7;137:19; 138:10;141:24;143:8; 152:19;153:1,10;157:12; 230:4;235:16;236:18	<b>achieve (1)</b> 185:6	<b>adds (1)</b> 218:2	<b>adverse (1)</b> 19:22
<b>ability (6)</b> 92:19;123:20;146:15; 180:10;181:1;201:18	<b>acre (13)</b> 25:13;27:5;39:23;40:2; 41:6;66:9;79:21;92:13; 223:7,8;225:1;236:19; 237:17	<b>adequate (2)</b> 121:17;137:22	<b>advocate (1)</b> 201:9
<b>able (13)</b> 24:3;47:18;93:1;115:17; 121:23;122:2;131:4;137:21; 138:14;142:1;143:16; 217:14;243:9	<b>acreage (18)</b> 53:25;78:4;84:25;85:15, 25;87:21;105:4;173:11; 174:6,9;175:15;178:7; 181:18;216:12,17;218:7,8; 238:21	<b>adjourn (1)</b> 256:19	<b>advocating (4)</b> 201:16;239:9;247:18; 248:3
<b>above (16)</b> 70:11;126:11;128:20; 131:13;157:6;165:4;169:1; 171:2;230:19;231:1,3; 232:13;233:9;234:12,14,17	<b>acre-feet (73)</b> 35:9;40:25;41:5,7,13,15, 22,25;43:24;44:5;71:19; 72:11,14,22;73:10,19,23; 74:9,14,25;96:7;127:1,2; 128:2,4;129:12,15,16,17,19; 130:7,10;152:12,13,14; 184:16,24,25;185:1,5,6,8,9, 13,14,15,16,17,22;189:2,14; 190:8,11,15,16,22,25;191:4; 204:25;207:3;209:16,20; 210:23;211:12;223:7,8,14, 18,19;224:25;228:13; 230:25;237:16	<b>adjourned (1)</b> 256:21	<b>AFRD (1)</b> 158:17
<b>above-average (2)</b> 126:7;232:2	<b>acre-foot (1)</b> 103:25	<b>adjudicated (1)</b> 113:12	<b>AFRD2 (6)</b> 143:5;151:16;154:2; 172:12,14,16
<b>Absolutely (9)</b> 21:3;28:2;34:6;46:22; 75:13;90:5;105:6;207:16; 251:13	<b>acres (89)</b> 24:15;29:25;32:21;33:4; 34:25;36:18,25;37:15,24;		<b>afternoon (9)</b> 111:20,21;179:2,8;198:3, 4;230:3,5;256:6
<b>accelerated (1)</b> 80:18			<b>ag (1)</b> 79:25
<b>accept (5)</b> 10:24;22:19;23:1;41:8; 252:17			<b>again (36)</b> 12:6;19:12;27:13;33:17; 37:4;38:13;40:4;51:24; 56:24;57:25;58:13;59:5; 68:25;73:3;74:16;83:9;
<b>acceptable (1)</b>			

<p>86:18;94:24;101:10,10,12, 13,13;104:22;109:15; 139:20;153:7;159:23; 172:17,24;179:8;180:18; 191:8;198:5;227:23;232:9 <b>against (4)</b> 150:6,15;156:12;225:14 <b>agencies (1)</b> 192:13 <b>agency (3)</b> 212:7;213:22,23 <b>ages (1)</b> 107:22 <b>ago (3)</b> 76:19;105:21;174:11 <b>agree (37)</b> 25:13,20;29:7;36:7;48:2; 74:18;82:11;102:23,25; 105:4;106:18;132:3;133:14; 180:23;183:18;201:20; 202:15;204:7;220:20;226:2; 229:6;230:18;231:3,9,25; 233:1,14;234:3;235:10; 236:8,12,17;238:12;243:15, 25;246:9;254:19 <b>agreed (3)</b> 35:24;40:6;67:4 <b>agreeing (1)</b> 49:1 <b>agrees (1)</b> 132:24 <b>agriculture (1)</b> 207:8 <b>ahead (5)</b> 8:9;38:14;70:1;215:19; 243:1 <b>al (2)</b> 13:15;230:4 <b>alfalfa (8)</b> 32:20,20;33:5;87:1;88:7; 105:1;107:5,16 <b>alleviate (1)</b> 202:8 <b>alleviating (1)</b> 203:19 <b>allocated (1)</b> 11:23 <b>allocating (1)</b> 11:22 <b>allocation (1)</b> 168:13 <b>allotment (6)</b> 143:23,24;144:3;245:1,6,9 <b>allotted (1)</b> 66:9 <b>allow (11)</b> 9:21;12:7;22:23;45:1; 51:19;58:12;94:19;99:24; 162:14;179:23;186:13 <b>allowances (1)</b> 243:23 <b>allowed (5)</b> 47:16;63:24;207:24;</p>	<p>214:11;250:8 <b>allowing (1)</b> 231:16 <b>allows (1)</b> 206:2 <b>almost (5)</b> 34:11;67:14;123:11; 222:25;242:9 <b>alone (3)</b> 147:11;207:22;249:9 <b>along (8)</b> 17:9;57:1;59:22;100:4; 140:16;144:23;189:21; 194:19 <b>alternate (3)</b> 149:3,6;239:22 <b>alternative (5)</b> 149:14;169:17;186:6,7,8 <b>alternatives (2)</b> 161:5;171:16 <b>Although (1)</b> 244:8 <b>always (10)</b> 16:4;19:2;21:2;80:13; 91:11;134:25;160:8;196:22, 25;212:12 <b>Amalgamated (1)</b> 256:2 <b>amending (1)</b> 12:5 <b>amendment (1)</b> 11:2 <b>among (3)</b> 11:23;75:19;88:24 <b>amongst (3)</b> 68:1;102:15,16 <b>amount (48)</b> 16:23;39:14;40:1;43:8; 61:23;66:18;70:14,18,22; 71:5;88:9;92:17;93:3,10,12; 97:5,6,7;102:5,9;103:2,3; 127:3;128:10;129:16;130:5; 151:22;152:7;160:6;178:14; 190:1,4;202:3;203:10;204:3, 3,18;205:9;210:19;211:5; 212:24;220:10,10;222:9; 223:17;225:23;226:4;229:8 <b>amounts (3)</b> 184:6;202:7;206:25 <b>analyses (6)</b> 119:8;135:24,24;136:18; 174:14;199:7 <b>analysis (36)</b> 114:23;130:15;133:7; 135:18;137:16;148:17; 149:16;158:3;166:20,24; 167:5,6,9,9,22;168:3,16; 169:14;170:24;171:4; 172:16;174:17,19;175:9; 177:15,19,22;199:16; 202:12;206:3;227:3,18; 228:20;239:6;240:5;252:1 <b>analytical (1)</b></p>	<p>228:20 <b>analyze (2)</b> 129:21;135:12 <b>analyzed (3)</b> 130:17;145:7;225:17 <b>analyzing (3)</b> 123:17;136:1;224:16 <b>Anders (7)</b> 42:23;43:15,17,20;44:8; 131:20;134:22 <b>Anderson (7)</b> 9:1;99:9,12,14,16,19; 100:12 <b>Andrea (6)</b> 8:6,8,10;10:18;60:7;68:22 <b>anecdotally (1)</b> 122:25 <b>annual (40)</b> 15:20;72:15;102:20,24; 103:1,5;141:4;143:22;144:2, 20;145:12;150:5,7,14,14,15, 24,25;151:1,2,3,3,5;152:23; 155:25;156:1,6,6,11,12; 167:5,7,11,12;168:23; 172:11;194:16;214:18,25; 240:17 <b>annually (4)</b> 52:23;83:3;84:4;243:20 <b>answered (3)</b> 51:15;58:16;146:24 <b>anticipate (1)</b> 45:2 <b>anticipating (1)</b> 23:9 <b>anymore (3)</b> 67:21;251:25;253:2 <b>anyways (2)</b> 127:21;171:9 <b>apologize (3)</b> 98:8;120:25;154:24 <b>apology (1)</b> 252:17 <b>apparently (2)</b> 22:1;228:1 <b>appeal (2)</b> 9:24;125:2 <b>appear (2)</b> 210:22;211:6 <b>appears (2)</b> 161:8;242:14 <b>application (6)</b> 28:18;59:24;60:23; 103:10;138:7;237:20 <b>applied (3)</b> 37:14;135:14;177:5 <b>apply (8)</b> 28:7;92:13,16;149:11,15; 160:24;172:25;237:13 <b>applying (1)</b> 163:22 <b>appreciate (2)</b> 23:19;24:3 <b>approach (8)</b></p>	<p>15:10;135:15;148:7;149:3, 7,9;184:14;189:15 <b>approaches (1)</b> 133:2 <b>appropriate (4)</b> 16:22;110:12;128:24; 217:3 <b>appropriator (1)</b> 11:17 <b>appropriators (3)</b> 11:11,21;36:23 <b>approval (1)</b> 67:8 <b>approve (2)</b> 28:20,21 <b>approved (8)</b> 186:18,20,24;187:13; 211:25;212:5,7;231:11 <b>approximately (5)</b> 29:14,16;41:7;184:16,19 <b>April (12)</b> 15:20;31:14;153:4; 157:13;159:19;165:6,15,15, 16,16;184:10;232:24 <b>Aqua (1)</b> 193:9 <b>aquifer (4)</b> 108:24;113:23;184:4; 192:24 <b>arbitrary (3)</b> 124:11,14,16 <b>archives (1)</b> 22:10 <b>area (38)</b> 32:17;36:19;37:25;41:11, 20;49:22;53:9;54:8,10;62:6; 69:10;77:14;78:8;83:19; 84:22;86:24;87:11,22;109:7; 112:23;122:11;145:11,11, 16;146:10;173:9,16,22; 174:17;177:25;194:19; 195:2,6,22;207:9;218:11; 231:16;241:17 <b>areas (7)</b> 88:17;97:9;174:14;175:5, 5;214:10;238:13 <b>arguably (1)</b> 68:15 <b>argue (2)</b> 35:18;43:6 <b>argued (1)</b> 11:14 <b>argumentative (2)</b> 58:10,24 <b>Arguments (1)</b> 231:20 <b>army (1)</b> 148:2 <b>around (20)</b> 16:8;20:21;21:7;52:15; 59:18;63:1;71:18;72:16,18; 74:19;79:20;88:7;92:21; 93:2;108:21;129:3,4;190:7;</p>
--	--	--	---

207:12;223:14 <b>articulate (5)</b> 247:25;248:2;252:11; 256:11,14 <b>As-Applied (5)</b> 121:7,18;122:4;184:10; 202:12 <b>ascertain (1)</b> 78:11 <b>aspects (1)</b> 253:19 <b>assertion (1)</b> 76:8 <b>assessment (4)</b> 24:17,25;25:3;135:15 <b>assessments (1)</b> 24:23 <b>assist (2)</b> 88:2;202:6 <b>assisted (1)</b> 113:10 <b>associated (3)</b> 11:1;98:23;129:11 <b>assume (14)</b> 13:11;42:14;61:23;72:12; 75:6,7;87:2;89:20;90:8; 109:20;229:19;247:10; 255:12,14 <b>Assuming (7)</b> 51:20;56:16;75:4;124:25; 191:15;197:16;218:18 <b>attached (1)</b> 64:9 <b>Attachment (5)</b> 63:5,6,11,13;103:9 <b>attachments (1)</b> 81:5 <b>attempt (3)</b> 45:25;46:2;88:17 <b>attempted (2)</b> 60:12;180:7 <b>attempting (1)</b> 181:9 <b>attended (1)</b> 120:1 <b>attorney (1)</b> 235:8 <b>attorneys (2)</b> 21:25;23:20 <b>attracts (1)</b> 27:19 <b>attributable (1)</b> 192:24 <b>augmentation (2)</b> 212:5,10 <b>augmentations (1)</b> 212:4 <b>August (5)</b> 87:17;90:3;153:6;220:14; 222:16 <b>authorize (1)</b> 81:19 <b>authorized (1)</b>	89:20 <b>automated (2)</b> 20:18;90:19 <b>automation (3)</b> 75:18;90:18;123:1 <b>available (14)</b> 41:6;89:9,24;91:9,14; 93:11;213:12;218:21;219:3, 4;229:13;239:7;240:6; 244:17 <b>average (70)</b> 72:22;79:21;87:11;126:5, 9,10,11,12,19;127:1,8,18; 128:2,9,10,17,19,20,23; 129:18;130:7;131:13; 140:23,24;141:21;145:1,1,4; 150:24;161:14;162:15; 163:3,4,16,25;164:2,21,25; 166:9;169:5,10,23;170:11; 171:5,6,9;227:8,16;230:10, 17,18,19,22,23;231:1,3,9,21, 25;232:7,11,13;233:7,9; 234:7,10,12,14,17,18 <b>averaged (1)</b> 72:10 <b>averages (1)</b> 173:7 <b>averaging (3)</b> 129:23;219:7,13 <b>avoid (1)</b> 79:3 <b>aware (9)</b> 45:18;50:10;182:23; 192:5;231:22;233:17;239:1; 242:17;244:13 <b>away (2)</b> 115:15;196:17 <b>axis (1)</b> 189:21	<b>bad (1)</b> 77:8 <b>balance (2)</b> 68:15;215:1 <b>balancing (1)</b> 214:24 <b>baled (1)</b> 34:18 <b>ballpark (1)</b> 90:20 <b>banks (1)</b> 21:13 <b>bar (2)</b> 15:17,18 <b>barley (11)</b> 86:25;87:12,24;88:5,11; 104:25;105:22;106:11,13, 23;107:4 <b>barley's (1)</b> 106:24 <b>Barlogi (70)</b> 12:24,25;13:3,6,19,21; 14:15;19:7;21:19;22:2,17; 23:17,21,24;24:9;29:5;30:2, 4;32:3,13;35:19;36:4,20; 37:13,20;38:19;39:1,41:4; 42:2;43:13;45:7;47:9,21; 49:1,11,21;52:20;54:11,14, 18,23;55:3;56:14,25;59:3; 60:3,20;62:13;65:5,13;67:9; 69:8,21;70:6;76:6;78:24; 100:18;105:2,16;107:22; 108:2;109:16,17,24;110:2; 123:2;148:4;195:25;224:9; 241:24 <b>B-a-r-l-o-g-i (1)</b> 13:22 <b>Barlogi's (2)</b> 110:7;228:5 <b>barriers (1)</b> 100:1 <b>bars (1)</b> 241:21 <b>base (3)</b> 46:24;243:16,18 <b>based (45)</b> 9:19;11:23;14:18;35:24; 66:22;82:2,9;100:5;108:12; 110:12;126:21;128:21,25; 138:15;141:6;147:2,2;157:9; 161:7;167:15;168:5,16; 169:4,19;170:17;171:8; 173:17,24;174:7,10,18; 177:4;180:22;186:8,9; 188:24;215:21;225:20; 227:14;228:22;233:5;237:5; 240:14;251:7,8 <b>baseline (42)</b> 73:1,5,9,17,21;74:8,13; 75:4;84:19,19;122:8;125:22, 23;126:5,10,15,20,25; 127:12,22,25;128:13,19,22, 23,25;129:6,8,17,19;130:12;	131:7,12,13,15;228:19; 230:14;234:4,6,11,12,21 <b>basic (1)</b> 126:2 <b>basically (12)</b> 122:7;124:8;138:10; 142:21;143:15;150:3; 151:11;153:17;189:22; 196:23;230:15;244:25 <b>Basin (4)</b> 81:9;82:2;187:21;215:14 <b>basis (13)</b> 11:22;19:2;79:14,14; 136:1;140:7;151:1,5,5; 167:6;169:3;197:5;228:4 <b>Bates (2)</b> 38:21,23 <b>BAXTER (2)</b> 12:15,17 <b>bean (1)</b> 17:18 <b>beans (1)</b> 87:1 <b>Bear (3)</b> 21:6;92:23;244:1 <b>become (6)</b> 75:13;94:21;131:14; 206:22;213:16;250:16 <b>becomes (4)</b> 96:10;148:16;160:4;226:6 <b>beet (1)</b> 88:7 <b>beets (5)</b> 26:11;87:1;105:24;106:12, 19 <b>begin (3)</b> 59:13;70:9;88:19 <b>beginning (9)</b> 17:10,11,20;18:3;31:6; 68:4;71:14;113:6;168:10 <b>begs (1)</b> 185:24 <b>behalf (4)</b> 23:16;36:23;53:6;237:12 <b>behind (3)</b> 14:7;88:18;134:2 <b>belief (1)</b> 37:13 <b>below (13)</b> 42:24;84:18;126:12,18; 128:10;129:17;142:3; 144:17;146:21;165:4; 234:17,18;241:17 <b>benchmark (2)</b> 127:17,18 <b>beneficial (9)</b> 82:3;237:2;243:25; 244:20;245:15,19,20,23; 254:16 <b>benefit (5)</b> 11:18;32:2;47:15,17; 225:20 <b>benefits (1)</b>
<b>B</b>			
	<b>baby (1)</b> 173:1 <b>back (60)</b> 10:1,5,17;34:19;46:7; 48:14;59:20;69:23,25;70:12; 75:20;90:11;96:23,23;97:11, 13,14;101:8,12;102:6; 109:17;110:2,18,21;115:18, 19;116:14;118:4,10;135:11, 22;148:10;149:25;156:7; 164:24;176:3;179:5,7; 185:18,20,21,22;188:2; 190:10,14;192:15,21;204:5; 205:4;207:11;219:21; 227:11;229:10,11;230:7; 231:7;234:25;243:2;245:12, 12 <b>backstop (1)</b> 183:13 <b>backup (1)</b> 127:4		

<p>48:4 <b>berms (1)</b> 18:20 <b>beside (1)</b> 45:17 <b>best (6)</b> 49:10;66:24,24;70:22; 87:10;150:19 <b>better (19)</b> 15:12;29:2,4;92:20;111:9; 123:5,20;133:6,7,7;146:6; 161:13;177:21;182:19; 187:25;196:22;197:14; 206:2;218:17 <b>beyond (7)</b> 47:8;91:21;97:15;132:14; 163:12;244:1,21 <b>bias (2)</b> 181:8,9 <b>BID (1)</b> 154:7 <b>bifurcates (1)</b> 16:9 <b>big (10)</b> 32:18;34:5;46:13;62:8,11; 92:24;107:13;171:24; 244:12;245:22 <b>big-box (1)</b> 52:6 <b>binder (5)</b> 14:8;36:12;40:22;100:21; 116:1 <b>bisect (1)</b> 195:1 <b>bit (21)</b> 19:8;26:9;90:13;115:14; 126:12;127:24;128:3; 132:20;134:5,19;142:3; 143:13;147:13;169:9;173:8; 178:3;181:25;182:6;190:7; 219:19;230:7 <b>black (18)</b> 110:17;140:17,22;141:18; 142:3;145:2,2,24,25;150:23, 23;151:6,22;153:15,17; 154:4,9;155:6 <b>Blackfoot (4)</b> 185:1,6;190:2,21 <b>blue (13)</b> 31:1,3;141:3,19;146:9,11; 147:5,12,15;155:9;165:13; 194:24;254:9 <b>board (5)</b> 28:17;61:8,20,22;64:15 <b>book (2)</b> 73:11;83:6 <b>both (13)</b> 11:20;16:11;19:24;23:19; 76:1,3,16;113:20,21;135:18; 143:17;144:18;192:4 <b>bother (1)</b> 148:23 <b>bottom (15)</b></p>	<p>20:15;38:24;39:8;84:15; 119:16;124:10;140:16,25; 144:23;153:6;189:21; 194:20,21;209:11;251:16 <b>bottoms (2)</b> 17:17;18:18 <b>bought (2)</b> 67:22,23 <b>boundaries (2)</b> 181:18;246:9 <b>boundary (3)</b> 44:13;50:23;52:7 <b>bow (1)</b> 159:8 <b>breach (2)</b> 208:14,16 <b>breached (1)</b> 206:17 <b>breaching (1)</b> 208:18 <b>Break (13)</b> 10:16;65:19;69:22,24; 88:3;110:20,22;118:2;172:8; 179:2,4,5,6 <b>breaks (1)</b> 21:14 <b>Bricker (20)</b> 70:1,2,5;72:6,8,9;73:12,14, 24;74:3,6;75:24;76:1,3,5; 78:15,18;104:15;117:22; 120:17 <b>briefly (4)</b> 81:2,4,7;132:8 <b>bring (3)</b> 17:25;94:7;254:6 <b>brings (2)</b> 49:19;136:21 <b>Brockway (2)</b> 124:22;176:11 <b>Brockway's (2)</b> 125:6,8 <b>broke (1)</b> 118:13 <b>BROMLEY (67)</b> 22:4;23:14,15,16;24:8; 37:8,10;38:14,15,19,22;39:1; 40:16,18,19;45:4,5,7;47:2, 13,14;48:3,13,24;49:8,14,19, 21;51:16,22;54:25;55:2,3,17, 22;56:1,9,13,14,19,22,25; 58:18;59:1,3;60:4,6,9,11,14, 19;65:3,6,9,12;68:17;69:1,2, 6,18,20,21;82:25;97:24; 103:9;116:10;117:15 <b>brought (2)</b> 32:24;126:2 <b>Budge (41)</b> 22:5,6;23:4,5,11;53:6,17; 78:19,20,23;91:23,24;92:2,3; 99:4,6;103:14;105:12,15; 107:17;108:2;109:11;110:6, 8,11,14;246:2,12,15,20,21; 247:2,20,22;248:1,3;252:9,</p>	<p>10,13;255:20;256:7 <b>budget (2)</b> 103:5;199:6 <b>budgeted (1)</b> 98:20 <b>build (1)</b> 158:2 <b>built (6)</b> 20:21;44:19;52:7;97:16, 19;250:19 <b>built-in (1)</b> 143:24 <b>bullet (1)</b> 124:15 <b>bullets (1)</b> 119:16 <b>bunch (3)</b> 135:21;181:15;195:2 <b>Burley (2)</b> 175:9;217:9 <b>business (2)</b> 163:12;181:5 <b>Butte (1)</b> 16:9 <b>butts (1)</b> 146:11 <b>bypass (1)</b> 63:1</p> <p style="text-align: center;"><b>C</b></p> <p><b>calculate (9)</b> 84:25;85:6;131:23,24; 136:16,19;214:12;220:23; 226:21 <b>calculated (3)</b> 158:1;170:17;254:7 <b>calculates (1)</b> 253:23 <b>calculating (2)</b> 128:12;250:10 <b>calculation (7)</b> 128:7;131:23;132:4; 134:21;137:4;151:10;226:21 <b>calculations (3)</b> 132:9;136:15;217:4 <b>calibrated (1)</b> 215:10 <b>calibration (1)</b> 193:1 <b>call (46)</b> 11:1,10;16:18;27:18;28:5; 37:12,19;38:1;39:4;54:15; 57:15,23;58:6,14,15,17;79:1; 113:6,8,8;114:6,8;118:15,18, 22,23;119:1;126:19,22; 131:10;137:18;138:16; 145:21;147:20;148:9; 150:16;164:12;181:12; 198:10;201:23;219:2;237:3, 3;241:4;255:12,25 <b>called (12)</b> 12:24;13:7;39:8;59:10;</p>	<p>62:8,11;64:6;111:2;134:25; 144:24;212:3,23 <b>calling (2)</b> 34:9;225:2 <b>calls (4)</b> 16:20;39:25;113:2;137:14 <b>came (5)</b> 34:15;46:6;61:7;141:22; 201:10 <b>Can (143)</b> 10:7,13,21;13:19;14:12; 15:15,25;16:25;17:9,24; 18:14,19;19:7;20:5;21:15; 22:16;28:9;30:20;33:18,21; 35:14;37:16;44:23;46:4,8; 47:7;49:10,13;53:21;65:2; 71:5,11,14;73:12;74:16; 78:11;81:4;88:23;90:3;96:9; 100:9,20,23;101:2;102:18; 104:10,19;106:25;107:12, 14;109:17,21,24;111:6,10; 112:17;113:13;114:10; 116:10;117:2,4,12,13,16; 122:1;136:25;141:11;144:3; 146:10;151:4,6,15;152:2,20; 153:11,23;154:19,21; 155:21;156:20,23;157:8,13; 159:16;160:5;161:2;164:19, 24;165:20,23;166:5,14; 171:17,23;172:8,18;175:19; 177:20;178:4,10;179:1,19; 181:6;183:4;186:10,19; 187:22;188:4;190:9,13,19; 191:3,17;193:13;194:4; 196:8,9,11,11,15;197:5; 212:7,20;213:25;218:5; 219:4;222:20;223:13,16; 232:9;235:13,13;239:17; 243:14,19;244:7,19;245:5,5, 16;246:21;251:11;256:4 <b>Canal (127)</b> 13:24;14:17,25;16:5,8,10; 18:22;20:3,7,13,13,14,15,16, 20,24;21:7,14;22:11;24:10, 14;26:22;29:13;33:15;35:14; 36:19;37:24;39:18;40:10,10; 41:12;42:4;44:4,13;46:10; 47:22;52:5;53:3,19;55:10; 56:7;57:4,14,17,22;58:5,6,8; 59:13;63:23;66:10,17;67:1; 68:6;70:10;71:7;74:8,13,24; 75:9,12;76:9,11,16,20;77:2, 7,13,25;79:13;80:20;81:14; 83:1;84:5;85:1,3,20,24;86:3; 90:8,14,25;91:1,9;92:11; 94:18,18;95:17;98:1;101:5, 16,18;102:12,13;105:3; 109:8;110:4;123:1;142:18; 143:3;146:6;152:17;166:25; 191:25;192:6,10;193:19; 195:2;196:1;200:18;225:11, 25;226:2,7;228:9;235:3,20; 236:10;237:17;238:22;</p>
---	---	--	---

241:17;243:15;244:5,15; 248:10;252:3,7 <b>canals (16)</b> 16:13,15;17:9,16,17,22,23; 18:1,5,18;75:17;220:3,19; 221:15;235:24;244:9 <b>Canal's (3)</b> 89:16;107:7;251:3 <b>Candice (2)</b> 8:18,20 <b>Canyon (2)</b> 97:15,16 <b>capacities (1)</b> 94:18 <b>capacity (8)</b> 21:7,8;28:12;66:10;94:19; 97:17,19;220:19 <b>capped (1)</b> 207:2 <b>capricious (1)</b> 124:14 <b>capture (1)</b> 10:20 <b>captured (1)</b> 102:5 <b>career (2)</b> 112:19,25 <b>carefully (3)</b> 54:4;143:19;226:8 <b>Carey (1)</b> 63:23 <b>Carlquist (1)</b> 255:25 <b>carry (2)</b> 220:9;222:15 <b>carrying (1)</b> 66:9 <b>carryover (1)</b> 200:11 <b>case (11)</b> 37:3;67:21;119:10,11; 152:22;163:21;191:17; 199:18;231:20;233:25; 236:17 <b>cases (10)</b> 97:16;141:15,19;142:2; 151:6,7,8;154:10;171:17,24 <b>cash (1)</b> 106:18 <b>categories (1)</b> 195:11 <b>caught (2)</b> 88:17,19 <b>cause (3)</b> 13:9;21:13;111:4 <b>caused (7)</b> 190:21;191:7;209:21,23; 212:21;229:3;249:18 <b>causing (2)</b> 79:24;203:5 <b>CDL (1)</b> 219:2 <b>census (1)</b>	49:9 <b>centered (1)</b> 21:7 <b>certain (19)</b> 46:5;78:11;86:15,17; 108:8,12;109:19;124:8; 177:6;212:19;213:22;226:3, 14;233:15,17,25;238:13; 239:7;243:10 <b>Certainly (29)</b> 16:3;17:4;18:5;20:8; 29:19;33:12;37:16;47:8; 50:25;52:3;71:4,10;74:3; 77:9;78:13;80:14;82:15; 83:24;86:13;90:12;92:18; 102:7;108:4,7,11,14;125:2; 226:6;242:2 <b>certificate (2)</b> 27:23;83:19 <b>certificates (2)</b> 27:17,21 <b>certified (1)</b> 215:11 <b>cetera (1)</b> 253:24 <b>cfs (8)</b> 66:12;89:23,25;90:10; 103:16,18,24;104:4 <b>challenge (2)</b> 96:10;177:10 <b>challenges (1)</b> 79:24 <b>chance (4)</b> 22:1;81:6;115:12;245:13 <b>change (17)</b> 27:20;78:4;117:3;122:14; 127:5;133:6,6;137:10,12; 178:3,4;182:7,12,13;196:4; 202:11;239:6 <b>changed (18)</b> 19:13;27:23;34:22;35:7; 53:25;54:3;55:24;70:15; 97:5;117:10,10;119:12; 126:10;127:11,23;132:11; 196:2;227:25 <b>changes (15)</b> 28:3,5;54:6;79:25;123:12, 13,14;127:15;171:19,20,23, 24;172:8,18;208:12 <b>changing (5)</b> 151:21;158:20;159:22,22; 160:11 <b>channel (2)</b> 18:20;63:1 <b>channels (1)</b> 17:13 <b>characterization (2)</b> 196:7;207:17 <b>characterize (3)</b> 20:25;135:14;182:9 <b>charging (2)</b> 244:5,11 <b>chart (4)</b>	43:9;204:8,20;228:12 <b>charts (1)</b> 152:22 <b>Check (2)</b> 8:6,10 <b>checking (1)</b> 148:3 <b>checks (1)</b> 149:16 <b>chemicals (1)</b> 18:6 <b>chemigation (4)</b> 245:14,18;254:16,19 <b>chief (1)</b> 191:17 <b>chokes (1)</b> 18:8 <b>chop (1)</b> 34:9 <b>choppers (1)</b> 34:1 <b>chose (2)</b> 132:22;227:2 <b>Chris (3)</b> 23:16;38:21;55:16 <b>Chuck (1)</b> 176:11 <b>CIR (5)</b> 159:25;167:14;173:16; 175:20,24 <b>Cites (1)</b> 23:16 <b>cities (6)</b> 36:5;112:4;114:3,4; 201:25;206:12 <b>citing (1)</b> 101:15 <b>City (6)</b> 39:22;111:2,22;114:2,2; 206:11 <b>claim (1)</b> 72:15 <b>claims (2)</b> 113:11,11 <b>clarify (3)</b> 79:5,10;117:9 <b>clarifying (1)</b> 193:20 <b>clean (2)</b> 46:8;69:7 <b>cleaned (1)</b> 18:21 <b>cleaning (3)</b> 17:16,17,22 <b>Clear (12)</b> 11:7,7;47:19;82:25; 111:11;124:12;168:15; 180:3;217:9,12;248:20; 254:4 <b>clearly (1)</b> 72:18 <b>client (2)</b> 206:11;210:10	<b>clients (3)</b> 113:10;207:6,7 <b>climate (1)</b> 173:17 <b>climatic (1)</b> 233:1 <b>close (8)</b> 54:9;86:20;130:11; 141:22;146:24;175:2;182:1; 224:8 <b>closer (2)</b> 65:4;158:8 <b>Coalition (61)</b> 9:9;13:7;14:8;23:16,20; 55:21;57:23;84:3;113:6; 114:3,15;118:24;119:1; 122:10,13,22;123:18;128:8; 130:3,17;134:11;135:12; 136:3;137:16;140:12;141:5; 143:22;145:6,13,21,25; 147:19;148:11;150:6,17; 156:9,18;166:23;167:14; 171:21;174:18;176:10; 177:4;181:12,13,16;182:4; 199:4;206:5;224:22;226:24; 232:1,3,8;233:15,18;236:11; 238:5;245:10;252:4;254:12 <b>Coalitions (1)</b> 147:2 <b>code (1)</b> 193:10 <b>coin (1)</b> 251:18 <b>colleagues (1)</b> 120:21 <b>collectively (2)</b> 81:18;88:11 <b>collects (2)</b> 192:15;195:23 <b>colon (3)</b> 65:23,24;66:2 <b>color (2)</b> 30:23;150:21 <b>Colorado (29)</b> 112:12;135:25;184:1; 186:12,16;208:1;210:11,14; 211:17,21;212:2,3,15;214:5, 14;215:12,13,15;216:1; 247:7,10,12;248:5;252:21, 21,21,25;253:1,2 <b>color-coded (1)</b> 194:23 <b>colored (1)</b> 150:20 <b>colorful (1)</b> 48:17 <b>Column (15)</b> 167:2,11,19,20;168:8,25; 169:1,16,18,25;170:5,19,21; 216:18;218:2 <b>columns (5)</b> 167:2;168:19,22;170:15, 18
---	--	--	--

<p><b>combination (1)</b> 138:11</p> <p><b>combined (2)</b> 168:23;232:1</p> <p><b>comfortable (3)</b> 22:2,6;177:11</p> <p><b>coming (7)</b> 62:10;102:10;157:24; 192:18,20;217:1;241:16</p> <p><b>commencement (1)</b> 82:4</p> <p><b>comment (2)</b> 49:13;101:17</p> <p><b>comments (8)</b> 120:5,13,15,20;121:3,11; 124:6;180:16</p> <p><b>commercial (4)</b> 52:10,14;80:1,8</p> <p><b>Commissioners (1)</b> 64:16</p> <p><b>Committee (2)</b> 113:16,18</p> <p><b>commodity (2)</b> 108:3,5</p> <p><b>common (3)</b> 77:2;88:16;215:2</p> <p><b>Commonly (1)</b> 88:14</p> <p><b>companies (4)</b> 152:2;174:6;238:22; 243:15</p> <p><b>Company (128)</b> 13:24;14:17,19,25;16:1; 17:1;22:11;24:14,18,22; 25:10,17;26:22;27:15;28:3; 29:13;31:12,21;32:4,8; 33:15;35:14;36:19;37:24; 39:18,24;40:10,11,24;41:12; 42:5,8;44:4;45:23;46:10,11; 47:22;50:3,6,12;51:13;52:5, 23;53:8,19,21;54:12,19; 56:7;57:14;58:5,7,8,59:13, 24;63:23;64:16;67:10,18; 68:6;70:10,17,19;71:7; 74:24;75:9,16;76:20;77:3,7, 25;78:7,8,11;79:8,13,17,24; 80:5,12,20;83:1,7,11;84:6; 85:1,4,24;86:7,10;88:22; 89:7;90:14,19;91:14;93:6, 15;95:13,17,20;96:5;98:1, 25;101:5,15,16,18;102:12, 13;103:15,18;110:4;112:21, 22;152:17;155:25;166:25; 191:25;192:6,10;193:19; 196:2;221:9;225:11;228:9; 244:15;248:10;252:4</p> <p><b>Company's (45)</b> 24:10;29:16;41:4;42:23; 44:13;50:22;53:3,9;54:15; 55:10;57:4,17,22;70:14; 71:18;72:10,15;73:1,2,5,6,8, 17,21;74:8,13;75:13;76:9,11, 16;77:13;81:15;85:20;86:23;</p>	<p>87:11,22;89:21;92:6;95:7; 102:24;103:1,10;109:7; 200:18;235:3</p> <p><b>comparable (2)</b> 145:5;156:4</p> <p><b>compare (6)</b> 48:3;128:18;141:18; 145:23;170:22;174:24</p> <p><b>compared (7)</b> 128:23;165:22;182:14; 224:4;230:13;234:11;244:14</p> <p><b>compares (1)</b> 28:18</p> <p><b>comparing (3)</b> 141:18;172:6;178:17</p> <p><b>comparison (11)</b> 127:18;128:4,12;129:5; 140:22;141:2;150:22; 171:14;224:4;230:9;254:11</p> <p><b>comparisons (1)</b> 12:13</p> <p><b>compelling (1)</b> 187:9</p> <p><b>compile (1)</b> 240:17</p> <p><b>compiled (2)</b> 114:12;238:23</p> <p><b>complaints (1)</b> 104:21</p> <p><b>completed (1)</b> 115:13</p> <p><b>completely (3)</b> 52:12;116:20;181:7</p> <p><b>complexes (1)</b> 82:16</p> <p><b>compliance (1)</b> 215:23</p> <p><b>complies (1)</b> 28:19</p> <p><b>compliment (1)</b> 252:11</p> <p><b>comply (1)</b> 183:23</p> <p><b>complying (1)</b> 183:24</p> <p><b>component (3)</b> 22:12;142:22;242:3</p> <p><b>components (3)</b> 142:21;215:15,18</p> <p><b>compromised (1)</b> 21:8</p> <p><b>computation (1)</b> 234:10</p> <p><b>compute (12)</b> 127:12;151:2;161:19; 162:9,14;163:2,13;164:2; 171:19;173:14,18;175:19</p> <p><b>computed (14)</b> 127:7;156:12;160:13,19; 168:24;169:3,4,18,21;171:6, 12;172:19;176:2;227:23</p> <p><b>computer (1)</b> 117:6</p>	<p><b>computing (3)</b> 159:24;172:5;234:6</p> <p><b>concern (3)</b> 134:4;207:6,7</p> <p><b>concerning (1)</b> 199:20</p> <p><b>concerns (3)</b> 131:6;139:8,23</p> <p><b>conclude (2)</b> 141:8;150:11</p> <p><b>conclusion (1)</b> 116:17</p> <p><b>conclusions (3)</b> 145:22;252:24;253:25</p> <p><b>conclusive (1)</b> 192:7</p> <p><b>concrete (7)</b> 18:24,25;19:3,5,5,10; 93:20</p> <p><b>condition (1)</b> 66:21</p> <p><b>conditions (5)</b> 84:21;119:12;173:18,18; 233:2</p> <p><b>conducted (2)</b> 114:11,14</p> <p><b>confusing (1)</b> 117:20</p> <p><b>confusion (1)</b> 253:23</p> <p><b>conjunctive (11)</b> 184:3;186:4;203:13; 205:20;212:9;225:7;226:9; 237:8;247:15;249:22;251:19</p> <p><b>conjunctively (1)</b> 203:14</p> <p><b>connecting (1)</b> 140:18</p> <p><b>connections (1)</b> 115:16</p> <p><b>conserve (1)</b> 144:5</p> <p><b>consider (8)</b> 123:7;149:10;160:24; 161:3;179:16;180:17; 235:19;244:20</p> <p><b>consideration (1)</b> 217:17</p> <p><b>considerations (1)</b> 179:14</p> <p><b>considered (13)</b> 9:25;12:5;37:7;38:4,9; 108:1;157:4;179:20;239:11, 12,13,22,24</p> <p><b>considering (3)</b> 97:5;122:12;181:9</p> <p><b>consistent (7)</b> 40:25;71:22;76:10; 123:22;133:3;134:1;178:15</p> <p><b>constantly (2)</b> 32:19;96:20</p> <p><b>constitutional (1)</b> 11:15</p>	<p><b>constraints (2)</b> 229:14,15</p> <p><b>constructed (2)</b> 44:17;90:22</p> <p><b>construction (1)</b> 63:24</p> <p><b>consultant (1)</b> 112:4</p> <p><b>consumed (1)</b> 136:10</p> <p><b>consumptive (8)</b> 159:3;184:24,25;185:9; 197:4,5;233:10;244:2</p> <p><b>contained (3)</b> 15:23;37:2;138:20</p> <p><b>contents (1)</b> 121:25</p> <p><b>context (8)</b> 106:8;112:16;123:5; 148:8;177:10;237:7,8; 249:23</p> <p><b>continually (1)</b> 94:19</p> <p><b>continue (6)</b> 20:10;87:25;92:17;97:3; 148:20,22</p> <p><b>continued (6)</b> 122:25;130:25;146:5; 147:9;148:25;187:10</p> <p><b>continues (2)</b> 19:14;124:10</p> <p><b>continuing (1)</b> 32:23</p> <p><b>continuous (2)</b> 25:11;214:16</p> <p><b>continuously (3)</b> 80:12;89:3;214:17</p> <p><b>Contor (1)</b> 256:5</p> <p><b>Contract (7)</b> 64:6,13;68:18;103:11,17, 21;104:6</p> <p><b>contracted (1)</b> 41:22</p> <p><b>contractual (1)</b> 108:13</p> <p><b>contribute (3)</b> 191:20;233:2,11</p> <p><b>control (1)</b> 125:2</p> <p><b>conversation (6)</b> 39:21;94:10;106:4,4,16; 116:15</p> <p><b>conversion (4)</b> 29:20;93:5;108:20;196:4</p> <p><b>conversions (5)</b> 122:25;130:25;146:5; 147:10;196:1</p> <p><b>convert (1)</b> 32:23</p> <p><b>converting (2)</b> 95:16;228:7</p> <p><b>converts (2)</b></p>
---	---	---	---

<p>95:1,10 <b>convey (2)</b> 222:3,7 <b>conveyance (18)</b> 114:20;137:25;138:2,4,11; 142:22,22,25;143:2,7,7,12; 225:21,22,22;226:12; 237:19;244:7 <b>conveys (1)</b> 223:19 <b>convincing (2)</b> 124:12;180:3 <b>copies (1)</b> 53:7 <b>copy (9)</b> 15:12;55:4;65:1;116:7,8; 117:3,12,12;118:13 <b>corn (13)</b> 26:10;32:20,20;33:7;87:1; 88:8;105:1,23;106:11,18; 107:2,5,15 <b>cornfields (1)</b> 92:25 <b>correcting (1)</b> 43:12 <b>correctly (1)</b> 92:6 <b>correlation (1)</b> 153:12 <b>correlations (1)</b> 156:21 <b>costs (1)</b> 46:7 <b>Cottonwood (2)</b> 62:8,11 <b>coulee (1)</b> 195:12 <b>coulees (3)</b> 42:11;194:25;195:21 <b>counsel (6)</b> 45:1;46:8;59:5;69:9; 202:10;255:11 <b>count (1)</b> 53:22 <b>counted (1)</b> 241:6 <b>counties (1)</b> 238:13 <b>country (2)</b> 115:8;209:5 <b>County (4)</b> 35:25;49:1,2,12 <b>couple (16)</b> 11:6;51:7;80:15;100:18; 112:17;120:3,3;124:6;152:3; 154:21;161:4,5;191:17; 230:6;242:24;253:17 <b>course (8)</b> 18:19;28:2,14;51:21; 80:10;101:22;125:7;222:17 <b>court (22)</b> 8:4,6,10;10:7,10,13,19; 11:9,9;19:7;37:11;56:11;</p>	<p>180:2;194:3;212:6;226:24; 231:23;239:16;245:16; 247:20,23;251:1 <b>courts (2)</b> 9:24;12:2 <b>cover (3)</b> 191:13;213:3;238:13 <b>covered (4)</b> 92:5;97:23;213:9;230:6 <b>covering (1)</b> 224:10 <b>cows (1)</b> 32:20 <b>cracked (1)</b> 100:6 <b>Crane (1)</b> 242:8 <b>create (1)</b> 19:22 <b>created (7)</b> 47:25;86:13;150:12; 174:11;191:5;209:20;250:15 <b>creates (1)</b> 208:1 <b>creating (1)</b> 213:15 <b>Creek (13)</b> 16:12;42:14;61:2;62:2,8, 11,20,23;63:2;64:10;97:16; 195:17;242:8 <b>creeks (1)</b> 195:20 <b>CREP (7)</b> 49:24;50:19;51:17,23,25; 239:14,19 <b>C-R-E-P (1)</b> 239:19 <b>crews (2)</b> 17:7;19:16 <b>criteria (4)</b> 230:19;231:2;234:4,13 <b>critical (1)</b> 110:14 <b>crop (92)</b> 33:24;34:2;51:9,11;52:3; 88:7,8,8,14;97:6,10;107:18, 20;108:6,16,16;132:1;134:6, 12,15,22;135:6;136:24; 137:10;138:15;139:9; 143:20;150:7,15,24;151:3, 10,13,20;152:8,9,11;153:2,8, 8,13,15;154:12,16;155:4; 156:1,6,13,22;157:25; 158:20,24,25;159:2,3,3,7,25; 160:1,3,7,11,14;161:12; 163:19;164:2,3;165:23; 166:1;167:12,12,14;169:4, 19;173:14,19,24,25;175:19; 218:10,13,14,19;219:2,14; 220:11,24;227:17;243:20; 244:22;253:19;254:20 <b>cropping (3)</b> 32:12,14;88:4</p>	<p><b>crops (36)</b> 11:24;32:18;66:21;77:3, 10,13,21;84:22;86:23;87:2,8, 17,20;88:12,15;92:20,22; 95:18;97:5;104:15,21,22; 106:18,25;107:5;108:8,9,12; 167:16;218:11;220:15; 221:25;233:10;244:1; 250:12,21 <b>crops' (1)</b> 106:22 <b>cross-examination (13)</b> 21:20;24:7;58:11;70:4; 78:22;99:18;197:11;198:1; 205:12;229:20;230:1;246:2; 247:1 <b>cross-examine (1)</b> 197:15 <b>CRP (4)</b> 49:23;50:19;51:17,23 <b>CU (1)</b> 185:7 <b>cul-de-sacs (1)</b> 39:5 <b>culminated (1)</b> 114:23 <b>curbed (1)</b> 39:4 <b>curious (3)</b> 55:25;182:21;231:19 <b>curious-looking (1)</b> 137:6 <b>curiously (1)</b> 127:16 <b>current (21)</b> 24:17,19;49:20;84:20,21; 92:9;116:1;133:1;148:7; 149:15;169:9;171:4;187:20, 23,24;190:19,20,20,23; 218:16,20 <b>Currently (9)</b> 32:10,10;33:1;35:8;39:20; 99:25;102:9;173:7;254:12 <b>curtail (10)</b> 35:12;58:8;148:24;184:5; 190:10,14;204:4;205:4; 209:7;226:11 <b>curtailed (22)</b> 185:3,5,7,9;204:16; 207:24;208:14,16;209:1,13; 210:24;211:5,12;216:3,4,5; 225:20;226:17;237:11,12; 249:15,18 <b>curtailing (7)</b> 184:17,22,24;185:13,15; 209:10;225:2 <b>curtailment (58)</b> 10:25;11:10;35:7,8;48:5; 85:10,17;122:16;182:14; 183:11,12,24;184:2,10,13, 15,21,22;186:4,7,8,9;187:3, 11;188:1,25;189:15,23; 190:2,6;191:11;202:13,24;</p>	<p>203:1,10,12,16,20,21; 204:21;205:22;206:3,19,22; 207:19,21;210:4;211:7,14; 216:9;225:8;226:20;240:22; 249:3,11,21;250:3,6 <b>curtain (1)</b> 134:2 <b>curve (1)</b> 243:19 <b>curves (1)</b> 141:12 <b>customary (1)</b> 148:22 <b>cut (5)</b> 8:8;34:10,16;90:11;188:9 <b>cutting (2)</b> 34:4,4 <b>cuttings (5)</b> 33:15;34:5,5;35:1,14 <b>CWN (1)</b> 169:1 <b>cycle (1)</b> 196:21</p>
<b>D</b>			
			<p><b>daily (5)</b> 193:8;194:17;214:19,22; 215:2 <b>dairies (3)</b> 32:19;33:23;34:15 <b>dairy (6)</b> 32:16,17;33:18;34:2,6,22 <b>Dam (1)</b> 16:4 <b>Darryll (1)</b> 9:6 <b>dash (1)</b> 38:24 <b>data (55)</b> 15:6,9;49:10;71:22;85:25; 114:12,13;124:19,19;126:14, 14;127:8,9,13,19,19,23,23; 128:1,11,16,16;133:7; 140:15;151:14,15;152:15, 23;155:19;156:12,25;157:3; 163:21,23;168:20;174:21; 175:3;177:2;192:17;193:9, 14,18;194:17;214:12,22; 218:20,21;219:3,3,5,14; 227:19,24;233:21;239:13 <b>database (8)</b> 83:6,12;85:21;192:9; 193:9,14,18;194:17 <b>dataset (5)</b> 177:1,12,12,22,25 <b>datasets (1)</b> 178:18 <b>date (23)</b> 35:7,8;122:16;182:13; 184:10,17,22;187:11;188:1; 189:22,23;191:11;202:13, 23;203:2,10,16;210:4;</p>

213:13;240:20;249:3,6,7 <b>dated (2)</b> 64:16;138:21 <b>dates (1)</b> 183:11 <b>day (7)</b> 25:14;26:13;27:1,2,5; 30:11,11 <b>days (3)</b> 34:19;175:13;232:25 <b>deal (2)</b> 244:12;245:22 <b>dealing (2)</b> 124:18;228:25 <b>decade (1)</b> 80:18 <b>decades (1)</b> 75:14 <b>decent (1)</b> 77:11 <b>decided (1)</b> 201:18 <b>decides (1)</b> 148:4 <b>decision (3)</b> 11:7;251:3,7 <b>decision-making (1)</b> 125:13 <b>decisions (5)</b> 10:6;108:6;136:6;237:9; 251:20 <b>declines (2)</b> 88:11;227:8 <b>decree (1)</b> 103:21 <b>decreed (4)</b> 68:13;82:2;103:15,18 <b>decrees (1)</b> 82:8 <b>dedicated (4)</b> 19:23;64:22,23;65:18 <b>Deep (1)</b> 16:12 <b>deficit (1)</b> 94:23 <b>define (1)</b> 241:12 <b>Degree (1)</b> 232:25 <b>degrees (1)</b> 233:6 <b>deleted (1)</b> 22:25 <b>deliver (12)</b> 79:13;92:17;93:3,10; 101:10;137:21;138:14; 205:23,24;223:9,18;244:18 <b>delivered (4)</b> 66:16,17;93:25;212:22 <b>deliveries (10)</b> 19:13;30:10,12;47:11; 48:17;221:8,12;222:11; 233:17;234:2	<b>delivering (13)</b> 16:21;32:4,8,10;68:6; 110:2;138:2;143:4,17; 196:24;221:14;236:7;239:21 <b>delivers (6)</b> 16:1;24:14;83:3;89:7; 223:7;224:8 <b>delivery (49)</b> 10:12;11:1,9;19:24;21:1; 31:5,13;37:11,19;38:1; 54:15;57:15;58:6,14,15,17; 79:8,9;83:23;85:21;88:21; 89:10;93:16;113:2,6,7,8; 114:6,8,20;118:15,18,22,23; 119:1;137:14,18;138:16; 145:21;147:19;148:9; 181:12;197:1;220:4;233:19; 235:4,12,23;248:9 <b>delving (1)</b> 124:7 <b>demand (49)</b> 27:8,8,11;51:23;52:2,11, 13,16;73:6,9;74:14;75:5; 84:25;85:6;102:17;132:1; 133:20,23;137:12;138:15; 144:1;151:2,11,12;154:13; 164:4;165:23;166:2;168:24; 169:4;170:16;172:7;173:20; 175:21;176:4,17;180:8; 196:2,5;203:2;217:4;220:9, 18;221:5,23;222:5,6,10; 233:11 <b>demands (11)</b> 33:18;71:9;73:2,18,22; 74:8;136:24;137:23;169:19; 172:11;228:3 <b>demonstrating (1)</b> 252:5 <b>demonstrative (1)</b> 193:17 <b>denied (2)</b> 11:10;138:17 <b>denominator (1)</b> 160:10 <b>deny (3)</b> 12:6;74:10;107:21 <b>Department (60)</b> 23:6;37:7;53:8,21;59:21; 61:11;69:10;72:25;73:4; 74:12,21,23;76:20,23;80:22; 85:4,15,16,25;110:6;120:1; 126:22;127:16;132:18,22; 137:17,24;138:20,24;139:1; 140:7;147:17;148:2;149:3, 13;155:12;160:21;167:18, 21;168:8,16;169:14;171:1,2, 3,12;175:8;176:23,25;177:7, 23;180:24;192:4,8;200:5; 202:6;218:24;230:12,16; 241:15 <b>Department's (13)</b> 52:21;128:22;139:8,24,25; 148:7;168:20;169:5,23;	170:24;172:21;178:22; 220:17 <b>Depending (1)</b> 221:9 <b>depends (8)</b> 89:17;175:17,22;176:6; 213:12;215:4;237:18,18 <b>depict (1)</b> 140:12 <b>depicting (1)</b> 232:21 <b>depiction (1)</b> 142:10 <b>depictions (1)</b> 144:22 <b>depicts (3)</b> 14:24;140:14;151:1 <b>depletion (6)</b> 190:20;191:5;209:20; 212:21;213:4;229:11 <b>depletions (2)</b> 213:1,15 <b>deposition (50)</b> 23:17;24:1,3;25:10,16; 28:23;29:11,21;30:9;32:3; 33:13;34:8;35:23;36:4; 39:12;42:4,22;43:2;45:5,10, 22;49:22;50:2,11;51:1; 52:21;53:2,6;54:14,24;55:4, 14,17,18;56:2,21;59:8,19; 62:13;75:8;77:1;89:6,11; 90:14,17;93:4;98:8,19; 104:11;199:8 <b>depressions (1)</b> 195:1 <b>derivation (1)</b> 173:23 <b>describe (10)</b> 14:12;15:15;16:1;17:1; 20:5;101:2;112:17;114:10; 125:23;194:14 <b>described (4)</b> 90:25;126:3;149:18; 222:24 <b>describing (1)</b> 137:13 <b>description (1)</b> 63:14 <b>design (1)</b> 220:8 <b>designed (2)</b> 222:15;247:12 <b>designing (1)</b> 220:9 <b>despite (1)</b> 176:21 <b>detail (4)</b> 115:17;223:23;224:24; 233:22 <b>detailed (2)</b> 180:25;223:25 <b>details (3)</b> 200:2;219:11;227:2	<b>determination (6)</b> 122:16;138:17,19;139:10; 210:2;228:21 <b>determinations (1)</b> 180:8 <b>determine (19)</b> 9:24;66:21;131:25; 133:20;138:13;148:17; 149:4,11;183:11;184:21; 187:10;188:1;202:12,23; 203:9,16;205:21;206:4; 219:14 <b>determined (15)</b> 137:25;141:5;142:4;145:6, 12,20;146:16,16;174:25; 177:7;203:11;204:19; 205:25;213:8;229:6 <b>determining (9)</b> 133:18;173:20;191:10; 192:23;201:10;202:6; 203:16,17;218:10 <b>detriments (1)</b> 48:4 <b>develop (4)</b> 39:22;91:9;131:7;208:2 <b>developed (7)</b> 83:5,10;149:6,14;213:20; 215:20;252:2 <b>developing (2)</b> 37:7;140:8 <b>development (8)</b> 11:16;54:6,8,9;79:24;80:9; 82:19;113:22 <b>development' (1)</b> 11:14 <b>developments (2)</b> 52:10,14 <b>Deviations (1)</b> 155:10 <b>devices (2)</b> 19:11;93:23 <b>devised (1)</b> 67:5 <b>devolving (1)</b> 256:17 <b>dialog (1)</b> 249:14 <b>difference (9)</b> 74:19;76:10;95:25; 103:20;143:14;170:12; 182:23;195:12;235:22 <b>differences (2)</b> 142:16;143:11 <b>different (33)</b> 16:17;17:6,8;20:11,16,17; 29:24;31:25;50:13;79:7; 88:24;112:21;144:7,21; 148:5;151:13;153:23;160:8; 168:25;169:13;171:1,11; 173:13;178:13;185:18,19; 195:11;203:8;209:19; 221:10;232:4;237:2,24 <b>differentiate (3)</b>
--	--	--	---



192:17;201:18;242:11  
**differently (1)**  
176:24  
**diminishes (1)**  
95:2  
**DIRECT (15)**  
13:17;14:15;24:11;29:12;  
39:12;40:13;42:3;59:5;  
79:16;111:18;198:9,22;  
201:6;246:6,10  
**direction (5)**  
132:22;146:4;173:3;193:5,  
15  
**directly (1)**  
56:20  
**Director (51)**  
12:15;15:10;21:19;23:15,  
21;35:3;37:1,10;38:15;  
44:22;47:6;48:13;49:8,20;  
51:17;56:15,22;59:1;60:4;  
68:19;69:2,12;70:2;73:25;  
78:16,20;99:9;107:17;  
124:11,14,25;132:16;  
138:23;178:25;181:14,15;  
191:15;193:16;201:6;209:6,  
9;211:18;215:16;216:17;  
229:22;246:2,17;247:19;  
248:4;254:23;255:24  
**directors (1)**  
28:17  
**Director's (3)**  
124:16;236:16,17  
**disagree (9)**  
49:11;58:21;86:11;196:7;  
207:16;217:18;223:13;  
236:21;246:11  
**disagreeing (2)**  
206:7;210:15  
**discharge (2)**  
95:6,8  
**discharging (1)**  
95:11  
**discomfort (1)**  
13:12  
**discover (1)**  
115:19  
**discussed (15)**  
23:25;24:2;28:23;42:4;  
44:8;45:10,22;47:19;48:15;  
52:20;68:21;76:19;79:23;  
89:4;188:14  
**discussing (7)**  
11:4;29:6,22;41:14;101:2,  
4;156:16  
**discussion (15)**  
28:25;43:14,17;60:17;  
68:18;111:8;116:13;125:25;  
149:19,24;156:15;169:25;  
177:14;250:25;253:18  
**discussions (2)**  
133:4;191:23  
**disfavor (1)**  
243:5

**disincentive (1)**  
131:14  
**disproportionate (1)**  
187:4  
**distance (1)**  
235:22  
**distribution (2)**  
66:23;67:4  
**District (4)**  
13:15;15:8;180:2;230:4  
**districts (2)**  
99:24;240:17  
**ditch (6)**  
14:3;16:19;27:25;97:12;  
108:25;253:9  
**ditches (5)**  
93:6;95:6,7;220:4;221:15  
**diversion (47)**  
27:2,24;41:17;89:2,20;  
90:4,10;93:17;97:4,8;  
126:14;127:23;128:1,8,16;  
129:22;135:11;137:12;  
151:2,11,12,17;152:9;153:9;  
154:13;164:4,4;165:22;  
169:4,19;172:7;176:4;  
200:18;220:24;225:5;  
230:17,18,20;231:10;  
233:21;235:23;236:12,14,  
18;237:16;243:17;244:21  
**diversions (43)**  
14:25;15:20;20:19;48:7;  
70:11,20;71:18;72:10,15,22;  
73:1,5;126:6,7;128:5,9;  
129:10;130:3,6,9,18,20;  
131:2;133:18;134:14,23;  
150:5,14;153:3;167:20,21;  
168:13;174:1;175:25;214:8;  
215:8;229:4;230:10;232:1,  
16;233:2;243:25;251:3  
**divert (30)**  
16:4,5,16;89:19;90:5;  
92:11;96:6,17,20,25;97:4;  
102:13;109:7;131:11,15;  
134:7,12,12;135:7,8;153:13;  
155:3,3;160:6;184:7;223:8;  
225:1;228:2;250:20,23  
**diverted (6)**  
93:16;152:12;164:5,9;  
167:24;197:7  
**diverting (19)**  
41:4;95:2;96:21;131:4;  
133:24,25;151:21;154:18;  
159:4,20;160:9;165:21;  
213:13;224:1;227:18;228:8,  
13;231:3;245:14  
**diverts (2)**  
40:24;96:2  
**divide (1)**  
135:5  
**divided (16)**  
134:23;137:11;150:24;  
153:16;154:12,17;169:1,5,  
20;173:25,25;175:20,24;

220:24;223:11;227:17  
**division (2)**  
41:7;165:23  
**document (48)**  
9:10,20,23;12:7,8;14:12,  
14;22:3;36:21;37:23,25;  
38:8,12;45:18,19;47:22,22,  
24,24;48:6,10,17,21,22;49:8,  
15,16;60:20;61:10;63:4;  
64:5,10,12;67:20,25;68:11;  
69:15;72:13;81:5,8;125:16;  
133:5;138:24;193:15,23;  
194:10;231:12;252:19  
**documents (11)**  
21:24;38:17;45:17;53:14,  
16;68:24,25;69:14,15;  
101:16;235:14  
**dollar (1)**  
25:7  
**done (36)**  
20:12,15;39:18;40:3;  
72:12;75:6;88:16;90:15;  
101:19;121:21;122:19;  
123:9;135:16,17,21,25,25;  
136:3,15;147:7;167:6,8,9;  
168:3;182:14;186:5,12;  
203:23;213:19;218:4,5;  
223:24;229:1;232:5;240:5;  
256:5  
**dot (1)**  
190:8  
**dots (14)**  
140:18;145:2;150:16,21;  
151:18,18;152:7;153:7;  
154:3;162:4,22;163:4;  
165:13;189:24  
**dotted (4)**  
140:22;141:18;142:3;  
150:20  
**double (1)**  
88:4  
**double-check (1)**  
216:22  
**double-counted (1)**  
175:5  
**doubled (2)**  
29:16,19  
**down (23)**  
16:5;19:8;20:23;63:22;  
68:14;88:3;97:6,7;102:8,8,8;  
131:3;138:3;146:2;151:24;  
153:5;162:3;164:25;221:14;  
228:16;242:9;247:21;253:11  
**downloaded (2)**  
193:9;194:17  
**downward (2)**  
102:9;256:17  
**dozen (1)**  
119:25  
**Dr (2)**  
125:6,8  
**drain (3)**  
101:24;102:3;253:9

**drains (3)**  
46:22;98:13;108:25  
**drastic (1)**  
182:13  
**draw (2)**  
145:22;252:23  
**drawn (3)**  
150:19;151:19;156:25  
**draws (1)**  
192:14  
**drier (1)**  
160:2  
**drip (1)**  
29:20  
**drive (2)**  
34:7;108:5  
**driveways (1)**  
36:8  
**drop (3)**  
87:21;101:6,17  
**dry (9)**  
34:17;61:2;62:2,20,23;  
63:2;64:10;87:1;186:20  
**drylands (1)**  
82:18  
**due (7)**  
40:6;41:23;143:11,14;  
192:18;196:9;227:9  
**duly (2)**  
13:8;111:3  
**duplicating (1)**  
79:3  
**during (29)**  
17:4,6,7;18:12,13;19:18;  
36:3;52:20;66:18;67:6;80:5,  
12;88:14;114:25;123:12,13;  
126:6;127:10;130:9;146:13,  
21;147:3;150:6;181:11;  
188:10;199:5,17;220:11;  
242:2  
**dynamic (1)**  
133:5

**E**

**earlier (26)**  
79:7;80:14;86:2,18;88:22;  
89:4;92:15;98:12;105:18;  
127:11;130:25;135:5;141:6;  
142:20;145:8;168:9;171:7;  
172:24;180:22,23;207:12;  
226:18;230:24;235:7;  
241:24;250:19  
**early (6)**  
17:25;87:17;165:20;  
187:8;221:22,24  
**easier (5)**  
38:17;65:15;90:9;148:21;  
226:7  
**easily (3)**  
54:2;86:16;175:19  
**East (1)**  
14:4

<p><b>Eastern (4)</b> 113:15,22;202:16;224:21</p> <p><b>easy (5)</b> 30:21;54:2;181:23;191:1; 213:23</p> <p><b>economic (14)</b> 9:6;10:25;11:12,13,16,18, 19;12:12,13;47:5,15,17,18; 48:4</p> <p><b>economy (1)</b> 80:16</p> <p><b>edges (1)</b> 17:9</p> <p><b>editorial (2)</b> 115:20;116:20</p> <p><b>effect (5)</b> 172:18;175:14;190:20; 222:18;249:17</p> <p><b>effectively (2)</b> 206:9,12</p> <p><b>efficiencies (106)</b> 76:9,11;91:10,14;92:4,18; 93:8,9;94:17;96:8;99:22; 122:9;123:8,17,21,22; 131:19,24,25;132:4,25; 133:14,19,19;135:5,13; 136:21;137:1,8;138:7;140:8, 9,14,19,23;141:1,13,20,20; 142:12;143:10;144:7,11,20, 21;145:1,4,12;146:2,11; 147:1,17,18;148:13;149:4,9, 10,12,17;155:14;157:22; 161:1;162:17,21;165:12,18; 169:2,6,10;171:5,19,21; 172:4,8;173:6,23,24;175:25; 176:2,3,8,24;201:17;219:19; 220:23;222:18,21,22;223:1, 1,3;225:17,18,21,22;226:15; 227:9,16,17,20,23;228:10; 243:3,23;244:7;254:11</p> <p><b>efficiency (106)</b> 75:10;76:16;95:21; 101:14;105:3,5;131:1;134:3, 21,24;135:1,2,9,10;136:17, 20;137:3,5,11;138:9,9,12; 139:9,24;140:1,6,13;141:4, 12;142:17,20,22,23,24,25; 143:7,12;144:25;145:5,18, 19;146:9;147:11,14;148:6, 21;150:25;151:3,10;153:16; 154:12,17;155:10;156:1,6, 12,21;158:1,7,20,23,23; 159:2,5,21,24;160:13,16,17, 18,19;161:11,19;162:10,14; 163:14,20,25;164:2;165:8; 169:20,20,24;170:10,11; 172:22;175:21;176:16; 191:20,21;196:9;200:6; 221:1;226:12,13;243:4,8; 244:7;251:8,11,22,23;252:5; 253:19;254:6,8</p> <p><b>efficient (21)</b> 75:14;90:15;94:21;</p>	<p>131:14;136:10;158:15; 187:1;196:10,23,25;197:3,6; 201:11;206:1;220:20,21; 245:3;248:2;250:16;251:12, 14</p> <p><b>efficiently (8)</b> 90:23;92:20;93:1;143:17; 153:11;224:6,19;245:6</p> <p><b>eight (1)</b> 126:9</p> <p><b>eighth (1)</b> 59:16</p> <p><b>eightieth (4)</b> 66:4,7,8,12</p> <p><b>either (11)</b> 35:18;56:17;62:12;87:18; 97:13;108:24;129:16; 157:24;174:10;185:18; 186:17</p> <p><b>elapsed (1)</b> 122:24</p> <p><b>electronic (1)</b> 93:22</p> <p><b>else (5)</b> 8:22;87:4;159:9,9;175:18</p> <p><b>Email (2)</b> 117:17,22</p> <p><b>emails (1)</b> 117:14</p> <p><b>employees (1)</b> 148:3</p> <p><b>employing (1)</b> 173:4</p> <p><b>enables (1)</b> 90:22</p> <p><b>encompass (1)</b> 68:12</p> <p><b>encourages (1)</b> 250:20</p> <p><b>encouraging (1)</b> 247:24</p> <p><b>End (19)</b> 14:4;16:11;17:14;18:9; 20:22,24;31:7;79:20;98:13; 158:9;162:17;164:3;165:23; 176:1,4,17;177:21;194:21; 251:16</p> <p><b>endeavored (1)</b> 126:13</p> <p><b>ended (4)</b> 66:14;122:6;137:16;138:8</p> <p><b>ends (5)</b> 17:19;18:20;46:21;70:24; 214:1</p> <p><b>Energy (2)</b> 46:5;98:3</p> <p><b>engage (1)</b> 227:2</p> <p><b>engaged (1)</b> 112:4</p> <p><b>engineer (4)</b> 22:11;67:8;101:17;112:11</p> <p><b>Engineering (3)</b></p>	<p>36:22;91:13;112:20</p> <p><b>Engineers (2)</b> 112:8;120:21</p> <p><b>engineer's (1)</b> 101:21</p> <p><b>enhanced (1)</b> 207:10</p> <p><b>enjoins (1)</b> 216:7</p> <p><b>enough (13)</b> 71:6;84:20;86:12;88:20; 138:14,18;160:9;180:10,20; 183:15,15;213:6;245:5</p> <p><b>enrolled (12)</b> 50:4,7,9,14,16,18,22; 51:23,25;239:14,18;240:9</p> <p><b>ensure (1)</b> 85:16</p> <p><b>enter (1)</b> 210:8</p> <p><b>entertain (1)</b> 100:3</p> <p><b>entire (1)</b> 112:19</p> <p><b>entirely (1)</b> 243:11</p> <p><b>entirety (1)</b> 70:10</p> <p><b>entities (1)</b> 245:8</p> <p><b>entitled (4)</b> 11:19;41:16;205:7;250:23</p> <p><b>entity (1)</b> 237:24</p> <p><b>enumerator (1)</b> 159:6</p> <p><b>envisioned (1)</b> 68:11</p> <p><b>equal (1)</b> 133:23</p> <p><b>equates (1)</b> 54:7</p> <p><b>equation (9)</b> 157:1;161:19,20,21;162:7, 9;164:19;169:22;173:5</p> <p><b>equivalent (3)</b> 31:17;66:12;212:13</p> <p><b>eradicating (1)</b> 18:7</p> <p><b>errata (1)</b> 115:25</p> <p><b>errors (3)</b> 115:20,20;116:19</p> <p><b>ESP (1)</b> 35:4</p> <p><b>ESPA (4)</b> 114:4;187:5,7;239:3</p> <p><b>ESPAM (1)</b> 183:3</p> <p><b>especially (3)</b> 124:24;184:4;246:3</p> <p><b>essentially (5)</b> 131:11;137:17;187:13,16;</p>	<p>243:5</p> <p><b>establish (3)</b> 37:19;162:13;188:1</p> <p><b>established (3)</b> 132:10;235:3,11</p> <p><b>Estimate (4)</b> 36:18;37:23;87:10;92:9</p> <p><b>estimates (2)</b> 181:2,6</p> <p><b>estimation (2)</b> 33:11;121:17</p> <p><b>et (4)</b> 13:15;230:4;243:19; 253:24</p> <p><b>evaluate (3)</b> 136:13;164:12;187:23</p> <p><b>evaluated (1)</b> 148:14</p> <p><b>evaluating (2)</b> 137:18;155:13</p> <p><b>evaluation (1)</b> 182:2</p> <p><b>even (16)</b> 125:8;137:3;148:16;151:4, 5,20;152:10;155:18,19; 161:12;175:2;181:9;208:15; 221:17,22;252:5</p> <p><b>event (1)</b> 183:14</p> <p><b>events (1)</b> 242:5</p> <p><b>Eventually (1)</b> 34:18</p> <p><b>everybody (3)</b> 8:13;90:10;110:19</p> <p><b>everybody's (1)</b> 220:1</p> <p><b>everyone (5)</b> 8:22;177:19,20;182:23; 255:22</p> <p><b>everyone's (1)</b> 206:24</p> <p><b>everywhere (1)</b> 212:1</p> <p><b>evidence (17)</b> 10:24;12:12;23:2;48:9,11, 22;49:4,16,17;69:4,16; 81:24;124:12;125:17;180:4; 194:11;227:12</p> <p><b>evidentiary (1)</b> 252:3</p> <p><b>evolved (1)</b> 251:19</p> <p><b>exact (1)</b> 220:6</p> <p><b>exactly (9)</b> 36:24;107:24;113:25; 123:11;176:4;213:1;219:17; 231:14;250:5</p> <p><b>EXAMINATION (6)</b> 13:17;100:16;111:18; 198:9;253:15;255:11</p> <p><b>examiner (1)</b></p>
--	--	--	---

<p>70:1 <b>examining (1)</b> 197:23 <b>example (25)</b> 46:4;116:22;123:16; 141:24;143:6,8,21;144:2; 151:17;152:11,19;154:1; 158:16;160:6;161:23,25; 162:18,21;165:5,6;175:11; 204:5;221:13;223:16;239:10 <b>examples (2)</b> 166:21;177:15 <b>excavators (3)</b> 17:15,21;18:2 <b>exceeds (1)</b> 86:9 <b>excellent (1)</b> 178:9 <b>except (1)</b> 170:5 <b>exceptions (2)</b> 141:12;146:19 <b>excerpt (1)</b> 10:6 <b>excerpted (2)</b> 11:6;22:25 <b>excess (8)</b> 19:4;43:24;44:4;85:17; 108:23,24;109:3;159:5 <b>Exclude (2)</b> 155:9,16 <b>excludes (1)</b> 165:11 <b>excluding (1)</b> 155:14 <b>exclusively (1)</b> 67:14 <b>excuse (5)</b> 74:21;167:8;199:10; 216:22;223:7 <b>excused (2)</b> 109:24;110:1 <b>exhausted (2)</b> 33:23;101:18 <b>Exhibit (106)</b> 9:3,18,21;10:2;12:8;14:11, 21;15:13,14,16;23:2,2,7; 30:3,6,8,9,14;31:24;32:2; 35:20,21;36:11,15,17,21; 37:5,18;38:24;40:20,23; 44:21,23;45:5,8,11;46:9; 47:2,12;48:10,12,16,23,25; 49:7,16,18;53:13;60:6,18; 65:11,13;69:16,17;71:11,12, 15;73:12,25;74:22;75:20,22, 24,24;77:17;81:2,23;84:8; 94:13;100:20;102:18; 104:10;115:5,24;116:1; 117:10;118:3,12,16;120:8, 12;121:5,6,9,16,25;124:2; 125:14,17,19;130:16;139:4; 149:19;184:9;193:17;194:2, 4,5,7,8,11,12;199:7;216:15;</p>	<p>232:17;240:25 <b>exhibits (9)</b> 14:9;21:21,22,24;23:3; 37:2;48:15;68:21;69:5 <b>exist (3)</b> 46:21;68:2;102:17 <b>existed (2)</b> 82:3;100:2 <b>existing (1)</b> 132:17 <b>exists (2)</b> 95:14;131:10 <b>expect (6)</b> 90:3;143:5,9;146:5;147:8; 252:6 <b>expectation (1)</b> 183:22 <b>expected (4)</b> 11:24;98:22;225:19; 237:10 <b>expedited (1)</b> 22:22 <b>expense (1)</b> 46:6 <b>expenses (3)</b> 98:23;102:24;103:1 <b>experience (13)</b> 14:18;61:21;76:21;94:23; 112:18;113:9,13;178:5,12; 196:8;207:25;224:4;237:5 <b>experienced (1)</b> 77:24 <b>experiencing (1)</b> 254:12 <b>expert (17)</b> 111:23;112:14;114:24; 115:2;122:7;124:23;135:13; 141:6;145:8;176:11;177:11; 181:21,22;198:14;246:5; 252:20;256:2 <b>expert's (1)</b> 124:18 <b>expire (1)</b> 16:11 <b>explain (7)</b> 32:4;33:20;44:23;116:19; 147:25;189:12;205:18 <b>explained (6)</b> 88:22;90:17,21;91:8;98:7; 211:20 <b>explains (2)</b> 14:16;30:10 <b>explanation (1)</b> 228:5 <b>explicitly (1)</b> 102:15 <b>explore (1)</b> 100:3 <b>exposure (1)</b> 107:25 <b>extend (1)</b> 26:21 <b>extended (1)</b></p>	<p>25:21 <b>extensive (3)</b> 18:24;114:22;127:14 <b>extent (15)</b> 18:10;33:21;42:10;70:23; 82:3,9;88:1;123:3;132:12, 13;191:16,25;222:22; 248:24;250:12 <b>extra (1)</b> 117:12 <b>extreme (1)</b> 151:16 <b>extremely (1)</b> 249:22 <b>eyeballing (1)</b> 166:6 <b>eye-opening (1)</b> 129:20 <b>eyes (1)</b> 64:25</p> <p style="text-align: center;"><b>F</b></p> <p><b>facilities (7)</b> 20:17;63:24;97:23,25; 102:17;114:21;123:22 <b>facing (1)</b> 206:19 <b>fact (9)</b> 39:21;47:9;178:16; 180:15;187:7;200:13; 206:11;222:7;250:18 <b>factor (1)</b> 218:13 <b>factors (2)</b> 100:1,8 <b>facts (5)</b> 12:4;187:8;227:11;228:22, 24 <b>fair (7)</b> 20:2;35:17;71:6;80:17,19; 88:9;250:2 <b>fairly (2)</b> 40:25;171:24 <b>fairness (1)</b> 35:18 <b>fall (12)</b> 89:13;141:15;208:19; 221:7,17,21,22,23,25; 222:19,21;223:2 <b>fallow (1)</b> 49:24 <b>fallowed (2)</b> 50:24;178:12 <b>fallowing (2)</b> 178:14,14 <b>Falls (129)</b> 13:24;14:17,24;22:10; 23:18;24:10,14;25:20;26:22; 29:13;33:14;35:9,13,25; 36:19;37:24;39:18,23;41:12; 42:4;43:3,23;44:4,13;46:4, 10;47:22;49:1,11;52:5;53:3,</p>	<p>19:55:10;56:6;57:4,14,17, 22;58:5,6,8;59:13;62:15; 63:22;64:16;68:6;70:10; 71:7;74:7,13,24;75:9,12; 76:9,11,15;77:2,25;79:13; 80:20;81:14;83:1;84:5;85:1, 3,20,24;86:3;89:16;90:14; 91:9;95:17;98:1,2,15,20; 101:5,18;107:7;110:3;114:3; 144:2;146:20;154:21; 159:14,15,17,19;162:2,10; 166:25;172:15;175:10,11,12, 16;178:19;191:25;192:6,9; 193:19;194:19,22;195:3,6, 22;196:1,13;200:17;217:10; 220:1,2,2,8;221:13;223:6,8; 224:19;225:11,13;228:9; 235:2;244:9,15,23;248:10; 251:3,8;252:3 <b>familiar (15)</b> 49:23;51:8;52:21;62:6; 77:13,20;80:7,23;83:16; 104:20,21;105:19;219:23; 231:5;247:9 <b>familiarity (2)</b> 51:2,24 <b>familiarize (1)</b> 60:20 <b>fantasy (1)</b> 209:18 <b>far (11)</b> 20:22,23;38:22;103:2; 119:10;121:15;153:14; 177:2,13;210:10;215:19 <b>farm (20)</b> 26:12,14,16,17,19,20; 27:14,22;40:9;67:21,24; 68:2;88:20,25;92:21;93:2; 101:12;138:14;200:5;221:19 <b>Farmer (16)</b> 26:4,4,9,12,14;33:22; 87:16,18;92:15,23;96:14; 105:18;106:10;107:10,24; 108:15 <b>farmers (26)</b> 11:23;25:17,25;26:3,17, 18,22;27:2,9;32:4;33:14; 35:14;41:12;49:24;51:2,8; 67:22;82:21;89:2;105:17,22; 106:22;107:1,20;109:7; 143:18 <b>farmers' (2)</b> 107:18;108:5 <b>farmer's (1)</b> 107:7 <b>farming (1)</b> 107:8 <b>farmland (4)</b> 79:25;80:7;83:5,10 <b>farms (9)</b> 67:22,23,24,25;68:2; 137:22;138:1;143:18;236:7 <b>feasible (1)</b></p>
--	--	---	---

28:11 <b>fee (1)</b> 25:3 <b>feed (2)</b> 32:20;33:23 <b>feedback (4)</b> 121:2;131:10;176:5; 250:22 <b>feedback-loop (1)</b> 133:17 <b>feel (4)</b> 43:11;202:2,5;253:22 <b>fees (1)</b> 24:19 <b>fell (2)</b> 129:17;146:21 <b>few (16)</b> 20:19;63:6,7;64:19;76:19; 77:23;79:5;92:3;96:11; 97:22;175:12;214:21; 229:22;232:17;240:24;246:6 <b>fewer (2)</b> 24:15;40:5 <b>field (26)</b> 14:5;19:17;26:5,6,9,10,10, 11;27:8,9;29:22;34:11,17; 37:21;41:21;51:2,3,9,10,22, 22;52:1;107:24,24;108:23; 114:18 <b>fields (10)</b> 17:19;29:8,24;49:24;51:7, 14,18,20;88:24;95:3 <b>Fifth (31)</b> 71:8,13,23;72:21;73:9; 76:12;84:9,12;121:6,12,18; 122:4;125:24;126:4;132:11; 141:1;144:11,25;145:1; 149:4;174:23;179:15,16; 182:7,11;184:8;202:11; 232:18;247:19;248:4;250:15 <b>Figure (35)</b> 39:9;86:4;136:9;139:4,5,7, 22;140:4;141:9;142:8,9,11; 144:9;145:22;149:25;150:8, 12,13;152:6,25;153:1; 154:19;155:22;156:2,9; 157:17;159:16;161:25; 165:2;190:9;218:19;227:15, 15;254:3,4 <b>figures (13)</b> 85:15;139:4,15;141:8; 152:2;154:23;156:16,17; 157:15;159:11;161:22; 174:6;253:24 <b>file (2)</b> 80:22;177:12 <b>filed (4)</b> 59:24;61:10;81:8;125:3 <b>filing (3)</b> 59:23;63:23;113:10 <b>fill (3)</b> 17:21,21;62:16 <b>filled (1)</b>	62:21 <b>filling (1)</b> 62:19 <b>filter (1)</b> 155:12 <b>final (1)</b> 240:24 <b>finally (2)</b> 145:17;153:6 <b>find (7)</b> 83:20;115:6;130:15; 158:12;188:20;199:22,24 <b>finding (1)</b> 236:21 <b>findings (2)</b> 124:11;131:8 <b>fine (7)</b> 10:15;22:16;56:4;57:2; 79:2;117:21;118:1 <b>finish (2)</b> 22:22;255:22 <b>finished (2)</b> 109:15;255:6 <b>finishing (1)</b> 29:2 <b>fire (1)</b> 97:18 <b>first (34)</b> 13:8;24:9;28:9;30:21; 31:12;34:4;63:13;64:19; 79:7;111:3;129:22;134:20; 135:13;139:6,15;150:4; 156:5;167:11;168:19,25; 190:5,6,10;193:4;196:16; 197:15;204:6,10,21,25; 205:2;208:25;228:8;252:2 <b>firsthand (1)</b> 80:5 <b>first-use (1)</b> 196:24 <b>fit (2)</b> 150:19;157:2 <b>five (11)</b> 25:2;33:15;34:5;35:1,14; 65:9;69:23;112:22;128:7; 146:14;219:16 <b>five-eighths (8)</b> 31:17;48:18;66:12;68:9, 16;93:13;200:19;248:21 <b>five-eighths-inch (2)</b> 79:9;248:9 <b>five-eights-inch (1)</b> 248:15 <b>five-minute (1)</b> 117:24 <b>fix (4)</b> 161:13,16;176:13;177:17 <b>fixed (5)</b> 161:14;163:15;164:19; 171:8;177:20 <b>flat (2)</b> 134:14;151:19 <b>flatter (1)</b>	154:4 <b>FLETCHER (34)</b> 9:12,16;58:22;110:13; 116:2;117:9,19;124:5; 125:15;188:22;193:25; 197:12,23,24;198:2,4;201:6, 9;205:16;246:3,22;247:5; 248:2,7,13;249:2,15;251:2; 253:5,9,18;255:2,3;256:14 <b>Fletcher's (3)</b> 229:20;248:18,25 <b>flip (2)</b> 84:9;152:4 <b>flipping (1)</b> 154:6 <b>flood (12)</b> 92:14;93:5;94:5;95:1,3,5, 10,19,22;108:20,23;109:8 <b>flooding (1)</b> 28:12 <b>floor (4)</b> 162:13;163:1,7,8 <b>Florida (4)</b> 242:10;253:3,4,6 <b>flow (15)</b> 21:12;25:11;42:18;44:7; 81:16;89:17,19;90:5;94:5; 103:24;144:4;168:13; 196:16;241:19;242:3 <b>flowmeter (1)</b> 214:16 <b>flows (21)</b> 16:8;17:23;18:22;42:2,5,9, 23;43:10;70:9;102:2;192:1, 6,9,11;193:19;194:18; 195:19;241:12,16;242:12; 253:10 <b>fluid (1)</b> 80:16 <b>focus (1)</b> 104:2 <b>focused (1)</b> 122:17 <b>focusing (1)</b> 122:6 <b>folks (3)</b> 27:20;28:7;102:16 <b>follow (4)</b> 26:7;155:15;243:19;247:4 <b>following (2)</b> 94:15;253:7 <b>follows (2)</b> 13:9;111:4 <b>follow-up (4)</b> 92:4;108:19;197:18;246:6 <b>font (1)</b> 64:24 <b>food (1)</b> 108:13 <b>Foods (1)</b> 11:8 <b>foot (1)</b> 66:8	<b>footnote (1)</b> 193:8 <b>footnotes (2)</b> 195:10;241:5 <b>forced (1)</b> 148:24 <b>forces (1)</b> 17:13 <b>forecast (8)</b> 168:1,4,9,10,11;170:18,19; 172:6 <b>foreman (1)</b> 19:17 <b>forever (2)</b> 207:4;208:11 <b>forget (2)</b> 124:2;227:15 <b>forgo (5)</b> 77:3,10;105:1;107:1,4 <b>forks (3)</b> 16:9;46:14;98:6 <b>form (3)</b> 71:25;93:20;219:4 <b>format (1)</b> 213:23 <b>former (1)</b> 34:16 <b>formula (1)</b> 200:6 <b>formulations (1)</b> 169:17 <b>forthcoming (1)</b> 45:3 <b>forward (4)</b> 13:4;99:15;130:21;246:13 <b>found (8)</b> 59:23;139:16;199:25; 200:1,2;226:24;227:16; 251:3 <b>foundation (6)</b> 37:13,19;45:2;49:7;72:6; 193:12 <b>foundational (1)</b> 119:18 <b>four (1)</b> 25:2 <b>Fourth (3)</b> 73:18;76:12;129:23 <b>framework (2)</b> 149:15;179:23 <b>freely (1)</b> 17:23 <b>Friday (1)</b> 255:22 <b>front (7)</b> 10:23;55:18;56:24;74:2; 100:21;210:10;241:1 <b>fruition (1)</b> 68:13 <b>fulfilled (1)</b> 203:11 <b>full (6)</b> 89:20,21;90:10;96:6;
--	--	--	--

165:22;204:25	<b>genuine (2)</b> 250:4,6	19:14;32:23;226:15	<b>guarantee (1)</b> 244:25
	<b>gets (5)</b> 21:8;192:15;196:17; 206:5;225:24	<b>Gray (2)</b> 181:15;195:7	<b>guess (25)</b> 9:8;10:5;17:4;35:15,18; 37:2;47:5;59:15;71:25;75:7; 101:20;103:20;105:2;123:5, 13;160:23;167:19;183:10, 19;197:12;198:11;231:9,25; 240:25;244:13
<b>'Full (2)</b> 11:13,15	<b>GIS (1)</b> 84:4	<b>Great (13)</b> 30:25;42:21;63:10;65:8, 10;67:15;74:21;75:8;92:24; 154:16;191:19;245:4,4	<b>guide (1)</b> 121:25
<b>F</b>	<b>given (8)</b> 27:1;78:12;105:21; 108:15;123:8;131:7;146:5; 252:6	<b>greater (14)</b> 11:18,19;128:24;130:10; 159:18;160:3,4;162:11; 164:4,5;165:19;175:7;233:6, 11	<b>gullies (1)</b> 194:25
<b>fully (2)</b> 98:6;236:3	<b>giving (3)</b> 139:8,23;204:6	<b>green (4)</b> 34:1,9;52:15;162:3	<b>guys (3)</b> 56:11;88:2;111:6
<b>function (1)</b> 186:21	<b>global (1)</b> 125:10	<b>greenhouse-type (1)</b> 87:7	<b>H</b>
<b>functionally (1)</b> 212:13	<b>goals (12)</b> 54:15,19;55:11;57:4,8,14, 18,22;58:2,3,6,14	<b>GREGORY (2)</b> 111:1;112:2	<b>half (8)</b> 31:21;41:12,20,23,23; 46:24;67:10;119:25
<b>fund (2)</b> 91:13,17	<b>goes (15)</b> 23:11;25:6;28:8,17;70:22; 97:6,7,14;135:10;210:4; 218:10;228:15,16;241:25; 244:21	<b>G-r-e-g-o-r-y (1)</b> 112:2	<b>half-inch (1)</b> 48:18
<b>funding (1)</b> 91:8	<b>Good (32)</b> 8:7,10;24:5;28:15;59:2; 61:23;77:7;97:21;109:14; 111:12,20,21;123:5;132:21; 134:6;152:10;153:12,24; 155:17;157:2,4,20;158:7; 161:10;180:10;186:3; 192:17;198:3,4;216:25; 230:3,5	<b>ground (8)</b> 17:18;32:23;36:23;70:11; 101:8;109:4;132:19;219:24	<b>half-mile (2)</b> 66:19;67:11
<b>furnish (2)</b> 210:1,7	<b>goose (1)</b> 124:22	<b>grounds (3)</b> 9:17;11:10;101:11	<b>hand (5)</b> 13:4;54:23;60:3;110:24; 193:2
<b>further (17)</b> 11:13;23:9;32:25;68:17; 69:18;70:25;71:1;78:16,19; 99:7;100:12;109:11,12; 155:18,19;184:2;197:21	<b>gosh (1)</b> 34:14	<b>groundwater (74)</b> 11:17,20;21:25;35:13; 47:16;58:9;60:23;85:10,11, 19,23;91:12,17;99:7,24; 101:1;103:10;105:10; 109:13;112:24;122:12,15; 131:16;148:24;179:13,17,19, 22;180:1,8;181:3,10,17; 182:3,10;184:23,24;192:16; 196:17;197:15,20;201:24; 202:4,16,18;203:5,15,22; 208:8;211:21;212:21;214:6, 10;215:7,23;236:1,4;238:2,8, 18,21,24;239:1,7,14,18,21, 25;240:5,17,18,21;242:17; 249:3	<b>handful (2)</b> 116:21;199:17
<b>furthermore (2)</b> 12:3;88:5	<b>governed (2)</b> 247:10,15	<b>groundwater-specific (1)</b> 125:10	<b>hang (1)</b> 10:7
<b>future (2)</b> 86:9;185:21	<b>government (1)</b> 49:23	<b>group (13)</b> 99:7;105:11;109:13; 113:19;119:21;120:22; 121:12;126:1;155:21; 174:13;180:17,19;188:12	<b>Hansen (1)</b> 16:9
<b>fuzzy (1)</b> 236:24	<b>grain (8)</b> 26:10;88:15,20;104:25; 106:13;107:3,13,15	<b>groups (2)</b> 113:21;197:20	<b>happen (4)</b> 185:24;196:13;207:23; 226:4
<b>G</b>	<b>grainfields (1)</b> 92:25	<b>grow (9)</b> 17:11,11;87:12;97:1; 107:20;108:6,15;220:11; 250:12	<b>happened (4)</b> 80:11;86:20;109:8;209:8
<b>gains (2)</b> 192:18,24	<b>Grande (1)</b> 224:17	<b>growing (7)</b> 87:24;92:24;97:10; 106:11;220:15;232:24;233:6	<b>happening (3)</b> 107:23;208:3;245:21
<b>gander (1)</b> 124:22	<b>graph (33)</b> 14:24;15:4,7,17,23;35:24; 40:19;48:25;49:2;140:11; 142:14;144:16,16,19;153:3, 4;154:2;156:5,7,8,8;162:3; 188:7,24;189:3,5,12,16,17, 20;232:22;233:5;242:12	<b>grown (10)</b> 33:2;35:25;49:2,12;86:23; 87:8;97:5;108:12;167:16; 218:12	<b>happens (5)</b> 86:10;135:8;163:24; 185:8;196:21
<b>gate (2)</b> 16:23,24	<b>graphing (1)</b> 144:19	<b>growth (3)</b> 17:12;18:3;36:5	<b>hardened (1)</b> 52:9
<b>gates (1)</b> 225:25	<b>graphs (15)</b> 140:10,12,13;141:9;150:1, 3,4;155:8,22;156:4,20;158:6, 12;241:4,4		<b>hardening (1)</b> 41:23
<b>gauge (1)</b> 195:13	<b>grass (2)</b> 17:11,12		<b>harder (1)</b> 17:13
<b>gauges (3)</b> 194:24;195:11;241:3	<b>gravity (3)</b>		<b>hard-surface (1)</b> 97:9
<b>gave (6)</b> 40:14;180:16;182:17; 183:3;188:10;198:22			<b>harm (3)</b> 11:12;12:12;38:12
<b>gears (4)</b> 86:21;173:8;179:12; 191:13			<b>harvested (6)</b> 87:17,20,25;88:12;105:23; 221:25
<b>general (7)</b> 14:6;107:9;112:18; 114:10;123:23;172:4;241:15			<b>hay (8)</b> 26:10;33:15,24;34:10,16; 35:1,14;106:18
<b>generally (15)</b> 14:12;15:25;17:1;18:4; 20:5;22:6;25:6;26:12; 133:15,16;134:4;143:16; 178:9;220:15;221:23			<b>hayfield (1)</b> 92:24
<b>generation (1)</b> 45:24			<b>hayfields (1)</b>

<p>92:25 <b>head (5)</b> 60:2;61:18;94:20;96:2,7 <b>head] (4)</b> 39:10;43:22;105:20; 106:20 <b>headgate (5)</b> 28:13;48:16;93:21;148:4; 222:11 <b>headgates (1)</b> 16:17 <b>heading (3)</b> 84:15;168:23;197:7 <b>headings (3)</b> 64:19,21;168:8 <b>heads (2)</b> 20:18;197:22 <b>health (3)</b> 51:4;88:3;108:10 <b>hear (5)</b> 22:20;111:10;131:22; 239:16;253:5 <b>heard (15)</b> 37:11,12;102:11;123:2; 125:3;174:2,7,9;177:14; 180:21;191:14;193:10; 224:9;228:5;241:23 <b>HEARING (149)</b> 8:3,8,12,20;9:15,19;10:4,9, 11,15,17;12:16,19;13:3,11; 15:11;21:23;22:5,15,18,21; 23:4,8;24:5;36:22;37:9,22; 38:4,4,7,11;44:25;47:3,13, 21;48:2,20,21;49:5,15; 51:19;55:1;56:5,8,10,12,16, 20,23;58:11,25;59:2;60:5; 65:3,8,10;68:23;69:3,13,20, 22,25;72:4;74:2;78:17; 91:23;92:1;99:6,11,13,15; 100:14;105:9;107:21; 109:12,23;110:1,10,16,21; 111:9,12;115:9;118:1,4; 121:15,19;123:11;124:4,20; 125:7,11,16;132:15;133:3, 10;138:25;139:11,16; 144:11;179:3,7;181:12; 191:19;193:22;194:2,5,9,10; 197:10,16;198:13,13;199:19, 22;200:22;201:17,21; 205:12;206:10,20;226:23, 23;227:1,5;229:19;231:15; 236:18;242:22;243:1; 245:25;246:8,18;247:24; 252:3,10,16;253:4,7,12; 254:24;255:4,6,9,18,21; 256:11,16,21 <b>hearings (1)</b> 198:8 <b>hearsay (5)</b> 22:7;101:1;107:11,12; 110:12 <b>heavily (1)</b> 113:7</p>	<p><b>heavy (4)</b> 104:24,25,25;105:22 <b>held (3)</b> 14:1;111:8;116:13 <b>Hello (2)</b> 70:6,7 <b>help (5)</b> 20:6;88:3;118:7;136:24; 202:6 <b>helped (1)</b> 23:22 <b>helpful (6)</b> 23:24;38:18;40:22;50:6; 51:13;192:21 <b>helping (2)</b> 21:1;113:11 <b>helps (3)</b> 32:3;137:5;192:17 <b>here's (1)</b> 94:6 <b>Hey (1)</b> 56:11 <b>High (15)</b> 16:10,14;20:13,24;21:4, 15;33:25;91:1;101:7;136:4; 158:22;160:17;164:1; 166:10;242:6 <b>higher (14)</b> 95:20;131:12,15;143:15; 147:10;157:21;158:8,9; 159:7;163:19,19;166:9; 233:6;244:8 <b>highest (6)</b> 164:24,25;165:12;220:18, 25;221:2 <b>high-level (1)</b> 121:22 <b>highlight (2)</b> 45:22;152:3 <b>highlighted (4)</b> 45:13,15,21;46:1 <b>highlighting (1)</b> 45:23 <b>highly (1)</b> 251:12 <b>high-priced (1)</b> 105:1 <b>high-value (1)</b> 136:5 <b>high-water-consumptive (1)</b> 32:18 <b>hindcast (9)</b> 164:12;166:15,20,24; 167:9;168:3;169:14;170:24; 171:4 <b>historical (20)</b> 22:10;96:24;97:14; 101:15;114:17,17;133:17; 135:19,24;136:6;146:20; 155:18;163:21,23;167:20, 21;173:24,25;174:1;175:24 <b>historically (5)</b> 32:25;33:3;67:25;135:7;</p>	<p>164:9 <b>history (1)</b> 14:19 <b>hits (1)</b> 16:9 <b>home (1)</b> 109:21 <b>hope (1)</b> 111:9 <b>horribly (1)</b> 184:3 <b>hosted (1)</b> 120:1 <b>hostility (1)</b> 147:23 <b>hotter (1)</b> 160:2 <b>hottest (1)</b> 220:14 <b>hour (1)</b> 69:23 <b>hours (1)</b> 179:4 <b>huge (3)</b> 102:5;129:18;224:17 <b>huh (1)</b> 253:4 <b>hundreds (3)</b> 135:23;224:18;236:13 <b>Hydro (2)</b> 46:14;98:6 <b>Hydrologic (1)</b> 113:16 <b>Hydrology (1)</b> 113:18 <b>hydropower (6)</b> 45:24;47:10;97:23;98:21; 102:12,14 <b>hypothetical (1)</b> 160:7</p> <hr/> <p style="text-align: center;"><b>I</b></p> <hr/> <p><b>Idaho (19)</b> 11:8;36:23;61:8,19; 112:12;113:14,17,17;114:3; 138:20;208:3;210:16;214:9; 215:8;235:20;237:6,7,17; 238:13 <b>Idaho's (1)</b> 247:15 <b>idea (8)</b> 33:6,8,10;87:13;132:21; 147:24;210:15;224:25 <b>identified (10)</b> 71:3;91:18;103:17;104:6; 119:12;122:6;171:16;195:8, 10;198:20 <b>identifies (1)</b> 203:4 <b>identify (11)</b> 20:10;28:9;91:13;109:20; 117:2;118:12,20;122:18;</p>	<p>193:3,3;195:15 <b>idle (2)</b> 51:3,7 <b>idled (4)</b> 51:14,21,22;52:1 <b>idling (2)</b> 51:18;77:25 <b>IDWR (20)</b> 121:3;127:5;128:11; 130:16,16;132:3,24;133:14; 134:20;137:14;163:17; 174:4,5,13;177:12,15,19; 180:7;182:15;194:17 <b>IDWR's (5)</b> 174:24;175:15;193:9,14, 18 <b>ignoring (1)</b> 181:7 <b>IGWA (2)</b> 53:7;231:20 <b>illustrate (2)</b> 139:7,22 <b>illustrations (1)</b> 149:23 <b>imagery (1)</b> 174:18 <b>imagine (4)</b> 17:10,24;18:19;160:5 <b>immediately (2)</b> 34:11;115:8 <b>impact (4)</b> 187:3,23;190:23;203:18 <b>impacts (6)</b> 9:6;10:25;19:22;186:14; 187:15;200:3 <b>impeach (1)</b> 56:18 <b>implement (1)</b> 20:10 <b>implemented (1)</b> 20:6 <b>implementing (3)</b> 75:17;171:18;172:17 <b>implements (1)</b> 169:25 <b>implied (1)</b> 151:25 <b>important (9)</b> 10:5;17:11;19:1;27:25; 85:16;110:3;136:5;218:13; 231:17 <b>importantly (2)</b> 114:14;169:8 <b>impose (1)</b> 85:16 <b>imposing (1)</b> 184:14 <b>impression (1)</b> 107:22 <b>improve (3)</b> 96:8;195:19;196:8 <b>improved (2)</b> 93:8;173:3</p>
---	---	---	---

<p><b>improvement (1)</b> 142:5</p> <p><b>improvements (5)</b> 91:18;131:1;133:1; 147:14;252:6</p> <p><b>inability (1)</b> 104:22</p> <p><b>inadequate (1)</b> 77:14</p> <p><b>inarticulate (1)</b> 10:12</p> <p><b>incentive (6)</b> 48:7;143:24;144:5;208:1; 250:15,19</p> <p><b>incentives (1)</b> 245:7</p> <p><b>inception (1)</b> 113:16</p> <p><b>inch (15)</b> 31:2,6,14,17,22;32:11; 66:13;68:7;79:8;93:13,13; 200:19;236:19;248:22,22</p> <p><b>inches (1)</b> 242:8</p> <p><b>incidental (3)</b> 47:10;102:17;174:15</p> <p><b>include (4)</b> 42:9;128:11;129:5;241:18</p> <p><b>included (3)</b> 114:16;242:18;254:4</p> <p><b>includes (2)</b> 99:2;175:4</p> <p><b>including (1)</b> 75:17</p> <p><b>income (3)</b> 46:16;47:10;102:21</p> <p><b>inconsistent (1)</b> 104:7</p> <p><b>incorporate (2)</b> 147:17;180:7</p> <p><b>incorporated (6)</b> 44:9;121:12;175:15;180:3, 14;188:8</p> <p><b>incorporating (1)</b> 139:25</p> <p><b>incorporation (2)</b> 139:24;179:13</p> <p><b>increase (9)</b> 24:22,25;25:2;28:24;65:1; 129:13,18;130:12;218:6</p> <p><b>increased (10)</b> 32:21;74:13;76:10;130:3, 6,18,21;232:16;233:2;252:5</p> <p><b>increases (1)</b> 159:4</p> <p><b>incurred (1)</b> 46:7</p> <p><b>independently (1)</b> 146:16</p> <p><b>indicates (3)</b> 146:1,13;151:9</p> <p><b>indication (1)</b> 158:13</p>	<p><b>indicative (1)</b> 172:1</p> <p><b>indicator (1)</b> 158:6</p> <p><b>individual (7)</b> 15:18;88:23;107:6;152:2; 232:3;236:7,13</p> <p><b>individuals (1)</b> 16:18</p> <p><b>industrial (5)</b> 52:6,10;80:1,9;82:16</p> <p><b>industry (21)</b> 32:17,17;33:18;34:2,7,23; 123:23;134:1;135:15; 149:11;201:10,16;225:5,6,9, 11,14,18;226:1,14;237:22</p> <p><b>inefficiencies (1)</b> 243:24</p> <p><b>inefficient (4)</b> 184:4;203:21;244:24; 249:22</p> <p><b>inevitably (1)</b> 196:15</p> <p><b>inflates (1)</b> 164:8</p> <p><b>Info (1)</b> 193:9</p> <p><b>inform (1)</b> 123:13</p> <p><b>informal (3)</b> 8:24;9:14;11:2</p> <p><b>information (50)</b> 22:10;44:8;63:15,16,21; 72:1,7;83:18;114:17;120:2; 126:3,21;127:7;133:7;140:6; 142:11;144:13,15,18; 152:21;160:22,25;161:3,8; 174:16;179:24;180:11,21,24, 25;181:1,2,14,16,20,22,24; 192:16,21;193:7;201:19; 204:7;213:21;218:17;219:2; 235:14;238:7,20,23;239:10</p> <p><b>informational (1)</b> 194:24</p> <p><b>injured (4)</b> 187:1;204:2;205:6;213:2</p> <p><b>injuries (1)</b> 229:3</p> <p><b>injury (18)</b> 198:18;199:5,10,11,20,23, 25;204:3,18,21;205:8; 207:14,14;209:17;210:2,23; 212:25;229:6</p> <p><b>input (2)</b> 137:4;214:23</p> <p><b>in-season (9)</b> 16:18;71:9;73:2,6;168:24; 170:16;172:11;203:2;204:2</p> <p><b>insert (1)</b> 175:18</p> <p><b>inspector (1)</b> 215:11</p> <p><b>installed (3)</b></p>	<p>19:21;90:18;102:3</p> <p><b>instances (2)</b> 198:21;212:8</p> <p><b>instantaneous (1)</b> 208:21</p> <p><b>instead (6)</b> 128:18;134:15;170:10; 175:16;183:7;219:19</p> <p><b>institute (1)</b> 200:2</p> <p><b>instrumented (1)</b> 192:13</p> <p><b>insufficient (1)</b> 11:20</p> <p><b>intended (3)</b> 66:20;67:12;133:5</p> <p><b>intensive (1)</b> 40:9</p> <p><b>intent (1)</b> 106:3</p> <p><b>intention (1)</b> 132:16</p> <p><b>intentional (1)</b> 127:21</p> <p><b>interest (6)</b> 21:3;22:20;23:24;75:10; 98:25;206:24</p> <p><b>interested (1)</b> 207:8</p> <p><b>interesting (2)</b> 128:15;146:3</p> <p><b>interests (1)</b> 66:25</p> <p><b>interject (1)</b> 133:25</p> <p><b>internet (2)</b> 49:9;115:15</p> <p><b>interpretation (1)</b> 124:19</p> <p><b>intersect (2)</b> 195:1,2</p> <p><b>intimately (3)</b> 83:16;105:19;107:10</p> <p><b>into (74)</b> 14:4,6;16:8,10;21:22; 22:23;23:2;32:17,25;33:22; 38:8;40:22;42:17,20;44:9; 48:9,11,22;49:3,16,17;61:7; 63:11;65:19;68:12;69:3,16; 70:12;75:18;79:25;89:25; 94:5,7;95:6;96:23,23;97:11, 13,14,15;100:1;101:8,12; 102:6;107:4;108:24,25; 109:4;121:12;124:7;125:17; 134:5,17,18;135:6;136:22; 140:1;143:13;144:6;154:18; 157:24;158:3;164:3;167:7; 179:14;180:8;194:11; 195:20;210:8;214:24; 218:10;225:25;241:25; 250:19</p> <p><b>introduce (1)</b> 8:5</p>	<p><b>introduced (1)</b> 9:18</p> <p><b>inventory (1)</b> 19:3</p> <p><b>investigation (1)</b> 114:15</p> <p><b>investigations (2)</b> 114:11;125:22</p> <p><b>invitation (1)</b> 119:24</p> <p><b>involved (10)</b> 107:8;113:5,7;114:7,21; 119:20,23;126:16,17;198:10</p> <p><b>involvement (1)</b> 118:14</p> <p><b>involving (3)</b> 136:5;151:10;251:1</p> <p><b>irrelevant (1)</b> 47:12</p> <p><b>irrigate (8)</b> 34:17;51:2,8;88:2;92:10; 95:18;106:11,14</p> <p><b>irrigated (47)</b> 25:14;27:5;29:8,14;36:9; 37:21;40:6,9;41:11,20; 49:22;52:2;53:9,23;69:10; 78:4,12;79:20;80:8;83:2; 84:4,22,25;85:4,5;86:3,7; 87:25;97:7;105:4;122:11; 173:9,11,16,22;174:3,14,17, 25;175:15;176:25;177:13, 21,24;178:17;179:21;218:11</p> <p><b>irrigates (2)</b> 108:22;109:2</p> <p><b>irrigating (11)</b> 17:18;52:24;53:4,20; 54:12;58:7;87:21;178:10; 217:15,16;221:20</p> <p><b>Irrigation (65)</b> 13:15;17:5,7;19:14;26:13; 29:21;31:7;41:5;44:5;47:11; 48:8;50:23;62:15,21,22,24; 66:18;80:21;81:15,19;82:9, 12;84:16,21;88:10;89:3; 92:14;94:6;95:3,5;102:17; 105:19;108:23;109:9; 114:21;123:25;135:16,19; 136:14;141:14;146:6; 159:25;167:15,24;178:6; 181:8;199:5;212:16,18; 220:7;224:5,7,16,20;225:17; 226:15,16;230:4;233:23; 234:2;237:19;241:19;242:2, 11;244:2</p> <p><b>irrigators (1)</b> 66:23</p> <p><b>issue (12)</b> 12:2,3;28:12,13;47:5, 19;82:1;117:9;147:9;196:14; 223:4</p> <p><b>issued (6)</b> 11:8;82:8;120:5;201:8; 209:9;231:6</p>
---	--	---	---

<p><b>issues (1)</b> 122:5</p> <p><b>ITCH (1)</b> 113:17</p> <p><b>item (1)</b> 22:7</p> <p><b>items (1)</b> 79:6</p>	<p><b>keep (13)</b> 31:11;50:3,12,16;52:5; 53:19;117:7;131:12;169:14; 175:18;180:20;186:13;211:7</p> <p><b>keeping (1)</b> 93:24</p> <p><b>keeps (2)</b> 83:12;206:2</p> <p><b>Kent (1)</b> 230:6</p> <p><b>key (1)</b> 190:11</p> <p><b>kind (41)</b> 14:16;17:3;30:15;34:3,15; 40:11;49:10;54:9;98:22; 123:22;126:15;127:20; 129:13,19;133:17,21;134:11, 14,23;135:24;137:1;142:14; 143:5,24;144:6;146:11,17; 149:15;152:3;164:11; 165:16;174:15;176:5; 178:20;182:21;190:7; 194:25;215:4,5;216:10; 230:13</p> <p><b>kinds (6)</b> 90:4;124:25;131:1;136:13, 18;205:25</p> <p><b>Kinyon (2)</b> 20:22;90:21</p> <p><b>KLAHN (69)</b> 60:8,10,13;111:15,16,19, 22;116:3,5,9,11,14,15; 117:24;118:6,7,10;120:18, 20;124:1,20,21;125:9,14,18, 20,21;132:9,15,16;133:9,10, 13;138:23;139:3,12,13,17; 178:25;179:9,10,11;188:23, 24;191:15,21,23;193:16,24; 194:1,4,8,13;197:10;205:10; 231:12;246:14,15;252:14, 25;253:3,10,12,13,16; 254:22;255:8,16;256:9</p> <p><b>Klahn's (2)</b> 197:17,17</p> <p><b>knew (1)</b> 248:14</p> <p><b>knowable (2)</b> 225:23,25</p> <p><b>knowing (1)</b> 50:24</p> <p><b>knowledge (3)</b> 179:25;215:7;249:4</p> <p><b>known (1)</b> 195:14</p> <p><b>kosher (1)</b> 214:1</p>	<p><b>laid (2)</b> 51:7;219:24</p> <p><b>Lake (8)</b> 16:6;59:4,7,14;62:21;63:2; 64:3;244:14</p> <p><b>land (9)</b> 27:20;39:22;64:15,16; 77:25;82:20;83:7,12;174:25</p> <p><b>lands (10)</b> 51:24;78:11;137:23; 175:15;176:25;178:11,13, 17;238:8,9</p> <p><b>landscaping (1)</b> 97:1</p> <p><b>language (1)</b> 23:10</p> <p><b>large (20)</b> 18:13;67:13;86:12;90:25; 97:17;123:24,24;137:12; 143:2;178:5;220:7;224:5; 226:1,5;235:20;236:10,12; 237:17;243:15;245:2</p> <p><b>largely (3)</b> 115:12;178:10;213:19</p> <p><b>larger (6)</b> 15:22;16:16;20:5;143:6; 159:7,7</p> <p><b>large-scale (1)</b> 91:3</p> <p><b>largest (1)</b> 220:10</p> <p><b>last (40)</b> 13:22;24:24,25;29:17; 32:14,16;34:4,4;39:22; 59:16;65:6;67:2,3,17;68:21; 71:19;75:14;80:15,18;92:8; 105:2;119:11;122:24; 123:19;147:3;154:20; 156:15,16;175:12;183:9; 191:4;199:2;207:4;209:20; 232:17;240:20;242:7; 249:25;250:7;252:2</p> <p><b>lastly (1)</b> 250:25</p> <p><b>late (3)</b> 8:25;228:18;255:25</p> <p><b>later (9)</b> 34:20;44:3;130:9;134:6, 17;143:13;186:2;211:15; 229:12</p> <p><b>lateral (2)</b> 220:3;221:15</p> <p><b>laterals (2)</b> 70:24;138:3</p> <p><b>latest (1)</b> 180:18</p> <p><b>lava (1)</b> 224:9</p> <p><b>law (1)</b> 247:10</p> <p><b>lawyer (2)</b> 183:21;235:13</p> <p><b>lawyers (1)</b></p>	<p>239:23</p> <p><b>lay (2)</b> 45:1;193:12</p> <p><b>leads (1)</b> 245:2</p> <p><b>leak (1)</b> 18:1</p> <p><b>least (23)</b> 8:18,22;9:2,5,22;10:20; 11:5;12:9;18:13;23:8,10; 41:15;48:6;72:4;140:14; 146:14;157:5;160:18;161:9; 173:2;182:18;187:18;219:4</p> <p><b>leave (3)</b> 8:14;23:11;68:18</p> <p><b>leaves (2)</b> 70:19;89:25</p> <p><b>leaving (1)</b> 256:5</p> <p><b>left (4)</b> 115:13;153:5;162:3,7</p> <p><b>legal (1)</b> 63:13</p> <p><b>legally (3)</b> 235:3,11;239:23</p> <p><b>length (2)</b> 176:22;191:24</p> <p><b>less (41)</b> 14:16;72:15,19;89:5; 92:11;93:5;94:5;95:11,23; 106:12;107:15;109:3;127:1, 3;128:2,3;131:4;135:7; 143:18;146:1;151:21;155:3, 4;164:15,17;165:10;169:23; 170:6,9;175:3;196:9,10,24; 197:1,6;221:23;222:10,10, 11;245:3;252:14</p> <p><b>less-than-efficient (1)</b> 148:25</p> <p><b>letter (1)</b> 53:7</p> <p><b>letters (1)</b> 69:8</p> <p><b>lettuce (2)</b> 29:22,25</p> <p><b>level (20)</b> 17:25;21:1,4,16;80:13; 95:21;141:25,25;143:15; 146:15;148:21;157:21; 158:11,23;160:17;165:11; 224:24;226:22;243:16,18</p> <p><b>levels (1)</b> 148:12</p> <p><b>licensed (1)</b> 112:11</p> <p><b>lifetime (1)</b> 77:7</p> <p><b>liked (5)</b> 119:9;121:21;122:20; 123:9;147:4</p> <p><b>likely (5)</b> 26:9;61:6;83:15;89:22,22</p> <p><b>Likewise (1)</b></p>
<b>J</b>			
<p><b>January (2)</b> 64:17;138:21</p> <p><b>Jay (17)</b> 12:24;13:6,21;14:15; 15:15,25;22:2;79:1,3;81:1,6; 84:12;99:12;123:2;148:4; 226:3;241:24</p> <p><b>J-a-y (1)</b> 13:21</p> <p><b>Jennifer (5)</b> 184:21;188:7;189:20; 193:11;204:7</p> <p><b>Jennifer's (1)</b> 188:14</p> <p><b>job (1)</b> 29:2</p> <p><b>JOHNS (1)</b> 256:12</p> <p><b>Johnson (1)</b> 45:11</p> <p><b>joined (1)</b> 145:2</p> <p><b>joint (1)</b> 81:9</p> <p><b>judge (8)</b> 123:20;125:3;201:3,8; 231:7;248:8,14,21</p> <p><b>judicial (6)</b> 124:7,17;132:10;138:24; 201:8;231:6</p> <p><b>judicially (1)</b> 186:17</p> <p><b>July (8)</b> 89:25;90:3;153:5;158:17; 201:4,7;220:14;222:16</p> <p><b>June (12)</b> 18:4,6;90:2;153:5;157:13; 162:1,2,10;166:5,6;220:14; 222:16</p> <p><b>junior (13)</b> 11:11,21;35:13;148:24; 188:25;190:22;191:6; 202:17,18,19;209:21; 210:24;229:4</p> <p><b>juniors (8)</b> 183:14,22;186:13;213:15; 225:2,19;226:17;237:11</p> <p><b>Justice (1)</b> 38:5</p>	<p><b>key (1)</b> 190:11</p> <p><b>kind (41)</b> 14:16;17:3;30:15;34:3,15; 40:11;49:10;54:9;98:22; 123:22;126:15;127:20; 129:13,19;133:17,21;134:11, 14,23;135:24;137:1;142:14; 143:5,24;144:6;146:11,17; 149:15;152:3;164:11; 165:16;174:15;176:5; 178:20;182:21;190:7; 194:25;215:4,5;216:10; 230:13</p> <p><b>kinds (6)</b> 90:4;124:25;131:1;136:13, 18;205:25</p> <p><b>Kinyon (2)</b> 20:22;90:21</p> <p><b>KLAHN (69)</b> 60:8,10,13;111:15,16,19, 22;116:3,5,9,11,14,15; 117:24;118:6,7,10;120:18, 20;124:1,20,21;125:9,14,18, 20,21;132:9,15,16;133:9,10, 13;138:23;139:3,12,13,17; 178:25;179:9,10,11;188:23, 24;191:15,21,23;193:16,24; 194:1,4,8,13;197:10;205:10; 231:12;246:14,15;252:14, 25;253:3,10,12,13,16; 254:22;255:8,16;256:9</p> <p><b>Klahn's (2)</b> 197:17,17</p> <p><b>knew (1)</b> 248:14</p> <p><b>knowable (2)</b> 225:23,25</p> <p><b>knowing (1)</b> 50:24</p> <p><b>knowledge (3)</b> 179:25;215:7;249:4</p> <p><b>known (1)</b> 195:14</p> <p><b>kosher (1)</b> 214:1</p>	<p><b>laid (2)</b> 51:7;219:24</p> <p><b>Lake (8)</b> 16:6;59:4,7,14;62:21;63:2; 64:3;244:14</p> <p><b>land (9)</b> 27:20;39:22;64:15,16; 77:25;82:20;83:7,12;174:25</p> <p><b>lands (10)</b> 51:24;78:11;137:23; 175:15;176:25;178:11,13, 17;238:8,9</p> <p><b>landscaping (1)</b> 97:1</p> <p><b>language (1)</b> 23:10</p> <p><b>large (20)</b> 18:13;67:13;86:12;90:25; 97:17;123:24,24;137:12; 143:2;178:5;220:7;224:5; 226:1,5;235:20;236:10,12; 237:17;243:15;245:2</p> <p><b>largely (3)</b> 115:12;178:10;213:19</p> <p><b>larger (6)</b> 15:22;16:16;20:5;143:6; 159:7,7</p> <p><b>large-scale (1)</b> 91:3</p> <p><b>largest (1)</b> 220:10</p> <p><b>last (40)</b> 13:22;24:24,25;29:17; 32:14,16;34:4,4;39:22; 59:16;65:6;67:2,3,17;68:21; 71:19;75:14;80:15,18;92:8; 105:2;119:11;122:24; 123:19;147:3;154:20; 156:15,16;175:12;183:9; 191:4;199:2;207:4;209:20; 232:17;240:20;242:7; 249:25;250:7;252:2</p> <p><b>lastly (1)</b> 250:25</p> <p><b>late (3)</b> 8:25;228:18;255:25</p> <p><b>later (9)</b> 34:20;44:3;130:9;134:6, 17;143:13;186:2;211:15; 229:12</p> <p><b>lateral (2)</b> 220:3;221:15</p> <p><b>laterals (2)</b> 70:24;138:3</p> <p><b>latest (1)</b> 180:18</p> <p><b>lava (1)</b> 224:9</p> <p><b>law (1)</b> 247:10</p> <p><b>lawyer (2)</b> 183:21;235:13</p> <p><b>lawyers (1)</b></p>	
<b>K</b>	<b>L</b>		
	<p><b>labeled (2)</b> 189:21;216:18</p> <p><b>lack (1)</b> 77:4</p>		



<p>198:6 <b>limit (3)</b> 70:21;100:9;226:5 <b>limitations (1)</b> 100:7 <b>limited (3)</b> 198:21;212:7;233:14 <b>Line (77)</b> 16:8,10,10,14,14,14;20:13, 13,16,24;46:14;53:11;55:8; 57:1,6,7;60:24;61:3;63:5,6; 77:20;91:1,21;94:14;98:2,5; 101:7,9,11;104:16,20; 140:17,22;141:3,18,19; 142:3;145:3,9,10,24,24; 146:1,1,9,9,12;147:5,12,15; 150:20,21,23,23;151:6,19, 23;153:14,15,17,24;154:4,9; 155:6;162:6,7,9;163:1,2,9; 189:18,18,19;190:3,13,13; 209:11 <b>lines (8)</b> 22:9;55:12;63:22;71:17; 100:25;154:8;195:7;254:9 <b>lining (8)</b> 18:15;20:11,12;75:17; 90:25;91:3;123:1;146:6 <b>list (4)</b> 20:9;69:7;118:17;255:23 <b>listed (4)</b> 62:2;193:8;241:5,8 <b>listened (1)</b> 252:19 <b>listening (1)</b> 8:17 <b>litigation (1)</b> 224:15 <b>little (30)</b> 19:8;26:9;65:4;68:5; 72:19,20;79:5;80:15;90:13; 115:14;127:24;132:20; 134:5,17,19;143:13;147:13, 15;169:9,13;170:11;171:11; 173:8;178:3;181:25;182:6; 184:6;190:7;219:19;236:24 <b>live (1)</b> 195:16 <b>load (1)</b> 222:16 <b>local (1)</b> 42:9 <b>location (6)</b> 42:19;205:9;212:22,24; 229:7;244:13 <b>lock (1)</b> 16:23 <b>lockstep (1)</b> 160:13 <b>lodge (2)</b> 37:2;132:7 <b>lodged (6)</b> 9:3,10,13,20;12:8,9 <b>logistically (1)</b></p>	<p>23:5 <b>long (12)</b> 34:13,15;143:2,2;183:6; 203:24;224:15,18,18; 239:12;240:16;246:18 <b>longer (4)</b> 65:4;126:6;187:19;199:16 <b>long-term (3)</b> 127:8;128:17;178:6 <b>look (46)</b> 14:7,11;28:9;29:3;30:2,20; 31:25;36:11;38:19;39:3; 45:16;56:3,25;60:22;65:18; 76:15;81:22;94:17;115:17; 120:8,12;121:5;123:6,14; 128:15;130:2;133:25;134:2; 139:2;144:9;151:4;152:1; 154:2;161:25;165:2;172:10; 177:20;190:12,19;204:15; 217:23;223:21,22,25;233:7; 254:1 <b>looked (15)</b> 59:20;62:5;68:3;69:9; 115:17;122:14,21,24;127:6, 10;138:6;224:20,23;240:1; 245:12 <b>looking (30)</b> 32:19;36:24;40:4,23; 43:15;72:7;91:11;114:21; 115:24;122:8,9,10;127:9; 137:19;141:18;150:8;154:7; 157:15;168:4;189:3,4; 211:15;230:10,17,23; 235:15;236:11;240:25; 255:14,23 <b>looks (4)</b> 8:21;62:7;63:13;120:15 <b>loop (5)</b> 131:10;146:24;176:5; 182:1;250:22 <b>loose (1)</b> 40:21 <b>lose (1)</b> 96:9 <b>losing (1)</b> 196:20 <b>loss (5)</b> 11:19;47:7;142:22;143:4,7 <b>losses (6)</b> 137:25;138:4;196:3; 225:23;237:19;243:24 <b>lost (2)</b> 61:16,24 <b>lot (34)</b> 18:11,17;19:18;52:17; 80:16;88:1;90:18;114:16; 134:10,11;135:16,17,25; 136:6;141:15;143:6;147:23; 152:15;154:10,10;155:1,3,4; 157:19;158:21;159:14; 175:12;219:11;230:9; 235:25;242:9;247:6;252:14, 23</p>	<p><b>loud (1)</b> 111:10 <b>Low (17)</b> 16:10,14;20:13;46:14; 98:2,5;101:9,11;137:8,11; 141:13;158:13;162:17,19; 195:22;208:18;222:22 <b>Lower (27)</b> 46:14;98:2,5;135:10; 148:21;160:19;162:15,17; 175:19,20,21,23;176:2,2,3,7, 8;194:21;196:11;221:5; 222:5,20;223:3,5;227:24,25; 228:11 <b>Lunch (2)</b> 110:20,22 <b>ly (1)</b> 141:23</p> <hr/> <p style="text-align: center;"><b>M</b></p> <hr/> <p><b>machine (1)</b> 10:10 <b>Magic (4)</b> 27:18;83:15,16,21 <b>magnitude (1)</b> 74:25 <b>Main (8)</b> 16:8,14;18:5,22;20:16; 32:15;122:17;195:21 <b>mainly (2)</b> 189:17;195:14 <b>maintain (8)</b> 17:2,12;83:2,11;84:3; 93:15;108:9;148:25 <b>maintains (2)</b> 83:7;192:9 <b>maintenance (8)</b> 16:25;17:3,5;19:16,16,17, 24;24:19 <b>major (1)</b> 113:20 <b>majority (1)</b> 185:20 <b>makes (3)</b> 46:23;124:15;143:1 <b>making (8)</b> 17:22;18:2;55:15;93:11; 171:22;196:23;237:2,3 <b>malls (1)</b> 52:6 <b>man (1)</b> 107:22 <b>manage (7)</b> 21:11,11,12;65:4;90:9,22; 226:8 <b>managed (4)</b> 227:10,13;228:1,22 <b>management (9)</b> 67:7;90:8;143:15;212:9; 228:25;237:8;247:16; 249:22;251:19 <b>manager (1)</b></p>	<p>14:6 <b>managers (1)</b> 199:8 <b>managing (1)</b> 110:2 <b>manner (1)</b> 70:13 <b>many (21)</b> 17:20;33:4;34:25;40:5; 44:12;52:14,23;53:3;54:12; 58:7;75:17;97:16;155:2; 161:5,9,10;171:10;223:6,8; 224:25;241:3 <b>map (4)</b> 62:5,10;64:2;139:15 <b>margin (2)</b> 172:5,7 <b>mark (6)</b> 60:14,16;193:22;194:2,4,5 <b>marked (19)</b> 9:3;12:8;15:12,14,16; 21:24;40:14,20;48:10,21; 49:16;60:18;65:11;68:25; 69:15;118:3;125:16;194:7, 10 <b>market (3)</b> 11:23;32:24;34:7 <b>match (1)</b> 213:1 <b>matches (1)</b> 167:3 <b>material (1)</b> 22:24 <b>materials (1)</b> 130:15 <b>math (9)</b> 41:7;72:12;75:6;126:16; 185:2;218:4,5,6;228:10 <b>Matt (1)</b> 42:23 <b>matter (12)</b> 8:23;11:5;110:5;111:24; 112:5,14;114:1;115:3; 134:12;172:4;240:21;249:25 <b>matters (5)</b> 10:23;12:21;118:15,18,22 <b>Max (1)</b> 117:15 <b>maxes (1)</b> 90:2 <b>maximizing (1)</b> 207:10 <b>maximum (1)</b> 145:15 <b>may (33)</b> 13:11;31:14,16,20;37:8; 48:6;54:25;66:21;87:7;91:6; 93:1;99:9;107:23;108:5,15; 133:11;136:22;147:13; 153:5;154:2;178:6;190:5; 205:18;209:7;214:22,25; 221:13;238:15,18,19; 239:23;250:21;252:25</p>
---	--	---	--

<p><b>maybe (26)</b> 8:14;59:16;65:9;68:4; 81:1;109:3;116:19;117:25; 127:13;129:1;149:24;152:3; 166:8;173:1,1;177:15; 196:20;209:7;210:4,13; 214:21;215:18;234:19; 236:4;240:12;244:11</p> <p><b>McCain (1)</b> 256:2</p> <p><b>McHugh (2)</b> 8:18,19</p> <p><b>mean (60)</b> 11:17;23:5;61:18;74:18; 78:7;107:12;121:20;128:6; 130:24;152:23;159:12; 165:6,15;168:4;170:8;176:7; 177:2,9,17,18;178:3,4; 180:11,21,23;183:2,17,19, 20;192:11;202:15;203:3; 207:25;208:4,12;209:4; 214:15,21;215:18;216:23; 218:18,18;221:10,19;224:12, 14;225:16;228:18;229:14; 230:24;232:4;235:21; 239:20;240:3;241:23; 243:18;244:19;245:22; 250:5;252:16</p> <p><b>meant (2)</b> 118:25;217:9</p> <p><b>measurable (1)</b> 93:21</p> <p><b>measure (5)</b> 16:18,22;67:12;214:7,11</p> <p><b>measured (5)</b> 66:19;194:18;214:14; 215:21;241:17</p> <p><b>measurement (3)</b> 28:13;194:20;214:13</p> <p><b>measurements (1)</b> 195:5</p> <p><b>measures (4)</b> 70:17,21,25;71:3</p> <p><b>measuring (5)</b> 19:11;67:10;93:23; 214:17;225:14</p> <p><b>meat (1)</b> 46:16</p> <p><b>mechanism (5)</b> 86:6;184:3;186:4;203:12; 215:20</p> <p><b>mechanisms (2)</b> 213:20;221:10</p> <p><b>meet (20)</b> 33:17;67:8;70:8;94:22,22; 136:24;137:23;138:15; 143:20;157:25;183:15; 197:5;207:1;221:11;228:2; 230:19;231:10;234:3;250:3, 6</p> <p><b>meeting (4)</b> 27:2;188:11;244:1,21</p> <p><b>meetings (3)</b></p>	<p>119:25,25;120:3</p> <p><b>Melanson (5)</b> 201:3,8;248:8,14,21</p> <p><b>member (7)</b> 113:15;130:3,17;135:13; 143:22;155:25;232:3</p> <p><b>members (47)</b> 84:3;114:16;122:10,13,22; 134:3,11;140:12,19;141:6, 22;142:13;144:21,24;145:7, 13,25;146:14;148:11;150:6, 18;156:9,10,18;161:9; 166:23;167:14;171:22; 173:19,21;174:18,19;177:4; 178:8;181:13,16,19,19; 199:9;224:22;227:21;232:1; 233:15,18;234:1;245:11; 252:4</p> <p><b>members' (2)</b> 128:8;240:18</p> <p><b>memo (2)</b> 120:24;121:1</p> <p><b>memory (1)</b> 56:17</p> <p><b>mention (1)</b> 159:10</p> <p><b>mentioned (11)</b> 59:4,10,11;86:25;90:18; 92:15;96:13;108:18;114:5; 130:24;198:9</p> <p><b>meshed (1)</b> 24:2</p> <p><b>met (1)</b> 166:2</p> <p><b>meter (2)</b> 16:22;214:16</p> <p><b>meters (5)</b> 93:15,20,22;214:7;215:10</p> <p><b>method (7)</b> 133:22;137:9,13,15; 146:18;172:3;214:5</p> <p><b>methodologies (2)</b> 136:8;230:19</p> <p><b>methodology (112)</b> 11:2;12:4,5;37:7;38:2; 44:9;52:22;53:10;55:11; 57:4;58:3,15;69:11;71:8,13, 23;72:7,21;73:9,18,22;74:1, 7,15;75:3;76:12;84:9,12,24; 85:5;121:6,12,18;122:4,11, 14;125:24;126:4;128:22; 129:23;131:23;132:4,8,12, 14;133:4,15,22;137:7;140:1, 9,20,24;141:1;144:11,25; 145:2;148:13;149:4;150:25; 151:23,25;155:5;161:2,15; 162:16;163:24;165:8;169:2, 11;170:22;171:4;172:22; 173:3,6,12,16;174:24;175:2, 7,14;177:8,23;179:14,15,16, 20;182:7,11,20,25;184:8; 200:3,11;202:11;229:2,13, 15;231:6;232:5,11,18;234:3,</p>	<p>8,9;247:19;248:4;250:15,20, 24;252:2;253:23</p> <p><b>methods (3)</b> 119:5;136:13;139:25</p> <p><b>Mexico (2)</b> 112:12;224:15</p> <p><b>microphone (1)</b> 12:17</p> <p><b>microphones (2)</b> 8:13;111:7</p> <p><b>mid-1980s (3)</b> 189:1;190:22;209:10</p> <p><b>mid-'80s (5)</b> 190:14;191:6;204:5; 205:5;209:22</p> <p><b>mid-April (2)</b> 89:7,10</p> <p><b>midday (2)</b> 256:5,13</p> <p><b>middle (2)</b> 18:4;141:14</p> <p><b>mid-October (2)</b> 89:8,10</p> <p><b>mid-season (1)</b> 220:25</p> <p><b>midsummer (1)</b> 223:2</p> <p><b>Midway (5)</b> 44:18;46:5,14;98:2,5</p> <p><b>might (16)</b> 10:13;15:10;23:9;60:4; 121:25;125:3;128:15;129:4; 152:4,9;166:7;189:3;191:14; 240:23;242:18;253:22</p> <p><b>miles (10)</b> 16:15;54:7;86:19;143:3; 220:3,3;221:14;223:20; 224:11,18</p> <p><b>million (18)</b> 40:25;41:5;72:19;96:1,6; 98:20;103:7;127:2;184:23, 25;185:7,8,13,15,17,22; 223:11;228:13</p> <p><b>Milner (7)</b> 16:4;42:24;152:11;154:7; 165:3,3,5</p> <p><b>mind (7)</b> 21:6;79:1;92:23;108:21; 139:21;169:15;205:20</p> <p><b>miner's (6)</b> 31:2,6,13,17,22;66:13</p> <p><b>Minidoka (6)</b> 175:9;185:1,6;190:2,21; 217:9</p> <p><b>minimize (2)</b> 71:5;202:3</p> <p><b>minimum (2)</b> 145:15;200:11</p> <p><b>minus (2)</b> 170:18;178:21</p> <p><b>minute (8)</b> 10:14;116:12;117:1; 151:5;165:2;202:9;216:13;</p>	<p>255:18</p> <p><b>minutes (8)</b> 65:9;69:22;76:19;128:7; 179:1,5;246:22;252:15</p> <p><b>mischaracterized (1)</b> 205:14</p> <p><b>mischaracterizes (1)</b> 205:10</p> <p><b>misclassified (1)</b> 177:16</p> <p><b>misleading (1)</b> 137:1</p> <p><b>mismatch (1)</b> 155:2</p> <p><b>missed (2)</b> 116:22;209:9</p> <p><b>mistake (1)</b> 217:13</p> <p><b>misunderstand (1)</b> 234:19</p> <p><b>misunderstanding (1)</b> 234:20</p> <p><b>misunderstood (3)</b> 91:7;106:9;129:2</p> <p><b>mitigate (15)</b> 183:14,14,15;186:14; 187:15;203:2,6;205:21,23; 207:21,23;208:2;211:10,11; 250:8</p> <p><b>mitigated (1)</b> 211:15</p> <p><b>mitigating (3)</b> 203:18;209:23;211:8</p> <p><b>mitigation (35)</b> 85:11;131:17;148:19; 183:21;186:23;191:8;202:3, 7;203:19;204:10;205:25; 206:5,8,13,23,25;208:5,9; 209:12;210:8,12;211:1,2,3,4; 212:4,12,17;213:6;226:20; 240:1,9;250:5,10,11</p> <p><b>mix (2)</b> 218:13;219:14</p> <p><b>mixture (1)</b> 165:3</p> <p><b>model (12)</b> 35:4;113:23;183:3,4,6,12; 184:14;186:11;187:4; 203:15;208:20;214:5</p> <p><b>modeling (23)</b> 112:24;113:13,16;122:15; 136:12;182:8,10,20,24,25; 186:9;187:10,23;188:2; 191:2,9;192:17,22;202:23; 203:1,3,4,9</p> <p><b>modest (3)</b> 171:18,20;172:18</p> <p><b>modifications (1)</b> 172:21</p> <p><b>modified (1)</b> 161:2</p> <p><b>moisture (4)</b> 136:24;157:25;166:2;</p>
--	--	--	--

<p>244:4 <b>moment (4)</b> 60:19;81:4;105:21;231:15 <b>Monday (1)</b> 26:4 <b>money (2)</b> 49:24;136:6 <b>monitor (3)</b> 42:15,19;54:4 <b>monitored (1)</b> 42:16 <b>month (17)</b> 18:6;30:11,11;153:3,23; 159:1;164:1;165:7,17,21,22, 22;167:15;169:6;173:15,17, 18 <b>monthlies (1)</b> 141:21 <b>monthly (41)</b> 131:25;136:16,21;137:1,4; 140:8,14,19,23,25;141:11; 142:12;143:9;149:17;151:4; 152:23;153:2,2,8,9;155:14; 156:17,20;161:11;163:15; 167:6,7,12;169:3,5,10,19,23; 183:3,4,5;214:18,25;215:2,8; 220:23 <b>months (16)</b> 137:9;140:15;153:23,24; 155:2,10;159:18;161:10; 162:11;163:18;165:3,20; 170:6;220:14;221:4;223:5 <b>moratorium (5)</b> 187:5,6,7,12,17 <b>more (124)</b> 14:16;21:9;33:1;37:14,21; 39:14;40:9;43:10;46:10,11, 22,23;53:25;64:20,25;68:9; 72:6,20;75:13;77:7,23; 80:16;85:4,6;86:4;89:5; 90:15,23;92:20;93:1;94:7, 17,20,20,21,21;95:18;97:22; 106:14,24;107:3,4,4,15; 115:17;119:18;122:19; 129:15;131:5,11,14,15,16; 132:18;135:7,8;141:2;143:3, 4,17,19;144:1,13;149:12; 151:8,8,21;158:2,11,15; 159:20;161:18;164:8,13; 165:24;169:9;170:8;177:2; 179:1;187:1;190:25;195:24; 196:11,23,24,25;197:3,5; 206:1,1,2;210:4;215:2;217:3, 12,15,15;218:16;219:15; 223:22,25;224:1,3,3,5,18; 226:7;227:23;228:2,9,18; 233:9,10;239:13;242:25; 244:19;245:1,6;247:25; 248:2;250:16,20,22,23; 252:24 <b>morning (14)</b> 8:4,7,11,19,23;12:22; 16:20;59:5,10;97:19;102:11;</p>	<p>109:21;195:25;255:15 <b>Morocco (1)</b> 115:10 <b>Moss (4)</b> 18:3,7,7;21:11 <b>most (26)</b> 21:6;36:4;44:16,18;52:14; 89:2;96:17,17,19;98:12; 134:9;145:25;146:12,13; 155:2;181:19;187:18;208:3, 4;212:2;213:21;214:9;216:2, 23;220:19,21 <b>motion (4)</b> 10:23;11:5;12:7;107:21 <b>move (16)</b> 22:13;33:25;58:20,25; 68:20;83:23;92:21;93:1; 105:23;107:17;131:19; 154:19;155:21;166:14; 176:9;181:25 <b>moved (6)</b> 14:3,4,5;32:17,19;88:6 <b>moves (2)</b> 27:22;54:4 <b>moving (5)</b> 26:5;28:10;59:1;136:23; 152:16 <b>mowing (2)</b> 17:8,8 <b>much (54)</b> 16:3;17:16;18:10;32:8; 37:21;43:18;46:20;47:15; 61:16;65:4;68:5;92:13; 93:16;95:2;96:13;97:4; 101:7;106:24;109:3,8; 126:18;136:9;144:5;151:7,8; 152:13;154:4;157:14; 159:18;177:21,21;178:10; 181:17;184:5,13,15;187:19; 190:10,17;192:6,18;193:20; 196:22;197:3;204:17; 206:23;213:9,12,13;223:4; 228:9;236:20;242:9;245:21 <b>multiple (5)</b> 17:15;20:16;29:24;94:11; 251:24 <b>multiplied (1)</b> 175:24 <b>Murtaugh (11)</b> 16:6;59:4,7,14;61:17; 62:16,19,21;63:2;64:3; 244:14 <b>must (7)</b> 78:7,7,8;84:20;106:9; 108:9;148:12 <b>myself (3)</b> 72:12;135:16;245:13  <b>N</b>  <b>name (5)</b> 8:6;13:20,21,22;111:25 <b>names (1)</b></p>	<p>27:21 <b>natural (8)</b> 81:16;89:17,19;90:4; 103:24;168:12;241:22; 242:12 <b>nature (4)</b> 51:10;142:17,17;191:25 <b>near (13)</b> 33:25;84:15;119:16; 141:25;158:24;185:1; 187:21;190:1,21;194:21,22; 220:19;244:16 <b>nearly (3)</b> 54:1;86:19,19 <b>necessarily (5)</b> 76:13;87:23;143:10; 208:10;239:8 <b>necessary (5)</b> 48:8;148:15,15;206:25; 207:1 <b>need (90)</b> 8:13;10:13;12:21;18:21, 21;21:9;26:8;27:12,13; 36:11;37:5;40:21;52:3;74:5; 90:6;97:20;134:6,7,13,16,22; 135:6;137:11;139:9;143:25; 150:7,15,24;151:3,10,13,20; 152:1,9,12;153:2,8,8,13,15; 154:12,17;155:4;156:1,7,13, 22;157:25;158:20,25;159:3, 5,21;160:1,3,8,11,14;161:12; 163:19;164:2,3;167:12,13; 169:5,19;173:14,25,25; 175:20;177:24;186:18,23; 190:14;197:3;218:10,14,19; 220:10,24;224:1,4;227:17; 229:17;243:16;244:22; 247:21;250:6;253:19;254:20 <b>needed (6)</b> 24:24;25:1;183:10;200:2; 202:8;234:14 <b>needing (1)</b> 88:15 <b>needs (10)</b> 27:2;34:6;94:8,22;131:12; 143:20;173:19;213:1;250:4, 12 <b>neighborhood (1)</b> 223:15 <b>neighbors' (2)</b> 67:22,23 <b>net (2)</b> 84:22;186:25 <b>new (26)</b> 8:4;18:15,15;19:12;20:17; 27:22,23,24;83:19;100:1,3; 112:12;122:8;126:15;127:8, 18,23,23,25;128:24;129:8; 171:6;183:1;187:5,13; 224:15 <b>News (2)</b> 62:9;173:10 <b>next (20)</b></p>	<p>12:24;16:24;26:14,20; 48:14,24;70:1;110:23;142:7, 14;152:20,21;154:1,2; 155:21;167:19;168:22; 170:15;210:3;255:12 <b>Nice (2)</b> 70:8;198:5 <b>night (1)</b> 242:7 <b>ninth (3)</b> 59:17;65:20,23 <b>nods (4)</b> 39:10;43:22;105:20; 106:20 <b>none (3)</b> 194:10;208:25;209:12 <b>nonetheless (1)</b> 107:25 <b>nonirrigated (1)</b> 36:25 <b>Non-Irrigated (2)</b> 36:18;37:24 <b>nonirrigation (3)</b> 17:6;18:12,14 <b>noon (1)</b> 109:15 <b>normally (2)</b> 22:18;112:15 <b>North (6)</b> 39:9;146:19;154:21; 159:14;217:24,25 <b>Nos (1)</b> 81:11 <b>note (7)</b> 127:6;141:17;146:8; 149:21;154:20;156:24; 159:13 <b>notes (2)</b> 188:20;241:10 <b>nothing's (1)</b> 181:5 <b>notice (4)</b> 30:14;74:1;138:24;139:2 <b>noticeably (2)</b> 107:14,15 <b>noticed (2)</b> 32:13,15 <b>November (9)</b> 81:25;82:5;168:1,3,9,11; 170:16,19;188:11 <b>now-unsealed (1)</b> 55:4 <b>number (27)</b> 8:16;29:17;44:6,14;51:9; 53:20,22;72:14;82:12;83:2; 85:6;86:12;101:14;114:6; 122:5;135:9;140:24;141:22; 145:6;149:7;171:8,9;183:19; 223:12;233:6;236:1;254:7 <b>numbered (1)</b> 59:23 <b>numbers (24)</b> 74:4,16,19;80:21,24;90:4;</p>
--	--	--	---

<p>117:10,10;123:18;127:10; 139:13;144:17,19;170:23, 23;171:1;174:3,10;185:11, 12,12;216:18,24;242:18 <b>numerator (5)</b> 159:22,23;160:4,9,11 <b>numerous (1)</b> 113:10</p>	<p>108:25;109:3;111:8;116:11, 13,16;117:13;141:15; 153:14,25;196:22;222:9; 241:16,25;256:16,18 <b>offer (21)</b> 8:24;9:1,4,8,14,20,22; 10:2;11:2;21:21;47:2;48:15, 18;49:3,13;69:12;124:1; 132:17;193:13,16;194:8</p>	<p>101:11,16;105:2;107:20; 108:6,16,19;110:5;113:20; 116:23;117:13;119:18; 123:9;124:9;126:1;133:16; 137:13;140:11;141:2,10; 142:13;145:23;148:7;149:8; 152:6,11,13,20;154:1;156:5; 157:9;160:23;161:16; 162:18;164:13;165:13; 169:16;179:18,19;180:1,15, 18;181:8,17;182:18;183:9,9, 19;188:9;189:4,13,23; 191:23;195:24;198:17; 202:10;205:8;207:7;209:11; 216:23;227:25;235:21; 238:15;240:20;254:14; 255:25</p>	<p>237:10;251:21,23 <b>operation (9)</b> 101:21;110:17;123:24; 134:3;138:8;146:7;149:1; 225:16;245:3 <b>Operational (3)</b> 70:23;158:7;244:24 <b>operationalize (2)</b> 147:25;148:8 <b>operations (18)</b> 19:25;20:7;47:10;75:13, 18;105:3;114:25;122:22; 123:8,19;136:13;146:20,21; 147:2;158:14;197:6;224:16; 226:25</p>
<b>O</b>			
<p><b>object (10)</b> 9:18;44:23;47:4;49:6; 55:13;58:22;71:25;91:20; 110:8;246:11 <b>objection (34)</b> 9:10,17;21:23;37:2;38:7, 10,12;45:1,2;48:20,21;49:5; 51:15;56:10,12;58:10;68:23; 69:13;72:5;92:2;99:20; 100:25;110:11;124:4,5; 125:11,15;132:7;133:8; 138:25;148:23;205:10; 231:12,17 <b>objections (2)</b> 81:10;194:9 <b>obligated (1)</b> 39:25 <b>obligation (2)</b> 207:2;226:21 <b>obligations (2)</b> 108:13;250:11 <b>observation (1)</b> 172:2 <b>observations (1)</b> 228:25 <b>observe (2)</b> 252:18,22 <b>observes (1)</b> 107:23 <b>observing (2)</b> 114:19,20 <b>obviously (1)</b> 183:21 <b>occludes (1)</b> 17:13 <b>occurred (2)</b> 82:19;209:16 <b>occurring (4)</b> 88:10;181:10;198:18; 220:13 <b>occurs (1)</b> 88:10 <b>o'clock (3)</b> 97:18;178:25;255:10 <b>October (3)</b> 15:21;141:16;153:6 <b>off (40)</b> 8:9;10:14;12:20,20;16:13, 15;26:20;27:8;28:16;33:24; 34:1,11;42:17;43:9;49:9; 51:9;60:17;61:18;88:6; 89:14;101:11;106:13,23,24;</p>	<p><b>offered (3)</b> 8:24;172:21;246:5 <b>office (1)</b> 27:18 <b>OFFICER (131)</b> 8:3,8,12,20;9:15,19;10:4,9, 11,15,17;12:16,19;13:3,11; 15:11;21:23;22:5,15,18; 23:4,8;24:5;37:9,22;38:4,7, 11;44:25;47:3,13,21;48:2, 20;49:5,15;51:19;55:1;56:5, 8,10,12,16,20,23;58:11,25; 59:2;60:5;65:3,8,10;68:23; 69:3,13,20,22,25;72:4;74:2; 78:17;91:23;92:1;99:6,11, 13,15;100:14;105:9;107:21; 109:12,23;110:1,10,16,21; 111:9,12;118:1,4;124:4,20; 125:7,11,16;132:15;133:3, 10;138:25;139:11,16;179:3, 7;191:19;193:22;194:2,5,9; 197:10,16;198:14;199:19, 22;200:22;201:17,21; 205:12;226:23;227:2,5; 229:19;231:15;242:22; 243:1;245:25;246:8,18; 247:24;252:10,16;253:4,7, 12;254:24;255:4,6,9,18,21; 256:11,16 <b>officers' (1)</b> 236:18 <b>official (1)</b> 74:1 <b>offseason (2)</b> 19:18;20:3 <b>often (5)</b> 24:22;33:22,24;34:4; 214:14 <b>old (8)</b> 101:16;117:3;127:19; 128:23;129:17;148:6; 173:10;177:4 <b>Olsen (1)</b> 9:6 <b>once (5)</b> 19:4;37:5;88:19;106:12,23 <b>one (108)</b> 8:14,22;10:7,14,23;16:22; 22:7;25:18;26:3,5,9,19,19, 23;27:8,9,22;28:10;44:18; 48:24;56:18,19;58:18;60:11; 64:21;66:3,6,8,11,19;67:10; 68:2;69:6,6;75:23;83:18,23; 91:5,6;92:23,24;99:9;</p>	<p>101:11,16;105:2;107:20; 108:6,16,19;110:5;113:20; 116:23;117:13;119:18; 123:9;124:9;126:1;133:16; 137:13;140:11;141:2,10; 142:13;145:23;148:7;149:8; 152:6,11,13,20;154:1;156:5; 157:9;160:23;161:16; 162:18;164:13;165:13; 169:16;179:18,19;180:1,15, 18;181:8,17;182:18;183:9,9, 19;188:9;189:4,13,23; 191:23;195:24;198:17; 202:10;205:8;207:7;209:11; 216:23;227:25;235:21; 238:15;240:20;254:14; 255:25 <b>one-quarter (1)</b> 165:12 <b>ones (10)</b> 19:12;77:8;113:4;157:10; 191:6,7,8;209:22;241:7,8 <b>on-farm (10)</b> 92:18;93:8;138:7,11; 142:23;147:11;196:9;197:6; 226:13;237:19 <b>ongoing (4)</b> 19:14;20:9;37:11,19 <b>only (26)</b> 10:3;41:23;102:14;105:5; 128:1;138:2;143:25;152:22; 154:17;159:21;165:21; 172:16;190:13;204:4,9; 205:4,7;207:13;209:25; 212:16;217:13;241:7;250:3, 11;255:25;256:7 <b>on-system (1)</b> 93:9 <b>onto (2)</b> 95:2;101:11 <b>open (6)</b> 140:18;148:4;216:14; 235:20,24;237:17 <b>open-canal (1)</b> 222:25 <b>opening (1)</b> 132:12 <b>operate (21)</b> 14:16;95:21;142:1;143:19, 23;146:15;148:12,20,21; 164:24;186:19;207:24; 224:5,18;225:19;226:2,4,7; 243:9,14,16 <b>operated (2)</b> 166:11;245:6 <b>operates (3)</b> 25:11;153:11;221:9 <b>operating (23)</b> 21:5,9,9,16;141:25; 143:16;146:22;157:21; 158:8,22;159:20;160:17; 171:22;172:5;187:18;206:9, 12;210:19;226:16,22;</p>	<p>36:4;38:17;39:17,20;50:8, 18,20;158:14;172:20; 199:12,18,20;200:4,10,17; 202:22;205:6;207:13;217:2; 218:16;235:11 <b>opinions (7)</b> 37:20;112:5;119:2; 123:14;179:12;198:14,17 <b>opportunities (1)</b> 91:11 <b>opportunity (4)</b> 101:6;115:14;133:24; 246:14 <b>opposed (2)</b> 35:5;237:3 <b>opposite (1)</b> 146:4 <b>orange (5)</b> 154:3;189:18;190:3; 195:4;241:21 <b>order (100)</b> 11:2,4;12:4,5;30:15;38:2; 44:9;51:3;53:10;69:11;71:8, 13,23;72:7,21;73:18,22;74:1, 7,15;75:3;76:12;84:9,12; 94:22;97:19;121:6,7,13,18, 19;122:4,5;125:24;126:4; 129:23;131:23;132:4,11; 133:5,15;138:4,21;139:1; 140:1,9,20,24;141:1;144:4, 11;145:2;148:25;149:5; 150:25;151:23,25;155:5; 161:15;165:8;169:2,11; 170:22;172:23;173:12; 174:24;175:15;176:3; 177:23;179:15,16;182:7,11; 183:21;184:8,10;185:5; 186:20;187:17;200:12; 201:7;202:11,12;203:11; 209:6,9;229:2;231:2,5,6; 232:18;236:16,22,24; 240:22;247:19;248:4; 250:15;252:2;253:23 <b>ordering (1)</b> 221:11 <b>orders (3)</b> 39:25;121:16;167:3</p>

<p><b>Order's (1)</b> 234:4</p> <p><b>ordinarily (1)</b> 23:23</p> <p><b>original (8)</b> 114:7,24;127:12,17; 137:16;145:21;181:11,22</p> <p><b>originally (1)</b> 102:4</p> <p><b>others (5)</b> 95:7;142:2;224:23; 226:11;244:10</p> <p><b>other's (1)</b> 213:25</p> <p><b>otherwise (3)</b> 82:18;117:19;196:18</p> <p><b>ought (6)</b> 11:5;27:10;147:15; 151:24;155:6;180:13</p> <p><b>out (59)</b> 14:3;16:4,8,17,21,23;17:7, 17,22;18:2,7,21;19:18; 22:25;30:15;39:8;40:22; 44:14;82:20;83:8,10,13; 84:1;88:14;90:2;95:8,11; 102:10;106:7;107:23;115:8; 125:6;127:2;128:20;136:9, 23;137:5;141:13;144:24; 148:3;152:7,17;156:20; 157:24;166:21;171:16; 178:13;190:9;195:23;207:6; 209:5;210:10;216:6;218:19; 219:24;223:12;225:24,25; 251:19</p> <p><b>Outlier (1)</b> 155:10</p> <p><b>outliers (1)</b> 155:15</p> <p><b>outset (1)</b> 234:15</p> <p><b>outside (2)</b> 246:4,9</p> <p><b>outstanding (2)</b> 24:12;79:17</p> <p><b>over (35)</b> 16:15,17;18:25;21:19; 32:14,15;53:8;60:2;69:10; 70:22;71:19;74:14;82:24; 102:2;103:19;112:15,15; 113:23;123:6,19;129:13; 146:19;162:7;166:2;170:15; 192:12;198:8;199:16; 217:21;218:3;223:19;230:7; 234:7;236:6,13</p> <p><b>overall (6)</b> 172:2;178:14;197:1; 215:15;218:9;222:5</p> <p><b>overcome (1)</b> 137:2</p> <p><b>overdiverting (1)</b> 221:4</p> <p><b>overlap (1)</b> 79:5</p>	<p><b>overlapped (1)</b> 238:9</p> <p><b>overrule (3)</b> 38:11;125:11;133:8</p> <p><b>Overruled (5)</b> 125:13;201:3;205:13; 231:18;248:14</p> <p><b>oversee (1)</b> 113:21</p> <p><b>oversight (1)</b> 127:21</p> <p><b>overturn (1)</b> 19:3</p> <p><b>overview (1)</b> 122:1</p> <p><b>own (8)</b> 26:14;27:14;46:15;98:6, 16;174:14,21;248:25</p> <p><b>owned (2)</b> 46:20;98:10</p> <p><b>owner (2)</b> 98:1,17</p> <p><b>owners (1)</b> 27:22</p> <p><b>ownership (2)</b> 27:16;98:25</p> <p><b>owns (1)</b> 27:19</p>	<p>38:5,16;42:12,18;63:23; 67:6;74:3;80:2;81:23;94:9; 101:14;127:11;138:16; 147:18;148:17;151:25; 158:1;165:21;168:17; 169:25;173:20;207:9;208:4; 214:22;216:2;235:15; 236:23;243:13;244:11,23; 254:20</p> <p><b>partial (1)</b> 165:22</p> <p><b>partially (1)</b> 168:10</p> <p><b>participants (1)</b> 8:16</p> <p><b>participated (2)</b> 113:1;198:7</p> <p><b>particular (6)</b> 12:1;61:22;175:6;178:8; 230:16;242:3</p> <p><b>particularly (5)</b> 136:23;165:17;178:5; 191:10;193:1</p> <p><b>parties (5)</b> 98:10;109:20;112:13; 114:13;209:12</p> <p><b>partly (1)</b> 246:3</p> <p><b>partners (2)</b> 46:15;98:6</p> <p><b>part-owner (1)</b> 98:1</p> <p><b>parts (5)</b> 27:10;65:19;94:11; 196:12;220:4</p> <p><b>party (3)</b> 67:5;204:3;208:8</p> <p><b>passages (1)</b> 11:7</p> <p><b>past (6)</b> 76:24;166:11;167:3; 223:24;227:10;228:3</p> <p><b>pasted (1)</b> 188:9</p> <p><b>path (2)</b> 96:24;97:14</p> <p><b>patios (1)</b> 36:8</p> <p><b>patrons (2)</b> 95:18;110:3</p> <p><b>patterns (2)</b> 32:12,14</p> <p><b>PATTERSON (2)</b> 255:17,24</p> <p><b>pay (3)</b> 49:24;229:10,11</p> <p><b>PDF (1)</b> 38:25</p> <p><b>PE (1)</b> 111:1</p> <p><b>peak (4)</b> 141:14;220:9;222:15; 223:1</p>	<p><b>peeled (1)</b> 222:9</p> <p><b>peer (1)</b> 113:22</p> <p><b>pen (1)</b> 110:17</p> <p><b>penalties (1)</b> 183:24</p> <p><b>pending (1)</b> 110:5</p> <p><b>people (4)</b> 65:1;117:2;206:10;209:10</p> <p><b>per (21)</b> 24:19;32:11;39:23;40:1; 41:6;43:24;44:1,5;67:25; 71:19;79:9,10,21;92:13; 127:1;200:19;223:7,8; 224:25;236:19;237:16</p> <p><b>per-acre (2)</b> 79:14;237:21</p> <p><b>per-acre-feet (1)</b> 237:21</p> <p><b>percent (39)</b> 29:9,14;35:25;46:24;49:3; 53:25;54:1;78:4;82:16,18; 86:4,15,18;92:7,7;127:3; 138:5,10;162:23,24;163:3; 165:14,14,19,24;166:8,8,10, 12;204:9,12,13,17,20;205:2, 7;207:14;213:3;243:23</p> <p><b>percentage (10)</b> 28:24;29:7,19;43:3,16; 87:10;185:3;204:11,15,16</p> <p><b>percentile (10)</b> 164:22,23;165:11;166:7, 12,13;170:7,10;173:5;243:5</p> <p><b>perfect (4)</b> 66:15;160:12;181:4,5</p> <p><b>performed (1)</b> 213:11</p> <p><b>period (12)</b> 67:6;88:13;90:3;114:25; 127:11;129:23;130:9,10; 145:7;199:16;214:25;234:7</p> <p><b>periods (2)</b> 72:2;183:4</p> <p><b>perishing (4)</b> 77:13,21;104:16,21</p> <p><b>permanent (1)</b> 174:10</p> <p><b>permanently (3)</b> 210:24;211:5,12</p> <p><b>per-share (1)</b> 79:14</p> <p><b>person (1)</b> 70:8</p> <p><b>personal (2)</b> 14:18;252:17</p> <p><b>personally (1)</b> 80:7</p> <p><b>perspective (2)</b> 12:1;107:9</p> <p><b>perspectives (1)</b></p>
<b>P</b>			
	<p><b>page (73)</b> 14:21;15:23;22:8;30:21; 31:12;38:20,24,24;39:11; 40:5,13;55:5,6;57:1;61:13; 63:4,12,12,13,14,18;64:2,5, 19,20;71:15,23;73:8,16; 74:22;75:25;76:1,2;77:18; 81:22;84:10,15;94:14; 100:23;104:10,13;117:10; 118:21;119:15,17;124:10,10, 13,15;139:11,13,15;140:10; 142:7;144:14;149:19,21,24; 159:15;188:4;189:5,9,11,13; 201:8;216:14,20,21,22; 227:7;230:8;232:19;234:24</p> <p><b>pages (4)</b> 115:25;156:19;211:18; 238:3</p> <p><b>paper (2)</b> 63:18;117:3</p> <p><b>paperwork (2)</b> 28:8,9</p> <p><b>paragraph (4)</b> 81:24;84:18;124:13;235:6</p> <p><b>parameters (1)</b> 28:19</p> <p><b>parking (1)</b> 52:17</p> <p><b>parks (1)</b> 52:6</p> <p><b>part (36)</b> 9:11;10:4;12:3,10;37:6;</p>		

<p>108:17 <b>Pete (2)</b> 117:16;118:7 <b>petewood@idwr (1)</b> 117:23 <b>petition (1)</b> 201:7 <b>physically (1)</b> 28:10 <b>pick (6)</b> 128:24;152:17;156:20; 157:9;165:10,13 <b>picked (3)</b> 34:18;166:21;171:16 <b>picking (2)</b> 243:12,12 <b>pie (1)</b> 43:9 <b>piece (8)</b> 64:23;142:25;164:13; 181:17;226:12,13;230:16; 236:25 <b>pieces (1)</b> 72:1 <b>pink (2)</b> 145:11,11 <b>piping (1)</b> 235:25 <b>place (21)</b> 27:3,24;28:3,5,11;66:15, 19;67:11;86:6;174:10;176:1; 206:9;209:12;211:22; 212:15,17,18,22;214:4; 216:9,25 <b>places (8)</b> 63:6,7;186:13,15;192:14, 14;194:18;212:2 <b>Plain (4)</b> 113:23;202:17,18;224:21 <b>plan (24)</b> 206:9,13,17;207:2,4,5; 208:4,6,9;209:12;210:8,12, 20;211:17,22;212:12,16,23; 213:7,9;215:16;244:2,22; 248:5 <b>planned (3)</b> 91:4,5,6 <b>plans (24)</b> 186:17,18;208:2,10,14,15, 16,17,18;212:3,4,5,6,10,11, 15;213:3,11;214:18,19; 215:24;240:1,9;247:7 <b>plant (6)</b> 44:16,18;77:10;104:22,23; 107:3 <b>planted (2)</b> 33:4;78:8 <b>planting (3)</b> 77:3,10;107:2 <b>plants (7)</b> 44:12;46:15,20;98:9,15, 24;99:2 <b>play (1)</b></p>	<p>61:7 <b>plays (1)</b> 144:6 <b>please (28)</b> 8:5;12:18;13:4,19;14:11, 22;15:16;19:8;23:12;38:21; 57:6;71:15;73:13,16;75:20; 77:17;100:23;104:19; 110:24;112:1;142:9;144:9; 188:5;193:24;194:15; 232:10;247:21;252:17 <b>plot (3)</b> 150:16,16;157:23 <b>plots (1)</b> 150:11 <b>plotted (6)</b> 142:13;150:5,15,23; 155:20,20 <b>plotting (5)</b> 153:2,7,9;156:5,11 <b>plowed (1)</b> 132:19 <b>plugged (1)</b> 127:21 <b>plus (2)</b> 168:13;178:21 <b>pm (1)</b> 256:21 <b>Pocatello (5)</b> 111:2,23;114:2;206:11; 231:20 <b>point (21)</b> 18:8;27:23;29:7;37:12; 83:23;91:16;93:16,17; 106:14;110:15;124:2,15; 139:14;152:7;155:17;204:1; 211:14;226:5;235:22,23; 236:12 <b>Pointe (1)</b> 39:9 <b>points (4)</b> 150:20;166:8;194:20; 236:13 <b>policy (3)</b> 28:6,19,20 <b>Pond (2)</b> 20:22;90:21 <b>ponds (2)</b> 17:19;97:17 <b>pool (2)</b> 203:17;210:5 <b>poor (1)</b> 158:5 <b>poorly (1)</b> 251:14 <b>population (1)</b> 48:25 <b>portion (4)</b> 23:7;86:22;87:14;110:7 <b>portions (1)</b> 124:8 <b>position (5)</b> 14:5,6;112:7;202:2;209:25</p>	<p><b>positions (1)</b> 14:1 <b>positive (1)</b> 131:9 <b>possible (9)</b> 10:25;21:13,14;22:23; 33:20;48:4;70:23;75:21; 94:16 <b>post (2)</b> 126:19;194:2 <b>potato (2)</b> 32:24;107:2 <b>potatoes (5)</b> 26:11;33:2,9;87:1;106:12 <b>potential (3)</b> 122:12;161:5;238:8 <b>potentially (4)</b> 123:15;149:12;158:7; 185:25 <b>power (11)</b> 44:12,16,18;45:13,16; 46:11,14,15;98:2,5;102:16 <b>practice (3)</b> 34:13,16;244:25 <b>Practices (7)</b> 84:16,21;105:19;107:8,19; 114:22;237:20 <b>precipitation (1)</b> 242:5 <b>predecessor (1)</b> 113:19 <b>predict (2)</b> 133:23;208:21 <b>predicted (3)</b> 75:4;76:20,23 <b>predicting (4)</b> 73:2;74:24;151:11,12 <b>predictor (3)</b> 134:7;154:13,16 <b>prefer (1)</b> 191:16 <b>preferable (1)</b> 176:25 <b>preference (3)</b> 149:7,8;172:25 <b>prefiled (10)</b> 22:13;23:21;24:1;71:11, 14;79:23;86:22;94:4,12; 96:16 <b>preirrigating (1)</b> 17:18 <b>preliminary (2)</b> 8:23;45:1 <b>prepare (4)</b> 15:4;121:19;149:2;164:11 <b>prepared (10)</b> 23:21;36:22;67:20;68:11; 102:21;118:17;119:13; 150:1;193:5,15 <b>present (10)</b> 28:11,12,13,24;30:17; 112:5,7,21;151:14;174:13 <b>presentation (1)</b></p>	<p>12:11 <b>presentations (1)</b> 188:10 <b>presented (6)</b> 8:24;71:23;118:11;120:2; 174:21;175:8 <b>presents (1)</b> 187:8 <b>president (1)</b> 112:8 <b>pressure (2)</b> 21:13;188:22 <b>presumes (1)</b> 134:6 <b>pretrial (1)</b> 15:23 <b>pretty (15)</b> 16:3;18:10;61:22;64:24; 114:14;126:14;128:4; 130:11;141:22;153:11,12, 24;159:16;178:18;235:23 <b>prevent (1)</b> 162:15 <b>prevents (2)</b> 186:25;212:25 <b>previous (6)</b> 126:5;141:23;144:14; 166:3;219:5,7 <b>previously (13)</b> 12:2;37:25;38:9;40:6; 46:9;121:9;141:5;142:4; 145:20;146:16,18;182:14; 206:1 <b>Price (1)</b> 64:21 <b>prices (3)</b> 11:24;108:3,5 <b>primarily (2)</b> 89:17;115:20 <b>primary (1)</b> 87:2 <b>principle (1)</b> 202:15 <b>print (2)</b> 117:13,18 <b>printed (1)</b> 116:10 <b>prior (26)</b> 10:6;20:9;25:2,3;37:2; 82:3;112:22;113:1,17; 118:17;119:3,6,13;137:14; 171:8,9;187:17,20,24; 190:24;202:19;230:14; 233:7;249:12;251:1,3 <b>priority (7)</b> 104:3;122:16;182:13; 184:17;189:22;202:23; 240:20 <b>privately (1)</b> 46:20 <b>probably (16)</b> 11:4;46:17;61:23;80:17; 88:6;100:8;157:21;158:8;</p>
--	---	---	--

<p>159:20;173:10;179:1;221:4; 234:18;236:6,20;242:19 <b>problem (7)</b> 118:9;127:4;149:9; 176:21;181:7;209:24;249:18 <b>problems (2)</b> 253:8,9 <b>procedure (3)</b> 135:22;155:15;182:12 <b>proceeding (12)</b> 38:1,6,47;9:55;11:57;5:18; 91:22,25;198:23;209:13; 216:10;220:2 <b>proceedings (1)</b> 201:23 <b>process (6)</b> 23:22;119:21;131:6,11; 132:18;196:19 <b>produce (9)</b> 35:8;46:23;184:6,15,25; 189:1,13,14;190:16 <b>produced (6)</b> 30:22,22;46:9;115:2; 188:8;190:1 <b>producers (2)</b> 46:13;108:13 <b>producing (1)</b> 11:18 <b>product (2)</b> 58:4;142:23 <b>production (6)</b> 82:20;83:6,8,11,13;84:1 <b>professional (8)</b> 112:7,9,11;121:17;134:24; 157:10;158:14;196:6 <b>profit (1)</b> 47:7 <b>program (6)</b> 18:24;27:18;61:20;83:15, 16,21 <b>programs (6)</b> 49:23;50:4,7,9,22;240:8 <b>progression (1)</b> 173:5 <b>project (94)</b> 18:13;19:15;25:14;26:9, 15;27:20;29:17;30:1;32:25; 33:2;42:17;52:7;54:5;59:22; 76:9,11,16;77:14;78:8;88:4; 90:25;91:10;105:4;107:15; 122:9;123:17;131:19,24,25; 132:3,25;133:14,18,19; 134:21;138:9;139:9,24,25; 140:5,8,12,14,19;141:20; 142:12,16,20,24;144:10,20, 20;145:5,5,19;147:1,18; 148:13;149:4;153:16; 154:12;155:9;156:1,6,11,21; 158:19;161:11,19;169:2,5, 10,24;170:10,11;172:3,22; 173:23,24;176:16,23; 219:18;220:20;221:1,20; 223:1;224:17;227:9;235:16,</p>	<p>19;238:8;243:3;244:14; 253:19 <b>projects (18)</b> 17:20;18:15,16;20:6,9,12, 12,25;46:18;75:17;91:3,4; 102:12;201:11;219:21; 227:12;238:12;239:7 <b>promises (1)</b> 256:12 <b>proof (8)</b> 8:24;9:1,9,14,21,22;10:2; 11:3 <b>proper (2)</b> 11:4;205:20 <b>properly (1)</b> 227:13 <b>prophecy (1)</b> 133:21 <b>proposal (3)</b> 126:2;164:12;173:4 <b>propose (10)</b> 149:3;160:20,21;161:7,16; 162:8,12,25;164:20;234:20 <b>proposed (3)</b> 161:4;169:18;243:3 <b>proposing (4)</b> 133:1;148:12;164:18,21 <b>prospect (1)</b> 35:15 <b>protect (3)</b> 66:25;229:3;234:14 <b>protects (1)</b> 215:20 <b>prove (1)</b> 39:18 <b>profit (1)</b> 186:19 <b>provide (15)</b> 21:1,15;53:21;85:25; 113:22;174:8;177:19; 183:12;204:2;206:4;211:1,2, 3,4;229:16 <b>provided (10)</b> 53:7;126:22;127:5,7; 130:16;140:6;174:6,16; 238:4;250:6 <b>provides (3)</b> 175:16;186:1;187:6 <b>providing (2)</b> 21:4;183:13 <b>provision (1)</b> 122:14 <b>provisional (1)</b> 127:13 <b>provisions (1)</b> 11:15 <b>prudently (2)</b> 21:5,17 <b>pull (3)</b> 40:22;71:11;73:12 <b>pulling (2)</b> 38:17;143:15 <b>pump (4)</b></p>	<p>137:21;186:24;210:11; 250:9 <b>pumped (1)</b> 190:24 <b>pumper (1)</b> 202:4 <b>pumpers (1)</b> 201:24 <b>pumping (10)</b> 180:25;181:13;184:5; 186:13;187:20,24;188:25; 190:24;209:15;216:7 <b>purple (4)</b> 151:18,18;162:22;163:4 <b>purports (1)</b> 9:5 <b>purpose (5)</b> 9:16;48:3,5;56:16;203:17 <b>purposes (17)</b> 9:13;10:3;53:9;102:14; 135:19;140:22,22;150:22; 165:8;171:15;192:23; 193:20;194:24;200:13; 217:4;254:10,14 <b>pursued (1)</b> 250:3 <b>push (3)</b> 17:13;179:1;222:14 <b>put (22)</b> 14:14;15:17;19:19;20:11, 16,17;21:12;28:14;30:15; 34:19;106:25;111:23;128:7; 140:21;141:2;155:13;176:7; 191:16;225:10;237:1;239:9; 251:19 <b>putting (3)</b> 18:6;47:11;100:1</p>	<p>141:15;142:3;155:1;182:22; 183:8;198:20;230:7;236:24 <b>quote (3)</b> 22:12;94:6;235:3 <b>quoted (3)</b> 22:11,24;110:9</p> <hr/> <p style="text-align: center;"><b>R</b></p> <hr/> <p><b>rained (1)</b> 242:6 <b>rains (1)</b> 242:9 <b>raise (2)</b> 13:4;110:24 <b>range (6)</b> 83:20;145:12,15;146:11; 178:20;243:13 <b>Rangen (1)</b> 113:8 <b>ranging (2)</b> 162:21,23 <b>rate (14)</b> 30:12;40:25;41:17;89:2, 20,21;144:3;200:18;225:5; 235:4,12;236:18;237:16; 244:25 <b>rates (1)</b> 79:8 <b>rather (9)</b> 15:19;155:25;164:20; 170:5;171:3;173:6;177:12; 245:1;246:15 <b>reach (16)</b> 185:2,4,4,7,16;190:2,11, 21;192:18,24;204:14; 208:21;209:17;210:22; 211:6,13 <b>reached (1)</b> 187:21 <b>reaches (3)</b> 185:18,19;186:1 <b>reaching (1)</b> 192:19 <b>react (1)</b> 191:18 <b>reaction (1)</b> 196:6 <b>read (25)</b> 24:1;55:8,22;56:13,20; 57:1,6;64:11;65:2,15;66:3,6, 15;67:2,3,17;74:16;84:12, 23;104:16,19;139:20;199:3; 231:8;235:14 <b>read] (1)</b> 66:8 <b>readily (1)</b> 219:4 <b>reading (4)</b> 55:14,17;56:1;217:19 <b>reads (1)</b> 81:24 <b>ready (2)</b></p>
<b>Q</b>			
<p><b>qualification (2)</b> 22:24;23:1 <b>qualified (2)</b> 107:19;235:10 <b>qualifier (1)</b> 202:21 <b>qualify (1)</b> 129:6 <b>quality (3)</b> 17:20;18:15;20:17 <b>quantified (3)</b> 73:19,23;74:8 <b>quantities (1)</b> 66:20 <b>quarter (1)</b> 179:5 <b>query (1)</b> 241:3 <b>quick (7)</b> 34:2;99:10,14,16;109:18; 246:21;254:1 <b>quite (11)</b> 33:24;77:5;114:22;</p>			

<p>89:13,14 <b>real (10)</b> 34:5;62:5;99:14;137:9; 138:1;202:8;204:1;207:1; 219:3;254:1 <b>reality (1)</b> 219:19 <b>realize (3)</b> 46:12;47:16;73:24 <b>realized (1)</b> 204:10 <b>realizes (1)</b> 47:18 <b>realizing (1)</b> 45:24 <b>really (24)</b> 9:17;17:3;18:22;19:1,1; 20:2;23:25;34:2;86:10; 92:16;107:6;124:18;131:14; 133:24;168:9;174:7;192:7; 195:21;202:8;211:15; 215:19;229:9,10;251:18 <b>realm (2)</b> 124:7,24 <b>reason (20)</b> 32:1;74:10;86:13;136:20; 138:16;144:7;147:11;158:2; 159:5,21;165:18;171:10; 183:2;184:14;217:25;221:3; 239:11,23;244:6,23 <b>reasonable (35)</b> 35:12,16;58:8;71:9;73:2,6; 134:1;138:8;141:4;144:10; 145:18,19;146:9,15;147:1, 17;148:14;149:9,12;158:11; 161:2;168:24;170:16; 172:11;181:2,6;225:5,21; 226:25;237:17;243:11; 251:1,4,21,23 <b>reasonableness (7)</b> 123:7,20;149:10;163:22; 172:25;225:16;226:10 <b>reasonably (5)</b> 158:22;160:17;177:6; 212:19;237:10 <b>reasoning (1)</b> 182:22 <b>reasons (6)</b> 147:13;178:12;182:17,18; 183:19;203:20 <b>rebuild (1)</b> 51:3 <b>rebuttal (1)</b> 191:16 <b>recalculate (1)</b> 176:15 <b>recall (35)</b> 25:4;28:25;35:21;39:15; 42:25;43:5;44:19;45:7; 49:25;51:5,6;52:25;53:11; 54:16,20;57:19;59:7;62:17; 129:10;147:23;174:23; 184:20;192:2;199:12,21;</p>	<p>200:23;201:17;231:14; 233:16;236:2;247:6;251:7, 10;253:20;254:17 <b>recapture (1)</b> 101:9 <b>receive (11)</b> 46:18,24;47:10;48:8; 49:15;94:23;98:16;101:23; 121:2;205:7;207:13 <b>received (17)</b> 10:2;23:3;48:11,12,22,23; 49:17,18;69:3,5,16,17; 119:24;125:17,19;194:11,12 <b>receiving (2)</b> 41:24;52:18 <b>recent (10)</b> 44:16,18;84:20;86:14; 88:3;102:7;216:23;227:23; 233:3;239:13 <b>recess (2)</b> 117:24;179:8 <b>recharge (16)</b> 16:6,6;59:12,17,22,25; 60:23;61:6,7,9,11,20,23; 64:10;103:10;244:10 <b>recharging (2)</b> 59:14;62:14 <b>recognize (3)</b> 30:6;53:14;81:14 <b>recognizing (1)</b> 22:21 <b>recollection (2)</b> 126:18;238:22 <b>recommendation (5)</b> 120:4,9,14,23;216:16 <b>recommendations (2)</b> 81:11;176:23 <b>recommended (1)</b> 236:18 <b>recommending (3)</b> 147:16;215:16;216:17 <b>recompute (2)</b> 127:22;175:25 <b>recomputed (2)</b> 126:8;128:17 <b>reconsider (2)</b> 10:24;12:7 <b>reconsideration (1)</b> 11:6 <b>record (40)</b> 9:3,11;10:14,17;12:9,10; 13:20;14:13;15:16;21:22; 22:23;37:3,6,18;38:5,8,13, 16;47:12;60:17;74:3;83:1,2; 110:13,21;111:8;112:1; 116:11,13,14,16;118:5,10; 120:7;149:22;179:7;193:21; 248:24;256:16,18 <b>recording (3)</b> 8:3;69:25;179:8 <b>records (4)</b> 47:23;59:20;114:17;123:6 <b>record's (1)</b></p>	<p>248:20 <b>Recross (3)</b> 105:10;255:1,2 <b>RECROSS-EXAMINATION (1)</b> 105:14 <b>red (4)</b> 145:9,10,23;146:1 <b>redact (1)</b> 110:6 <b>redacting (1)</b> 23:6 <b>redeliver (1)</b> 94:24 <b>redirect (7)</b> 22:17;46:9;99:8;100:16, 19;246:1;253:15 <b>redirected (1)</b> 102:6 <b>redline (1)</b> 117:5 <b>redo (1)</b> 132:12 <b>red-shaded (1)</b> 146:10 <b>reduce (7)</b> 27:11;70:18,20;71:1; 88:20;176:15;218:8 <b>reduced (7)</b> 31:21;102:9;104:22; 233:17,19;234:1,1 <b>reduces (1)</b> 41:11 <b>refer (1)</b> 155:11 <b>reference (6)</b> 86:21,22;124:16;140:21; 169:21;252:23 <b>referenced (2)</b> 11:15;204:8 <b>references (2)</b> 125:12;252:20 <b>referred (3)</b> 35:4;52:22;120:10 <b>referring (5)</b> 84:19;94:12;199:15; 245:8;249:11 <b>refers (1)</b> 204:12 <b>reflect (4)</b> 27:23;83:7;234:14;248:25 <b>reflected (3)</b> 121:16;163:21;167:17 <b>reflection (2)</b> 160:15,16 <b>reflective (1)</b> 232:2 <b>reflects (5)</b> 83:19;145:15;157:23; 160:25;168:2 <b>refresh (2)</b> 56:17;245:13 <b>regarding (5)</b> 9:6;10:25;12:12;53:9;</p>	<p>173:4 <b>regardless (1)</b> 158:24 <b>regards (1)</b> 102:1 <b>registrations (1)</b> 112:10 <b>regression (12)</b> 161:19,20,21;162:6,9; 163:1,2,11,13;164:18; 169:22;243:4 <b>regular (1)</b> 19:2 <b>regulate (1)</b> 93:16 <b>regulations (1)</b> 66:22 <b>rehab (1)</b> 19:11 <b>rehabilitate (2)</b> 10:21;51:10 <b>reimbursement (1)</b> 46:5 <b>rejected (7)</b> 200:8,15;201:13,20;227:5; 231:22;248:14 <b>related (12)</b> 23:10;32:16;58:16; 118:23;142:17;145:10; 176:22;179:12;189:13; 193:18;238:7;248:8 <b>relating (3)</b> 13:8;81:24;111:3 <b>relation (3)</b> 126:14;134:15;181:14 <b>relationship (9)</b> 151:12;155:5;157:5,14,20; 159:17;160:12;161:11,13 <b>relative (2)</b> 50:15;82:15 <b>relatively (7)</b> 80:11;141:13;151:19; 164:1;184:6;210:20;213:23 <b>release (1)</b> 109:19 <b>relevance (3)</b> 47:5;91:22;99:21 <b>reliable (4)</b> 132:19;177:3;178:22; 208:17 <b>reliably (1)</b> 186:22 <b>reliance (1)</b> 177:10 <b>relook (1)</b> 122:21 <b>reluctant (1)</b> 22:19 <b>rely (1)</b> 101:20 <b>relying (2)</b> 177:11;207:21 <b>remember (19)</b></p>
--	--	---	--



54:21;80:2;94:9,10; 103:12;117:8;133:12; 139:19;174:20;199:3;200:1, 25;219:16;235:16;238:11; 248:11,13;251:5;254:5 <b>remind (3)</b> 23:12;159:23;173:11 <b>reminding (1)</b> 56:24 <b>remote (4)</b> 174:19;175:3,4;219:2 <b>remotely (2)</b> 8:17;120:2 <b>removed (2)</b> 82:12;83:5 <b>rendered (3)</b> 198:14;200:4,10 <b>renegotiated (1)</b> 208:11 <b>rentals (1)</b> 167:23 <b>repairs (1)</b> 18:2 <b>repeat (2)</b> 239:17;245:16 <b>repeatable (1)</b> 178:23 <b>repetitious (1)</b> 37:4 <b>replace (6)</b> 19:1,2,11;210:5;247:19; 248:4 <b>replacement (7)</b> 186:16,18;212:23;213:9; 215:24;247:7;248:5 <b>replacing (1)</b> 116:16 <b>replete (1)</b> 252:20 <b>report (41)</b> 9:5;111:23;114:24;115:2, 12,21;118:12;119:15;122:7; 124:9,23;125:6,8;135:13; 139:14;141:7;145:8;149:2; 181:22;188:5;189:6,12; 198:15;204:9;211:18;215:8; 216:14;217:2,11,19;225:10, 13;227:7;230:8;233:13; 234:25;235:17;238:2;246:5; 252:20;254:6 <b>reported (2)</b> 96:17;167:14 <b>reporter (14)</b> 8:4,6,10;10:7,10,13,19; 19:7;56:11;194:3;239:16; 245:16;247:20,23 <b>reporting (3)</b> 213:21;214:17,20 <b>reports (6)</b> 85:4;118:17,22;119:3,6,13 <b>represent (11)</b> 36:20;41:3;44:2;53:24; 66:11;71:8;74:6;84:20;	111:22;236:6;238:4 <b>representative (1)</b> 126:7 <b>represented (7)</b> 66:9;84:22;86:18;141:21; 190:4;238:21;251:2 <b>representing (3)</b> 72:2;113:25;201:24 <b>represents (12)</b> 15:18;31:1;128:6,7; 140:18;145:11;167:4; 189:19;190:4,18;194:24; 195:4 <b>request (2)</b> 9:20;181:14 <b>requested (1)</b> 181:15 <b>requesting (1)</b> 231:21 <b>require (11)</b> 25:17;37:14;39:13,23; 184:15;186:14;207:20; 214:19;232:5,11;234:9 <b>required (12)</b> 53:24;70:23;85:11;202:3, 7,7;210:1;211:22;214:6; 215:8;250:11,21 <b>requirement (7)</b> 52:22;159:25;167:15; 200:11;214:3;237:1;244:2 <b>requirements (2)</b> 206:22;214:13 <b>requires (3)</b> 37:16;148:18;231:2 <b>requiring (1)</b> 226:19 <b>re-regulating (3)</b> 16:7;20:23;59:11 <b>reservoir (3)</b> 16:7;20:23;59:11 <b>residential (1)</b> 80:1 <b>resort (2)</b> 249:25;250:7 <b>Resource (6)</b> 61:8,20;186:3;187:2; 206:2;207:10 <b>resources (4)</b> 112:20,24;138:20;148:3 <b>resources' (1)</b> 11:16 <b>respect (1)</b> 249:8 <b>respective (2)</b> 11:24;12:12 <b>respond (1)</b> 37:8 <b>response (6)</b> 120:14,22,23,25;208:21; 248:17 <b>responses (1)</b> 191:14 <b>responsible (5)</b>	191:7,8;203:5,18;209:23 <b>rest (6)</b> 22:13;31:20;84:23; 104:19;154:6;244:14 <b>restate (1)</b> 73:3 <b>restrictions (1)</b> 9:7 <b>result (12)</b> 11:11;12:6;46:7;48:8; 85:9;94:6;95:15;133:8; 135:2;163:18;206:19;207:18 <b>resulted (1)</b> 129:18 <b>resulting (3)</b> 11:1;190:2;205:8 <b>results (8)</b> 137:6,11;166:24;167:7; 170:14;182:13;189:19; 220:22 <b>retained (1)</b> 82:16 <b>retains (1)</b> 67:7 <b>return (24)</b> 42:2,5,8,18,23;43:10;44:7; 70:9,11;94:5;95:7;191:25; 192:6,9,11,14;193:19; 194:18;195:19;196:16; 241:12,16,19;242:11 <b>returned (1)</b> 115:11 <b>returning (4)</b> 43:3,7,23;44:4 <b>returns (4)</b> 46:11,21;242:17;253:10 <b>reuse (5)</b> 101:6,10;196:15,19,24 <b>reused (3)</b> 196:3,11,18 <b>revenue (8)</b> 45:13,16,23;46:6,11; 47:15;98:21,22 <b>reverses (1)</b> 12:11 <b>review (19)</b> 9:19;22:1;74:4;81:5,6; 113:22;115:12;121:18; 124:7,17;125:23;126:13; 132:10;201:8;213:24,25; 220:17,18;231:6 <b>reviewed (3)</b> 114:12;120:5;121:9 <b>reviewing (5)</b> 9:23;12:10;113:11; 114:16;122:3 <b>reviews (1)</b> 28:18 <b>revised (2)</b> 123:21;175:18 <b>rider (1)</b> 14:3 <b>riders (2)</b>	16:19;27:25 <b>right (119)</b> 8:12,21;9:7;12:23;13:4; 17:8,22;23:8,10;30:4;34:20; 35:21;40:18;55:23;56:5; 59:20,21;60:1,22;61:6,7,9; 62:3;64:10,22,23;65:8,18; 66:2,14;71:7,20;72:18; 75:18;78:9;80:21,23;81:10, 11,25;87:19;89:23,24,24; 93:2;96:1;97:2;98:7;103:7, 10,15,17,22,23;104:2,3,7; 109:14;110:16,24;111:14; 115:9,13;117:5,15;118:4; 120:25;129:25;134:19; 138:22;139:15;147:21; 150:9;151:18;153:4;164:16, 25;173:2;176:11;177:17; 179:11;185:12;188:8,23; 189:11,22;191:9;194:13; 197:9;198:11;200:1,21; 202:15;206:15;207:22; 208:4;209:14;213:5;216:15; 219:8,10;220:5;221:1;227:5; 228:17;234:8,16;236:9; 237:14;238:16;239:1; 240:21;246:22;249:7,19; 254:7,10,13;255:16 <b>rights (26)</b> 35:13;58:9;64:21;80:21; 81:15,16,19;82:1;103:15; 112:20,24;135:20;180:24, 25;202:16,18;210:23; 213:14;238:24;239:14,18; 240:1,5,6,18;249:3 <b>Rio (1)</b> 224:17 <b>RISD (1)</b> 168:23 <b>risk (2)</b> 21:9;208:18 <b>River (31)</b> 42:24;61:3;70:11,12;81:8, 15,17;82:2;97:15;102:14; 103:24;185:19,23;187:21, 25;189:14;190:25;192:12, 14,15,19,21;194:21,22; 195:20;197:7;202:16;223:9; 224:21,23;236:13 <b>road (1)</b> 107:13 <b>roads (2)</b> 36:8;39:5 <b>Rock (2)</b> 42:14;97:16 <b>role (1)</b> 202:5 <b>rolled (1)</b> 214:24 <b>rolling (1)</b> 171:6 <b>rooftop (1)</b> 52:17
---	--	--	---

<p><b>rooftops (2)</b> 36:8;40:7</p> <p><b>room (4)</b> 8:21;142:4;208:5,8</p> <p><b>rotate (9)</b> 25:17;26:3,5,16,17,23; 27:3,14;88:24</p> <p><b>rotated (3)</b> 25:20;88:7;108:9</p> <p><b>rotates (1)</b> 26:11</p> <p><b>rotating (8)</b> 25:25;26:14,19;27:9; 67:18,19;68:1;89:4</p> <p><b>rotation (4)</b> 66:24;67:5,16;107:18</p> <p><b>rotations (2)</b> 88:23;107:7</p> <p><b>roughly (10)</b> 72:14;122:23;129:15; 146:14;158:23;162:23; 178:15;184:22;223:20; 224:10</p> <p><b>round (1)</b> 137:5</p> <p><b>routine (3)</b> 213:10,16,17</p> <p><b>routinely (2)</b> 124:24;186:12</p> <p><b>rows (1)</b> 171:2</p> <p><b>royalties (2)</b> 46:19;98:16</p> <p><b>royalty (1)</b> 46:25</p> <p><b>R-squared (18)</b> 157:1,5;158:5,13,17; 159:18;161:18;162:8,11; 164:15,17;165:4,7,9;169:22; 170:1,6,9</p> <p><b>rubuttal (1)</b> 256:6</p> <p><b>rule (3)</b> 9:8;125:10,10</p> <p><b>rules (5)</b> 66:22;212:9;237:8; 247:16;251:19</p> <p><b>ruling (3)</b> 10:4,24;12:11</p> <p><b>rulings (2)</b> 248:8;251:1</p> <p><b>run (8)</b> 16:10;184:21;187:4; 189:24;190:4;208:23; 242:14;244:10</p> <p><b>running (1)</b> 225:24</p> <p><b>runoff (6)</b> 42:9;196:11;241:25,25; 242:5,12</p> <p><b>runs (5)</b> 109:3;177:23;189:20; 207:6;225:25</p>	<p style="text-align: center;"><b>S</b></p> <p><b>safety (1)</b> 186:25</p> <p><b>same (50)</b> 16:3;31:12;34:3;39:11,13; 41:16,24;57:24,25;58:19; 72:2;75:4;92:17;93:3,10,12; 95:24,25;96:2;97:8;125:5; 135:11;140:24;142:11; 143:10;144:18;150:21; 151:22;152:8,21;155:15; 158:24,24;160:6,9,10; 167:16;170:5,25;172:14,16; 175:18,21;176:1,4,17; 178:20;197:5;201:14;251:18</p> <p><b>Sarah (2)</b> 111:13,22</p> <p><b>sauce (2)</b> 124:21,22</p> <p><b>saving (1)</b> 245:7</p> <p><b>savings (1)</b> 95:12</p> <p><b>saw (2)</b> 71:4;228:12</p> <p><b>saying (17)</b> 22:11;33:14;40:24;41:14, 16,19;93:11;95:17,20;96:3; 106:23;180:12,20;209:19; 215:3;226:3,18</p> <p><b>scale (1)</b> 87:4</p> <p><b>scan (1)</b> 8:21</p> <p><b>scanned (1)</b> 252:18</p> <p><b>scatter (6)</b> 150:16;152:7,15;154:10; 157:23;158:2</p> <p><b>schedule (2)</b> 255:14,22</p> <p><b>scheduled (1)</b> 255:15</p> <p><b>Schroeder (1)</b> 38:5</p> <p><b>scope (4)</b> 47:8;91:21,24;132:14</p> <p><b>scrutinizes (1)</b> 174:5</p> <p><b>scrutiny (2)</b> 174:8;177:5</p> <p><b>sea (1)</b> 182:12</p> <p><b>season (28)</b> 17:5,6,7,25;18:12,14,19; 21:14;26:13;31:7,21;32:9; 43:24;44:1,5;62:15,22; 66:18;68:6;141:14;166:3; 211:22;212:16,18;214:4; 229:8,16;242:2</p> <p><b>seasonal (6)</b> 136:17,19;137:3,5;144:20; 254:8</p>	<p><b>seasonally (1)</b> 243:19</p> <p><b>seasons (4)</b> 17:4;199:5;233:23;234:2</p> <p><b>seat (1)</b> 13:12</p> <p><b>second (16)</b> 10:8;63:12,14;64:20;66:2, 8;67:6;73:22;74:1,7,14;75:2; 81:22;147:23;162:3;183:2</p> <p><b>second-to-last (1)</b> 235:6</p> <p><b>section (1)</b> 83:20</p> <p><b>section-township-range (1)</b> 83:17</p> <p><b>sediment (2)</b> 17:17,19</p> <p><b>seeing (4)</b> 142:8;156:2;157:23;198:5</p> <p><b>seeking (1)</b> 64:10</p> <p><b>seem (4)</b> 134:9;157:14;182:25; 186:3</p> <p><b>seemed (1)</b> 232:4</p> <p><b>seeming (1)</b> 62:6</p> <p><b>seems (6)</b> 40:23;109:14;131:9; 155:3;181:23;185:25</p> <p><b>seep (1)</b> 102:10</p> <p><b>seepage (2)</b> 61:16;143:4</p> <p><b>seeps (4)</b> 21:14;101:23;102:3; 242:17</p> <p><b>selected (3)</b> 125:24;126:15;129:8</p> <p><b>selecting (1)</b> 128:22</p> <p><b>self-fulfilling (1)</b> 133:21</p> <p><b>sells (1)</b> 27:20</p> <p><b>send (1)</b> 117:16</p> <p><b>senior (9)</b> 11:21;198:18;205:6; 206:3;207:13;215:20; 234:15;250:4,12</p> <p><b>seniors (12)</b> 183:13;184:6;187:1; 205:24;208:19;213:6,13; 229:3;243:5;249:16;250:16, 20</p> <p><b>sense (6)</b> 143:1;158:21;175:3; 176:9;219:2;239:13</p>	<p><b>sensing (2)</b> 174:19;175:4</p> <p><b>sensitive (3)</b> 137:10;155:4;172:3</p> <p><b>sent (2)</b> 53:8;69:9</p> <p><b>sentence (3)</b> 67:2,17;94:16</p> <p><b>sentences (1)</b> 112:18</p> <p><b>separate (4)</b> 132:14;156:8,18;189:24</p> <p><b>September (7)</b> 141:16;153:6;162:20,21; 163:5;190:5;232:24</p> <p><b>series (4)</b> 119:16,25;150:1;155:24</p> <p><b>serve (1)</b> 66:25</p> <p><b>service (12)</b> 21:1,4,16;36:19;37:25; 86:24;87:11,22;109:7; 194:19;195:2;241:17</p> <p><b>set (12)</b> 65:6;132:25;143:22; 150:4;152:21;156:4,16; 168:22;170:15;174:25; 175:15;227:20</p> <p><b>sets (1)</b> 150:3</p> <p><b>seven (4)</b> 46:18;98:9;146:14;156:10</p> <p><b>several (8)</b> 17:8;19:12;20:11,17; 140:10;174:2;198:7,14</p> <p><b>shaded (1)</b> 145:16</p> <p><b>shaking (1)</b> 197:22</p> <p><b>shall (3)</b> 67:5,7;117:24</p> <p><b>shape (1)</b> 141:11</p> <p><b>shapefile (5)</b> 84:4;175:16;177:10,12; 217:15</p> <p><b>shapefiles (3)</b> 86:14;174:11;177:5</p> <p><b>share (9)</b> 24:19;27:15;32:11;39:23; 40:1;79:9,10,21;200:19</p> <p><b>shareholders (6)</b> 16:2,17;21:2;77:3,25; 92:10</p> <p><b>shares (10)</b> 24:10,12;27:19,21;28:4; 79:17;82:17,20;83:23,24</p> <p><b>sheriff (1)</b> 216:6</p> <p><b>shift (2)</b> 182:9,16</p> <p><b>shifted (1)</b> 31:16</p>
---	---	--	--

<p><b>Shoestring (3)</b> 16:5,13;20:14</p> <p><b>short (10)</b> 104:24;107:3,14;138:1; 148:17;199:9;213:14; 230:25;235:24;249:16</p> <p><b>shortage (18)</b> 11:22;95:14;148:18; 170:17,25;171:15,18,25; 172:9;183:16;184:16;191:5; 203:6,7,20;206:22;209:21; 226:22</p> <p><b>shortages (10)</b> 171:10,11;172:12,19; 198:21;199:17;200:3;202:8; 207:1;210:3</p> <p><b>shortened (2)</b> 233:23;234:2</p> <p><b>shortfall (9)</b> 74:24;75:3;76:21;170:16; 203:2,10;204:9;205:8;229:7</p> <p><b>shortfalls (1)</b> 76:23</p> <p><b>shorting (1)</b> 106:22</p> <p><b>shot (1)</b> 252:17</p> <p><b>shoulder (2)</b> 137:9;223:5</p> <p><b>shoulders (1)</b> 208:19</p> <p><b>shove (1)</b> 18:8</p> <p><b>show (14)</b> 40:3,8;48:6;102:24; 118:16;156:17;185:10,16; 204:13,21,25;205:2;211:13; 252:1</p> <p><b>showed (2)</b> 48:17;228:13</p> <p><b>showing (9)</b> 43:20;140:5;144:12; 150:13;172:13;174:16; 177:13;193:17;218:6</p> <p><b>shown (14)</b> 35:24;76:12;145:8,17; 146:15;150:17;161:21; 164:24;166:11;170:15; 189:12;243:9,13;253:24</p> <p><b>shows (18)</b> 8:17;18:1;31:8;49:2; 83:22;140:4;144:19;145:24; 151:15;153:17;172:17; 189:16,20;194:14;199:8; 211:16;220:18;223:25</p> <p><b>shutoff (1)</b> 213:13</p> <p><b>side (7)</b> 75:22,22;146:19;154:21; 159:14;217:24,25</p> <p><b>sides (1)</b> 251:18</p> <p><b>sidewalks (3)</b></p>	<p>36:8;40:7;52:17</p> <p><b>sign (1)</b> 28:16</p> <p><b>signature (1)</b> 61:15</p> <p><b>signed (1)</b> 61:13</p> <p><b>significant (8)</b> 43:3,7,16;61:25;82:12,14; 87:14;157:11</p> <p><b>significantly (5)</b> 32:21;33:1;43:10;70:15; 175:7</p> <p><b>Sigstedt (2)</b> 255:15;256:4</p> <p><b>silt (1)</b> 18:20</p> <p><b>similar (9)</b> 26:15;124:23;151:22; 154:7;156:15;178:18;214:9; 216:24;235:20</p> <p><b>similarities (1)</b> 235:21</p> <p><b>similarly (1)</b> 77:12</p> <p><b>simple (5)</b> 31:12;41:7;126:14;147:9; 160:5</p> <p><b>simplifies (1)</b> 110:16</p> <p><b>simply (5)</b> 94:7,16;223:22;227:14; 243:19</p> <p><b>simulates (1)</b> 189:23</p> <p><b>single (1)</b> 232:8</p> <p><b>sinks (2)</b> 108:24;109:4</p> <p><b>sites (1)</b> 90:19</p> <p><b>situation (13)</b> 26:15;101:4;134:10; 137:24;138:3;154:7;165:20; 187:19;191:10;215:5,6; 225:7;226:9</p> <p><b>situations (4)</b> 135:17,18;136:16;161:17</p> <p><b>six (1)</b> 126:9</p> <p><b>size (1)</b> 142:18</p> <p><b>slated (1)</b> 12:23</p> <p><b>slide (1)</b> 110:9</p> <p><b>slope (1)</b> 154:4</p> <p><b>slow (2)</b> 19:7;247:21</p> <p><b>small (17)</b> 64:24;87:4,8;100:21; 124:9;127:3;128:4,6;137:10;</p>	<p>161:13,16;171:23;172:7; 173:2;185:3;199:17;210:20</p> <p><b>smaller (6)</b> 16:15;46:20;114:4;143:8; 204:11,17</p> <p><b>Snake (18)</b> 42:24;61:3;70:11;81:8,15, 17;82:2;97:15;102:14; 113:15,23;185:19;187:21, 25;202:16;223:9;224:21; 236:13</p> <p><b>sod (2)</b> 97:1,6</p> <p><b>soil (12)</b> 51:4;66:21;88:2;108:9; 136:23;157:24;166:2;244:3; 245:15,19;254:16,19</p> <p><b>soils (1)</b> 224:9</p> <p><b>solid (1)</b> 140:17</p> <p><b>solution (2)</b> 186:11;210:13</p> <p><b>somebody (5)</b> 94:25;95:10;108:22; 109:2;117:13</p> <p><b>someone (1)</b> 206:8</p> <p><b>sometime (5)</b> 184:11;188:25;190:14; 209:7;229:12</p> <p><b>sometimes (2)</b> 154:8;214:11</p> <p><b>somewhat (3)</b> 20:23;50:8;82:14</p> <p><b>Somewhere (6)</b> 20:21;22:9;59:17;74:18; 79:19,20</p> <p><b>soon (1)</b> 22:22</p> <p><b>Sophia (1)</b> 255:15</p> <p><b>Sophia's (1)</b> 120:15</p> <p><b>sorry (27)</b> 8:8;12:19;15:2;36:13; 56:15;87:5;99:10,12;116:3; 120:18;131:24;157:16,17; 159:11;164:16;168:5; 169:21;184:9,9;185:14; 186:7;189:3;194:3;216:20; 232:9;235:1;242:24</p> <p><b>sort (18)</b> 113:21;119:18;123:7; 125:4;146:7;149:16;151:25; 160:24;165:15;179:24; 185:23;191:1;200:5;213:14; 214:7,24;241:14;243:16</p> <p><b>sorts (1)</b> 215:22</p> <p><b>sound (3)</b> 60:1;129:25;220:5</p> <p><b>sounds (3)</b></p>	<p>138:22;236:9;255:9</p> <p><b>source (8)</b> 15:6,8;61:2;62:2,7;122:13; 193:6;239:22</p> <p><b>sourced (1)</b> 49:9</p> <p><b>sources (2)</b> 192:25;241:18</p> <p><b>South (2)</b> 46:14;98:6</p> <p><b>southern (1)</b> 238:13</p> <p><b>space (2)</b> 41:23;52:15</p> <p><b>Spackman (1)</b> 11:8</p> <p><b>Spain (1)</b> 115:10</p> <p><b>speaking (1)</b> 70:13</p> <p><b>speaks (1)</b> 231:12</p> <p><b>specific (7)</b> 20:19;37:15;54:21; 180:15;215:6;238:9;244:19</p> <p><b>specifically (6)</b> 54:17,21;79:25;142:12; 195:10;199:13</p> <p><b>specifics (1)</b> 238:11</p> <p><b>spectrum (2)</b> 251:11,16</p> <p><b>speed (2)</b> 23:22;247:22</p> <p><b>spell (1)</b> 13:19</p> <p><b>spelling (1)</b> 112:1</p> <p><b>spend (2)</b> 17:15;132:20</p> <p><b>spending (1)</b> 19:18</p> <p><b>spent (1)</b> 114:18</p> <p><b>SPF (1)</b> 36:22</p> <p><b>spill (3)</b> 70:12,23;71:5</p> <p><b>spilled (1)</b> 225:24</p> <p><b>spilling (1)</b> 43:10</p> <p><b>spills (4)</b> 42:20;70:14,18,22</p> <p><b>spoke (1)</b> 42:22</p> <p><b>spot (1)</b> 195:22</p> <p><b>spotty (1)</b> 115:15</p> <p><b>spread (1)</b> 157:19</p> <p><b>spreadsheet (2)</b></p>
--	--	--	--

<p>127:5,10 <b>spring (11)</b> 33:23;89:12;141:13;221:7, 17,22,24;222:19,21;223:2; 244:8 <b>Springs (3)</b> 11:7,7;47:19 <b>sprinkler (22)</b> 19:14,19,20;29:8,14; 32:23,24;92:4,7;93:5;95:1, 11,16,19;96:5;108:20;109:2, 6;123:1;130:25;146:6; 226:15 <b>sprinklers (11)</b> 28:24;29:17;32:22;92:7, 11,14;95:21;97:18;147:10; 196:1,4 <b>Spronk (2)</b> 112:8;120:21 <b>square (2)</b> 54:7;86:19 <b>squint (1)</b> 190:7 <b>SRBA (2)</b> 82:9;113:9 <b>stacked (1)</b> 104:1 <b>staff (6)</b> 19:24;120:4,9,14,23;121:1 <b>stake (1)</b> 136:7 <b>stamp (2)</b> 38:21,23 <b>stand (4)</b> 58:12;110:23;119:2,5 <b>standard (21)</b> 123:24;124:18;135:15; 136:19;149:11;155:10; 180:3;201:10,16;213:20; 225:5,6,9,11,14,18;231:10; 232:2;237:21,22;248:15 <b>standards (4)</b> 124:17;134:1;226:1,14 <b>standpoint (1)</b> 90:8 <b>start (15)</b> 13:23;16:21;17:18;41:21; 44:22;111:25;115:8;125:21; 139:5;141:13;149:18,19; 166:19;217:1;255:21 <b>started (5)</b> 13:25;14:3;31:13;68:4; 194:14 <b>starting (9)</b> 17:21;62:22;65:19;66:3,6; 149:24,25;152:25;155:22 <b>starts (2)</b> 211:23;214:4 <b>state (42)</b> 13:19;22:11;27:10;29:13; 35:5;52:23;64:15;67:8; 71:17;72:18;101:17;122:15; 182:7,10,16,19,24;183:8,11;</p>	<p>186:6,8,10;187:10,22,23; 188:2;189:1,15,19;190:13, 16;191:2,9;202:13,22;203:1, 9;204:1,22;207:15,18; 208:20 <b>stated (18)</b> 25:10,16;36:3;39:13;42:3; 43:2,7;50:2;53:2;57:19; 63:22;67:17;75:8,12;77:2, 12,24;78:3 <b>statement (9)</b> 22:17;58:23;94:4;101:15, 21;227:8;228:4;234:24; 235:2 <b>statements (6)</b> 47:7;102:21,23;116:24; 124:23,25 <b>states (3)</b> 72:21;103:25;237:6 <b>stating (2)</b> 111:25;230:15 <b>statistics (1)</b> 220:6 <b>stay (3)</b> 47:16,18;246:18 <b>stayed (1)</b> 71:18 <b>stays (3)</b> 97:8;160:9,10 <b>stead (1)</b> 187:22 <b>steady (32)</b> 35:5;122:15;182:7,10,16, 19,24;183:7,11;186:6,8,10; 187:10,22;188:2;189:1,15, 19;190:12,16;191:2,9; 202:13,22;203:1,9;204:1,22; 207:15,18;208:20;244:17 <b>steep (1)</b> 151:8 <b>steeper (1)</b> 151:7 <b>Step (4)</b> 37:16;52:23;69:11;173:2 <b>stepping (1)</b> 164:24 <b>steps (1)</b> 173:2 <b>stick (1)</b> 211:7 <b>sticker (1)</b> 194:6 <b>still (28)</b> 29:7;52:15;93:2,3;96:6; 102:8;108:21;110:11;119:2, 5;127:16,19;128:10,20; 129:6;137:4;149:7;154:10; 171:20;221:7,14;222:3,7,14; 229:9,12;230:25;240:11 <b>stipulated (1)</b> 112:13 <b>stipulation (2)</b> 81:9,23</p>	<p><b>stock (1)</b> 79:11 <b>stockholder (1)</b> 93:12 <b>stockholders (3)</b> 88:23;89:12;102:16 <b>stop (3)</b> 66:15;167:1;219:9 <b>stopped (1)</b> 10:10 <b>storage (5)</b> 97:17;103:25;168:13; 205:24;229:12 <b>store (1)</b> 97:17 <b>stored (1)</b> 166:2 <b>stores (1)</b> 52:6 <b>storing (1)</b> 244:3 <b>straight (2)</b> 98:8;230:23 <b>strains (1)</b> 206:23 <b>straying (2)</b> 155:18,19 <b>stream (1)</b> 195:16 <b>streams (1)</b> 241:22 <b>streets (2)</b> 39:4;40:7 <b>stress (1)</b> 183:4 <b>stretches (1)</b> 224:9 <b>stricken (4)</b> 22:8,13;124:9;125:5 <b>strike (2)</b> 107:18,22 <b>strip (1)</b> 52:6 <b>strive (1)</b> 96:8 <b>strong (2)</b> 156:21;159:16 <b>struck (1)</b> 182:21 <b>structures (6)</b> 18:25;19:4,5,6,10;20:18 <b>struggled (1)</b> 45:25 <b>struggles (1)</b> 46:3 <b>struggling (2)</b> 10:12;108:21 <b>stubble (2)</b> 88:2,3 <b>stuck (1)</b> 176:3 <b>studied (2)</b> 233:21;236:23</p>	<p><b>studies (3)</b> 39:18;40:3,7 <b>study (2)</b> 40:11;91:13 <b>stuff (5)</b> 97:1;115:16;211:15; 219:11;227:4 <b>stump (1)</b> 201:1 <b>subdivision (6)</b> 39:4,9;40:8;41:11,22; 96:14 <b>subdivisions (13)</b> 35:19;36:7;37:14,18,20; 39:13,17;40:4;41:14;96:12, 13,17;97:3 <b>subject (4)</b> 122:7;132:10;133:6; 240:22 <b>subjects (1)</b> 120:3 <b>submit (3)</b> 181:13,20;214:22 <b>submitted (11)</b> 38:1,3;114:13;120:5,13, 22;121:11;126:3;181:24; 213:11,22 <b>subsequent (2)</b> 9:24;244:4 <b>substantial (1)</b> 11:11 <b>substantially (2)</b> 202:17,20 <b>substantive (2)</b> 116:25;212:10 <b>substitute (1)</b> 212:6 <b>subsurface (1)</b> 102:5 <b>succinct (5)</b> 254:25;256:8,9,10,15 <b>sudden (2)</b> 137:11;183:6 <b>suffer (5)</b> 11:18;93:9;199:4,10,11 <b>suffice (1)</b> 171:9 <b>sufficient (5)</b> 66:10;89:19;107:25; 212:24;229:20 <b>sugar (6)</b> 26:11;87:1;88:7;105:24; 106:12,19 <b>suggest (8)</b> 68:10;83:14;131:2;154:5; 155:5;176:8;177:20;211:18 <b>suggested (4)</b> 25:24;43:9;130:16;180:17 <b>suggesting (4)</b> 148:11;180:13,23;234:5 <b>suggestion (1)</b> 179:3 <b>suggestions (2)</b></p>
--	---	--	--

<p>28:15;132:17 <b>suggests (6)</b> 151:24;157:20;159:4,19; 176:11;178:21 <b>Sukow (2)</b> 188:8;193:11 <b>Sukow's (1)</b> 204:7 <b>Sullivan (23)</b> 110:23;111:1,14,20;112:2; 115:7;116:18;118:11;124:6; 125:21;132:20;133:11; 139:3;179:11;193:3;194:13; 197:21;198:3;230:3;232:19; 235:1;247:3;255:7 <b>S-u-l-l-i-v-a-n (1)</b> 112:3 <b>Sullivan's (1)</b> 246:5 <b>sum (1)</b> 167:11 <b>summaries (1)</b> 194:16 <b>summarized (2)</b> 114:24;199:7 <b>summarizing (1)</b> 193:18 <b>summary (5)</b> 121:22;166:23;167:5; 172:11,20 <b>supervisor (2)</b> 14:5;19:17 <b>Supplemental (23)</b> 63:15,16,21;122:12; 179:13,16,18,20,22;180:1,7; 181:3,7,10,13,17;182:3; 238:2,21,24;239:6;240:5,21 <b>supplied (2)</b> 229:7;236:3 <b>supplies (4)</b> 88:24;137:20;178:9;234:1 <b>supply (26)</b> 9:7,25;21;26:21;33:23; 77:4,11,14;89:17;90:23; 94:8;102:7;107:3;137:22; 168:1,4,5,14;170:18,19; 172:6;179:21;206:23;212:6, 17;233:14;244:17 <b>support (2)</b> 62:1;91:19 <b>suppose (6)</b> 27:12;46:8;50:13,15; 62:25;239:22 <b>Supreme (1)</b> 11:9 <b>Sure (26)</b> 10:9,15;17:3,22;18:21; 19:9,20;37:9;72:8;80:4; 82:25;99:13;111:6;115:25; 128:10;129:1;168:15; 205:17,19;206:24;213:25; 231:8;243:21;246:8;254:2,3 <b>Surface (71)</b></p>	<p>9:9;13:7;14:8;23:20; 47:17;55:9,20;57:3,15,22; 58:17;70:12;84:3;113:5; 114:6,7,15;118:23,25; 122:10,13,22;123:18;128:8; 129:21;130:2,17;134:11; 135:12;136:2;137:16; 140:11;141:5;143:22;145:6, 13,21,25;147:1,19;148:11; 150:5,17;156:9,18;166:22; 167:13;171:21;174:17; 176:10;177:4;181:11,12,16; 182:3;192:19;199:4;202:19; 206:5;222:25;224:22; 226:24;236:4,11;238:5,9,16; 241:25;245:10;252:4;254:11 <b>surface-to-surface (1)</b> 237:13 <b>surprise (2)</b> 44:3;205:16 <b>surprised (1)</b> 130:20 <b>surrounding (1)</b> 9:6 <b>sustain (4)</b> 72:4;90:5;92:2;97:19 <b>sustaining (1)</b> 99:20 <b>SWC (2)</b> 199:8,9 <b>swings (1)</b> 171:24 <b>switch (4)</b> 86:21;173:8;179:12; 191:13 <b>sworn (3)</b> 13:8;111:3,14 <b>synonyms (1)</b> 94:18 <b>system (67)</b> 16:7,11;17:2;18:7,8,25; 19:21;20:20,22;21:5,7,17; 42:12,19;46:18;59:6,66;23; 67:1,4,7,16;68:11;70:19; 89:3;90:2,9,15;92:23;94:5,7; 95:7,8,12;96:23;97:12,13,15; 100:2;101:12;102:6;107:7; 137:19;138:9;142:18;143:8; 146:6;196:12,14;220:4,7,8,9; 222:4,8,15;223:19;224:7,12; 226:7;235:20;236:1;243:17; 245:1,5,6,9;252:7 <b>systems (34)</b> 18:23;19:19,20;114:19; 123:25;134:9;135:16,19; 136:1,11,14;138:2;142:5; 143:3,5,14,22;144:1,5; 148:22;178:6,11;222:25; 224:5,17,20;225:1;226:2,5; 227:9;236:10;237:17;245:2; 247:13</p>	<p style="text-align: center;"><b>T</b></p> <p><b>table (11)</b> 63:14;121:24;140:25; 144:17;166:23;167:4;169:7; 172:10,13;232:21;238:4 <b>tables (5)</b> 76:15;159:10;166:14; 170:2;241:3 <b>tabulated (2)</b> 181:21;227:16 <b>tags (1)</b> 216:6 <b>tail (2)</b> 46:21;98:13 <b>talk (39)</b> 12:21;24:9;32:12;35:19; 42:2,7;49:22;59:4;64:22; 121:23;123:2;134:20;140:3; 142:8;147:22;150:4;164:14; 165:16;166:5,15;167:2; 169:8;173:8;179:12;181:25; 182:6;189:17;202:9;209:15; 211:17;212:10;216:12; 219:18;221:6;224:10;230:8; 236:16;238:1;241:24 <b>talked (27)</b> 29:12,21;30:8;33:13;34:8; 35:23;48:24;51:1,5,9,19; 83:15;103:14;134:22;135:4; 142:20;173:1;175:12; 176:22;185:12;192:4; 202:10,14;203:21;215:17; 232:16;233:13;234:13; 235:15 <b>talking (36)</b> 37:15;42:14;51:6;59:7; 61:5;101:5;105:16;106:4; 118:13,14;132:9,20;138:19; 148:2,5;152:22;159:14; 161:8;162:6;168:19;172:15; 173:15;189:17;204:18; 206:10;214:5;222:6,6,12; 223:10;224:12;225:4,6,10; 227:4;230:22 <b>talks (3)</b> 86:23;124:11,13 <b>targeted (1)</b> 206:1 <b>tasks (1)</b> 113:20 <b>Technical (9)</b> 113:18;119:20;120:22; 121:11;126:1;174:13; 180:16,18;188:11 <b>techniques (1)</b> 149:11 <b>technologies (4)</b> 99:22;100:1,2,10 <b>technology (3)</b> 100:4,8;146:7 <b>telemetry (1)</b></p>	<p>214:6 <b>telling (1)</b> 247:22 <b>tells (2)</b> 154:15;158:19 <b>temporarily (1)</b> 244:8 <b>ten (2)</b> 44:15;252:14 <b>Tend (2)</b> 158:15;223:1 <b>term (5)</b> 9:14;141:3;154:12;168:8; 241:12 <b>termed (1)</b> 145:18 <b>terminology (3)</b> 225:15;241:15;254:5 <b>terms (4)</b> 105:3;135:18;179:20; 250:10 <b>test (3)</b> 163:22;172:25;226:10 <b>tested (1)</b> 186:19 <b>testified (16)</b> 13:9;47:9;79:7;86:2; 90:13;93:4;98:12,19;105:18; 111:4;131:20;195:25; 226:18;230:24;235:7;249:21 <b>testify (3)</b> 107:19;241:24;255:16 <b>Testimony (85)</b> 14:15;15:23;22:2,13,19, 20,23,25,25;23:12,22;24:1, 11;29:12;39:13,15;40:13; 42:3,25;43:5,8,14,44;3; 49:25;50:3;51:5;59:5;71:12, 14;79:16,23;80:2;86:22; 89:12;94:4,9,11,12,25;96:16, 16;102:20;103:12;105:21, 25;106:10,21;107:1,18; 108:1;109:6,21;110:7; 116:17;131:22;132:13,25; 139:7,23;174:2,9;180:22; 188:14;191:14,16;193:11, 20;196:3;198:22;199:8; 205:11,15,17,17;208:13,24; 235:16;238:2;248:25;250:2, 14,18;252:19,22;254:4 <b>Texas (1)</b> 224:15 <b>TFCC (1)</b> 241:12 <b>TFCC's (1)</b> 78:4 <b>Techniques (6)</b> 8:12;41:10;99:5;110:18; 170:4;179:3 <b>theme (1)</b> 133:4 <b>theoretical (1)</b> 153:14</p>
---	--	--	---

<p><b>theory (4)</b> 134:8;210:21;211:11; 219:20</p> <p><b>thereby (2)</b> 66:9;70:20</p> <p><b>there'd (1)</b> 177:16</p> <p><b>therefor (1)</b> 66:14</p> <p><b>therefore (3)</b> 187:22;197:6;209:22</p> <p><b>therein (1)</b> 71:17</p> <p><b>thereof (1)</b> 66:10</p> <p><b>thinking (1)</b> 191:3</p> <p><b>third (2)</b> 98:10;196:20</p> <p><b>third-party (1)</b> 98:16</p> <p><b>Thompson (61)</b> 13:1,2,13,14,14,18;15:12, 15;19:23;21:18;22:15,16; 37:1,23;38:3,10,21;40:14,17, 20;44:22;47:3,4;48:2;49:6; 51:15;55:13,20,24;56:4,6; 58:10;71:25;91:20;99:8; 100:14,17;105:7,9,16;106:5; 109:18,25;132:7;229:19,22; 230:2,3;231:19;239:18,25; 242:20,23,24;243:2;245:18, 24,25;246:4;255:4,5</p> <p><b>thorough (1)</b> 114:14</p> <p><b>thoroughly (3)</b> 45:20;101:18;117:4</p> <p><b>though (10)</b> 23:13;50:21;61:11; 161:12;169:8;176:11;225:3; 245:23;247:23;252:5</p> <p><b>thought (12)</b> 10:11;56:6;127:20; 128:15;142:1;146:3,22; 189:5;197:13;209:4,5; 215:19</p> <p><b>thousand (1)</b> 178:21</p> <p><b>thousands (1)</b> 135:23</p> <p><b>threat (1)</b> 211:7</p> <p><b>three (17)</b> 46:13;63:22;80:21;81:19; 88:16;97:25;98:4,24;114:18; 168:19,25;175:6;182:17,18; 211:20;219:13,16</p> <p><b>three-quarter-inch (1)</b> 248:9</p> <p><b>three-quarters (11)</b> 31:1,6,13;32:11;48:18; 68:7,16;79:8;93:12;236:19; 248:22</p>	<p><b>threshold (2)</b> 86:9;251:15</p> <p><b>throughout (7)</b> 18:5,18;21:14;26:13,15; 90:2;93:6</p> <p><b>throw (2)</b> 44:14;223:12</p> <p><b>thus (1)</b> 70:18</p> <p><b>tick (1)</b> 147:15</p> <p><b>ticking (1)</b> 147:12</p> <p><b>tie (1)</b> 159:8</p> <p><b>tiers (1)</b> 251:25</p> <p><b>tighten (1)</b> 158:3</p> <p><b>tiles (3)</b> 101:24;102:3,10</p> <p><b>tillage (4)</b> 245:15,19;254:16,20</p> <p><b>times (15)</b> 11:22;33:22;66:20;88:1; 134:10,11,23;154:9;159:25; 167:14;173:16;175:20; 211:20;213:5;243:10</p> <p><b>timing (2)</b> 109:14;255:10</p> <p><b>tiniest (1)</b> 128:3</p> <p><b>tiny (6)</b> 126:12,12;128:3,9,9; 129:16</p> <p><b>title (2)</b> 36:17,24</p> <p><b>titled (8)</b> 14:15;37:23;84:16; 144:10;155:24,25;168:22; 172:11</p> <p><b>TJ (3)</b> 83:9;252:15;255:19</p> <p><b>today (18)</b> 32:9;57:16;65:4;78:25; 90:13;98:12;103:22;109:15; 121:15;123:2;190:21;209:2, 3;218:19;235:7;240:7,7; 247:18</p> <p><b>together (4)</b> 14:14;15:17;30:15;199:7</p> <p><b>told (3)</b> 39:21;46:17;54:11</p> <p><b>tomorrow (4)</b> 97:18;255:15;256:5,19</p> <p><b>took (3)</b> 23:17;175:23;176:1</p> <p><b>top (10)</b> 61:18;64:12;104:1; 142:15;144:17;155:8; 194:19;241:13;243:12; 244:16</p> <p><b>topic (1)</b></p>	<p>48:14</p> <p><b>topics (1)</b> 23:25</p> <p><b>torn (1)</b> 92:1</p> <p><b>total (11)</b> 21:7;79:17;86:7;93:24; 103:5;128:5,9;129:10;138:8; 185:7;217:21</p> <p><b>totaled (3)</b> 43:25;217:7;241:7</p> <p><b>totalizers (1)</b> 93:19</p> <p><b>totalizing (1)</b> 214:16</p> <p><b>Touché (1)</b> 248:1</p> <p><b>toured (1)</b> 219:21</p> <p><b>toward (1)</b> 201:7</p> <p><b>to-wit (2)</b> 65:24;66:3</p> <p><b>township (1)</b> 83:20</p> <p><b>track (12)</b> 27:15;28:3;50:3,12,16; 52:5;53:20;70:10;83:12,24; 86:6;93:24</p> <p><b>tracked (1)</b> 27:17</p> <p><b>tracking (3)</b> 42:8;83:25;87:5</p> <p><b>tracks (1)</b> 42:5</p> <p><b>tract (5)</b> 50:9,14,19,24;241:16</p> <p><b>tractors (1)</b> 17:8</p> <p><b>trajectory (1)</b> 102:8</p> <p><b>transcript (7)</b> 54:24;55:5,18;56:2;57:24; 58:1;104:11</p> <p><b>transfer (10)</b> 27:21;28:6,6,8,10,16,18, 20;83:18;135:24</p> <p><b>transferred (2)</b> 82:18,21</p> <p><b>transfers (5)</b> 54:4;135:20,25;136:3; 239:2</p> <p><b>transient (15)</b> 35:5;122:15;182:8,10,16, 19,24;183:5,7,12;184:14; 186:9;187:4;190:3;202:12</p> <p><b>transition (2)</b> 19:13;80:11</p> <p><b>transparent (1)</b> 213:24</p> <p><b>Travis (10)</b> 13:14;38:23;40:16;55:18, 22;56:1,9;106:16;230:3,5</p>	<p><b>treat (1)</b> 18:5</p> <p><b>trendline (8)</b> 150:19;151:7;153:9;154:3, 8;157:1,2;162:5</p> <p><b>trendlines (2)</b> 153:13;156:25</p> <p><b>trends (1)</b> 178:6</p> <p><b>tribunal (1)</b> 12:10</p> <p><b>tributaries (3)</b> 42:13;195:6;242:1</p> <p><b>tributary (8)</b> 42:20,20;61:3;195:13,14, 15,22;241:21</p> <p><b>tried (1)</b> 127:22</p> <p><b>true (25)</b> 32:5;43:23;51:23;52:9; 72:9,25;73:4,8,17,21;74:12, 23;75:2;76:8,14;77:1;104:8; 134:8,8,9;143:1;196:10; 222:24;238:16,17</p> <p><b>truly (1)</b> 206:25</p> <p><b>truncate (1)</b> 24:4</p> <p><b>trust (2)</b> 85:24;210:16</p> <p><b>truth (2)</b> 13:8;111:3</p> <p><b>try (7)</b> 20:10;29:2;45:1;79:3; 117:8;135:3;221:11</p> <p><b>trying (12)</b> 22:22;33:17;37:17;38:16; 65:1,3;129:7;136:21;188:20; 200:25;218:19;219:9</p> <p><b>TSCHOHL (2)</b> 111:6,10</p> <p><b>Tuesday (1)</b> 26:4</p> <p><b>tune (1)</b> 54:3</p> <p><b>tunnels (1)</b> 102:10</p> <p><b>turn (33)</b> 8:13,14;12:17;14:21; 21:19;35:20;39:25;44:21; 53:13;55:5;63:4;64:20; 66:24;71:15;74:22;75:20; 77:17;81:1;84:8;85:9;89:13, 14;100:20,23;102:18; 104:10;121:24;129:3;142:7; 188:4;232:17,19;234:24</p> <p><b>turned (2)</b> 16:19;129:4</p> <p><b>turning (1)</b> 159:15</p> <p><b>turns (2)</b> 62:15;128:20</p> <p><b>Twin (128)</b></p>
--	---	--	---

<p>13:24;14:17,24;22:10; 23:18;24:10,14;25:20;26:22; 29:13;33:14;35:9,13,25; 36:19;37:24;39:18,23;41:12; 42:4;43:3,23;44:4,13;46:4, 10;47:22;49:1,11;52:5;53:3, 19;55:10;56:6;57:4,14,17, 22;58:5,6,8;59:13;62:15; 63:22;64:16;68:6;70:10; 71:7;74:7,13,24;75:9,12; 76:9,11,15;77:2,25;79:13; 80:20;81:14;83:1;84:5;85:1, 3,20,24;86:3;89:16;90:14; 91:9;95:17;98:1,2,15,20; 101:5,18;107:7;110:3;144:2; 146:20;154:21;159:14,15,17, 19;162:2,10;166:25;172:15; 175:10,11,12,16;178:19; 191:25;192:6,9;193:19; 194:19,22;195:3,6,22;196:1, 13;200:17;217:10;220:1,2,2, 8;221:13;223:6,8;224:19; 225:11,13;228:9;235:2; 244:9,15,23;248:10;251:3,8, 252:3</p> <p><b>two (26)</b> 10:23;17:4;18:13;21:21; 51:3;68:21;72:1;74:19; 75:14;76:15;88:16;91:3,5; 121:15;142:21;150:3;157:9; 166:21;169:17;170:12; 171:15;173:13;179:4; 211:20;215:10;251:18</p> <p><b>type (3)</b> 47:11;83:11;89:4</p> <p><b>types (1)</b> 108:8</p> <p><b>typical (3)</b> 39:4;67:20,23</p> <p><b>typically (25)</b> 18:13;19:10;45:16;77:6,9, 11;78:3;87:17;89:7,9;90:1; 101:11;136:19;137:2; 214:13,15,18;220:13,16; 222:20;223:3,4,25;235:23; 245:2</p>	<p><b>underground (2)</b> 11:16;192:20</p> <p><b>underlying (2)</b> 12:4;37:3</p> <p><b>understood (6)</b> 32:2;89:6,11;92:6;102:15; 250:18</p> <p><b>undertaken (2)</b> 71:2;75:16</p> <p><b>unduly (1)</b> 37:4</p> <p><b>unit (3)</b> 137:18,21;235:15</p> <p><b>unless (1)</b> 210:11</p> <p><b>unreasonable (3)</b> 222:23;223:17;226:6</p> <p><b>unsealed (1)</b> 55:4</p> <p><b>up (89)</b> 12:11;14:3;16:23;17:21, 21;18:1,1,8,20;23:22;25:6; 33:11;34:18;41:13;42:8; 46:8;49:19;55:15;67:22,23; 69:7;71:11;73:12;79:20; 88:17,19;97:18;100:6;116:5; 122:6;131:16;132:12,25; 134:15;135:22;137:17; 138:8;141:14,23;143:15; 144:3;146:11;147:12,15; 151:24;153:24;154:8;158:4; 159:3,6;160:13;162:23; 163:9;164:3;165:24;167:3,7; 169:7;176:1,4,17;177:21; 181:2;185:10,16;186:16; 204:13,21,25;205:2;211:13, 16;214:1,24;217:1;218:3; 224:23;226:16;227:11; 228:15,16,19,21;235:24; 241:6;244:16;247:4,22; 254:6</p> <p><b>update (2)</b> 84:4;177:24</p> <p><b>updated (10)</b> 119:8,11;122:9;123:16; 127:14;128:1,19;146:25; 147:4,6</p> <p><b>upon (6)</b> 11:23;14:18;66:22; 101:20;228:22;237:5</p> <p><b>upper (3)</b> 151:18;165:12;243:13</p> <p><b>upper-left (1)</b> 153:4</p> <p><b>Urban (1)</b> 39:9</p> <p><b>urbanization (1)</b> 178:7</p> <p><b>URL (1)</b> 193:10</p> <p><b>use (106)</b> 11:19;27:24;28:4,5;37:17, 20;40:4,8;66:20;67:12;80:1;</p>	<p>81:25;82:3;92:20;96:13,19, 25;101:12;131:25;132:17; 135:3,5,19,24;136:6;137:3; 139:9;143:25;149:8,8;159:3, 7;161:13,14,18;162:9,25; 163:11,19,25;164:18,19,21; 171:4;172:3,22;173:6; 174:10;176:23,25;177:8,18, 22;180:8;181:1,3,10,23; 182:3,24;184:23,24,25; 185:9;186:3,10;187:9,10,22; 196:10,16,19,20,23;197:4,5; 200:5;203:15;204:2;206:2; 207:10;208:20;214:11; 215:21;216:17;217:3,13; 219:5;223:16;225:15; 230:25;233:10;237:2; 239:13;240:11,15,17;243:4; 244:4;245:9,15,19,20,23; 250:16;251:1</p> <p><b>used (71)</b> 9:14;33:25;61:8;62:23; 67:6;80:8;85:7;87:11;96:14; 119:5;122:11;127:12; 129:23;131:7,23;133:18,19; 136:8,12;137:14,15,17; 138:13;140:7,9,20,23; 146:18;148:7,8;149:17; 161:1;167:18,21,24;169:23; 170:7,9;171:3;173:7,11,13, 14,22;174:4;178:23;181:24; 182:20;183:5,7;191:3; 192:16;202:23;203:9; 207:19,20;217:24;218:22; 219:5;229:3;231:21;234:6,8; 239:9;240:1,7;241:15,16; 244:12;245:2;251:24</p> <p><b>user (19)</b> 39:24;47:7,16,17;143:23; 153:10;197:20;203:4;208:5, 8;211:21,21;212:22;213:2; 232:5,6,8;237:1;250:7</p> <p><b>users (55)</b> 18:9;19:19;21:4,16,25; 66:25;85:10,12,20,24;88:17; 91:12,17;101:1;105:10; 131:16;146:12;148:24; 152:24;153:22;155:1; 159:13;165:17;175:6,9; 186:2,24;191:5;197:2; 198:18;202:19;203:5,6,18; 207:21,23;208:2,4;210:5,19; 213:20,21,24;214:6,10; 215:7,23;221:8;222:4,8; 226:16;229:12;238:15; 245:1,4</p> <p><b>uses (9)</b> 72:25;73:4;132:3,24; 133:14;168:8;179:19; 210:17;254:17</p> <p><b>using (40)</b> 26:12;35:4;41:12,14,18; 61:6;70:18;96:22;123:6;</p>	<p>127:8,16;138:9;152:10; 162:16;163:13,14,15; 164:20;165:5;168:7,12; 169:9,21;171:8;173:4;188:2; 201:16;202:12;203:12; 204:22;205:22;207:14; 218:7,8,20;219:1;221:13; 227:19;243:8;245:18</p> <p><b>utilize (1)</b> 105:17</p> <p><b>utilized (1)</b> 179:24</p> <p><b>utilizes (1)</b> 84:25</p>
<p style="text-align: center;"><b>U</b></p> <p><b>ultimately (8)</b> 120:4;186:11;199:18; 201:22;204:13;206:21; 214:22,24</p> <p><b>uncorrected (1)</b> 127:19</p> <p><b>under (26)</b> 69:10;73:9,18,22;74:7; 75:2;88:5;109:8;138:7; 148:12;151:16;168:23; 169:16;187:3;189:15;193:5; 210:21;211:21;212:23; 213:9;214:4;224:16;226:2; 229:13;245:6;250:23</p>		<p><b>validation (1)</b> 146:17</p> <p><b>valuable (1)</b> 107:5</p> <p><b>value (12)</b> 46:24;127:17;157:1; 161:14;163:16,16;164:19,21, 22,22;165:10;167:17</p> <p><b>values (12)</b> 155:18,19;156:17;165:1; 167:7,12,17;170:1;172:22; 173:11;239:9;243:9</p> <p><b>variable (1)</b> 105:5</p> <p><b>variation (1)</b> 158:25</p> <p><b>varied (1)</b> 86:4</p> <p><b>varies (1)</b> 215:14</p> <p><b>various (2)</b> 103:24;178:12</p> <p><b>vary (6)</b> 108:3;136:21;145:14; 153:23;157:22;237:25</p> <p><b>vast (2)</b> 184:5;238:13</p> <p><b>verbally (1)</b> 12:6</p> <p><b>verify (1)</b> 126:16</p> <p><b>version (3)</b> 15:22;116:1;117:3</p> <p><b>versus (14)</b> 11:8;47:17;95:21;107:20; 108:6,16;153:2,8;156:6; 192:20,24;202:13;248:9; 253:24</p> <p><b>viability (2)</b> 207:8,9</p> <p><b>viewed (1)</b> 212:12</p> <p><b>virtually (2)</b> 94:18;187:20</p> <p><b>vis-à-vis (1)</b> 225:16</p>	

<p><b>volume (3)</b> 41:6,24;93:24</p> <p><b>voluminous (1)</b> 114:13</p> <p><b>vs (1)</b> 144:11</p> <hr/> <p style="text-align: center;"><b>W</b></p> <hr/> <p><b>wait (7)</b> 143:7;160:10;193:12; 239:16;245:16;253:5;255:18</p> <p><b>wall (2)</b> 78:8,9</p> <p><b>wants (1)</b> 12:10</p> <p><b>warmer (1)</b> 233:1</p> <p><b>waste (16)</b> 93:6;95:6,7;96:24;97:12, 14;101:11;108:25;143:18; 225:23,25;226:4,7;237:10; 241:25;251:15</p> <p><b>wastes (2)</b> 97:14;101:8</p> <p><b>wastewater (5)</b> 94:24;95:1,11;96:9;101:9</p> <p><b>wasting (3)</b> 251:9,22,22</p> <p><b>water (419)</b> 9:7,7,9;11:16,20,22,23; 13:7;14:8;15:8;16:1,4,16,19, 21;17:14,20,22,25;18:9,9,15, 22;19:13,19,24;20:16,21:4, 16;23:20;25:17,25;26:3,5,12, 22,23;27:4,22;28:10;34:19; 36:22,23;37:14,17,21;39:14, 24,25;40:1,4,8;41:6,22,24; 42:16;43:4,8,10;46:10,22; 47:7,17;48:7;51:23;52:2,3, 10,13,15,18;54:4;55:9,20; 57:3,15,23,58;59:20,21; 61:8,9,16,20;62:20,20,23; 64:10,16,21,21,23;65:18; 66:16,17,23,25;68:5,14; 70:18,22;77:4,8,11,14;79:14; 80:21,21,23;81:10,11,15,16, 19,25;82:1,17;83:3,18;84:3, 25;85:6,21;88:6,15,17,24; 89:7,9,16,23,24,24;90:9,23; 92:11,13,19,20,21;93:1,5,12, 16;94:7,17,20;95:5,12,14,18, 23,25;96:14,18,19;97:11; 101:6,17,23;102:5,7,10,13; 103:10,14,17,22,23,25; 104:2,7,24;105:17,23; 106:22,25;107:3,14;108:23, 24;109:3,8;110:3;112:8,20, 20,23,24;113:6;114:6,8,15, 20;118:23,25;120:21; 122:10,13,22;123:18; 124:24;128:8;129:21;130:2, 17;131:17;132:1;134:6,11,</p>	<p>12,15,22;135:6,12,20;136:3, 9,23;137:10,16,20;138:1,2, 15,18,20;139:9;140:11; 141:5;143:4,17,20,22,25; 144:6;145:6,13,21,25;147:1, 19;148:3,11;150:6,7,15,17, 24;151:3,10,13,20;152:8,9, 11;153:2,8,8,13,15;154:12, 17;155:4;156:1,6,9,13,18,22; 157:24,25;158:20,25;159:3, 7,20;160:1,3,6,7,9,11,14; 161:12;163:19;164:2,3; 166:22;167:12,13,13,23; 169:4,19;171:21;173:14,24, 25;174:18;175:20;176:10; 177:4;178:9;180:24,25; 181:11,13,16;182:3;183:13; 185:3,25;186:23,24;189:2, 14,21;190:1,4;192:15,18,19, 20;195:23;196:9,20,24,24; 197:3,6;198:10;199:4,6,9; 202:19;204:2,3,13,16; 205:23,24;206:5,5,6;210:7, 22,23;211:16,21;212:10,17; 213:6,12,14;214:4;218:10, 14,19;220:10,24;221:8,11, 14;222:3,4,7,14,25;223:20; 224:8,22;226:24;227:17; 228:2,9;229:16;233:10,14; 236:4,7,11;237:1,2,14;238:5, 9,16;241:17,18;242:16; 244:1,3,18,21,22,25;245:5,7, 10,14,15,18,19;247:7,13; 248:5;249:16;250:4,6,16,21; 251:2,9;252:4;253:7,19; 254:12,20</p> <p><b>watermaster (1)</b> 14:4</p> <p><b>watermasters (1)</b> 28:8</p> <p><b>waterways (4)</b> 16:16;18:4;20:19;21:12</p> <p><b>way (55)</b> 16:3,11;19:20;30:14; 32:18;34:18;41:21;55:10; 57:3;68:4;77:5;97:7;99:25; 114:10;125:13;136:2,2; 139:14;147:18;149:10; 150:2;151:16;153:25;181:8; 183:5,25;186:22,22;187:1; 188:1,3;190:19;191:1,3,10; 197:2;203:8,14,21;204:23; 205:20,22,23;209:19;210:9, 14;212:14;214:7;222:10; 225:18;245:12;246:4,9,13; 251:18</p> <p><b>ways (5)</b> 68:5;148:23;168:25; 173:13;210:13</p> <p><b>weather (3)</b> 66:21;173:18;218:12</p> <p><b>weed (1)</b> 17:12</p>	<p><b>weeds (3)</b> 17:9,10;21:11</p> <p><b>week (1)</b> 39:22</p> <p><b>weeks (2)</b> 88:16;114:18</p> <p><b>weird (1)</b> 165:17</p> <p><b>welcome (2)</b> 91:15,18</p> <p><b>wells (19)</b> 137:21;187:5,13,16,18,21, 24;188:25;190:22,24; 208:25,25;209:21,25;236:2, 6;240:11,14,15</p> <p><b>wells' (1)</b> 190:23</p> <p><b>weren't (1)</b> 249:11</p> <p><b>west (3)</b> 16:11;20:22;203:23</p> <p><b>wet (2)</b> 183:13;186:19</p> <p><b>what's (21)</b> 9:2;15:16;24:17;35:4,24; 36:17;87:10;107:23;112:7; 117:22;124:21;135:2; 152:10;185:24;189:12; 192:23;193:6;195:12; 198:25;246:4;253:24</p> <p><b>wheat (11)</b> 86:25;87:12,25;88:10; 104:25;105:22;106:11,13,13, 23,24</p> <p><b>whenever (2)</b> 144:4;207:5</p> <p><b>whereas (1)</b> 151:22</p> <p><b>whereby (1)</b> 131:11</p> <p><b>white-and-black (1)</b> 140:18</p> <p><b>whole (7)</b> 96:5;112:25;158:21; 206:3;207:8,25;208:1</p> <p><b>wholly (1)</b> 168:11</p> <p><b>who's (2)</b> 213:14,17</p> <p><b>whose (3)</b> 146:20;205:16,17</p> <p><b>Wildman (2)</b> 125:3;231:7</p> <p><b>willing (3)</b> 91:12;139:2;197:18</p> <p><b>windfall (1)</b> 186:1</p> <p><b>winter (3)</b> 166:3;185:20;242:16</p> <p><b>wish (1)</b> 160:23</p> <p><b>withdraw (2)</b> 81:10;189:6</p>	<p><b>within (44)</b> 16:7;20:20;25:14;26:11, 14,17;27:14,19;33:14;36:18; 37:17,24;39:22;44:12;50:14, 19,22,24;52:7;54:4;66:19; 67:11;68:2;77:13;86:3,15, 23;87:21;90:19;91:24; 101:14;102:12;105:4;127:9; 143:23;149:15;150:3; 163:23;171:21;181:18; 229:14;238:8;239:7;243:13</p> <p><b>without (2)</b> 210:20;237:10</p> <p><b>witness (31)</b> 12:23,24;13:7;19:9;22:20; 47:24;49:13;51:20;56:18,18; 58:13;107:19;109:20,22; 111:2;116:4,8;117:12; 120:19;197:17;205:14; 231:14;239:20;252:12; 253:1,2;255:12,23,25;256:1, 2</p> <p><b>witnessed (2)</b> 80:4;102:1</p> <p><b>witnesses (4)</b> 174:3;191:18;192:5;256:3</p> <p><b>wonder (1)</b> 147:24</p> <p><b>WOOD (9)</b> 75:23,25;76:2,4;117:13, 17,21,23;118:9</p> <p><b>word (8)</b> 65:19,24;116:22,22; 199:13;201:5;231:24;248:18</p> <p><b>words (4)</b> 43:6,15;70:12;165:11</p> <p><b>word (23)</b> 14:19;18:17;20:15;45:6; 57:10;90:14;112:18;115:15; 119:10,11,20;120:22;121:12, 23;122:1,18;136:1;141:6; 145:20;149:15;174:13; 213:22;215:22</p> <p><b>working (16)</b> 13:23,25;19:19;112:19,23; 114:5;126:1;163:23;171:20; 180:16,18;188:11;207:12; 214:1,1;229:14</p> <p><b>works (5)</b> 19:21;59:6;101:21; 183:25;210:14</p> <p><b>worry (1)</b> 8:15</p> <p><b>worse (1)</b> 64:25</p> <p><b>worth (2)</b> 50:23;125:1</p> <p><b>wrap (1)</b> 108:21</p> <p><b>written (7)</b> 22:1,19,24;110:7;120:5; 121:2;198:22</p> <p><b>wrong (1)</b></p>
--	---	--	--



189:4		<b>11.86 (1)</b> 41:25	210:21;216:14,21
<b>X</b>	<b>Z</b>	<b>1-10 (2)</b> 80:22;81:11	<b>190,000 (2)</b> 41:5;223:19
<b>XY (1)</b> 150:16	<b>zero (1)</b> 78:4	<b>1100 (1)</b> 223:20	<b>1900 (5)</b> 63:23;90:1;103:15;104:2,3
<b>Y</b>	<b>0</b>	<b>11a (3)</b> 63:15,21;64:1	<b>1902 (2)</b> 67:20,20
<b>y-axis (2)</b> 140:13;189:25	<b>0.625 (1)</b> 31:16	<b>12 (7)</b> 63:6;71:23;73:8,16; 126:11;162:23;227:7	<b>1903 (2)</b> 64:17;103:11
<b>year (136)</b> 15:18;17:10,16,19,24; 18:11,18;19:3,5;24:25;30:1, 10,11;31:11;33:5;51:2,11; 53:23;54:1;59:16,17;61:19; 71:19;73:9,17,22;74:8,13; 75:4,4;78:9,12;84:19,20; 88:14;94:2;103:8;104:24; 107:3,13,14;108:3,3,16,16; 122:8;125:22,24;126:5,7,10, 15,20,25;127:1;128:13,19, 22,24,25;129:6,8,17,19; 130:12;131:7,12,13,13,16; 145:14,14;151:22;152:13, 14;160:3,7,8,12,12;164:1,6; 168:6,7,10,11,14;169:11; 171:5;177:24,25;178:4,4,15, 15;185:4,16,18;190:5,6,10; 203:11;204:6,10,21;205:1,3, 8;209:17;210:2,3,3,6;213:8; 219:6,22;220:11;228:19; 230:10,14,19;231:9,21; 232:2,12;233:14;234:3,4,6, 11,12,14,21;249:5,7,9	<b>06 (4)</b> 126:11,22;130:12;219:21	<b>1-209 (2)</b> 80:22;81:12	<b>1915 (2)</b> 90:1;102:4
	<b>06/08/12 (2)</b> 126:19;230:21	<b>13 (5)</b> 90:22;149:20,21,24;165:7	<b>1930 (1)</b> 102:4
	<b>08 (1)</b> 126:11	<b>14 (8)</b> 34:19;57:6,7;71:17;76:1,2; 129:25;149:19	<b>1939 (1)</b> 89:23
	<b>1</b>	<b>14 (8)</b> 34:19;57:6,7;71:17;76:1,2; 129:25;149:19	<b>194 (1)</b> 68:14
	<b>1 (20)</b> 14:11;15:8;21:22,24;23:2, 3;37:16;52:23;69:11;71:11, 15;94:13;100:20;167:20; 168:1,9,11;170:16,19;190:5	<b>1-4 (2)</b> 80:22;81:11	<b>194,000 (3)</b> 54:1;79:20;86:19
	<b>1,000 (4)</b> 16:15;67:24;220:3;221:15	<b>142,000 (3)</b> 129:15,19;130:11	<b>1953 (7)</b> 35:8,13;184:11,17,21; 190:7,10
	<b>1,045,382 (2)</b> 73:23;74:9	<b>143,000 (3)</b> 130:7,10,11	<b>196,162 (1)</b> 81:20
	<b>1,060,011 (1)</b> 73:19	<b>15 (20)</b> 29:18;32:14,16;54:7; 69:22;86:19;114:3;122:23; 123:10,11,19;147:3;179:5; 180:12;204:9,12,20;205:2,7; 207:14	<b>1970 (1)</b> 210:5
	<b>1,062,098 (2)</b> 72:11,22	<b>150,000 (1)</b> 43:24	<b>1980 (1)</b> 205:4
	<b>1,100,000 (1)</b> 71:19	<b>154 (1)</b> 218:1	<b>1980s (6)</b> 208:25;209:1,16;210:1,21, 23
	<b>1,121,717 (1)</b> 73:10	<b>15-square (1)</b> 224:10	<b>1987 (3)</b> 81:25;82:5,9
	<b>1.1 (8)</b> 40:25;41:5;72:19;79:21; 96:1,6;223:11;228:13	<b>15-year (1)</b> 169:10	<b>1988 (3)</b> 14:25;15:19,21
	<b>1.325 (1)</b> 185:8	<b>17 (1)</b> 22:9	<b>1990 (10)</b> 30:16,21;31:2,5;112:21; 114:25;146:2,13,21;227:19
	<b>1.4 (1)</b> 185:7	<b>170 (2)</b> 89:23,23	<b>1990-to-2006 (2)</b> 145:7,14
	<b>1.625 (1)</b> 185:17	<b>171 (4)</b> 36:11,13,15;38:24	<b>1992 (1)</b> 31:11
	<b>1.7 (6)</b> 184:23,25;185:13,14,15,22	<b>179,000 (1)</b> 178:19	<b>1993 (1)</b> 13:25
	<b>1:00 (1)</b> 110:18	<b>179,066 (1)</b> 171:1	<b>1998 (1)</b> 15:19
	<b>10 (4)</b> 34:19;55:12;63:15;92:8	<b>18 (6)</b> 77:20;100:25;104:17,20; 127:3;216:22	<b>19th (2)</b> 81:25;82:5
	<b>10,000 (6)</b> 18:25;54:1,3,7;86:19; 224:10	<b>180 (1)</b> 236:6	<b>1A (10)</b> 15:13,14,16;21:22,24; 23:2,3;40:15,20,23
	<b>10:00 (1)</b> 96:18	<b>180- (3)</b> 79:19;223:9,18	<b>1st (2)</b> 15:20;184:10
	<b>100 (10)</b> 19:2,4,5;165:14,19,24; 213:3;220:3;221:14;243:23	<b>184 (1)</b> 81:2	<b>2</b>
	<b>11 (1)</b> 63:5	<b>187,000 (1)</b> 178:19	<b>2 (7)</b> 61:13;63:4;119:17; 124:13;158:17;169:1;170:18
	<b>11.6 (1)</b> 41:15	<b>18th (1)</b> 31:20	<b>20 (8)</b> 22:9;92:8;94:14;100:25; 129:24;178:17;228:14;238:3
		<b>19 (7)</b> 35:25;49:3;84:18;170:2;	<b>200,000 (2)</b>

<p>24:15;224:8 <b>2000 (8)</b> 72:10;127:9;128:2,17,18; 129:24;230:10,25 <b>2000-to-2014 (1)</b> 130:10 <b>2002 (1)</b> 14:25 <b>2003 (1)</b> 199:9 <b>2005 (7)</b> 44:20;114:7;198:10;199:5, 10,11;219:21 <b>2006 (7)</b> 115:1;126:6;146:3,13,21; 199:5;227:19 <b>2007 (10)</b> 132:19;135:13;141:6; 145:8;147:16;150:6;167:9; 226:23;238:24;254:7 <b>2007's (1)</b> 198:13 <b>2008 (10)</b> 28:24;29:7;36:21;38:3; 123:11;126:6;138:21; 144:11;181:12;252:1 <b>2009 (2)</b> 201:4,7 <b>2010 (6)</b> 15:25;20:6,8,21;36:1; 70:15 <b>2011 (5)</b> 11:8;20:21;174:22,25; 178:17 <b>2012 (3)</b> 90:22;126:6;233:8 <b>2013 (1)</b> 86:4 <b>2014 (2)</b> 130:1;231:7 <b>2015 (3)</b> 130:3,21;180:16 <b>2015-ish (1)</b> 59:18 <b>2017 (3)</b> 174:22,25;178:17 <b>2018 (5)</b> 73:1,5;129:9,11;130:13 <b>2019 (1)</b> 91:1 <b>202,690 (1)</b> 79:17 <b>202,690.93 (1)</b> 24:11 <b>2020 (2)</b> 49:3;59:23 <b>2021 (21)</b> 72:10;127:9;128:2,18; 150:6;167:10;170:25; 174:22,25;178:17;180:18; 216:18;217:3,7,21;218:1,2, 7;230:10,25 <b>2022 (15)</b></p>	<p>15:2,19;119:20;128:11,16, 17;129:5;188:11;233:13,18, 21;234:1,5,17,20 <b>2023 (6)</b> 74:25;76:21;91:4;98:21; 182:16;218:21 <b>2024 (1)</b> 91:4 <b>21 (2)</b> 233:8;238:3 <b>22 (3)</b> 22:8;94:14;100:23 <b>220 (1)</b> 217:25 <b>224 (2)</b> 77:18;104:13 <b>24 (4)</b> 188:4;189:5;201:4;211:18 <b>240,000 (2)</b> 68:12,14 <b>245,000 (1)</b> 103:25 <b>24th (1)</b> 201:7 <b>25 (6)</b> 29:9;82:16,17;92:7;163:3; 211:19 <b>26 (4)</b> 25:5;189:9,11,13 <b>27 (5)</b> 14:21;15:23;40:13;71:15; 124:15 <b>28th (1)</b> 188:11 <b>29th (1)</b> 138:21 <b>2nd (1)</b> 64:17</p>	<p>190:5,17;207:5;228:14; 246:22 <b>30,000 (1)</b> 152:12 <b>300 (9)</b> 71:12;75:20,24;84:8; 121:5,9,16;130:16;232:17 <b>300,000 (1)</b> 44:5 <b>301 (4)</b> 74:22;121:6,16;184:9 <b>3023 (1)</b> 199:7 <b>306 (4)</b> 73:12;75:22,24;76:4 <b>31 (1)</b> 201:8 <b>3-1 (14)</b> 139:5,7,22;140:4;141:9; 142:11;166:14,19,23; 168:15;169:18;253:24; 254:2,3 <b>3-10 (2)</b> 154:23,25 <b>3-11 (4)</b> 152:2;154:23,25;155:9 <b>3-12 (8)</b> 154:19;155:22;156:2,5; 158:6;159:10,11;170:2 <b>3-13 (1)</b> 157:17 <b>314 (2)</b> 77:17;104:10 <b>3-14 (1)</b> 158:16 <b>316 (1)</b> 120:8 <b>3-16 (1)</b> 165:2 <b>3-18 (1)</b> 150:2 <b>3-19 (7)</b> 150:2;156:3;158:6;159:10, 11,16;161:25 <b>31st (1)</b> 15:21 <b>3-2 (5)</b> 142:8,9;166:14;172:10,13 <b>322 (3)</b> 120:17,18,20 <b>326 (2)</b> 120:12,15 <b>327 (1)</b> 120:16 <b>3-3 (2)</b> 144:9;145:22 <b>332 (4)</b> 30:3;48:16,22,23 <b>334 (4)</b> 35:20;48:25;49:16,18 <b>337 (4)</b> 53:13;69:7,16,17 <b>338 (5)</b></p>	<p>44:21;47:2;48:10,12; 102:18 <b>3-4 (6)</b> 149:25;150:2,8,12,13; 152:6 <b>347 (4)</b> 115:5,24;116:2,16 <b>347A (15)</b> 116:3,5,16;117:12;118:3, 12,16,16;121:25;124:2; 125:17,19;139:4;149:19; 216:15 <b>35 (1)</b> 76:16 <b>3-5 (4)</b> 152:2,25;153:1;155:8 <b>36 (5)</b> 38:20,22,24,24;40:5 <b>3-6 (1)</b> 154:2 <b>362 (3)</b> 60:8,9,14 <b>363 (6)</b> 60:6,16,18;68:22;69:1,5 <b>364 (5)</b> 65:11,13;68:22;69:1,5 <b>365 (8)</b> 193:25;194:1,7,8,11,12,14; 240:25 <b>38,000 (1)</b> 72:14 <b>3a (1)</b> 81:24 <b>3rd (1)</b> 31:14</p>
	<b>3</b>		<b>4</b>
			<p><b>4 (4)</b> 63:18;118:21;170:5,18 <b>4,000 (1)</b> 16:17 <b>40 (7)</b> 67:21;128:2,4;129:16; 162:24;190:17;230:25 <b>400 (4)</b> 9:3;10:2;12:8;29:25 <b>400-acre (1)</b> 29:22 <b>40-acre (3)</b> 41:21;67:25;68:1 <b>45-14537 (1)</b> 59:23 <b>4th (1)</b> 31:16</p>
			<b>5</b>
			<p><b>5 (25)</b> 31:21;53:25;54:1;60:24; 86:4,15,18;157:6;159:18; 161:18;162:11;164:15,17; 165:4,4,10;167:2;169:2,23;</p>

<p>170:7,8,9,21;193:8;237:16 <b>5,000 (1)</b> 129:17 <b>5,600 (1)</b> 127:2 <b>5,666 (1)</b> 127:1 <b>5.8 (4)</b> 41:7,13,22;223:14 <b>5:00 (3)</b> 96:18;97:18;255:10 <b>5:03 (1)</b> 256:21 <b>50 (4)</b> 29:14;92:7;165:14;190:17 <b>50,000 (1)</b> 152:13 <b>57 (3)</b> 55:5,6;57:1 <b>57,000 (1)</b> 218:7</p>	<p><b>75,200 (4)</b> 35:9;74:25;189:2,14 <b>75th (11)</b> 164:22,23;165:11;166:7, 12,12,13;170:7,10;173:5; 243:5 <b>76,000 (1)</b> 74:14 <b>781 (1)</b> 162:8 <b>7-ish (1)</b> 44:20</p>		
<p style="text-align: center;"><b>6</b></p>	<p style="text-align: center;"><b>8</b></p>		
<p><b>6 (4)</b> 39:9;44:20;124:10;230:8 <b>6/'8/'12 (15)</b> 126:23,25;127:5,12,17,18, 22,25;128:12,19,20;129:6, 14;130:12;230:14 <b>60 (4)</b> 29:14;90:19;92:7;166:8 <b>600 (1)</b> 90:1 <b>618,000 (2)</b> 217:22;218:3 <b>65 (1)</b> 166:8 <b>65,000 (1)</b> 152:14</p>	<p><b>8 (1)</b> 71:17 <b>80 (2)</b> 67:21;166:10 <b>800 (1)</b> 67:24 <b>86 (1)</b> 158:17</p>		
<p style="text-align: center;"><b>7</b></p>	<p style="text-align: center;"><b>9</b></p>		
<p><b>7 (11)</b> 34:19;55:8,12;57:1;103:7; 124:10,13;230:8;232:19; 234:24;237:16 <b>7:00 (1)</b> 16:20 <b>7:30 (1)</b> 16:20 <b>700,000 (2)</b> 184:23;185:5 <b>73,000 (1)</b> 101:8 <b>75 (5)</b> 31:3,5;82:18;138:10; 166:10 <b>75,000 (18)</b> 184:16,16;185:1,6,16; 190:8,11,15,16,18,22,25; 191:4;204:25;209:16,20; 210:23;211:12</p>	<p><b>9 (2)</b> 84:10,15 <b>9,000-some (1)</b> 207:3 <b>9:00 (2)</b> 255:22;256:19 <b>90,000 (1)</b> 223:9 <b>90s (1)</b> 187:8</p>		

BEFORE THE DEPARTMENT OF WATER RESOURCES  
OF THE STATE OF IDAHO

IN THE MATTER OF DISTRIBUTION OF ) DOCKET NO.  
WATER TO VARIOUS WATER RIGHTS ) CM-DC-2010-001  
HELD BY OR FOR THE BENEFIT OF A&B )  
IRRIGATION DISTRICT, AMERICAN )  
FALLS RESERVOIR DISTRICT #2, )  
BURLEY IRRIGATION DISTRICT, )  
MILNER IRRIGATION DISTRICT, )  
MINIDOKA IRRIGATION DISTRICT, )  
NORTH SIDE CANAL COMPANY, AND )  
TWIN FALLS CANAL COMPANY )  
\_\_\_\_\_ )

BEFORE

HEARING OFFICER: GARY SPACKMAN

VOLUME III

Date: June 8, 2023, 9:02 a.m.  
Location: Idaho Department of Water Resources  
322 East Front Street, 6th Floor

REPORTED BY:  
ANDREA L. CHECK, CSR No. 748, RPR, CRR  
Notary Public

## A P P E A R A N C E S

1  
2  
3 For the Idaho Department of Water Resources:

4 Office of the Attorney General

5 Idaho Department of Water Resources

6 BY MR. PETER A. WOOD, ESQ.

7 322 East Front Street, Suite 648

8 Boise, Idaho 83720-0098

9 pete.wood@idwr.idaho.gov

10 For the City of Pocatello:

11 Somach Simmons & Dunn, P.C.

12 BY MS. SARAH A. KLAHN, ESQ.

13 & MR. MAXIMILIAN C. BRICKER, ESQ.

14 1155 Canyon Boulevard, Suite 110

15 Boulder, Colorado 80302

16 sklahn@somachlaw.com

17 For the Cities of Bliss, Burley, Carey, Declo, Dietrich,

18 Gooding, Hazelton, Heyburn, Jerome, Paul, Richfield,

19 Rupert, Shoshone, and Wendell:

20 McHugh Bromley, PLLC

21 BY MR. CHRIS M. BROMLEY, ESQ.

22 & MS. CANDICE M. MCHUGH, ESQ.

23 380 South 4th Street, Suite 103

24 Boise, Idaho 83702

25 cmchugh@mchughbromley.com

## A P P E A R A N C E S (Continued)

For the Surface Water Coalition, Twin Falls Canal  
Company, North Side Canal Company, and Milner Irrigation  
District, A&B, Burley Irrigation District:

Marten Law

BY MR. JOHN K. SIMPSON, ESQ.

& MR. TRAVIS L. THOMPSON, ESQ.

101 South Capitol Boulevard, Suite 305

Boise, Idaho 83702

jsimpson@martenlaw.com

tthompson@martenlaw.com

For the Minidoka Irrigation District, AFRD#2:

Fletcher Law Office

BY MR. W. KENT FLETCHER, ESQ.

1200 Overland Avenue

Burley, Idaho 83318-0248

wkf@pmt.org

For the City of Idaho Falls:

Holden, Kidwell, Hahn & Crapo

BY MR. ROBERT L. HARRIS, ESQ.

1000 Riverwalk Drive, Suite 200

P.O. Box 50130

Idaho Falls, ID 83405

rharris@holdenlegal.com

## A P P E A R A N C E S (Continued)

For Idaho Ground Water Appropriators, Inc.:

Racine Olson, PLLP

BY MR. THOMAS J. BUDGE, ESQ.

& MS. ELISHEVA M. PATTERSON, ESQ.

201 East Center Street

Pocatello, Idaho 83201

tj@racineolson.com

elisheva@racineolson.com

For Madison Ground Water District, Henry's Fork Ground  
Water District, Jefferson Clark Ground Water District:

Rigby, Andrus & Rigby Law, PLLC

BY MR. JERRY R. RIGBY, ESQ.

25 North 2nd East

Rexburg, Idaho 83440

jrigby@rex-law.com

For Bonneville-Jefferson Ground Water District:

Olsen Taggart, PLLC

BY MR. SKYLER C. JOHNS, ESQ.

P.O. Box 3005

Idaho Falls, Idaho 83403

sjohns@olsentaggart.com

A P P E A R A N C E S (Continued)

For Bingham Ground Water District:

Dylan Anderson Law

BY MR. DYLAN K. ANDERSON, ESQ.

P.O. Box 35

Rexburg, Idaho 83440

dylan@dylanandersonlaw.com

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25



## I N D E X

## W I T N E S S E S

1		
2		
3		
4	TESTIMONY OF SOPHIA SIGSTEDT	PAGE
5	Direct Examination by Ms. Patterson	11
6	Direct Examination by Ms. McHugh	87
7	Cross-Examination by Mr. Simpson	89
8	Cross-Examination by Mr. Fletcher	112
9	Cross-Examination by Ms. Patterson	117
10	Examination by the Hearing Officer	119
11		
12	TESTIMONY OF RICHARD LYNN CARLQUIST	
13	Direct Examination by Mr. Budge	122
14	Cross-Examination by Mr. Fletcher	132
15	Cross-Examination by Mr. Simpson	140
16	Redirect Examination by Mr. Budge	144
17		
18	TESTIMONY OF BRYCE CONTOR	
19	Direct Examination by Mr. Johns	150
20	Cross-Examination by Mr. Harris	207
21	Cross-Examination by Mr. Thompson	211
22	Redirect Examination by Mr. Johns	227
23		
24		
25		

## I N D E X

## W I T N E S S E S (Continued)

## TESTIMONY OF ANTHONY OLENICHAK

Direct Examination by Mr. Harris 228

Direct Examination by Mr. Budge 237

Cross-Examination by Mr. Thompson 244

Cross-Examination by Mr. Fletcher 253

Cross-Examination by Ms. McHugh 258

Redirect Examination by Mr. Harris 261

Recross-Examination by Mr. Fletcher 263

I N D E X  
E X H I B I T S

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

NO.	MARKED	RECEIVED
SWC		
8 -	246	252
IDAHO FALLS, POCATELLO, AND COALITION OF CITIES		
366 -	227	236
BONNEVILLE-JEFFERSON GROUND WATER DISTRICT		
500 -	***	206
IGWA		
829 -	***	149
837 -	***	87

P R O C E E D I N G S

1  
2  
3 HEARING OFFICER: Okay. It's 9:00 a.m.  
4 June 8th, and we're ready to start.

5 Are we on the record, Andrea?

6 COURT REPORTER: Yes.

7 HEARING OFFICER: Microphones are on.

8 Sarah, can you hear us?

9 Sarah is there, her image is there, anyways.  
10 Maybe she just logged in.

11 Okay. Do we have Candice McHugh today?

12 MS. KLAHN: She will join us later. She's at  
13 a meeting with one of her clients getting ready for the  
14 testimony tomorrow.

15 HEARING OFFICER: All right, good. Are there  
16 any preliminary matters that need to be addressed this  
17 morning? If not, I think the witness that's --

18 MR. WOOD: Should we see if these guys can  
19 hear us?

20 HEARING OFFICER: Yeah. Is Garrick Baxter on?

21 MR. BAXTER: I'm here, Director.

22 HEARING OFFICER: You can hear us?

23 MR. BAXTER: Yes, we can hear you fine.

24 HEARING OFFICER: Great. All right. Thanks.

25 I think the next witness is Sophia Sigstedt;

1 is that correct?

2 MS. PATTERSON: That is correct, Director.

3 HEARING OFFICER: And who will be examining?

4 MS. PATTERSON: Elisheva Patterson on behalf  
5 of IGWA will be.

6 HEARING OFFICER: Good. Ms. Patterson, if you  
7 will come forward, please, and find one of the  
8 microphones.

9 And, Sophia, I see that you are online and  
10 participating remotely.

11 THE WITNESS: Yes, thank you.

12 HEARING OFFICER: So I hope this examination  
13 can proceed in a way that's meaningful.

14 Okay. I guess I need to swear you in from a  
15 distance, Sophia, so if you'll raise your right hand.

16  
17 SOPHIA SIGSTEDT, PH-GW,  
18 called by IGWA having been first duly sworn to tell the  
19 truth relating to said cause, testified remotely as  
20 follows:

21  
22 HEARING OFFICER: Thank you.

23 All right. Ms. Patterson.

24 MS. PATTERSON: Thank you, Director.

25 ///

DIRECT EXAMINATION

QUESTIONS BY MS. PATTERSON:

Q. Good morning, Ms. Sigstedt. May I call you "Sophia" today?

A. Yes, that's fine.

Q. Thank you.

Can you please give the court your name and your business address.

A. Oh, gosh. Yes, my name is Sophia Sigstedt. And the business address is -- sorry, just give me a second.

Q. Just the business is fine.

A. Okay. Lynker in Boulder, Colorado.

Q. Thank you.

And, quickly, can you tell me what your educational background is.

A. Yes. I have a bachelor's degree in environmental science from the New Mexico Institute of Mining and Technology and a master's degree in hydrology, also from New Mexico Institute of Mining and Technology.

Q. And how long have you been with Lynker?

A. I've been with Lynker since 2015, so about eight years. But I've been consulting since 2010, so a little over ten years.

1 Q. And how long have you been familiar with  
2 the -- this project, the Eastern Snake Plain Aquifer?

3 A. I started working for IGWA around 2012, 2013,  
4 so about ten years I've been working on the Eastern  
5 Snake Plain Aquifer.

6 Q. And what type of work do you do for IGWA?

7 A. I started with IGWA during the Rangen  
8 litigation. So I did a lot of modeling, water right  
9 support related to that matter. I've done some witness  
10 testimony also related to water right transfer in a  
11 mitigation matter for the Rangen case. I've done a lot  
12 of groundwater modeling, looking at IGWA's various  
13 mitigation activities around CREP, recharge, water  
14 conservation, modeling those activities as part of a  
15 mitigation plan. I've done modeling for settlement  
16 agreements around water conservation. For IGWA, I  
17 participate on a number of technical working groups like  
18 the --

19 Q. Yes, thank you.

20 So you've worked since 2012 -- was that the  
21 date? -- 2012, 2013 on -- with IGWA?

22 A. Yes, that's right.

23 Q. So you're familiar with this project?

24 A. Yes.

25 Q. You mentioned briefly that you work on

1 other -- or not other consulting projects -- strike  
2 that, please.

3 Can you tell me about the other committees  
4 that you mentioned. Is there an aquifer modeling  
5 committee that you are on and participate on?

6 A. Yes. So I'm a member of the Eastern Snake  
7 Plain Hydrologic Modeling Committee, which does  
8 technical advisory and oversight of Eastern Snake Plain  
9 hydrologic model or ESPAM. I also participate in the  
10 Big Lost Modeling Technical Advisory Committee.

11 Q. Okay. Thank you. I'm going to move to what  
12 you did on this case.

13 What were you asked to do here in preparation  
14 for this hearing?

15 A. I was asked to review the Fifth Methodology  
16 Order, the April As-Applied Order, and the various  
17 expert reports that were submitted in this matter.

18 Q. Thank you.

19 As a part of this hearing, did you also  
20 participate in technical working groups held by the  
21 Department staff in 2022?

22 A. Yes. I was part of the -- all of the meetings  
23 for the 2022 technical working group, and I was also  
24 part of the 2015 technical working group in this matter.

25 Q. Thank you.



1           And did you submit comments to the Department  
2 on each of the 2015 technical working group and the 2022  
3 technical working group?

4           A. Yes, I did.

5           Q. Did you submit an expert report in this case?

6           A. Yes, I did.

7           Q. And we have identified that as Exhibit 837.

8           Do you have a copy of that with you?

9           A. I do.

10          Q. Wonderful. So we will be going over your  
11 expert report today.

12           We have also discussed your written comments  
13 that you made to the staff in 2015. Those are  
14 identified as Exhibit 103. We will be referring to  
15 those during your testimony today.

16           And then your 2022 comments are identified as  
17 Exhibit 916.

18          A. I have all of those.

19          Q. And you have copies of those available to you?

20          A. Yes.

21          Q. Thank you.

22           On this expert report and on your analysis of  
23 the Fifth Methodology Order and the As-Applied Order,  
24 were you able to perform all of the work you wanted to  
25 do?

1           A. No, there is a number of things that -- sort  
2 of outlined throughout the report that I didn't have  
3 time to accomplish. And I think I submitted some other  
4 documents to the court related to kind of further  
5 analysis around irrigated acres. I would have liked to  
6 have done some modeling to evaluate As-Applied Order  
7 models that's detailed in the report. I think  
8 reasonable carryover is something that I didn't have  
9 very much time to analyze in this report; that's  
10 something that I would have liked to have spent more  
11 time on. Project efficiencies --

12           Q. It's kind of hard for you to see me, but I'll  
13 try to interrupt you if -- we will address, you know,  
14 these matters in more detail as we go through your  
15 report, but suffice it to say there were more things  
16 that you would have liked to do if you had time in  
17 assessing the Fifth Methodology Order and the As-Applied  
18 Order?

19           A. Yes. There are a huge number of components to  
20 this methodology, and that was a very compressed time  
21 frame to put together this report and analysis.

22           Q. Okay. Thank you.

23                   And were there other matters that IGWA had  
24 asked you to work on that, you know, this analysis  
25 pulled you off of?

1           A. Yes. We're doing -- I'm doing some workaround  
2 looking at how -- approaches to a groundwater management  
3 plan, I'm working on recharge analysis, several things  
4 that could have been done -- that should have been done  
5 in this time.

6           Q. Okay. Thank you.

7                   Let's turn to your report now and discuss what  
8 you mentioned, the irrigated acreage issue. And can we  
9 look at Table 2-1, which is a summary of the SWC  
10 irrigated acres 2015, TWG.

11          A. Okay.

12                   HEARING OFFICER: So, Ms. Patterson, this is  
13 Exhibit 837 in the common exhibits?

14                   MS. PATTERSON: This would be under IGWA's  
15 exhibits.

16                   MR. WOOD: What number again?

17                   MS. PATTERSON: 837. It should be the last  
18 binder.

19                   MR. WOOD: 837?

20                   MR. BUDGE: Director, can we go off the record  
21 just for a moment just to address a logistical matter?

22                   HEARING OFFICER: Yes.

23                   (Break taken.)

24                   HEARING OFFICER: Back on the record. We're  
25 recording again. Microphones are on.

1 Ms. Patterson?

2 MS. PATTERSON: Thank you.

3 Q. (BY MS. PATTERSON) Sophia, can you see me a  
4 little better now?

5 A. Yes, thank you.

6 Q. So I previously asked you to turn to your  
7 report, which is Exhibit 837, and then on page 8, there  
8 is a Table 2-1.

9 Can you please tell us again what the 2015 TWG  
10 refers to?

11 A. Yes. So in 2015, I think, there was an order  
12 that directed Department staff to convene a technical  
13 working group around a number of issues. One of the  
14 issues that was discussed was improvement to the  
15 reasonable in-season demand. And part of that was  
16 looking at irrigated acres.

17 This table that you're referring to is  
18 basically a summary of irrigated acres presented to the  
19 technical working group related to their reasonable  
20 in-season demand calculation.

21 Q. Okay. And then in your report, two paragraphs  
22 above the second sentence, it reads: "It was my  
23 understanding that in 2015 that these would be the  
24 irrigated acres used in the Methodology Order. However,  
25 my recent review of the Department's RISD calculation

1 spreadsheet indicates that these acres were only applied  
2 to calculations 2000 to 2014."

3 Can you explain that comment for us?

4 A. So I'm referring to the very last column in  
5 the Table 2.1 that you referred to that's labeled, and  
6 this is the Department staff's labeling, "2013  
7 Reasonable In-Season Demand." So in that column,  
8 there's sort of a conglomeration of the different  
9 irrigated acres presented in the table where they're  
10 either taking what's from the partial decree irrigated  
11 acres, or it seems like they're using the 2005-2007 SPF  
12 acres, which I think have been mentioned in testimony  
13 represented in previous proceedings.

14 And so it was my understanding that the  
15 last -- the acres in that last column were being used in  
16 the reasonable in-season demand. They provided a  
17 spreadsheet of the reasonable in-season demand  
18 calculation in 2015, and these were the irrigated acres  
19 used in the calculation sheet at that time.

20 When I referred to they were only used through  
21 2014 is that for this proceeding, we were given an  
22 updated spreadsheet, something like that reasonable  
23 in-season demand through 2022, and that includes a  
24 hindcast, basically, from -- you know, the order wasn't  
25 implemented until I think 2010, but that includes a

1 hindcast of reasonable in-season calculations starting  
2 in 2000. And what I see in that sheet was that these  
3 irrigated acres in this column were used in the  
4 reasonable in-season demand from 2000 to 2014.

5 Q. So you identified some of the columns here.  
6 Am I to understand the 2013 RISD column of -- those were  
7 used in the hindcast, which means that they were used in  
8 the As-Applied Order to calculate RISD in 2000 to 2014?

9 A. Like I said, I think the As-Applied Order  
10 really only goes through 2010, but, yes, I think these  
11 were the irrigated acres used in the calculation during  
12 that time.

13 Q. Okay. And then you mentioned, you know, that  
14 second column from the right, "2005-2007 SPF."

15 Do I understand -- is that the Spronk  
16 engineering inputs?

17 A. Yes.

18 Q. And so, for example, Burley, it looks like  
19 that's 44,715, and then in column -- on the far left,  
20 that same number is used for the 2013 RISD?

21 A. Correct.

22 Q. And similar for Minidoka and Twin Falls Canal  
23 Company?

24 A. That's correct.

25 Q. Thank you.

1           Let's move next to Table 2-2, which is on  
2 page 9. Can you explain to me what this is?

3           A. Yes. So this is the table extracted directly  
4 out of the reasonable in-season demand calculation  
5 sheet. You can see this in both the version provided to  
6 the technical working group dated 2014, and you can see  
7 this same table in the reasonable in-season demand  
8 calculation sheet provided to the technical working  
9 group in 2022 -- or it was -- yeah, 2022.

10           And, essentially, you can see that this is --  
11 these are the data cells used for irrigated acres in the  
12 reasonable in-season demand calculation, like I said,  
13 2000 through 2014.

14           Q. And what is significant about the Twin Falls  
15 Canal Company acreage?

16           A. So you can see, like the table that we  
17 referred to previously, they're implementing the SPF,  
18 the Spronk water irrigated acre numbers there. They're  
19 referencing an exhibit I think that was used in the  
20 proceeding to, basically, accept these acres to be used  
21 in the reasonable in-season demand calculation.

22           Q. Thank you.

23           Did the Department staff tell the 2015  
24 technical working group that they were planning to  
25 change the acreage that was used to calculate RISD that

1 was shown in Table 2-1?

2 A. I don't recall that, and I went through the  
3 staff recommendations which were very detailed in terms  
4 of what they were recommending to change, and there was  
5 nothing about changing the number of irrigated acres  
6 that they were going to be applying in the reasonable  
7 in-season demand calculation.

8 Q. Thank you.

9 Let's go to that memo, which is actually an  
10 attachment to your report, but it is also Exhibit 103.  
11 If we want to stay on the report, we can just look at  
12 page 50.

13 Sophia, do you have in front of you that staff  
14 report that is from Liz Cresto and Matt Anders to Gary  
15 Spackman dated March 16th, 2015?

16 A. I do.

17 Q. And do you recognize this?

18 A. Yes.

19 Q. Can you explain to me what this is?

20 A. Yeah. So I think at the conclusion of the  
21 series of technical working group meetings in 2015, the  
22 staff was, basically, describing the recommendations  
23 that they were going to have if they were recommending  
24 to have implemented in the methodology. And then they  
25 also describe, I think, pieces of improvements to



1 reasonable in-season demand and others that they didn't  
2 have time to, basically, do analysis and address to make  
3 a recommendation on.

4 Q. Thank you. And then if we turn to page 55 of  
5 your report, which, again, is -- we're still looking at  
6 that memo from Liz Cresto. It says down at the bottom  
7 that -- the last paragraph summarizes the work on the  
8 mid-season forecast demand.

9 It reads: "With the limited time frame the  
10 committee was given, we were unable to conclude an  
11 analysis of methods to improve RISD forecasts. Because  
12 this analysis was not yet complete, we cannot currently  
13 recommend changes to the current methodology regarding  
14 this issue."

15 Do you recall why there was a limited time  
16 frame?

17 A. I do not, but I definitely do remember the  
18 staff talking about being under a compressed time frame  
19 during the period that they had to do the analysis.

20 Q. Do you know whether the technical working  
21 group or Department staff has completed this analysis  
22 since 2015?

23 A. I think the things that she lays out here and  
24 that I recall from the presentations to the technical  
25 working group were, she was looking at alternative

1 possibilities for basically forecasting the remainder of  
2 the irrigation season and the reasonable in-season  
3 demand calculation, so opposes the current methodology  
4 that uses the baseline year to come up with volumes for  
5 the months that haven't occurred. She was also looking  
6 at supplemental groundwater use and reevaluating the  
7 project efficiency methods.

8 To my knowledge, none of that analysis was  
9 carried on past this point or further.

10 Q. Thank you.

11 If you go down to page 56, I believe that's  
12 where supplemental groundwater use is discussed, so  
13 under Section 4, paragraph 2, sub (b), it says:  
14 "Supplemental groundwater use. There was insufficient  
15 time for the committee to evaluate this subject."

16 Does that match what you recall?

17 A. Yes.

18 HEARING OFFICER: Ms. Sigstedt, could you tell  
19 me which exhibit that you are referring to at the  
20 present time?

21 THE WITNESS: I'm looking at the last page of  
22 the 2015 Department staff recommendations.

23 HEARING OFFICER: So, Ms. Patterson, I'm  
24 sorry, that would be 103?

25 MS. PATTERSON: So it is contained in 103. If

1 you want to refer to it there, it would be the last page  
2 of that one. But it is also an attachment to  
3 Ms. Sigstedt's expert report. And if you're looking at  
4 the expert report, which is 837, it will be on page 56.

5 HEARING OFFICER: Okay. I now am on page 56  
6 of Exhibit 837. Okay. Thank you.

7 MR. WOOD: I don't think that's correct.

8 MR. FLETCHER: It says: "Future committee  
9 meetings."

10 HEARING OFFICER: Yeah, it's titled, "Future  
11 Committee Meetings," Section 4.

12 MR. WOOD: Oh, that's right.

13 MS. PATTERSON: Yeah, that's right.

14 MR. WOOD: Okay. That's fine. Sorry.

15 HEARING OFFICER: Go ahead.

16 MS. PATTERSON: Sorry, there's a lot of paper.

17 MR. WOOD: Yeah.

18 Q. (BY MS. PATTERSON) Sorry, I'll just go back.

19 So as you recognized or just testified about  
20 before, the technical working group in 2015 did not have  
21 time to address the supplemental groundwater use, and is  
22 that reflected in the report on page 56?

23 A. That's right. And you can see right above  
24 that, the Department staff is also recommending that  
25 they would have liked to continue this work in future

1 meetings. I think they recommend something like one  
2 meeting a year or something. And that -- that has not  
3 taken place. I don't think that recommendation was  
4 taken up.

5 Q. Thank you.

6 Section D also identifies future work.  
7 Irrigated acres, it says: "Significant discussion  
8 focused on this topic. And it was generally agreed that  
9 the processing for determining irrigated acres for SWC  
10 members could not be improved."

11 Do you recall that discussion?

12 A. Yes. I think discussion around irrigated  
13 acres was -- had to do with the submittals by the  
14 Surface Water Coalition, whether they were updated and  
15 whether the Department had a process in place to,  
16 basically, evaluate what the Surface Water Coalition  
17 submitted.

18 Q. Thank you.

19 Let's move on to page 66 of your report, which  
20 are your comments in 2015 in response to the Liz Cresto  
21 report.

22 Is that correct?

23 A. I'm sorry, I have a different page number.  
24 Okay.

25 Q. So can you just describe this document?

1 HEARING OFFICER: So what document are we  
2 looking at now?

3 MS. PATTERSON: If you stay on the current  
4 exhibit that you are on, 837, and if you go to page 66.

5 HEARING OFFICER: Okay.

6 THE WITNESS: So following the recommendation  
7 comments from Department staff in 2015, they gave an  
8 opportunity to the technical working group members to  
9 provide their own comments that would be attached to  
10 their comments, which is what you see. These are my  
11 comments related to what they recommended.

12 Q. (BY MS. PATTERSON) And just so we're clear  
13 that we're all looking at the same document, is this the  
14 one dated March 16th, 2015?

15 A. That's what I'm looking at.

16 Q. Perfect. Okay. On page 68, the last two  
17 paragraphs refer to "irrigated acres."

18 Are these comments referred to in your current  
19 report?

20 A. Yes.

21 Q. Can you explain to the Court what your  
22 comments are here?

23 A. So what we heard from the technical working  
24 group on irrigated acres was that there was not a  
25 process in place for the Department to basically

1 evaluate a submittal, aside from overlapping -- removing  
2 overlapping acres, I think, from those shapefiles.

3 So my comments here have to do with  
4 recommending that they're -- they do put in a review  
5 process around irrigated acres submitted that includes  
6 identifying hardened acres using either aerial imagery  
7 or remote sensing data, which was presented as being  
8 available to the Department to use for this type of  
9 analysis.

10 So I lay out kind of the things that they  
11 should -- a process around things that should be  
12 removed, like roads and surfaces, things like that. And  
13 then I also have a comment here that I, essentially,  
14 disagree with using the 5 percent standard as the  
15 Surface Water Coalition's being able to, essentially,  
16 say that as long as they haven't changed their acreage  
17 within 5 percent -- this has to do with something we  
18 heard, I think in testimony earlier -- that for a very  
19 large irrigation district like Twin Falls Canal Company,  
20 5 percent of that irrigated acres can be something like  
21 10,000 acres and that can, you know, add up to some tens  
22 of thousands of acre-feet in terms of crop water need.

23 Q. Potentially erroneous crop water need?

24 A. Exactly. An erroneous calculation of crop  
25 water need that would fall into the demand shortfall

1 calculation.

2 Q. Do you know if the Department has done  
3 anything to improve the process?

4 A. No. I think based on the information that we  
5 represented in the 2022 technical working group, not  
6 only have they not implemented their own review process,  
7 for whatever reason, it seems like they have reverted  
8 back to using more outdated irrigated acres than were  
9 presented to us in this 2015 technical working group,  
10 which took into account, basically, the nonirrigated  
11 acres that had previously been identified and presented  
12 to the Court for various irrigation entities.

13 Q. Okay. Thank you.

14 Let's go back to the body of your report. So  
15 we're still on Exhibit 837, but we'll be going to  
16 page 10. And we're looking at Table 2-3, Summary of SWC  
17 Irrigated Acres 2022, TWG.

18 Can you just explain again what the 2022 TWG  
19 is?

20 A. So again, by order, the Department staff were  
21 directed to convene a technical working group. This is  
22 the first one since that 2015 technical working group.  
23 There was a series of meetings held as part of meetings  
24 around looking at the implementation of what's called  
25 near real-time METRIC data, and they presented

1 information on irrigated acres.

2 This table is a summary of the various  
3 datasets for irrigated acres that were presented to the  
4 technical working group committee in 2022.

5 Q. Okay. So this came from a presentation that  
6 was given by the Department in the 2022 technical  
7 working group?

8 A. Correct.

9 Q. Thank you. So what does this show, this  
10 table?

11 A. So this shows -- it starts with a column  
12 called "Shapefile Acres." These are either from the  
13 permitted place of use, PPU, with a date; acres  
14 recorded; or sometimes there's a shapefile that has been  
15 submitted by Surface Water Coalition following that  
16 date, so it has -- that would be designated by SWC with  
17 the date that that shapefile was committed and the  
18 associated acres. That's the first column.

19 The second column, and these are the  
20 Department's labeling, is "If Removed Non-irrigated  
21 Acres Using the 2011 Irrigated Lands Dataset." So these  
22 report the acres for the districts from using the  
23 Departments irrigated land dataset.

24 The same thing is in the next column but is  
25 the updated irrigated lands for 2017.



1           And then, like I said, this presentation, I  
2 think, was focused around the implementation of near  
3 real-time METRIC, and so they have a column labeled  
4 "Near Real-Time METRIC Processing Acres" that was done  
5 in 2021.

6           And then the last column is, essentially, the  
7 acres that are used in the Methodology Order. And like  
8 I said, I reviewed the reasonable in-season demand  
9 calculation sheet for the Methodology Order and  
10 following -- starting in 2015, the very last column  
11 here, are the acres used in every year for the  
12 reasonable in-season demand calculation.

13           Q. Thank you. If we go to page 11 of your  
14 report, the first paragraph has a sentence that reads:  
15 "Every technical analysis of the irrigated acres  
16 consistently shows that Twin Falls Canal Company is  
17 irrigated approximately 15,000 acres less than the" 19  
18 -- or "194,732 acre figure that Twin Falls Canal Company  
19 reports to IDWR as being irrigated."

20           And then there's references to the SPF report  
21 from 2008 and the IDWR irrigated lands dataset in 2011  
22 and 2017, and then the NRT METRIC data for 2021.

23           Can you explain to me, you know, how those  
24 different references helped you form that conclusion?

25           A. I mean, you can see it in the table we were

1 just referring to, Table 2-3. Each of those datasets  
2 that is -- has, basically, an actual analysis. What the  
3 irrigated lands, the actual irrigated lands are at that  
4 time shows that it's about 15,000 acre-feet less than  
5 the irrigated acres that's being used for Twin Falls.

6 You know, this is confusing, because I think  
7 in the same presentation, Matt Anders makes very clear  
8 that in the Department methodology nonirrigated acres  
9 are not supposed to be included in the reasonable  
10 in-season demand calculation, and, essentially, they're  
11 showing consistently data that shows that those  
12 nonirrigated acres are being used.

13 Q. Thank you. Can you explain to us the IDWR  
14 irrigated lands dataset, as you understand it?

15 A. Yes. As I understand it, this was something  
16 that was, I think, originally commissioned for Eastern  
17 Snake Plain Hydrologic -- or at the direction, maybe, at  
18 the Eastern Snake Plain Hydrologic Modeling Committee.  
19 They used this dataset in the calibration of the model,  
20 and the year that it is available, they use that as the  
21 irrigated acres, then they apply whatever method they're  
22 using to calculate ET, or evapotranspiration, to come up  
23 with a consumptive use volume associated with those  
24 acres to be used in the model and the model calibration.

25 Q. So just to confirm, this irrigated lands

1 dataset, this was used in the model?

2 A. Correct. It's -- yep -- whatever years it's  
3 available, it's used for those years until -- starting  
4 in that year until the next most updated irrigated lands  
5 dataset comes available.

6 And I think I list in my report there, I saw,  
7 basically, some Department information, like a story map  
8 or something, talking about these irrigated lands  
9 dataset, and it looks like starting in, basically, 2008,  
10 they've developed it for every year through 2017.

11 Q. Thank you.

12 On page 12, there's a figure labeled "2-1."  
13 Can you explain this figure just briefly?

14 A. So this comes from a 2006 document about how  
15 the irrigated lands dataset is created. I found this in  
16 background material presented to the technical working  
17 group in 2015, so I think it was made available to us  
18 then in terms of understanding how the irrigated lands  
19 dataset worked.

20 And, essentially, what you can see is they  
21 start with remote sensing data of irrigated lands, which  
22 is kind of the green box without any delineation s, and  
23 they overlay that with a very detailed -- the most  
24 detailed polygon area that they can find. It's called  
25 the CLU, and it's, basically, designed to be the

1 smallest boundary that they can. So individual fields  
2 owned by individual owners, just, basically, the most  
3 discretized polygon acres that they can associate with  
4 the various land designations.

5 COURT REPORTER: Ms. Sigstedt, hold on because  
6 I missed a word.

7 (Record read by reporter.)

8 THE WITNESS: I think "discretized" is the  
9 word I used.

10 COURT REPORTER: Okay. Thank you.

11 THE WITNESS: So they use the -- they use the  
12 Landsat image to then assign those polygons as either  
13 irrigated or nonirrigated. And then they take that  
14 classification, and they mask it with, basically, aerial  
15 imagery to identify where the developed acres are.

16 And we heard testimony earlier that this --  
17 the IDWR irrigated lands dataset is basically classified  
18 into three classes that includes irrigated,  
19 semi-irrigated, and nonirrigated. And so they use the  
20 aerial imagery to identify the semi-irrigated acres,  
21 which in -- ultimately, this all resulted in the last  
22 image that you see on the bottom right where the  
23 irrigated acres are shown in green, the semi-irrigated  
24 acres are shown in gray, and the nonirrigated acres are  
25 shown in tan.

1 Q. (BY MS. PATTERSON) Thank you.

2 And you said that this dataset is available --  
3 or has been used by the Department since 2008 through  
4 present, or they at least have the dataset.

5 Can you clarify what that comment was?

6 A. I think they started this dataset around  
7 2006 -- I'm not sure exactly when they started -- and  
8 they did some prior years like, maybe, 1986, 1996,  
9 2000 [sic]. But my comment was that, at least based on  
10 the information -- I haven't checked the archived data  
11 to verify this, but based on information from the  
12 Department, it looked like starting in 2008 this dataset  
13 is available every year through 2017.

14 And they continually update it every year for  
15 the model. Like right now, they're estimating that the  
16 2021 dataset will come out next year, I think. And it  
17 just takes them a while to process. It's a very  
18 detailed dataset that is well done, and so it takes them  
19 a while to process it.

20 Q. Thank you. The next section of your report  
21 discusses IDWR METRIC dataset.

22 Can you explain your understanding of this?

23 A. Yes. So, also, I think for the ESPAM model  
24 development, they started working with -- I think the  
25 University of Idaho, basically, under a grant to come up

1 with an alternative method to using the ET data just  
2 measured at point sources from weather stations to  
3 coming up with mapped evapotranspiration data across the  
4 entire Snake Plain that they could use for their  
5 consumptive use in the model. And so, again, they went  
6 back for -- they have some years like 1986, 1996, 2006,  
7 but they started developing, as often as they could, a  
8 METRIC dataset to be used in the model for ET.

9 Q. Thank you.

10 And so Figure 2-2, on page 13, is that an  
11 example of the METRIC ET?

12 A. Yes. So here, you can see the model boundary  
13 on the left figure, and then the -- where that METRIC  
14 data covers in terms of just the images that come out  
15 from the METRIC analysis. And then there's kind of a  
16 zoomed-in picture to show you how detailed this METRIC  
17 is in terms of they can apply it on a field-by-field  
18 basis for coming up with an evapotranspiration rate.

19 Q. Thank you.

20 And then on page 13, you have a section on  
21 your conclusions. Can you just briefly explain your  
22 conclusions based off of all these different technical  
23 working groups and the work that you've done?

24 A. Yeah. So I think based on the information  
25 that I understand that the Department has available to

1       them, they certainly have the capability to be updating  
2       the irrigated lands that are used in the methodology to  
3       be consistent with only applying nonirrigated -- or to  
4       not apply nonirrigated acres and to only be using  
5       irrigated acres. I think that the -- whatever is the  
6       most up-to-date IDWR Landsat at a minimum should be used  
7       to evaluate what the shapefiles that the Surface Water  
8       Coalition submits in terms of irrigated acres.

9               I understand from the Department staff  
10       testimony that they would like that to be available  
11       every single year. I think that there are a number of  
12       components in the methodology that aren't available in  
13       real time, the crop links which is also used in the  
14       reasonable in-season demand isn't, and so I think using  
15       whatever is the most up-to-date dataset makes sense.

16               I think if they wanted to have the most  
17       real-time picture, it seems like they should be able to  
18       use the METRIC information that is -- potentially is  
19       available to them in-season, and they could use that to  
20       identify within the information that they already have  
21       what is being irrigated and what is not being irrigated.

22               Q. Okay. Thank you. Let's move on to another  
23       component of the reasonable in-season demand.

24               Can you talk about the baseline year and what  
25       the selection criteria are, briefly.

1           A. Yes. So the baseline years is, essentially,  
2 come up with a forecasted demand for the Surface Water  
3 Coalition entities that can be used in April before the  
4 season starts. It's meant to sort of balance -- be a  
5 balance between providing adequate protection for the  
6 senior surface water users without creating  
7 unnecessary -- you know, creating a level of protection  
8 against unnecessary curtailment of the juniors. There  
9 is a series of baseline criteria, and these are meant to  
10 account for three factors that are basically climate,  
11 water supply, and the irrigation practice.

12           Q. And are there specific criteria, like within  
13 the climate factor, for example, that the Department  
14 considers?

15           A. Yes. So I think in my expert report, I show  
16 the specific criteria being used for the baseline year,  
17 and, essentially, to capture irrigation practices, they  
18 only consider years post 2000 to make sure that current  
19 irrigation practices are only considered in the  
20 averages.

21           In terms of water demand or, you know, also  
22 related to irrigation practices, they look at what the  
23 total Surface Water Coalition diversions are. They also  
24 look at what the supply is in terms of the highest  
25 natural flow and then the storage allocations.



1           For the climate component, they look at what  
2           the evapotranspiration is. They look at what the  
3           growing degree days are, so, essentially, making sure  
4           that they're evaluating a long season. And they look at  
5           what the precipitation would be for the irrigation  
6           season.

7           Q. And then in your report, you have Figures 2-3  
8           to 2-7.

9           Are these figures pulled from the methodology  
10          report?

11          A. That's right. And these figures show all of  
12          those individual baseline criteria components, and then  
13          they show what the average over the period is for these  
14          components so that you can see that for the -- so that  
15          you can see that they're meeting the baseline criteria  
16          in terms of whether they're supposed to be above or  
17          below average.

18          Q. Going to page 17 of your report. Can you  
19          explain how the baseline year has evolved over the  
20          different methodology orders?

21          A. Sure. So by my review, it seems like the  
22          First Methodology Order laid out the first baseline year  
23          to be used, and they, essentially, were using a period  
24          of record from 2000 to 2008. Based on the selection  
25          criteria, there's a statement in there that says, "'from

1 a standpoint of total annual SWC diversions, 2006 is an  
2 appropriate baseline year with 97 percent of 2000 to  
3 2008 total surface water diversions.'" "

4 That's a direct quote from the First  
5 Methodology Order, but the Director found that it would  
6 also be appropriate to use the values of 2006 and 2008,  
7 so an average of those values, to arrive at the baseline  
8 year. And the reasoning there was that it more strongly  
9 fits the criteria for all of the members. And in the  
10 '06 and '08 the average amounts to 100 percent of the  
11 Surface Water Coalition's diversions over that period of  
12 time.

13 If we move on to the Third Amended Final  
14 Order, which was the next update to the baseline year,  
15 the period of record that they're considering is 2000 to  
16 2014. And the reason they needed to update the baseline  
17 year was that the previous average being used no longer  
18 met the baseline year criteria.

19 In that year, they had -- they considered 2012  
20 as the baseline year. They decided that they did not  
21 think that was an appropriate baseline year because it  
22 was very extreme in terms of the average over some of  
23 the baseline year criteria. Ultimately, they chose the  
24 average, '06, '08, '12 for the baseline year criteria to  
25 establish the baseline year in that methodology. That's

1 101 percent of the total Surface Water Coalition  
2 diversions.

3 And then for the Fifth Methodology, which is  
4 the next update to the baseline year, they again had an  
5 extended period of record. So they're looking at 2000  
6 to 2021 to evaluate those baseline year criterias.

7 The Department considered using 2018 or 2020  
8 based on the review -- based on the information  
9 presented to us in the 2022 technical working group  
10 committee. They selected 2018 as the baseline year, and  
11 that's 104 percent of the Surface Water Coalition total  
12 diversion entities.

13 And I guess one thing that I note in terms of  
14 how this evolution played out, is that I think the  
15 difference between 104 percent and 1 percent of the  
16 baseline year, in terms of the bias it creates, is,  
17 essentially, looking at the difference between  
18 32,000 acre-feet or 120,000 acre-feet, respectively, in  
19 terms of protection for the senior surface water user in  
20 terms of just sort of starting with how much demand you  
21 want to start with in the evaluation.

22 And I think that that's a significant shift  
23 from the previous baseline years that were all around  
24 that 100 to 101 percent. And I think it's informative  
25 that in the Third Methodology Order when they chose '06,

1 '12, '08 as the baseline year at 101 percent, they could  
2 have chosen -- I'm just looking for it here in my notes.

3 Q. I think it was the '08-'12 average?

4 A. Yes. They could have chosen the '08-'12  
5 average, which would have -- instead of being  
6 101 percent of the surface water diversions at that  
7 time, that would have been 104 percent of the diversions  
8 at this time -- at that time. And they chose not to do  
9 that. I think they chose a year closer to the  
10 100 percent. They chose the 101 percent.

11 And I think that's because there's no need to  
12 shift the baseline year to that higher percentage  
13 because it's the accumulation of all the baseline year  
14 criteria, themselves, that ensures that there's  
15 above-average supply so that they can divert as much as  
16 they want. It ensures that it's a hot and very long  
17 growing season and in terms that there's minimal  
18 precipitation. And then on top of that, in terms of the  
19 demand shortfall, you already have a reduced forecast  
20 supply based on conservatism that they had in that.

21 So all of that, arguably, amounts to, you  
22 know, a very protective year in terms of what the senior  
23 needs to balance out protection for them versus  
24 curtailment of the junior.

25 Q. Thank you.

1           And just to summarize a couple of points, the  
2 Department allowed averaging to create kind of a  
3 synthetic baseline year in the past; is that correct?

4           A. Yes. In all of the previous orders, an  
5 average was used to, basically, get as close as they  
6 could to that 100 percent.

7           Q. Okay. Thank you.

8           Let's go now to your conclusions, which, you  
9 know, if you've already kind of testified about some of  
10 your conclusions, just please address on page 18 of your  
11 report if there's anything else that you kind of  
12 concluded from your analysis on the baseline year.

13          A. Yeah. So I think, you know, one thing you can  
14 look at, Twin Falls in particular, and look at choosing  
15 2018 as the baseline year, which has 106 percent of the  
16 average Twin Falls, TFC, diversions, and that creates a  
17 bias in their favor of starting with 60,000 acre-feet.  
18 So that's almost the entire demand shortfall that was  
19 calculated this year. And I think if you take into  
20 account in addition what the methodology does to reduce  
21 the supply, what we can see in a year like this is that  
22 the entire demand shortfall is really based on just the  
23 conservatism in this methodology.

24          So I think it's important that that  
25 conservatism be balanced in some way when we talk about

1 60,000 acre-feet of shortfall being just the  
2 conservatism, and we think about the new method of the  
3 methodology, where the transient model is employed,  
4 we're talking about already a very senior curtailment  
5 date.

6 If we consider the curve that Jennifer Sukow  
7 presented in terms of looking at demand shortfall under  
8 the transient simulation and the -- what it generates  
9 for shortfall under the transient simulation, a  
10 60,000 acre-foot demand shortfall basically starts you  
11 in around a 1961 curtailment date with over  
12 500,000 acre-feet of groundwater curtailed. And so I  
13 don't really see the balance there for protection  
14 against curtailment for the junior.

15 Q. I want to direct you to page 20 of your  
16 report. Up at the top of that first paragraph, you  
17 state: "There were unique hydrologic circumstances in  
18 2018 that I don't believe represent the typical dry  
19 year."

20 Can you explain that a little bit?

21 A. So in addition to just shifting the total  
22 demand for the Surface Water Coalition, the thing  
23 they're pointing -- when you look at 2018, I think there  
24 was a particularly good water supply outlook for that  
25 year, and there was a lot of recharge done across the

1 Eastern Snake Plain Aquifer in that year. And it also  
2 may have just lapsed water operations because the water  
3 supply was predicted to be so good, and it didn't need  
4 to be constrained.

5 And so a couple of things that I looked into  
6 was whether all the recharge water was accounted for in  
7 2018. And I don't know if we're going to get into this,  
8 it might be later in my report, but what I see is that I  
9 don't think that they have -- that the Department's  
10 water allocation has accounted for all the recharge that  
11 needed to be subtracted out of 2018 as a baseline year.

12 And then the other concern I have with 2018 as  
13 a baseline year is if we look at the figures for the  
14 baseline year criteria, what we see is that it's  
15 particularly low in terms of the irrigation season  
16 precipitation. It's the only year in the entire record  
17 that doesn't have any July and September precipitation,  
18 and its total precipitation is, basically, at one  
19 standard deviation away from the average.

20 And when I look at previous orders on  
21 selecting the baseline year, it seems like they're  
22 choosing an average to get all of those baseline  
23 criteria closer to average so that, you know, an  
24 outlier-type year is not included as a baseline on its  
25 own.

1 Q. Thank you.

2 And are some of those things you just  
3 described, you know, about precipitation, are those  
4 identified in Table 2-4 on page 19?

5 A. No -- well, yes. Yeah. You can see in  
6 Table 2-4, what I'm laying out here are, essentially,  
7 the numbers for the different baseline years considered  
8 in this Fifth Methodology Order based on the technical  
9 working group meeting. So that was 2020, 2018, and  
10 they're comparing it to the average of the 2000-to-2021  
11 period. And so, yes, you can see that precipitation is  
12 particularly low compared to the average there.

13 And what I'm proposing in this table is that I  
14 think the Department could have considered an average  
15 for the baseline year criteria in the Fifth Methodology  
16 Order, so I've included the average of '06 and 2018 to  
17 show that that also meets all of the baseline year  
18 criteria when you look at it compared to this current  
19 period of record, but it's much -- but it's more  
20 reasonable in terms of just being 101 percent of average  
21 for total Surface Water Coalition diversions more  
22 consistent with what's been chosen in previous orders.

23 Q. Okay. Thank you.

24 And in your January 16th, 2023, comments to  
25 the technical working group, did you raise these issues?



1           A. Yes, I did.

2           Q. Thank you. Let's move next to forecast  
3 supply.

4                   What issues were identified at the 2015  
5 technical working group meeting? Again, just briefly.

6           A. So I think, specifically, one of the reasons  
7 -- and it was definitely something that the Department  
8 put the most, it seemed like, time and analysis into --  
9 was that the April forecast supply model for Twin Falls  
10 Canal Company needed to be improved. And so they looked  
11 at, basically, ways that they can improve that model.  
12 Just because of the way that they did the analysis, they  
13 evaluated the forecast supply models for all of the  
14 different Surface Water Coalition entities, and in the  
15 end they made a recommendation to change several of  
16 them.

17           Q. Thank you. And then Table 2-5 on page 22, can  
18 you just describe what that table shows.

19           A. So this is a list of all the different  
20 predictors that the 2015 technical working group  
21 considered at that time to improve the forecast supply  
22 models, and then you can see in bold, in this table, are  
23 the ones that actually got selected to be used in the  
24 forecast supply models.

25                   And so I think in total here, we're looking

1 at -- almost 30 different predictors that would be --

2 HEARING OFFICER: Just a moment. Just a  
3 moment. We lost the audio. We need to back up.

4 Q. (BY MS. PATTERSON) Sophia, were you counting  
5 out, or were you trying to say something when you were  
6 doing that?

7 A. No. I'm sorry. That was just me counting in  
8 my head. I'm sorry about that.

9 So I was just saying that, essentially, they  
10 tested about 30 predictors to see which ones applied and  
11 how they can improve the models at those times.

12 Q. And you were looking at Table 2-5 and just  
13 counting out the different predictors that they  
14 considered in 2015?

15 A. Just roughly, yes.

16 Q. Roughly, yeah. Thank you.

17 Moving on to the 2022 technical working group,  
18 what was the regression models discussed there?

19 A. So we saw a presentation that basically showed  
20 the Department's evaluation where -- you know, since  
21 these models were developed in 2014, they're able to  
22 look at how the regressions compare as they add new --  
23 as they add each new year of data so they can show us  
24 over the years how the regression models have performed.

25 And so that -- you know, that's one of the

1 analyses that they -- that's kind of the main analysis  
2 that they showed us for the 2022 technical working  
3 group.

4 Q. Let's go to Table 2-6 which is on page 22.

5 What does this table show?

6 A. So this is the table that I've created to,  
7 basically, summarize -- from my understanding, it looked  
8 like they did try and see if they could make  
9 improvements to the forecast models. But this effort  
10 seemed like it was done not in the same manner as the  
11 2015 technical working group, which had a really  
12 thorough and kind of prescribed approach to how -- to  
13 the predictors that they did.

14 It seemed like here they, basically, tested  
15 three new predictors. So the table that I'm showing  
16 are, in bold, the predictors that are already used in  
17 the model. And in this technical working group, they  
18 tested a couple wells and then, basically, the  
19 introduction of the Sentinel Well Index to see if those  
20 improved the forecast models; and they found that they  
21 did not, and so there was no recommendation to change  
22 the forecast models.

23 Q. Okay. And then in your section on current  
24 forecast supply predictor variables, can you explain  
25 your concerns that you have presently?

1           A. Yeah. So I think these are concerns that the  
2 Department had as well. It was part of their  
3 presentation to us. And that's that they, basically,  
4 showed us that for Twin Falls Canal Company in  
5 particular, what they see is that the R-squared value  
6 has been degrading over time to the point where -- and  
7 the R-squared value is, basically -- you know, it  
8 explains the predictive power for accuracy of the model,  
9 so the percent of variabilities that's explained by your  
10 forecast model.

11           And so it -- they see it degrading about  
12 10 percent, and they see it consistently degrading every  
13 single year that it's input. And so I think that's a  
14 concern.

15           And I think we heard testimony that the  
16 concern is, potentially, that that model includes  
17 Box Canyon as a predictor. They talked about the shift  
18 that's observed in Box Canyon. I think that's a  
19 concern. When you look at just the water year summary  
20 for Box Canyon, it also talks about it can be influenced  
21 by irrigation return flows from Rimrock.

22           And then I have a concern for Box Canyon as a  
23 predictor just because physically Box Canyon discharges  
24 from a completely different reach of the Eastern Snake  
25 Plain Aquifer, and, actually, when you look at kind of

1 historical discharge from the Kimberly to King Hill,  
2 which is the reach that Box Canyon discharges to,  
3 compared to the near Blackfoot to Minidoka reach, they  
4 have different responses to, basically, changes in the  
5 Eastern Snake Plain Aquifer over time.

6 And so to me, just logically, it's a  
7 questionable predictor, and it's probably just  
8 correlated with something else, and that's why it  
9 doesn't perform very well in the model.

10 Q. Do you recall the testimony from Matt Anders  
11 where he discussed the Department's decision to -- and I  
12 don't have the exact quote -- but just monitor and  
13 reassess the Box Canyon data in the future?

14 Do you agree with his statement?

15 A. Yes. I think they should be concerned about  
16 using Box Canyon as a predictor. And I think not -- I  
17 think that there's a really good reason for them to do a  
18 comprehensive review of how the forecast supply models  
19 are done, similar to what was done in 2015 with casting  
20 a wide net of predictors that are more pertinent to the  
21 near Blackfoot to Minidoka reach, and that just wasn't  
22 performed. And I mentioned this at the beginning of my  
23 testimony, I think that this should be performed to see  
24 if there is a better predictor for the forecast supply  
25 models, particularly the Twin Falls, given the

1 degradation.

2 Q. Matt Anders also said that, you know, there's  
3 a chance that the Box Canyon R2 could stabilize or  
4 perhaps improve in the future.

5 In your experience, do you think that's  
6 likely?

7 A. I mean, they have not seen it improve from one  
8 year to the next in any year that they've employed it;  
9 so just based on the record, I think that that's  
10 unlikely. It seems like it's more likely to further  
11 degrade.

12 Q. Thank you.

13 And then you mentioned also in your report a  
14 well, 05S31E27ABA1. I think -- you can just refer to  
15 that as ABA1.

16 What was your issue with that?

17 A. You know, this is just something that I have  
18 from experience because this is one of the sentinel  
19 wells. It's something that -- you know, there's a  
20 technical working group around the sentinel wells to  
21 evaluate whether they're a good representation. I think  
22 we've sort of flagged this well as it's not really  
23 necessarily, being representative of aquifer conditions  
24 and that it's probably more representative of sort of  
25 surface water irrigation practices or maybe American

1 Falls Reservoir levels than it is kind of regional or  
2 even local aquifer conditions. And so I know that this  
3 well -- and I didn't have much time to evaluate the July  
4 forecast model, but this well is used in some of those  
5 July forecast models. And so it just catches my eye in  
6 terms of, you know, that should probably be reevaluated  
7 as well.

8 Q. Thank you.

9 And do you have any other recommendations on  
10 improving natural flow models that you haven't already  
11 discussed?

12 A. I think just in addition to doing a more  
13 comprehensive and really more objective approach to the  
14 forecast supply models, like a stepwise linear  
15 regression that has the very specific criteria that,  
16 basically, establishes the significance of including or  
17 omitting variables, and these are just standard methods  
18 that can be applied, I think that should have been done.

19 And then the other thing that I've mentioned  
20 in both my 2015 and 2022 comments is the idea that, at  
21 least from my perspective, it seems like we have a good  
22 forecast supply that comes out of the joint forecast for  
23 Heise. And I don't quite understand why we can't use  
24 forecast supply from there to kind of develop an  
25 allocation model that, basically, takes the water rights

1 administration in this reach into account to determine  
2 what is available to the individual surface water  
3 entities without coming up -- you know, which would  
4 avoid having developed our own forecast supply models  
5 that are forecasting administration effects, which I  
6 think is difficult.

7 Q. Okay. Thank you. Let's move on to reasonable  
8 carryover.

9 Can you explain briefly what that term means?

10 A. Yes. So reasonable carryover, it's basically  
11 to establish the carryover needs of the various Surface  
12 Water Coalition entities for the next surface water --  
13 for the next irrigation season. And so the way that  
14 they calculate that in the methodology is the baseline  
15 year demand minus the projected supply, and so they  
16 use -- for projected supply, they use an average of  
17 historical supply -- which, again, they're choosing a  
18 below average. I think they use maybe '04, '06, and  
19 they didn't change that in this methodology.

20 But something that was brought to the  
21 attention of the technical working group really late in  
22 the process, and there really wasn't any analysis  
23 around, was that the baseline year selected as 2018,  
24 because it has such higher demands for the Surface Water  
25 Coalition entities, it really changes -- it changes that



1 calculation as a reasonable carryover in terms of there  
2 being, more often, shortfalls determined for the  
3 reasonable carryover.

4 Q. And are some of your concerns reflected in  
5 Table 2-7; or can you explain Table 2-7, which is on  
6 page 25?

7 A. This just shows the difference in choosing the  
8 baseline year and the change of the baseline year in the  
9 Fourth to the Fifth. And so you can see that, for some  
10 entities, we're only talking about a 4,000-foot  
11 increase, but some of them, the change is like -- if you  
12 look at AFRD2 there, you go from is 11,500 feet in the  
13 Fourth Methodology Order to 93,000 acre-feet in the  
14 Fifth.

15 Or similarly, if you look at North Side Canal  
16 Company, in the Fourth Methodology Order, their  
17 carryover needs were 65,000 acre-feet, and in the Fifth  
18 they're, you know, over 110,000 acre-feet.

19 Twin Falls Canal Company went from  
20 25,000 acre-feet to over 85,000 acre-feet.

21 And there really wasn't any analysis presented  
22 to the technical working group around whether there was  
23 a need for these massive increases to carryover needs.  
24 Like, historically, can you show that the carryover has  
25 been insufficient, you know, to these levels for those

1 entities.

2 Q. Thank you. Let's move on to your section on  
3 compounding bias.

4 You state: [As read] "The Fifth Methodology  
5 Order leads to curtailment of every junior right on the  
6 ESPA in most years even though TFCC records demonstrate  
7 that it is short of water only occasionally."

8 Can you explain that statement?

9 A. Yeah. So to explain that statement, we need  
10 to look at Table 2-8.

11 Q. Okay. And that is on page 26.

12 A. Okay. So this table was based off of,  
13 essentially, a hindcast analysis that Department staff  
14 put together where they were showing the difference from  
15 the period of 2000 to 2022 between using a baseline  
16 year -- the previous baseline year and then the update  
17 to using 2018 as the baseline year.

18 And so in this table, what I've pulled out is  
19 the April baseline year shortfall is, essentially, the  
20 second column here after the year in this table. And  
21 then from that shortfall, that would be determined from  
22 the Department's analysis using 2018 as the baseline  
23 year. I've used -- Jennifer Sukow provided a series of  
24 ESPAM model datasets that were used to generate the  
25 figure that we've been over in previous testimony that

1 basically shows -- she created a curve that showed  
2 various curtailment dates under the transient ESPAM  
3 model and the associated shortfall.

4 And so I took those model files and,  
5 basically, tried to find the curtailment date that she  
6 had run that produced a benefit to the near Blackfoot to  
7 Minidoka reach that most closely approximates the April  
8 baseline shortfall using 2018.

9 And so the comment that you specifically  
10 mentioned, I'm basically highlighting every year that  
11 the shortfall determination is over 97,000 acre-feet,  
12 which means whenever there is a shortfall above that,  
13 it's a full curtailment to the 1900 curtailment date,  
14 and that's 941,000 acre-feet of junior groundwater acres  
15 curtailed. And so when you look at the hindcast of  
16 these 23 years, 16 of the years result in complete  
17 curtailment to that 1900 date.

18 And then in the very last column, from some  
19 information provided by Twin Falls Canal Company, I  
20 think related to their deposition, there was, basically,  
21 a record of what their diversion rates were -- I think  
22 maybe starting in the '90s. And, basically, I just --  
23 in the column for each year, I included every diversion  
24 rate, and I am highlighting, basically, years that have  
25 a diversion rate that is less than five-eighths.

1           And there's only 4 years out of the 16 years  
2           that have shown that they've diverted less than the full  
3           diversion of five-eighths versus the 16 years that, you  
4           know, 900 -- over 940,000 acre -- junior groundwater  
5           acres are curtailed. And so this just kind of  
6           demonstrates what I was discussing in the selection of  
7           the baseline year; that when you shift 2018 as the  
8           baseline year at the higher percent of SWC diversion,  
9           there's really no balance in terms of any protection  
10          against unnecessary curtailment of the juniors.

11          Q. Okay. Thank you.

12           Let's go next to the impact that nonirrigated  
13          acres has when it's included in the RISD November actual  
14          demand shortfall calculation.

15           On page 27, there is Table 2-9. Can you  
16          explain that?

17          A. So, again, I am pulling some data from the  
18          hindcast analysis that the Department did where, in  
19          addition to presenting information from 2000 to 2022 for  
20          the April demand shortfall, they included the November  
21          reasonable in-season demand for shortfall. So in  
22          November, the baseline year is no longer a component,  
23          and the shortfall is completely determined based on the  
24          reasonable in-season demand calculation.

25           And all I'm doing here is, basically, instead

1 of using the acres that the Department is using in the  
2 Methodology Order, I'm just using the acres -- and I've  
3 only done this for -- oh, no, I did all of them -- so  
4 I'm only updating the acres for Twin Falls Canal  
5 Company, which is the one we have very consistent  
6 evidence that it's nonirrigated acres.

7 And so for Twin Falls Canal Company, I'm,  
8 basically, updating the acres used in the reasonable  
9 in-season demand calculation sheet to be whatever the  
10 most recent irrigated lands dataset is; or for 2021 and  
11 2022, I'm using what the Department reported in terms of  
12 2021 near real-time METRIC acres. And I'm just showing  
13 the difference in the shortfall that you calculate by  
14 using those more accurate acres for Twin Falls Canal  
15 Company.

16 Q. Okay. Thank you.

17 Moving to your next section, you've got a  
18 Table 2-10. Can you explain this table and how it  
19 relates to bias in April and July?

20 A. Sorry, that actually should be -- that's a  
21 typo. This really just refers to April.

22 Q. Oh, okay.

23 A. The April forecast. Sorry, that's my mistake.

24 But in the April forecast, the -- so in April,  
25 the shortfall is the baseline year -- is the forecast

1 supply minus the baseline year demand, and so -- and the  
2 forecast supply comes out of the forecast supply models.  
3 And those forecast supply model predictions are each  
4 reduced as a measure of bias or, essentially, in favor  
5 of the senior. They're reduced by one standard  
6 deviation. So we don't use the forecast supply that we  
7 actually predict; we use less than that.

8 And so what I'm tabulating here is basically  
9 what one standard deviation is for each of the Surface  
10 Water Coalition entities in terms of their forecast  
11 supply models. And so just off the top of those, you  
12 know, again, we focus on Twin Falls where we're  
13 reducing, just to be protective, another  
14 50,000 acre-feet.

15 So maybe these are all reasonable, but they --  
16 individually, it's just important to remember that if  
17 we're adding a bias in terms of the demand by choosing a  
18 higher baseline year of 60,000 acre-feet, we also have  
19 to remember that we're reducing the supply by another  
20 50 -- you know, 50,000. So we're sort of starting with  
21 over 100,000 acre-feet of, you know, potential shortfall  
22 depending on the year just based on that.

23 Q. Okay. Thank you.

24 And then your next section bias in the 2018  
25 baseline year for reasonable carryover, is there

1 anything new that you need to address here?

2 A. No. Like I said -- I mean, I didn't do -- I  
3 didn't -- I wasn't able to do an analysis of,  
4 essentially, a hindcast that would show the difference  
5 in curtailment date from -- which is also calculated at  
6 the time that there's a shortfall to the reasonable  
7 carryover. So I don't have that information.

8 But what I do have is, essentially,  
9 information that was presented to the technical working  
10 group that I'm showing in Figure 10 that, basically,  
11 just shows how this bias will create shortfall in so  
12 many more years in the Fifth Methodology Order compared  
13 to the Fourth.

14 So I'm showing the information from Twin Falls  
15 Canal Company, and in the columns labeled either the  
16 Fourth Amended Methodology Order or the Fifth Amended  
17 Methodology Order, I'm, essentially, highlighting years.  
18 And this isn't me; this is information from Matt Anders  
19 that he presented to us. It highlights years where a  
20 reasonable carryover shortfall would have been  
21 calculated.

22 And you can see that over the period using the  
23 Fourth, there was only three years where a carryover  
24 shortfall would have been determined, and these are  
25 mostly in very dry or dry years.

1           And then you see with the shift in the  
2 baseline year that to 2018 that occurs in the Fifth,  
3 we're now looking at, you know, most of the record is  
4 going to have a shortfall, and these are going to occur  
5 in even average or above-average years.

6           Q. Thank you.

7           And then just to close out the section, are  
8 there any other sources of bias in the methodology?

9           A. So I touched on it a little bit that when I  
10 reviewed 2018, and I looked at the Department's  
11 spreadsheet for, essentially, their adjustment, where  
12 they take into account either wheeled water or recharge  
13 that has occurred -- and I only did this for 2018, but I  
14 think it could be done for other years, and it could,  
15 potentially, lower total Surface Water Coalition  
16 diversions that we're using in the baseline year. So  
17 that's a concern of mine.

18           But just reviewing 2018, I can see in the  
19 spreadsheet that there's, basically, a note -- I think  
20 it's for AFRD2 -- that it was reported that either 5,000  
21 or 10,000 acre-feet was recharged, and the Department  
22 has only accounted for, in their calculation,  
23 5,000 acre-feet.

24           And then, additionally, based on the  
25 settlement agreement reporting that is submitted by IGWA



1 to the Surface Water Coalition, it looks to me like  
2 there is another 4,000 acre-feet of recharge that  
3 occurred in 2018 on the North Side Canal Company that's  
4 not included, and so that's about 9,000 -- that's,  
5 potentially, 9,000 acre-feet of -- you know, in my  
6 opinion, I think just error, but maybe bias in -- in the  
7 baseline year that will occur every year -- you know,  
8 that it's part of the baseline year, so that will always  
9 be there.

10 And then another -- I think this has been  
11 testified to. You know, another just consistent source  
12 of bias is that the supplemental groundwater acres as  
13 either a reduction in acres or a source of supply is not  
14 being taken into account. We don't know what level, I  
15 guess, that occurs, but we know it does occur, so that's  
16 just consistently in there.

17 And then I think --

18 Q. Oh, please continue. Sorry.

19 A. You know, I think this has maybe been  
20 discussed as well, but I think just another source of  
21 potential bias in the way the baseline criteria are laid  
22 out is that increasing diversions by the Surface Water  
23 Coalition entities just, ultimately, result in  
24 increasingly higher baseline-year criteria to meet and,  
25 ultimately, a higher baseline year determined.

1           And so there's not really incentive to be  
2 efficient with Surface Water Coalition diversions.  
3 There's actually, seemingly, just based on the  
4 methodology, there's incentive to keep your diversion as  
5 high as you can because it ensures that in the future  
6 more and more water comes.

7           Q. Thank you.

8           One last question: Did you raise the issue of  
9 the supplemental groundwater with the Department in the  
10 past?

11          A. Yes. Those were in my comments in 2015, and  
12 they were in my comments in 2022.

13           And I think, you know, from my experience,  
14 which has a lot to do with the ESPAM model, I know that  
15 we do account for mixed source lands in the ESPAM model  
16 and that there is a dataset available. And I saw some  
17 notes from Matt Anders that looked like they were  
18 prepared for the 2015 technical working group that  
19 looked like -- it seemed like he was considering that  
20 that dataset from the ESPAM model for mixed source lands  
21 could be used in the Methodology Order.

22           And so it's not clear to me why that can't be  
23 advanced or, you know, why we can estimate it in the  
24 groundwater model, but we can't in the Methodology  
25 Order.

1 Q. Okay. Thank you.

2 MS. PATTERSON: Director, we've got one last  
3 section of the report to go through, so I think we're  
4 about two-thirds of the way done.

5 HEARING OFFICER: Let's break.

6 MS. PATTERSON: Okay.

7 HEARING OFFICER: Let's break for 15 minutes,  
8 come back at a quarter to the hour.

9 (Break taken.)

10 HEARING OFFICER: Are we back on the record?

11 COURT REPORTER: Yes.

12 HEARING OFFICER: Thank you. Mics are on.

13 Ms. Patterson.

14 MS. PATTERSON: Thank you.

15 Q. (BY MS. PATTERSON) Sophia, before we move on  
16 to your section on the ESPAM model, I just want to do  
17 one item of cleanup.

18 When we were discussing the irrigated acres,  
19 there was a quote from your report that said the  
20 "irrigated acres consistently shows that TFCC is  
21 irrigating approximately 15,000 acres less than the  
22 194,732" number.

23 You may have misspoke and said in some of your  
24 testimony that it was 15,000 acre-feet. I just want to  
25 confirm, did you mean it's 15,000 acres?

1 A. Yes. Acres.

2 Q. Thank you.

3 Moving back to your report on page 30, you  
4 have a section called, "Simulation of Curtailment of  
5 Junior Groundwater Rights Using the ESPAM Model."

6 Can you please explain some of the background.

7 A. The ESPAM model is used in the As-Applied  
8 Order to determine the curtailment date that comes up  
9 with the -- that meets the demand shortfall obligation.  
10 In this section on background, I'm describing the  
11 development of the ESPAM model and, essentially, that  
12 it's done under the -- it's the Department's model and  
13 done under the advisory of what's called the Eastern  
14 Snake Plain Hydrological Modeling Committee.

15 Q. And you said before that you participate in  
16 this group, the committee?

17 A. That's correct.

18 Q. And so you're quite familiar with the model?

19 A. Yes. I've been, I think, part of that  
20 committee in working with the model for over ten years.

21 Q. Can you explain a little bit about the model  
22 structure?

23 A. Yeah. So I think in terms of the testimony  
24 I'm going to give today, what's important about the  
25 model structure is that it's a single layer throughout

1 the entire model. It's a single-layer model, and it's  
2 defined with homogenous isotropic properties, which  
3 means that it, basically, doesn't differentiate between  
4 horizontal and vertical hydrologic conductivity, which  
5 relates to how quickly or easily water moves through the  
6 aquifer system.

7 Q. And then tell us a little bit about the  
8 calibration process.

9 A. Sure. So when you develop a model, you build  
10 the structure and you build the boundary conditions that  
11 you think best represent reality in a simplified version  
12 in the model, and the model is calibrated, basically,  
13 over a historical period where you've developed various  
14 sets of model input data, like groundwater consumptive  
15 use or tributary inflow, and then the model is,  
16 basically, calibrated over that historical period. And  
17 it's calibrated based on trying to get the best match to  
18 historical observations of what are called "model  
19 targets."

20 And those historical observations are  
21 typically, things like water levels in the aquifer and  
22 reach -- basically, reach gains or spring level --  
23 spring discharge data, so you're -- in calibration  
24 you're trying to get the best fit with those historical  
25 observations.

1           With the ESPAM model, they used an automated  
2 calibration tool that's called PEST. And the way that  
3 PEST works is that the modeler, basically, gets to  
4 assign PEST a certain set of parameters that it's  
5 allowed to adjust up or down based on ranges that the  
6 modeler gives it.

7           I think in terms of my testimony that I'm  
8 going to give today, it's important to understand that  
9 the parameters that PEST is allowed to adjust in its  
10 model calibration process is aquifer properties like the  
11 transmissivity and the storage of the aquifer, and then  
12 it's also allowed to adjust water budget components like  
13 tributary underflow values and nonirrigated land  
14 recharge.

15           Q. Thank you.

16           And you've got a section on model uncertainty.  
17 Why did you feel it important to discuss this?

18           A. Yeah. So, you know, all models inherently  
19 have model uncertainty. Because of what I said, they're  
20 basically a simplification. There's model uncertainty  
21 around the target observation that we put in, so when  
22 we're trying to get it to match the reach gain, like the  
23 near Blackfoot to Minidoka reach, that's subject to just  
24 error, like in the observation in the target data, like  
25 reach gain error around the gage measurement. But it's

1 also subject to, essentially, errors that are caused by  
2 uncertainty that we have in the water budget components  
3 or the aquifer properties themselves.

4 And so we have uncertainty around, like I  
5 said, the aquifer properties in some of those model  
6 budget components, and that's why we allow PEST in the  
7 calibration process to adjust those. So that's one type  
8 of model uncertainty around water budget components.

9 And then there's another type of model  
10 uncertainty that just has to do with how the model is  
11 built conceptually and how well that conceptual model  
12 matches the reality.

13 And I think when we look at, basically, the  
14 hydrologic controls on the discharge, the near Blackfoot  
15 to Minidoka reach, which is the particular prediction  
16 that we're using ESPAM for in this surface water  
17 delivery call, there's significant limitations in the  
18 conceptual model of the ESPAM in that reach.

19 Q. And you note in your report on page 32 that no  
20 amount of data improvement resampling or recalibration  
21 can correct errors stemming from incorrect or simply  
22 incomplete model conceptualization.

23 In the Blackfoot to Minidoka reach, are those  
24 sort of what you're talking about where there's just  
25 some things built in that you're not going to be able to

1 calibrate around?

2 A. That's right.

3 So, you know, PEST is going to do its best to  
4 match the model results with the targets no matter how  
5 we build the model. And so if you build the model wrong  
6 in that area, it's going to match the observation, as  
7 well, in terms of the calibration process, but it's not  
8 going to match them for the right reasons because it's  
9 not built the right way. And I think that's,  
10 essentially, the point there.

11 Q. Thank you.

12 And under 3.4.2 of your report, you talk about  
13 the Blackfoot to Minidoka reach.

14 Can you explain kind of what you would want to  
15 see in the model to address this issue?

16 A. Sure. So what I'm referring to a lot in this  
17 section -- I'm referencing a report that was done in  
18 2008 by Ralston -- I think -- Engineering Services, and  
19 it was done for the Department, prepared for the  
20 Department. And it's, essentially, a look at how the  
21 model -- and they're evaluating ESPAM1.1, I think, based  
22 on the date there, but these same conceptualizations,  
23 the same in this area in ESPAM2.2, so it all applies.

24 But it's, essentially, a critique of how the  
25 model is built in that area, because they lay out



1 geologic -- the hydrogeologic framework that shows that  
2 the model actually is -- or the aquifer is very -- has  
3 multiple aquifer layers and what are called aquatards or  
4 impermeable layers within the aquifer that are,  
5 essentially, the main controls on what's dictating the  
6 discharge in the near Blackfoot to Minidoka reach.

7           And because the ESPAM model is a single-layer  
8 model that doesn't have the vertical hydraulic  
9 connectivity represented, it's not able to re-create the  
10 flow conditions in terms of the major controls, which  
11 it's laid out through the -- based on the geology there,  
12 we know that there are significant vertical flow  
13 components that lead to the discharge in the near  
14 Blackfoot to Minidoka reach.

15           Q. And on page 33, you have Figure 3-1 and 3-2.  
16 Are those figures from the Ralston report?

17           A. Yes. So these are excerpts from that report  
18 that are taken from previous hydrogeologic  
19 investigation. And, essentially, what I'm trying to  
20 illustrate in 3-1, this shows, basically, the  
21 interlayered nature the interfingering of the aquifer  
22 system, which is shown in kind of the darker vertical  
23 line stippled -- or dashed area, and then the  
24 impermeable layers that are shown as kind of the  
25 stippled lighter areas in that figure.

1           And so what happens -- and I think it's,  
2           basically, what is controlling the discharge to the near  
3           Blackfoot to Minidoka reach -- is that the main aquifer  
4           system, basically, encounters these very impermeable  
5           layers in the vicinity of the American Falls reach, and  
6           that forces -- because they can't move through these  
7           impermeable layers, it forces the water to discharge to  
8           that reach, but it's going to be discharging vertically,  
9           basically, through these interconnected hydrologic  
10          aquifers.

11          Q.    Okay.   Thank you.

12                So if I understand, that section relates to  
13                kind of the framework of the model and, you know, issues  
14                that might be there?

15                Can you explain 3 -- 3.4.3 section on page 34  
16                of your report?

17          A.    Yeah.   So what we just went over were,  
18                essentially, the aspects of the conceptual model  
19                uncertainty.   What this section talks about is  
20                uncertainty around our input parameters, and so what I'm  
21                referring to in this particular section is the aquifer  
22                properties.

23                And so the aquifer properties are  
24                transmissivity and storage, and those two combine to,  
25                basically, control how quickly or slowly water will move

1 through a system. So if we think about the curtailment  
2 simulation for the Methodology Order, it's,  
3 essentially -- controls how a reduction in groundwater  
4 pumping in one area will propagate to the near Blackfoot  
5 to Minidoka reach will be based on those aquifer  
6 properties, and we have uncertainty in those aquifer  
7 properties.

8 And so they're something that are adjusted  
9 during model calibration, and so we'll get -- these will  
10 change as new -- as each new version of the model comes  
11 out. And so that's, more or less, what I'm describing,  
12 kind of the evolution of these properties with the  
13 versions of the model.

14 Q. So why don't you, then, explain your next  
15 section, which compares ESPAM1.1 to 2.2?

16 A. So are we looking at, like, Figure 3-3?

17 Q. Yes. And that is on page 36.

18 A. So here in this figure, I'm, basically,  
19 showing -- I know you can't read these figures -- and so  
20 I'm showing the distribution of one of those terms,  
21 "transmissivity," so sort of the resistance to which  
22 water can move through the system. What I'm showing for  
23 each version of the model is the mean transmissivity,  
24 and so you can see how these values from ESPAM1.1 to 2.1  
25 -- and then change.

1 I've got -- on the left side of this figure,  
2 I'm describing the ESPAM2.2 model that was proposed to  
3 the Eastern Snake Plain Hydrologic Modeling Committee in  
4 January of 2020, and then I'm also showing, above that,  
5 the actual version of ESPAM2.2 that was accepted, which  
6 was proposed in September of 2020.

7 And what I'm going through -- the reason I'm  
8 going through this evolution in this section is that  
9 when the version that was proposed in January was  
10 presented to the Eastern Snake Plain Hydrologic Modeling  
11 Committee, I did a review of the model, basically,  
12 looking at how the calibration -- how the calibration  
13 had turned out. And then, as I've mentioned prior in  
14 testimony, I do a lot of analysis for my clients, IGWA,  
15 around using the model.

16 And so I ran the model -- I ran some of those  
17 basic analyses that I do all the time with the new  
18 version of the model, and I was seeing really, really  
19 drastic changes in terms of what it was predicting for  
20 water levels, like at the sentinel wells, for example,  
21 or what it was predicting in terms of what responses to  
22 recharge activities were going to be.

23 And so in January, I raised those concerns to  
24 the committee saying that, essentially, the changes that  
25 we were seeing -- that I was seeing in the model -- I

1 think were hard to explain based on the structural  
2 changes that we made to the model. And I just -- I had  
3 concerns about -- particularly, one of the main inputs  
4 that we had changed to the model was one of the water  
5 budget components.

6 It was, essentially, introducing the METRIC  
7 data to calculate consumptive use. And I thought that  
8 that was probably a likely change for -- you know, I  
9 thought that that input and, then, how the model dealt  
10 with that input, in terms of its calibration, was kind  
11 of -- was a likely change for what we were seeing in  
12 terms of such widespread differences in aquifer  
13 transmissivity.

14 And then particularly if we go to the next  
15 figure, that shows the same thing for storage in terms  
16 of the evolution between the models and the storage  
17 values average across, there again, changing very  
18 drastically. And that's really, really changing the  
19 type of model predictions that we're getting.

20 So I just raised this concern to the  
21 committee; that I thought before we release this version  
22 of the model, there was some things that I thought we  
23 should analyze, to check out to make sure that we were  
24 comfortable with what was resulting from the  
25 calibration.

1 Q. Okay. When you said "the next figure," are  
2 you referring to Figure 3-4 on page 37?

3 A. Yes. So this shows the storage, which,  
4 ultimately, I think, was probably one of the main  
5 drivers for the differences that we are seeing in  
6 predictions in terms of water levels and responses for  
7 reach gains -- through reach gains.

8 Q. Moving to the next page, 38, you have  
9 Figure 3-5.

10 Can you explain this chart?

11 A. Yeah, so in this chart, I think you should  
12 focus on the yellow lines in this figure. And,  
13 essentially, this is a really standard analysis that the  
14 Department does with any version of the model that they  
15 release, and it shows a curtailment response. In this  
16 case, we're looking at curtailment of groundwater rights  
17 junior to 1961.

18 And the dashed yellow line shows the response  
19 to the near Blackfoot to Neeley reach using version  
20 ESPAM2.1, and the solid line shows the predicted  
21 response to that reach using ESPAM -- the accepted  
22 version of ESPAM2.2.

23 Q. And what does this difference mean?

24 A. So these are -- it's just a difference in what  
25 it predicts under the different model version. And I

1 think it's about a 20 percent difference in terms of  
2 what they predict. And the difference in the prediction  
3 has to do with, essentially, what I was talking about,  
4 how those aquifer parameters influence the timing of  
5 responses from a reduction in groundwater and how that  
6 moves to the reach.

7 Q. And then can you explain Figure 3-6?

8 A. This compares, again, the ESPAM2.2 and  
9 ESPAM2.1, what the steady state response function is, so  
10 the percentage of water from each model cell that would  
11 result in -- essentially, if you stressed any one of  
12 these model cells, the percentage of that stress that  
13 would impact the near Blackfoot to Neeley reach under  
14 steady state conditions.

15 And so, again, just the difference in the  
16 distribution of these shows the difference in the timing  
17 and -- that results from changing to this new version of  
18 the model.

19 Q. You discuss, on page 39, the ESPAM water  
20 budget component uncertainty and the current model.

21 Can you just go through that and explain some  
22 of the uncertainties?

23 A. Yes. So this was related to the concern that  
24 I brought up to the committee in January of 2020 when  
25 they proposed their first, potentially, version of

1 ESPAM2.2. And the differences I saw is basically what I  
2 reviewed from calibration -- from the calibration  
3 results where I had mentioned that PEST, the tool, is  
4 allowed to adjust water budget components up or down to  
5 better match the observed targets.

6 And if we turn to -- you're looking at  
7 Figure 3-7; is that what you're looking at?

8 Q. Yes, on page 40.

9 A. Yes. So when you look at Figure 3-7, the  
10 initial estimate for -- what I'm showing on the left  
11 there is the initial estimate for the volume of annual  
12 recharge -- natural recharge to the reach. And what we  
13 see -- precalibration is the blue line, and  
14 postcalibration is the orange line.

15 And what we see is that PEST is trying -- so  
16 that it's able to match the observation, it's increasing  
17 the amount of natural recharge components across the  
18 ESPAM model pretty significantly. And I've put a couple  
19 of those components on the right side of the graph where  
20 the lines represent the same thing.

21 Blue is precalibration and orange is  
22 postcalibration, and we're looking at tributary  
23 underflow, and then we're looking at recharge on  
24 nonirrigated lands. And so what we see is that for the  
25 model to be able to calibrate, it's having to increase



1 the amount of tributary underflow or nonirrigated land  
2 recharge to compensate for that.

3 And what we saw -- what we saw in the storage  
4 is that we also saw the model had to significantly  
5 increase its aquifer storage values.

6 And all of these things combined tell me that  
7 it seems like PEST it trying to adjust for the fact that  
8 we're taking too much water out of it. It's working  
9 really hard in calibration to get more water into the  
10 model wherever it can, either by increasing the  
11 aquifer's storage or by increasing these water budget  
12 components.

13 And so I had questioned to the committee --  
14 because I was part of --

15 COURT REPORTER: I'm sorry, Ms. Sigstedt, I  
16 think I missed a little bit. "And so I had questioned  
17 to the committee"?

18 THE WITNESS: I questioned to the committee  
19 the use of the METRIC processing that we were using.

20 Q. (BY MS. PATTERSON) Okay. Go ahead and  
21 continue from there.

22 A. And the reason that I questioned the METRIC  
23 processing was because I was part of a technical working  
24 group that discussed how the METRIC data would be  
25 processed, and I remembered that they were choosing,

1 basically, whether to apply a buffer or sort of an  
2 increase in the area around the actual field irrigated  
3 area to -- they were trying to decide what buffer area  
4 they would use to process the METRIC data.

5 And I remembered in that committee that there  
6 wasn't really a well-justified reason for the buffer  
7 that they ultimately decided that -- they were  
8 considering like two or three different buffer areas,  
9 and, ultimately, they just chose the largest one which  
10 had resulted in the largest estimate of ET. And I was  
11 concerned that maybe it was that processing that was  
12 creating us to overestimate the METRIC application in  
13 ESPAM that results in one of the largest model  
14 components, which is the groundwater consumptive use  
15 component of the water budget.

16 And so in my recommendations to the committee  
17 in 2020 when they proposed this model was that they do a  
18 sensitivity analysis around that processing and just  
19 either try and verify the processing they were using by  
20 looking at, you know, a field verification or something  
21 like that or, like, an on-the-ground verification of the  
22 number that they were using or just test the model to  
23 the sensitivity of using -- of processing the data some  
24 of the other ways that they proposed and see if one of  
25 those helped with this calibration or how much it

1 influenced the calibration.

2 Q. So was the idea trying different methods,  
3 running through and seeing kind of what the parameters  
4 look like on Figure 7.3, and seeing if those improve  
5 with different runs?

6 Was that the sensitivity you were requesting?

7 A. Exactly, just seeing how it changed. So if we  
8 tried some of the other processing methods, would the --  
9 would this preimposed calibration of, you know, the  
10 tributary underflow or the -- the nonirrigated lands  
11 recharge, would PEST seem to adjust those less.

12 And then on the -- like I said, the storage  
13 value, the change in the aquifer storage value, was  
14 something I was really concerned with, mainly because in  
15 calibration, we have a preferred value for that storage.  
16 It's something around .205. And you can see that, if you  
17 look at the evolution of that figure, each version of  
18 ESPAM2.2 is moving further away from that. And so to  
19 see if our -- the change in the storage wasn't as  
20 drastic testing the sensitivity to that under the  
21 different processing method.

22 Q. Thank you.

23 Can we move to page 41, Figure 3.8, and can  
24 you explain to me what this addresses.

25 A. So ultimately, the Department chose not to

1 take the recommendation that I gave in January to test  
2 those parameters, and they did do some -- I think they  
3 extended the model calibration period, which was another  
4 recommendation I made, before they proposed another  
5 version of this model of this ESPAM2.2 model in  
6 September, and in September they asked for the committee  
7 to, basically, have a vote to accept that model. That  
8 was, ultimately, the version that was adopted as  
9 ESPAM2.2.

10 Following that meeting, the Department asked  
11 for recommendations from the committee about future  
12 improvements to ESPAM, we just start working on the next  
13 version of the model immediately. In those  
14 recommendations to the committee, I again brought up  
15 this issue that I discussed around, you know, some kind  
16 of verification of the METRIC processing.

17 Ultimately, the Department did do that, and  
18 when they looked at sort of a preliminary field  
19 investigation of the processing and then they also  
20 compared their METRIC processing to some open source  
21 metric.

22 So the in-field investigation looked at using  
23 the diversion data compared to the METRIC processing,  
24 kind of a field-by-field basis, and then they also  
25 compared their METRIC processing method to just some

1 open source ET data. There's a couple of different  
2 sources they could see. And what they consistently saw  
3 was that their method produced a much higher ET rate  
4 than any of the open source data or the comparison to  
5 the diversion data.

6 And so they consulted with ET -- or more like  
7 METRIC specialists or experts -- and they, basically,  
8 reviewed the processing method the Department was using,  
9 and they did say that it should be -- that that was  
10 probably not the correct way to do it and that they had  
11 a different recommendation for how that processing  
12 should be done. And then the Department has basically  
13 done an initially recalibration using an alternative  
14 processing of the METRIC data, and that's what I'm  
15 showing in Figure 3-8.

16 So on the right side of this figure is the  
17 current ESPAM model for those same aquifer properties we  
18 were looking at, transmissivity and aquifer storage; and  
19 then on the left is the preliminary recalibration of the  
20 model. And so, you know, particularly for storage, what  
21 you see is that the value is going down, you know, is a  
22 lower -- closer to that preferred value of .05 that we  
23 have.

24 And then if we move on to the next figure,  
25 which is 3-9, I've highlighted -- or this is really,

1 actually, Jennifer's figure, where she's highlighted  
2 some of these water budget components that I touched on.

3 So we've got the ESPAM2.2 value shown in green  
4 for the water budget component, and then we have the  
5 precalibration refined METRIC processing value shown in  
6 gray. And then we have the postcalibrated with the new  
7 processing method shown in blue.

8 And so what you see is that this eliminates  
9 that concern that I highlighted earlier where when you  
10 compare the gray bar to the blue bar, which is  
11 precalibration versus postcalibration, we see that the  
12 -- that FS isn't having to adjust those model parameters  
13 anymore. Precalibration and postcalibration, the values  
14 are pretty similar.

15 But also what we see is that there's a huge  
16 difference in some of these components. Like, I think,  
17 nonirrigated recharge and tributary underflow, we're  
18 looking at like 300,000 acre-feet differences between  
19 ESPAM2.2 and this preliminary calibration model; and for  
20 groundwater CIR, we're looking at a difference of like  
21 600,000 acre-feet.

22 So what this highlight s for me and the reason  
23 that I'm bringing it up here is that we just have  
24 significant uncertainty in these model -- these water  
25 budget components right now in the model, and it's

1 leading to significant uncertainty because of the way  
2 the model is calibrated, and it's able to adjust both  
3 water budget and aquifer parameters. At the same time,  
4 it's leading to significant uncertainty in the water  
5 budget -- I mean, in the aquifer parameters.

6 And, you know, this preliminary calibration,  
7 the storage value that we see, is getting a little  
8 closer to, you know -- a little closer to what was in  
9 2.1. And so when I showed you, before, the response  
10 from curtailment, the difference between 2.2 and 2.1,  
11 we're, again, going to see a shift whenever the next  
12 version of the model is released, which, you know, won't  
13 be for years, probably. But it will again change that  
14 prediction. And we sort of already know at this point  
15 that it's wrong.

16 Q. Thank you.

17 Let's move next to Section 3.4.4, and if you  
18 can just explain this section and the Table 3-1.

19 A. Yeah, so this is just a section that kind of  
20 describes some of my conclusions, again just kind of  
21 relating the fact that we have this aquifer  
22 uncertainty and that it -- I mean, that we have this  
23 model uncertainty -- and that it directly affects the  
24 prediction that we're making at this near Blackfoot to  
25 Minidoka reach for the methodology.

1           The table is an analysis that was done by  
2 Jaxon Higgs, who couldn't be here to testify, so I went  
3 over the analysis with him, and I'm going to testify on  
4 it today.

5           And, essentially, what it lays out is -- it  
6 takes the model files that the Department produced as  
7 background data for the current curtailment date for  
8 this April As-Applied Order, and it splits it into -- it  
9 splits it geographically by groundwater district to see  
10 how each district's reduction in pumping affects the  
11 near Blackfoot to Minidoka reach.

12           And so if I just go through the columns, we've  
13 got the first column is just IGWA's proportionate share  
14 broken down by districts that comes from that  
15 curtailment.

16           And then if we move to the column that is the  
17 transient May-through-September impact, that's,  
18 basically, by district what impact comes -- you know,  
19 what will show up within that first season from the  
20 curtailment for each district. And then the next column  
21 shows the curtailment volume, so the amount of acre-feet  
22 curtailed within each district. And then the next  
23 column is basically the ratio of those two.

24           And so what we see is that the response from  
25 each groundwater district, because of its distance or



1 hydrologic connection to this reach, is really variable  
2 in terms of the type of benefit that we get for how you  
3 curtail to near Blackfoot to Minidoka reach gain.

4 And, you know, particularly if we go to some  
5 of these districts at the bottom and we look at, like,  
6 Jefferson Clark, Magic Valley, North Snake, we see --  
7 and then, you know, we can see that the response to what  
8 they get at the reach is extremely low compared to what  
9 they have to curtail.

10 And so, again, moving through this column,  
11 there's the next column that, basically, tabulates by  
12 district the number of acres that are curtailed. And so  
13 we can see, just kind of adding up some of those bottom  
14 districts with the lowest response, we're talking about  
15 in the vicinity of 300-, 400,000 acres that are  
16 curtailed that have almost no in-season benefit to the  
17 near Blackfoot to Minidoka reach.

18 And I think that those are probably my main  
19 conclusions from this.

20 Q. Thank you.

21 A. I guess -- actually, I guess it is also  
22 interesting to look at the next two columns, which is  
23 percent of acres curtailed, and you can just -- again,  
24 just illustrates for a year like this, using the  
25 transient model -- for a lot of these districts, you're

1 talking about, you know, 70 to 97 percent of the  
2 groundwater acres in those districts are curtailed under  
3 this type of curtailment date.

4 Q. Thank you.

5 The last section is your summary of  
6 conclusions. I think we can go without you reading  
7 these on the record, and I will just move to admit  
8 Exhibit 837.

9 HEARING OFFICER: Any objection from the  
10 parties?

11 Hearing no objection, the document marked as  
12 Exhibit 837 is received into evidence.

13 (Exhibit 837 received.)

14 MS. PATTERSON: And that will be -- I'm done.

15 HEARING OFFICER: Any further questions of  
16 Ms. Sigstedt from the groundwater users group?

17 MS. MCHUGH: I have questions.

18 HEARING OFFICER: Ms. McHugh?

19 MS. MCHUGH: Should I sit there?

20 HEARING OFFICER: You're welcome to sit here.

21  
22 DIRECT EXAMINATION

23 QUESTIONS BY MS. MCHUGH:

24 Q. Good morning, Sophia. I just had -- I wanted  
25 to make sure I understood your testimony correctly

1 relevant -- I think it's to Exhibit 826. It's a table  
2 where you did a hindcast. It's Table 2-8, the hindcast  
3 of what the impact is for using 2018 as a baseline year.

4 A. Okay.

5 Q. And I just wanted to ask you about -- just  
6 make sure I understood your testimony about what you  
7 would expect going forward now using the 2018 baseline  
8 year.

9 A. I think we can expect that in most years, the  
10 aquifer is going to be curtailed to pretty much --  
11 potentially, it's -- all of the junior groundwater acres  
12 are going to be curtailed more than half of the time,  
13 60 percent of the time if we just use the hindcast.

14 And then using -- also looking at the  
15 hindcast, we can see that there's only four years out of  
16 this 20-year period where less than 300,000 acre-feet of  
17 junior groundwater acres are curtailed. So I think, you  
18 know, almost every year you're going to see more or at  
19 least 300,000 acre-feet of junior groundwater pumper  
20 acres curtailed using the 2018 as the baseline year.

21 Q. And when you say -- when you mean "curtail,"  
22 you're meaning that in the analysis for the As-Applied  
23 Order in April, there will be a forecast of shortage to  
24 at least one member of the Surface Water Coalition; and  
25 what I understood you to say over -- in at least

1 66 percent of the years going forward?

2 A. I think 60 percent of the years.

3 Q. Okay.

4 MS. MCHUGH: That's all I wanted to ask.

5 Thank you.

6 HEARING OFFICER: Okay. Other questions from  
7 the groundwater group?

8 All right. Cross-examination.

9 Mr. Simpson.

10 MR. SIMPSON: Yes. If we could go off the  
11 record for a moment. I can move all my stuff up there  
12 and get organized.

13 HEARING OFFICER: Yes. Okay. Let's go off  
14 the record.

15 (Break taken.)

16 HEARING OFFICER: Let's go back on the record,  
17 Andrea. We're recording.

18 Thank you, Mr. Simpson. You may examine  
19 Ms. Sigstedt.

20

21 CROSS-EXAMINATION

22 QUESTIONS BY MR. SIMPSON:

23 Q. Ms. Sigstedt, good morning. My name is John  
24 Simpson. I'm one of the attorneys for A&B Irrigation  
25 District, et al., and I'll be cross-examining you this

1 morning.

2 Is it okay if I call you "Sophia"?

3 A. Yes, that's fine.

4 Q. Thank you. So, Sophia, from your direct  
5 testimony this morning, you've been working on these  
6 issues on conjunctive management on the ESPA for well  
7 over ten years; is that correct?

8 A. I think, yeah, over ten years.

9 Q. Okay. And during that time, you've been  
10 retained by IGWA specifically for those efforts?

11 A. That's correct.

12 Q. And you mentioned in your direct testimony  
13 that in approximately 2012, around the time you started  
14 working for IGWA, you worked on the modeling in the  
15 Rangen case.

16 Do you recall that testimony?

17 A. Yes.

18 Q. And in that case, did you use the ESPA model  
19 as a part of your tasks that you performed on behalf of  
20 IGWA?

21 A. Yes.

22 Q. Okay. And did you use that ESPA model in the  
23 version that was then present because it was the best  
24 science that was available for your efforts?

25 A. I think so.

1 Q. Okay. If it was the best science available at  
2 that time, would you agree that it's the best science  
3 available today to estimate or predict the responses of  
4 the aquifer to stresses such as groundwater pumping?

5 A. I do.

6 Q. And that would include stresses in every reach  
7 of the Snake River, including the near Blackfoot to  
8 Minidoka reach?

9 A. Yes.

10 Q. And in using the model, have you used it in  
11 both the steady state and the transient version?

12 A. Yes.

13 Q. And in your opinion, is the transient version  
14 of the model and running of the model the best predictor  
15 of what would need to be accomplished on the aquifer to  
16 deliver water into the Blackfoot to Neeley reach -- or  
17 excuse me -- the Blackfoot to Minidoka reach?

18 A. Over what time period?

19 Q. In the -- in the present irrigation season.

20 A. I think it's the only version that can predict  
21 in the present year of irrigation season.

22 Q. So if we're attempting to use the model to  
23 identify what actions need to be taken on the ESPA to  
24 deliver a volume of water into the Blackfoot to Minidoka  
25 reach during the irrigation season, the transient model

1 would be the only version to use; is that correct?

2 A. That's correct.

3 Q. During your direct testimony, Sophia, you  
4 discussed the efforts in early 2015 by the technical  
5 work group.

6 Do you recall that testimony?

7 A. For the Surface Water Coalition technical  
8 working group?

9 Q. Yes.

10 A. Yes.

11 Q. And in looking at the comments that were  
12 provided by you on behalf of IGWA and then the  
13 recommendations made by Department staff to the Director  
14 as a result of those efforts, do you recall the time  
15 frame under which those comments were made?

16 A. I think you would look at the dates of the  
17 memos. I think mine were in March.

18 Q. Right. And so, I mean, you testified that  
19 there was a limitation of time -- a limitation of time  
20 at that point that limited the number of issues to be  
21 discussed or recommendations to be made.

22 Do you recall that testimony?

23 A. That was in the Department's conclusions and  
24 their recommendations.

25 Q. And do you believe that limitation was in

1 reference to the work that was completed in March of  
2 2015 relative to the irrigation season that was then  
3 pending?

4 A. I don't know.

5 Q. You testified earlier today regarding the --  
6 on page -- I believe it's on page 10 of your report  
7 Table 2-3, if you'd turn to that, please.

8 And this is a summary of the SWC irrigated  
9 acres, the 2022 technical work group, is it not?

10 A. That's correct.

11 Q. And you described earlier the various columns  
12 and the basis for the various columns, that is either  
13 the shapefiles or the irrigated lands datasets that were  
14 generated by the Department; is that correct?

15 A. That's correct.

16 Q. And would you agree that for the irrigated  
17 lands dataset, the 2011 or the 2017 or the METRIC  
18 processing acres 2021, that those are just a snapshot in  
19 time?

20 A. Yes.

21 Q. So at that particular point in time,  
22 whatever's identified with respect to those datasets,  
23 the number of irrigated acres identified would be  
24 relevant, but you can't, necessarily, draw conclusions  
25 as to what's happening before or after that particular



1 snapshot; is that correct?

2 A. I think that there's evidence that they don't  
3 change that much between them, if you look at what I  
4 focused on here for Twin Falls Canal Company between  
5 2017 -- or 2011 and 2017. And I think that that's the  
6 reason that, for example, in the modeling for, you know,  
7 years that we don't have the intervening data, we just  
8 use whatever the most recent data is because we have  
9 some confidence that the level of difference is not  
10 going to be that great.

11 Q. But, for example, between 2011 and 2017, you  
12 don't have an irrigated lands dataset for 2013, do you?

13 A. I actually think there is, potentially,  
14 irrigated lands datasets for every year in between this,  
15 based on the information that I saw on a Department  
16 information page. But I haven't verified those in the  
17 archive, but I think there are additional years to  
18 what's shown here.

19 Q. So for 2013, for example, what irrigated land  
20 figure would you utilize? Would you use an unknown  
21 number that you haven't calculated for 2013, or would  
22 you use the shapefile acres for SWC members and  
23 specifically for Twin Falls?

24 A. I think that the change that you see -- I  
25 think that they should be updated relative to each

1 other. So in my opinion, in 2013, the shapefile that  
2 was submitted by SWC should have been verified against  
3 the 2011 irrigated lands dataset as well as against the  
4 acres identified in the SPF report that were accepted  
5 previously in the methodology to confirm that either  
6 those acres were still nonirrigated or that they had  
7 somehow changed to be irrigated.

8 Q. But would you agree that, in 2013, the best  
9 information available to the Department was the SWC  
10 shapefile for Twin Falls Canal Company?

11 A. No. Because the Department really made it  
12 clear that they don't verify the acres that are  
13 submitted from the Surface Water Coalition entities to  
14 identify nonirrigated acres, and those efforts to  
15 identify nonirrigated acres are done in other datasets.

16 Q. So within the irrigated lands dataset, can you  
17 explain to me what the difference is between  
18 semi-irrigated and irrigated lands?

19 A. Semi-irrigated is a classification that, like,  
20 a subdivision or a developed area would be classified  
21 into. And irrigated are, you know, purely irrigation  
22 lands like an agricultural field.

23 Q. And do you know the time of the year that the  
24 irrigated lands dataset was generated, for example, in  
25 the spring or in the midsummer? Late fall?

1           A. I think that they use, you know, a variety of  
2 different sources that probably all -- they use  
3 satellite imagery, they use aerial imagery, so the dates  
4 on all of those are going to vary.

5           Q. So would you agree that, depending upon the  
6 date of a photograph of -- showing irrigated acres, if  
7 it was in the early spring, that later in the spring or  
8 later in the summer that those particular lines might be  
9 irrigated if they previously were shown as not  
10 irrigated?

11          A. I think the point of generating the irrigated  
12 lands dataset is specifically to characterize irrigated  
13 acres for the consumptive use calculation used in the  
14 model. So I think their, you know -- their method is  
15 based around trying to capture that as best they can. I  
16 don't know the dates or how they make sure that that is  
17 true.

18          Q. So now turning to your testimony on the  
19 baseline year, is it fair to say that your -- the issue  
20 you draw with utilizing the base year 2018 as the new  
21 baseline year under the Fifth Methodology Order was that  
22 it was above the average for looking at all years?

23          A. I think relative to previous baseline years  
24 that have been selected in previous orders, it's a  
25 higher percentage than have been selected previously.

1 And my testimony is that it is possible to select  
2 something that's more consistent with the baseline year  
3 that has been adopted in previous methodologies.

4 Q. So more consistent with being closer to the  
5 average as opposed to more conservative in terms of  
6 baseline year demand?

7 A. Yes, more consistent with the previous percent  
8 of average.

9 Q. So do you have an understanding of why the  
10 Department picks a baseline year that's above average?

11 A. They're trying to give the senior adequate  
12 protection.

13 Q. Protection against what?

14 A. I think protection that they're going to have  
15 the supplies that they need to meet demands in the next  
16 coming season.

17 Q. And do you know why they, the Department or  
18 the -- in the Methodology Order -- identify an  
19 above-average year as opposed to a below-average year?  
20 Is it because of a court determination that requires  
21 that?

22 Do you have a general understanding?

23 A. I have seen, I think, that language that  
24 you're referring to.

25 Q. You've reviewed that language?

1           A. I've seen it before. I think it was in one of  
2 your expert reports.

3           Q. Okay. With respect to the baseline year and  
4 your testimony regarding looking at 2018 as a baseline  
5 year, do you recall your testimony regarding  
6 above-average years and the potential for lax  
7 operations -- I wrote it down; you used that phrase "lax  
8 operations" -- by project managers in terms of  
9 delivering water?

10                   Do you recall that testimony?

11           A. Yes. I think that I was referring to water  
12 supply outlooks in 2018 based on the snowpack that  
13 occurred in that year. People had confidence, I think,  
14 at that time that it wasn't going to be a constrained  
15 water supply year, that there would be recharge  
16 opportunity.

17           COURT REPORTER: I'm sorry, can you repeat  
18 that last part again.

19           THE WITNESS: That there would be recharge  
20 opportunity.

21           COURT REPORTER: Thank you.

22           Q. (BY MR. SIMPSON) How does recharge  
23 opportunity relate to project managers delivering their  
24 water supply?

25           A. I don't know that they do.

1 Q. So I took what you said when you said "lax  
2 operations" for the projects, that managers weren't as  
3 careful when they deliver water in a year like 2018.

4 Would that be a correct conclusion?

5 A. I think I'm just saying that that's possible.  
6 I know that I think -- or I think that it's easier to  
7 run operations with higher volumes through the system,  
8 and if you know that it's not going to be constrained,  
9 maybe you would want to have your operations be easier.  
10 But I don't know that.

11 Q. You don't have any evidence that shows that;  
12 is that correct?

13 A. That's correct.

14 Q. So in your testimony we discussed -- -- strike  
15 that.

16 You discussed the issue of reasonable  
17 carryover and how a modification in the baseline year  
18 resulted in a change in reasonable carryover for SWC  
19 members.

20 Do you recall that testimony?

21 A. Yes.

22 Q. And that that change increased the carryover  
23 figures for many of the SWC members; correct?

24 A. Correct.

25 Q. Do you have an understanding with respect to

1 the methodology and the identification of reasonable  
2 carryover and what the purpose of reasonable carryover  
3 is?

4 A. I identified that in my report as something  
5 that I would like to have given more consideration if I  
6 had more time. It's something that I am less familiar  
7 with at this time in terms of what all of the  
8 considerations around reasonable carryover are, and it's  
9 something that was not presented to the technical  
10 working group in 2022.

11 Q. So with respect to the purpose of reasonable  
12 carryover, you don't have a clear understanding of why  
13 it's identified in the methodology?

14 A. I mean, I think it's to protect that you have  
15 adequate supplies for the next irrigation season.  
16 That's the purpose of your reservoirs, are to carry over  
17 supplies when you need them.

18 Q. So the purpose of that carryover figure is to  
19 protect the SWC members and to ensure that they have an  
20 adequate water supply for the following year?

21 A. That's my understanding.

22 Q. And in the context of your testimony regarding  
23 bias being built into the reasonable carryover, how does  
24 that bias impact the reasonable carryover figure?

25 A. In my report and in my testimony, I think I'm

1 being specific to how the selection of the baseline year  
2 is affecting reasonable carryover. And so it's kind of  
3 just related to the fact that I think, compared to  
4 previous baseline year determinations in previous  
5 orders, 2018 is a further bias in terms of how it  
6 predicts demand needs.

7 Q. Sophia, with respect to the Methodology Order,  
8 would you agree that the purpose of that Methodology  
9 Order is to ensure that the injured party receives water  
10 when they need it?

11 A. I think that is a fair statement.

12 Q. When you were testifying as to forecast  
13 supply, you identified some concerns regarding the  
14 continued use of Box Canyon as part of the forecasted  
15 supply determination in the As-Applied Order for April.

16 Do you recall that testimony?

17 A. Yes.

18 Q. So earlier, Sophia, you testified that you had  
19 been involved in the Rangen call, so you have a general  
20 understanding of the ESPA and ongoing efforts on the  
21 ESPA regarding recharge efforts and other efforts  
22 throughout that area?

23 A. I think so.

24 Q. So do you have a general understanding that a  
25 number of the Water Resource Board's activities with



1 respect to managed recharge are occurring in the lower  
2 valley, that is, diversions occurring below American  
3 Falls?

4 A. I would say most of the Board's recharge is in  
5 the lower valley.

6 Q. And with respect to that recharge that's  
7 occurring in the lower valley, do you have an  
8 understanding that most of the benefits from that  
9 recharge have propagated into the reaches below Milner?

10 A. I think that that is true.

11 Q. And could that -- those efforts by the Board  
12 influencing the Box Canyon and the issue that you raise  
13 with respect to the R-squared values associated with  
14 Box Canyon as a reasonable forecast tool?

15 A. I think that those recharge efforts influence  
16 the discharge at Box Canyon.

17 Q. So if those recharge efforts were leading to  
18 the overprediction of the discharge from Box Canyon,  
19 could that have an impact on the forecasted supply in  
20 April for SWC members?

21 A. It would be a matter of looking at the timing  
22 of that, the timing of when they -- what discharge  
23 measurement timing is on the predictor versus the  
24 response timing of that recharge to that spring.

25 Q. And so if you've identified concerns about the

1 R-squared relationship at Box Canyon and the use of  
2 Box Canyon as a part of the forecasted water supply,  
3 until a change is made, how would you respond to this  
4 uncertainty?

5 A. I think the Department has responded to that  
6 uncertainty, and that's, you know, one of the reasons  
7 that they take the standard deviation below in favor of  
8 the Surface Water Coalition. They -- any uncertainty  
9 they have taken there, that's how they address it.

10 Q. So with those additional questions that you've  
11 raised or uncertainty that you've raised with respect to  
12 Box Canyon, would you agree that taking a conservative  
13 approach is warranted?

14 A. I think that's the Department's discretion in  
15 terms of how they want to take that approach, and  
16 they've chosen a wide margin on how much conservatism or  
17 bias that they want to -- that they've applied there.  
18 So it's, in my opinion, one standard deviation is very  
19 significant in terms of the reduction.

20 Q. Sophia, if you could turn to page 34 of your  
21 report.

22 A. Would you mind giving me a section header?

23 Q. Yeah. On page 34 of your report. At the top  
24 of that page, you discuss -- or state that: [As read]  
25 "the ESPAM transmissivity does not fit the

1 hydrogeological characteristics of the near Blackfoot to  
2 Minidoka reach region."

3 Do you see that at the top of the page?

4 A. Is that the paragraph right above  
5 Section 3.4.3?

6 Q. It is.

7 A. Yeah.

8 Q. So can you explain to me why that  
9 transmissivity does not fit?

10 A. Sure. So if we look at the Figure 33 --  
11 3-3 -- and this was something that was criticized or  
12 brought to the Department's attention in the Ralston  
13 report that was prepared for them, which I think would  
14 have been referring to ESPAM1.1, based on the date of  
15 that, but I think you can see it has persisted in all of  
16 these.

17 And, essentially, it's that if you just look  
18 at where the American Falls Reservoir is positioned in  
19 terms of the transmissivity, it's in a pretty high -- so  
20 the transmissivity values on these, the darker color,  
21 the higher the transmissivity is.

22 And so you can see that in all of these models  
23 kind of in the vicinity of that American Falls reach,  
24 it's of those higher transmissivity colors, and the  
25 geology, basically, the presence of these interfingering

1 impermeable units would specify that you should have  
2 lower transmissivity in that American Falls area and to  
3 the southwest.

4 And that's, you know, a function of what  
5 causes the discharge to that near Blackfoot to Neeley  
6 reach to come up before the reservoir. Basically, all  
7 the springs are kind of -- to the -- to the east.

8 Q. And is part of your opinion based upon the  
9 fact that we have a single-layer model instead of a  
10 multilayer model?

11 A. Yes. I mean, that's separate from just the  
12 comment on the transmissivity. But perhaps the  
13 inappropriate -- perhaps that if the model had the  
14 multiple layers that it should in that area, the  
15 transmissivity would work itself out.

16 Q. Is it ever appropriate to represent a  
17 multilayer geologic system with a single-layer  
18 groundwater model?

19 A. In my professional career, and I've built a  
20 lot of models, I've never built a single-layer model,  
21 even when I'm doing -- representing an alluvial aquifer  
22 system on a short reach of river. Because I was taught  
23 that even in just an alluvial environment, the vertical  
24 hydraulic conductivity is less than the horizontal  
25 hydraulic conductivity, I will have multiple layers so

1 that I can represent that anisotropy.

2 Q. Do you know why ESPAM uses a single layer?

3 A. I've heard the Department talk about maybe  
4 they don't have the data to support multiple layers.  
5 But, you know, in my review of just kind of the  
6 information that's available out there, there's some  
7 hydrogeologic studies done for the RASA project, which  
8 is Regional Aquifer-System -- I can't remember exactly.  
9 But back in the '90s, they had, you know, I think a  
10 four-layer model of the Eastern Snake Plain. So it's  
11 really at the modeler's discretion.

12 Q. And is that an issue you bring up in the  
13 modeling committee that you're a part of?

14 A. Yes.

15 Q. Does the MODFLOW river package allow for the  
16 representation of low permeability impacts of fine grain  
17 sediments in the area in the Black- -- near Blackfoot to  
18 Minidoka area?

19 A. MODFLOW is capable of representing multiple  
20 layers, and you can parameterize those to represent  
21 those impermeable characteristics.

22 In particular, ESPAM2.2 moved to a version of  
23 MODFLOW that's called MODFLOW USG, which stands for  
24 unstructured grain. And it's very -- it's very  
25 flexible, in that it allows you to put in layers in just

1 certain parts of the aquifer. It doesn't have to be  
2 across the whole region.

3 Q. Right. So the river package can control the  
4 interactions of the river and the reservoir?

5 A. Yes. The river package has a conductance  
6 value that, exactly that, is very controlling in terms  
7 of how it interacts with the groundwater -- the regional  
8 groundwater levels.

9 Q. So with respect to the near Blackfoot to  
10 Minidoka reach, is this how the interactions with  
11 respect to reach gains are represented in that area?

12 A. I mean, the boundary conditions as they're --  
13 as they exist in MODFLOW are implemented throughout the  
14 model and including this reach.

15 Q. Sophia, in your testimony you discussed  
16 confidence in ESPAM2.2 predictions in the near Blackfoot  
17 to Minidoka reach gain, and you make comparisons between  
18 ESPAM2.1 and 2.2 --

19 A. Yes.

20 Q. -- I believe specifically stating that those  
21 differences in reach gain predictions indicate  
22 uncertainty in the model.

23 Is that your testimony?

24 A. Yes. I think they're a reflection of  
25 uncertainty that we have in aquifer parameters and water

1 budget components.

2 Q. But aren't those differences due primarily to  
3 improvements in 2.2 from 2.1 that more accurately  
4 calculate reach gains?

5 A. I think that there are localized improvements  
6 that were done in ESPAM2.2, so I think that's true. But  
7 I don't think that -- I don't think that that is -- I  
8 think it's separate from just kind of general model  
9 uncertainty that we have in prediction from these other  
10 components; like model -- like conceptual uncertainty  
11 and input parameter uncertainty, they still exist.

12 Q. Would you agree that we're going to always  
13 have some level of uncertainty when we're dealing with a  
14 model?

15 A. I agree with that. What I'm highlighting in  
16 my report here is very specific issues around water  
17 budget components for consumptive use and a known  
18 problem that will impact the response to this reach in a  
19 similar fashion that was, you know, a change that we saw  
20 from 2.1 to 2.2.

21 Q. So do you have a recommendation for a better  
22 way to estimate near Blackfoot to Minidoka reach gains?

23 A. I think my recommendation, which is, you know,  
24 something that the Department puts in their calibration  
25 report, is that because we have this model uncertainty,

1 that uncertainty should be taken into account when using  
2 it in water resource applications and administration.

3 And so I think in my report I'm advocating to  
4 consider a trim line as a potential -- a potential to  
5 just recognize that there is uncertainty in some of  
6 the -- in the prediction that we're making.

7 Q. So you've used this term "trim line." What's  
8 your definition of a trim line?

9 A. I think in applications that I'm familiar  
10 with, it's often based on a response to the reach or a  
11 feature. Like, I think in Rangen, they used the Great  
12 Rift where the response beyond that feature they have  
13 less certainty in.

14 Q. So with respect to the application of a trim  
15 line, do you think that junior groundwater pumpers are  
16 responsible for mitigating their impacts to senior  
17 surface water rights?

18 MS. PATTERSON: Object. Objection. This is  
19 outside the scope of her report, and it calls for --

20 HEARING OFFICER: Am I hearing an objection?

21 MS. PATTERSON: Yes. Objection. Sorry.

22 HEARING OFFICER: You'll need to speak up  
23 loudly, I think.

24 MS. PATTERSON: It's outside the scope of her  
25 report, and it calls for a legal conclusion.



1 MR. SIMPSON: Well, Mr. Director, she's  
2 testifying as to her perspective or her testimony  
3 regarding the application of a trim line, and that's  
4 what my question was based upon.

5 HEARING OFFICER: Overruled.

6 Answer the question, please, Ms. Sigstedt.

7 THE WITNESS: Can you repeat the question.

8 Q. (BY MR. SIMPSON) You testified a few moments  
9 ago about the application of a trim line, and my  
10 question that I asked you was: Do you believe that  
11 junior groundwater pumpers are responsible for  
12 mitigating their impacts to senior surface water rights?

13 A. I think that water users are, you know, ruled  
14 by state administration's rules.

15 Q. So if it's determined that junior groundwater  
16 pumping is impacting a senior surface water right, then  
17 they would have the obligation to mitigate for that  
18 impact?

19 A. I mean, however that's determined. Like I  
20 said, a trim line has been used with the ESPAM model in  
21 previous rulings and, you know, however that's applied  
22 or not applied is what the obligation is.

23 MR. SIMPSON: That's all the questions I have.

24 HEARING OFFICER: Did you have further  
25 cross-examination, Mr. Fletcher?

1 MR. FLETCHER: Yes, I have just two lines of  
2 TJ's version of 30 minutes from yesterday, if that's  
3 okay, unless you want to break right now.

4 HEARING OFFICER: What does everybody want to  
5 do? I'm sure we'll have some redirect.

6 MS. PATTERSON: We will have some redirect,  
7 but we're happy to have Kent do this questioning.

8 HEARING OFFICER: I just wonder whether we can  
9 get through Ms. Sigstedt before lunch. My guess is we  
10 will end up with a late lunch.

11 Let's break right now and come back a quarter  
12 after and you may ask your questions then, Mr. Fletcher.

13 So let's break for lunch and come back in an  
14 hour, at a quarter after 1:00. Thank you.

15 (Break taken.)

16 HEARING OFFICER: We're recording again after  
17 the lunch recess.

18 Mr. Fletcher, you may cross-examine  
19 Ms. Sigstedt.

20 MR. FLETCHER: Ms. Sigstedt, are you on the  
21 phone?

22 HEARING OFFICER: Perhaps she's not.

23 MR. FLETCHER: Unless the name's changed.

24 THE WITNESS: Can you hear me? Can you hear  
25 me?

1 MR. FLETCHER: There you are.

2 HEARING OFFICER: There you are.

3

4 CROSS-EXAMINATION

5 QUESTIONS BY MR. FLETCHER:

6 Q. Good afternoon. My name is Kent Fletcher. I  
7 represent Minidoka Irrigation District and American  
8 Falls Reservoir District 2, and I just have two areas  
9 I'd like to ask you a few questions concerning.

10 And the first one is, in this proceeding,  
11 there's been a lot of discussion about the number of  
12 acres of the SWC members and how they're calculated and  
13 that, as I understand your report, you believe the  
14 number of acres in the methodology are overstated for  
15 Twin Falls Canal Company; isn't that correct?

16 A. That's correct.

17 Q. But one thing that hasn't been discussed at  
18 all is if the number of acres are changed, don't other  
19 changes have to be made to the methodology?

20 How does the change in the number of acres  
21 affect the methodology?

22 A. It's used in the calculation of crop water  
23 need.

24 Q. Where else is it used?

25 A. That's the main thing that I can think about.

1 Q. Is it used in the determination of project  
2 efficiency?

3 A. I think project efficiency is calculated using  
4 crop water need and the diversions, so I think the  
5 change to crop water need affects the project efficiency  
6 calculation.

7 Q. And the crop water need is based upon acreage,  
8 correct, to some degree?

9 A. Correct.

10 Q. So if you went back -- if you change the  
11 number of acres, you'd have to recalculate the  
12 efficiency of the entity; correct?

13 A. So in my report, I'm changing the value of the  
14 acres using the Department's reasonable in-season demand  
15 sheet. And I believe I can see it changing the  
16 calculation of the project efficiency in there. So in  
17 the example I provide, I think that is taken care of,  
18 unless I'm missing something.

19 Q. Well, you said that the use of a different --  
20 of the higher acres number creates what you referred to  
21 as an erroneous shortfall; correct?

22 A. Correct.

23 Q. But if you adjusted efficiency to take into  
24 account the adjustment in acres and the same amount of  
25 water was diverted, the shortfall would be the same;

1 isn't that correct?

2 A. I mean, it doesn't seem so. I do see the  
3 project efficiencies go down when I change the irrigated  
4 acres, but I'm still calculating a difference in the  
5 shortfall.

6 Q. How much would it adjust the shortfall?

7 A. We can look at my table. So if you look at  
8 page 27 of Exhibit 387, I have recalculated the  
9 shortfall changing the irrigated acres for Twin Falls  
10 Canal Company in the reasonable in-season demand  
11 calculation sheet, which, like I said, it seems to be  
12 changing the project efficiency. And those are the  
13 shortfalls, the difference.

14 Q. Did you recalculate the efficiency as part of  
15 that?

16 A. Like I said, to me, they seem to be updating  
17 in the sheet as a function of the crop water need, so I  
18 do see a change in the project efficiency.

19 Q. So that was really the point I was trying to  
20 make. It is true that if you do redo the acres, you  
21 have to adjust the project efficiency as well as the  
22 crop water need; correct?

23 A. That's how the calculation sheet works, to my  
24 understanding.

25 Q. The other area I would like to go into dealt

1 with the transient versus steady state analysis. I'm a  
2 little unclear on what your opinion is concerning the  
3 use of the steady state.

4 I believe your testimony when Mr. Simpson was  
5 questioning you was that the transient model run was the  
6 only way to determine how much water would be available  
7 in the reach during the year of need. Wasn't that  
8 correct?

9 Isn't that your testimony?

10 A. If you're trying to determine the amount of  
11 water May through September of the current year, the  
12 transient model is the only model that can give you that  
13 answer.

14 Q. So if your goal is to furnish the amount of  
15 shortage to the injured party during that year, you have  
16 to use the transient model; correct?

17 A. That's the way to get that model output.

18 Q. And if you use the steady state model run to  
19 do the same calculation, the injured party would only  
20 receive about 15 percent of the shortfall in that year;  
21 isn't that correct?

22 A. I think it varies by curtailment date in terms  
23 of the percentage.

24 Q. Well, you reviewed Jennifer Sukow's  
25 information; correct?

1 A. Correct.

2 Q. And do you remember the information that she  
3 provided? I think it said that either 15 percent or 9  
4 to 15 percent appears in the year of curtailment?

5 A. Yes, that range is what I'm referring to --

6 Q. Okay.

7 A. -- that the --

8 COURT REPORTER: Ms. Sigstedt, I'm sorry. I  
9 missed some of that again. I got, "Yes, that range is  
10 what I'm referring to"?

11 THE WITNESS: I think that that range was  
12 developed based on analyzing different curtailment dates  
13 and looking at the comparison of the transient -- the  
14 in-season to the steady state response.

15 Q. (BY MR. FLETCHER) Do you believe that the  
16 goal of the methodology should be to protect seniors  
17 from injury caused by junior diversions?

18 A. I think that that sounds correct.

19 Q. And do you agree that if injury is determined,  
20 the shortfall should be supplied in time, location, and  
21 amount that season?

22 A. To me, that seems like, potentially, a policy  
23 decision. I don't know if it's a technical question.

24 Q. So you don't have an opinion on that?

25 A. My opinion is that it's a policy decision.

1 MR. FLETCHER: Thank you.

2 I don't have any further questions.

3 HEARING OFFICER: Okay. Thank you,  
4 Mr. Fletcher.

5 Redirect, Ms. Patterson?

6 MS. PATTERSON: Yes. Just a moment.

7 HEARING OFFICER: Do you want to go off the  
8 record?

9 MS. PATTERSON: No. I'll be short.

10

11

REDIRECT EXAMINATION

12

QUESTIONS BY MS. PATTERSON:

13

Q. Hi, Sophia. Before lunch, you were asked by  
14 Mr. Simpson whether or not you were saying the model  
15 should be used given the uncertainty, and I think you  
16 replied that it's what we have, and so, yes, it should  
17 be used.

18

I just want to clarify, are you saying that it  
19 can be used but you need to account for the uncertainty?

20

A. That's correct.

21

Q. And then there was questions about irrigated  
22 acres and whether or not in 2013 the Department should  
23 have used the self-reported numbers.

24

You commented that, no, that one shouldn't be  
25 used because it hasn't been verified; is that correct?



1           A. That's correct.

2           Q. Could you envision a process such as the  
3 Department using the most recent data available for  
4 irrigated acres, such as the Landsat data that they use  
5 in the model, and then the districts, if they find an  
6 error with that, could produce that -- produce that  
7 evidence to the Department if they want to contend that  
8 the data, the Landsat data excludes irrigated or  
9 semi-irrigated acres?

10          A. Yes, I think that makes sense, and I also  
11 think that in the application of those acres, there is  
12 the semi-irrigated acres category that I think is just  
13 being treated as irrigated acres. I think, similarly,  
14 you can make a determination of the percent of the  
15 semi-irrigated acres that are nonirrigated.

16          Q. Thank you.

17                 That brings me to my last question which is,  
18 again, related to the Landsat data. That includes  
19 irrigated, semi-irrigated, and nonirrigated acres; is  
20 that correct?

21          A. That's correct.

22          Q. And if we look at --

23          A. The irrigated lands dataset is the one that  
24 has those classifications.

25          Q. Thank you, the irrigated lands dataset.

1           Going to Table 2-3, where it discusses the  
2 different ways to calculate irrigated acres, in that  
3 chart do you know whether that -- those numbers include  
4 both irrigated acres and semi-irrigated, or is it only  
5 counting irrigated?

6           A. I'm pretty sure, from the testimony that we  
7 heard from Matt, it is including the semi-irrigated.

8           Q. Okay. That is what I recall as well. Thank  
9 you.

10           MS. PATTERSON: That's all.

11           HEARING OFFICER: Recross, Mr. Simpson?

12           MR. SIMPSON: No.

13           HEARING OFFICER: Mr. Fletcher?

14           MR. FLETCHER: No.

15           HEARING OFFICER: I just have one question for  
16 Ms. Sigstedt.

17  
18                           EXAMINATION

19           QUESTIONS BY THE HEARING OFFICER:

20           Q. Ms. Sigstedt, I am looking at page 23 under  
21 Section 2.2.2, and the beginning of the second  
22 paragraph, it says: "The first is that Box Canyon  
23 spring flows are representative of groundwater discharge  
24 to the near Blackfoot to Minidoka reach."

25                   Is that your testimony?

1           A. No, that looks like a typo. It should be "are  
2 not representative."

3           Q. Okay. And it may be just in the context of  
4 that statement, because in the previous paragraph it  
5 says: "I have additional concerns about two of the  
6 predictions," but then, again, it very clearly states  
7 that they are representative, and you're saying that it  
8 should say "is not"; is that correct?

9           A. That's correct.

10          Q. Okay.

11          A. I also noticed a typo on the curtailment date  
12 under the figure -- under the last figure also. So I  
13 think there could be some minor corrections.

14          Q. Under what figure?

15                 Well, if you don't recall, maybe you can  
16 correct it through your counsel. I just noticed this  
17 particular sentence and thought it was not consistent  
18 with your testimony, and I wanted to ensure that at  
19 least the document reflected and was consistent with  
20 your testimony.

21          A. I really appreciate that.

22                 And the other one is Figure 10. 3-10 has a  
23 typo in the curtailment date.

24                 MS. PATTERSON: Counsel will see to it that  
25 those changes are updated and it's submitted to the

1 Department.

2 HEARING OFFICER: You'll have to speak up,  
3 Ms. Patterson.

4 MS. PATTERSON: Counsel will work with Sophia  
5 to make sure those corrections are accounted for and  
6 submitted to the parties in the Department.

7 HEARING OFFICER: Okay.

8 All right. Thank you, Ms. Sigstedt.

9 THE WITNESS: Thank you.

10 HEARING OFFICER: The next witness I have in  
11 my list is Jaxon Higgs. He is not here, I assume, and  
12 doesn't have connections in some remote location in  
13 Mexico, Mr. Budge?

14 MR. BUDGE: That's correct.

15 HEARING OFFICER: So we don't anticipate  
16 hearing from Mr. Higgs.

17 MR. BUDGE: No.

18 HEARING OFFICER: And the next witness I show  
19 is Bryce Contor.

20 MR. BUDGE: I think we're going to put Lynn  
21 Carlquist on next.

22 HEARING OFFICER: Okay. Mr. Carlquist, if  
23 you'll come forward, please.

24 THE WITNESS: Right here.

25 HEARING OFFICER: We'll switch back to our

1 regular configuration which you have not observed.

2 Will you raise your right hand, please.

3  
4 RICHARD LYNN CARLQUIST,

5 called by IGWA, having been first duly sworn to tell the  
6 truth relating to said cause, testified as follows:

7  
8 HEARING OFFICER: Thank you. This chair may  
9 feel comfortable to you, given your long history.

10 THE WITNESS: Not our first go-round.

11 HEARING OFFICER: Okay. Mr. Budge.

12  
13 DIRECT EXAMINATION

14 QUESTIONS BY MR. BUDGE:

15 Q. Thank you.

16 Lynn, thank you for being here today. Just to  
17 begin, will you please state your name and address for  
18 the record.

19 A. Richard Lynn Carlquist, 1092 South 2500 East,  
20 Hazelton, Idaho 83335.

21 Q. You're here to testify today, Lynn, on behalf  
22 of Idaho Ground Water Appropriators?

23 A. Yes.

24 Q. What's your current position with IGWA?

25 A. I am the co-chair of IGWA organization,

1 serving with Stephanie Mickelsen as the other co-chair.

2 Q. How long have you been involved with IGWA?

3 A. Since the mid-2000s. 2005 our groundwater  
4 district joined.

5 Q. And can you identify who IGWA's groundwater  
6 district members are?

7 A. Yeah, if I look them up, I could go -- try and  
8 go through them, but there's nine districts and one  
9 irrigation district that is members of IGWA.

10 Q. I'll make it easy for you, Lynn. I'll just go  
11 through them and then have you confirm.

12 There is North Snake Groundwater District,  
13 Carey Valley Groundwater District, Magic Valley Ground  
14 Water District, Aberdeen-American Falls Groundwater  
15 District, Bingham Groundwater District, Jefferson Clark  
16 Groundwater District, Henry's Fork Groundwater District,  
17 and Madison Groundwater District.

18 Does that sound right?

19 A. That sounds right. I think that's all of  
20 them.

21 Q. And Southwest Irrigation District is also a  
22 member of IGWA?

23 A. Yes.

24 Q. I understand you are a member, personally, of  
25 North Snake Groundwater District?

1 A. That's correct.

2 Q. How long have you been a member of that  
3 district?

4 A. Since its inception.

5 Q. Do you serve as a director of that district?

6 A. Yes.

7 Q. And as the chairman?

8 A. Yes.

9 Q. How long have you been the chairman?

10 A. Ten years.

11 Q. Where is North Snake Groundwater District  
12 located?

13 A. It's located in Jerome County, Gooding County,  
14 and Blaine -- or Shoshone County.

15 Q. And it represents groundwater irrigators in  
16 that area?

17 A. Yes.

18 Q. Are there also nonirrigator members of the  
19 district?

20 A. Yes.

21 Q. Just describe some of the nonirrigation uses  
22 that are in the district.

23 A. Some of the cheese-processing plants are some  
24 of the bigger users of water. Amalgamated Sugar has  
25 some use of water. Other cities, municipalities have

1 water rights that belong to our district.

2 Q. And I understand there's a lot of dairy  
3 operators in your district as well?

4 A. There are a lot.

5 Q. How many acres, approximately, are irrigated  
6 by members of your district?

7 A. There's a little over 200,000, 202,000 acres,  
8 irrigated acres in our district -- or 102,000 irrigated  
9 acres in our district.

10 Q. Okay. And, generally, what types of crops are  
11 grown in your district?

12 A. Well, the big crops now are alfalfa, corn.  
13 There are still potatoes, sugar beets, beans, small  
14 grains. Some specialty crops are grown, some seed  
15 crops.

16 Q. And how much water do patrons of your district  
17 divert on a per-acre basis typically?

18 A. The diversion now, we average about -- from  
19 our -- the groundwater is 2.2 acre-feet a year.

20 Q. And I understand that your district limits how  
21 much groundwater the patrons are permitted to divert?

22 A. Yes.

23 When the Surface Water Coalition plan was  
24 formulated and put into place, each groundwater district  
25 was given an amount of reduction that belonged to their



1 district; and we set up a system whereby a set of  
2 priorities each individual water right was given a set  
3 amount that they could divert.

4 Q. And that's 2.2 acre-feet in your district?

5 A. The priorities range from 2.4 to 2. And we  
6 average, roughly, that 2.2 right now.

7 Q. Okay. So more senior rights in your district  
8 are allotted a higher volume than more junior rights?

9 A. That's correct.

10 Q. And your district sends out to each patron the  
11 volume of water it's allowed to use, and they're  
12 responsible to stay within that amount?

13 A. Yes.

14 Q. Are you aware of other groundwater districts  
15 also imposing diversion limits on their members?

16 A. Yes.

17 Q. Compared to other groundwater districts, are  
18 North Snake's diversion limits higher or lower than  
19 others?

20 A. Generally higher.

21 Q. The other districts have lower diversion  
22 limits than your district?

23 A. Yes.

24 Q. I understand you, personally, own groundwater  
25 rights in the district?

1 A. Yes.

2 Q. And you also own surface water rights?

3 A. Yes.

4 Q. Where does your surface water come from?

5 A. I have surface water rights with A&B

6 Irrigation District, North Side Canal.

7 Q. Does A&B Irrigation District regulate how much  
8 water you can divert under your surface water rights?

9 A. Yes.

10 Q. How does that work?

11 A. We're given so many acre-feet a year that we  
12 can pump. If we go beyond that, then we get charged a  
13 surcharge for the additional acre-feet that we pump.

14 Q. Okay. Does North Side Canal Company regulate  
15 how much surface water you can divert?

16 A. Their water right is based on a diversion  
17 rate, not a consumptive amount.

18 Q. So you're just able to divert your rate all  
19 season long?

20 A. Yes, if you want to, you can.

21 Q. Okay. Let me ask you some questions about the  
22 Fifth Methodology Order that was issued April 21st of  
23 this year.

24 Lynn, are you aware that among other changes  
25 to the Fifth Methodology Order, the Director changed

1 from a steady state to a transient state application of  
2 the ESPA model?

3 A. Yes, I'm aware of that.

4 Q. Did you know what effect a transient state  
5 would have on curtailments?

6 A. Well, we talked about it a lot. We didn't  
7 know exactly the impact that it would have, but we knew  
8 it would be a major change from the steady state  
9 analysis that had been done. And we thought for sure,  
10 based on where our groundwater district is, there would  
11 be less of an impact; but, in fact, you know, it -- the  
12 curtailment for our district is about the same as  
13 everybody else.

14 Q. You're aware that also in April this year the  
15 Director issued what we call an As-Applied Order that  
16 sets a curtailment date of December 30th, 1953?

17 A. Yes.

18 Q. Did you anticipate a curtailment happening  
19 this year?

20 A. No.

21 Q. Why not?

22 A. With the larger than average snowpack that we  
23 had and what we'd had in previous years, we did not  
24 anticipate that there would be a curtailment order  
25 issued.

1 Q. So it came as a surprise to members of your  
2 district when the curtailment was issued?

3 A. Yes.

4 Q. And have your patrons complained about that  
5 revelation?

6 A. Complained? They've asked questions. They  
7 want to know why and what they can do and what the  
8 impact will be.

9 Q. Your patrons also weren't anticipating a  
10 curtailment this year?

11 A. I don't think so.

12 Q. Lynn, let me have you turn, in one of those  
13 white binders behind you, to Exhibit 829.

14 Do you recognize that document, Lynn?

15 A. Yes, I've seen this.

16 MR. BUDGE: And just for the record, I'll  
17 represent that Exhibit 829 is a duplication of  
18 Figure 3-1 in the expert report of Sophia Sigstedt,  
19 which has been admitted into evidence as Exhibit 837.

20 Q. (BY MR. BUDGE) Lynn, you mentioned that  
21 you've seen this before. What do you understand this  
22 exhibit shows?

23 A. Well, in the left portion of the exhibit, it  
24 shows IGWA's -- IDWR's percentage of IGWA's  
25 proportionate share, and that was based more on a type

1 of steady state type of analysis, is my understanding.

2 And the midsection shows the impact of water  
3 that would be made available under curtailment based on  
4 the transient state analysis.

5 Q. So if we look at the row for North Snake,  
6 that's North Snake Groundwater District; correct?

7 A. Yes. We're on the very bottom.

8 Q. If we look at the middle section of that  
9 spreadsheet, it shows that the curtailment would  
10 eliminate beneficial use of 217,151 acre-feet.

11 Do you see that?

12 A. Yes.

13 Q. Do you understand that to be the curtailment  
14 within your district?

15 A. Based on the December 30th, 1953, date?

16 Q. Correct. And then the model benefit to the  
17 Coalition from May to September would be 0.06 acre-feet?

18 A. Yes.

19 Q. Did that come as a surprise to you?

20 A. Yes. It's much lower than I thought it would  
21 have been.

22 Q. And does this change how North Snake handles  
23 groundwater management for its patrons going forward?

24 A. Well, it probably will. I've had patrons  
25 call, and, of course, they have rights junior to 1953.

1 And if you look over further, it shows that 88,000 acres  
2 are junior to that, so they're concerned "Are we going  
3 to be curtailed?" And I -- under the way we used to  
4 mitigate for an order, was supplying wet water prior to  
5 the Surface Water Coalition call -- or agreement that we  
6 entered into. And I told them we will be able to supply  
7 the necessary water to meet our obligation under this  
8 curtailment order.

9 Q. Which would be a very small fraction?

10 A. A very small -- less than 1 acre-foot.

11 Q. Have your patrons continued to conserve water  
12 this year -- or I should rephrase that.

13 Has your district continued to send out the  
14 diversion reduction obligations this year like you've  
15 done in the past?

16 A. We have. And at our annual meeting, I told  
17 them that we were going to do that, and we asked if  
18 everyone was okay with that, that was at the meeting,  
19 and they said yes. And we will continue to do our  
20 reductions that we've been doing in the past under the  
21 Surface Water Coalition Act.

22 Q. Okay. And that's intended to stabilize the  
23 aquifer in your area?

24 A. That's what our intent is.

25 Q. It's not, necessarily, a representation of

1 your obligations under the -- this table that we've just  
2 seen?

3 A. No.

4 MR. BUDGE: No further questions.

5 HEARING OFFICER: Okay. Cross-examination?

6 Mr. Simpson or Fletcher?  
7

8 CROSS-EXAMINATION

9 QUESTIONS BY MR. FLETCHER:

10 Q. Hi, Mr. Carlquist. How are you doing?

11 A. Oh, pretty good.

12 Q. I'm Kent Fletcher, as you know. We've dealt  
13 with each other for many years. And on behalf of our  
14 clients, I'd like to thank your district for the actions  
15 you've taken over the years pursuant to our plan.

16 I -- first of all, you mentioned briefly some  
17 of the operations for your district. You heard the  
18 testimony of Jay Barlogi yesterday -- were you sitting  
19 in on that?

20 A. I was not, I didn't hear it.

21 Q. I'll represent to you that he said that Twin  
22 Falls Canal Company employs -- his written testimony  
23 states that the Twin Falls Canal Company employs  
24 somewhere around 65 employees, 24 ditch riders to  
25 monitor water deliveries. And that's for somewhere

1 between 180-, 195,000 acres, whatever number is  
2 determined. You said you had about 100,000 acres of  
3 groundwater that you manage in your groundwater  
4 district; correct?

5 A. I would say we don't manage it, but we have  
6 initiated programs for the members of our district who  
7 have those groundwater rights. We don't own any  
8 groundwater rights as a groundwater district, and I  
9 wouldn't say that we manage it, but we give them plans  
10 and operations that will help meet the obligations that  
11 come because of water calls.

12 Q. Does your district monitor in-season  
13 diversions of groundwater?

14 A. No.

15 Q. Does your district take any action against  
16 groundwater users who overdivert the allocation you  
17 talked about?

18 A. We do.

19 Q. And what do you do?

20 A. We have gone to the program where they are  
21 required to pay \$100 per acre-foot. There is actually  
22 an averaging system that is set up, that Jaxon Higgs  
23 helped us put into place, where they can make up in a  
24 following year for overages in a previous year. But if  
25 after a three-year period of time they don't make it up,



1 then they have to pay the difference in acre-feet, \$100  
2 per acre-foot.

3 Q. And the only reporting concerning the  
4 diversions that take place in your district occurs after  
5 the season has ended; is that correct?

6 A. That's correct.

7 Q. I was a little confused about your actions.

8 Is your district -- you mentioned the 2015  
9 agreement a few times. Is your district still honoring  
10 the 2015 mitigation plan and the order that was entered  
11 pursuant to that?

12 MR. BUDGE: Objection. Beyond the scope of  
13 this proceeding.

14 HEARING OFFICER: I don't -- I don't think so.  
15 He testified about the actions that were taken by North  
16 Snake. This is clarification.

17 MR. FLETCHER: Right.

18 HEARING OFFICER: Overruled.

19 MR. BUDGE: Objection. Calls for a legal  
20 conclusion.

21 HEARING OFFICER: Overruled again.

22 MR. BUDGE: Mr. Director, can I inquire of the  
23 witness in aid of objection?

24 HEARING OFFICER: Sure.

25 MR. BUDGE: And I'll just stand here.

1           Mr. Carlquist, do you understand that the  
2           dispute has arisen between IGWA and the Surface Water  
3           Coalition over the terms of the 2015 settlement  
4           agreement?

5           THE WITNESS: Now, say that again.

6           MR. BUDGE: Do you understand that a dispute  
7           has arisen between IGWA and the Surface Water Coalition  
8           over the terms of the 2015 settlement agreement?

9           THE WITNESS: Yes.

10          MR. BUDGE: Do you understand that dispute is  
11          presently on appeal?

12          THE WITNESS: Yes.

13          MR. BUDGE: That dispute has not finally been  
14          resolved?

15          THE WITNESS: That's my understanding.

16          MR. BUDGE: And your understanding of the  
17          terms of that agreement are different than the Surface  
18          Water Coalition's understanding of the terms of that  
19          agreement?

20          THE WITNESS: That has been the case.

21          MR. BUDGE: Mr. Director, Mr. Fletcher is  
22          asking the witness to testify as to whether he's in  
23          compliance with the agreement. The witness can't do  
24          that, given that the terms of the agreement have not  
25          fully been adjudicated.

1 HEARING OFFICER: Mr. Carlquist can testify  
2 about whether he believes he's complying or not.

3 Overruled.

4 Mr. Fletcher.

5 MR. FLETCHER: Let me reask the question  
6 because that wasn't my question, and I'm not looking for  
7 past breaches or these issues that Mr. Budge is talking  
8 about.

9 Q. (BY MR. FLETCHER) What I'm talking about is  
10 this year, 2023, is your district planning on attempting  
11 to comply with the 2015 settlement agreement and the  
12 order that was entered?

13 A. That had been the case that we were going to  
14 try and do. What was frustrating was the fact that we  
15 found out that even if we do it, if other members of the  
16 IGWA don't comply, then we're also out of compliance, so  
17 we don't know where we're going to go.

18 Q. So that's your understanding is that your  
19 district could comply, but if your -- if other districts  
20 don't, then all of you will be out of compliance?

21 A. That's my understanding.

22 Q. So you're not sure if you're going to attempt  
23 to comply with that yet, as I understand it?

24 A. At our annual meeting, I made the suggestion  
25 to the members of our district that we would still do

1 our share of compliance of that agreement, and our plan  
2 was to do that; but if doing that will not bring us any  
3 satisfaction, then I'm not sure what direction we'll go  
4 now.

5 Q. I understand that.

6 Is it your belief that if you do comply with  
7 the mitigation plan and are found to be in compliance  
8 with the mitigation plan, that your district then would  
9 have safe harbor?

10 A. No. My understanding is we will not.

11 Q. No, I say if you were in compliance with the  
12 mitigation plan, if you believed you were, and if the  
13 Director found you were in compliance with the  
14 mitigation plan, your district, then you would have safe  
15 harbor?

16 A. I don't know that we would. I don't think  
17 anyone's told us that we can do it individually and  
18 receive safe harbor.

19 Q. If you did have -- if you were found to be  
20 complying with the mitigation plan and order that is in  
21 place now, you would have safe harbor?

22 MR. BUDGE: Objection. Director, I'm going to  
23 renew my objection. This case is involving the Fifth  
24 Methodology Order and the As-Applied Order. We have a  
25 separate proceeding involving the mitigation plan past

1 compliance and mitigation compliance for 2023, and I  
2 don't think it's appropriate in this proceeding for  
3 Mr. Fletcher to ask the questions that he would like to  
4 have answers to in other proceedings.

5 HEARING OFFICER: And, Mr. Budge, your direct  
6 examination opened up this particular subject.  
7 Mr. Fletcher is exploring it. Overruled.

8 Q. (BY MR. FLETCHER) Do you remember my  
9 question?

10 A. Do it again.

11 Q. All right. If you were found to be in  
12 compliance with the mitigation plan this year, then the  
13 mitigation plan states you would have safe harbor;  
14 correct?

15 A. Well, the agreement says we would have safe  
16 harbor, but my understanding is from decisions that have  
17 come from the Department, from the Director, is the fact  
18 that if everyone is not in compliance, then no one is  
19 going to be in compliance.

20 Q. And if you had safe harbor, then none of your  
21 irrigators would be subject to curtailment regardless of  
22 what the curtailment date is; correct?

23 A. That's correct.

24 Q. You brought up this table -- or your counsel  
25 brought up this table that Jaxon Higgs prepared. I

1 think you still have it in front of you; is that  
2 correct?

3 A. I do.

4 Q. I was a little unclear about your testimony on  
5 that. It does show that in a one-year transient state  
6 analysis that North Snake would have to contribute a  
7 very small amount of water?

8 A. Yes.

9 Q. Is that correct?

10 A. That's correct.

11 Q. Are you -- is it your position as president of  
12 IGWA that those who contribute more to the shortage this  
13 year should mitigate for that, and those who contribute  
14 less mitigate their share?

15 A. That decision has not been made by IGWA.

16 Q. Is that your position as the president of your  
17 groundwater district?

18 A. No, it's not.

19 Q. What is your position concerning a mitigation  
20 requirement for this year?

21 A. We, as a group of groundwater districts, would  
22 have to get together and determine how any obligation  
23 would be shared. And that hasn't been done yet.

24 Q. So it has not been done yet?

25 A. No.

1 MR. FLETCHER: That's all the questions I  
2 have. Thank you, Mr. Carlquist.

3 HEARING OFFICER: Any further cross?  
4 Mr. Simpson?

5  
6 CROSS-EXAMINATION

7 QUESTIONS BY MR. SIMPSON:

8 Q. Lynn, good afternoon. John Simpson  
9 representing A&B, et al. Good to see you again. I just  
10 had a couple follow-ups to your direct testimony.

11 First, you indicated on direct that you  
12 thought since it was a good snowpack, that there  
13 wouldn't be a curtailment this year; is that fair?

14 A. That would be -- that was my thought, that the  
15 snowpacks were large enough, you know, and, of course, I  
16 was surprised when I understood that the -- those who  
17 measure said that possibly the system would not totally  
18 fill, even with the snowpack that we had, because there  
19 were certain areas, Jackson Lake area, for example,  
20 didn't have quite the snow that other areas did.

21 Q. Yeah. And given that you receive North Side  
22 Canal Company water; correct?

23 A. Yes.

24 Q. As the reservoir system declines in its  
25 carryover, that, obviously, means you need a better

1 snowpack in order to fill the reservoirs; correct?

2 A. Yes.

3 Q. And so that's part of the reason why --

4 A. It also depends on how the water comes off of  
5 that system up there to fill the reservoir.

6 Q. You bet. Understand that.

7 So in your experience, even if you have a good  
8 snowpack, it doesn't necessarily ensure that surface  
9 water users have a full water supply; is that fair?

10 A. You can't guarantee it, but it's certainly a  
11 better chance, we thought, that they would have a full  
12 water supply on a year like this.

13 Q. And so with respect to your groundwater rights  
14 and your pumps and where those pumps are on the North  
15 Snake groundwater system, what have you observed in  
16 terms of your groundwater levels over the last couple  
17 years?

18 A. In the last couple years, they've gone back  
19 down. In the prior 10 or 12 years, they've come up  
20 fairly dramatically. And then the last two years,  
21 they've declined a little bit again.

22 Q. When you say "a little bit," 10 feet?  
23 15 feet?

24 A. 3 feet.

25 Q. So in those prior years since 2015, what kind



1 of increase did you see?

2 A. We went up almost 12 feet. And that's the  
3 first time they've gone up since the '80s.

4 Q. So you saw about a 25 percent decline over the  
5 last couple years?

6 A. Yes.

7 Q. So when you were asked on direct testimony  
8 that you're anticipating to continue your reductions in  
9 order to stabilize the aquifer -- do you recall that  
10 testimony?

11 A. Yes.

12 Q. So when you --

13 A. When we -- we, as a board of North Snake  
14 Groundwater District, have made that determination, and  
15 we have expressed that desire to the members of our  
16 district and received their --

17 Q. Approval?

18 A. -- "yea" that they would be fine with that.

19 Q. So when you talk about stabilizing, what does  
20 that mean to you in terms of your North Snake members in  
21 the district?

22 A. Our idea is that we will not see further  
23 declines going down. Not that we'll recover it to a  
24 particular level, but they will not continue to decline.

25 Q. Not continue the declines that we've seen in

1 the last couple years?

2 A. No. Decline in the last 20 years.

3 Q. Then looking at this table that Jaxon Higgs  
4 put together that you have in front of you, you  
5 indicated that the first couple columns were a steady  
6 state calculation?

7 A. That was my understanding, that we requested  
8 from the Department that they give us -- the allocation  
9 of the amount of this order would be for the districts.  
10 And my understanding was that the numbers that are there  
11 in the first columns, like, for example, North Snake  
12 would be 3,262 acre-feet, was done on some -- whether  
13 it's a modified steady state analysis or what, but it  
14 wasn't done on the straight transient analysis.

15 Q. So is it fair to say that, in the first column  
16 where it says 5.1 percent, that's -- North Snake's  
17 obligation under a steady state modeling was  
18 5.1 percent?

19 A. That's my understanding.

20 Q. So that would be 5.1 percent of the obligation  
21 that would be owed to the Surface Water Coalition?

22 A. Yes.

23 Q. Under a steady state analysis, to be fair?

24 A. Yes.

25 Q. And with respect to your -- not "your," but

1 the North Snake groundwater rights within the  
2 groundwater district, have most, if not all, of those  
3 groundwater rights been in place for -- since 1993, the  
4 date of the moratorium; do you know?

5 A. Most, I would say, most have been in place  
6 since then.

7 Q. A very high percentage?

8 A. Yes, a high percentage.

9 MR. SIMPSON: That's all the questions I have.  
10 Thank you.

11 HEARING OFFICER: Okay. Mr. Budge, redirect.  
12

13 REDIRECT EXAMINATION

14 QUESTIONS BY MR. BUDGE:

15 Q. Yeah, just a few follow-up questions, Lynn.

16 Mr. Simpson was asking you some questions  
17 about the snowpack this last winter?

18 A. [Witness nods head.]

19 Q. And you understand it was well above average  
20 snowpack this winter in the Upper Snake River Basin?

21 A. Well, it was above average. Now, well above  
22 average, I'm not sure what that number means, but at  
23 times we were up close to 150 percent of average. And  
24 in certain parts of it, it was above that.

25 Q. And in years past when we had that much snow

1 in the mountains, there would not have been a  
2 curtailment under the Methodology Order; correct?

3 A. Not that I remember.

4 Q. Okay. And do you understand that under the  
5 Fourth Methodology Order, there would not have been a  
6 curtailment this year?

7 A. I don't know that for sure.

8 Q. Okay. But you did understand or did assume  
9 that with as much snow as we've got, you did not expect  
10 a curtailment coming this year?

11 A. I did not expect a curtailment coming this  
12 year.

13 Q. Let me ask you a few questions about that  
14 table in front of you, which is Exhibit 829, the table  
15 that Jaxon Higgs prepared.

16 Mr. Fletcher asked you some questions about  
17 how mitigation obligations are apportioned among the  
18 groundwater districts under the 2015 settlement  
19 agreement.

20 Do you recall that?

21 A. Yes.

22 Q. You understand that the terms of that  
23 agreement do not specify how that 240,000-acre-foot  
24 obligation is apportioned among the districts?

25 MR. FLETCHER: Director, I'm going to object

1 simply because I didn't ask that question, but I don't  
2 mind this line of inquiry. I mean, I don't know how to  
3 do that. That was not my question to Mr. Carlquist.

4 MR. BUDGE: I'll accept the withdrawal of  
5 objection.

6 MR. FLETCHER: I'm objecting to the fact that  
7 I asked about that. I did not.

8 HEARING OFFICER: All right.

9 MR. FLETCHER: It misstates the foundation for  
10 the question.

11 HEARING OFFICER: All right. So,  
12 Mr. Carlquist, if you remember the question, you may  
13 answer. Otherwise, Mr. Budge, please restate the  
14 question.

15 THE WITNESS: Well, I think I remember, but go  
16 ahead and restate it.

17 Q. (BY MR. BUDGE) Do you recall Mr. Fletcher  
18 discussing with you for a moment the 2015 settlement  
19 agreement between IGWA and the Surface Water Coalition?

20 A. Broadly, I guess, yeah.

21 Q. And he was asking if your district's planning  
22 to comply with that this year?

23 A. Yes.

24 Q. You understand that one of the terms of that  
25 agreement is that the groundwater districts

1 collectively -- or the groundwater users collectively  
2 will conserve 240,000 acre-feet of water?

3 A. Yes.

4 Q. And you understand that the agreement does not  
5 specify how much conservation each individual  
6 groundwater district has to achieve?

7 A. I don't think the agreement says that, but the  
8 groundwater districts apportion their share of the  
9 240,000 acre-feet based on their share of pumping, their  
10 historical baseline pumping that they had had the  
11 previous five years.

12 Q. And that apportionment was an agreement that  
13 the groundwater districts struck among themselves after  
14 the 2015 settlement agreement was signed?

15 A. Yes.

16 Q. And you understand the Director recently  
17 changed or interpreted the terms of that agreement in a  
18 way that would collectively require the groundwater  
19 districts to conserve more water than they had  
20 historically?

21 A. More than we have historically, yes. When the  
22 allocation -- when we did the allocation among the  
23 groundwater districts, we assumed that everyone who  
24 pumps water would have some share of that  
25 240,000 acre-feet. So the districts that were -- signed

1 the agreement -- the six districts that signed the  
2 agreement, allocated 202,000 of the 240,000 acre-feet.

3 Q. 205,000?

4 A. Yeah, it was 202 or 205, yeah.

5 Q. And now that the Director's come out with the  
6 new transient state model application, does that change  
7 your thinking on how the 240 should be allocated?

8 A. Well, that's possible. We'll have to  
9 negotiate like we did before with the groundwater  
10 districts, but our district has decided that we are  
11 going to maintain our reduction proportion that we've  
12 had in the past, which is based on the 205, not the 240.  
13 That's what -- that's the allocation that we send out.  
14 Pumping allocation to the members of our district is  
15 based on our share of the 205,000 acre-feet.

16 Q. Yeah. Is it fair to say that the information  
17 in that table that shows the transient state impacts,  
18 that the districts have discussed how to reallocate the  
19 240 and not been able to reach an agreement?

20 A. No. No agreement has been reached.

21 MR. BUDGE: The last thing I would do,  
22 Director, and this is just really for clarity of the  
23 record, is, I've been referring to Exhibit 829, which is  
24 that table from an excerpt from Exhibit 837. I would  
25 move that we admit that as a separate of exhibit just

1 for ease of reference in the record.

2 HEARING OFFICER: Any objection?

3 MR. FLETCHER: We have no objection. It was  
4 already admitted as part of Sophia's expert report.

5 HEARING OFFICER: The document, then, that has  
6 been marked as Exhibit 829 is received into evidence.

7 (Exhibit 829 received.)

8 MR. BUDGE: Thank you, Lynn.

9 HEARING OFFICER: Any further  
10 cross-examination?

11 MR. FLETCHER: I don't have anything further.

12 MR. SIMPSON: No.

13 HEARING OFFICER: Thank you, Mr. Carlquist.

14 Now, my list of witnesses, I don't know where  
15 to go. Please direct me.

16 MR. JOHNS: I think we're going to have Bryce  
17 Contor go up next, if that's permissible.

18 HEARING OFFICER: All right. Mr. Contor, if  
19 you'll come forward, please.

20 MR. JOHNS: Do you care if I --

21 HEARING OFFICER: You can sit or stand if you  
22 want.

23 Will you raise your right hand.

24 ///

25 ///



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

BRYCE CONTOR,  
called by Bonneville-Jefferson Ground Water District,  
having been first duly sworn to tell the truth relating  
to said cause, testified as follows:

HEARING OFFICER: Thank you. Please be  
seated.

Mr. Johns?

DIRECT EXAMINATION

QUESTIONS BY MR. JOHNS:

Q. Good afternoon, Mr. Contor. For the record,  
my name is Skyler Johns, and I represent  
Bonneville-Jefferson Ground Water District in this  
matter.

Can you please state your name and spell it  
for the record.

A. Bryce Contor, B-r-y-c-e, C-o-n-t-o-r.

Q. And just to check, are you okay if I call you  
Bryce?

A. Yes, sir.

Q. Perfect. The parties have stipulated to your  
qualifications as an expert; however, would you just  
briefly describe your educational background for us?

A. I've got an associate degree in farm crops

1 management. I've got a bachelor's degree in  
2 agricultural economics, a master's degree in hydrology  
3 from the University of Idaho.

4 Q. Can you, please, also describe your work  
5 history on water issues.

6 A. Yeah. So I farmed, I irrigated with  
7 groundwater and surface water, I served on the canal  
8 board. As a member of the canal board, I prepared  
9 the -- our little tiny canal company's adjudication  
10 claims.

11 I later went to work for Idaho Department of  
12 Water Resources, first measuring discharge wells in the  
13 Magic Valley and then in the Mud Lake area and also west  
14 of Idaho Falls.

15 After that I worked for Idaho Department of  
16 Water Resources making adjudication recommendations in  
17 the Snake River Basin Adjudication.

18 I went to work as a hydrologist for the  
19 University of Idaho doing the water budgets for the  
20 ESPAM models from 2001 through about 2010. During that  
21 time, I did subcontract work under Water District 1  
22 doing field examinations for Snake River Basin  
23 Adjudication claims.

24 And then in 2010, I transitioned to the  
25 private sector. I've done water rights work, landfill

1 work, flow measurement work, all related to water  
2 resources.

3 Q. Okay. And are you still in the private  
4 sector?

5 A. Yes.

6 Q. Who's your employer?

7 A. Rocky Mountain Environmental Associates is the  
8 company. In this matter, Rocky Mountain is employed by  
9 the Bonneville-Jefferson Ground Water District.

10 Q. And what's your current occupation or title?

11 A. My occupation is a hydrologist. My title is  
12 principal hydrologist.

13 Q. Have you ever previously been identified as a  
14 witness in an IDWR proceeding?

15 A. Yes.

16 Q. About how many proceedings have you been a  
17 part of?

18 A. Probably eight or ten, including both water  
19 right matters and some, you know, private district court  
20 things that related to water but not before IDWR, and I  
21 haven't parsed it out.

22 Q. For the record, were you invited to  
23 participate in what's been referred to as the 2022  
24 technical working group for this matter?

25 A. I was not.

1 Q. Okay. So you're coming in fresh and having to  
2 review some of this information?

3 A. Yes.

4 Q. You had already stated you're here  
5 representing Bonneville-Jefferson Ground Water District;  
6 correct?

7 A. Yes.

8 Q. Were you asked to create an expert report for  
9 this proceeding on their behalf?

10 A. Yes.

11 Q. Okay. And has that report been provided?

12 A. Yes.

13 Q. Will you please turn to Exhibit 500.

14 Yeah, there should be three copies.

15 COURT REPORTER: And if you can guys can slow  
16 down a little bit, please.

17 MR. JOHNS: I thought I was going slow. I'll  
18 try.

19 THE WITNESS: We're trying to go slow in an  
20 expedited manner.

21 MR. JOHNS: Being concise in an expedited  
22 matter.

23 Q. (BY MR. JOHNS) Could you please identify the  
24 document that's in front of you.

25 A. It's my expert report. It has a long title,

1 but it's my report.

2 Q. Okay. And can you please identify what you  
3 were asked to do in this report.

4 A. So I was asked to do just four things, kind of  
5 a subset of all of the issues:

6 I was asked to look at the technical arguments  
7 made by the Department to justify the change to a  
8 transient modeling.

9 I was asked to review the purposes of the  
10 ESPAM models and technical opinions regarding the use of  
11 those models.

12 I was asked to talk about the possible  
13 application of source water fractions to address the  
14 supplemental water question.

15 And then I was asked to talk about logical  
16 consistency in the use of transient modeling and in the  
17 use of steady state modeling.

18 Q. Okay. So did you review the Fifth Methodology  
19 Order -- and I believe that is marked as Exhibit 300 --  
20 and then the 2023 As-Applied Order, which I believe  
21 that's -- did you review those documents?

22 A. So I did a cursory review of the entire  
23 document, and then I focused on the parts relating just  
24 to these issues.

25 Q. What information did you look at in

1 preparation for this report?

2 A. I looked at old documents that I had prepared  
3 when I worked at Idaho Water Resources Research  
4 Institute. I looked at additional information prepared  
5 by others from the IDWR website related to the ESPAM  
6 modeling. I looked at some prior orders in this matter.  
7 We can look back here. Those are the primary ones that  
8 I relied on. I looked at a document that I had prepared  
9 in a Rangen proceeding.

10 Q. And is the information pertaining to those  
11 documents provided in your report or cited in your  
12 report?

13 A. It is.

14 Q. Will you please generally describe the  
15 conclusions in your report.

16 A. So I'd like to just quickly go to -- I think  
17 it's page 30.

18 Q. Okay.

19 A. So the first two opinions -- and I wish I had  
20 numbered these -- were regarding the factual reasons  
21 given in the Fifth Order. And my conclusion was that  
22 those reasons are not factually correct; and that,  
23 therefore, I don't know what the actual reasoning was,  
24 and I cannot evaluate the actual reasoning.

25 The next point, the third conclusion is that

1 the use of ESPAM modeling is technically defensible when  
2 the use of the model is tempered both by the knowledge  
3 of the ratio of the relief provided and the burden to  
4 generate that relief and the precision of the model for  
5 the question being answered.

6 The next two are the response to the question  
7 about supplemental groundwater, and it's, essentially,  
8 the same thing. The argument's presented in the order I  
9 found not to be factually correct, and so I can't speak  
10 to the actual reasoning for that decision.

11 And then the last three talk about the --  
12 well, let's see -- no, the next one talks about the  
13 effect. I talk about the multiplier effect of the  
14 consequence of ignoring the supplemental use.

15 The last two, then, talk about the consistency  
16 between the time frame of the modeling, the question  
17 being asked, and essentially there's two conclusions.  
18 One is that if you calculate the obligation one way and  
19 partition it another, then you could -- it can result in  
20 a party being responsible for more mitigation than their  
21 curtailment could have possibly generated.

22 And then the last one I think is probably the  
23 most important, is that technical methods exist to make  
24 a technically coherent alignment between the problem  
25 that's trying to be solved and the tools that are

1 available to address the problem.

2 Q. And the reasons justifying those conclusions  
3 are provided in your report; correct?

4 A. They are. And -- yes.

5 Q. And you and I had spoke earlier. Have you  
6 identified any mistakes or corrections that we need to  
7 make on the record that you located in your report after  
8 it was submitted?

9 A. Yeah. I -- the most important one is on  
10 page 29, I think. I refer to a figure -- the second  
11 full paragraph on page 29 -- "visual inspection of  
12 figure R16," I did not get that figure into the report,  
13 but it is presented as Exhibit 511. And I'm sure there  
14 are some typos that I've not yet captured.

15 Q. Okay. Just in general, were you able to  
16 perform all the work that you wanted to perform in this  
17 report?

18 A. No.

19 Q. Can you identify just some general technical  
20 subject matters that you would have liked to have gotten  
21 into?

22 A. Well, certainly, I would have liked to have  
23 reviewed the things that Mr. Sullivan and Ms. Sigstedt  
24 reviewed that I didn't even address. But within the  
25 topics that were assigned to me, I would like to have



1 further explored the implications of transient modeling  
2 of ESPAM2.2 in regard to this question of assigning  
3 responsibility and in regard to the question of the  
4 logical consistency between transient and steady state.

5 I tried to do some exploration for the second  
6 purpose, which was to generate a technical opinion  
7 regarding the use of the model. I would have liked to  
8 have further explored work that's been done by others  
9 and some original work regarding anticipated precision  
10 and uncertainty of the ESPAM2.2 model.

11 Q. And was that work not performed due to time  
12 constraints?

13 A. That's correct.

14 Q. Would it have improved your analysis in  
15 reviewing the Fifth Amended Methodology Order and  
16 preparing for this hearing?

17 A. It certainly would have made me -- made my  
18 analysis more solid, more coherent, given me more  
19 opportunity to be sure that I had not missed something  
20 in the analysis. It may also have enabled me to  
21 generate additional insights that might have been  
22 useful.

23 Q. I want to talk briefly about your involvement  
24 with the ESPAM modeling and your experience at IWRRI.

25 Can you please describe what work you

1 performed related to ESPAM while you worked at IWRRI?

2 A. So while I was at IWRRI, my assignment and the  
3 reason I was hired was to be responsible for the water  
4 budget input to the model, and so that is all of the --  
5 we call them "goes ins" and "goes outs," all the sources  
6 of water and all of the sources of withdrawals from the  
7 aquifer with the exception of the interaction of the  
8 Snake River.

9 While I was there, I also generated scenarios  
10 using the model after it was -- after the model was  
11 developed, first, to the ESPAM1.1 and 1.1 and then to  
12 some extent with the ESPAM2.0 model.

13 The other thing that I did was I ended up  
14 having a substantial role in providing transparency  
15 through presentations to the Eastern Snake Hydrologic  
16 Modeling Committee and in writing design documents.

17 Q. And did you make presentations to the  
18 Department regarding the ESPAM model?

19 A. I did to the extent that the Department  
20 personnel were involved in the ESHMC modeling committee.

21 Q. And was a report generated for that or some  
22 sort of a document generated?

23 A. So there were many documents. I think the one  
24 that I referred to in this report was a specific report.  
25 IWRRI was asked, and I was tasked to be the lead on

1 assessing what would be the implications of using the  
2 ESPAM model, and this was initially the ESPAM1.0 model,  
3 in assessing the effects of curtailment of groundwater  
4 rights.

5 Q. Did your analysis include an analysis of  
6 transient modeling?

7 A. It did.

8 Q. And to your knowledge, has that information  
9 changed over time, at least the findings with regard to  
10 transient modeling?

11 A. So qualitatively, nothing has changed. And a  
12 good part of my report wades through individual findings  
13 that were in that 2006 document. But -- you know, but  
14 the nutshell is, there's nothing known now about  
15 transient modeling that was not known then. Different  
16 versions of the model produced different results, and so  
17 those have changed, but qualitatively, nothing has  
18 changed.

19 Q. And you've been present -- just for the  
20 record -- you've been present this -- since Tuesday when  
21 this hearing began and listened to the testimony that's  
22 been presented by the witnesses?

23 A. Yes. You know, I've stepped out a time or  
24 two, but I've been here the whole time.

25 Q. And so I think that this -- I want -- again, I

1 want to be concise. I think that some of the arguments  
2 on this have already been presented, but do you agree  
3 with the statement that the technical justifications for  
4 moving from -- or do you agree with the Department's  
5 technical justifications for IDWR moving from steady  
6 state to transient as they're presented in the Fifth  
7 Methodology Order?

8 A. I do not.

9 Q. And do you agree that with -- I believe it was  
10 with Ms. Sukow -- I don't want to mischaracterize her  
11 testimony, but I think she said that the decision was  
12 not technical to move from the steady state or to  
13 transient; is that correct? Or is that your  
14 recollection of her testimony?

15 A. That sounds about like what she said. So if  
16 there were technical reasons, number one, they have not  
17 been revealed, to my knowledge; and number two, I can't  
18 think of any technical reasons.

19 Q. Well, I won't belabor that point, but have the  
20 reasons -- or have your reasons for your conclusion with  
21 regard to the technical justifications for transient  
22 been provided in your report?

23 A. Yes.

24 Q. Okay. Is there anything else that you'd like  
25 to add on the technical justifications for transient?

1           A. I think just qualitatively that either steady  
2 state or transient could be, technically, justifiable if  
3 the entire package were considered, if all the  
4 implications of either type of modeling were considered.

5           Q. And I think we're going to talk about a couple  
6 of those. We'll dig into them. So we'll move on to --  
7 let's grab -- I think it's Exhibit -- the Fifth  
8 Methodology Order, is that Exhibit --

9           MR. WOOD: 300.

10          MR. JOHNS: 300?

11          MR. WOOD: Yeah.

12          MR. JOHNS: If we could grab a copy of that.

13          THE WITNESS: Here we go.

14          MR. WOOD: Did you find it?

15          THE WITNESS: I did. At least it has the  
16 right number on the cover. Okay, yes.

17          Q. (BY MR. JOHNS) Could you turn to page 30 of  
18 the Fifth Methodology Order.

19          A. Page 30?

20          Q. Yeah. And could you read Finding of Fact 83,  
21 please.

22          A. "Merriam-Webster's Dictionary defines  
23 steady-state as, 'a state or condition of a system or  
24 process that does not change in time.'" And then  
25 there's a citation.

1            "A steady-state ESPAM simulation can only  
2 model increases in aquifer discharge to the Snake River  
3 resulting from continuous curtailments of an identical  
4 magnitude and location until the impacts of curtailment  
5 are fully realized. For example, a steady-state  
6 analysis of the curtailment of 1,000 acres, assumes that  
7 irrigation of the same 1,000 acres is curtailed every  
8 year at the same rate of consumptive use until the  
9 impacts of that curtailment reach a steady state or no  
10 longer change from year to year."

11            Q. What's your professional reaction to Finding  
12 of Fact 83?

13            A. It's twofold. First, there's some  
14 embarrassment that I may have precipitated this line of  
15 thinking in my 2006 report. And then second, it's not  
16 technically correct.

17            Q. How so?

18            A. So steady state can be used to describe a  
19 cubic-feet-per-second effect, or it can be used to  
20 describe an acre-foot effect. And in the 2006 report, I  
21 did use steady state on a cfs basis, and there are ways  
22 of construing that that would make this statement true  
23 in that context. But in the context of a curtailment,  
24 it's an acre-foot basis.

25            And I think, if you were to -- you know, so

1 1,000 acres, so that's 2,000 acre-feet per year. If you  
2 curtail 2,000 acre-feet per year for an infinite period  
3 of time, the accrual to the Snake River would be  
4 infinite, and that's not what a steady state model would  
5 show you. A steady state model would show you that if  
6 you curtailed 2,000 acre-feet, it would show you that  
7 2,000 acre-feet were expressed at various points on the  
8 river, and it would estimate where those points were.

9 Q. What would you include in the definition to  
10 make it more accurate?

11 A. So may I refer back to Exhibit 500?

12 Q. Yes.

13 A. Towards the end, I edited it. And if you find  
14 the page before I do --

15 Q. I believe page 12, page 12, Exhibit 500.

16 A. Are you ready for me?

17 Q. Let the --

18 A. Yeah.

19 Q. -- folks get there.

20 Go ahead.

21 A. So I won't read all of this struck material;  
22 I'll only read what I retained and what I added.

23 "Merriam-Webster's Dictionary defines  
24 steady-state as 'a state or condition of a system or  
25 process that does not change in time.'" And then some

1 citations.

2 "A steady-state ESPAM simulation based on  
3 input values of acre-feet of curtailment can only  
4 indicate total acre-feet of accrual to modeled reaches  
5 of the Snake River and tributary springs resulting after  
6 the effects of curtailment have been fully realized.

7 "For example, a steady-state analysis of the  
8 curtailment of 1,000 acre-feet would indicate where the  
9 1,000 acre-feet of accrual eventually would be expressed  
10 but would not describe the timing of arrival of  
11 accruals."

12 Q. So in your opinion, the definition of steady  
13 state, as it appears in the Fifth Methodology, is  
14 technically incorrect?

15 A. As applied to acre-feet, it is technically  
16 incorrect.

17 Q. Can you please turn to page 11 of your report.  
18 And I'm looking at Figure R7.

19 Do you see that?

20 A. Yes.

21 Q. Can you explain what Figure R7 shows?

22 A. Figure R7 is from that 2006 product that we  
23 produced for IDWR, and each line represents the  
24 transient effects of an ongoing curtailment activity  
25 corresponding to the priority date there in the legend.



1 And the little symbols that are there on the very right  
2 represent the equivalent steady state result from that  
3 same curtailment date. And what it shows is that over  
4 time, the transient modeling does approach the steady  
5 state result.

6 And this figure doesn't show it, but the fact  
7 is that if you could run transient out to eternity, then  
8 it would exactly equal the steady state result.

9 Q. So could you explain how transient and steady  
10 state are being used in the Methodology Order?

11 A. So the order itself, as I read it, specifies  
12 that transient will be used to determine a priority  
13 cutoff date. I didn't find it. And again, I was  
14 time-constrained. I didn't find in the Methodology  
15 Order a specification of how steady state would be used,  
16 but in the As-Applied, I found that it was used to  
17 assign responsibility specifically between the parties  
18 that have mitigation plans and those who do not.

19 Q. What about steady state?

20 A. So I'm sorry, if I misspoke, in the  
21 As-Applied, that's how steady state was used.

22 Q. Okay. And transient is for calculating the  
23 priority date?

24 A. So in the Fifth Order and then the As-Applied,  
25 transient was used to calculate the priority date, and

1 then steady state was used to assign responsibility, as  
2 I read those.

3 Q. Responsibility for mitigation?

4 A. I believe that was -- yes, I believe it was  
5 responsibility for mitigation.

6 Q. In your opinion, are the different uses of  
7 steady state and transient in the Fifth Methodology  
8 Order technically defensible?

9 A. They aren't, both because in neither case is  
10 the entire picture considered, but also because they  
11 fundamentally speak to different goals or processes. So  
12 the transient, you know, just by the nature of it, would  
13 be an appropriate tool if you were considering  
14 short-term effects. Transient -- or steady state, by  
15 the nature of it, would be appropriate if you're trying  
16 to consider long-term cumulative effects.

17 It appears that the Fifth Methodology Order is  
18 focused on short-term effects, and, yet, the As Applied  
19 still used a tool more appropriate for long-term  
20 effects. And, you know, either the goal is this or it's  
21 this, and they're not the same thing.

22 Q. In your review of the Fifth Methodology Order,  
23 were you able to identify any of the stated goals for  
24 steady state or transient?

25 A. So there was discussion of a goal of transient

1 to try to achieve in-season. I think there was --  
2 within the season of use there was a five-month period  
3 that was the stated goal for transient. I did not find  
4 reference to the prior goal for use of steady state.

5 Q. So is it your opinion that there's kind of  
6 conflicting goals that are going on by the way steady  
7 state is being used and transient is being used in the  
8 Fifth Methodology Order?

9 A. So in the order itself, only transient is  
10 specified. The As-Applied creates the tension because  
11 the As-Applied uses both.

12 Q. So is it fair to say, to be technically  
13 correct, you would need to use transient to do both or  
14 steady state to do both calculations?

15 A. That's my opinion, yes.

16 Q. And that's not how it's being done this year?

17 A. That's correct.

18 Q. What's your understanding of the original  
19 purpose of the ESPAM tool?

20 A. So it was originally designed to aid IDWR both  
21 in planning and in administrative questions. Although,  
22 I think the word used in most of the reports was  
23 "management." I think, from having been there, the  
24 intent really was administration, even though the word  
25 used was "management."

1 Q. Has that purpose changed over time?

2 A. Not to my understanding.

3 I think the tool has been -- when I was  
4 debating whether to go work on the tool, an attorney  
5 said, "Don't worry. As soon as an appropriate misuse is  
6 identified, it will be misused."

7 But I think that the primary purposes are  
8 still the same, to inform planning and also to inform  
9 administration.

10 Q. Okay. In your report you refer to some -- I  
11 believe you referred to them as "precautions," where you  
12 identified precautions or factors that need to be  
13 considered when using the ESPAM when calculating surface  
14 water shortfalls.

15 Could you summarize what some of those  
16 precautions or factors may be and why?

17 A. Yeah. So the question, when you ask is this  
18 the best tool or is this an appropriate tool, you have  
19 to consider the suitability of the tool for its purpose.  
20 And, you know, if all I have in my toolbox is a crescent  
21 wrench, that may be the best tool I have, but it's still  
22 not useful for all purposes. For instance, it's not  
23 good for turning a Phillips-head screw.

24 So there are two different ways that I  
25 approach this question of the appropriateness of using

1 the model. And one is twice during my tenure within the  
2 ESHMC, the Eastern Snake Hydrologic Modeling Committee,  
3 the committee has been asked to provide a statement on  
4 appropriate uses of the model. Neither time were we  
5 able to come to consensus.

6 The first time we assembled what we called a  
7 white paper, which was really an anthology of statements  
8 from various members. The second time various members  
9 prepared statements, but the anthology wasn't even  
10 assembled. And in that process, there were divergent  
11 views, but they ranged from use of the ESPAM model for  
12 administration is technically indefensible to it can be  
13 used and described some narrow circumstances.

14 The Eastern Idaho Water Rights Coalition gave  
15 a more thoughtful -- I don't know if it was more  
16 thoughtful, but, certainly, a more lengthy response that  
17 talked about matching the precision of the model to the  
18 precision of the work -- the results needed and pointed  
19 out that the precision of the model depends upon the  
20 discretization of the question that's being asked. So  
21 that's one set of input to that question.

22 The other is I just looked at -- every version  
23 of the model has been, in its day, the best available  
24 science. And I looked at the important result of the  
25 model for this proceeding, which is the short-term

1 prediction of accruals to the near Blackfoot to Neeley  
2 -- or maybe it was the near Blackfoot to Minidoka  
3 reach -- combined reach.

4 And what I found is the two subsequent best  
5 available sciences in that short time period differed by  
6 a factor of more than five. That was one.

7 And then the other is that since ESPAM2.1, the  
8 reports have included an R-squared statistic on the  
9 ability of the model to meet short-term targets -- the  
10 model and its input data to meet short-term targets for  
11 each modeled reach. And what I found is that the  
12 ESPAM2.2, for the near Blackfoot to Neeley, the  
13 R-squared is .42, which means the model is capable of  
14 explaining about 42 percent of the variability observed.  
15 From Neeley to Minidoka, the R-squared is less than 0.1,  
16 which means that it's less -- it explains less than  
17 1 percent of the variability.

18 So those -- and if you're going to use the  
19 model to predict something that's as important as the  
20 water supply for the Surface Water Coalition, to me  
21 those are frightening degrees of difference from one  
22 best available science to the next, and then within the  
23 current best available science, a disappointing ability  
24 to perform to the very thing that it's being asked to  
25 predict.

1 Q. And is it fair to say that the problem that  
2 it's being asked to predict in the context of this water  
3 delivery call is short-term problems, in-season demand  
4 problems?

5 A. That's my understanding.

6 Q. Does the ESPAM have short-term or is it more  
7 of a mid- to long-term response time?

8 A. So the aquifer itself, unless you're talking  
9 about a few locations very near the springs or river, if  
10 you're talking about the aquifer as a whole, the  
11 groundwater irrigated acres as a whole, the response is  
12 medium to long to perhaps very long-term.

13 Q. To your knowledge, does the Fifth Methodology  
14 Order specify minimum precision and accuracy criteria  
15 for the use of the ESPAM?

16 A. I couldn't find it.

17 Q. Is there a metric available that you could  
18 measure ESPAM precision and accuracy that you're aware  
19 of?

20 A. Well, so for this particular prediction, which  
21 is the one important in this question, the R-squared  
22 would be the useful statistic. There are additional  
23 modeling statistics that could be reviewed, but that  
24 would be a very useful and convenient one.

25 Q. Okay. And I believe Matt Anders and

1 Greg Sullivan, and I believe perhaps Sophia did as well,  
2 discussed the R-squared values.

3 Could you just briefly describe your  
4 understanding of the R-squared values and how that's  
5 important in evaluating this type of model?

6 A. Yeah. So, you know, fundamentally the  
7 R-squared shows how much of the observed variability can  
8 be explained by the model and the data, the equation and  
9 the data, the process and the data that are being used  
10 to estimate whatever the observed thing is. So it's --  
11 R-squared of 42 means 42 percent of the variability is  
12 explainable.

13 Q. What level of precision and accuracy does the  
14 ESPAM2.2 have when using it to determine monthly  
15 estimations of the effects of the near Blackfoot to  
16 Minidoka reach? And you have already said this.

17 A. Yeah, so that's basically that 42 percent. It  
18 can explain 42 percent of that short-term variability.

19 Q. Do you believe there's a technical basis to  
20 set that minimum tolerance level and provide some  
21 criteria for that?

22 A. There are. And I have not explored them  
23 exhaustively, but, you know, for different types of data  
24 there are different typical thresholds. I would think a  
25 .5 would be useful in this, which is lower than the



1 R-squared for the Twin Falls regression that everyone  
2 seems to be concerned about. But I still think in the  
3 modeling context that could be a useful criteria.

4 Q. Do you believe it's a policy question of  
5 whether to set that, or is there technical -- is there a  
6 technical basis that would inform that policy decision?

7 A. So it is a policy decision. And, you know,  
8 ideally, you would make the decision based upon the  
9 gravity of the prediction being made and then you would  
10 look to see if the candidate tools are capable of  
11 meeting that. I think it would be tempting to do it the  
12 other way, "Well, we want to use this tool. Let's set  
13 our criterion so this tool passes." I don't like that  
14 kind of science.

15 Q. What kind of technical work could inform the  
16 policy decision establishing minimum criteria?

17 A. So a broader exploration of typical model  
18 precision -- you know, again, the technical work, the  
19 gravity of this situation -- of this prediction in terms  
20 of whether or not the calculated relief will take care  
21 of what the Surface Water Coalition needs, the gravity  
22 of the much larger effort that has to be made by  
23 groundwater users to provide that relief, those together  
24 could inform on the one hand what's attainable, on the  
25 other hand what would be necessary to justify and to

1 support the gravity of the decision being made.

2 Q. I think you touched on or you at least  
3 addressed the best available science standard. My  
4 question, I guess in follow-up to that, is the best  
5 available science standard as you understand it within  
6 your range of scientific tolerance, so to speak?

7 A. Help me understand. I'm not tracking what  
8 you're trying to ask.

9 Q. So is best available science in your work, if  
10 you were to make a recommendation as a scientist, is  
11 that good enough for you? I think you touched on this.

12 A. Oh, okay. No, it's not. I think that two  
13 things are required: It has to be the best available,  
14 and it has to be good enough to address the question at  
15 hand, both in its ability to provide an answer and in  
16 the gravity of the -- you know, if someone asks me what  
17 do you think about "X," I'm really comfortable, and it's  
18 just casual conversation shooting from the hip. But if  
19 someone's livelihood depends on it, if I get this answer  
20 wrong, they won't have enough water to irrigate with.  
21 I'm not comfortable shooting from the hip. And that's  
22 the kind of process, thought process, I would go  
23 through.

24 The other thing that's important is that paper  
25 from Roger Warner, Eastern Idaho Water Rights Coalition,

1 that I referred to, points out that the precision of the  
2 model depends upon the kinds of questions that are being  
3 asked. And if you've got a model that cannot answer a  
4 very specific question, if you can reformulate the  
5 question more broadly, and if that means reformulating  
6 the policy or the action that that is informing more  
7 broadly, then you can greatly improve your confidence  
8 that your results are meaningful and will provide the  
9 needed relief.

10 Q. And I want to talk about that with you, Bryce,  
11 because, again, we've identified there's some issues  
12 with, you know, the criterion and that.

13 But can you provide any suggestions on how to  
14 improve, I guess it would be, the R-squared value of the  
15 ESPAM, things that the Department should look at?

16 A. Yeah. So Sophia talked about many of her  
17 recommendations that have been made in the Eastern Snake  
18 Hydrologic Modeling Committee. And, you know, the  
19 bottom line is that to get the R-squared value better,  
20 the model has to get better. And I agree completely  
21 with Ms. Sigstedt that we've put as much lipstick on  
22 this single-layer pig as this single-layer pig can wear,  
23 and we need to make an advance in our structural  
24 representation in our conceptual model before we're  
25 going to get to meaningful improvement.

1           The other thing that Ms. Sigstedt said that I  
2 think is very important is that you can overfit a model,  
3 and some of that 42 percent of variability that the  
4 statistic says the model is able to predict, as  
5 Ms. Sigstedt said, it may be getting the right answer  
6 for the wrong reason, and it can only get that answer  
7 when it's spoon-fed the data that were used to build it.  
8 And if you want independent data to actually make a  
9 prediction, that 42 percent number may be an  
10 overestimate.

11           But either way, there's ongoing technical work  
12 that can be done, it is being done, IDWR is striving  
13 hard, and I think there are things that can be done to  
14 improve it.

15           Q. Just briefly, can you explain in your report,  
16 you refer to ratios of relief to cost. You touched on  
17 this, but can you just kind of summarize that again what  
18 you mean by ratios of relief to cost?

19           A. Yeah. And so I'm not talking about an  
20 economic valuation. We've heard that that's not  
21 appropriate. But it's clear from a lay reading of not  
22 only the conjunctive management rules but the order  
23 itself that there is a need to maximize the use of the  
24 state's water resources and that there is a need to  
25 secure the maximum benefit to the state from its

1 resources.

2 And so as a ratio of beneficial use -- for  
3 instance, if you had 1 acre that was mischaracterized as  
4 being irrigated by surface water, and so you have  
5 calculated a shortfall to supply that acre, and in  
6 reality that acre didn't need any surface water because  
7 it was applied by groundwater, that acre requires --  
8 we've heard 5.8. For simple math, I'll round it to  
9 5 acre-feet of water. We're going to go out on the  
10 plain somewhere and curtail groundwater to supply that  
11 5 acre-feet.

12 But even if we could be 100 percent, if we  
13 could have a pipe from the groundwater user to that acre  
14 because groundwater users, as Mr. Carlquist testified,  
15 divert so much less, now we're going to have to have 2  
16 or 3 acres of groundwater beneficial use to be curtailed  
17 to supply this 1 acre of beneficial use that's not  
18 needed.

19 Now we add in the fact that where you are on  
20 the plain, only a fraction of your -- of the groundwater  
21 pumping that's curtailed or foregone will actually  
22 accrue to that reach. On average, across the plain, now  
23 you've doubled that 3 acres to 6. There's some place s  
24 where you go -- it's an incredibly large number because  
25 there's such small effect.

1           Now, if you add in the fact that now we insist  
2           that this entire benefit accrue in this narrow period of  
3           time, to get that one -- you know, to get the effect of  
4           those 6 acres, we have to curtail ten times as many. So  
5           now we're -- we've -- because we've been unable to  
6           identify this 1 acre that actually has no need, we've  
7           erroneously removed 60 acres of beneficial use.

8           That's the multiplier effect that I'm talking  
9           about, and it applies to any imprecision that causes the  
10          calculated shortfall to be larger than the Surface Water  
11          Coalition's actual need.

12          Q. Okay. And did you have time to look into some  
13          specific things or adjustments that could be made in the  
14          model that could account for or address that issue of  
15          ratios of relief to cost?

16          A. So I did not. Except that conceptually the  
17          model can refine what that ratio is, but the ratio  
18          exists because of the physical characteristics of the  
19          aquifer. It's really independent of modeling. Modeling  
20          is only a tool used to estimate the magnitude of that  
21          effect.

22          Q. So it's something you weren't able to get  
23          into, but if I under your testimony, the ESPAM is  
24          capable of performing such analysis -- or you're capable  
25          of --

1           A. So the aquifer actually causes the effect.  
2 The model, within its limits of precision, can estimate  
3 those effects.

4           Is that -- did I answer the right question?

5           Q. I think that's the answer to the question I  
6 meant to ask you.

7           A. Okay.

8           Q. I want to talk to you about supplemental water  
9 use, and I believe Greg has discussed this, Sophia. I  
10 mean, it's been, you know, discussed quite a bit, so I'm  
11 just going to kind of move around on a couple of  
12 questions throughout here.

13           But could you turn to page 10 of the Fifth  
14 Methodology Order. And in the interest of being  
15 concise, could you just -- I'll just note that we're  
16 looking at page 10, Finding of Fact No. 23.

17           A. Yes.

18           Q. Could you just skim that?

19           A. Yeah, so -- okay.

20           So what I read is that there are areas of  
21 supplemental groundwater supply. It is allowable to  
22 consider that but that the information available to the  
23 Department is not sufficient to make that determination.

24           That's what I read there.

25           Q. Okay. So is it fair to say that the Fifth

1 Methodology Order didn't consider supplemental  
2 irrigation?

3 A. Only to the extent to acknowledge that it  
4 could be, but did not actually do that.

5 Q. What implications are there by not considering  
6 supplemental irrigation?

7 A. So it's exactly this multiplier effect, that  
8 if a piece of ground actually is not irrigated by  
9 surface water, then there's no need to provide surface  
10 water to support that acre. And if we erroneously try  
11 to support that acre, then depending where on the plain  
12 that reduction or curtailment has to take place, we're,  
13 you know, perhaps, as much as 60 times the reduction of  
14 beneficial use for something that actually is not  
15 needed.

16 Q. I believe it was Greg Sullivan who stated that  
17 he believes there's a framework where you could consider  
18 supplemental groundwater use.

19 Do you agree with that statement?

20 A. Yes, very much.

21 Q. Have you identified in your report any  
22 documents or anything that speaks to -- or provides  
23 frameworks for supplemental groundwater use?

24 A. Yes. There's -- I think I made four  
25 references. Three of them are to modeling reports that



1 provide thumbnail sketches. One of them, I think the  
2 most important one, is to a design document that I and  
3 Paul Pelot prepared. So this --

4 Q. Just is that the determination of source  
5 irrigation water?

6 A. Yes. Yes. So that would be --

7 Q. Exhibit 515, I believe, is what that is.

8 A. Yes. And I don't think I need to refer to it  
9 to just tell you in a nutshell.

10 So in a nutshell, I spent hours and hours and  
11 hours over several years wrestling and refining this  
12 because that was my job at Eastern Idaho -- at IWRRI  
13 was -- and this is an important part of the water  
14 budget, of the -- I think others have talked about the  
15 general methods, the general data that are available. I  
16 think the important thing that I can add from that  
17 exhibit -- whatever the number you said --

18 Q. 515.

19 A. Okay. -- is that to refine our understanding,  
20 for things we could not tell any other way, we developed  
21 a statistically valid sampling of 300 points, which is a  
22 pretty robust dataset across the plain. And I trained  
23 Mr. Pelot, and we funded him, and he went and looked at  
24 these points individually. And the point of that is  
25 that was not an onerous task. And we did that, you

1 know, over -- that part of it we did just over part of a  
2 summer.

3 And so there are robust methods that are  
4 available, and there are ways to account for the  
5 imprecision of those methods that are protective of the  
6 senior right. That's the importance of those four  
7 documents.

8 Q. Okay. Could you just describe a technically  
9 defensible adjustment relying on those documents that  
10 you can make the ESPAM for supplemental groundwater use?

11 A. So it would certainly be technically  
12 defensible to use the W-I-M-S [sic], Water Measurement  
13 Information System, data and any groundwater pumping  
14 that was indicated by the WMIS data to occur within the  
15 Surface Water Coalition on acres that they have  
16 identified could immediately be subtracted defensibly.

17 And the reason for that is, is that any kind  
18 of a failure that could occur with the underlying data  
19 in the WMIS -- and I know this from being actively  
20 involved in the first three years of the program that  
21 the groundwater data go into -- any of those failures  
22 will cause the groundwater diversion to be  
23 underreported, which would cause an overestimate of  
24 calculated shortfall. So that's the first part.

25 The second part is that the methods outlined

1 in those documents that we don't want to plow through  
2 will tell how to identify and confirm the places of use  
3 to which those apply.

4 Q. Are there any other frameworks or methods that  
5 are technically defensible that you can provide at this  
6 time?

7 A. For?

8 Q. For supplemental groundwater.

9 A. For supplemental.

10 Those are the only ones that I can think of  
11 right this very minute. I don't think there's anything  
12 else in my report. If there is, I apologize.

13 Q. If you were given more time, would you have  
14 been able to explore that issue more thoroughly?

15 A. Yes.

16 Q. Is that something you wanted to do?

17 A. It is something I very much wanted to do.

18 Q. And due to time constraints, were you barred  
19 from being able to perform that further analysis?

20 A. Yes.

21 Q. Do you think that impacted your testimony at  
22 this hearing?

23 A. It certainly did.

24 Q. In what way?

25 A. I was unable to answer the last question.

1 Q. Do you anticipate if you would have had time  
2 to do the analysis, you could have provided additional  
3 frameworks that could be considered for supplemental  
4 groundwater use --

5 A. I, certainly, would have been able to explore  
6 what other frameworks there are. You know, I don't know  
7 whether that exploration would have led to success.

8 Q. I think you covered that.

9 I think you touched on this, but just for  
10 clarification, what's the implication of neglecting a  
11 single acre of supplemental irrigation within the SWC  
12 service area under the Fifth Methodology Order?

13 THE WITNESS: Are you ready?

14 COURT REPORTER: Yes.

15 THE WITNESS: Okay. Approximately, at least  
16 within the right number of zeros, 60 acres of needless  
17 loss of beneficial use from groundwater.

18 Q. (BY MR. JOHNS) Does the -- well, let me  
19 rephrase it this way: Is it difficult to create the  
20 adjustment for supplemental irrigation, in your opinion?

21 A. No.

22 Q. And is it your opinion that the Department has  
23 sufficient information to create that adjustment and it  
24 will be technically defensible?

25 A. Yes.

1 Q. Does the admission of supplemental water, as  
2 we've been discussing from the Fifth Methodology Order,  
3 make it less technically defensible?

4 A. The omission from -- in my mind, yes, it makes  
5 the Fifth Methodology Order, as a whole, less  
6 defensible.

7 Q. So its inclusion would make it more --

8 A. Yes. Inclusion would make it more defensible  
9 because there's an important factor that's obtainable --  
10 that's obtainable and reliable and that has not been  
11 considered.

12 Q. Okay. I want to shift gears and talk about,  
13 your report identified a couple of consistency issues,  
14 and so I just want to shift gears and talk briefly.

15 Again, I think this issue has been discussed  
16 somewhat ad nauseam, so I don't want to belabor it, but  
17 there was some discussion about accruals?

18 A. Yes.

19 Q. Do you recall those discussions?

20 A. Yes.

21 Q. Do you agree the Fifth Methodology Order does  
22 not make adjustments for accruals for target and  
23 nontarget reaches?

24 A. Yes, I agree.

25 Q. What's your professional reaction to that

1 admission?

2 A. It's a surprise because it's an inherent and  
3 obvious result of the modeling, number one. And number  
4 two, though I'm not a policy expert, I understand enough  
5 about what's trying to be achieved here that it's  
6 surprising that it's not considered in some fashion.

7 Q. Does it distort the calculation?

8 A. It distorts the calculation in every year  
9 beyond the first.

10 Q. Okay. You previously stated the Fifth  
11 Methodology Order uses steady state to partition the  
12 responsibility for mitigation in lieu of curtailment; is  
13 that correct?

14 A. I meant to say that the -- as I read it, the  
15 Fifth Order is silent on the partition, but the  
16 As-Applied indicates that it was used that way, which  
17 itself is a problem. We have an order that does not  
18 describe all the methods that are being used, and that  
19 causes me heartburn, because I can't address them  
20 technically if they're not described.

21 Q. So it's your opinion that the way the steady  
22 state was used in the As-Applied is not specified in the  
23 Fifth Methodology Order?

24 A. I did not find it in the time that I had to  
25 look at it.

1 Q. Okay. And I believe Greg Sullivan may have  
2 addressed this, but for the record, is this approach --  
3 well, I think we covered that already, Bryce.

4 Could you please turn to page 35 and 36 of the  
5 Fifth Methodology Order.

6 A. I am there.

7 Q. And could you please skim Conclusion of Law  
8 No. 21. Once you've done that, do you have a  
9 professional reaction to that conclusion?

10 A. So this is a conclusion regarding a mitigation  
11 plan. My response -- my professional response to this  
12 is that it seems to articulate the ability, and not only  
13 the ability but perhaps a requirement, to use the  
14 modeling tools in a coherent -- in a fashion coherent  
15 with both the ability of the tools, the modeling tools,  
16 and the ability of the administrative instruments that  
17 are used to time frames that match the physical  
18 capabilities. And I think it's technically possible to  
19 do that.

20 Q. In your opinion, was that done?

21 A. In my opinion, it was not done.

22 Q. Can you please discuss any factors that may  
23 affect the precision of estimating the expected relief  
24 and the timing of which it will be realized.

25 A. Yeah. So, primarily, it is the ability of the

1 model itself to accurately estimate. The finer the time  
2 scale or the finer the temporal scale, the less  
3 precision the model is able to actually achieve. And  
4 that's the primary limitation.

5 The other limitation is physical. It doesn't  
6 matter how much I want to get water from Kilgore to  
7 someplace on the Snake River, in a certain time frame,  
8 the physical characteristics of the aquifer make that  
9 impossible.

10 Q. You've talked somewhat about some technical  
11 work that can be performed, but on this point is there  
12 any technical work that could be performed to improve  
13 the precision in this regard?

14 A. So the -- addressing the deficiencies that  
15 Ms. Sigstedt talked about with the conceptual model,  
16 certainly the layering, I have been in the camp that if  
17 you don't have data to support something, don't put it  
18 in the model. I think that's, in some cases,  
19 short-sighted. But the clear response is then the  
20 gravity of these matters for the needs of the Surface  
21 Water Coalition mean that a prudent investment would be  
22 to acquire the data to allow adequate modeling of some  
23 of those additional features that are known to exist.

24 Q. Were you able to perform some modeling? Will  
25 you turn over to page 25.



1 A. You're in Exhibit 500 now?

2 Q. Exhibit 500, yeah.

3 A. Yes.

4 Q. I'm looking through -- you've got Figures R17,  
5 the next page Figure R18, and then a series of figures  
6 that go through page 28. It appears you were able to do  
7 some modeling?

8 A. So R17 and R18 are reproduced from old work;  
9 they have some bearing. R19 through -- yeah, R19  
10 through R21 were new modeling that was done under my  
11 direction by Mr. Kindred of Rocky Mountain  
12 Environmental.

13 Q. And can you please explain what the purpose of  
14 these figures is and how they relate to the findings  
15 in --

16 (Speaking simultaneously.)

17 COURT REPORTER: Okay. Wait. "And how they  
18 relate to"?

19 MR. JOHNS: To the findings in your report.  
20 Sorry.

21 THE WITNESS: So these figures compare the two  
22 most recent best available science versions.  
23 Specifically, they're those models' indication of  
24 responses to the near Blackfoot to Minidoka reach. I  
25 think in all cases, the solid bar represents the

1 ESPAM2.1 results as embodied in the ETRAN 3.3 modeling  
2 tool provided by IDWR. The cross-hatched results  
3 indicate the results from ESPAM2.2 embodied in the ETRAN  
4 3.4 transfer tool. And they show where they are similar  
5 and where they are different.

6 Q. (BY MR. JOHNS) And what conclusions did you  
7 draw from running these analyses from generating these  
8 charts?

9 A. I conclude that if the two successive best  
10 available science models differ by this much, it gives  
11 us some viewpoint -- some view into the window of how  
12 precise can these models be.

13 Figure R19 is the one that I think is most  
14 alarming on a percentage basis. So if we're looking at  
15 a five-month period, four months is a third of the year.  
16 Five months is pretty close to a third of the year. The  
17 first in each graph -- the first bar is the indication  
18 of that model's estimate of the response in that  
19 first -- so in that period of such concern for us.

20 So here from -- in Figure R19, this Row 75,  
21 Column 57, at that location, the new model, you know,  
22 just guessing by how tall those bars are, indicates  
23 about a third of the relief that the old model did. And  
24 if it's important to get relief to the Surface Water  
25 Coalition, that degree of imprecision is alarming.

1 Q. Are there any -- is there any technical work  
2 or any adjustments you could recommend that you haven't  
3 discussed already that would improve?

4 A. Not that hasn't already been discussed.

5 Q. Would you please turn to page 28 of your  
6 report?

7 A. Yes.

8 Q. And I'll just summarize. In your report, you  
9 state that there's a technical analysis that could be  
10 performed to inform a policy decision, answering the  
11 question: "Is it fair to the SWC to use the model to  
12 estimate timing of accruals in the trimester of  
13 curtailment when the two most recent best available  
14 science models differ by approximately a factor of six";  
15 correct?

16 A. Yes.

17 Q. Okay. What technical work could be used to  
18 inform this decision?

19 A. So much of it has been done, but it would be  
20 further exploration of these questions of precision of  
21 the model. That's the first piece.

22 The second piece is relating back to this  
23 finding of fact 21, that it appears to be -- there could  
24 be an ability to adjust the instruments, perhaps adjust  
25 the time frame of consideration of the order to match

1 the ability of the instruments to provide relief to the  
2 calculation or definition of the relief required.

3 Q. Were you able to perform any technical work in  
4 this regard to help inform your testimony?

5 A. Only these limited figures that are shown here  
6 in my report.

7 Q. Okay. Did time constraints prevent you from  
8 performing that work?

9 A. Yes.

10 Q. Okay. If you had the time, would you have  
11 been able to present that at this hearing?

12 A. I would have, and it would have been much  
13 better, because what I presented is not -- it may be  
14 spatially representative, but I don't know that it is,  
15 and I would have been able to perform analyses that were  
16 spatially representative.

17 Q. Would you mind turning over to page 29 of your  
18 report --

19 MR. JOHNS: And we're nearing the end here,  
20 Director. I think I have this, and then I just have a  
21 couple points on rebuttal. We can chug along, or we can  
22 take a break.

23 HEARING OFFICER: We probably should break.  
24 We've been here two hours. Let's take a 15-minute  
25 break. Back at 3:30.

1 (Break taken.)

2 HEARING OFFICER: We are recording.

3 Further questions, Mr. Johns.

4 MR. JOHNS: Thank you, Mr. Director. If I  
5 may, I just have some quick rebuttal I'd like to ask  
6 Mr. Contor from prior witnesses.

7 Q. (BY MR. JOHNS) Bryce, were you present in the  
8 room during the testimony of Jay Barlogi?

9 A. Yes.

10 Q. Barlogi, I believe it is?

11 A. Yeah, I think so.

12 Q. Do you recall a discussion about variations in  
13 irrigated acres?

14 A. Yes.

15 Q. On a 40-acre-tract basis, how much is a  
16 5 percent change?

17 A. It's 2 acres.

18 Q. You have experience in assessing irrigation in  
19 the ground without entering the field?

20 A. I do, starting with my position at the canal  
21 company when I was assigned to prepare the adjudication  
22 claims.

23 And then I worked for the seed company, which  
24 we haven't talked about. I needed to assess what was  
25 going on in each tract around my seed isolations, not

1 for irrigation purposes, but it's the same process to  
2 assess whether they were growing the same crop as my  
3 seed isolation.

4 Then when I was at IWRRI, I did a lot of  
5 windshield surveys to verify irrigated lands data,  
6 source data, and methodology.

7 So I -- and then I did a lot of that, as well,  
8 when I was making -- doing subcontract field  
9 investigation for water right claims in the Snake River  
10 Basin Adjudication.

11 Q. In your experience, is it easy to detect a  
12 2-acre change in a 40-acre tract without entering the  
13 ground or going in the field?

14 A. If you're specifically looking for that and  
15 the topography is right, sometimes you can catch that  
16 but not on a casual basis. On a casual basis, I think  
17 2 acres of change in a 40-acre tract could occur and  
18 you'd never notice it.

19 HEARING OFFICER: Hello. We have somebody  
20 listening in that's not muted, phone number ends in 38.  
21 You're interrupting the hearing. Apparently, they're  
22 off.

23 MS. TSCHOHL: I was able to mute them.

24 HEARING OFFICER: Okay. Thank you, Sarah.

25 I don't like that kind of interruption, and if

1 it continues, I may just exclude people. Okay.

2 MR. JOHNS: Thank you, Mr. Director.

3 Q. (BY MR. JOHNS) Bryce, you were also present  
4 in the room during Ms. Sukow's testimony; correct?

5 A. Yes.

6 Q. Do you recall some of her discussion she had  
7 about steady state, and -- just generally, do you recall  
8 her discussing steady state analysis?

9 A. Yes.

10 Q. Is it true that utilizing a steady state will  
11 not result in realization of the predictive down  
12 shortfall in that irrigation season?

13 A. So I think there's some confusion. The  
14 modeling won't change when the relief arrives. And so  
15 whatever method you use to calculate a curtailment date,  
16 when that curtailment is instituted, most of the relief  
17 will arrive after the irrigation season.

18 A steady state calculation, because it's time  
19 agnostic, will calculate a different number than would a  
20 transient; but in either case, only 9 to 15 percent -- I  
21 think is approximately correct -- is what actually would  
22 arrive. I don't know if that's the question you were  
23 asking.

24 Q. I believe that's the question I was asking.

25 Bryce, you were also present during the

1 testimony of Matt Anders; correct?

2 A. Yes.

3 Q. Do you recall Matt Anders making an assertion  
4 that -- I believe it was not every drain or return flow  
5 from Twin Falls Canal Company is accounted for?

6 A. I do.

7 Q. Okay. What impact does neglecting these  
8 return flows have on the calculated shortfall in the  
9 Fifth Methodology?

10 A. So if an adjustment for returns were to be  
11 made and you omitted a return, that return that got  
12 omitted would cause the calculated shortfall to be too  
13 large. And so if the data are -- the dataset is  
14 incomplete, the data are imperfect, the shortcomings all  
15 work to the benefit of the Surface Water Coalition so  
16 they are conservative.

17 Q. Do you have any other comments about  
18 Mr. Anders' discussion on missing return flow data?

19 A. Only that they have the same multiplier effect  
20 that any other omission would. So if you -- if, because  
21 of omitting return flow calculations, the shortfall was  
22 an acre-foot too high, out on the plain somewhere, you'd  
23 have, you know, approximately 60 acre-feet of beneficial  
24 use that would have to be foregone.

25 Q. How does the omission of this information



1 affect the technical defensibility of the Fifth  
2 Methodology Order?

3 A. It's the same as the other. There's a  
4 relevant bit of technical information that is available  
5 that was not considered, and so it undermines the  
6 credibility of the document.

7 Q. Okay. In your opinion, is there a way to  
8 calculate credit for the return flows in calculating  
9 shortfall?

10 A. So I'm very familiar with all the work we did  
11 in the modeling process to quantify returns. One of the  
12 things I would like to have done would be to understand  
13 the full calculation of shortfall. I don't understand  
14 it well enough to speak to exactly how that would affect  
15 that calculation.

16 Q. During Matt Anders' testimony, do you recall  
17 some discussion about irrigated acreage data?

18 A. Yes.

19 Q. Do you have any personal knowledge about  
20 irrigated lands data that the Department has?

21 A. Yeah. So every irrigated lands dataset that  
22 was created up through when I left IWRRI in 2010 was  
23 under my responsibility, and particularly the transition  
24 to the methodology that's now used, it was my  
25 responsibility to ensure that that method was adequate

1 for the modeling purposes. And so at the time it was  
2 being developed, I was intimately involved in  
3 understanding how it worked in independent verification  
4 of it, and so I feel quite comfortable with those  
5 irrigated lands datasets.

6 Q. Do you have any opinions as to their  
7 sufficiency for determining the irrigated acreage in the  
8 Fifth Methodology?

9 A. Yes. I think that because of the process, I  
10 think they're robust datasets, and I wanted to talk a  
11 little bit about that process. We've talked about a  
12 suite of polygons, the CLU polygons that were used to  
13 identify discrete blocks of land that may have a  
14 different irrigation characteristic. And those came  
15 from the U.S. Department of Agriculture, but they were  
16 hand-modified by IDWR to correspond to aerial imagery  
17 to, again, improve that ability.

18 And then there was a scoring process that used  
19 multiple remote sensing data sources for multiple dates  
20 during the year to score which of these three categories  
21 that it fell into.

22 And then there was an additional  
23 hand-verification process. That's part of the reason  
24 this process is so costly. It's probably my fault  
25 because I raised the issue. We had a spot out in near

1 where I lived at the time that it just happened that  
2 every time the stinking satellite flew, my neighbor had  
3 just cut his hay and his field was showing up as  
4 nonirrigated when, in fact, it was. And pursuing that  
5 led to this additional level of handwork that I think  
6 makes it a very robust dataset.

7 Q. Would it be technically defensible, in your  
8 opinion, to use that data, the irrigated lands dataset,  
9 to determine the irrigated acres in the Fifth  
10 Methodology Order?

11 A. Not only defensible, I think it's the best  
12 available data that could be used.

13 Q. What more can you say about the ability of  
14 IDWR to apply its methodology to the SWC areas?

15 A. I think that the areas where IDWR has said  
16 it's unable to perform a certain analysis, I think there  
17 are robust methods to do that, that when there's  
18 uncertainty either the uncertainty inherently cuts in  
19 favor of the Surface Water Coalition or that an  
20 adjustment can be made.

21 Q. Okay. I want to shift over. And I think this  
22 is -- just have a couple questions left, some for  
23 Sophia, and then I think just a few conclusory ones, and  
24 then we'll be wrapped up here.

25 You were present for Ms. Sigstedt's testimony

1 earlier; correct?

2 A. I was, yes.

3 Q. Sophia, so I don't mess it up.

4 A. Yes.

5 Q. Do you recall her discussion about the  
6 R-squared values?

7 A. Yes.

8 Q. Okay. I just want to ask you a couple of  
9 questions in follow-up to some things she said.

10 What are the consequences of the degrading  
11 R-squared value that Ms. Sigstedt discussed?

12 A. So the consequence is that the prediction is  
13 less reliable, which could cut either way. Either to  
14 make the calculated shortfall inadequate to sustain  
15 Surface Water Coalition needs or cause the required  
16 mitigation or curtailment to be in excess of what was  
17 needed.

18 Q. And do you agree with Ms. Sophia's statement  
19 that there are consequences in neglecting Portneuf and  
20 Blackfoot and Henry's Fork?

21 A. I do, but I think she focused on the potential  
22 harm to the Surface Water Coalition. I think an  
23 important point is that there will be a year when the  
24 snowpack is reversed, that the snowpack above Heise is  
25 high, and that forecast is robust, but all the other

1 areas have reduced snowpack. And in that case, omission  
2 of those data will result in a calculated shortfall that  
3 is too low.

4 Q. Do you agree -- there was a discussion that  
5 Sophia had about the river package. Do you agree that  
6 the river package allows proper representation of the  
7 communication between the river and the aquifer --  
8 allows proper representation of the communication  
9 between the river and the aquifer, given that it is a  
10 layered model?

11 A. So I believe the discussion was relative to  
12 her criticism that the model is not yet a multilayer  
13 model. And the river package and the parameters that  
14 describe the operation of the river package allow the  
15 best representation of the communication between the  
16 river and the model cell that hosts it at the top of the  
17 aquifer. But the river communicates through that cell,  
18 both to the bottom of that cell and then to adjacent  
19 cells, and the river package cannot overcome the  
20 deficiencies of a single-layer model in representing  
21 that broader communication.

22 Q. Have you noticed any themes from the different  
23 witnesses that have been talking about the Fifth  
24 Methodology Order with regard to criterion for minimum  
25 conservatism?

1           A. So a recurring theme is that if you have  
2 multiple components that are each conservative, that  
3 that tends to build and build and build on the  
4 conservatism. And so one comment that I have related to  
5 that is that there are robust mathematical methods to  
6 calculate cumulative effects like that in terms of a  
7 statistical distribution. They're well known, and  
8 they're not difficult to perform.

9           The second is that, as we talked earlier about  
10 criteria, you know, the -- the qualitative criterion is  
11 that it should be conservative. Well, eight times the  
12 need is conservative, so is 100.00001 percent of the  
13 need conservative. If an objective standard of the  
14 appropriate level of conservatism were set, then those  
15 calculations could be applied to ascertain whether that  
16 appropriate level were achieved. Because if the level  
17 of conservatism by this hip-shot method is too low, that  
18 harms the Surface Water Coalition. If it's too high,  
19 that harms the groundwater users. And I don't think  
20 anybody wants to do either of those things.

21           Q. So when you say that "hip-shot" approach, I  
22 mean, are you saying currently there's no way to measure  
23 or determine whether IDWR data in the Fifth Methodology  
24 Order -- or the 2023 As-Applied met any threshold level  
25 of conservatism?

1           A. I don't see that a threshold was identified,  
2 nor do I see any evidence that a calculation was  
3 performed to see if the appropriate level was achieved.

4           Q. Okay. What technical issues may arise from  
5 not establishing these criteria?

6           A. So the technical issue is that these levels of  
7 conservatism can propagate more rapidly into higher  
8 levels than humans are intuitively able to understand.  
9 I do some work for groundwater modeling, and there's a  
10 threshold for the probability of a false positive  
11 occurring in a single year. And sometimes we miss that  
12 criterion by a few points, and we say, ah, you know,  
13 we're close, we're close.

14           But if you calculate those out, in that case,  
15 by missing that criterion only by a few points, you've  
16 almost guaranteed that in the course of 10 or 20 years  
17 you will have a false positive, and the regulatory  
18 implication of a false positive can be severe.

19           Q. Were you able to perform any technical work  
20 that would inform some policy decisions or some  
21 criterion that could be established in this regard prior  
22 to this hearing?

23           A. I started down that road, and I purged that  
24 from my report because I didn't have time to do a good  
25 enough job to present it, you know, where it may have a

1 consequence.

2 Q. Okay. Is it your belief that the -- that that  
3 analysis could have informed the Department on things it  
4 could do to establish some criterion?

5 A. Yes.

6 Q. But you were unable to do that?

7 A. I was unable.

8 Q. Time constraints?

9 A. Time constraints.

10 Q. Very good.

11 Is there any other items in your report that  
12 you would like to present at this time?

13 A. Let me just quickly thumb through here. I  
14 know that we all have other places we'd rather be.

15 There is one.

16 Q. Okay.

17 A. So there's been discussion about when would  
18 the Department have been available to perform analyses  
19 on a one-month basis, and there's two sides to that  
20 question. When would the model have been capable of  
21 performing such analyses. The answer to that question  
22 is since 1999. Actually, there's three.

23 One is when could that have been done with a  
24 model that was calculated on at least that time step --  
25 or stress period. And the 1999 model was, the 2005,



1 2006 models were not. Though they could have been  
2 implemented that way, they were not calibrated that way.

3 The 2013 model was calibrated to one-month  
4 stress periods, so that's the answer of when could it  
5 have been done. The answer to when would it have been  
6 reasonable to do it depends on the criterion of  
7 accuracy, which is an administrative decision that can  
8 be informed technically that, to my knowledge, has not  
9 been made, and so I can't answer that question.

10 Q. And is that relevant to your discussion about  
11 the technical defensibility of moving to transient?

12 A. Yes. And I think there was some confusion in  
13 earlier testimony that may have not been possible until  
14 2021, and the fact is that it's been possible for many  
15 years.

16 MR. JOHNS: At this time I'd like to move to  
17 admit Exhibit 500, Bryce's expert report.

18 HEARING OFFICER: Any objection to the  
19 admission of the document marked as Exhibit 500?

20 Hearing no objection, the document marked as  
21 Exhibit 500 is received into evidence.

22 (Exhibit 500 received.)

23 MR. JOHNS: Mr. Director, I don't have any  
24 further questions at this time. I reserve the right for  
25 any redirect.

1 HEARING OFFICER: Does the groundwater group  
2 wish to question Mr. Contor at all?

3 Mr. Harris?  
4

5 CROSS-EXAMINATION

6 QUESTIONS BY MR. HARRIS:

7 Q. Good afternoon, Bryce. I have just a few  
8 questions about one aspect of your testimony here today.

9 You testified about supplemental groundwater  
10 use in the Methodology Order --

11 A. Yes.

12 Q. -- do you recall that testimony?

13 A. Yes.

14 Q. And as I recall, the Methodology Order doesn't  
15 have any supplemental groundwater use in it currently;  
16 correct?

17 A. There's -- the actual process does not  
18 consider supplemental groundwater.

19 Q. But it says that it may consider it?

20 A. Yes.

21 Q. And based on your employment with IWRRI, IDWR,  
22 and in your private consulting, have you become familiar  
23 with GIS programs?

24 A. Yes.

25 Q. Could you just describe what those programs

1 generally entail?

2 A. So they are computer programs that allow you  
3 to display spatial data in its spatial relationship and  
4 to produce maps. You can perform analyses. For  
5 instance, you could have a spatial representation of  
6 evapotranspiration. You could subtract from that a  
7 spatial representation of precipitation.

8 You could find out -- you could -- if IDWR has  
9 plotted a point in its data, you could see on a map  
10 where that point lies, and you could analyze its  
11 inclusion or exclusion or its proximity to any other  
12 feature of interest.

13 Q. And so a GIS shapefile is a polygon that the  
14 program creates and then talks to the underlying aerial  
15 photo; correct?

16 A. Yes.

17 Q. And different shapefiles or polygons or, you  
18 know, points, and there's also lines; correct?

19 A. Correct.

20 Q. And you're also familiar, through past  
21 experience, on how water rights are described?

22 A. Yes.

23 Q. And that would include a place of use?

24 A. Yes.

25 Q. And in the water right report, it describes it

1 as the number of acres per quarter quarter; correct?

2 A. Most do. Some large ones omit that detailed  
3 listing.

4 Q. Right. And so a shapefile -- so, for example,  
5 if a water right says there's 30 acres authorized to be  
6 irrigated in this 40-acre tract, a shapefile polygon for  
7 the place of use would actually depict which 30 of the  
8 40 are authorized; correct?

9 A. It depends on whether it's a shapefile showing  
10 the actual irrigated parcel or if it's showing a  
11 permissible place of use. So I've seen water rights  
12 where the shapefile draws a boundary, maybe the boundary  
13 is 8,000 acres, and then the water right says within  
14 this box, you may irrigate 5,000.

15 Q. Correct. But on a private decreed -- say a  
16 groundwater right --

17 A. Yes.

18 Q. -- that does not have a permissible place of  
19 use, it would depict, in my example, which 30 of the  
20 40 acres --

21 A. Yes, that's correct.

22 Q. And so in this case there would be -- if there  
23 were groundwater rights within the Twin Falls Canal  
24 Company service area, places of use of those water  
25 rights would be depicted with shapefiles; correct?

1 A. Yes.

2 Q. And would it be difficult, in your view, to do  
3 some sort of a clip or an overlap to see where those  
4 acres overlap with the, say, 2017 shapefile or any other  
5 shapefiles generated by the Department?

6 A. That would be a very straightforward  
7 operation.

8 Q. In fact, my office did it -- would it surprise  
9 you to know it took about an hour to do that?

10 A. Why so long?

11 Q. It's not hard to do; right?

12 A. No.

13 Q. So at a minimum, you'd have a starting point  
14 of which water right places of use overlap with the Twin  
15 Falls Canal Company place of use?

16 A. Yes.

17 Q. And do you agree that would be a starting  
18 point for determining whether there is supplemental  
19 irrigation occurring within the Twin Falls Canal Company  
20 area?

21 A. Yes.

22 MR. HARRIS: I have no further questions.  
23 Thank you.

24 HEARING OFFICER: Other questions from the  
25 groundwater group?

1                   Cross-examination for the Surface Water  
2 Coalition?

3                   Mr. Thompson?  
4

5                   CROSS-EXAMINATION

6 QUESTIONS BY MR. THOMPSON:

7                   Q. Good afternoon, Mr. Contor. Travis Thompson  
8 for A&B Irrigation District, et al. Just a few  
9 questions today, Mr. Contor.

10                  When were you hired by Bonneville-Jefferson  
11 Groundwater District?

12                  A. It was probably December or January --  
13 December of 2020 -- well, we've done work for the  
14 district in the past, and I don't recall when that was,  
15 but I started working in earnest on these issues in  
16 December, maybe November of 2022, maybe as late as  
17 January of 2023.

18                  Q. And do you know, at least for purposes of the  
19 Surface Water Coalition delivery call, did  
20 Bonneville-Jefferson Ground Water District use  
21 Ms. Sigstedt and Mr. Higgs until that time?

22                  A. I don't know. I know that they have used  
23 Mr. Higgs and still do for various functions. I don't  
24 know the nature of their relationship with Ms. Sigstedt.

25                  Q. Have they retained any other consultants, to

1 your knowledge?

2 A. I think that they have. They're working on  
3 some projects unrelated to this that I think they have  
4 other folks working on.

5 Q. Do you know who that is?

6 A. I don't.

7 Q. What sort of projects?

8 A. So one of the project is a --

9 MR. JOHNS: Objection. I'd like to raise an  
10 objection. I think this kind of goes outside the scope  
11 of what was presented on direct.

12 HEARING OFFICER: Well, I think these are  
13 preliminary questions about where Mr. Contor has worked  
14 and for whom. Those were questions that were asked of  
15 him initially. Overruled.

16 Mr. Thompson.

17 Q. (BY MR. THOMPSON) I'm just curious. You had  
18 a list of four projects that you were tasked to do for  
19 this proceeding, and you've referenced they have other  
20 consultants, and you're aware of some projects that are  
21 being worked on. I'm just curious what those are?

22 A. So there's a piping project, there is a well  
23 design project. I don't think they've hired someone. I  
24 made recommendations. My understanding is that  
25 Mr. Higgs continues to perform their hydrographer

1 services. He still performs some analyses for them.  
2 Often I will hear somebody did this task, and I don't  
3 know whether they did it for Bonneville-Jefferson or if  
4 they did it for Idaho Ground Water Appropriators. So  
5 that's the extent of my knowledge.

6 Q. Thank you. Is a diversion volume of  
7 5 acre-feet per acre for a large open canal system in  
8 the Snake River Basin reasonable, in your opinion?

9 A. So it would depend on the system, but it could  
10 be.

11 Q. Is that a common value for canals in Water  
12 District 1?

13 A. I think so.

14 Q. About 7 acre-feet?

15 A. I don't think that's unheard of.

16 Q. How about 10?

17 A. I don't think that's unheard of.

18 Q. Are those values reasonable?

19 A. You know, reasonable depends upon some  
20 criterion. And I think -- I haven't been asked to  
21 evaluate criteria. You haven't provided me criteria. I  
22 think there are criteria under which 10 could be  
23 considered reasonable.

24 Q. And you've testified you're familiar with the  
25 groundwater model and its prior versions; is that



1 correct?

2 A. Yes.

3 Q. You worked on water budgets for the model  
4 while you were at IWRI?

5 A. I did.

6 Q. And you were -- presented those design  
7 documents to the Eastern Snake Plain technical  
8 committee; is that correct?

9 A. Yeah, the ones that I authored, I did.

10 Q. And you have been using the transfer tool that  
11 the Department's created; is that correct?

12 A. I have been.

13 Q. And that tool relies upon the model; is that  
14 your understanding?

15 A. Yes.

16 Q. And that tool looks at impacts to river  
17 reaches?

18 A. Well, so years ago, I was severely chastised  
19 for using the word "impact" because it has legal  
20 meanings. I would say that that transfer tool estimates  
21 effects or accruals.

22 Q. A response from a change in an aquifer  
23 condition resulting to the river, would that be --

24 A. So if a volume of water is put into the  
25 aquifer or removed from the aquifer, the tool estimates

1 when and where that would be expressed at the river  
2 or -- at the parts of the river and springs that are  
3 represented in the model.

4 Q. And has that been an acceptable use of the  
5 model?

6 A. Well, again, it has been accepted -- I've  
7 never liked it, but it has been accepted.

8 Q. And do you use for it for clients in transfer  
9 application?

10 A. I have.

11 Q. Has that been approved by the Department?

12 A. Yes.

13 Q. So you indicate in your report that the 1999  
14 version of the model was created to be, quote, a  
15 planning and management tool; is that correct?

16 A. Yes.

17 Q. And I think you testified earlier with  
18 Mr. Johns that you stated management could be  
19 administration?

20 A. That's my opinion. That's not what was stated  
21 in those documents.

22 Q. So is the term "management" similar to  
23 administration?

24 A. I don't think so. I think they are different,  
25 but it's been my experience that, in Idaho, we use the

1 word "management" when we mean "administration."

2 Q. And the Department's conjunctive management  
3 rules use the word "management"; is that correct?

4 A. They do.

5 Q. So would you agree that the Department has  
6 used the ESPAM model for conjunctive administration for  
7 over a decade?

8 A. Yes.

9 Q. Would you agree that Idaho courts have  
10 approved the Director's use of the model for that  
11 purpose?

12 A. Yes.

13 Q. Would you agree that ESPAM2.2, which I think  
14 is the most current version of the model, can be used to  
15 represent temporary curtailment of groundwater rights?

16 A. Yes.

17 Q. And is that what is referred to as the  
18 transient use of the model?

19 A. Yes.

20 Q. Looking at specific reaches -- and you're  
21 familiar with how that model is calibrated to different  
22 reaches; is that correct?

23 A. Yes.

24 Q. -- would you agree that it's better calibrated  
25 to the near Blackfoot to Neeley reach compared to the

1 Neeley to Minidoka reach?

2 A. Yes.

3 Q. Would you agree that in the near Blackfoot to  
4 Neeley reach, that contains the majority of the springs  
5 and aquifer discharge --

6 A. Yes.

7 Q. -- between those two reaches?

8 So you talked about the R-squared values for  
9 those two reaches in that calibration document.

10 A. Yes.

11 Q. And it's in your report; is that correct?

12 A. Yes.

13 Q. Would you agree that those reaches'  
14 calibration values are within the range of values for  
15 upriver reaches as well?

16 A. So I looked at that, and I can't remember the  
17 result. I think that the Neeley to Minidoka is amongst  
18 the worst, but it's a small discharge. I think that the  
19 near Blackfoot to Neeley is neither the best nor the  
20 worst, but that may be incorrect. I, again, was  
21 constrained by time. I wish I could have done a better  
22 job.

23 Q. Let's turn to your Exhibit 512 when you get a  
24 second. It will be page 125.

25 A. Okay. I need a different book.

1           Okay. I have 512 here.

2           Q. I'm looking at page 125 of 190.

3           A. Oh, it's double-sided. That confuses me.

4           Okay. Here we are.

5           HEARING OFFICER: Let me find that. And it's  
6           page what, 125?

7           MR. THOMPSON: 125. I think they're  
8           Bates-stamped on the bottom.

9           Q. (BY MR. THOMPSON) Mr. Contor, I believe these  
10          pages show the different river reaches -- I'll say above  
11          Milner and the different R-squared values assigned for  
12          the observed and model results; is that correct?

13          A. Yeah, starting with page 125 and then  
14          continuing for a few pages, yes.

15          Q. I guess my question was the near Blackfoot to  
16          Neeley within those range of values represented by those  
17          different reaches?

18          A. Yeah. And so we can look -- so Ashton to  
19          Rexburg is .16, so it's above that; Heise to Shelley is  
20          .61, so it's below that; Shelley to near Blackfoot is  
21          .21, so it's above that; near Blackfoot to Neeley, 42,  
22          as we discussed; Neeley to Minidoka, .0079.

23                 So I -- without the specifics, my  
24          representation, I think, was correct that it's neither  
25          the best nor the worst. The near Blackfoot to Neeley is

1 neither the best nor the worst.

2 Q. And you testified you recommended a .5  
3 R-squared value would be useful; is that correct?

4 A. That was an initial starting point. The  
5 actual determination of the threshold is administrative,  
6 but from a technical basis, that's a useful starting  
7 point.

8 Q. And has a certain criteria been evaluated by  
9 the modeling committee?

10 A. Not that I know of.

11 Q. Is it true they've accepted this model and the  
12 R-squared values for these various reaches?

13 A. So there's a long answer and a short answer.  
14 The short answer is that the committee, some of us with  
15 some reluctance, agreed to endorse ESPAM2.2 as a  
16 replacement for ESPAM2.1, acknowledging -- all of us  
17 acknowledging that there are things that we wish we  
18 could do better.

19 Q. So you talked about some comparisons of the  
20 two versions and that some versions varied by a factor  
21 of 5. Was that just for specific cells?

22 A. So if you look at the response from one cell  
23 to the reach, that was the analysis I performed. I did  
24 not have time to perform a regional analysis. But the  
25 way the model is configured, adjacent cells will have

1 similar results, and as you broaden that circle, the  
2 variability between the cells increases. But, yes, that  
3 was -- I performed that analysis on -- well, I had that  
4 analysis performed, and I reviewed it on just a small  
5 number of single cells.

6 Q. So has 2.2 been accepted as a better  
7 representation of aquifer changes and river responses?

8 A. I think it's been accepted that it should be  
9 moved forward because it ought to be better. And I  
10 think there are people who believe that it is better.  
11 In the particular case of near Blackfoot to Neeley, the  
12 R-squared value is better. To the extent that that  
13 reflects, as Sophia said, answering the -- getting the  
14 right result for the right reasons, then it appears to  
15 be better.

16 Q. And that work continues today on the model; is  
17 that correct?

18 A. Yes.

19 Q. Is it your opinion that a model should only be  
20 used when a, quote, ratio of relief to cost is  
21 considered?

22 A. It's my opinion that any tool should be --  
23 when any tool is deployed, the gravity of the use of  
24 that tool should be weighed in terms of the precision of  
25 that tool. If I'm tapping on the carburetor of a

1 motorcycle, a crescent wrench is acceptable. If I have  
2 the opportunity to touch a million-dollar Ferrari, I  
3 would not tap on the carburetor with a crescent wrench.

4 Q. Is that, essentially, a cost-benefit analysis  
5 of what is more efficient?

6 A. It is a recognition of the principle that  
7 benefit -- it's a recognition of the principle that some  
8 calculations have tremendous gravity, both for the party  
9 seeking relief and the party being required to provide  
10 relief. And if you have a tool that doesn't work very  
11 good, it's sobering to pull the trigger and wonder where  
12 the bullet's going to hit.

13 Q. What type of gravity are you referring to?

14 A. I'm talking about the Surface Water Coalition  
15 in some years being indicated to be short by, perhaps, a  
16 quarter-million acre-feet of water. That's a serious  
17 block of water and could have serious consequences to  
18 folks needing that water and not receiving it.

19 Q. So you referenced the -- I guess -- the  
20 efficiency or how to use water that using 2 acre-feet  
21 may not be as efficient as 1 acre-foot?

22 Is that --

23 A. So I didn't mean to say that. I -- do you  
24 want a long answer, or do you want a short answer?

25 Q. Well, I think you have the general idea that,



1 hey, if we use groundwater more efficiently or for more  
2 acres, we shouldn't curtail -- we shouldn't curtail a  
3 lot of groundwater to produce less surface water; is  
4 that generally correct?

5 A. That wasn't what I meant to say.

6 Q. Okay. I must have misunderstood it, then.

7 So you're not advocating that water users  
8 should just abandon surface water systems and go to  
9 groundwater; that's not what you're saying?

10 A. No.

11 COURT REPORTER: Okay. Wait. Can you repeat  
12 your question?

13 Q. (BY MR. THOMPSON) You are not suggesting that  
14 surface water users abandon their surface water supplies  
15 and just transition to groundwater?

16 A. No.

17 Q. A few questions about supplemental groundwater  
18 use you talked about with Mr. Johns.

19 Your opinion -- your report identifies that  
20 measurement of groundwater use today is more reliable  
21 than it was in the early 2000s; is that correct?

22 A. Yes.

23 Q. And do you know when groundwater pumping data  
24 is available during the irrigation season?

25 A. So my understanding is that an individual

1 grower or a hydrographer can go to a meter at any time  
2 and read it, that it's recorded -- or reported annually,  
3 which is very compatible with the transit time of the  
4 effects of groundwater pumping.

5 Q. Could that be made available on a daily basis?

6 A. I suppose that it could. I suppose that every  
7 turnout of the Twin Falls Canal Company could be made  
8 available on a minute-by-minute basis. I don't know the  
9 purpose, but yes, it could be done.

10 Q. Weekly? Monthly? Would that be --

11 A. It could be done.

12 Q. Are you part of the technical modeling  
13 committee?

14 A. I'm part of the Eastern Snake Hydrologic  
15 Modeling Committee. I am not part of the technical  
16 working group for the Surface Water Coalition/Idaho  
17 Ground Water Appropriators agreement.

18 Q. And I'll correct my question. I was referring  
19 to the Eastern Snake Plain Modeling Committee.

20 A. Yes, I'm a member of that.

21 Q. And have there been suggestions in those  
22 meetings to update the model with measured pumping data?

23 A. There have been discussions. I don't know  
24 that -- suggestions -- maybe suggestions, but certainly  
25 discussions.

1 Q. Do you know why that hasn't been adopted?

2 A. I don't know all the reasons.

3 Q. Would that sort of data make it more reliable?

4 A. From the context of groundwater modeling,  
5 probably not.

6 Q. Is the priority date of a supplemental well an  
7 appropriate consideration?

8 A. I think so.

9 Q. Would you agree if that well was subject to a  
10 curtailment, that would affect its availability?

11 A. I think it would, and I think the WMIS data  
12 would reflect that.

13 COURT REPORTER: The what?

14 THE WITNESS: W-M-I-S. I'm sorry.

15 Q. (BY MR. THOMPSON) So going back to the ETRAN  
16 model, you've used that in your report, and I understand  
17 that to be just a comparison between two versions of the  
18 model.

19 You were using two versions of the ETRAN tool;  
20 is that correct?

21 A. That's what I did in the report, yes.

22 Q. And it provides for transient responses from  
23 the aquifer to the river; is that correct?

24 A. Yes.

25 Q. And it's true that wells near the river will

1 have their responses realized sooner than wells located  
2 farther away; is that correct?

3 A. Yes.

4 Q. That's what your analysis showed?

5 A. It did show that. That wasn't the purpose for  
6 the analysis, but that's one of the implications of the  
7 results.

8 Q. You talked about the Fifth Order and your --  
9 you testified you did not have time to confirm the  
10 estimates identified in the Fifth Order relating to the  
11 steady state use of the model for the May to September  
12 accrual.

13 Do you recall that?

14 A. So I think it was the transient model that was  
15 used to estimate those accruals, but I did not have time  
16 to repeat those runs.

17 Q. I think there was a 9 to 15 percent number  
18 identified by the Department?

19 A. Yes.

20 Q. And you could replicate that if you wanted to;  
21 is that correct?

22 A. If I had time, I could.

23 Q. Do you have any reason to question that  
24 modeling run or those results?

25 A. No.

1 Q. But it's your opinion that the modeling runs  
2 should be consistent both for determining the  
3 curtailment date and then for apportioning mitigation  
4 responsibility?

5 A. Yes.

6 Q. So in looking at the two types of uses of the  
7 model, would a steady state curtailment run produce the  
8 demand shortfall in the same irrigation season if direct  
9 mitigation is not provided?

10 A. Not if it was as is currently done on a  
11 single-event basis. But for many curtailments, neither  
12 would a transient analysis.

13 Q. And that would depend on the location of the  
14 well being curtailed?

15 A. It would depend on the quantity of relief  
16 needed by the Surface Water Coalition.

17 Q. And the Department's order identified a  
18 December 30th, 1953, priority date --

19 A. For this particular shortfall.

20 MR. THOMPSON: That's all the questions I  
21 have. Thank you.

22 HEARING OFFICER: Further cross-examination?

23 MR. FLETCHER: I don't have any further.

24 HEARING OFFICER: Mr. Fletcher? Mr. Simpson?

25 Redirect?

1 MR. JOHNS: Just briefly.

2  
3 REDIRECT EXAMINATION

4 QUESTIONS BY MR. JOHNS:

5 Q. Bryce, Mr. Thompson asked you if the courts  
6 have approved the model, to your knowledge.

7 Do you remember that question?

8 A. Yes.

9 Q. Do you know if the courts have approved the  
10 model since its implemented transient analysis, as used  
11 in the Fifth Methodology Order?

12 A. I do not know.

13 Q. So to your knowledge, that hasn't been  
14 approved yet?

15 A. To my knowledge, it has not. And I do not  
16 know if ESPAM2.2 has been tested in the court.

17 MR. JOHNS: Nothing else. Thanks.

18 HEARING OFFICER: Okay. I assume, based on  
19 the short questions, there's no recross-exam.

20 Surface Water Coalition?

21 All right. Thank you, Mr. Contor.

22 All right. Let's just go off the record for a  
23 minute.

24 (Exhibit 366 marked.)

25 HEARING OFFICER: Mr. Harris, you may question

1 Mr. Olenichak.

2 Pardon me. Oh, I do need to swear him in.

3 So, Tony, I'll have to rely on your  
4 representation that you're standing. Raise your right  
5 hand, please.

6 Is somebody clairvoyant out there?  
7

8 ANTHONY OLENICHAK,  
9 called by the City of Idaho Falls, having been first  
10 duly sworn to tell the truth relating to said cause,  
11 testified remotely as follows:  
12

13 HEARING OFFICER: Thank you. Please be  
14 seated, if you're not already.

15 Mr. Harris?  
16

17 DIRECT EXAMINATION

18 QUESTIONS BY MR. HARRIS:

19 Q. Tony, can you please say and spell your name  
20 for the record.

21 A. Yes. Tony, T-o-n-y, Olenichak,  
22 O-l-e-n-i-c-h-a-k.

23 Q. Could you describe your educational background  
24 after high school.

25 A. I spent two years at the University of

1 Maryland in their biological science program and four  
2 years at Utah State University, where I obtained a  
3 master of science degree in watershed science in 1983.

4 Q. And what is your current occupation?

5 A. I am both watermaster and program manager for  
6 Water District No. 1.

7 Q. And how long have you held that position?

8 A. I've been watermaster for the past four years.  
9 For the past 17 years, I've been program manager,  
10 according to the IDWR employee records.

11 Q. What does Water District 1 do?

12 A. Water District 1 measures the natural flow in  
13 the river reaches within the district each day and  
14 allocates to the various reservoir and diversion and  
15 water rights the amounts that they're allocated to their  
16 diversions for each day of the irrigation season.

17 Q. What area of Idaho does Water District 1  
18 cover?

19 A. It covers the Snake River and its tributaries  
20 above Blackfoot in Idaho, in addition to the Snake River  
21 main stem diversions from Blackfoot to Milner Dam.

22 Q. Does Water District 1 track fill of the Upper  
23 Snake Reservoir system?

24 A. Yes, with the exception of the reservoirs in  
25 the Blackfoot and Portneuf Basins.



1 Q. Prior to your election as the watermaster for  
2 Water District 1, what positions did you hold within  
3 Water District 1?

4 A. I was program manager from 2006 to 2019, and  
5 hydrologist from 1990 to 2005.

6 Q. Are you familiar with the April joint forecast  
7 issued by the United States Bureau of Reclamation and  
8 the United States Army Corps of Engineers for the  
9 unregulated flow at the Heise Gage?

10 A. Yes.

11 Q. Could you briefly describe what the forecast  
12 consists of and what data that forecast considers?

13 A. Well, it's changed over the years. Initially  
14 I think it only included the snow water equivalent  
15 content at certain snow survey sites upstream from  
16 Heise. Now I think it includes other factors, such as  
17 soil moisture and precipitation. But it's, essentially,  
18 the same as forecasting the unregulated flow that arises  
19 upstream from the USGS Heise station.

20 Q. And Heise is located near the city of Ririe,  
21 Idaho; correct?

22 A. Yes, just upstream from just about all the  
23 major diversions in Water District 1 on the Snake River.

24 Q. And the snowpack that is discussed in that  
25 forecast is measured by SNOTEL sites that are maintained

1 by the NRCS; correct?

2 A. Yes.

3 Q. And on the Water District 1 website, you have  
4 links to that data; correct?

5 A. Yes.

6 Q. Okay. And do you know how those SNOTEL sites  
7 measure and account for snowpack?

8 A. Yeah. They simply weigh the snow that's on  
9 top of what they call a "snow pillow," and by measuring  
10 the weight of the snow, you can determine the quantity  
11 of water in snow.

12 Q. Tony, I'm going to have you look at a map that  
13 I emailed you earlier today. It's the Mountain Snow  
14 Water Equivalent map. It's been marked here as  
15 Exhibit 366.

16 For the record, it is actually already in the  
17 administrative record. It was contained on page 7 of a  
18 motion for continuance that was filed on April 28th,  
19 2023.

20 Tony, have you seen that sort of document  
21 before?

22 A. Yes. And also what I mostly view as the one  
23 that's issued by the NRCS, but they are, essentially,  
24 the same. I think the one done by IDWR brings up the  
25 snow and the subbasins above Heise also.

1 Q. So what, generally, does this map depict?

2 A. Well, it depicts the percentage of the median  
3 snowpack in various basins in the Upper Snake River  
4 Basin and across Idaho.

5 Q. And it's also a helpful reference for  
6 different basins. What basins directly contribute to  
7 the water supply of the Surface Water Coalition  
8 entities?

9 A. All the basins that are tributary to the Snake  
10 River above Milner Dam.

11 Q. And that would include the Henry's Fork  
12 (Teton) Basin depicted on that map; is that right?

13 A. Yes.

14 Q. And the Snake Basin above Palisades, Willow,  
15 Blackfoot, and Portneuf; is that right?

16 A. Yeah, I think they identify the Snake River  
17 above Heise instead of Snake River above Palisades.

18 Q. Okay. And in looking at this map, does water  
19 from the Henry's Fork (Teton) Basin come in below the  
20 Heise Gage?

21 A. Yes.

22 Q. How about from the Willow Creek drainage?

23 A. That also comes in below the Heise Gage.

24 Q. And the same for Blackfoot?

25 A. Yes.

1 Q. And finally, the Portneuf?

2 A. Yes. They're all tributary below the Heise  
3 Gage.

4 Q. And based on this map, as of April 3rd, the  
5 snowpack was 124 percent of average in the Henry's Fork  
6 (Teton), 120 percent for the Snake above Palisades,  
7 178 percent for Willow Creek, 186 percent for Blackfoot,  
8 and 216 percent for the Portneuf; is that correct?

9 A. Yeah. I don't have the map in front of me,  
10 but, yeah, that seems like what I have seen in the past.

11 Q. And I believe you testified before, but I want  
12 to be clear, does the April joint forecast explicitly  
13 consider the water supply from the Henry's Fork, Willow,  
14 Blackfoot, and Portneuf drainages or does it not  
15 consider them?

16 A. No, the April joint forecast is only for the  
17 watershed above the Snake River at the Heise Gage.

18 Q. Okay. I have just a few more questions.

19 In your position as the watermaster, what have  
20 you observed this year in terms of water supply to the  
21 Coalition members as a result of the significantly  
22 above-average snowpack and runoff from the lower part of  
23 the basin?

24 A. Yeah, the advantage to the water rights in the  
25 Water District 1 from the runoff in those lower

1 watersheds, that supplies a greater amount of natural  
2 flow to those Surface Water Coalition canals that are  
3 further down on the -- on our distribution system, so  
4 they don't need to draw from the natural flow that  
5 arises in the upstream areas above Blackfoot, and so  
6 that allows us to store more water to the junior  
7 priority reservoirs upstream and -- instead of passing  
8 that natural flow down to the senior priority diversions  
9 downstream.

10 Q. So would you say this year that there was an  
11 unusually high amount of runoff from those drainages?

12 A. Yes. The further south you go into the  
13 Portneuf, the Blackfoot, and Willow Creek drainages,  
14 they had a higher percentage above median values for the  
15 April 1st runoff forecast than those areas further  
16 upstream above Palisades.

17 Q. Did that runoff also free up other natural  
18 flow rights in the basin?

19 A. Yes. What it allowed us to do is probably  
20 store more water into the reservoir water rights instead  
21 of having delivered that natural flow to senior priority  
22 irrigation diversions. That was helped not only by the  
23 snowpack but also the spring rains that we received over  
24 the last couple of months.

25 Q. Great. I want to ask you just a couple more

1 questions about storage allocation.

2 Are you generally familiar with the storage  
3 space held by members of the Surface Water Coalition?

4 A. Yes.

5 Q. And of the Coalition members, how about the  
6 Twin Falls Canal Company?

7 A. Yes.

8 Q. Do you know, approximately, how much storage  
9 space they have and in which two reservoirs?

10 A. Yeah. The two reservoirs they have space are  
11 in Jackson and American Falls, approximately  
12 250,000 acre-feet.

13 Q. In the As-Applied Order that is part of what  
14 we're discussing today, the Director found material  
15 injury to the Twin Falls Canal Company in the amount of  
16 75,200 acre-feet, and of that amount, 13,324 acre-feet  
17 was predicted of space that would not fill.

18 As of today, has all of Twin Falls Canal  
19 Company's storage space filled?

20 A. Yes.

21 Q. Is it possible that that fill determination  
22 could be affected by a flood control spill from Jackson  
23 Lake?

24 A. Yes. In the big runoff years, the Bureau of  
25 Reclamation sometimes has to evacuate previously stored

1 water out of Jackson for flood control, and if it's lost  
2 out of the system, that can result in a reduction from a  
3 full allocation to the space holders, Twin Falls Canal.  
4 But that seems unlikely at this point in time but could  
5 change if we get a lot of rain here over the next couple  
6 of weeks.

7 Q. Great.

8 MR. HARRIS: Director, that's all the  
9 questions I have. I would move to admit Exhibit 366  
10 into the administrative record.

11 HEARING OFFICER: Any objection to the snow  
12 water equivalent map marked as Exhibit 366? Any  
13 objection to its admission?

14 Hearing none, the document marked as  
15 Exhibit 366 is received into evidence.

16 (Exhibit 366 received.)

17 MR. HARRIS: That's all the questions I have.  
18 Thank you, Tony.

19 HEARING OFFICER: Any cross-examination by the  
20 Surface Water Coalition?

21 Mr. Budge?

22 MR. BUDGE: Yes. IGWA also identified Tony as  
23 a witness, so perhaps I'll just do my direct examination  
24 and the Coalition can handle their cross in one fell  
25 swoop.

1 HEARING OFFICER: Okay.

2  
3 DIRECT EXAMINATION

4 QUESTIONS BY MR. BUDGE:

5 Q. Good afternoon, Tony. I don't know if you can  
6 see me or not, but this TJ Budge. How are you?

7 A. Yes, I can see you. Thank you, TJ.

8 Q. Okay. I just got a couple questions.

9 The first one follows up on Mr. Harris's  
10 questions about the storage water supplies. I  
11 understand as your duties -- among your duties as Water  
12 District 1 watermaster, you oversee the Upper Snake  
13 River storage water system?

14 A. Yes. We keep track of the amount of natural  
15 flow that accrues to those reservoir water rights.

16 Q. And are rentals or leases of storage water  
17 handled through your office?

18 A. Yes.

19 Q. You're generally familiar with how the  
20 transactions of storage water in the Upper Snake River  
21 Basin are handled from year to year?

22 A. Yes.

23 Q. Are you familiar with the 2004 Nez Perce water  
24 rights agreement?

25 A. Somewhat, yes, I'm familiar with it.



1 Q. Are you aware that storage water is frequently  
2 leased out of the Upper Snake River Reservoir system to  
3 meet some flow augmentation requirements under that Nez  
4 Perce agreement?

5 A. Yes.

6 Q. Do I understand correctly that participation  
7 in rentals of storage for flow augmentation under that  
8 agreement is a voluntary program?

9 A. Yes.

10 Q. And do members of the Surface Water Coalition  
11 frequently participate in renting storage water?

12 A. Yes.

13 Q. And I believe those who do participate in that  
14 program receive rent on the storage water they lease?

15 A. If you mean payment, yes.

16 Q. Okay. That's all I had on that topic.

17 The other topic that I wish to ask you about  
18 is just about the application of the futile call  
19 doctrine in the Teton River Basin?

20 I understand that water distribution in the  
21 Teton River Basin falls under your jurisdiction as the  
22 Water District 1 watermaster?

23 A. Yes.

24 Q. Are you familiar with the application of the  
25 futile call doctrine in the Teton River Basin?

1           A. Yes.

2           Q. Could you explain how that works?

3           A. Yes. If you look at the Teton Basin as a  
4 whole, the lower part of the basin, the downstream part  
5 of the basin was developed earlier than the upper part  
6 of the basin. So the Teton River, typically towards  
7 midsummer/end of the summer, can cut down to the 1885,  
8 1884 priorities, and so the entire flow or natural flow  
9 in the Teton Basin was used up after those years.

10           As the upper part of the basin was settled and  
11 they developed water rights on the tributaries that fed  
12 the Teton River, they had -- they were later in time,  
13 had later priorities than the diversions off the Teton  
14 River downstream. But those tributaries that they  
15 diverted water from, typically in midseason, even when  
16 there's no diversions from them, that water and those  
17 tributaries doesn't reach the main stem of the Teton  
18 River.

19           So you have a situation where this irrigation  
20 that was developed in the Upper Teton Basin on these  
21 tributaries, when they go out of priority on the main  
22 stem of the Teton River if we shut off all those  
23 diversions on the tributary and the water still doesn't  
24 reach the channel of the Teton River, we say it's futile  
25 for the lower senior priority diversions to call for

1 curtailment of those junior priority water rights on  
2 those tributaries when shutting off those junior  
3 priorities won't make a difference to the water  
4 physically reaching the Teton River channel.

5 Q. Thanks, Tony. That's very helpful.

6 Just for clarification. When you refer to the  
7 Upper Teton Basin, you're referring to that area in the  
8 Driggs-Tetonia area?

9 A. Yes. That whole upper valley before the river  
10 reaches the canyon where it narrows down.

11 Q. And then when you refer to the Lower Teton  
12 Basin, is that down in the, you know, Teton-Sugar City  
13 area?

14 A. Yes. It's where the water emerges out of the  
15 canyon there and into the valley there in Newdale,  
16 Teton, Rexburg, Sugar City, that whole area.

17 Q. Okay. And then you mentioned that the call  
18 becomes futile once the tributary doesn't reach the main  
19 stem. You're referring to the surface water connection  
20 between the tributary and the main stem of the Teton?

21 A. Yes.

22 Q. And how do you know when the tributaries  
23 disconnect?

24 A. It is visual. You get to a point -- well,  
25 over the years, the deputy watermaster in that area

1 responsible for regulating the diversion usually has a  
2 sense of when he shuts off all the diversions, water  
3 won't reach the Teton River. And so at that point the  
4 tributary is on a different priority system than the  
5 Teton River.

6 If that judgment is contested, then we  
7 actually go through and do a process where we shut off  
8 all the diversions on that tributary and let the water  
9 run for a certain amount of days. Sometimes it's been  
10 three days in the past, it's been as long as five days,  
11 and after that three- or five-day period, if the water  
12 still hasn't reached the Teton River from that  
13 tributary, then we call a futile call, and then we start  
14 turning on diversions on that tributary according to  
15 priority until all of the water is diverted.

16 Q. When the tributaries don't reach, is that  
17 because the water is just sinking into the ground?

18 A. Yes. At some point, usually further upstream  
19 on the tributary in the higher elevations above your  
20 irrigation land, you'll see water -- plenty of water in  
21 those tributaries. And then as it moves further  
22 downstream into the valley before it reaches the Teton  
23 River, it just completely sinks into the ground.

24 Q. Do you have any idea where it goes once it  
25 sinks?

1 A. I don't.

2 Q. Are there a lot of springs along the main stem  
3 of the Teton River in that upper basin that feed the  
4 river?

5 A. Yes, there are some springs.

6 Q. Is it your understanding that the water that  
7 seeps into the ground from those tributaries accrues to  
8 the Teton River downstream through a spring in flow?

9 A. Yes, that's certainly likely.

10 Q. Just one last question, Tony. Did you  
11 contribute in any way to the development of the Fifth  
12 Methodology Order?

13 A. No.

14 Q. You weren't asked any questions by folks at  
15 the Boise office as they were developing that?

16 A. No. I think the only time we get questions  
17 concerning the data that goes into that concerns our  
18 storage carryover numbers. [Unintelligible.]

19 COURT REPORTER: Wait. Excuse me. Hold on.  
20 Wait.

21 HEARING OFFICER: Tony, the court reporter.

22 COURT REPORTER: I'm sorry, but I missed some  
23 of your answer a while back. So I can read what I have,  
24 and then I need you to go from there.

25 "Answer: No. I think the only time we get

1 questions concerning the data that goes into that  
2 concerns our storage carryover numbers."

3 THE WITNESS: I'm having trouble hearing you.  
4 You need to get closer to the microphone.

5 COURT REPORTER: Okay. So: "Answer: No. I  
6 think the only time we get questions concerning the data  
7 that goes into that concerns our storage carryover  
8 numbers."

9 THE WITNESS: Yes.

10 COURT REPORTER: And then can you keep going  
11 from there.

12 THE WITNESS: They may have asked some other  
13 questions about storage allocations or water delivery to  
14 that effect, but as far as how the model works, you  
15 know, what equations are incorporated into it and what  
16 the output is, no, they don't share that information  
17 with us.

18 MR. BUDGE: I don't have any further  
19 questions.

20 HEARING OFFICER: Thank you, Mr. Budge.

21 Any cross-examination, Surface Water  
22 Coalition?

23 Mr. Thompson, if you'll come forward.

24 ///

25 ///

## 1 CROSS-EXAMINATION

2 QUESTIONS BY MR. THOMPSON:

3 Q. Hi, Tony. This is Travis Thompson for A&B  
4 Irrigation District, et al.

5 Can you hear me?

6 A. Yes, I can. Thank you.

7 Q. You talked about, with Mr. Harris, the joint  
8 Heise forecast. Is that something you look at every  
9 year?10 A. Yes. We use that to determine how much flow  
11 augmentation volume is available to the Bureau each  
12 year.

13 Q. And do they issue that forecast monthly?

14 A. No. They do it annually, usually the week  
15 following April 1st.

16 Q. So the Bureau doesn't revise that in May?

17 A. Well, they -- well, yes, but that's not the  
18 April 1st forecast; that's the May forecast.19 Q. That was my question. They do it monthly for  
20 a period of time starting in January?21 A. Yeah. I have heard, yeah, but I don't pay any  
22 attention, usually, to those forecasts. It's only the  
23 April 1st forecast that I use in my job.24 Q. So you didn't look at the May forecast to see  
25 if it went down or not compared to April?

1           A. I did not.

2           Q. Mr. Budge asked you questions about the rental  
3 pool and the Nez Perce agreement.

4           Do you recall those?

5           A. Yes.

6           Q. And under the rental pool procedures, do space  
7 holders have the ability to opt out of that rental pool?

8           A. Yes.

9           Q. In the context of the Surface Water Coalition,  
10 if they are injured and were to receive a storage  
11 mitigation assignment, could they receive that if they  
12 were not a participant in the common pool?

13          A. I don't know the answer to that question.

14          Q. Do the current procedures address that?

15          A. Well, to receive water, I don't think you need  
16 to be a participant. But to supply water, you do need  
17 to be a participant.

18          Q. So it's your testimony if somebody were to opt  
19 out of the rental pool, they could still receive a  
20 storage assignment if it was for mitigation purposes; is  
21 that true?

22          A. Yes.

23          Q. I think we emailed you a PDF. Do you have a  
24 copy of that, Tony?

25          A. A TDF? What's --



1 Q. A PDF file. I'm sorry.

2 A. Oh, PDF file. Thank you. Yeah, the  
3 watermaster report?

4 Q. Yes.

5 MR. THOMPSON: I'm just going to mark that as  
6 Exhibit 8.

7 (Exhibit 8 marked.)

8 Q. (BY MR. THOMPSON) And I'll represent to you,  
9 Tony, it's an excerpt from the 2011 annual report.

10 Have you had a chance to look at that?

11 A. Yes.

12 Q. And are you familiar with that document?

13 A. Yes.

14 Q. And can you identify it for the record?

15 A. It's an excerpt from the 2011 annual report of  
16 Water District 1 prepared by watermaster Lyle Swank.

17 Q. And does the water district keep this kind of  
18 information since that time?

19 A. Yes.

20 Q. And is that published?

21 A. Yes.

22 Q. And can you generally describe what those  
23 tables depict?

24 A. Those tables depict the amount diverted by  
25 each for diversions that are in our water right

1 accounting program.

2 Q. And are you familiar with the various canals  
3 and pumps listed in this exhibit?

4 A. Yes.

5 Q. And recognize that every year is different,  
6 but generally do these canals convert similar amounts  
7 every year?

8 A. Yes. Somewhat it varies just a little bit by  
9 water supply. Sometimes they're limited by water  
10 supply, and sometimes they're not.

11 Q. Do large open canal systems represented on  
12 this exhibit have different diversion needs compared to  
13 individual pumps?

14 A. Yes.

15 Q. Would that be reflected on the acre-feet per  
16 acre diverted column?

17 A. The acre-feet per acre diverted is simply the  
18 calculation of the volume that was diverted at the head  
19 of the canal and the amount of acres that the Water  
20 District 1 had on record at one point that the canal  
21 irrigated. But the problem with that acre-foot per acre  
22 diverted is we didn't know in any of these years these  
23 annual books were published the actual amount of acres  
24 that were being irrigated by the diversion.

25 Q. So the service area lists a number that may or

1 may not reflect the actual irrigated acres in a given  
2 year?

3 A. Right. That's the number that represents the  
4 maximum number of acres that could be irrigated by the  
5 diversion, but not, necessarily, the number of irrigated  
6 acres during that year.

7 Q. Based on your experience as watermaster, are  
8 any of these values unreasonable for the canals listed?

9 MR. HARRIS: Objection.

10 THE WITNESS: No. But at some point in the  
11 future years, we stopped listing those acres because --

12 MR. HARRIS: I'd like to lodge an objection.

13 THE WITNESS: -- because it gave some people  
14 the impression that those were the actual amount of  
15 acres being irrigated --

16 HEARING OFFICER: Just a moment, Tony. Sorry.

17 Okay, Mr. Harris.

18 MR. HARRIS: We called Tony as a fact witness  
19 to talk about the contribution of the natural flow from  
20 those lower drainages. We did not identify him as an  
21 expert to talk about rate-per-acre diversions or  
22 anything like that. So I think this goes beyond the  
23 scope of my examination.

24 HEARING OFFICER: That's true, Mr. Harris. Do  
25 you want me to allow the Surface Water Coalition to call

1 Tony as their own witness down the road if they choose  
2 to do that to explore this?

3 MR. FLETCHER: We'd do it today as soon as  
4 he's done here.

5 MR. HARRIS: I don't believe they identified  
6 him, but maybe I'm mistaken.

7 MR. FLETCHER: You did.

8 HEARING OFFICER: Well, I'm not restricting  
9 testimony.

10 MR. HARRIS: Okay.

11 HEARING OFFICER: Overruled.

12 MR. THOMPSON: Tony, thank you. That's all  
13 the questions I have.

14 MS. MCHUGH: I have a quick question.

15 MR. FLETCHER: I just have a question.

16 Did his last answer get on the record,  
17 Mr. Olenichak's last answer?

18 HEARING OFFICER: I didn't hear it.

19 COURT REPORTER: Well, it's kind of chopped up  
20 with speaking in between trying to interrupt him. So  
21 not --

22 MR. FLETCHER: To clear that up, can you ask  
23 that question so it's on the record.

24 Q. (BY MR. THOMPSON) Tony, I think we were  
25 talking about the acre-foot diverted of the service

1 area, recognizing that these service area number of  
2 acres list a potential maximum number of acres within  
3 these canals. And I was asking you if there's any  
4 contention that any of these diversion rates are  
5 unreasonable by these canals.

6 A. Yeah. And again, my answer was that the  
7 service areas, it may be the maximum service area of the  
8 canal but not, necessarily, the number of irrigated  
9 acres. And that acre-foot-per-acre-diverted number that  
10 you see in the far-right column is based on the  
11 assumption that all those acres are being irrigated by  
12 the volume that was diverted and the acre-feet in the  
13 first column, and that may not, necessarily, be the case  
14 if the canal was irrigating less acres than the maximum  
15 that was listed on this table.

16 Q. So that could change the acre-foot-per-acre  
17 calculation; is that correct?

18 A. Correct.

19 Q. I guess in your experience with the values  
20 represented in this exhibit, do you believe any of those  
21 are unreasonable?

22 A. I don't know how to answer that.

23 MR. BUDGE: Objection.

24 HEARING OFFICER: Tony, this is difficult.

25 We've got another objection.

1           The basis for the objection?

2           MR. BUDGE: Well, it calls for a legal  
3 conclusion. But I think Tony explained that he  
4 doesn't -- he can't answer that question, so he  
5 recognized it as such.

6           HEARING OFFICER: Okay. I want the answer on  
7 the record again, because I had to interrupt the  
8 testimony to address the objection.

9           So ask it again, Mr. Thompson, and let's get  
10 his answer.

11           Q. (BY MR. THOMPSON) And, Tony, this table shows  
12 total volumes diverted by canals all throughout Water  
13 District 1.

14           Do you have any reason to contend any of these  
15 values are unreasonable?

16           A. The volumes are accurate. The service area  
17 probably represents the maximum number of acres that can  
18 be irrigated, but not, necessarily, the actual number of  
19 acres that were irrigated in this particular year. And  
20 therefore, since the total diverted was divided into the  
21 service area acres that were listed, the acre-foot per  
22 acre diverted in that last column may not be accurate  
23 since we don't know for certain the number of acres that  
24 were actually irrigated in this particular year. And in  
25 future years, we stopped listing this acre-foot acre

1 diverted for that reason.

2 Q. Yeah. I don't know if you answered my  
3 question, Tony.

4 I guess the volumes represented, they all  
5 vary. I think they go from like 1 to above 10.

6 Do you have any reason to believe any of those  
7 values are unreasonable for those canals listed?

8 A. No.

9 Q. Thank you.

10 MR. FLETCHER: Do you want to admit that  
11 exhibit?

12 MR. THOMPSON: Yeah.

13 I'd move to admit Exhibit 8.

14 HEARING OFFICER: Any objection to receiving  
15 Exhibit 8 into evidence?

16 Hearing no objection, the document marked as  
17 Exhibit 8 is received into evidence.

18 (Exhibit 8 received.)

19 HEARING OFFICER: Mr. Fletcher, you have  
20 questions?

21 MR. FLETCHER: I do.

22 HEARING OFFICER: Would you come to the table.  
23 Thank you. I know you like to examine watermasters or  
24 former watermasters.

25 MR. FLETCHER: Yeah. Well, that's -- yeah.

1 HEARING OFFICER: That's an inside joke.

2 MR. FLETCHER: Yeah, it is.

3

4 CROSS-EXAMINATION

5 QUESTIONS BY MR. FLETCHER:

6 Q. Hey, Tony. This is Kent Fletcher. How are  
7 you?

8 A. Good, thank you.

9 Q. That water that's coming in below Heise flows  
10 into the storage system as well as used for natural  
11 flow; isn't that correct?

12 A. Yes.

13 Q. And that storage system doesn't only benefit  
14 the Surface Water Coalition, does it?

15 A. No, it benefits many.

16 Q. Now, the storage -- the Surface Water  
17 Coalition's source of water is not only storage water;  
18 correct?

19 A. Correct.

20 Q. It includes natural flow?

21 A. Yes.

22 Q. What did you observe prior to -- well, at the  
23 end of last irrigation season, what did you observe in  
24 the storage system concerning the amount of storage?

25 A. It was below average. We finished the



1 irrigation season with less water in the -- remaining in  
2 the reservoirs than what's typical.

3 Q. And what did you observe this winter before  
4 runoff started on the inflows into the reservoirs?

5 A. Well, before the snowmelt started, it was  
6 below average, and then, of course, when the snow  
7 started melting, we've been above average since that  
8 time.

9 Q. So before the snowmelt started, the flows  
10 coming into the river were below average?

11 A. Yes.

12 Q. You had mentioned that -- I think you were  
13 asked a very generic question about do members of the  
14 Surface Water Coalition generally participate in renting  
15 storage.

16 There are many members of the Surface Water  
17 Coalition who do not regularly rent storage; isn't that  
18 correct?

19 A. Yes, but the reason I answered the way I did  
20 was the rental pool procedures have recently changed  
21 where all participating space holders now are  
22 responsible for supplying a portion of their storage  
23 allocation, if needed, by the common pool.

24 Q. I see.

25 And so you were talking about flow

1 augmentation water?

2 A. Yes.

3 Q. But as far as actually renting water to a  
4 third party, most of the Surface Water Coalition members  
5 do not rent water to third parties; isn't that correct?

6 A. Well, under the most recent procedures, we  
7 have the small pool which is 5,000 acre-feet maximum,  
8 very small amount, but under the current procedures, the  
9 participants, including the Surface Water Coalition,  
10 could provide a small percentage to their storage  
11 allocation towards that small rental.

12 Q. Yeah, that comes out of everybody's storage  
13 accounts; correct?

14 A. Yes.

15 Q. But I'm talking about private leases. I  
16 should have said it better.

17 Most of these do not -- most of the Surface  
18 Water Coalition members do not have private leases; is  
19 that correct?

20 A. Yes. I think the -- yes, I think that is  
21 correct.

22 Q. And the storage you're talking about as far as  
23 flow augmentation, that is a result of the Nez Perce  
24 agreement?

25 A. Yes.

1 Q. And that is to protect the water users from  
2 claims of the tribes; is that correct?

3 A. Yes.

4 Q. The futile-call scenario that you were talking  
5 about on the Teton Basin, that was purely a surface  
6 water system; correct?

7 A. Yes.

8 Q. And so when you talk about curtailing  
9 in-season, you're only dealing with water that would  
10 accrue that season; correct? You're not dealing with  
11 what would happen from curtailment into future years?

12 A. I don't understand the question, but...

13 Q. I don't either, so let me -- in fact, let me  
14 just withdraw that question.

15 I guess the point is that that is a  
16 100 percent surface-water scenario you're talking about?

17 A. Yes.

18 Q. And that's true throughout the state, as far  
19 as you know, isn't it; that if a senior cannot get his  
20 water for whatever reason, he doesn't have a right to  
21 call out a junior. Correct?

22 A. Yes. I think they have the same type of  
23 practice in the Big Lost Basin and probably in some  
24 other basins around Idaho.

25 Q. But those calls are not typically made under

1 the conjunctive management rules, are they?

2 A. No.

3 MR. FLETCHER: That's all the questions I  
4 have. Thank you.

5 HEARING OFFICER: Redirect, Mr. Harris?

6 MR. HARRIS: I do.

7 MR. FLETCHER: I think Candice has a few.

8 MS. McHUGH: Can I just -- it's not really  
9 redirect, I wanted to clarify something.

10 Now that Kent asked about recent rentals from  
11 this common pool and the small pool, I just wanted to  
12 clarify a few things, and then he can redirect. We  
13 listed Tony as a witness, but I guess I would cross him  
14 on what --

15 At this point is he your witness? I'm not  
16 really sure how that works. I just want to ask a couple  
17 clarifying questions, and I'm asking if I can do that.

18 HEARING OFFICER: What do the parties want me  
19 to do?

20 MR. BUDGE: Well, it's Rob's witness and mine,  
21 so anyone else would be crossing, so this would be the  
22 time if Ms. McHugh wants to ask questions for  
23 cross-examination.

24 MR. FLETCHER: Yeah. I don't think we have a  
25 problem with that as long as if she opens up something

1 new, I guess we would have the right to address it.

2 HEARING OFFICER: Well, I have a hard time  
3 characterizing these questions as cross-examination, at  
4 least technically, but okay.

5 Ask your questions.

6  
7 CROSS-EXAMINATION

8 QUESTIONS BY MS. MCHUGH:

9 Q. Good afternoon, Tony. It's Candice McHugh on  
10 behalf of the Coalition of Cities and McCain Foods  
11 specifically.

12 I wanted to ask a question -- just a  
13 clarifying question about a statement you made relative  
14 to an answer -- I think it was given by -- or in  
15 response to an answer by TJ and then Mr. Fletcher  
16 expanded upon it. It had to do with the storage  
17 assignment for mitigation purposes.

18 Do you recall testimony relative to how  
19 storage is assigned for mitigation purposes?

20 A. No. The way you're characterizing that, I'm  
21 not sure I recall what specific question you're asking  
22 me about.

23 Q. Fair enough.

24 You said recently that there were some changes  
25 made on how water is provided to the small rental pool.

1                   Do you remember that line of questioning of  
2 Mr. Fletcher?

3                   A. Yes.

4                   Q. Okay. And can you explain what those changes  
5 were?

6                   A. Yes. Prior to the last couple years, we've  
7 used what we call "late season fill" to supply common  
8 pool rentals which can be comprised of the  
9 5,000 acre-feet or flow augmentation rentals. What that  
10 resulted in was some space holders had to provide a  
11 higher percentage of their storage allocations towards  
12 those rentals than others. And so in the last year or  
13 two, we changed the rental pool procedures to spread  
14 that obligation out to the small rentals and towards  
15 flow augmentation to all participating space holders, so  
16 each of those participating space holders supplies the  
17 same percentage of their storage allocation towards  
18 those rentals.

19                  Q. And if a person went to this small pool, my  
20 understanding is they're -- and wanted to rent water  
21 from the small pool for mitigation purposes, is there  
22 some new rule or is there some procedure that they would  
23 have to follow to do that?

24                  A. Yeah, I think the -- this past year, we  
25 specifically excluded using the small pool, the

1 5,000 acre-feet supply, for mitigation purposes. The  
2 purpose of the 5,000 acre-feet was to supply to small  
3 diversions along the river that would reduce regulation  
4 costs incurred by the watermaster.

5 Q. And members of the Surface Water Coalition, if  
6 they were going to receive water from the storage  
7 system, would they have to agree to accept that  
8 mitigation water, or is there a limitation on their  
9 ability to accept that mitigation water?

10 A. No, I don't think so. If someone purchased  
11 some rental water, for example, and said, "I want to  
12 supply that to Twin Falls Canal," I would add that to  
13 the Twin Falls storage allocation whether they wanted to  
14 use it or not.

15 Q. Okay. So I think I might have misheard  
16 earlier. I thought you had said something about they  
17 could opt out of having a storage assignment for  
18 mitigation purposes. Is that just not correct?

19 A. No. The opt out part is an option for all  
20 space holders to not participate in the rental pool  
21 process. And by doing that, they don't have to  
22 contribute any of their storage allocation towards these  
23 common pool rentals.

24 MS. MCHUGH: Okay. That's all I wanted to  
25 ask. Thank you.

1 HEARING OFFICER: Redirect, Mr. Harris?

2  
3 REDIRECT EXAMINATION

4 QUESTIONS BY MR. HARRIS:

5 Q. Tony, just a couple follow-up questions:  
6 Mr. Thompson emailed you the 2011 annual report from  
7 Water District 1 or select portions of it.

8 Do you recall that testimony?

9 A. Yes.

10 Q. As a general matter, what was the 2011 water  
11 year like?

12 A. I don't remember.

13 Q. Was it an above average water year or below  
14 average?

15 A. I don't remember. I don't think it was below  
16 average because those always stick in my mind, but  
17 whether it was average or above average, I don't  
18 remember.

19 Q. And the canals that are in the select portions  
20 here, don't those systems have return or tail-out  
21 locations that put water back in the Snake River or  
22 other natural streams?

23 A. Yes, I think many of them do.

24 Q. But the Twin Falls Canal Company and North  
25 Side Canal Company tailwater would come in below Milner



1 Dam; correct?

2 A. Correct.

3 MR. HARRIS: I have no further questions.

4 HEARING OFFICER: Okay. Mr. Budge, further  
5 questions?

6 MR. BUDGE: You know how much I like to get  
7 the last word in.

8 HEARING OFFICER: Okay.

9 MR. BUDGE: But I'm going to pass, so we're  
10 done.

11 HEARING OFFICER: Recross?

12 MR. FLETCHER: I just have a few minor  
13 questions since Ms. McHugh wanted to open up the nuances  
14 of the common pool and the rental pool rules, so I guess  
15 we'll talk about what those restrictions are on that.

16 HEARING OFFICER: Well, as Mr. Fletcher comes  
17 forward, I hope that we don't get into the rental pool  
18 procedures, because just an elementary acquaintance with  
19 the rental pool procedures might take the next six  
20 months.

21 MR. FLETCHER: Yeah, I'm -- I just want to  
22 point out three issues and see if Mr. Olenichak agrees.

23 ///

24 ///

25 ///



1 Milner, then; correct?

2 A. Yes.

3 Q. And the most you can rent out of the common  
4 pool is 100 acre-feet; correct?

5 A. Correct.

6 Q. And isn't there a limitation in the rental  
7 pools that it cannot be used for mitigation?

8 A. Yes. I think there was a clause added during  
9 this past year for groundwater recharge or mitigation.

10 MR. FLETCHER: Thank you.

11 HEARING OFFICER: Any more recross?

12 All right. Thank you, Tony, for hanging in  
13 there.

14 Okay. I guess we're done for the day. We'll  
15 start at 9:00 a.m. in the morning again.

16 I would like to ask before convening tomorrow,  
17 Andrea, if you can work with Sarah Tschohl and maybe  
18 with Pete, maybe we can get a list of all the exhibits  
19 that have been admitted into evidence. Is that possible  
20 to distribute to the parties?

21 And then I think that would be helpful for  
22 everybody to look through and determine whether there  
23 are exhibits that the parties wish to offer prior to our  
24 adjournment and, all of a sudden, an attempt to try to  
25 identify what exhibits are in or out.

1                   Would that be helpful to everybody?

2                   Sarah?

3                   MS. KLAHN: Are you going to want closing  
4                   briefs or proposed orders?

5                   HEARING OFFICER: I thought I would allow some  
6                   opportunity for a short period of time, if people want  
7                   to offer something in writing. I don't want to hear  
8                   oral argument, however.

9                   MS. KLAHN: Right. That's what I was  
10                  wondering, if you wanted something in writing. Okay.

11                  HEARING OFFICER: Yeah.

12                  Okay. We'll see everybody at 9:00 in the  
13                  morning.

14

15                  (Hearing adjourned at 5:21 p.m.)

16

17

18

19

20

21

22

23

24

25

REPORTER'S CERTIFICATE

I, ANDREA L. CHECK, CSR No. 748, Certified Shorthand Reporter, certify;

That the foregoing proceedings were taken before me at the time and place therein set forth, at which time the witness was put under oath;

That the testimony and all objections made were recorded stenographically by me and transcribed by me or under my direction;

That the foregoing is a true and correct record of all testimony given, to the best of my ability;

I further certify that I am not a relative or employee of any attorney or party, nor am I financially interested in the action.

IN WITNESS WHEREOF, I set my hand and seal this 19th day of June, 2023.

Andrea Check

ANDREA L. CHECK, CSR No. 748, RPR, CRR

Notary Public

P.O. Box 2636

Boise, Idaho 83701-2636

My Commission expires July 20, 2028.

\$	73:5;75:21;95:4;215:6,7; 219:11;220:6,8	125:19;126:4;127:11,13; 130:10,17;134:1;143:12; 147:2,9,25;148:2,15;164:1,2, 6,7;165:3,4,8,9,15;178:9,11; 197:23;213:7,14;221:16,20; 235:12,16,16;247:15,17; 250:12;255:7;259:9;260:1,2; 263:4,17,24;264:4	21:9;46:23;49:25;58:20; 59:7;63:3;70:2;83:1;86:21; 94:13;133:21;177:8;178:21; 179:6;180:1;181:4,8,14; 189:3;196:21;205:22;209:7; 231:16;241:7;251:24;255:3
\$100 (2) 133:21;134:1	accomplish (1) 15:3 accomplished (1) 91:15	acre-foot (13) 43:10;131:10;133:21; 134:2;163:20,24;197:22; 221:21;247:21;249:25; 251:21,25;263:7	ad (1) 186:16
/	accounting (2) 229:10;241:14	acre-foot-per-acre (1) 250:16	add (8) 27:21;47:22,23;161:25; 178:19;179:1;182:16;260:12
/// (8) 10:25;149:24,25;243:24, 25;262:23,24,25	account (13) 28:10;37:10;42:20;53:1; 61:12;62:14;63:15;109:1; 113:24;117:19;179:14; 183:4;231:7	acre-foot-per-acre-diverted (1) 250:9	added (2) 164:22;264:8
[	accounted (5) 44:6,10;61:22;121:5;197:5	acres (154) 15:5;16:10;17:16,18,24; 18:1,9,11,12,15,18;19:3,11; 20:11,20;21:5;25:7,9,13; 26:17,24;27:2,5,6,20,21; 28:8,11,17;29:1,3,12,13,18, 21,22;30:4,7,11,15,17;31:5, 8,12,21,24;33:3,15,20,23,24, 24;36:4,5,8;56:14;57:5,13; 58:1,2,4,6,8,12,14;62:12,13; 64:18,20,21,25;65:1;86:12, 15,23;87:2;88:11,17,20;93:9, 18,23;94:22;95:4,6,12,14,15; 96:6,13;112:12,14,18,20; 113:11,14,20,24;114:4,9,20; 117:22;118:4,9,11,12,13,15, 19;119:2,4;125:5,7,8,9; 131:1;133:1,2;163:6,7; 164:1;172:11;178:16,23; 179:4,7;183:15;185:16; 194:13,17;195:17;200:9; 209:1,5,13,20;210:4;222:2; 247:19,23;248:1,4,6,11,15; 250:2,2,9,11,14;251:17,19, 21,23	adding (2) 59:17;86:13
[As (2) 55:4;103:24 [sic] (2) 34:9;183:12 [Unintelligible] (1) 242:18 [Witness (1) 144:18	accounting (1) 247:1	act (1) 131:21	addition (5) 42:20;43:21;52:12;57:19; 229:20
A	accounts (1) 255:13	action (2) 133:15;176:6	additional (11) 94:17;103:10;120:5; 127:13;155:4;158:21; 172:22;185:2;189:23; 199:22;200:5
A&B (6) 89:24;127:5,7;140:9; 211:8;244:3	accrual (4) 164:3;165:4,9;225:12	actions (4) 91:23;132:14;134:7,15	additionally (1) 61:24
ABA1 (1) 51:15	accruals (7) 165:11;171:1;186:17,22; 192:12;214:21;225:15	actively (1) 183:19	address (20) 11:8,10;15:13;16:21;22:2; 24:21;42:10;60:1;69:15; 103:9;122:17;154:13;157:1, 24;175:14;179:14;187:19; 245:14;251:8;258:1
abandon (2) 222:8,14	accrue (3) 178:22;179:2;256:10	activities (4) 12:13,14;73:22;101:25	addresses (1) 80:24
Aberdeen-American (1) 123:14	accrue (2) 237:15;242:7	activity (1) 165:24	addressing (1) 189:14
ability (14) 171:9,23;175:15;188:12, 13,15,16,25;192:24;193:1; 199:17;200:13;245:7;260:9	accurate (4) 58:14;164:10;251:16,22	actual (16) 31:2,3;57:13;73:5;79:2; 155:23,24;156:10;179:11; 207:17;209:10;219:5; 247:23;248:1,14;251:18	adequate (6) 37:5;97:11;100:15,20; 189:22;198:25
able (30) 14:24;27:15;36:17;47:21; 60:3;68:25;70:9;77:16,25; 84:2;127:18;131:6;148:19; 157:15;167:23;170:5;177:4; 179:22;184:14,19;185:5; 189:3,24;190:6;193:3,11,15; 195:23;204:8,19	accuracy (5) 49:8;172:14,18;173:13; 206:7	actually (26)	adjacent (2) 202:18;219:25
above (33) 17:22;24:23;38:16;56:12; 73:4;96:22;97:10;104:4; 144:19,21,21,24;201:24; 218:10,19,21;229:20; 231:25;232:10,14,17,17; 233:6,17;234:5,14,16; 241:19;252:5;254:7;261:13, 17;263:25	accurately (2) 108:3;189:1		adjourned (1) 265:15
above-average (5) 41:15;61:5;97:19;98:6; 233:22	achieve (3) 147:6;168:1;189:3		adjournment (1) 264:24
accept (5) 20:20;81:7;146:4;260:7,9	achieved (3) 187:5;203:16;204:3		adjudicated (1) 135:25
acceptable (2) 215:4;221:1	acknowledge (1) 181:3		adjudication (6) 151:9,16,17,23;194:21; 195:10
accepted (8)	acknowledging (2) 219:16,17		adjust (13) 67:5,9,12;68:7;77:4;78:7; 80:11;83:12;84:2;114:6,21; 192:24,24

<p>53:1,5;109:2;168:24; 169:9;170:12;215:19,23; 216:1,6 <b>administration's (1)</b> 110:14 <b>administrative (6)</b> 168:21;188:16;206:7; 219:5;231:17;236:10 <b>admission (4)</b> 186:1;187:1;206:19; 236:13 <b>admit (6)</b> 87:7;148:25;206:17; 236:9;252:10,13 <b>admitted (3)</b> 129:19;149:4;264:19 <b>adopted (3)</b> 81:8;97:3;224:1 <b>advance (1)</b> 176:23 <b>advanced (1)</b> 63:23 <b>advantage (1)</b> 233:24 <b>advisory (3)</b> 13:8,10;65:13 <b>advocating (2)</b> 109:3;222:7 <b>aerial (6)</b> 27:6;33:14,20;96:3; 199:16;208:14 <b>affect (5)</b> 112:21;188:23;198:1,14; 224:10 <b>affected (1)</b> 235:22 <b>affecting (1)</b> 101:2 <b>affects (3)</b> 84:23;85:10;113:5 <b>AFRD2 (2)</b> 54:12;61:20 <b>afternoon (7)</b> 112:6;140:8;150:12; 207:7;211:7;237:5;258:9 <b>again (44)</b> 16:16,25;17:9;22:5;28:18, 20;35:5;40:4;46:5;53:17; 57:17;59:12;74:17;76:8,15; 81:14;84:11,13,20;86:10,23; 98:18;111:16;116:9;118:18; 120:6;134:21;135:5;138:10; 140:9;141:21;160:25; 166:13;174:18;176:11; 177:17;186:15;199:17; 215:6;217:20;250:6;251:7,9; 264:15 <b>against (7)</b> 37:8;43:14;57:10;95:2,3; 97:13;133:15 <b>agnostic (1)</b> 196:19 <b>ago (2)</b></p>	<p>110:9;214:18 <b>agree (29)</b> 50:14;91:2;93:16;95:8; 96:5;101:8;103:12;108:12, 15;116:19;161:2,4,9;176:20; 181:19;186:21,24;201:18; 202:4,5;210:17;216:5,9,13, 24;217:3,13;224:9;260:7 <b>agreed (2)</b> 25:8;219:15 <b>agreement (31)</b> 61:25;131:5;134:9;135:4, 8,17,19,23,24;136:11;137:1; 138:15;145:19,23;146:19, 25;147:4,7,12,14,17;148:1,2, 19,20;223:17;237:24;238:4, 8;245:3;255:24 <b>agreements (1)</b> 12:16 <b>agrees (1)</b> 262:22 <b>agricultural (2)</b> 95:22;151:2 <b>Agriculture (1)</b> 199:15 <b>ah (1)</b> 204:12 <b>ahead (4)</b> 24:15;78:20;146:16; 164:20 <b>aid (2)</b> 134:23;168:20 <b>al (4)</b> 89:25;140:9;211:8;244:4 <b>alarming (2)</b> 191:14,25 <b>alfalfa (1)</b> 125:12 <b>alignment (1)</b> 156:24 <b>allocated (3)</b> 148:2,7;229:15 <b>allocates (1)</b> 229:14 <b>allocation (15)</b> 44:10;52:25;133:16; 143:8;147:22,22;148:13,14; 235:1;236:3;254:23;255:11; 259:17;260:13,22 <b>allocations (3)</b> 37:25;243:13;259:11 <b>allotted (1)</b> 126:8 <b>allow (7)</b> 68:6;106:15;189:22; 202:14;208:2;248:25;265:5 <b>allowable (1)</b> 180:21 <b>allowed (7)</b> 42:2;67:5,9,12;77:4; 126:11;234:19 <b>allows (4)</b> 106:25;202:6,8;234:6</p>	<p><b>alluvial (2)</b> 105:21,23 <b>almost (6)</b> 42:18;47:1;86:16;88:18; 142:2;204:16 <b>along (3)</b> 193:21;242:2;260:3 <b>alternative (3)</b> 22:25;35:1;82:13 <b>Although (1)</b> 168:21 <b>always (3)</b> 62:8;108:12;261:16 <b>Amalgamated (1)</b> 124:24 <b>Amended (4)</b> 39:13;60:16,16;158:15 <b>American (8)</b> 51:25;71:5;102:2;104:18, 23;105:2;112:7;235:11 <b>among (6)</b> 127:24;145:17,24;147:13, 22;237:11 <b>amongst (1)</b> 217:17 <b>amount (26)</b> 68:20;77:17;78:1;85:21; 113:24;115:10,14;116:21; 125:25;126:3,12;127:17; 139:7;143:9;234:1,11; 235:15,16;237:14;241:9; 246:24;247:19,23;248:14; 253:24;255:8 <b>amounts (4)</b> 39:10;41:21;229:15;247:6 <b>analyses (8)</b> 48:1;73:17;191:7;193:15; 205:18,21;208:4;213:1 <b>analysis (62)</b> 14:22;15:5,21,24;16:3; 22:2,11,12,19,21;23:8;27:9; 30:15;31:2;35:15;42:12; 46:8,12;48:1;53:22;54:21; 55:13,22;57:18;60:3;73:14; 75:13;79:18;85:1,3;88:22; 115:1;128:9;130:1,4;139:6; 143:13,14,23;158:14,18,20; 160:5,5;163:6;165:7;179:24; 184:19;185:2;192:9;196:8; 200:16;205:3;219:23,24; 220:3,4;221:4;225:4,6; 226:12;227:10 <b>analyze (3)</b> 15:9;74:23;208:10 <b>analyzing (1)</b> 116:12 <b>Anders (9)</b> 21:14;31:7;50:10;51:2; 60:18;63:17;172:25;197:1,3 <b>Anders' (2)</b> 197:18;198:16 <b>Andrea (3)</b> 9:5;89:17;264:17</p>	<p><b>anisotropy (1)</b> 106:1 <b>annual (8)</b> 39:1;77:11;131:16; 136:24;246:9,15;247:23; 261:6 <b>annually (2)</b> 223:2;244:14 <b>answered (3)</b> 156:5;252:2;254:19 <b>anthology (2)</b> 170:7,9 <b>ANTHONY (2)</b> 7:4;228:8 <b>anticipate (4)</b> 121:15;128:18,24;185:1 <b>anticipated (1)</b> 158:9 <b>anticipating (2)</b> 129:9;142:8 <b>anymore (1)</b> 83:13 <b>anyways (1)</b> 9:9 <b>apologize (1)</b> 184:12 <b>Apparently (1)</b> 195:21 <b>appeal (1)</b> 135:11 <b>appears (6)</b> 116:4;165:13;167:17; 190:6;192:23;220:14 <b>application (11)</b> 79:12;109:14;110:3,9; 118:11;128:1;148:6;154:13; 215:9;238:18,24 <b>applications (2)</b> 109:2,9 <b>applied (10)</b> 18:1;47:10;52:18;103:17; 110:21,22;165:15;167:18; 178:7;203:15 <b>applies (2)</b> 69:23;179:9 <b>apply (6)</b> 31:2;35:17;36:4;79:1; 184:3;200:14 <b>applying (2)</b> 21:6;36:3 <b>apportion (1)</b> 147:8 <b>apportioned (2)</b> 145:17,24 <b>apportioning (1)</b> 226:3 <b>apportionment (1)</b> 147:12 <b>appreciate (1)</b> 120:21 <b>approach (8)</b> 48:12;52:13;103:13,15; 166:4;169:25;188:2;203:21</p>
--	---	---	--

<p><b>approaches (1)</b> 16:2</p> <p><b>appropriate (16)</b> 39:2,6,21;105:16;138:2; 167:13,15,19;169:5,18; 170:4;177:21;203:14,16; 204:3;224:7</p> <p><b>appropriateness (1)</b> 169:25</p> <p><b>Appropriators (3)</b> 122:22;213:4;223:17</p> <p><b>Approval (1)</b> 142:17</p> <p><b>approved (5)</b> 215:11;216:10;227:6,9,14</p> <p><b>approximately (10)</b> 30:17;64:21;90:13;125:5; 185:15;192:14;196:21; 197:23;235:8,11</p> <p><b>approximates (1)</b> 56:7</p> <p><b>April (27)</b> 13:16;37:3;46:9;55:19; 56:7;57:20;58:19,21,23,24, 24;85:8;88:23;101:15; 102:20;127:22;128:14; 230:6;231:18;233:4,12,16; 234:15;244:15,18,23,25</p> <p><b>aquatards (1)</b> 70:3</p> <p><b>Aquifer (56)</b> 12:2,5;13:4;44:1;49:25; 50:5;51:23;52:2;66:6,21; 67:10,11;68:3,5;70:2,3,4,21; 71:3,21,23;72:5,6;74:12; 76:4;78:5;80:13;82:17,18; 84:3,5,21;88:10;91:4,15; 105:21;107:1,25;131:23; 142:9;159:7;163:2;172:8,10; 179:19;180:1;189:8;202:7,9, 17;214:22,25,25;217:5; 220:7;224:23</p> <p><b>aquifers (1)</b> 71:10</p> <p><b>aquifer's (1)</b> 78:11</p> <p><b>Aquifer-System (1)</b> 106:8</p> <p><b>archive (1)</b> 94:17</p> <p><b>archived (1)</b> 34:10</p> <p><b>area (36)</b> 32:24;69:6,23,25;70:23; 72:4;79:2,3,3;95:20;101:22; 105:2,14;106:17,18;107:11; 114:25;124:16;131:23; 140:19;151:13;185:12; 209:24;210:20;229:17; 240:7,8,13,16,25;247:25; 250:1,1,7;251:16,21</p> <p><b>areas (12)</b> 70:25;79:8;112:8;140:19,</p>	<p>20;180:20;200:14,15;202:1; 234:5,15;250:7</p> <p><b>arguably (1)</b> 41:21</p> <p><b>argument (1)</b> 265:8</p> <p><b>arguments (2)</b> 154:6;161:1</p> <p><b>argument's (1)</b> 156:8</p> <p><b>arise (1)</b> 204:4</p> <p><b>arisen (2)</b> 135:2,7</p> <p><b>arises (2)</b> 230:18;234:5</p> <p><b>Army (1)</b> 230:8</p> <p><b>around (34)</b> 12:3,13,16;15:5;17:13; 25:12;27:5,11;28:24;30:2; 34:6;40:23;43:11;51:20; 53:23;54:22;67:21,25;68:4, 8;69:1;71:20;73:15;79:2,18; 81:15;90:13;96:15;100:8; 108:16;132:24;180:11; 194:25;256:24</p> <p><b>around205 (1)</b> 80:16</p> <p><b>arrival (1)</b> 165:10</p> <p><b>arrive (3)</b> 39:7;196:17,22</p> <p><b>arrives (1)</b> 196:14</p> <p><b>articulate (1)</b> 188:12</p> <p><b>As-Applied (22)</b> 13:16;14:23;15:6,17;19:8, 9;65:7;85:8;88:22;101:15; 128:15;137:24;154:20; 166:16,21,24;168:10,11; 187:16,22;203:24;235:13</p> <p><b>ascertain (1)</b> 203:15</p> <p><b>Ashton (1)</b> 218:18</p> <p><b>aside (1)</b> 27:1</p> <p><b>aspect (1)</b> 207:8</p> <p><b>aspects (1)</b> 71:18</p> <p><b>assembled (2)</b> 170:6,10</p> <p><b>assertion (1)</b> 197:3</p> <p><b>assess (2)</b> 194:24;195:2</p> <p><b>assessing (4)</b> 15:17;160:1,3;194:18</p> <p><b>assign (4)</b> 33:12;67:4;166:17;167:1</p>	<p><b>assigned (4)</b> 157:25;194:21;218:11; 258:19</p> <p><b>assigning (1)</b> 158:2</p> <p><b>assignment (5)</b> 159:2;245:11,20;258:17; 260:17</p> <p><b>associate (2)</b> 33:3;150:25</p> <p><b>associated (4)</b> 29:18;31:23;56:3;102:13</p> <p><b>Associates (1)</b> 152:7</p> <p><b>assume (3)</b> 121:11;145:8;227:18</p> <p><b>assumed (1)</b> 147:23</p> <p><b>assumes (1)</b> 163:6</p> <p><b>assumption (1)</b> 250:11</p> <p><b>attached (1)</b> 26:9</p> <p><b>attachment (2)</b> 21:10;24:2</p> <p><b>attainable (1)</b> 174:24</p> <p><b>attempt (2)</b> 136:22;264:24</p> <p><b>attempting (2)</b> 91:22;136:10</p> <p><b>attention (3)</b> 53:21;104:12;244:22</p> <p><b>attorney (1)</b> 169:4</p> <p><b>attorneys (1)</b> 89:24</p> <p><b>audio (1)</b> 47:3</p> <p><b>augmentation (11)</b> 238:3,7;244:11;255:1,23; 259:9,15;263:7,9,10,13</p> <p><b>authored (1)</b> 214:9</p> <p><b>authorized (2)</b> 209:5,8</p> <p><b>automated (1)</b> 67:1</p> <p><b>availability (1)</b> 224:10</p> <p><b>available (47)</b> 14:19;27:8;31:20;32:3,5, 17;34:2,13;35:25;36:10,12, 19;53:2;63:16;90:24;91:1,3; 95:9;106:6;115:6;118:3; 130:3;157:1;170:23;171:5, 22,23;172:17;175:3,5,9,13; 180:22;182:15;183:4; 190:22;191:10;192:13; 198:4;200:12;205:18; 222:24;223:5,8;244:11; 263:5,14</p>	<p><b>average (45)</b> 38:13,17;39:7,10,17,22,24; 41:3,5;42:5,16;44:19,22,23; 45:10,12,14,16,20;53:16,18; 61:5;74:17;96:22;97:5,8,10; 125:18;126:6;128:22; 144:19,21,22,23;178:22; 233:5;253:25;254:6,7,10; 261:13,14,16,17,17</p> <p><b>averages (1)</b> 37:20</p> <p><b>averaging (2)</b> 42:2;133:22</p> <p><b>avoid (1)</b> 53:4</p> <p><b>aware (7)</b> 126:14;127:24;128:3,14; 172:18;212:20;238:1</p> <p><b>away (3)</b> 44:19;80:18;225:2</p>
<b>B</b>			
			<p><b>bachelor's (2)</b> 11:17;151:1</p> <p><b>Back (23)</b> 16:24;24:18;28:8,14;35:6; 47:3;64:8,10;65:3;89:16; 106:9;111:11,13;113:10; 121:25;141:18;155:7; 164:11;192:22;193:25; 224:15;242:23;261:21</p> <p><b>background (7)</b> 11:16;32:16;65:6,10;85:7; 150:24;228:23</p> <p><b>balance (5)</b> 37:4,5;41:23;43:13;57:9</p> <p><b>balanced (1)</b> 42:25</p> <p><b>bar (4)</b> 83:10,10;190:25;191:17</p> <p><b>Barlogi (3)</b> 132:18;194:8,10</p> <p><b>barred (1)</b> 184:18</p> <p><b>bars (1)</b> 191:22</p> <p><b>base (1)</b> 96:20</p> <p><b>based (47)</b> 28:4;34:9,11;35:22,24; 38:24;40:8,8;41:20;42:22; 45:8;51:9;55:12;57:23; 59:22;61:24;63:3;66:17; 67:5;69:21;70:11;72:5;74:1; 94:15;96:15;98:12;104:14; 105:8;109:10;110:4;113:7; 116:12;127:16;128:10; 129:25;130:3,15;147:9; 148:12,15;165:2;174:8; 207:21;227:18;233:4;248:7; 250:10</p> <p><b>baseline (77)</b></p>



<p>23:4;36:24;37:1,9,16; 38:12,15,19,22;39:2,7,14,16, 18,20,21,23,24,25;40:4,6,10, 16,23;41:1,12,13;42:3,12,15; 44:11,13,14,21,22,24;45:7, 15,17;53:14,23;54:8,8,55:15, 16,17,19,22;56:8;57:7,8,22; 58:25;59:1,18,25;61:2,16; 62:7,8,21,25;88:3,7,20; 96:19,21,23;97:2,6,10;98:3, 4;99:17;101:1,4;147:10</p> <p><b>baseline-year (1)</b> 62:24</p> <p><b>basic (1)</b> 73:17</p> <p><b>basically (68)</b> 17:18;18:24;20:20;21:22; 22:2;23:1;25:16;26:25; 28:10;31:2;32:7,9,25;33:2, 14,17;34:25;37:10;42:5; 43:10;44:18;46:11;47:19; 48:7,14,18;49:3,7;50:4; 52:16,25;53:10;56:1,5,10,20, 22,24;57:25;58:8;59:8; 60:10;61:19;66:3,12,16,22; 67:3,20;68:13;70:20;71:2,4, 9,25;72:18;73:11;77:1;79:1; 81:7;82:7,12;85:18,23; 86:11;104:25;105:6;173:17</p> <p><b>Basin (27)</b> 144:20;151:17,22;195:10; 213:8;232:4,12,14,19; 233:23;234:18;237:21; 238:19,21,25;239:3,4,5,6,9, 10,20;240:7,12;242:3;256:5, 23</p> <p><b>Basins (6)</b> 229:25;232:3,6,6,9;256:24</p> <p><b>basis (18)</b> 35:18;81:24;93:12; 125:17;163:21,24;173:19; 174:6;191:14;194:15; 195:16,16;205:19;219:6; 223:5,8;226:11;251:1</p> <p><b>Bates-stamped (1)</b> 218:8</p> <p><b>Baxter (3)</b> 9:20,21,23</p> <p><b>beans (1)</b> 125:13</p> <p><b>bearing (1)</b> 190:9</p> <p><b>become (1)</b> 207:22</p> <p><b>becomes (1)</b> 240:18</p> <p><b>beets (1)</b> 125:13</p> <p><b>began (1)</b> 160:21</p> <p><b>begin (1)</b> 122:17</p> <p><b>beginning (2)</b></p>	<p>50:22;119:21</p> <p><b>behalf (7)</b> 10:4;90:19;92:12;122:21; 132:13;153:9;258:10</p> <p><b>behind (1)</b> 129:13</p> <p><b>belabor (2)</b> 161:19;186:16</p> <p><b>belief (2)</b> 137:6;205:2</p> <p><b>believes (2)</b> 136:2;181:17</p> <p><b>belong (1)</b> 125:1</p> <p><b>belonged (1)</b> 125:25</p> <p><b>below (16)</b> 38:17;53:18;102:2,9; 103:7;218:20;232:19,23; 233:2;253:9,25;254:6,10; 261:13,15,25</p> <p><b>below-average (1)</b> 97:19</p> <p><b>beneficial (8)</b> 130:10;178:2,16,17;179:7; 181:14;185:17;197:23</p> <p><b>benefit (9)</b> 56:6;86:2,16;130:16; 177:25;179:2;197:15;221:7; 253:13</p> <p><b>benefits (2)</b> 102:8;253:15</p> <p><b>best (28)</b> 66:11,17,24;69:3;90:23; 91:1,2,14;95:8;96:15; 169:18,21;170:23;171:4,22, 23;175:3,4,9,13;190:22; 191:9;192:13;200:11; 202:15;217:19;218:25;219:1</p> <p><b>bet (1)</b> 141:6</p> <p><b>better (18)</b> 17:4;50:24;77:5;108:21; 140:25;141:11;176:19,20; 193:13;216:24;217:21; 219:18;220:6,9,10,12,15; 255:16</p> <p><b>beyond (5)</b> 109:12;127:12;134:12; 187:9;248:22</p> <p><b>bias (16)</b> 40:16;42:17;55:3;58:19; 59:4,17,24;60:11;61:8;62:6, 12,21;100:23,24;101:5; 103:17</p> <p><b>Big (4)</b> 13:10;125:12;235:24; 256:23</p> <p><b>bigger (1)</b> 124:24</p> <p><b>binder (1)</b> 16:18</p> <p><b>binders (1)</b></p>	<p>129:13</p> <p><b>Bingham (1)</b> 123:15</p> <p><b>biological (1)</b> 229:1</p> <p><b>bit (12)</b> 43:20;61:9;65:21;66:7; 78:16;141:21,22;153:16; 180:10;198:4;199:11;247:8</p> <p><b>Black- (1)</b> 106:17</p> <p><b>Blackfoot (51)</b> 50:3,21;56:6;67:23;68:14, 23;69:13;70:6,14;71:3;72:4; 75:19;76:13;84:24;85:11; 86:3,17;91:7,16,17,24;104:1; 105:5;106:17;107:9,16; 108:22;119:24;171:1,2,12; 173:15;190:24;201:20; 216:25;217:3,19;218:15,20, 21,25;220:11;229:20,21,25; 232:15,24;233:7,14;234:5,13</p> <p><b>Blaine (1)</b> 124:14</p> <p><b>block (1)</b> 221:17</p> <p><b>blocks (1)</b> 199:13</p> <p><b>blue (4)</b> 77:13,21;83:7,10</p> <p><b>Board (4)</b> 102:11;142:13;151:8,8</p> <p><b>Board's (2)</b> 101:25;102:4</p> <p><b>body (1)</b> 28:14</p> <p><b>Boise (1)</b> 242:15</p> <p><b>bold (2)</b> 46:22;48:16</p> <p><b>Bonneville-Jefferson (7)</b> 150:2,14;152:9;153:5; 211:10,20;213:3</p> <p><b>book (1)</b> 217:25</p> <p><b>books (1)</b> 247:23</p> <p><b>both (18)</b> 20:5;52:20;84:2;91:11; 119:4;152:18;156:2;167:9; 168:11,13,14,20;175:15; 188:15;202:18;221:8;226:2; 229:5</p> <p><b>bottom (8)</b> 22:6;33:22;86:5,13;130:7; 176:19;202:18;218:8</p> <p><b>Boulder (1)</b> 11:13</p> <p><b>boundary (6)</b> 33:1;35:12;66:10;107:12; 209:12,12</p> <p><b>box (20)</b> 32:22;49:17,18,20,22,23;</p>	<p>50:2,13,16;51:3;101:14; 102:12,14,16,18;103:1,2,12; 119:22;209:14</p> <p><b>breaches (1)</b> 136:7</p> <p><b>Break (13)</b> 16:23;64:5,7,9;89:15; 111:3,11,13,15;193:22,23, 25;194:1</p> <p><b>briefly (14)</b> 12:25;32:13;35:21;36:25; 46:5;53:9;132:16;150:24; 158:23;173:3;177:15; 186:14;227:1;230:11</p> <p><b>briefs (1)</b> 265:4</p> <p><b>bring (2)</b> 106:12;137:2</p> <p><b>bringing (1)</b> 83:23</p> <p><b>brings (2)</b> 118:17;231:24</p> <p><b>broaden (1)</b> 220:1</p> <p><b>broader (2)</b> 174:17;202:21</p> <p><b>Broadly (3)</b> 146:20;176:5,7</p> <p><b>broken (1)</b> 85:14</p> <p><b>brought (6)</b> 53:20;76:24;81:14; 104:12;138:24,25</p> <p><b>Bryce (12)</b> 121:19;149:16;150:1,18, 20;176:10;188:3;194:7; 196:3,25;207:7;227:5</p> <p><b>B-r-y-c-e (1)</b> 150:18</p> <p><b>Bryce's (1)</b> 206:17</p> <p><b>Budge (43)</b> 7:6;16:20;121:13,14,17, 20;122:11,14;129:16,20; 132:4;134:12,19,22,25; 135:6,10,13,16,21;136:7; 137:22;138:5;144:11,14; 146:4,13,17;148:21;149:8; 236:21,22;237:4,6;243:18, 20;245:2;250:23;251:2; 257:20;262:4,6,9</p> <p><b>budget (18)</b> 67:12;68:2,6,8;74:5;76:20; 77:4;78:11;79:15;83:2,4,25; 84:3,5;108:1,17;159:4; 182:14</p> <p><b>budgets (2)</b> 151:19;214:3</p> <p><b>buffer (4)</b> 79:1,3,6,8</p> <p><b>build (8)</b> 66:9,10;69:5,5;177:7; 203:3,3,3</p>
---	---	---	---

<p><b>built (7)</b> 68:11,25;69:9,25;100:23; 105:19,20</p> <p><b>bullet's (1)</b> 221:12</p> <p><b>burden (1)</b> 156:3</p> <p><b>Bureau (5)</b> 230:7;235:24;244:11,16; 263:10</p> <p><b>Burley (1)</b> 19:18</p> <p><b>business (3)</b> 11:8,10,12</p>	<p>65:4,13;66:18;67:2;70:3; 106:23;122:5;150:2;170:6; 228:9;248:18</p> <p><b>calls (6)</b> 109:19,25;133:11;134:19; 251:2;256:25</p> <p><b>came (3)</b> 29:5;129:1;199:14</p> <p><b>camp (1)</b> 189:16</p> <p><b>can (199)</b> 9:8,18,22,23;10:13;11:7; 15;13:3;16:8,20;17:3,9;18:3; 20:2,5,6,10,16;21:11,19; 24:23;25:25;26:21;27:20,21; 28:18;30:23,25;31:13;32:13, 20,24;33:1,3;34:5,22;35:12, 17,21;36:24;37:3;38:14,15, 18;41:15;42:13,21;43:20; 45:5,11;46:11,17,22;47:11, 23;48:24;49:20;51:14;52:18; 53:9;54:5,9,24;55:8;57:15; 58:18;60:22;61:18;63:5,23; 65:6,21;68:21;69:14;71:15; 72:22,24;75:10;76:7,21; 78:10;80:16,23,23;84:18; 86:7,13,23;87:6;88:9,15; 89:11;91:20;95:16;96:15; 98:17;104:8,15,22;106:1,20; 107:3;110:7;111:8,24,24; 112:25;113:15;114:7; 115:12;117:19;118:14; 120:15;123:5;127:8,12,15, 20;129:7;133:23;134:22; 136:1;137:17;149:21; 150:16;151:4;153:15,15; 154:2;155:7;156:19;157:19; 158:25;163:1,18,19;165:3, 17,21;170:12;173:7,18; 176:4,7,13,22;177:2,6,12,13, 15,17;179:17;180:2;182:16; 183:10;184:5,10;188:22; 189:11;190:13;191:12; 193:21,21;195:15;200:13, 20;204:7,18;206:7;208:4; 216:14;218:18;222:11; 223:1;228:19;231:10;236:2, 24;237:5,7;239:7;242:23; 243:10;244:5,6;246:14,22; 249:22;251:17;257:8,12,17; 259:4,8;263:22;264:3,17,18</p> <p><b>Canal (46)</b> 19:22;20:15;27:19;30:16, 18;46:10;49:4;54:15,19; 56:19;58:4,7,14;60:15;62:3; 94:4;95:10;112:15;114:10; 127:6,14;132:22,23;140:22; 151:7,8,9;194:20;197:5; 209:23;210:15,19;213:7; 223:7;235:6,15,18;236:3; 247:11,19,20;250:8,14; 260:12;261:24,25</p> <p><b>canals (10)</b></p>	<p>213:11;234:2;247:2,6; 248:8;250:3,5;251:12;252:7; 261:19</p> <p><b>Candice (3)</b> 9:11;257:7;258:9</p> <p><b>candidate (1)</b> 174:10</p> <p><b>Canyon (20)</b> 49:17,18,20,22,23;50:2,13, 16;51:3;101:14;102:12,14, 16,18;103:1,2,12;119:22; 240:10,15</p> <p><b>capabilities (1)</b> 188:18</p> <p><b>capability (1)</b> 36:1</p> <p><b>capable (6)</b> 106:19;171:13;174:10; 179:24,24;205:20</p> <p><b>capture (2)</b> 37:17;96:15</p> <p><b>captured (1)</b> 157:14</p> <p><b>carburetor (2)</b> 220:25;221:3</p> <p><b>care (3)</b> 113:17;149:20;174:20</p> <p><b>career (1)</b> 105:19</p> <p><b>careful (1)</b> 99:3</p> <p><b>Carey (1)</b> 123:13</p> <p><b>Carlquist (12)</b> 121:21,22;122:4,19; 132:10;135:1;136:1;140:2; 146:3,12;149:13;178:14</p> <p><b>carried (1)</b> 23:9</p> <p><b>carry (1)</b> 100:16</p> <p><b>carryover (28)</b> 15:8;53:8,10,11;54:1,3,17, 23,24;59:25;60:7,20,23; 99:17,18,22;100:2,2,8,12,18, 23,24;101:2;140:25;242:18; 243:2,7</p> <p><b>case (16)</b> 12:11;13:12;14:5;75:16; 90:15,18;135:20;136:13; 137:23;167:9;196:20;202:1; 204:14;209:22;220:11; 250:13</p> <p><b>cases (2)</b> 189:18;190:25</p> <p><b>casting (1)</b> 50:19</p> <p><b>casual (3)</b> 175:18;195:16,16</p> <p><b>catch (1)</b> 195:15</p> <p><b>catches (1)</b> 52:5</p>	<p><b>categories (1)</b> 199:20</p> <p><b>category (1)</b> 118:12</p> <p><b>cause (8)</b> 10:19;122:6;150:4;183:22, 23;197:12;201:15;228:10</p> <p><b>caused (2)</b> 68:1;116:17</p> <p><b>causes (4)</b> 105:5;179:9;180:1;187:19</p> <p><b>cell (5)</b> 76:10;202:16,17,18; 219:22</p> <p><b>cells (7)</b> 20:11;76:12;202:19; 219:21,25;220:2,5</p> <p><b>certain (10)</b> 67:4;107:1;140:19; 144:24;189:7;200:16;219:8; 230:15;241:9;251:23</p> <p><b>certainly (11)</b> 36:1;141:10;157:22; 158:17;170:16;183:11; 184:23;185:5;189:16; 223:24;242:9</p> <p><b>certainty (1)</b> 109:13</p> <p><b>cfs (1)</b> 163:21</p> <p><b>chair (1)</b> 122:8</p> <p><b>chairman (2)</b> 124:7,9</p> <p><b>chance (3)</b> 51:3;141:11;246:10</p> <p><b>change (39)</b> 20:25;21:4;46:15;48:21; 53:19;54:8,11;72:10,25; 74:8,11;80:13,19;84:13; 94:3,24;99:18,22;103:3; 108:19;112:20;113:5,10; 114:3,18;128:8;130:22; 148:6;154:7;162:24;163:10; 164:25;194:16;195:12,17; 196:14;214:22;236:5;250:16</p> <p><b>changed (16)</b> 27:16;74:4;80:7;95:7; 111:23;112:18;127:25; 147:17;160:9,11,17,18; 169:1;230:13;254:20;259:13</p> <p><b>changes (13)</b> 22:13;50:4;53:25,25; 73:19,24;74:2;112:19; 120:25;127:24;220:7; 258:24;259:4</p> <p><b>changing (8)</b> 21:5;74:17,18;76:17; 113:13,15;114:9,12</p> <p><b>channel (2)</b> 239:24;240:4</p> <p><b>characteristic (1)</b> 199:14</p>
<b>C</b>			
<p><b>calculate (15)</b> 19:8;20:25;31:22;53:14; 58:13;74:7;108:4;119:2; 156:18;166:25;196:15,19; 198:8;203:6;204:14</p> <p><b>calculated (15)</b> 42:19;60:5,21;94:21; 112:12;113:3;174:20;178:5; 179:10;183:24;197:8,12; 201:14;202:2;205:24</p> <p><b>calculating (4)</b> 114:4;166:22;169:13; 198:8</p> <p><b>calculation (38)</b> 17:20,25;18:18,19;19:11; 20:4,8,12,21;21:7;23:3; 27:24;28:1;30:9,12;31:10; 54:1;57:14,24;58:9;61:22; 96:13;112:22;113:6,16; 114:11,23;115:19;143:6; 187:7,8;193:2;196:18; 198:13,15;204:2;247:18; 250:17</p> <p><b>calculations (6)</b> 18:2;19:1;168:14;197:21; 203:15;221:8</p> <p><b>calibrate (2)</b> 69:1;77:25</p> <p><b>calibrated (8)</b> 66:12,16,17;84:2;206:2,3; 216:21,24</p> <p><b>calibration (26)</b> 31:19,24;66:8,23;67:2,10; 68:7;69:7;72:9;73:12,12; 74:10,25;77:2,2;78:9;79:25; 80:1,9,15;81:3;83:19;84:6; 108:24;217:9,14</p> <p><b>call (21)</b> 11:3;68:17;90:2;101:19; 128:15;130:25;131:5; 150:19;159:5;172:3;211:19; 231:9;238:18,25;239:25; 240:17;241:13,13;248:25; 256:21;259:7</p> <p><b>called (15)</b> 10:18;28:24;29:12;32:24;</p>			

<p><b>characteristics (4)</b> 104:1;106:21;179:18; 189:8</p> <p><b>characterize (1)</b> 96:12</p> <p><b>characterizing (2)</b> 258:3,20</p> <p><b>charged (1)</b> 127:12</p> <p><b>chart (3)</b> 75:10,11;119:3</p> <p><b>charts (1)</b> 191:8</p> <p><b>chastised (1)</b> 214:18</p> <p><b>check (2)</b> 74:23;150:19</p> <p><b>checked (1)</b> 34:10</p> <p><b>cheese-processing (1)</b> 124:23</p> <p><b>choose (1)</b> 249:1</p> <p><b>choosing (6)</b> 42:14;44:22;53:17;54:7; 59:17;78:25</p> <p><b>chopped (1)</b> 249:19</p> <p><b>chose (7)</b> 39:23;40:25;41:8,9,10; 79:9;80:25</p> <p><b>chosen (4)</b> 41:2,4;45:22;103:16</p> <p><b>chug (1)</b> 193:21</p> <p><b>CIR (1)</b> 83:20</p> <p><b>circle (1)</b> 220:1</p> <p><b>circumstances (2)</b> 43:17;170:13</p> <p><b>citation (1)</b> 162:25</p> <p><b>citations (1)</b> 165:1</p> <p><b>cited (1)</b> 155:11</p> <p><b>cities (2)</b> 124:25;258:10</p> <p><b>City (4)</b> 228:9;230:20;240:12,16</p> <p><b>claims (5)</b> 151:10,23;194:22;195:9; 256:2</p> <p><b>clairvoyant (1)</b> 228:6</p> <p><b>clarification (3)</b> 134:16;185:10;240:6</p> <p><b>clarify (4)</b> 34:5;117:18;257:9,12</p> <p><b>clarifying (2)</b> 257:17;258:13</p> <p><b>clarity (1)</b></p>	<p>148:22</p> <p><b>Clark (2)</b> 86:6;123:15</p> <p><b>classes (1)</b> 33:18</p> <p><b>classification (2)</b> 33:14;95:19</p> <p><b>classifications (1)</b> 118:24</p> <p><b>classified (2)</b> 33:17;95:20</p> <p><b>clause (1)</b> 264:8</p> <p><b>cleanup (1)</b> 64:17</p> <p><b>clear (9)</b> 26:12;31:7;63:22;95:12; 100:12;177:21;189:19; 233:12;249:22</p> <p><b>clearly (1)</b> 120:6</p> <p><b>clients (4)</b> 9:13;73:14;132:14;215:8</p> <p><b>climate (3)</b> 37:10,13;38:1</p> <p><b>clip (1)</b> 210:3</p> <p><b>close (6)</b> 42:5;61:7;144:23;191:16; 204:13,13</p> <p><b>closely (1)</b> 56:7</p> <p><b>closer (7)</b> 41:9;44:23;82:22;84:8,8; 97:4;243:4</p> <p><b>closing (1)</b> 265:3</p> <p><b>CLU (2)</b> 32:25;199:12</p> <p><b>Coalition (66)</b> 25:14,16;29:15;36:8;37:3; 23;40:1,11;43:22;45:21; 46:14;53:12,25;59:10;61:15; 62:1,23;63:2;88:24;92:7; 95:13;103:8;125:23;130:17; 131:5,21;135:3,7;143:21; 146:19;170:14;171:20; 174:21;175:25;183:15; 189:21;191:25;197:15; 200:19;201:15,22;203:18; 211:2,19;221:14;226:16; 227:20;232:7;233:21;234:2; 235:3,5;236:20,24;238:10; 243:22;245:9;248:25; 253:14;254:14,17;255:4,9, 18;258:10;260:5</p> <p><b>Coalition/Idaho (1)</b> 223:16</p> <p><b>Coalition's (5)</b> 27:15;39:11;135:18; 179:11;253:17</p> <p><b>co-chair (2)</b> 122:25;123:1</p>	<p><b>coherent (4)</b> 156:24;158:18;188:14,14</p> <p><b>collectively (3)</b> 147:1,1,18</p> <p><b>color (1)</b> 104:20</p> <p><b>Colorado (1)</b> 11:13</p> <p><b>colors (1)</b> 104:24</p> <p><b>column (29)</b> 18:4,7,15;19:3,6,14,19; 29:11,18,19,24;30:3,6,10; 55:20;56:18,23;85:13,16,20, 23;86:10,11;143:15;191:21; 247:16;250:10,13;251:22</p> <p><b>columns (8)</b> 19:5;60:15;85:12;86:22; 93:11,12;143:5,11</p> <p><b>combine (1)</b> 71:24</p> <p><b>combined (2)</b> 78:6;171:3</p> <p><b>comfortable (5)</b> 74:24;122:9;175:17,21; 199:4</p> <p><b>coming (9)</b> 35:3,18;53:3;97:16; 145:10,11;153:1;253:9; 254:10</p> <p><b>comment (7)</b> 18:3;27:13;34:5,9;56:9; 105:12;203:4</p> <p><b>commented (1)</b> 117:24</p> <p><b>comments (18)</b> 14:1,12,16;25:20;26:7,9, 10,11,18,22;27:3;45:24; 52:20;63:11,12;92:11,15; 197:17</p> <p><b>commissioned (1)</b> 31:16</p> <p><b>committed (1)</b> 29:17</p> <p><b>committee (38)</b> 13:5,7,10;22:10;23:15; 24:8,11;29:4;31:18;40:10; 65:14,16,20;73:3,11,24; 74:21;76:24;78:13,17,18; 79:5,16;81:6,11,14;106:13; 159:16,20;170:2,3;176:18; 214:8;219:9,14;223:13,15,19</p> <p><b>committees (1)</b> 13:3</p> <p><b>common (13)</b> 16:13;213:11;245:12; 254:23;257:11;259:7; 260:23;262:14;263:3,5,6,22; 264:3</p> <p><b>communicates (1)</b> 202:17</p> <p><b>communication (4)</b> 202:7,8,15,21</p>	<p><b>Company (35)</b> 19:23;20:15;27:19;30:16, 18;46:10;49:4;54:16,19; 56:19;58:5,7,15;60:15;62:3; 94:4;95:10;112:15;114:10; 127:14;132:22,23;140:22; 152:8;194:21,23;197:5; 209:24;210:15,19;223:7; 235:6,15;261:24,25</p> <p><b>company's (2)</b> 151:9;235:19</p> <p><b>compare (3)</b> 47:22;83:10;190:21</p> <p><b>compared (13)</b> 45:12,18;50:3;60:12; 81:20,23,25;86:8;101:3; 126:17;216:25;244:25; 247:12</p> <p><b>compares (2)</b> 72:15;76:8</p> <p><b>comparing (1)</b> 45:10</p> <p><b>comparison (3)</b> 82:4;116:13;224:17</p> <p><b>comparisons (2)</b> 107:17;219:19</p> <p><b>compatible (1)</b> 223:3</p> <p><b>compensate (1)</b> 78:2</p> <p><b>complained (2)</b> 129:4,6</p> <p><b>complete (2)</b> 22:12;56:16</p> <p><b>completed (2)</b> 22:21;93:1</p> <p><b>completely (4)</b> 49:24;57:23;176:20; 241:23</p> <p><b>compliance (12)</b> 135:23;136:16,20;137:1,7, 11,13;138:1,1,12,18,19</p> <p><b>comply (6)</b> 136:11,16,19,23;137:6; 146:22</p> <p><b>complying (2)</b> 136:2;137:20</p> <p><b>component (6)</b> 36:23;38:1;57:22;76:20; 79:15;83:4</p> <p><b>components (22)</b> 15:19;36:12;38:12,14; 67:12;68:2,6,8;70:13;74:5; 77:4,17,19;78:12;79:14; 83:2,16,25;108:1,10,17; 203:2</p> <p><b>compounding (1)</b> 55:3</p> <p><b>comprehensive (2)</b> 50:18;52:13</p> <p><b>compressed (2)</b> 15:20;22:18</p> <p><b>comprised (1)</b></p>
--	--	---	---

<p>259:8 <b>computer (1)</b> 208:2 <b>conceptual (6)</b> 68:11,18;71:18;108:10; 176:24;189:15 <b>conceptualization (1)</b> 68:22 <b>conceptualizations (1)</b> 69:22 <b>conceptually (2)</b> 68:11;179:16 <b>concern (10)</b> 44:12;49:14,16,19,22; 61:17;74:20;76:23;83:9; 191:19 <b>concerned (5)</b> 50:15;79:11;80:14;131:2; 174:2 <b>concerning (8)</b> 112:9;115:2;134:3; 139:19;242:17;243:1,6; 253:24 <b>concerns (11)</b> 48:25;49:1;54:4;73:23; 74:3;101:13;102:25;120:5; 242:17;243:2,7 <b>concise (3)</b> 153:21;161:1;180:15 <b>conclude (2)</b> 22:10;191:9 <b>concluded (1)</b> 42:12 <b>conclusion (12)</b> 21:20;30:24;99:4;109:25; 134:20;155:21,25;161:20; 188:7,9,10;251:3 <b>conclusions (13)</b> 35:21,22;42:8,10;84:20; 86:19;87:6;92:23;93:24; 155:15;156:17;157:2;191:6 <b>conclusory (1)</b> 200:23 <b>condition (3)</b> 162:23;164:24;214:23 <b>conditions (6)</b> 51:23;52:2,66:10;70:10; 76:14;107:12 <b>conductance (1)</b> 107:5 <b>conductivity (3)</b> 66:4;105:24,25 <b>confidence (4)</b> 94:9;98:13;107:16;176:7 <b>configuration (1)</b> 122:1 <b>figured (1)</b> 219:25 <b>confirm (6)</b> 31:25;64:25;95:5;123:11; 184:2;225:9 <b>conflicting (1)</b> 168:6</p>	<p><b>confused (1)</b> 134:7 <b>confuses (1)</b> 218:3 <b>confusing (1)</b> 31:6 <b>confusion (2)</b> 196:13;206:12 <b>conglomeration (1)</b> 18:8 <b>conjunctive (5)</b> 90:6;177:22;216:2,6;257:1 <b>connection (2)</b> 86:1;240:19 <b>connections (1)</b> 121:12 <b>connectivity (1)</b> 70:9 <b>consensus (1)</b> 170:5 <b>consequence (3)</b> 156:14;201:12;205:1 <b>consequences (3)</b> 201:10,19;221:17 <b>conservation (3)</b> 12:14,16;147:5 <b>conservatism (11)</b> 41:20;42:23,25;43:2; 103:16;202:25;203:4,14,17, 25;204:7 <b>conservative (7)</b> 97:5;103:12;197:16;203:2, 11,12,13 <b>conserve (3)</b> 131:11;147:2,19 <b>consider (12)</b> 37:18;43:6;109:4;167:16; 169:19;180:22;181:1,17; 207:18,19;233:13,15 <b>consideration (3)</b> 100:5;192:25;224:7 <b>considerations (1)</b> 100:8 <b>considered (17)</b> 37:19;39:19;40:7;45:7,14; 46:21;47:14;162:3,4;167:10; 169:13;185:3;186:11;187:6; 198:5;213:23;220:21 <b>considering (5)</b> 39:15;63:19;79:8;167:13; 181:5 <b>considers (2)</b> 37:14;230:12 <b>consistency (4)</b> 154:16;156:15;158:4; 186:13 <b>consistent (10)</b> 36:3;45:22;58:5;62:11; 97:2,4,7;120:17,19;226:2 <b>consistently (6)</b> 30:16;31:11;49:12;62:16; 64:20;82:2 <b>consists (2)</b></p>	<p>230:12;263:6 <b>constrained (4)</b> 44:4;98:14;99:8;217:21 <b>constraints (5)</b> 158:12;184:18;193:7; 205:8,9 <b>construing (1)</b> 163:22 <b>consultants (2)</b> 211:25;212:20 <b>consulted (1)</b> 82:6 <b>consulting (3)</b> 11:24;13:1;207:22 <b>consumptive (9)</b> 31:23;35:5;66:14;74:7; 79:14;96:13;108:17;127:17; 163:8 <b>contained (2)</b> 23:25;231:17 <b>contains (1)</b> 217:4 <b>contend (2)</b> 118:7;251:14 <b>content (1)</b> 230:15 <b>contention (1)</b> 250:4 <b>contested (1)</b> 241:6 <b>context (8)</b> 100:22;120:3;163:23,23; 172:2;174:3;224:4;245:9 <b>continually (1)</b> 34:14 <b>continuance (1)</b> 231:18 <b>continue (7)</b> 24:25;62:18;78:21; 131:19;142:8,24,25 <b>Continued (4)</b> 7:2;101:14;131:11,13 <b>continues (3)</b> 196:1;212:25;220:16 <b>continuing (1)</b> 218:14 <b>continuous (1)</b> 163:3 <b>Contor (13)</b> 121:19;149:17,18;150:1, 12,18;194:6;207:2;211:7,9; 212:13;218:9;227:21 <b>C-o-n-t-o-r (1)</b> 150:18 <b>contribute (6)</b> 139:6,12,13;232:6;242:11; 260:22 <b>contribution (1)</b> 248:19 <b>control (4)</b> 71:25;107:3;235:22;236:1 <b>controlling (2)</b> 71:2;107:6</p>	<p><b>controls (4)</b> 68:14;70:5,10;72:3 <b>convene (2)</b> 17:12;28:21 <b>convenient (1)</b> 172:24 <b>convening (1)</b> 264:16 <b>conversation (1)</b> 175:18 <b>convert (1)</b> 247:6 <b>copies (2)</b> 14:19;153:14 <b>copy (3)</b> 14:8;162:12;245:24 <b>corn (1)</b> 125:12 <b>Corps (1)</b> 230:8 <b>corrections (3)</b> 120:13;121:5;157:6 <b>correctly (2)</b> 87:25;238:6 <b>correlated (1)</b> 50:8 <b>correspond (1)</b> 199:16 <b>corresponding (1)</b> 165:25 <b>cost (4)</b> 177:16,18;179:15;220:20 <b>cost-benefit (1)</b> 221:4 <b>costly (1)</b> 199:24 <b>costs (1)</b> 260:4 <b>counsel (4)</b> 120:16,24;121:4;138:24 <b>counting (4)</b> 47:4,7,13;119:5 <b>County (3)</b> 124:13,13,14 <b>couple (24)</b> 42:1;44:5;48:18;77:18; 82:1;140:10;141:16,18; 142:5;143:1,5;162:5;180:11; 186:13;193:21;200:22; 201:8;234:24,25;236:5; 237:8;257:16;259:6;261:5 <b>course (4)</b> 130:25;140:15;204:16; 254:6 <b>COURT (26)</b> 9:6;11:7;15:4;26:21; 28:12;33:5,10;64:11;78:15; 97:20;98:17,21;116:8; 152:19;153:15;185:14; 190:17;222:11;224:13; 227:16;242:19,21,22;243:5, 10;249:19 <b>courts (3)</b></p>
--	---	---	---

<p>216:9;227:5,9 <b>cover (2)</b> 162:16;229:18 <b>covered (2)</b> 185:8;188:3 <b>covers (2)</b> 35:14;229:19 <b>create (5)</b> 42:2;60:11;153:8;185:19, 23 <b>created (6)</b> 32:15;48:6;56:1;198:22; 214:11;215:14 <b>creates (5)</b> 40:16;42:16;113:20; 168:10;208:14 <b>creating (3)</b> 37:6,7;79:12 <b>credibility (1)</b> 198:6 <b>credit (1)</b> 198:8 <b>Creek (3)</b> 232:22;233:7;234:13 <b>CREP (1)</b> 12:13 <b>crested (3)</b> 169:20;221:1,3 <b>Cresto (3)</b> 21:14;22:6;25:20 <b>criteria (29)</b> 36:25;37:9,12,16;38:12, 15,25;39:9,18,23,24;41:14; 44:14,23;45:15,18;52:15; 62:21,24;172:14;173:21; 174:3,16;203:10;204:5; 213:21,21,22;219:8 <b>crierias (1)</b> 40:6 <b>criterion (10)</b> 174:13;176:12;202:24; 203:10;204:12,15,21;205:4; 206:6;213:20 <b>criticism (1)</b> 202:12 <b>criticized (1)</b> 104:11 <b>critique (1)</b> 69:24 <b>crop (11)</b> 27:22,23,24;36:13;112:22; 113:4,5,7;114:17,22;195:2 <b>crops (5)</b> 125:10,12,14,15;150:25 <b>cross (3)</b> 140:3;236:24;257:13 <b>Cross-Examination (22)</b> 7:7,8,9;89:8,21;110:25; 112:4;132:5,8;140:6;149:10; 207:5;211:1,5;226:22; 236:19;243:21;244:1;253:4; 257:23;258:3,7 <b>cross-examine (1)</b></p>	<p>111:18 <b>cross-examining (1)</b> 89:25 <b>cross-hatched (1)</b> 191:2 <b>crossing (1)</b> 257:21 <b>cubic-feet-per-second (1)</b> 163:19 <b>cumulative (2)</b> 167:16;203:6 <b>curious (2)</b> 212:17,21 <b>current (18)</b> 22:13;23:3;26:3,18;37:18; 45:18;48:23;76:20;82:17; 85:7;115:11;122:24;152:10; 171:23;216:14;229:4; 245:14;255:8 <b>currently (5)</b> 22:12;203:22;207:15; 226:10;263:6 <b>cursor (1)</b> 154:22 <b>curtail (8)</b> 86:3,9;88:21;164:2; 178:10;179:4;222:2,2 <b>curtailed (18)</b> 43:12;56:15;57:5;85:22; 86:12,16,23;87:2;88:10,12, 17,20;131:3;163:7;164:6; 178:16,21;226:14 <b>curtailing (1)</b> 256:8 <b>curtailment (69)</b> 37:8;41:24;43:4,11,14; 55:5;56:2,5,13,13,17;57:10; 60:5;65:4,8;72:1;75:15,16; 84:10;85:7,15,20,21;87:3; 115:22;116:4,12;120:11,23; 128:12,16,18,24;129:2,10; 130:3,9,13;131:8;138:21,22; 140:13;145:2,6,10,11; 156:21;160:3;163:4,6,9,23; 165:3,6,8,24;166:3;181:12; 187:12;192:13;196:15,16; 201:16;216:15;224:10; 226:3,7;240:1;256:11 <b>curtailments (3)</b> 128:5;163:3;226:11 <b>curve (2)</b> 43:6;56:1 <b>cut (3)</b> 200:3;201:13;239:7 <b>cutoff (1)</b> 166:13 <b>cuts (1)</b> 200:18</p>	<p><b>dairy (1)</b> 125:2 <b>Dam (3)</b> 229:21;232:10;262:1 <b>darker (2)</b> 70:22;104:20 <b>dashed (2)</b> 70:23;75:18 <b>data (72)</b> 20:11;27:7;28:25;30:22; 31:11;32:21;34:10;35:1,3, 14;47:23;50:13;57:17;66:14, 23;67:24;68:20;74:7;78:24; 79:4,23;81:23;82:1,4,5,14; 85:7;94:7,8;106:4;118:3,4,8, 8,18;171:10;173:8,9,9,23; 177:7,8;182:15;183:13,14, 18,21;189:17,22;195:5,6; 197:13,14,18;198:17,20; 199:19;200:8,12;202:2; 203:23;208:3,9;222:23; 223:22;224:3,11;230:12; 231:4;242:17;243:1,6 <b>Dataset (36)</b> 29:21,23;30:21;31:14,19; 32:1,5,9,15,19;33:17;34:2,4, 6,12,16,18,21;35:8;36:15; 58:10;63:16,20;93:17;94:12; 95:3,16,24;96:12;118:23,25; 182:22;197:13;198:21; 200:6,8 <b>datasets (9)</b> 29:3;31:1;55:24;93:13,22; 94:14;95:15;199:5,10 <b>date (32)</b> 12:21;29:13,16,17;43:5, 11;56:5,13,17;60:5;65:8; 69:22;85:7;87:3;96:6; 104:14;115:22;120:11,23; 128:16;130:15;138:22; 144:4;165:25;166:3,13,23, 25;196:15;224:6;226:3,18 <b>dated (3)</b> 20:6;21:15;26:14 <b>dates (6)</b> 56:2;92:16;96:3,16; 116:12;199:19 <b>day (4)</b> 170:23;229:13,16;264:14 <b>days (4)</b> 38:3;241:9,10,10 <b>dealing (3)</b> 108:13;256:9,10 <b>dealt (3)</b> 74:9;114:25;132:12 <b>debating (1)</b> 169:4 <b>decade (1)</b> 216:7 <b>December (6)</b> 128:16;130:15;211:12,13, 16;226:18 <b>decide (1)</b></p>	<p>79:3 <b>decided (3)</b> 39:20;79:7;148:10 <b>decision (14)</b> 50:11;116:23,25;139:15; 156:10;161:11;174:6,7,8,16; 175:1;192:10,18;206:7 <b>decisions (2)</b> 138:16;204:20 <b>decline (3)</b> 142:4,24;143:2 <b>declined (1)</b> 141:21 <b>declines (3)</b> 140:24;142:23,25 <b>decree (1)</b> 18:10 <b>decreed (1)</b> 209:15 <b>defensibility (2)</b> 198:1;206:11 <b>defensible (11)</b> 156:1;167:8;183:9,12; 184:5;185:24;186:3,6,8; 200:7,11 <b>defensibly (1)</b> 183:16 <b>deficiencies (2)</b> 189:14;202:20 <b>defined (1)</b> 66:2 <b>defines (2)</b> 162:22;164:23 <b>definitely (2)</b> 22:17;46:7 <b>definition (4)</b> 109:8;164:9;165:12;193:2 <b>degradation (1)</b> 51:1 <b>degrade (1)</b> 51:11 <b>degrading (4)</b> 49:6,11,12;201:10 <b>degree (9)</b> 11:17,19;38:3;113:8; 150:25;151:1,2;191:25; 229:3 <b>degrees (1)</b> 171:21 <b>delineation (1)</b> 32:22 <b>deliver (3)</b> 91:16,24;99:3 <b>delivered (1)</b> 234:21 <b>deliveries (1)</b> 132:25 <b>delivering (2)</b> 98:9,23 <b>delivery (4)</b> 68:17;172:3;211:19; 243:13 <b>demand (45)</b></p>
	<b>D</b>		
	<p><b>daily (1)</b> 223:5</p>		

17:15;20;18:7,16,17,23; 19:4;20:4,7,12,21;21:7;22:1, 8;23:3;27:25;30:8,12;31:10; 36:14,23;37:2,21;40:20; 41:19;42:18,22;43:7,10,22; 53:15;57:14,20,21,24;58:9; 59:1,17;65:9;97:6;101:6; 113:14;114:10;172:3;226:8	165:10;173:3;183:8;187:18; 202:14;207:25;228:23; 230:11;246:22	<b>differed (1)</b> 171:5	<b>discharging (1)</b> 71:8
<b>demands (2)</b> 53:24;97:15	<b>described (5)</b> 45:3;93:11;170:13; 187:20;208:21	<b>difference (22)</b> 40:15,17;54:7;55:14; 58:13;60:4;75:23,24;76:1,2, 15,16;83:16,20;84:10;94:9; 95:17;114:4,13;134:1; 171:21;240:3	<b>disconnect (1)</b> 240:23
<b>demonstrate (1)</b> 55:6	<b>describes (2)</b> 84:20;208:25	<b>differences (6)</b> 74:12;75:5;77:1;83:18; 107:21;108:2	<b>discrete (1)</b> 199:13
<b>demonstrates (1)</b> 57:6	<b>describing (4)</b> 21:22;65:10;72:11;73:2	<b>different (46)</b> 18:8;25:23;30:24;35:22; 38:20;45:7;46:14,19;47:1, 13;49:24;50:4;75:25;79:8; 80:2,5,21;82:1,11;96:2; 113:19;116:12;119:2; 135:17;160:15,16;167:6,11; 169:24;173:23,24;191:5; 196:19;199:14;202:22; 208:17;215:24;216:21; 217:25;218:10,11,17;232:6; 241:4;247:5,12	<b>discretion (2)</b> 103:14;106:11
<b>Department (75)</b> 13:21;14:1;17:12;18:6; 20:23;22:21;23:22;24:24; 25:15;26:7,25;27:8;28:2,20; 29:6;31:8;32:7;34:3,12; 35:25;36:9;37:13;40:7;42:2; 45:14;46:7;49:2;55:13; 57:18;58:1,11;61:21;63:9; 69:19,20;75:14;80:25;81:10, 17;82:8,12;85:6;92:13; 93:14;94:15;95:9,11;97:10, 17;103:5;106:3;108:24; 117:22;118:3,7;121:1,6; 138:17;143:8;151:11,15; 154:7;159:18,19;176:15; 180:23;185:22;198:20; 199:15;205:3,18;210:5; 215:11;216:5;225:18	<b>design (4)</b> 159:16;182:2;212:23; 214:6	<b>differentiate (1)</b> 66:3	<b>discretization (1)</b> 170:20
<b>Departments (1)</b> 29:23	<b>designated (1)</b> 29:16	<b>difficult (5)</b> 53:6;185:19;203:8;210:2; 250:24	<b>discretized (2)</b> 33:3,8
<b>Department's (16)</b> 17:25;29:20;44:9;47:20; 50:11;55:22;61:10;65:12; 92:23;103:14;104:12; 113:14;161:4;214:11;216:2; 226:17	<b>designations (1)</b> 33:4	<b>dig (1)</b> 162:6	<b>discuss (5)</b> 16:7;67:17;76:19;103:24; 188:22
<b>depend (3)</b> 213:9;226:13,15	<b>designed (2)</b> 32:25;168:20	<b>Direct (21)</b> 7:5,6;11:1;39:4;43:15; 87:22;90:4,12;92:3;122:13; 138:5;140:10,11;142:7; 149:15;150:10;212:11; 226:8;228:17;236:23;237:3	<b>discussed (25)</b> 14:12;17:14;23:12;47:18; 50:11;52:11;62:20;78:24; 81:15;92:4,21;99:14,16; 107:15;112:17;148:18; 173:2;180:9,10;186:15; 192:3,4;201:11;218:22; 230:24
<b>depending (3)</b> 59:22;96:5;181:11	<b>desire (1)</b> 142:15	<b>directed (2)</b> 17:12;28:21	<b>discusses (2)</b> 34:21;119:1
<b>depends (7)</b> 141:4;170:19;175:19; 176:2;206:6;209:9;213:19	<b>detail (1)</b> 15:14	<b>direction (3)</b> 31:17;137:3;190:11	<b>diffusion (6)</b> 57:6;64:18;146:18;186:2; 196:8;235:14
<b>depict (5)</b> 209:7,19;232:1;246:23,24	<b>detailed (7)</b> 15:7;21:3;32:23,24;34:18; 35:16;209:2	<b>directly (3)</b> 20:3;84:23;232:6	<b>discussion (15)</b> 25:7,11,12;112:11;167:25; 186:17;194:12;196:6; 197:18;198:17;201:5;202:4, 11;205:17;206:10
<b>depicted (2)</b> 209:25;232:12	<b>determination (10)</b> 56:11;97:20;101:15; 113:1;118:14;142:14; 180:23;182:4;219:5;235:21	<b>Director (25)</b> 9:21;10:2,24;16:20;39:5; 64:2;92:13;110:1;124:5; 127:25;128:15;134:22; 135:21;137:13,22;138:17; 145:25;147:16;148:22; 193:20;194:4;196:2;206:23; 235:14;236:8	<b>discussions (3)</b> 186:19;223:23,25
<b>depicts (1)</b> 232:2	<b>determinations (1)</b> 101:4	<b>Director's (2)</b> 148:5;216:10	<b>display (1)</b> 208:3
<b>deployed (1)</b> 220:23	<b>determine (12)</b> 53:1;65:8;115:6,10; 139:22;166:12;173:14; 200:9;203:23;231:10; 244:10;264:22	<b>disagree (1)</b> 27:14	<b>dispute (4)</b> 135:2,6,10,13
<b>deposition (1)</b> 56:20	<b>determined (9)</b> 54:2;55:21;57:23;60:24; 62:25;110:15,19;116:19; 133:2	<b>disappointing (1)</b> 171:23	<b>distance (2)</b> 10:15;85:25
<b>deputy (1)</b> 240:25	<b>determining (4)</b> 25:9;199:7;210:18;226:2	<b>discharge (16)</b> 50:1;66:23;68:14;70:6,13; 71:2,7;102:16,18,22;105:5; 119:23;151:12;163:2;217:5, 18	<b>distort (1)</b> 187:7
<b>describe (19)</b> 21:25;25:25;46:18; 124:21;150:24;151:4; 155:14;158:25;163:18,20;	<b>development (3)</b> 34:24;65:11;242:11	<b>discharges (2)</b> 49:23;50:2	<b>distorts (1)</b> 187:8
	<b>deviation (5)</b> 44:19;59:6,9;103:7,18		<b>distribute (1)</b> 264:20
	<b>dictating (1)</b> 70:5		<b>distribution (5)</b> 72:20;76:16;203:7;234:3; 238:20
	<b>Dictionary (2)</b> 162:22;164:23		<b>district (106)</b> 27:19;85:9,18,20,22,25; 86:12;89:25;112:7,8;123:4, 6,9,12,13,14,15,16,16,17, 21,25;124:3,5,11,19,22; 125:1,3,6,8,9,11,16,20,24; 126:1,4,7,10,22,25;127:6,7; 128:10,12;129:2;130:6,14; 131:13;132:14,17;133:4,6,8, 12,15;134:4,8,9;136:10,19, 25;137:8,14;139:17;142:14, 16,21;144:2;147:6;148:10, 14;150:2,14;151:21;152:9,
	<b>differ (2)</b> 191:10;192:14		

<p>19;153:5;211:8,11,14,20; 213:12;229:6,11,12,13,17, 22;230:2,3,23;231:3;233:25; 237:12;238:22;244:4; 246:16,17;247:20;251:13; 261:7;263:14,23</p> <p><b>districts (25)</b> 29:22;85:14;86:5,14,25; 87:2;118:5;123:8;126:14,17, 21;136:19;139:21;143:9; 145:18,24;146:25;147:8,13, 19,23,25;148:1,10,18</p> <p><b>district's (2)</b> 85:10;146:21</p> <p><b>ditch (1)</b> 132:24</p> <p><b>divergent (1)</b> 170:10</p> <p><b>diversion (25)</b> 40:12;56:21,23,25;57:3,8; 63:4;81:23;82:5;125:18; 126:15,18,21;127:16; 131:14;183:22;213:6; 229:14;241:1;247:12,24; 248:5;250:4;263:23,25</p> <p><b>diversions (31)</b> 37:23;39:1,11;40:2;41:6,7; 42:16;45:21;61:16;62:22; 63:2;102:2;113:4;116:17; 133:13;134:4;229:16,21; 230:23;234:8,22;239:13,16, 23,25;241:2,8,14;246:25; 248:21;260:3</p> <p><b>diversions' (1)</b> 39:3</p> <p><b>divert (8)</b> 41:15;125:17,21;126:3; 127:8,15,18;178:15</p> <p><b>diverted (15)</b> 57:2;113:25;239:15; 241:15;246:24;247:16,17,18, 22;249:25;250:12;251:12, 20,22;252:1</p> <p><b>divided (1)</b> 251:20</p> <p><b>doctrine (2)</b> 238:19,25</p> <p><b>document (22)</b> 25:25;26:1,13;32:14; 87:11;120:19;129:14;149:5; 153:24;154:23;155:8; 159:22;160:13;182:2;198:6; 206:19,20;217:9;231:20; 236:14;246:12;252:16</p> <p><b>documents (12)</b> 15:4;154:21;155:2,11; 159:16,23;181:22;183:7,9; 184:1;214:7;215:21</p> <p><b>done (58)</b> 12:9,11,15;15:6;16:4,4; 28:2;30:4;34:18;35:23; 43:25;48:10;50:19,19;52:18; 58:3;61:14;64:4;65:12,13;</p>	<p>69:17,19;82:12,13;85:1; 87:14;95:15;106:7;108:6; 128:9;131:15;139:23,24; 143:12,14;151:25;158:8; 168:16;177:12,12,13;188:8, 20,21;190:10;192:19; 198:12;205:23;206:5; 211:13;217:21;223:9,11; 226:10;231:24;249:4; 262:10;264:14</p> <p><b>doubled (1)</b> 178:23</p> <p><b>double-sided (1)</b> 218:3</p> <p><b>ditch (1)</b> 132:24</p> <p><b>down (20)</b> 22:6;23:11;67:5;77:4; 82:21;85:14;98:7;114:3; 141:19;142:23;153:16; 196:11;204:23;234:3,8; 239:7;240:10,12;244:25; 249:1</p> <p><b>downstream (5)</b> 234:9;239:4,14;241:22; 242:8</p> <p><b>drain (1)</b> 197:4</p> <p><b>drainage (1)</b> 232:22</p> <p><b>drainages (4)</b> 233:14;234:11,13;248:20</p> <p><b>dramatically (1)</b> 141:20</p> <p><b>drastic (2)</b> 73:19;80:20</p> <p><b>drastically (1)</b> 74:18</p> <p><b>draw (4)</b> 93:24;96:20;191:7;234:4</p> <p><b>draws (1)</b> 209:12</p> <p><b>Driggs-Tetonia (1)</b> 240:8</p> <p><b>drivers (1)</b> 75:5</p> <p><b>dry (3)</b> 43:18;60:25,25</p> <p><b>due (3)</b> 108:2;158:11;184:18</p> <p><b>duly (4)</b> 10:18;122:5;150:3;228:10</p> <p><b>duplication (1)</b> 129:17</p> <p><b>during (20)</b> 12:7;14:15;19:11;22:19; 72:9;90:9;91:25;92:3;115:7, 15;151:20;170:1;194:8; 196:4,25;198:16;199:20; 222:24;248:6;264:8</p> <p><b>duties (2)</b> 237:11,11</p>	<p><b>earlier (14)</b> 27:18;33:16;83:9;93:5,11; 101:18;157:5;201:1;203:9; 206:13;215:17;231:13; 239:5;260:16</p> <p><b>early (3)</b> 92:4;96:7;222:21</p> <p><b>earnest (1)</b> 211:15</p> <p><b>ease (1)</b> 149:1</p> <p><b>easier (2)</b> 99:6,9</p> <p><b>easily (1)</b> 66:5</p> <p><b>east (2)</b> 105:7;122:19</p> <p><b>Eastern (22)</b> 12:2,4;13:6,8;31:16,18; 44:1;49:24;50:5;65:13;73:3, 10;106:10;159:15;170:2,14; 175:25;176:17;182:12; 214:7;223:14,19</p> <p><b>easy (2)</b> 123:10;195:11</p> <p><b>economic (1)</b> 177:20</p> <p><b>economics (1)</b> 151:2</p> <p><b>edited (1)</b> 164:13</p> <p><b>educational (3)</b> 11:16;150:24;228:23</p> <p><b>effect (13)</b> 128:4;156:13,13;163:19, 20;178:25;179:3,8,21;180:1; 181:7;197:19;243:14</p> <p><b>effects (13)</b> 53:5;160:3;165:6,24; 167:14,16,18,20;173:15; 180:3;203:6;214:21;223:4</p> <p><b>efficiencies (2)</b> 15:11;114:3</p> <p><b>efficiency (12)</b> 23:7;113:2,3,5,12,16,23; 114:12,14,18,21;221:20</p> <p><b>efficient (3)</b> 63:2;221:5,21</p> <p><b>efficiently (1)</b> 222:1</p> <p><b>effort (2)</b> 48:9;174:22</p> <p><b>efforts (11)</b> 90:10,24;92:4,14;95:14; 101:20,21,21;102:11,15,17</p> <p><b>eight (3)</b> 11:24;152:18;203:11</p> <p><b>either (23)</b> 18:10;27:6;29:12;33:12; 60:15;61:12,20;62:13;78:10; 79:19;93:12;95:5;116:3; 162:1,4;167:20;177:11; 196:20;200:18;201:13,13;</p>	<p>203:20;256:13</p> <p><b>election (1)</b> 230:1</p> <p><b>elementary (1)</b> 262:18</p> <p><b>elevations (1)</b> 241:19</p> <p><b>eliminate (1)</b> 130:10</p> <p><b>eliminates (1)</b> 83:8</p> <p><b>Elisheva (1)</b> 10:4</p> <p><b>else (8)</b> 42:11;50:8;112:24; 128:13;161:24;184:12; 227:17;257:21</p> <p><b>emailed (3)</b> 231:13;245:23;261:6</p> <p><b>embarrassment (1)</b> 163:14</p> <p><b>embodied (2)</b> 191:1,3</p> <p><b>emerges (1)</b> 240:14</p> <p><b>employed (3)</b> 43:3;51:8;152:8</p> <p><b>employee (1)</b> 229:10</p> <p><b>employees (1)</b> 132:24</p> <p><b>employer (1)</b> 152:6</p> <p><b>employment (1)</b> 207:21</p> <p><b>employs (2)</b> 132:22,23</p> <p><b>enabled (1)</b> 158:20</p> <p><b>encounters (1)</b> 71:4</p> <p><b>end (5)</b> 46:15;111:10;164:13; 193:19;253:23</p> <p><b>ended (2)</b> 134:5;159:13</p> <p><b>endorse (1)</b> 219:15</p> <p><b>ends (1)</b> 195:20</p> <p><b>engineering (2)</b> 19:16;69:18</p> <p><b>Engineers (1)</b> 230:8</p> <p><b>enough (8)</b> 140:15;175:11,14,20; 187:4;198:14;204:25;258:23</p> <p><b>ensure (5)</b> 100:19;101:9;120:18; 141:8;198:25</p> <p><b>ensures (3)</b> 41:14,16;63:5</p> <p><b>entail (1)</b></p>
<b>E</b>			

<p>208:1 <b>entered (3)</b> 131:6;134:10;136:12 <b>entering (2)</b> 194:19;195:12 <b>entire (10)</b> 35:4;42:18,22;44:16;66:1; 154:22;162:3;167:10;179:2; 239:8 <b>entities (13)</b> 28:12;37:3;40:12;46:14; 53:3,12,25;54:10;55:1; 59:10;62:23;95:13;232:8 <b>entity (1)</b> 113:12 <b>environment (1)</b> 105:23 <b>environmental (3)</b> 11:18;152:7;190:12 <b>envision (1)</b> 118:2 <b>equal (1)</b> 166:8 <b>equation (1)</b> 173:8 <b>equations (1)</b> 243:15 <b>equivalent (4)</b> 166:2;230:14;231:14; 236:12 <b>erroneous (3)</b> 27:23,24;113:21 <b>erroneously (2)</b> 179:7;181:10 <b>error (4)</b> 62:6;67:24,25;118:6 <b>errors (2)</b> 68:1,21 <b>ESHMC (2)</b> 159:20;170:2 <b>ESPA (8)</b> 55:6;90:6,18,22;91:23; 101:20,21;128:2 <b>ESPAM (44)</b> 13:9;34:23;55:24;56:2; 63:14,15,20;64:16;65:5,7,11; 67:1;68:16,18;70:7;75:21; 76:19;77:18;79:13;81:12; 82:17;103:25;106:2;110:20; 151:20;154:10;155:5;156:1; 158:24;159:1,18;160:2; 163:1;165:2;168:19;169:13; 170:11;172:6,15,18;176:15; 179:23;183:10;216:6 <b>ESPAM1.0 (1)</b> 160:2 <b>ESPAM1.1 (5)</b> 69:21;72:15,24;104:14; 159:11 <b>ESPAM2.0 (1)</b> 159:12 <b>ESPAM2.1 (6)</b> 75:20;76:9;107:18;171:7;</p>	<p>191:1;219:16 <b>ESPAM2.2 (22)</b> 69:23;73:2,5;75:22;76:8; 77:1;80:18;81:5,9;83:3,19; 106:22;107:16;108:6;158:2, 10;171:12;173:14;191:3; 216:13;219:15;227:16 <b>essentially (41)</b> 20:10;27:13,15;30:6; 31:10;32:20;37:1,17;38:3, 23;40:17;45:6;47:9;55:13, 19;59:4;60:4,8,17;61:11; 65:11;68:1;69:10,20,24; 70:5,19;71:18;72:3;73:24; 74:6;75:13;76:3,11;85:5; 104:17;156:7,17;221:4; 230:17;231:23 <b>establish (3)</b> 39:25;53:11;205:4 <b>established (1)</b> 204:21 <b>establishes (1)</b> 52:16 <b>establishing (2)</b> 174:16;204:5 <b>estimate (14)</b> 63:23;77:10,11;79:10; 91:3;108:22;164:8;173:10; 179:20;180:2;189:1;191:18; 192:12;225:15 <b>estimates (3)</b> 214:20,25;225:10 <b>estimating (2)</b> 34:15;188:23 <b>estimations (1)</b> 173:15 <b>ET (12)</b> 31:22;35:1,8,11;79:10; 82:1,3,6;89:25;140:9;211:8; 244:4 <b>eternity (1)</b> 166:7 <b>ETRAN (4)</b> 191:1,3;224:15,19 <b>evacuate (1)</b> 235:25 <b>evaluate (10)</b> 15:6;23:15;25:16;27:1; 36:7;40:6;51:21;52:3; 155:24;213:21 <b>evaluated (2)</b> 46:13;219:8 <b>evaluating (3)</b> 38:4;69:21;173:5 <b>evaluation (2)</b> 40:21;47:20 <b>evapotranspiration (5)</b> 31:22;35:3,18;38:2;208:6 <b>even (13)</b> 52:2;55:6;61:5;105:21,23; 136:15;140:18;141:7; 157:24;168:24;170:9; 178:12;239:15</p>	<p><b>eventually (1)</b> 165:9 <b>everybody (5)</b> 111:4;128:13;264:22; 265:1,12 <b>everybody's (1)</b> 255:12 <b>everyone (4)</b> 131:18;138:18;147:23; 174:1 <b>evidence (13)</b> 58:6;87:12;94:2;99:11; 118:7;129:19;149:6;204:2; 206:21;236:15;252:15,17; 264:19 <b>evolution (5)</b> 40:14;72:12;73:8;74:16; 80:17 <b>evolved (1)</b> 38:19 <b>exact (1)</b> 50:12 <b>Exactly (9)</b> 27:24;34:7;80:7;106:8; 107:6;128:7;166:8;181:7; 198:14 <b>Examination (18)</b> 7:5,6,10;10:12;11:1;87:22; 117:11;119:18;122:13; 138:6;144:13;150:10;227:3; 228:17;236:23;237:3; 248:23;261:3 <b>examinations (1)</b> 151:22 <b>examine (2)</b> 89:18;252:23 <b>examining (1)</b> 10:3 <b>example (16)</b> 19:18;35:11;37:13;73:20; 94:6,11,19;95:24;113:17; 140:19;143:11;163:5;165:7; 209:4,19;260:11 <b>Except (1)</b> 179:16 <b>exception (2)</b> 159:7;229:24 <b>excerpt (3)</b> 148:24;246:9,15 <b>excerpts (1)</b> 70:17 <b>excess (1)</b> 201:16 <b>exclude (1)</b> 196:1 <b>excluded (1)</b> 259:25 <b>excludes (1)</b> 118:8 <b>exclusion (1)</b> 208:11 <b>excuse (2)</b> 91:17;242:19</p>	<p><b>exhaustively (1)</b> 173:23 <b>Exhibit (59)</b> 14:7,14,17;16:13;17:7; 20:19;21:10;23:19;24:6; 26:4;28:15;87:8,12,13;88:1; 114:8;129:13,17,19,22,23; 145:14;148:23,24,25;149:6, 7;153:13;154:19;157:13; 162:7,8;164:11,15;182:7,17; 190:1,2;206:17,19,21,22; 217:23;227:24;231:15; 236:9,12,15,16;246:6,7; 247:3,12;250:20;252:11,13, 15,17,18 <b>exhibits (5)</b> 16:13,15;264:18,23,25 <b>exist (4)</b> 107:13;108:11;156:23; 189:23 <b>exists (1)</b> 179:18 <b>expanded (1)</b> 258:16 <b>expect (4)</b> 88:7,9;145:9,11 <b>expected (1)</b> 188:23 <b>expedited (2)</b> 153:20,21 <b>experience (11)</b> 51:5,18;63:13;141:7; 158:24;194:18;195:11; 208:21;215:25;248:7;250:19 <b>expert (16)</b> 13:17;14:5,11,22;24:3,4; 37:15;98:2;129:18;149:4; 150:23;153:8,25;187:4; 206:17;248:21 <b>experts (1)</b> 82:7 <b>explain (39)</b> 18:3;20:2;21:19;26:21; 28:18;30:23;31:13;32:13; 34:22;35:21;38:19;43:20; 48:24;53:9;54:5;55:8,9; 57:16;58:18;65:6,21;69:14; 71:15;72:14;74:1,75:10; 76:7,21;80:24;84:18;95:17; 104:8;165:21;166:9;173:18; 177:15;190:13;239:2;259:4 <b>explainable (1)</b> 173:12 <b>explained (3)</b> 49:9;173:8;251:3 <b>explaining (1)</b> 171:14 <b>explains (2)</b> 49:8;171:16 <b>explicitly (1)</b> 233:12 <b>exploration (4)</b> 158:5;174:17;185:7;</p>
--	--	--	--



<p>192:20 <b>explore (3)</b> 184:14;185:5;249:2 <b>explored (3)</b> 158:1,8;173:22 <b>exploring (1)</b> 138:7 <b>expressed (4)</b> 142:15;164:7;165:9;215:1 <b>extended (2)</b> 40:5;81:3 <b>extent (5)</b> 159:12,19;181:3;213:5; 220:12 <b>extracted (1)</b> 20:3 <b>extreme (1)</b> 39:22 <b>extremely (1)</b> 86:8 <b>eye (1)</b> 52:5</p>	<p>174:1;197:5;209:23;210:15, 19;223:7;228:9;235:6,11,15, 18;236:3;238:21;260:12,13; 261:24 <b>false (3)</b> 204:10,17,18 <b>familiar (18)</b> 12:1,23;65:18;100:6; 109:9;198:10;207:22; 208:20;213:24;216:21; 230:6;235:2;237:19,23,25; 238:24;246:12;247:2 <b>far (6)</b> 19:19;243:14;255:3,22; 256:18;263:17 <b>farm (1)</b> 150:25 <b>farmed (1)</b> 151:6 <b>far-right (1)</b> 250:10 <b>farther (1)</b> 225:2 <b>fashion (3)</b> 108:19;187:6;188:14 <b>fault (1)</b> 199:24 <b>favor (4)</b> 42:17;59:4;103:7;200:19 <b>feature (3)</b> 109:11,12;208:12 <b>features (1)</b> 189:23 <b>fed (1)</b> 239:11 <b>feed (1)</b> 242:3 <b>feel (3)</b> 67:17;122:9;199:4 <b>feet (5)</b> 54:12;141:22,23,24;142:2 <b>fell (2)</b> 199:21;236:24 <b>Ferrari (1)</b> 221:2 <b>few (17)</b> 110:8;112:9;134:9; 144:15;145:13;172:9; 200:23;204:12,15;207:7; 211:8;218:14;222:17; 233:18;257:7,12;262:12 <b>field (9)</b> 79:2,20;81:18;95:22; 151:22;194:19;195:8,13; 200:3 <b>field-by-field (2)</b> 35:17;81:24 <b>fields (1)</b> 33:1 <b>Fifth (50)</b> 13:15;14:23;15:17;40:3; 45:8,15;54:9,14,17;55:4; 60:12,16;61:2;96:21;127:22,</p>	<p>25;137:23;154:18;155:21; 158:15;161:6;162:7,18; 165:13;166:24;167:7,17,22; 168:8;172:13;180:13,25; 185:12;186:2,5,21;187:10, 15,23;188:5;197:9;198:1; 199:8;200:9;202:23;203:23; 225:8,10;227:11;242:11 <b>figure (46)</b> 30:18;32:12,13;35:10,13; 55:25;60:10;70:15,25;72:16, 18;73:1;74:15;75:1,2,9,12; 76:7;77:7,9;80:4,17,23; 82:15,16,24;83:1,94:20; 100:18,24;104:10;120:12,12, 14,22;129:18;157:10,12,12; 165:18,21,22;166:6;190:5; 191:13,20 <b>Figures (12)</b> 38:7,9,11;44:13;70:16; 72:19;99:23;190:4,5,14,21; 193:5 <b>file (2)</b> 246:1,2 <b>filed (1)</b> 231:18 <b>files (2)</b> 56:4;85:6 <b>fill (7)</b> 140:18;141:1,5;229:22; 235:17,21;259:7 <b>filled (1)</b> 235:19 <b>Final (1)</b> 39:13 <b>finally (2)</b> 135:13;233:1 <b>find (13)</b> 10:7;32:24;56:5;118:5; 162:14;164:13;166:13,14; 168:3;172:16;187:24;208:8; 218:5 <b>Finding (4)</b> 162:20;163:11;180:16; 192:23 <b>findings (4)</b> 160:9,12;190:14,19 <b>fine (7)</b> 9:23;11:5,12;24:14;90:3; 106:16;142:18 <b>finer (2)</b> 189:1,2 <b>finished (1)</b> 253:25 <b>first (37)</b> 10:18;28:22;29:18;30:14; 38:22,22;39:4;43:16;76:25; 85:13,19;112:10;119:22; 122:5,10;132:16;140:11; 142:3;143:5,11,15;150:3; 151:12;155:19;159:11; 163:13;170:6;183:20,24; 187:9;191:17,17,19;192:21;</p>	<p>228:9;237:9;250:13 <b>fit (3)</b> 66:24;103:25;104:9 <b>fits (1)</b> 39:9 <b>five (4)</b> 147:11;171:6;191:16; 241:10 <b>five-day (1)</b> 241:11 <b>five-eighths (2)</b> 56:25;57:3 <b>five-month (2)</b> 168:2;191:15 <b>flagged (1)</b> 51:22 <b>Fletcher (59)</b> 7:8,11;24:8;110:25;111:1, 12,18,20,23;112:1,5,6; 116:15;117:1,4;119:13,14; 132:6,9,12;134:17;135:21; 136:4,5,9;138:3,7,8;140:1; 145:16,25;146:6,9,17;149:3, 11;226:23,24;249:3,7,15,22; 252:10,19,21,25;253:2,5,6; 257:3,7,24;258:15;259:2; 262:12,16,21;263:2;264:10 <b>flew (1)</b> 200:2 <b>flexible (1)</b> 106:25 <b>flood (2)</b> 235:22;236:1 <b>flow (33)</b> 37:25;52:10;70:10,12; 152:1;197:4,18,21;229:12; 230:9,18;234:2,4,8,18,21; 237:15;238:3,7;239:8,8; 242:8;244:10;248:19; 253:11,20;254:25;255:23; 259:9,15;263:9,10,13 <b>flows (6)</b> 49:21;119:23;197:8; 198:8;253:9;254:9 <b>focus (2)</b> 59:12;75:12 <b>focused (6)</b> 25:8;30:2;94:4;154:23; 167:18;201:21 <b>folks (4)</b> 164:19;212:4;221:18; 242:14 <b>follow (1)</b> 259:23 <b>following (7)</b> 26:6;29:15;30:10;81:10; 100:20;133:24;244:15 <b>follows (5)</b> 10:20;122:6;150:4; 228:11;237:9 <b>follow-up (4)</b> 144:15;175:4;201:9;261:5 <b>follow-ups (1)</b></p>
<b>F</b>			
<p><b>fact (20)</b> 78:7;84:21;101:3;105:9; 128:11;136:14;138:17; 146:6;162:20;163:12;166:6; 178:19;179:1;180:16; 192:23;200:4;206:14;210:8; 248:18;256:13 <b>factor (5)</b> 37:13;171:6;186:9; 192:14;219:20 <b>factors (5)</b> 37:10;169:12,16;188:22; 230:16 <b>factual (1)</b> 155:20 <b>factually (2)</b> 155:22;156:9 <b>failure (1)</b> 183:18 <b>failures (1)</b> 183:21 <b>fair (12)</b> 96:19;101:11;140:13; 141:9;143:15,23;148:16; 168:12;172:1;180:25; 192:11;258:23 <b>fairly (1)</b> 141:20 <b>fall (2)</b> 27:25;95:25 <b>Falls (50)</b> 19:22;20:14;27:19;30:16, 18;31:5;42:14,16;46:9;49:4; 50:25;52:1;54:19;56:19; 58:4,7,14;59:12;60:14;71:5; 94:4,23;95:10;102:3;104:18, 23;105:2;112:8,15;114:9; 123:14;132:22,23;151:14;</p>			

<p>140:10 <b>Foods (1)</b> 258:10 <b>forces (2)</b> 71:6,7 <b>forecast (46)</b> 22:8;41:19;46:2,9,13,21, 24;48:9,20,22,24;49:10; 50:18,24;52:4,5,14,22,22,24; 53:4;58:23,24,25;59:2,2,3,6, 10;88:23;101:12;102:14; 201:25;230:6,11,12,25; 233:12,16;234:15;244:8,13, 18,18,23,24 <b>forecasted (4)</b> 37:2;101:14;102:19;103:2 <b>forecasting (3)</b> 23:1;53:5;230:18 <b>forecasts (2)</b> 22:11;244:22 <b>foregone (2)</b> 178:21;197:24 <b>Fork (6)</b> 123:16;201:20;232:11,19; 233:5,13 <b>form (1)</b> 30:24 <b>former (1)</b> 252:24 <b>formulated (1)</b> 125:24 <b>forward (9)</b> 10:7;88:7;89:1;121:23; 130:23;149:19;220:9; 243:23;262:17 <b>found (13)</b> 32:15;39:5;48:20;136:15; 137:7,13,19;138:11;156:9; 166:16;171:4,11;235:14 <b>foundation (1)</b> 146:9 <b>four (8)</b> 88:15;154:4;181:24; 183:6;191:15;212:18;229:1, 8 <b>four-layer (1)</b> 106:10 <b>Fourth (7)</b> 54:9,13,16;60:13,16,23; 145:5 <b>fraction (2)</b> 131:9;178:20 <b>fractions (1)</b> 154:13 <b>frame (8)</b> 15:21;22:9,16,18;92:15; 156:16;189:7;192:25 <b>frames (1)</b> 188:17 <b>framework (3)</b> 70:1;71:13;181:17 <b>frameworks (4)</b> 181:23;184:4;185:3,6</p>	<p><b>free (1)</b> 234:17 <b>frequently (2)</b> 238:1,11 <b>fresh (1)</b> 153:1 <b>frightening (1)</b> 171:21 , <b>'from (1)</b> 38:25 <b>F</b> <b>front (6)</b> 21:13;139:1;143:4; 145:14;153:24;233:9 <b>frustrating (1)</b> 136:14 <b>FS (1)</b> 83:12 <b>full (7)</b> 56:13;57:2;141:9,11; 157:11;198:13;236:3 <b>fully (3)</b> 135:25;163:5;165:6 <b>function (3)</b> 76:9;105:4;114:17 <b>functions (1)</b> 211:23 <b>fundamentally (2)</b> 167:11;173:6 <b>funded (1)</b> 182:23 <b>furnish (1)</b> 115:14 <b>further (31)</b> 15:4;23:9;51:10;80:18; 87:15;101:5;110:24;117:2; 131:1;132:4;140:3;142:22; 149:9,11;158:1,8;184:19; 192:20;194:3;206:24; 210:22;226:22,23;234:3,12, 15;241:18,21;243:18;262:3, 4 <b>futile (5)</b> 238:18,25;239:24;240:18; 241:13 <b>futile-call (1)</b> 256:4 <b>Future (11)</b> 24:8,10,25;25:6;50:13; 51:4;63:5;81:11;248:11; 251:25;256:11 <b>G</b> <b>gage (6)</b> 67:25;230:9;232:20,23; 233:3,17 <b>gain (5)</b></p>	<p>67:22,25;86:3;107:17,21 <b>gains (6)</b> 66:22;75:7,7;107:11; 108:4,22 <b>Garrick (1)</b> 9:20 <b>Gary (1)</b> 21:14 <b>gave (4)</b> 26:7;81:1;170:14;248:13 <b>gears (2)</b> 186:12,14 <b>general (10)</b> 97:22;101:19,24;108:8; 157:15,19;182:15,15; 221:25;261:10 <b>generally (13)</b> 25:8;125:10;126:20; 155:14;196:7;208:1;222:4; 232:1;235:2;237:19;246:22; 247:6;254:14 <b>generate (4)</b> 55:24;156:4;158:6,21 <b>generated (7)</b> 93:14;95:24;156:21;159:9, 21,22;210:5 <b>generates (1)</b> 43:8 <b>generating (2)</b> 96:11;191:7 <b>generic (1)</b> 254:13 <b>geographically (1)</b> 85:9 <b>geologic (2)</b> 70:1;105:17 <b>geology (2)</b> 70:11;104:25 <b>gets (1)</b> 67:3 <b>GIS (2)</b> 207:23;208:13 <b>given (18)</b> 18:21;22:10;29:6;50:25; 100:5;117:15;122:9;125:25; 126:2;127:11;135:24; 140:21;155:21;158:18; 184:13;202:9;248:1;258:14 <b>gives (2)</b> 67:6;191:10 <b>giving (1)</b> 103:22 <b>goal (6)</b> 115:14;116:16;167:20,25; 168:3,4 <b>goals (3)</b> 167:11,23;168:6 <b>goes (10)</b> 19:10;159:5,5;212:10; 241:24;242:17;243:1,7; 248:22;263:9 <b>good (29)</b> 9:15;10:6;11:3;43:24;</p>	<p>44:3;50:17;51:21;52:21; 87:24;89:23;112:6;132:11; 140:8,9,12;141:7;150:12; 160:12;169:23;175:11,14; 204:24;205:10;207:7;211:7; 221:11;237:5;253:8;258:9 <b>Gooding (1)</b> 124:13 <b>go-round (1)</b> 122:10 <b>gosh (1)</b> 11:9 <b>grab (2)</b> 162:7,12 <b>grain (2)</b> 106:16,24 <b>grains (1)</b> 125:14 <b>grant (1)</b> 34:25 <b>graph (2)</b> 77:19;191:17 <b>gravity (9)</b> 174:9,19,21;175:1,16; 189:20;220:23;221:8,13 <b>gray (3)</b> 33:24;83:6,10 <b>Great (5)</b> 9:24;94:10;109:11; 234:25;236:7 <b>greater (1)</b> 234:1 <b>greatly (1)</b> 176:7 <b>green (3)</b> 32:22;33:23;83:3 <b>Greg (4)</b> 173:1;180:9;181:16;188:1 <b>Ground (15)</b> 122:22;123:13;150:2,14; 152:9;153:5;181:8;194:19; 195:13;211:20;213:4; 223:17;241:17,23;242:7 <b>groundwater (124)</b> 12:12;16:2;23:6,12,14; 24:21;43:12;56:14;57:4; 62:12;63:9,24;65:5;66:14; 72:3;75:16;76:5;79:14; 83:20;85:9,25;87:2,16; 88:11,17,19;89:7;91:4; 105:18;107:7,8;109:15; 110:11,15;119:23;123:3,5, 12,13,14,15,16,16,17,25; 124:11,15;125:19,21,24; 126:14,17,24;128:10;130:6, 23;133:3,3,7,8,8,13,16; 139:17,21;141:13,15,16; 142:14;144:1,2,3;145:18; 146:25;147:1,6,8,13,18,23; 148:9;151:7;156:7;160:3; 172:11;174:23;178:7,10,13, 14,16,20;180:21;181:18,23; 183:10,13,21,22;184:8;</p>
---	--	---	---

<p>185:4,17;203:19;204:9; 207:1,9,15,18;209:16,23; 210:25;211:11;213:25; 216:15;222:1,3,9,15,17,20, 23;223:4;224:4;264:9 <b>group (49)</b> 13:23,24;14:2,3;17:13,19; 20:6,9,24;21:21;22:21,25; 24:20;26:8,24;28:5,9,21,22; 29:4,7;32:17;40:9;45:9,25; 46:5,20;47:17;48:3,11,17; 51:20;53:21;54:22;60:10; 63:18;65:16;78:24;87:16; 89:7;92:5,8;93:9;100:10; 139:21;152:24;207:1; 210:25;223:16 <b>groups (3)</b> 12:17;13:20;35:23 <b>grower (1)</b> 223:1 <b>growing (3)</b> 38:3;41:17;195:2 <b>grown (2)</b> 125:11,14 <b>guarantee (1)</b> 141:10 <b>guaranteed (1)</b> 204:16 <b>guess (18)</b> 10:14;40:13;62:15;86:21, 21;111:9;146:20;175:4; 176:14;218:15;221:19; 250:19;252:4;256:15; 257:13;258:1;262:14;264:14 <b>guessing (1)</b> 191:22 <b>guys (2)</b> 9:18;153:15</p>	<p>200:1 <b>happening (2)</b> 93:25;128:18 <b>happens (1)</b> 71:1 <b>happy (1)</b> 111:7 <b>harbor (7)</b> 137:9,15,18,21;138:13,16, 20 <b>hard (6)</b> 15:12;74:1;78:9;177:13; 210:11;258:2 <b>hardened (1)</b> 27:6 <b>harm (1)</b> 201:22 <b>harms (2)</b> 203:18,19 <b>Harris (23)</b> 7:5,10;207:3,6;210:22; 227:25;228:15,18;236:8,17; 244:7;248:9,12,17,18,24; 249:5,10;257:5,6;261:1,4; 262:3 <b>Harris's (1)</b> 237:9 <b>hay (1)</b> 200:3 <b>Hazelton (1)</b> 122:20 <b>head (2)</b> 47:8;247:18 <b>head] (1)</b> 144:18 <b>header (1)</b> 103:22 <b>hear (11)</b> 9:8,19,22,23;111:24,24; 132:20;213:2;244:5;249:18; 265:7 <b>heard (10)</b> 26:23;27:18;33:16;49:15; 106:3;119:7;132:17;177:20; 178:8;244:21 <b>HEARING (131)</b> 9:3,7,15,20,22,24;10:3,6, 12,22;13:14,19;16:12,22,24; 23:18,23;24:5,10,15;26:1,5; 47:2;64:5,7,10,12;87:9,11, 15,18,20;89:6,13,16;109:20, 20,22;110:5,24;111:4,8,16, 22;112:2;117:3,7;119:11,13, 15,19;121:2,7,10,15,16,18, 22,25;122:8,11;132:5; 134:14,18,21,24;136:1; 138:5;140:3;144:11;146:8, 11;149:2,5,9,13,18,21;150:6; 158:16;160:21;184:22; 193:11,23;194:2;195:19,21, 24;204:22;206:18,20;207:1; 210:24;212:12;218:5; 226:22,24;227:18,25;</p>	<p>228:13;236:11,14,19;237:1; 242:21;243:3,20;248:16,24; 249:8,11,18;250:24;251:6; 252:14,16,19,22;253:1; 257:5,18;258:2;261:1;262:4, 8,11,16;264:11;265:5,11,15 <b>heartburn (1)</b> 187:19 <b>Heise (15)</b> 52:23;201:24;218:19; 230:9,16,19,20;231:25; 232:17,20,23;233:2,17; 244:8;253:9 <b>held (4)</b> 13:20;28:23;229:7;235:3 <b>Hello (1)</b> 195:19 <b>help (3)</b> 133:10;175:7;193:4 <b>helped (4)</b> 30:24;79:25;133:23; 234:22 <b>helpful (4)</b> 232:5;240:5;264:21;265:1 <b>Henry's (6)</b> 123:16;201:20;232:11,19; 233:5,13 <b>hey (2)</b> 222:1;253:6 <b>Hi (3)</b> 117:13;132:10;244:3 <b>Higgs (10)</b> 85:2;121:11,16;133:22; 138:25;143:3;145:15; 211:21,23;212:25 <b>high (9)</b> 63:5;104:19;144:7,8; 197:22;201:25;203:18; 228:24;234:11 <b>higher (19)</b> 41:12;53:24;57:8;59:18; 62:24,25;82:3;96:25;99:7; 104:21,24;113:20;126:8,18, 20;204:7;234:14;241:19; 259:11 <b>highest (1)</b> 37:24 <b>highlight (1)</b> 83:22 <b>highlighted (3)</b> 82:25;83:1,9 <b>highlighting (4)</b> 56:10,24;60:17;108:15 <b>highlights (1)</b> 60:19 <b>Hill (1)</b> 50:1 <b>hindcast (11)</b> 18:24;19:1,7;55:13;56:15; 57:18;60:4;88:2,2,13,15 <b>hip (2)</b> 175:18,21 <b>hip-shot (2)</b></p>	<p>203:17,21 <b>hired (3)</b> 159:3;211:10;212:23 <b>historical (8)</b> 50:1;53:17;66:13,16,18, 20,24;147:10 <b>historically (3)</b> 54:24;147:20,21 <b>history (2)</b> 122:9;151:5 <b>hit (1)</b> 221:12 <b>hold (3)</b> 33:5;230:2;242:19 <b>holder (1)</b> 263:19 <b>holders (7)</b> 236:3;245:7;254:21; 259:10,15,16;260:20 <b>homogenous (1)</b> 66:2 <b>honoring (1)</b> 134:9 <b>hope (2)</b> 10:12;262:17 <b>horizontal (2)</b> 66:4;105:24 <b>hosts (1)</b> 202:16 <b>hot (1)</b> 41:16 <b>hour (3)</b> 64:8;111:14;210:9 <b>hours (4)</b> 182:10,10,11;193:24 <b>huge (2)</b> 15:19;83:15 <b>humans (1)</b> 204:8 <b>hydraulic (3)</b> 70:8;105:24,25 <b>hydrogeologic (3)</b> 70:1,18;106:7 <b>hydrogeological (1)</b> 104:1 <b>hydrographer (2)</b> 212:25;223:1 <b>Hydrologic (15)</b> 13:7,9;31:17,18;43:17; 66:4;68:14;71:9;73:3,10; 86:1;159:15;170:2;176:18; 223:14 <b>Hydrological (1)</b> 65:14 <b>hydrologist (4)</b> 151:18;152:11,12;230:5 <b>hydrology (2)</b> 11:20;151:2</p> <hr/> <p style="text-align: center;"><b>I</b></p> <hr/> <p><b>Idaho (21)</b> 34:25;122:20,22;151:3,11,</p>
--	--	---	--

<p>14,15,19;155:3;170:14; 175:25;182:12;213:4; 215:25;216:9;228:9;229:17, 20;230:21;232:4;256:24</p> <p><b>idea (5)</b> 52:20;80:2;142:22; 221:25;241:24</p> <p><b>ideally (1)</b> 174:8</p> <p><b>identical (1)</b> 163:3</p> <p><b>identification (1)</b> 100:1</p> <p><b>identified (28)</b> 14:7,14,16;19:5;28:11; 45:4;46:4;93:22,23;95:4; 100:4,13;101:13;102:25; 152:13;157:6;169:6,12; 176:11;181:21;183:16; 186:13;204:1;225:10,18; 226:17;236:22;249:5</p> <p><b>identifies (2)</b> 25:6;222:19</p> <p><b>identify (19)</b> 33:15,20;36:20;91:23; 95:14,15;97:18;123:5; 153:23;154:2;157:19; 167:23;179:6;184:2;199:13; 232:16;246:14;248:20; 264:25</p> <p><b>identifying (1)</b> 27:6</p> <p><b>IDWR (22)</b> 30:19,21;31:13;33:17; 34:21;36:6;152:14,20;155:5; 161:5;165:23;168:20; 177:12;191:2;199:16; 200:14,15;203:23;207:21; 208:8;229:10;231:24</p> <p><b>IDWR's (1)</b> 129:24</p> <p><b>ignoring (1)</b> 156:14</p> <p><b>IGWA (27)</b> 10:5,18;12:3,6,7,16,21; 15:23;61:25;73:14;90:10,14, 20;92:12;122:5,24,25;123:2, 9,22;135:2,7;136:16;139:12, 15;146:19;236:22</p> <p><b>IGWA's (6)</b> 12:12;16:14;85:13;123:5; 129:24,24</p> <p><b>illustrate (1)</b> 70:20</p> <p><b>illustrates (1)</b> 86:24</p> <p><b>image (3)</b> 9:9;33:12,22</p> <p><b>imagery (6)</b> 27:6;33:15,20;96:3,3; 199:16</p> <p><b>images (1)</b> 35:14</p>	<p><b>immediately (2)</b> 81:13;183:16</p> <p><b>impact (15)</b> 57:12;76:13;85:17,18; 88:3;100:24;102:19;108:18; 110:18;128:7,11;129:8; 130:2;197:7;214:19</p> <p><b>impacted (1)</b> 184:21</p> <p><b>impacting (1)</b> 110:16</p> <p><b>impacts (7)</b> 106:16;109:16;110:12; 148:17;163:4,9;214:16</p> <p><b>imperfect (1)</b> 197:14</p> <p><b>impermeable (6)</b> 70:4,24;71:4,7;105:1; 106:21</p> <p><b>implementation (2)</b> 28:24;30:2</p> <p><b>implemented (6)</b> 18:25;21:24;28:6;107:13; 206:2;227:10</p> <p><b>implementing (1)</b> 20:17</p> <p><b>implication (2)</b> 185:10;204:18</p> <p><b>implications (5)</b> 158:1;160:1;162:4;181:5; 225:6</p> <p><b>importance (1)</b> 183:6</p> <p><b>important (19)</b> 42:24;59:16;65:24;67:8, 17;156:23;157:9;170:24; 171:19;172:21;173:5; 175:24;177:2;182:2,13,16; 186:9;191:24;201:23</p> <p><b>imposing (1)</b> 126:15</p> <p><b>impossible (1)</b> 189:9</p> <p><b>imprecision (3)</b> 179:9;183:5;191:25</p> <p><b>impression (1)</b> 248:14</p> <p><b>improve (14)</b> 22:11;28:3;46:11,21; 47:11;51:4,7;80:4;176:7,14; 177:14;189:12;192:3;199:17</p> <p><b>improved (4)</b> 25:10;46:10;48:20;158:14</p> <p><b>improvement (3)</b> 17:14;68:20;176:25</p> <p><b>improvements (5)</b> 21:25;48:9;81:12;108:3,5</p> <p><b>improving (1)</b> 52:10</p> <p><b>inadequate (1)</b> 201:14</p> <p><b>inappropriate (1)</b> 105:13</p>	<p><b>incentive (2)</b> 63:1,4</p> <p><b>inception (1)</b> 124:4</p> <p><b>include (6)</b> 91:6;119:3;160:5;164:9; 208:23;232:11</p> <p><b>included (9)</b> 31:9;44:24;45:16;56:23; 57:13,20;62:4;171:8;230:14</p> <p><b>includes (8)</b> 18:23,25;27:5;33:18; 49:16;118:18;230:16;253:20</p> <p><b>including (6)</b> 52:16;91:7;107:14;119:7; 152:18;255:9</p> <p><b>inclusion (3)</b> 186:7,8;208:11</p> <p><b>incomplete (2)</b> 68:22;197:14</p> <p><b>incorporated (1)</b> 243:15</p> <p><b>incorrect (4)</b> 68:21;165:14,16;217:20</p> <p><b>increase (5)</b> 54:11;77:25;78:5;79:2; 142:1</p> <p><b>increased (1)</b> 99:22</p> <p><b>increases (3)</b> 54:23;163:2;220:2</p> <p><b>increasing (4)</b> 62:22;77:16;78:10,11</p> <p><b>increasingly (1)</b> 62:24</p> <p><b>incredibly (1)</b> 178:24</p> <p><b>incurred (1)</b> 260:4</p> <p><b>indefensible (1)</b> 170:12</p> <p><b>independent (3)</b> 177:8;179:19;199:3</p> <p><b>Index (1)</b> 48:19</p> <p><b>indicate (5)</b> 107:21;165:4,8;191:3; 215:13</p> <p><b>indicated (4)</b> 140:11;143:5;183:14; 221:15</p> <p><b>indicates (3)</b> 18:1;187:16;191:22</p> <p><b>indication (2)</b> 190:23;191:17</p> <p><b>individual (9)</b> 33:1,2;38:12;53:2;126:2; 147:5;160:12;222:25;247:13</p> <p><b>individually (3)</b> 59:16;137:17;182:24</p> <p><b>in-field (1)</b> 81:22</p> <p><b>infinite (2)</b></p>	<p>164:2,4</p> <p><b>inflow (1)</b> 66:15</p> <p><b>inflows (1)</b> 254:4</p> <p><b>influence (2)</b> 76:4;102:15</p> <p><b>influenced (2)</b> 49:20;80:1</p> <p><b>influencing (1)</b> 102:12</p> <p><b>inform (9)</b> 169:8,8;174:6,15,24; 192:10,18;193:4;204:20</p> <p><b>information (34)</b> 28:4;29:1;32:7;34:10,11; 35:24;36:18,20;40:8;56:19; 57:19;60:7,9,14,18;94:15,16; 95:9;106:6;115:25;116:2; 148:16;153:2;154:25;155:4, 10;160:8;180:22;183:13; 185:23;197:25;198:4; 243:16;246:18</p> <p><b>informative (1)</b> 40:24</p> <p><b>informed (2)</b> 205:3;206:8</p> <p><b>informing (1)</b> 176:6</p> <p><b>inherent (1)</b> 187:2</p> <p><b>inherently (2)</b> 67:18;200:18</p> <p><b>initial (3)</b> 77:10,11;219:4</p> <p><b>initially (4)</b> 82:13;160:2;212:15; 230:13</p> <p><b>initiated (1)</b> 133:6</p> <p><b>injured (4)</b> 101:9;115:15,19;245:10</p> <p><b>injury (3)</b> 116:17,19;235:15</p> <p><b>input (10)</b> 49:13;66:14;71:20;74:9, 10;108:11;159:4;165:3; 170:21;171:10</p> <p><b>inputs (2)</b> 19:16;74:3</p> <p><b>inquire (1)</b> 134:22</p> <p><b>inquiry (1)</b> 146:2</p> <p><b>ins (1)</b> 159:5</p> <p><b>in-season (32)</b> 17:15,20;18:7,16,17,23; 19:1,4;20:4,7,12,21;21:7; 22:1;23:2;30:8,12;31:10; 36:14,19,23;57:21,24;58:9; 86:16;113:14;114:10; 116:14;133:12;168:1;172:3;</p>
---	---	--	---

<p>256:9 <b>inside (1)</b> 253:1 <b>insights (1)</b> 158:21 <b>insist (1)</b> 179:1 <b>inspection (1)</b> 157:11 <b>instance (3)</b> 169:22;178:3;208:5 <b>instead (6)</b> 41:5;57:25;105:9;232:17; 234:7,20 <b>Institute (3)</b> 11:18,20;155:4 <b>instituted (1)</b> 196:16 <b>instruments (3)</b> 188:16;192:24;193:1 <b>insufficient (2)</b> 23:14;54:25 <b>intended (1)</b> 131:22 <b>intent (2)</b> 131:24;168:24 <b>interaction (1)</b> 159:7 <b>interactions (2)</b> 107:4,10 <b>interacts (1)</b> 107:7 <b>interconnected (1)</b> 71:9 <b>interest (2)</b> 180:14;208:12 <b>interesting (1)</b> 86:22 <b>interfingering (2)</b> 70:21;104:25 <b>interlayered (1)</b> 70:21 <b>interpreted (1)</b> 147:17 <b>interrupt (3)</b> 15:13;249:20;251:7 <b>interrupting (1)</b> 195:21 <b>interruption (1)</b> 195:25 <b>intervening (1)</b> 94:7 <b>intimately (1)</b> 199:2 <b>into (59)</b> 27:25;28:10;33:18;42:19; 44:5,7;46:8;53:1;61:12; 62:14;78:9;85:8;87:12; 91:16,24;95:21;100:23; 102:9;109:1;113:23;114:25; 125:24;129:19;131:6; 133:23;149:6;157:12,21; 162:6;179:12,23;183:21;</p>	<p>191:11;199:21;204:7; 206:21;214:24;234:12,20; 236:10,15;240:15;241:17,22, 23;242:7,17;243:1,7,15; 251:20;252:15,17;253:10; 254:4,10;256:11;262:17; 264:19 <b>introducing (1)</b> 74:6 <b>introduction (1)</b> 48:19 <b>intuitively (1)</b> 204:8 <b>investigation (4)</b> 70:19;81:19,22;195:9 <b>investment (1)</b> 189:21 <b>invited (1)</b> 152:22 <b>involved (5)</b> 101:19;123:2;159:20; 183:20;199:2 <b>involvement (1)</b> 158:23 <b>involving (2)</b> 137:23,25 <b>irrigate (2)</b> 175:20;209:14 <b>irrigated (115)</b> 15:5;16:8,10;17:16,18,24; 18:9,10,18;19:3,11;20:11,18; 21:5;25:7,9,12;26:17,24; 27:5,20;28:8,17;29:1,3,21, 23,25;30:15,17,19,21;31:3,3, 5,14,21,25;32:4,8,15,18,21; 33:13,17,18,23;36:2,5,8,21, 21;58:10;64:18,20;79:2; 93:8,13,16,23;94:12,14,19; 95:3,7,16,18,21,24;96:6,9,10, 11,12;114:3,9;117:21;118:4, 8,13,19,23,25;119:2,4,5; 125:5,8,8;151:6;172:11; 178:4;181:8;194:13;195:5; 198:17,20,21;199:5,7;200:8, 9;209:6,10;247:21,24;248:1, 4,5,15;250:8,11;251:18,19, 24 <b>irrigating (2)</b> 64:21;250:14 <b>irrigation (46)</b> 23:2;27:19;28:12;37:11, 17,19,22;38:5;44:15;49:21; 51:25;53:13;89:24;91:19,21, 25;93:2;95:21;100:15;112:7; 123:9,21;127:6,7;163:7; 181:2,6;182:5;185:11,20; 194:18;195:1;196:12,17; 199:14;210:19;211:8; 222:24;226:8;229:16; 234:22;239:19;241:20; 244:4;253:23;254:1 <b>irrigators (2)</b> 124:15;138:21</p>	<p><b>isolation (1)</b> 195:3 <b>isolations (1)</b> 194:25 <b>isotropic (1)</b> 66:2 <b>issue (16)</b> 16:8;22:14;51:16;63:8; 69:15;81:15;96:19;99:16; 102:12;106:12;179:14; 184:14;186:15;199:25; 204:6;244:13 <b>issued (6)</b> 127:22;128:15,25;129:2; 230:7;231:23 <b>issues (17)</b> 17:13,14;45:25;46:4; 71:13;90:6;92:20;108:16; 136:7;151:5;154:5,24; 176:11;186:13;204:4; 211:15;262:22 <b>item (1)</b> 64:17 <b>items (1)</b> 205:11 <b>IWRRI (9)</b> 158:24;159:1,2,25;182:12; 195:4;198:22;207:21;214:4</p>	<p><b>joined (1)</b> 123:4 <b>joint (5)</b> 52:22;230:6;233:12,16; 244:7 <b>joke (1)</b> 253:1 <b>judgment (1)</b> 241:6 <b>July (4)</b> 44:17;52:3,5;58:19 <b>June (1)</b> 9:4 <b>junior (21)</b> 41:24;43:14;55:5;56:14; 57:4;65:5;75:17;88:11,17, 19;109:15;110:11,15; 116:17;126:8;130:25;131:2; 234:6;240:1,2;256:21 <b>juniors (2)</b> 37:8;57:10 <b>jurisdiction (1)</b> 238:21 <b>justifiable (1)</b> 162:2 <b>justifications (4)</b> 161:3,5,21,25 <b>justify (2)</b> 154:7;174:25 <b>justifying (1)</b> 157:2</p>
<b>J</b>			
		<p><b>Jackson (4)</b> 140:19;235:11,22;236:1 <b>January (9)</b> 45:24;73:4,9,23;76:24; 81:1;211:12,17;244:20 <b>Jaxon (6)</b> 85:2;121:11;133:22; 138:25;143:3;145:15 <b>Jay (2)</b> 132:18;194:8 <b>Jefferson (2)</b> 86:6;123:15 <b>Jennifer (3)</b> 43:6;55:23;115:24 <b>Jennifer's (1)</b> 83:1 <b>Jerome (1)</b> 124:13 <b>job (4)</b> 182:12;204:25;217:22; 244:23 <b>John (2)</b> 89:23;140:8 <b>JOHNS (28)</b> 149:16,20;150:8,11,13; 153:17,21,23;162:10,12,17; 185:18;190:19;191:6; 193:19;194:3,4,7;196:2,3; 206:16,23;212:9;215:18; 222:18;227:1,4,17 <b>join (1)</b> 9:12</p>	<b>K</b>
			<p><b>keep (4)</b> 63:4;237:14;243:10; 246:17 <b>Kent (5)</b> 111:7;112:6;132:12; 253:6;257:10 <b>Kilgore (1)</b> 189:6 <b>Kimberly (1)</b> 50:1 <b>kind (44)</b> 15:4,12;27:10;32:22; 35:15;42:2,9,11;48:1,12; 49:25;52:1,24;57:5;69:14; 70:22,24;71:13;72:12;74:10; 80:3;81:15,24;84:19,20; 86:13;101:2;104:23;105:7; 106:5;108:8;141:25;154:4; 168:5;174:14,15;175:22; 177:17;180:11;183:17; 195:25;212:10;246:17; 249:19 <b>Kindred (1)</b> 190:11 <b>kinds (1)</b> 176:2 <b>King (1)</b> 50:1 <b>KLAHN (3)</b></p>

<p>9:12;265:3,9 <b>knew (1)</b> 128:7 <b>knowledge (12)</b> 23:8;156:2;160:8;161:17; 172:13;198:19;206:8;212:1; 213:5;227:6,13,15 <b>known (5)</b> 108:17;160:14,15;189:23; 203:7</p>	<p><b>Law (1)</b> 188:7 <b>lax (3)</b> 98:6,7;99:1 <b>lay (3)</b> 27:10;69:25;177:21 <b>layer (2)</b> 65:25;106:2 <b>layered (1)</b> 202:10 <b>layering (1)</b> 189:16 <b>layers (10)</b> 70:3,4,24;71:5,7;105:14, 25;106:4,20,25 <b>laying (1)</b> 45:6 <b>lays (2)</b> 22:23;85:5 <b>lead (2)</b> 70:13;159:25 <b>leading (3)</b> 84:1,4;102:17 <b>leads (1)</b> 55:5 <b>lease (1)</b> 238:14 <b>leased (1)</b> 238:2 <b>leases (3)</b> 237:16;255:15,18 <b>least (14)</b> 34:4,9;52:21;88:19,24,25; 120:19;160:9;162:15;175:2; 185:15;205:24;211:18;258:4 <b>led (2)</b> 185:7;200:5 <b>left (8)</b> 19:19;35:13;73:1;77:10; 82:19;129:23;198:22;200:22 <b>legal (4)</b> 109:25;134:19;214:19; 251:2 <b>legend (1)</b> 165:25 <b>lengthy (1)</b> 170:16 <b>less (27)</b> 30:17;31:4;56:25;57:2; 59:7;64:21;72:11;80:11; 88:16;100:6;105:24;109:13; 128:11;131:10;139:14; 171:15,16,16;178:15;186:3, 5;189:2;201:13;222:3; 250:14;254:1;263:24 <b>level (14)</b> 37:7;62:14;66:22;94:9; 108:13;142:24;173:13,20; 200:5;203:14,16,16,24;204:3 <b>levels (9)</b> 52:1;54:25;66:21;73:20; 75:6;107:8;141:16;204:6,8 <b>lies (1)</b></p>	<p>208:10 <b>lieu (1)</b> 187:12 <b>lighter (1)</b> 70:25 <b>liked (8)</b> 15:5,10,16;24:25;157:20, 22;158:7;215:7 <b>likely (5)</b> 51:6,10;74:8,11;242:9 <b>limitation (7)</b> 92:19,19,25;189:4,5; 260:8;264:6 <b>limitations (2)</b> 68:17;263:21 <b>limited (5)</b> 22:9,15;92:20;193:5;247:9 <b>limits (5)</b> 125:20;126:15,18,22; 180:2 <b>line (17)</b> 70:23;75:18,20;77:13,14; 109:4,7,8,15;110:3,9,20; 146:2;163:14;165:23; 176:19;259:1 <b>linear (1)</b> 52:14 <b>lines (5)</b> 75:12;77:20;96:8;111:1; 208:18 <b>links (2)</b> 36:13;231:4 <b>lipstick (1)</b> 176:21 <b>list (7)</b> 32:6;46:19;121:11; 149:14;212:18;250:2;264:18 <b>listed (6)</b> 247:3;248:8;250:15; 251:21;252:7;257:13 <b>listened (1)</b> 160:21 <b>listening (1)</b> 195:20 <b>listing (3)</b> 209:3;248:11;251:25 <b>lists (1)</b> 247:25 <b>litigation (1)</b> 12:8 <b>little (20)</b> 11:25;17:4;43:20;61:9; 65:21;66:7;78:16;84:7,8; 115:2;125:7;134:7;139:4; 141:21,22;151:9;153:16; 166:1;199:11;247:8 <b>lived (1)</b> 200:1 <b>livelihood (1)</b> 175:19 <b>Liz (3)</b> 21:14;22:6;25:20 <b>local (1)</b></p>	<p>52:2 <b>localized (1)</b> 108:5 <b>located (5)</b> 124:12,13;157:7;225:1; 230:20 <b>location (5)</b> 116:20;121:12;163:4; 191:21;226:13 <b>locations (2)</b> 172:9;261:21 <b>lodge (1)</b> 248:12 <b>logged (1)</b> 9:10 <b>logical (2)</b> 154:15;158:4 <b>logically (1)</b> 50:6 <b>logistical (1)</b> 16:21 <b>long (18)</b> 11:22;12:1;27:16;38:4; 41:16;122:9;123:2;124:2,9; 127:19;153:25;172:12; 210:10;219:13;221:24; 229:7;241:10;257:25 <b>longer (3)</b> 39:17;57:22;163:10 <b>long-term (4)</b> 167:16,19;172:7,12 <b>look (53)</b> 16:9;21:11;37:22,24;38:1, 2,4;42:14,14;43:23;44:13, 20;45:18;47:22;49:19,25; 54:12,15;55:10;56:15;68:13; 69:20;77:9;80:4,17;86:5,22; 92:16;94:3;104:10,17;114:7, 7;118:22;123:7;130:5,8; 131:1;154:6,25;155:7; 174:10;176:15;179:12; 187:25;218:18;219:22; 231:12;239:3;244:8,24; 246:10;264:22 <b>looked (17)</b> 34:12;44:5;46:10;48:7; 61:10;63:17,19;81:18,22; 155:2,4,6,8;170:22,24; 182:23;217:16 <b>looking (49)</b> 12:12;16:2;17:16;22:5,25; 23:5,21;24:3;26:2,13,15; 28:16,24;40:5,17;41:2;43:7; 46:25;47:12;61:3;72:16; 73:12;75:16;77:6,7,22,23; 79:20;82:18;83:18,20;88:14; 92:11;96:22;98:4;102:21; 116:13;119:20;136:6;143:3; 165:18;180:16;190:4; 191:14;195:14;216:20; 218:2;226:6;232:18 <b>looks (5)</b> 19:18;32:9;62:1;120:1;</p>
<b>L</b>			
<p><b>labeled (4)</b> 18:5;30:3;32:12;60:15 <b>labeling (2)</b> 18:6;29:20 <b>laid (3)</b> 38:22;62:21;70:11 <b>Lake (3)</b> 140:19;151:13;235:23 <b>land (7)</b> 29:23;33:4;67:13;78:1; 94:19;199:13;241:20 <b>landfill (1)</b> 151:25 <b>Lands (36)</b> 29:21,25;30:21;31:3,3,14, 25;32:4,8,15,18,21;33:17; 36:2;58:10;63:15,20;77:24; 80:10;93:13,17;94:12,14; 95:3,16,18,22,24;96:12; 118:23,25;195:5;198:20,21; 199:5;200:8 <b>Landsat (5)</b> 33:12;36:6;118:4,8,18 <b>language (2)</b> 97:23,25 <b>lapsed (1)</b> 44:2 <b>large (7)</b> 27:19;140:15;178:24; 197:13;209:2;213:7;247:11 <b>larger (3)</b> 128:22;174:22;179:10 <b>largest (3)</b> 79:9,10,13 <b>last (39)</b> 16:17;18:4,15,15;22:7; 23:21;24:1;26:16;30:6,10; 33:21;56:18;63:8;64:2;87:5; 98:18;118:17;120:12; 141:16,18,20;142:5;143:1,2; 144:17;148:21;156:11,15, 22;184:25;234:24;242:10; 249:16,17;251:22;253:23; 259:6,12;262:7 <b>late (5)</b> 53:21;95:25;111:10; 211:16;259:7 <b>later (7)</b> 9:12;44:8;96:7,8;151:11; 239:12,13</p>	<p><b>law (1)</b> 188:7 <b>lax (3)</b> 98:6,7;99:1 <b>lay (3)</b> 27:10;69:25;177:21 <b>layer (2)</b> 65:25;106:2 <b>layered (1)</b> 202:10 <b>layering (1)</b> 189:16 <b>layers (10)</b> 70:3,4,24;71:5,7;105:14, 25;106:4,20,25 <b>laying (1)</b> 45:6 <b>lays (2)</b> 22:23;85:5 <b>lead (2)</b> 70:13;159:25 <b>leading (3)</b> 84:1,4;102:17 <b>leads (1)</b> 55:5 <b>lease (1)</b> 238:14 <b>leased (1)</b> 238:2 <b>leases (3)</b> 237:16;255:15,18 <b>least (14)</b> 34:4,9;52:21;88:19,24,25; 120:19;160:9;162:15;175:2; 185:15;205:24;211:18;258:4 <b>led (2)</b> 185:7;200:5 <b>left (8)</b> 19:19;35:13;73:1;77:10; 82:19;129:23;198:22;200:22 <b>legal (4)</b> 109:25;134:19;214:19; 251:2 <b>legend (1)</b> 165:25 <b>lengthy (1)</b> 170:16 <b>less (27)</b> 30:17;31:4;56:25;57:2; 59:7;64:21;72:11;80:11; 88:16;100:6;105:24;109:13; 128:11;131:10;139:14; 171:15,16,16;178:15;186:3, 5;189:2;201:13;222:3; 250:14;254:1;263:24 <b>level (14)</b> 37:7;62:14;66:22;94:9; 108:13;142:24;173:13,20; 200:5;203:14,16,16,24;204:3 <b>levels (9)</b> 52:1;54:25;66:21;73:20; 75:6;107:8;141:16;204:6,8 <b>lies (1)</b></p>	<p>208:10 <b>lieu (1)</b> 187:12 <b>lighter (1)</b> 70:25 <b>liked (8)</b> 15:5,10,16;24:25;157:20, 22;158:7;215:7 <b>likely (5)</b> 51:6,10;74:8,11;242:9 <b>limitation (7)</b> 92:19,19,25;189:4,5; 260:8;264:6 <b>limitations (2)</b> 68:17;263:21 <b>limited (5)</b> 22:9,15;92:20;193:5;247:9 <b>limits (5)</b> 125:20;126:15,18,22; 180:2 <b>line (17)</b> 70:23;75:18,20;77:13,14; 109:4,7,8,15;110:3,9,20; 146:2;163:14;165:23; 176:19;259:1 <b>linear (1)</b> 52:14 <b>lines (5)</b> 75:12;77:20;96:8;111:1; 208:18 <b>links (2)</b> 36:13;231:4 <b>lipstick (1)</b> 176:21 <b>list (7)</b> 32:6;46:19;121:11; 149:14;212:18;250:2;264:18 <b>listed (6)</b> 247:3;248:8;250:15; 251:21;252:7;257:13 <b>listened (1)</b> 160:21 <b>listening (1)</b> 195:20 <b>listing (3)</b> 209:3;248:11;251:25 <b>lists (1)</b> 247:25 <b>litigation (1)</b> 12:8 <b>little (20)</b> 11:25;17:4;43:20;61:9; 65:21;66:7;78:16;84:7,8; 115:2;125:7;134:7;139:4; 141:21,22;151:9;153:16; 166:1;199:11;247:8 <b>lived (1)</b> 200:1 <b>livelihood (1)</b> 175:19 <b>Liz (3)</b> 21:14;22:6;25:20 <b>local (1)</b></p>	

<p>214:16 <b>loss (1)</b> 185:17 <b>Lost (4)</b> 13:10;47:3;236:1;256:23 <b>lot (18)</b> 12:8,11;24:16;43:25; 63:14;69:16;73:14;86:25; 105:20;112:11;125:2,4; 128:6;195:4,7;222:3;236:5; 242:2 <b>loudly (1)</b> 109:23 <b>low (6)</b> 44:15;45:12;86:8;106:16; 202:3;203:17 <b>lower (16)</b> 61:15;82:22;102:1,5,7; 105:2;126:18,21;130:20; 173:25;233:22,25;239:4,25; 240:11;248:20 <b>lowest (1)</b> 86:14 <b>lunch (5)</b> 111:9,10,13,17;117:13 <b>Lyle (1)</b> 246:16 <b>Lynker (3)</b> 11:13,22,23 <b>Lynn (13)</b> 121:20;122:4,16,19,21; 123:10;127:24;129:12,14, 20;140:8;144:15;149:8</p>	<p>133:3,5,9 <b>managed (1)</b> 102:1 <b>management (14)</b> 16:2;90:6;130:23;151:1; 168:23,25;177:22;215:15,18, 22;216:1,2,3;257:1 <b>manager (3)</b> 229:5,9;230:4 <b>managers (3)</b> 98:8,23;99:2 <b>manner (2)</b> 48:10;153:20 <b>many (15)</b> 60:12;99:23;125:5; 127:11;132:13;152:16; 159:23;176:16;179:4; 206:14;226:11;253:15; 254:16;261:23;263:4 <b>map (10)</b> 32:7;208:9;231:12,14; 232:1,12,18;233:4,9;236:12 <b>mapped (1)</b> 35:3 <b>maps (1)</b> 208:4 <b>March (4)</b> 21:15;26:14;92:17;93:1 <b>margin (1)</b> 103:16 <b>mark (1)</b> 246:5 <b>marked (11)</b> 87:11;149:6;154:19; 206:19,20;227:24;231:14; 236:12,14;246:7;252:16 <b>Maryland (1)</b> 229:1 <b>mask (1)</b> 33:14 <b>massive (1)</b> 54:23 <b>master (1)</b> 229:3 <b>master's (2)</b> 11:19;151:2 <b>match (10)</b> 23:16;66:17;67:22;69:4,6, 8;77:5,16;188:17;192:25 <b>matches (1)</b> 68:12 <b>matching (1)</b> 170:17 <b>material (3)</b> 32:16;164:21;235:14 <b>math (1)</b> 178:8 <b>mathematical (1)</b> 203:5 <b>Matt (11)</b> 21:14;31:7;50:10;51:2; 60:18;63:17;119:7;172:25; 197:1,3;198:16</p>	<p><b>matter (14)</b> 12:9,11;13:17,24;16:21; 69:4;102:21;150:15;152:8, 24;153:22;155:6;189:6; 261:10 <b>matters (6)</b> 9:16;15:14,23;152:19; 157:20;189:20 <b>maximize (1)</b> 177:23 <b>maximum (7)</b> 177:25;248:4;250:2,7,14; 251:17;255:7 <b>May (42)</b> 11:3;44:2;64:23;89:18; 111:12,18;115:11;120:3; 122:8;130:17;146:12; 158:20;163:14;164:11; 169:16,21;177:5,9;188:1,22; 193:13;194:5;196:1;199:13; 204:4,25;206:13;207:19; 209:14;217:20;221:21; 225:11;227:25;243:12; 244:16,18,24;247:25;248:1; 250:7,13;251:22 <b>Maybe (21)</b> 9:10;31:17;34:8;51:25; 53:18;56:22;59:15;62:6,19; 79:11;99:9;106:3;120:15; 171:2;209:12;211:16,16; 223:24;249:6;264:17,18 <b>May-through-September (1)</b> 85:17 <b>McCain (1)</b> 258:10 <b>McHugh (14)</b> 7:9;9:11;87:17,18,19,23; 89:4;249:14;257:8,22;258:8, 9;260:24;262:13 <b>mean (24)</b> 30:25;51:7;60:2;64:25; 72:23;75:23;84:5,22;88:21; 92:18;100:14;105:11; 107:12;110:19;114:2; 142:20;146:2;177:18; 180:10;189:21;203:22; 216:1;221:23;238:15 <b>meaning (1)</b> 88:22 <b>meaningful (3)</b> 10:13;176:8,25 <b>meanings (1)</b> 214:20 <b>means (10)</b> 19:7;53:9;56:12;66:3; 140:25;144:22;171:13,16; 173:11;176:5 <b>meant (5)</b> 37:4,9;180:6;187:14;222:5 <b>measure (5)</b> 59:4;140:17;172:18; 203:22;231:7 <b>measured (3)</b></p>	<p>35:2;223:22;230:25 <b>measurement (5)</b> 67:25;102:23;152:1; 183:12;222:20 <b>measures (1)</b> 229:12 <b>measuring (2)</b> 151:12;231:9 <b>median (2)</b> 232:2;234:14 <b>medium (1)</b> 172:12 <b>meet (7)</b> 62:24;97:15;131:7; 133:10;171:9,10;238:3 <b>meeting (10)</b> 9:13;25:2;38:15;45:9; 46:5;81:10;131:16,18; 136:24;174:11 <b>meetings (8)</b> 13:22;21:21;24:9,11;25:1; 28:23,23;223:22 <b>meets (2)</b> 45:17;65:9 <b>melting (1)</b> 254:7 <b>member (7)</b> 13:6;88:24;123:22,24; 124:2;151:8;223:20 <b>members (32)</b> 25:10;26:8;39:9;94:22; 99:19,23;100:19;102:20; 112:12;123:6,9;124:18; 125:6;126:15;129:1;133:6; 136:15,25;142:15,20; 148:14;170:8,8;233:21; 235:3,5;238:10;254:13,16; 255:4,18;260:5 <b>memo (2)</b> 21:9;22:6 <b>memos (1)</b> 92:17 <b>mentioned (17)</b> 12:25;13:4;16:8;18:12; 19:13;50:22;51:13;52:19; 56:10;73:13;77:3;90:12; 129:20;132:16;134:8; 240:17;254:12 <b>Merriam-Webster's (2)</b> 162:22;164:23 <b>mess (1)</b> 201:3 <b>met (2)</b> 39:18;203:24 <b>meter (1)</b> 223:1 <b>method (12)</b> 31:21;35:1;43:2;80:21; 81:25;82:3,8;83:7;96:14; 196:15;198:25;203:17 <b>methodologies (1)</b> 97:3 <b>Methodology (91)</b></p>
<b>M</b>			
<p><b>Madison (1)</b> 123:17 <b>Magic (3)</b> 86:6;123:13;151:13 <b>magnitude (2)</b> 163:4;179:20 <b>main (13)</b> 48:1;70:5;71:3;74:3;75:4; 86:18;112:25;229:21; 239:17,21;240:18,20;242:2 <b>mainly (1)</b> 80:14 <b>maintain (1)</b> 148:11 <b>maintained (1)</b> 230:25 <b>major (3)</b> 70:10;128:8;230:23 <b>majority (1)</b> 217:4 <b>makes (5)</b> 31:7;36:15;118:10;186:4; 200:6 <b>making (6)</b> 38:3;84:24;109:6;151:16; 195:8;197:3 <b>manage (3)</b></p>			

13:15;14:23;15:17,20; 17:24;21:24;22:13;23:3; 30:7,9;31:8;36:2,12;38:9,20, 22;39:5,25;40:3,25;42:20, 23;43:3;45:8,15;53:14,19; 54:13,16;55:4;58:2;60:12, 16,17;61:8;63:4,21,24;72:2; 84:25;95:5;96:21;97:18; 100:1,13;101:7,8;112:14,19, 21;116:16;127:22,25; 137:24;145:2,5;154:18; 158:15;161:7;162:8,18; 165:13;166:10,14;167:7,17, 22;168:8;172:13;180:14; 181:1;185:12;186:2,5,21; 187:11,23;188:5;195:6; 197:9;198:2,24;199:8; 200:10,14;202:24;203:23; 207:10,14;227:11;242:12	<b>mind (5)</b> 103:22;146:2;186:4; 193:17;261:16 <b>mine (3)</b> 61:17;92:17;257:20 <b>Minidoka (33)</b> 19:22;50:3,21;56:7;67:23; 68:15,23;69:13;70:6,14; 71:3;72:5;84:25;85:11;86:3, 17;91:8,17,24;104:2;106:18; 107:10,17;108:22;112:7; 119:24;171:2,15;173:16; 190:24;217:1,17;218:22 <b>minimal (1)</b> 41:17 <b>minimum (6)</b> 36:6;172:14;173:20; 174:16;202:24;210:13 <b>Mining (2)</b> 11:19,20 <b>minor (2)</b> 120:13;262:12 <b>minus (2)</b> 53:15;59:1 <b>minute (2)</b> 184:11;227:23 <b>minute-by-minute (1)</b> 223:8 <b>minutes (2)</b> 64:7;111:2 <b>mischaracterize (1)</b> 161:10 <b>mischaracterized (1)</b> 178:3 <b>misheard (1)</b> 260:15 <b>miss (1)</b> 204:11 <b>missed (5)</b> 33:6;78:16;116:9;158:19; 242:22 <b>missing (3)</b> 113:18;197:18;204:15 <b>misspoke (2)</b> 64:23;166:20 <b>misstates (1)</b> 146:9 <b>mistake (1)</b> 58:23 <b>mistaken (1)</b> 249:6 <b>mistakes (1)</b> 157:6 <b>misunderstood (1)</b> 222:6 <b>misuse (1)</b> 169:5 <b>misused (1)</b> 169:6 <b>mitigate (4)</b> 110:17;131:4;139:13,14 <b>mitigating (2)</b> 109:16;110:12	<b>mitigation (35)</b> 12:11,13,15;134:10;137:7, 8,12,14,20,25;138:1,12,13; 139:19;145:17;156:20; 166:18;167:3,5;187:12; 188:10;201:16;226:3,9; 245:11,20;258:17,19; 259:21;260:1,8,9,18;264:7,9 <b>mixed (2)</b> 63:15,20 <b>model (224)</b> 13:9;31:19,24,24;32:1; 34:15,23;35:5,8,12;43:3; 46:9,11;48:17;49:8,10,16; 50:9;52:4,25;55:24;56:3,4; 59:3;63:14,15,20,24;64:16; 65:5,7,11,12,18,20,21,25; 66:1,1,9,12,12,14,15,18;67:1, 10,16,19,20;68:5,8,9,10,11, 18,22;69:4,5,5,15,21,25; 70:2,7,8;71:13,18;72:9,10, 13,23;73:2,11,15,16,18,25; 74:2,4,9,19,22;75:14,25; 76:10,12,18,20;77:18,25; 78:4,10;79:13,17,22;81:3,5, 5,7,13;82:17,20;83:12,19,24, 25;84:2,12,23;85:6;86:25; 90:18,22;91:10,14,14,22,25; 96:14;105:9,10,13,18,20; 106:10;107:14,22;108:8,10, 14,25;110:20;115:5,12,12, 16,17,18;117:14;118:5; 128:2;130:16;148:6;156:2,4; 158:7,10;159:4,10,10,12,18; 160:2,2,16;163:2;164:4,5; 170:1,4,11,17,19,23,25; 171:9,10,13,19;173:5,8; 174:17;176:2,3,20,24;177:2, 4;179:14,17;180:2;189:1,3, 15,18;191:21,23;192:11,21; 202:10,12,13,16,20;205:20, 24,25;206:3;213:25;214:3, 13;215:3,5,14;216:6,10,14, 18,21;218:12;219:11,25; 220:16,19;223:22;224:16, 18;225:11,14;226:7;227:6, 10;243:14 <b>modeled (2)</b> 165:4;171:11 <b>modeler (2)</b> 67:3,6 <b>modeler's (1)</b> 106:11 <b>modeling (57)</b> 12:8,12,14,15;13:4,7,10; 15:6;31:18;65:14;73:3,10; 90:14;94:6;106:13;143:17; 154:8,16,17;155:6;156:1,16; 158:1,24;159:16,20;160:6, 10,15;162:4;166:4;170:2; 172:23;174:3;176:18; 179:19,19;181:25;187:3; 188:14,15;189:22,24;190:7,	10;191:1;196:14;198:11; 199:1;204:9;219:9;223:12, 15,19;224:4;225:24;226:1 <b>models (30)</b> 15:7;46:13,22,24;47:11, 18,21,24;48:9,20,22;50:18, 25;52:5,10,14;53:4;59:2,11; 67:18;74:16;104:22;105:20; 151:20;154:10,11;191:10, 12;192:14;206:1 <b>models' (1)</b> 190:23 <b>model's (1)</b> 191:18 <b>MODFLOW (5)</b> 106:15,19,23,23;107:13 <b>modification (1)</b> 99:17 <b>modified (1)</b> 143:13 <b>moisture (1)</b> 230:17 <b>moment (7)</b> 16:21;47:2,3;89:11;117:6; 146:18;248:16 <b>moments (1)</b> 110:8 <b>monitor (3)</b> 50:12;132:25;133:12 <b>monthly (4)</b> 173:14;223:10;244:13,19 <b>months (5)</b> 23:5;191:15,16;234:24; 262:20 <b>moratorium (1)</b> 144:4 <b>more (64)</b> 15:10,14,15;28:8;39:8; 45:19,21;50:20;51:10,24; 52:12,13;54:2;58:14;60:12; 63:6,6;72:11;78:9;82:6; 88:12,18;97:2,4,5,7;100:5,6; 108:3;126:7,8;129:25; 139:12;147:19,21;156:20; 158:18,18,18;164:10; 167:19;170:15,15,16;171:6; 172:6;176:5,6;184:13,14; 186:7,8;200:13;204:7;221:5; 222:1,1,20;224:3;233:18; 234:6,20,25;264:11 <b>morning (8)</b> 9:17;11:3;87:24;89:23; 90:1,5;264:15;265:13 <b>most (34)</b> 32:4,23;33:2;36:6,15,16; 46:8;55:6;56:7;58:10;61:3; 88:9;94:8;102:4,8;118:3; 144:2,5,5;156:23;157:9; 168:22;182:2;190:22; 191:13;192:13;196:16; 209:2;216:14;255:4,6,17,17, 264:3 <b>mostly (2)</b>
---	---	--	--



60:25;231:22 <b>motion (1)</b> 231:18 <b>motorcycle (1)</b> 221:1 <b>Mountain (4)</b> 152:7,8;190:11;231:13 <b>mountains (1)</b> 145:1 <b>move (25)</b> 13:11;20:1;25:19;36:22; 39:13;46:2;53:7;55:2;64:15; 71:6,25;72:22;80:23;82:24; 84:17;85:16;87:7;89:11; 148:25;161:12;162:6; 180:11;206:16;236:9;252:13 <b>moved (2)</b> 106:22;220:9 <b>moves (3)</b> 66:5;76:6;241:21 <b>Moving (9)</b> 47:17;58:17;65:3;75:8; 80:18;86:10;161:4,5;206:11 <b>much (36)</b> 15:9;40:20;41:15;45:19; 52:3;78:8;79:25;82:3;88:10; 94:3;103:16;114:6;115:6; 125:16,21;127:7,15;130:20; 144:25;145:9;147:5;173:7; 174:22;176:21;178:15; 181:13,20;184:17;189:6; 191:10;192:19;193:12; 194:15;235:8;244:10;262:6 <b>Mud (1)</b> 151:13 <b>multilayer (3)</b> 105:10,17;202:12 <b>multiple (8)</b> 70:3;105:14,25;106:4,19; 199:19,19;203:2 <b>multiplier (4)</b> 156:13;179:8;181:7; 197:19 <b>municipalities (1)</b> 124:25 <b>must (1)</b> 222:6 <b>mute (1)</b> 195:23 <b>muted (1)</b> 195:20	<b>natural (16)</b> 37:25;52:10;77:12,17; 229:12;234:1,4,8,17,21; 237:14;239:8;248:19; 253:10,20;261:22 <b>nature (4)</b> 70:21;167:12,15;211:24 <b>nauseam (1)</b> 186:16 <b>near (44)</b> 28:25;30:2,4;50:3,21;56:6; 58:12;67:23;68:14;70:6,13; 71:2;72:4;75:19;76:13; 84:24;85:11;86:3,17;91:7; 104:1;105:5;106:17;107:9; 16;108:22;119:24;171:1,2, 12;172:9;173:15;190:24; 199:25;216:25;217:3,19; 218:15,20,21,25;220:11; 224:25;230:20 <b>nearing (1)</b> 193:19 <b>necessarily (8)</b> 51:23;93:24;131:25; 141:8;248:5;250:8,13; 251:18 <b>necessary (2)</b> 131:7;174:25 <b>need (46)</b> 9:16;10:14;27:22,23,25; 41:11;44:3;47:3;54:23;55:9; 60:1;91:15,23;97:15;100:17; 101:10;109:22;112:23; 113:4,5,7;114:17,22;115:7; 117:19;140:25;157:6; 168:13;169:12;176:23; 177:23,24;178:6;179:6,11; 181:9;182:8;203:12,13; 217:25;228:2;234:4;242:24; 243:4;245:15,16 <b>needed (11)</b> 39:16;44:11;46:10; 170:18;176:9;178:18; 181:15;194:24;201:17; 226:16;254:23 <b>needing (1)</b> 221:18 <b>needless (1)</b> 185:16 <b>needs (9)</b> 41:23;53:11;54:17,23; 101:6;174:21;189:20; 201:15;247:12 <b>Neeley (17)</b> 75:19;76:13;91:16;105:5; 171:1,12,15;216:25;217:1,4, 17,19;218:16,21,22,25; 220:11 <b>neglecting (3)</b> 185:10;197:7;201:19 <b>negotiate (1)</b> 148:9 <b>neighbor (1)</b>	200:2 <b>neither (6)</b> 167:9;170:4;217:19; 218:24;219:1;226:11 <b>net (1)</b> 50:20 <b>New (18)</b> 11:18,20;43:2;47:22,23; 48:15;60:1;72:10,10;73:17; 76:17;83:6;96:20;148:6; 190:10;191:21;258:1;259:22 <b>Newdale (1)</b> 240:15 <b>next (40)</b> 9:25;20:1;29:24;32:4; 34:16,20;39:14;40:4;46:2; 51:8;53:12,13;57:12;58:17; 59:24;72:14;74:14;75:1,8; 81:12;82:24;84:11,17;85:20, 22;86:11,22;97:15;100:15; 121:10,18,21;149:17; 155:25;156:6,12;171:22; 190:5;236:5;262:19 <b>Nez (4)</b> 237:23;238:3;245:3; 255:23 <b>nine (1)</b> 123:8 <b>nods (1)</b> 144:18 <b>none (4)</b> 23:8;138:20;236:14; 263:13 <b>nonirrigated (21)</b> 28:10;31:8,12;33:13,19, 24;36:3,4;57:12;58:6;67:13; 77:24;78:1;80:10;83:17; 95:6,14,15;118:15,19;200:4 <b>Non-irrigated (1)</b> 29:20 <b>nonirrigation (1)</b> 124:21 <b>nonirrigator (1)</b> 124:18 <b>nontarget (1)</b> 186:23 <b>nor (4)</b> 204:2;217:19;218:25; 219:1 <b>North (22)</b> 54:15;62:3;86:6;123:12, 25;124:11;126:18;127:6,14; 130:5,6,22;134:15;139:6; 140:21;141:14;142:13,20; 143:11,16;144:1;261:24 <b>note (4)</b> 40:13;61:19;68:19;180:15 <b>notes (2)</b> 41:2;63:17 <b>notice (1)</b> 195:18 <b>noticed (3)</b> 120:11,16;202:22	<b>November (4)</b> 57:13,20,22;211:16 <b>NRCS (2)</b> 231:1,23 <b>NRT (1)</b> 30:22 <b>nuances (1)</b> 262:13 <b>number (49)</b> 12:17;15:1,19;16:16; 17:13;19:20;21:5;25:23; 36:11;64:22;79:22;86:12; 92:20;93:23;94:21;101:25; 112:11,14,18,20;113:11,20; 133:1;144:22;161:16,17; 162:16;177:9;178:24; 182:17;185:16;187:3,3; 195:20;196:19;209:1;220:5; 225:17;247:25;248:3,4,5; 250:1,2,8,9;251:17,18,23 <b>numbered (1)</b> 155:20 <b>numbers (8)</b> 20:18;45:7;117:23;119:3; 143:10;242:18;243:2,8 <b>nutshell (3)</b> 160:14;182:9,10
<b>O</b>			
			<b>Object (2)</b> 109:18;145:25 <b>objecting (1)</b> 146:6 <b>objection (27)</b> 87:9,11;109:18,20,21; 134:12,19,23;137:22,23; 146:5;149:2,3;206:18,20; 212:9,10;236:11,13;248:9, 12;250:23,25;251:1,8; 252:14,16 <b>objective (2)</b> 52:13;203:13 <b>obligation (10)</b> 65:9;110:17,22;131:7; 139:22;143:17,20;145:24; 156:18;259:14 <b>obligations (4)</b> 131:14;132:1;133:10; 145:17 <b>observation (4)</b> 67:21,24;69:6;77:16 <b>observations (3)</b> 66:18,20,25 <b>observe (3)</b> 253:22,23;254:3 <b>observed (9)</b> 49:18;77:5;122:1;141:15; 171:14;173:7,10;218:12; 233:20 <b>obtainable (2)</b> 186:9,10 <b>obtained (1)</b>
<b>N</b>			
<b>name (8)</b> 11:7,9;89:23;112:6; 122:17;150:13,16;228:19 <b>name's (1)</b> 111:23 <b>narrow (2)</b> 170:13;179:2 <b>narrows (1)</b> 240:10			

<p>229:2  <b>obvious (1)</b>  187:3  <b>obviously (1)</b>  140:25  <b>occasionally (1)</b>  55:7  <b>occupation (3)</b>  152:10,11;229:4  <b>occur (6)</b>  61:4;62:7,15;183:14,18;  195:17  <b>occurred (4)</b>  23:5;61:13;62:3;98:13  <b>occurring (5)</b>  102:1,2,7;204:11;210:19  <b>occurs (3)</b>  61:2;62:15;134:4  <b>off (16)</b>  15:25;16:20;35:22;55:12;  59:11;89:10,13;117:7;141:4;  195:22;227:22;239:13,22;  240:2;241:2,7  <b>offer (2)</b>  264:23;265:7  <b>office (3)</b>  210:8;237:17;242:15  <b>OFFICER (115)</b>  9:3,7,15,20,22,24;10:3,6,  12,22;16:12,22,24;23:18,23;  24:5,10,15;26:1,5;47:2;64:5,  7,10,12;87:9,15,18,20;89:6,  13,16;109:20,22;110:5,24;  111:4,8,16,22;112:2;117:3,7;  119:11,13,15,19;121:2,7,10,  15,18,22,25;122:8,11;132:5;  134:14,18,21,24;136:1;  138:5;140:3;144:11;146:8,  11;149:2,5,9,13,18,21;150:6;  193:23;194:2;195:19,24;  206:18;207:1;210:24;  212:12;218:5;226:22,24;  227:18,25;228:13;236:11,  19;237:1;242:21;243:20;  248:16,24;249:8,11,18;  250:24;251:6;252:14,19,22;  253:1;257:5,18;258:2;261:1;  262:4,8,11,16;264:11;265:5,  11  <b>often (4)</b>  35:7;54:2;109:10;213:2  <b>old (3)</b>  155:2;190:8;191:23  <b>OLENICHAK (5)</b>  7:4;228:1,8,21;262:22  <b>O-l-e-n-i-c-h-a-k (1)</b>  228:22  <b>Olenichak's (1)</b>  249:17  <b>omission (4)</b>  186:4;197:20,25;202:1  <b>omit (1)</b>  209:2</p>	<p><b>omitted (2)</b>  197:11,12  <b>omitting (2)</b>  52:17;197:21  <b>Once (3)</b>  188:8;240:18;241:24  <b>one (78)</b>  9:13;10:7;17:13;24:2;  25:1;26:14;28:22;40:13;  42:13;44:18;46:6;47:25;  51:7,18;58:5;59:5,9;63:8;  64:2,17;68:7;72:4,20;74:3,4;  75:4;76:11;79:9,13,24;  88:24;89:24;98:1;103:6,18;  112:10,17;117:24;118:23;  119:15;120:22;123:8;  129:12;138:18;146:24;  156:12,18,18,22;157:9;  159:23;161:16;170:1,21;  171:6,21;172:21,24;174:24;  179:3;182:1,2;187:3;191:13;  198:11;203:4;205:15,23;  207:8;212:8;219:22;225:6;  231:22,24;236:24;237:9;  242:10;247:20  <b>one-month (2)</b>  205:19;206:3  <b>onerous (1)</b>  182:25  <b>ones (7)</b>  46:23;47:10;155:7;  184:10;200:23;209:2;214:9  <b>one-year (1)</b>  139:5  <b>ongoing (3)</b>  101:20;165:24;177:11  <b>online (1)</b>  10:9  <b>only (52)</b>  18:1,20;19:10;28:6;36:3,4;  37:18,19;44:16;54:10;55:7;  57:1;58:3,4;60:23;61:13,22;  88:15;91:20;92:1;115:6,12,  19;119:4;134:3;163:1;  164:22;165:3;168:9;177:6,  22;178:20;179:20;181:3;  184:10;188:12;193:5;  196:20;197:19;200:11;  204:15;220:19;230:14;  233:16;234:22;242:16,25;  243:6;244:22;253:13,17;  256:9  <b>on-the-ground (1)</b>  79:21  <b>open (6)</b>  81:20;82:1,4;213:7;  247:11;262:13  <b>opened (1)</b>  138:6  <b>opens (1)</b>  257:25  <b>operation (2)</b>  202:14;210:7</p>	<p><b>operations (8)</b>  44:2;98:7,8;99:2,7,9;  132:17;133:10  <b>operators (1)</b>  125:3  <b>opinion (26)</b>  62:6;91:13;95:1;103:18;  105:8;115:2;116:24,25;  158:6;165:12;167:6;168:5,  15;185:20,22;187:21;  188:20,21;198:7;200:8;  213:8;215:20;220:19,22;  222:19;226:1  <b>opinions (3)</b>  154:10;155:19;199:6  <b>opportunity (7)</b>  26:8;98:16,20,23;158:19;  221:2;265:6  <b>opposed (2)</b>  97:5,19  <b>opposes (1)</b>  23:3  <b>opt (4)</b>  245:7,18;260:17,19  <b>option (1)</b>  260:19  <b>oral (1)</b>  265:8  <b>orange (2)</b>  77:14,21  <b>Order (99)</b>  13:16,16;14:23,23;15:6,  17,18;17:11,24;18:24;19:8,  9;28:20;30:7,9;38:22;39:5,  14;40:25;45:8,16;54:13,16;  55:5;58:2;60:12,16,17;  63:21,25;65:8;72:2;85:8;  88:23;96:21;97:18;101:7,9,  15;127:22,25;128:15,24;  131:4,8;134:10;136:12;  137:20,24,24;141:1;142:9;  143:9;145:2,5;154:19,20;  155:21;156:8;158:15;161:7;  162:8,18;166:10,11,15,24;  167:8,17,22;168:8,9;172:14;  177:22;180:14;181:1;  185:12;186:2,5,21;187:11,  15,17,23;188:5;192:25;  198:2;200:10;202:24;  203:24;207:10,14;225:8,10;  226:17;227:11;235:13;  242:12;263:18  <b>orders (8)</b>  38:20;42:4;44:20;45:22;  96:24;101:5;155:6;265:4  <b>organization (1)</b>  122:25  <b>organized (1)</b>  89:12  <b>original (2)</b>  158:9;168:18  <b>originally (2)</b>  31:16;168:20</p>	<p><b>others (6)</b>  22:1;126:19;155:5;158:8;  182:14;259:12  <b>Otherwise (1)</b>  146:13  <b>ought (1)</b>  220:9  <b>out (64)</b>  20:4;22:23;27:10;34:16;  35:14;38:22;40:14;41:23;  44:11;45:6;47:5,13;52:22;  55:18;57:1;59:2;61:7;62:22;  69:25;70:11;72:11;73:13;  74:23;78:8;85:5;88:15;  105:15;106:6;126:10;  131:13;136:15,16,20;148:5,  13;152:21;160:23;166:7;  170:19;176:1;178:9;197:22;  199:25;204:14;208:8;228:6;  236:1,2;238:2;239:21;  240:14;245:7,19;255:12;  256:21;259:14;260:17,19;  262:22;263:9,18,22;264:3,25  <b>outdated (1)</b>  28:8  <b>outlier-type (1)</b>  44:24  <b>outlined (2)</b>  15:2;183:25  <b>outlook (1)</b>  43:24  <b>outlooks (1)</b>  98:12  <b>output (2)</b>  115:17;243:16  <b>outs (1)</b>  159:5  <b>outside (3)</b>  109:19,24;212:10  <b>over (48)</b>  11:25;14:10;38:13,19;  39:11,22;43:11;47:24;49:6;  50:5;54:18,20;55:25;56:11;  57:4;59:21;60:22;65:20;  66:13,16;71:17;85:3;88:25;  90:7,8;91:18;100:16;125:7;  131:1;132:15;135:3,8;  141:16;142:4;160:9;166:3;  169:1;182:11;183:1,1;  189:25;193:17;200:21;  216:7;230:13;234:23;236:5;  240:25  <b>overages (1)</b>  133:24  <b>overcome (1)</b>  202:19  <b>overdivert (1)</b>  133:16  <b>overestimate (3)</b>  79:12;177:10;183:23  <b>overfit (1)</b>  177:2  <b>overlap (3)</b></p>
---	--	---	--

<p>210:3,4,14 <b>overlapping (2)</b> 27:1,2 <b>overlay (1)</b> 32:23 <b>overprediction (1)</b> 102:18 <b>Overruled (7)</b> 110:5;134:18,21;136:3; 138:7;212:15;249:11 <b>oversee (1)</b> 237:12 <b>oversight (1)</b> 13:8 <b>overstated (1)</b> 112:14 <b>owed (1)</b> 143:21 <b>own (8)</b> 26:9;28:6;44:25;53:4; 126:24;127:2;133:7;249:1 <b>owned (1)</b> 33:2 <b>owners (1)</b> 33:2</p>	<p>67:4,9;71:20;76:4;80:3; 81:2;83:12;84:3,5;107:25; 202:13 <b>parcel (1)</b> 209:10 <b>Pardon (1)</b> 228:2 <b>parsed (1)</b> 152:21 <b>part (38)</b> 12:14;13:19,22,24;17:15; 28:23;49:2;62:8;65:19; 78:14,23;90:19;98:18; 101:14;103:2;105:8;106:13; 114:14;141:3;149:4;152:17; 160:12;182:13;183:1,1,24, 25;199:23;223:12,14,15; 233:22;235:13;239:4,4,5,10; 260:19 <b>partial (1)</b> 18:10 <b>participant (3)</b> 245:12,16,17 <b>participants (1)</b> 255:9 <b>participate (10)</b> 12:17;13:5,9,20;65:15; 152:23;238:11,13;254:14; 260:20 <b>participating (4)</b> 10:10;254:21;259:15,16 <b>participation (1)</b> 238:6 <b>particular (16)</b> 42:14;49:5;68:15;71:21; 93:21,25;96:8;106:22; 120:17;138:6;142:24; 172:20;220:11;226:19; 251:19,24 <b>particularly (9)</b> 43:24;44:15;45:12;50:25; 74:3,14;82:20;86:4;198:23 <b>parties (8)</b> 87:10;121:6;150:22; 166:17;255:5;257:18; 264:20,23 <b>partition (3)</b> 156:19;187:11,15 <b>parts (4)</b> 107:1;144:24;154:23; 215:2 <b>party (7)</b> 101:9;115:15,19;156:20; 221:8,9;255:4 <b>pass (1)</b> 262:9 <b>passes (1)</b> 174:13 <b>passing (1)</b> 234:7 <b>past (17)</b> 23:9;42:3;63:10;131:15, 20;136:7;137:25;144:25;</p>	<p>148:12;208:20;211:14; 229:8,9;233:10;241:10; 259:24;264:9 <b>patron (1)</b> 126:10 <b>patrons (7)</b> 125:16,21;129:4,9;130:23, 24;131:11 <b>PATTERSON (41)</b> 10:2,4,4,6,23,24;11:2; 16:12,14,17;17:1,2,3;23:23, 25;24:13,16,18;26:3,12; 34:1;47:4;64:2,6,13,14,15; 78:20;87:14;109:18,21,24; 111:6;117:5,6,9,12;119:10; 120:24;121:3,4 <b>Paul (1)</b> 182:3 <b>pay (3)</b> 133:21;134:1;244:21 <b>payment (1)</b> 238:15 <b>PDF (3)</b> 245:23;246:1,2 <b>Pelot (2)</b> 182:3,23 <b>pending (1)</b> 93:3 <b>People (6)</b> 98:13;196:1;220:10; 248:13;263:22;265:6 <b>per (10)</b> 133:21;134:2;164:1,2; 209:1;213:7;247:15,17,21; 251:21 <b>per-acre (1)</b> 125:17 <b>Perce (4)</b> 237:23;238:4;245:3; 255:23 <b>percent (55)</b> 27:14,17,20;39:2,10;40:1, 11,15,15,24;41:1,6,7,10,10; 42:6,15;45:20;49:9,12;57:8; 76:1;86:23;87:1;88:13;89:1, 2;97:7;115:20;116:3,4; 118:14;142:4;143:16,18,20; 144:23;171:14,17;173:11,17, 18;177:3,9;178:12;194:16; 196:20;203:12;225:17; 233:5,6,7,7,8;256:16 <b>percentage (14)</b> 41:12;76:10,12;96:25; 115:23;129:24;144:7,8; 191:14;232:2;234:14; 255:10;259:11,17 <b>Perfect (2)</b> 26:16;150:22 <b>perform (16)</b> 14:24;50:9;157:16,16; 171:24;184:19;189:24; 193:3,15;200:16;203:8; 204:19;205:18;208:4;</p>	<p>212:25;219:24 <b>performed (13)</b> 47:24;50:22,23;90:19; 158:11;159:1;189:11,12; 192:10;204:3;219:23;220:3, 4 <b>performing (3)</b> 179:24;193:8;205:21 <b>performs (1)</b> 213:1 <b>perhaps (11)</b> 51:4;105:12,13;111:22; 172:12;173:1;181:13; 188:13;192:24;221:15; 236:23 <b>period (26)</b> 22:19;38:13,23;39:11,15; 40:5;45:11,19;55:15;60:22; 66:13,16;81:3;88:16;91:18; 133:25;164:2;168:2;171:5; 179:2;191:15,19;205:25; 241:11;244:20;265:6 <b>periods (1)</b> 206:4 <b>permeability (1)</b> 106:16 <b>permissible (3)</b> 149:17;209:11,18 <b>permitted (2)</b> 29:13;125:21 <b>persisted (1)</b> 104:15 <b>person (1)</b> 259:19 <b>personal (1)</b> 198:19 <b>personally (2)</b> 123:24;126:24 <b>personnel (1)</b> 159:20 <b>perspective (2)</b> 52:21;110:2 <b>pertaining (1)</b> 155:10 <b>pertinent (1)</b> 50:20 <b>PEST (10)</b> 67:2,3,4,9;68:6;69:3;77:3, 15;78:7;80:11 <b>Pete (1)</b> 264:18 <b>PH-GW (1)</b> 10:17 <b>Phillips-head (1)</b> 169:23 <b>phone (2)</b> 111:21;195:20 <b>photo (1)</b> 208:15 <b>photograph (1)</b> 96:6 <b>phrase (1)</b> 98:7</p>
<p><b>P</b></p>			
<p><b>package (9)</b> 106:15;107:3,5;162:3; 202:5,6,13,14,19 <b>page (69)</b> 17:7;20:2;21:12;22:4; 23:11,21;24:1,4,5,22;25:19, 23;26:4,16,28;16:30;13; 32:12;35:10,20;38:18;42:10; 43:15;45:4;46:17;48:4;54:6; 55:11;57:15;65:3;68:19; 70:15;71:15;72:17;75:2,8; 76:19;77:8;80:23;93:6,6; 94:16;103:20,23,24;104:3; 114:8;119:20;155:17; 157:10,11;162:17,19;164:14, 15,15;165:17;180:13,16; 188:4;189:25;190:5,6;192:5; 193:17;217:24;218:2,6,13; 231:17 <b>pages (2)</b> 218:10,14 <b>Palisades (4)</b> 232:14,17;233:6;234:16 <b>paper (3)</b> 24:16;170:7;175:24 <b>paragraph (8)</b> 22:7;23:13;30:14;43:16; 104:4;119:22;120:4;157:11 <b>paragraphs (2)</b> 17:21;26:17 <b>parameter (1)</b> 108:11 <b>parameterize (1)</b> 106:20 <b>parameters (11)</b></p>			

<p><b>physical (4)</b> 179:18;188:17;189:5,8</p> <p><b>physically (2)</b> 49:23;240:4</p> <p><b>picks (1)</b> 97:10</p> <p><b>picture (3)</b> 35:16;36:17;167:10</p> <p><b>piece (3)</b> 181:8;192:21,22</p> <p><b>pieces (1)</b> 21:25</p> <p><b>pig (2)</b> 176:22,22</p> <p><b>pillow (1)</b> 231:9</p> <p><b>pipe (1)</b> 178:13</p> <p><b>piping (1)</b> 212:22</p> <p><b>place (17)</b> 25:3,15;26:25;29:13; 125:24;133:23;134:4; 137:21;144:3,5;178:23; 181:12;208:23;209:7,11,18; 210:15</p> <p><b>places (4)</b> 184:2;205:14;209:24; 210:14</p> <p><b>Plain (22)</b> 12:2,5;13:7,8;31:17,18; 35:4;44:1;49:25;50:5;65:14; 73:3,10;106:10;178:10,20, 22;181:11;182:22;197:22; 214:7;223:19</p> <p><b>plan (15)</b> 12:15;16:3;125:23; 132:15;134:10;137:1,7,8,12, 14,20,25;138:12,13;188:11</p> <p><b>planning (6)</b> 20:24;136:10;146:21; 168:21;169:8;215:15</p> <p><b>plans (2)</b> 133:9;166:18</p> <p><b>plants (1)</b> 124:23</p> <p><b>played (1)</b> 40:14</p> <p><b>please (34)</b> 10:7;11:7;13:2;17:9; 42:10;62:18;65:6;93:7; 110:6;121:23;122:2,17; 146:13;149:15,19;150:6,16; 151:4;153:13,16,23;154:2; 155:14;158:25;162:21; 165:17;188:4,7,22;190:13; 192:5;228:5,13,19</p> <p><b>plenty (1)</b> 241:20</p> <p><b>plotted (1)</b> 208:9</p> <p><b>plow (1)</b> 184:1</p>	<p><b>pm (1)</b> 265:15</p> <p><b>point (29)</b> 23:9;35:2;49:6;69:10; 84:14;92:20;93:21;96:11; 114:19;155:25;161:19; 182:24;189:11;201:23; 208:9,10;210:13,18;219:4,7; 236:4;240:24;241:3,18; 247:20;248:10;256:15; 257:15;262:22</p> <p><b>pointed (1)</b> 170:18</p> <p><b>pointing (1)</b> 43:23</p> <p><b>points (10)</b> 42:1;164:7,8;176:1; 182:21,24;193:21;204:12, 15;208:18</p> <p><b>policy (10)</b> 116:22,25;174:4,6,7,16; 176:6;187:4;192:10;204:20</p> <p><b>polygon (4)</b> 32:24;33:3;208:13;209:6</p> <p><b>polygons (4)</b> 33:12;199:12,12;208:17</p> <p><b>pool (30)</b> 245:3,6,7,12,19;254:20,23; 255:7;257:11,11;258:25; 259:8,13,19,21,25;260:20, 23;262:14,14,17,19;263:3,4, 5,6,7,8,22;264:4</p> <p><b>pools (1)</b> 264:7</p> <p><b>portion (2)</b> 129:23;254:22</p> <p><b>portions (2)</b> 261:7,19</p> <p><b>Portneuf (7)</b> 201:19;229:25;232:15; 233:1,8,14;234:13</p> <p><b>position (7)</b> 122:24;139:11,16,19; 194:20;229:7;233:19</p> <p><b>positioned (1)</b> 104:18</p> <p><b>positions (1)</b> 230:2</p> <p><b>positive (3)</b> 204:10,17,18</p> <p><b>possibilities (1)</b> 23:1</p> <p><b>possible (9)</b> 97:1;99:5;148:8;154:12; 188:18;206:13,14;235:21; 264:19</p> <p><b>possibly (2)</b> 140:17;156:21</p> <p><b>post (1)</b> 37:18</p> <p><b>postcalibrated (1)</b> 83:6</p> <p><b>postcalibration (4)</b></p>	<p>77:14,22;83:11,13</p> <p><b>potatoes (1)</b> 125:13</p> <p><b>potential (7)</b> 59:21;62:21;98:6;109:4,4; 201:21;250:2</p> <p><b>Potentially (9)</b> 27:23;36:18;49:16;61:15; 62:5;76:25;88:11;94:13; 116:22</p> <p><b>power (1)</b> 49:8</p> <p><b>PPU (1)</b> 29:13</p> <p><b>practice (2)</b> 37:11;256:23</p> <p><b>practices (4)</b> 37:17,19,22;51:25</p> <p><b>precalibration (5)</b> 77:13,21;83:5,11,13</p> <p><b>precautions (3)</b> 169:11,12,16</p> <p><b>precipitated (1)</b> 163:14</p> <p><b>precipitation (9)</b> 38:5;41:18;44:16,17,18; 45:3,11;208:7;230:17</p> <p><b>precise (1)</b> 191:12</p> <p><b>precision (16)</b> 156:4;158:9;170:17,18,19; 172:14,18;173:13;174:18; 176:1;180:2;188:23;189:3, 13;192:20;220:24</p> <p><b>predict (8)</b> 59:7;76:2;91:3,20;171:19, 25;172:2;177:4</p> <p><b>predicted (3)</b> 44:3;75:20;235:17</p> <p><b>predicting (2)</b> 73:19,21</p> <p><b>prediction (12)</b> 68:15;76:2;84:14,24; 108:9;109:6;171:1;172:20; 174:9,19;177:9;201:12</p> <p><b>predictions (6)</b> 59:3;74:19;75:6;107:16, 21;120:6</p> <p><b>predictive (2)</b> 49:8;196:11</p> <p><b>predictor (8)</b> 48:24;49:17,23;50:7,16, 24;91:14;102:23</p> <p><b>predictors (8)</b> 46:20;47:1,10,13;48:13, 15,16;50:20</p> <p><b>predicts (2)</b> 75:25;101:6</p> <p><b>preferred (2)</b> 80:15;82:22</p> <p><b>preimposed (1)</b> 80:9</p> <p><b>preliminary (6)</b></p>	<p>9:16;81:18;82:19;83:19; 84:6;212:13</p> <p><b>preparation (2)</b> 13:13;155:1</p> <p><b>prepare (1)</b> 194:21</p> <p><b>prepared (12)</b> 63:18;69:19;104:13; 138:25;145:15;151:8;155:2, 4,8;170:9;182:3;246:16</p> <p><b>preparing (1)</b> 158:16</p> <p><b>prescribed (1)</b> 48:12</p> <p><b>presence (1)</b> 104:25</p> <p><b>present (14)</b> 23:20;34:4;90:23;91:19, 21;160:19,20;193:11;194:7; 196:3,25;200:25;204:25; 205:12</p> <p><b>presentation (5)</b> 29:5;30:1;31:7;47:19;49:3</p> <p><b>presentations (3)</b> 22:24;159:15,17</p> <p><b>presented (23)</b> 17:18;18:9;27:7;28:9,11, 25;29:3;32:16;40:9;43:7; 54:21;60:9,19;73:10;100:9; 156:8;157:13;160:22;161:2, 6;193:13;212:11;214:6</p> <p><b>presenting (1)</b> 57:19</p> <p><b>presently (2)</b> 48:25;135:11</p> <p><b>resident (2)</b> 139:11,16</p> <p><b>pretty (8)</b> 77:18;83:14;88:10; 104:19;119:6;132:11; 182:22;191:16</p> <p><b>prevent (1)</b> 193:7</p> <p><b>previous (20)</b> 18:13;39:17;40:23;42:4; 44:20;45:22;55:16,25;70:18; 96:23,24;97:3,7;101:4,4; 110:21;120:4;128:23; 133:24;147:11</p> <p><b>previously (9)</b> 17:6;20:17;28:11;95:5; 96:9,25;152:13;187:10; 235:25</p> <p><b>primarily (2)</b> 108:2;188:25</p> <p><b>primary (3)</b> 155:7;169:7;189:4</p> <p><b>principal (1)</b> 152:12</p> <p><b>principle (2)</b> 221:6,7</p> <p><b>prior (14)</b> 34:8;73:13;131:4;141:19,</p>
--	--	---	--

<p>25;155:6;168:4;194:6; 204:21;213:25;230:1; 253:22;259:6;264:23</p> <p><b>priorities (5)</b> 126:2,5;239:8,13;240:3</p> <p><b>priority (14)</b> 165:25;166:12,23,25; 224:6;226:18;234:7,8,21; 239:21,25;240:1;241:4,15</p> <p><b>private (7)</b> 151:25;152:3,19;207:22; 209:15;255:15,18</p> <p><b>probability (1)</b> 204:10</p> <p><b>probably (19)</b> 50:7;51:24;52:6;74:8; 75:4;82:10;84:13;86:18; 96:2;130:24;152:18;156:22; 193:23;199:24;211:12; 224:5;234:19;251:17;256:23</p> <p><b>problem (7)</b> 108:18;156:24;157:1; 172:1;187:17;247:21;257:25</p> <p><b>problems (2)</b> 172:3,4</p> <p><b>procedure (1)</b> 259:22</p> <p><b>procedures (8)</b> 245:6,14;254:20;255:6,8; 259:13;262:18,19</p> <p><b>proceed (1)</b> 10:13</p> <p><b>proceeding (11)</b> 18:21;20:20;112:10; 134:13;137:25;138:2; 152:14;153:9;155:9;170:25; 212:19</p> <p><b>proceedings (3)</b> 18:13;138:4;152:16</p> <p><b>process (31)</b> 25:15;26:25;27:5,11;28:3, 6;34:17,19;53:22;66:8; 67:10;68:7;69:7;79:4;118:2; 162:24;164:25;170:10; 173:9;175:22,22;195:1; 198:11;199:9,11,18,23,24; 207:17;241:7;260:21</p> <p><b>processed (1)</b> 78:25</p> <p><b>processes (1)</b> 167:11</p> <p><b>processing (21)</b> 25:9;30:4;78:19,23;79:11, 18,19,23;80:8,21;81:16,19, 20,23,25;82:8,11,14;83:5,7; 93:18</p> <p><b>produce (5)</b> 118:6,6;208:4;222:3;226:7</p> <p><b>produced (5)</b> 56:6;82:3;85:6;160:16; 165:23</p> <p><b>product (1)</b> 165:22</p>	<p><b>professional (5)</b> 105:19;163:11;186:25; 188:9,11</p> <p><b>program (10)</b> 133:20;183:20;208:14; 229:1,5,9;230:4;238:8,14; 247:1</p> <p><b>programs (4)</b> 133:6;207:23,25;208:2</p> <p><b>project (18)</b> 12:2,23;15:11;23:7;98:8, 23;106:7;113:1,3,5,16;114:3, 12,18,21;212:8,22,23</p> <p><b>projected (2)</b> 53:15,16</p> <p><b>projects (6)</b> 13:1;99:2;212:3,7,18,20</p> <p><b>propagate (2)</b> 72:4;204:7</p> <p><b>propagated (1)</b> 102:9</p> <p><b>proper (2)</b> 202:6,8</p> <p><b>properties (10)</b> 66:2;67:10;68:3,5;71:22, 23;72:6,7,12;82:17</p> <p><b>proportion (1)</b> 148:11</p> <p><b>proportionate (2)</b> 85:13;129:25</p> <p><b>proposed (8)</b> 73:2,6,9;76:25;79:17,24; 81:4;265:4</p> <p><b>proposing (1)</b> 45:13</p> <p><b>protect (4)</b> 100:14,19;116:16;256:1</p> <p><b>protection (9)</b> 37:5,7;40:19;41:23;43:13; 57:9;97:12,13,14</p> <p><b>protective (3)</b> 41:22;59:13;183:5</p> <p><b>provide (15)</b> 26:9;113:17;170:3; 173:20;174:23;175:15; 176:8,13;181:9;182:1;184:5; 193:1;221:9;255:10;259:10</p> <p><b>provided (17)</b> 18:16;20:5,8;55:23;56:19; 92:12;116:3;153:11;155:11; 156:3;157:3;161:22;185:2; 191:2;213:21;226:9;258:25</p> <p><b>provides (2)</b> 181:22;224:22</p> <p><b>providing (2)</b> 37:5;159:14</p> <p><b>proximity (1)</b> 208:11</p> <p><b>prudent (1)</b> 189:21</p> <p><b>published (2)</b> 246:20;247:23</p> <p><b>pull (1)</b></p>	<p>221:11</p> <p><b>pulled (3)</b> 15:25;38:9;55:18</p> <p><b>pulling (1)</b> 57:17</p> <p><b>pump (2)</b> 127:12,13</p> <p><b>pumper (1)</b> 88:19</p> <p><b>pumpers (2)</b> 109:15;110:11</p> <p><b>pumping (12)</b> 72:4;85:10;91:4;110:16; 147:9,10;148:14;178:21; 183:13;222:23;223:4,22</p> <p><b>pumps (5)</b> 141:14,14;147:24;247:3, 13</p> <p><b>purchased (1)</b> 260:10</p> <p><b>purely (2)</b> 95:21;256:5</p> <p><b>purged (1)</b> 204:23</p> <p><b>purpose (14)</b> 100:2,11,16,18;101:8; 158:6;168:19;169:1,19; 190:13;216:11;223:9;225:5; 260:2</p> <p><b>purposes (12)</b> 154:9;169:7,22;195:1; 199:1;211:18;245:20; 258:17,19;259:21;260:1,18</p> <p><b>pursuant (2)</b> 132:15;134:11</p> <p><b>pursuing (1)</b> 200:4</p> <p><b>put (15)</b> 15:21;27:4;46:8;55:14; 67:21;77:18;106:25;121:20; 125:24;133:23;143:4; 176:21;189:17;214:24; 261:21</p> <p><b>puts (1)</b> 108:24</p>	<p>50:7</p> <p><b>quick (2)</b> 194:5;249:14</p> <p><b>quickly (5)</b> 11:15;66:5;71:25;155:16; 205:13</p> <p><b>quite (5)</b> 52:23;65:18;140:20; 180:10;199:4</p> <p><b>quote (5)</b> 39:4;50:12;64:19;215:14; 220:20</p>
<b>R</b>			
			<p><b>R16 (1)</b> 157:12</p> <p><b>R17 (2)</b> 190:4,8</p> <p><b>R18 (2)</b> 190:5,8</p> <p><b>R19 (4)</b> 190:9,9;191:13,20</p> <p><b>R2 (1)</b> 51:3</p> <p><b>R21 (1)</b> 190:10</p> <p><b>R7 (3)</b> 165:18,21,22</p> <p><b>rain (1)</b> 236:5</p> <p><b>rains (1)</b> 234:23</p> <p><b>raise (8)</b> 10:15;45:25;63:8;102:12; 122:2;149:23;212:9;228:4</p> <p><b>raised (5)</b> 73:23;74:20;103:11,11; 199:25</p> <p><b>Ralston (3)</b> 69:18;70:16;104:12</p> <p><b>ran (2)</b> 73:16,16</p> <p><b>range (7)</b> 116:5,9,11;126:5;175:6; 217:14;218:16</p> <p><b>ranked (1)</b> 170:11</p> <p><b>Rangen (6)</b> 12:7,11;90:15;101:19; 109:11;155:9</p> <p><b>ranges (1)</b> 67:5</p> <p><b>rapidly (1)</b> 204:7</p> <p><b>RASA (1)</b> 106:7</p> <p><b>rate (7)</b> 35:18;56:24,25;82:3; 127:17,18;163:8</p> <p><b>rate-per-acre (1)</b> 248:21</p> <p><b>rates (2)</b></p>
<b>Q</b>			
		<p><b>qualifications (1)</b> 150:23</p> <p><b>qualitative (1)</b> 203:10</p> <p><b>qualitatively (3)</b> 160:11,17;162:1</p> <p><b>quantify (1)</b> 198:11</p> <p><b>quantity (2)</b> 226:15;231:10</p> <p><b>quarter (5)</b> 64:8;111:11,14;209:1,1</p> <p><b>quarter-million (1)</b> 221:16</p> <p><b>questionable (1)</b></p>	

56:21;250:4 <b>rather (1)</b> 205:14 <b>ratio (6)</b> 85:23;156:3;178:2;179:17, 17;220:20 <b>ratios (3)</b> 177:16,18;179:15 <b>reach (71)</b> 49:24;50:2,3,21;53:1;56:7; 66:22,22;67:22,23,25;68:15, 18,23;69:13;70:6,14;71:3,5, 8;72:5;75:7,7,19,21;76:6,13; 77:12;84:25;85:11;86:1,3,8, 17;91:6,8,16,17,25;104:2,23; 105:6,22;107:10,11,14,17, 21;108:4,18,22;109:10; 115:7;119:24;148:19;163:9; 171:3,3,11;173:16;178:22; 190:24;216:25;217:1,4; 219:23;239:17,24;240:18; 241:3,16 <b>reached (2)</b> 148:20;241:12 <b>reaches (15)</b> 102:9;165:4;186:23; 214:17;216:20,22;217:7,9, 15;218:10,17;219:12; 229:13;240:10;241:22 <b>reaches' (1)</b> 217:13 <b>reaching (1)</b> 240:4 <b>reaction (3)</b> 163:11;186:25;188:9 <b>read (12)</b> 33:7;72:19;162:20;164:21, 22;166:11;167:2;180:20,24; 187:14;223:2;242:23 <b>read] (2)</b> 55:4;103:24 <b>reading (2)</b> 87:6;177:21 <b>reads (3)</b> 17:22;22:9;30:14 <b>ready (4)</b> 9:4,13;164:16;185:13 <b>real (1)</b> 36:13 <b>reality (3)</b> 66:11;68:12;178:6 <b>realization (1)</b> 196:11 <b>realized (4)</b> 163:5;165:6;188:24;225:1 <b>reallocate (1)</b> 148:18 <b>really (35)</b> 19:10;42:22;43:13;48:11; 50:17;51:22;52:13;53:21,22, 25;54:21;57:9;58:21;63:1; 73:18,18;74:18,18;75:13; 78:9;79:6;80:14;82:25;86:1;	95:11;106:11;114:19; 120:21;148:22;168:24; 170:7;175:17;179:19;257:8, 16 <b>real-time (5)</b> 28:25;30:3,4;36:17;58:12 <b>reask (1)</b> 136:5 <b>reason (19)</b> 28:7;39:16;50:17;73:7; 78:22;79:6;83:22;94:6; 141:3;159:3;177:6;183:17; 199:23;225:23;251:14; 252:1,6;254:19;256:20 <b>reasonable (50)</b> 15:8;17:15,19;18:7,16,17, 22;19:1,4;20:4,7,12,21;21:6; 22:1;23:2;30:8,12;31:9; 36:14,23;45:20;53:7,10; 54:1,3;57:21,24;58:8;59:15, 25;60:6,20;99:16,18;100:1,2, 8,11,23,24;101:2;102:14; 113:14;114:10;206:6;213:8, 18,19,23 <b>reasoning (4)</b> 39:8;155:23,24;156:10 <b>reasons (12)</b> 46:6;69:8;103:6;155:20, 22;157:2;161:16,18,20,20; 220:14;224:2 <b>reassess (1)</b> 50:13 <b>rebuttal (2)</b> 193:21;194:5 <b>recalculate (2)</b> 113:11;114:14 <b>recalculated (1)</b> 114:8 <b>recalibration (3)</b> 68:20;82:13,19 <b>recall (34)</b> 21:2;22:15,24;23:16; 25:11;50:10;90:16;92:6,14, 22;98:5,10;99:20;101:16; 119:8;120:15;142:9;145:20; 146:17;186:19;194:12; 196:6,7;197:3;198:16;201:5; 207:12,14;211:14;225:13; 245:4;258:18,21;261:8 <b>receive (9)</b> 115:20;137:18;140:21; 238:14;245:10,11,15,19; 260:6 <b>received (12)</b> 87:12,13;142:16;149:6,7; 206:21,22;234:23;236:15, 16;252:17,18 <b>receives (1)</b> 101:9 <b>receiving (2)</b> 221:18;252:14 <b>recent (8)</b> 17:25;58:10;94:8;118:3;	190:22;192:13;255:6;257:10 <b>recently (3)</b> 147:16;254:20;258:24 <b>recess (1)</b> 111:17 <b>recharge (28)</b> 12:13;16:3;43:25;44:6,10; 61:12;62:2;67:14;73:22; 77:12,12,17,23;78:2;80:11; 83:17;98:15,19,22;101:21; 102:1,4,6,9,15,17,24;264:9 <b>recharged (1)</b> 61:21 <b>Reclamation (2)</b> 230:7;235:25 <b>recognition (2)</b> 221:6,7 <b>recognize (4)</b> 21:17;109:5;129:14;247:5 <b>recognized (2)</b> 24:19;251:5 <b>recognizing (1)</b> 250:1 <b>recollection (1)</b> 161:14 <b>recommend (3)</b> 22:13;25:1;192:2 <b>recommendation (11)</b> 22:3;25:3;26:6;46:15; 48:21;81:1,4;82:11;108:21, 23;175:10 <b>recommendations (13)</b> 21:3,22;23:22;52:9;79:16; 81:11,14;92:13,21,24; 151:16;176:17;212:24 <b>recommended (2)</b> 26:11;219:2 <b>recommending (4)</b> 21:4,23;24:24;27:4 <b>record (38)</b> 9:5;16:20,24;33:7;38:24; 39:15;40:5;44:16;45:19; 51:9;56:21;61:3;64:10;87:7; 89:11,14,16;117:8;122:18; 129:16;148:23;149:1; 150:12,17;152:22;157:7; 160:20;188:2;227:22; 228:20;231:16,17;236:10; 246:14;247:20;249:16,23; 251:7 <b>recorded (2)</b> 29:14;223:2 <b>recording (4)</b> 16:25;89:17;111:16;194:2 <b>records (2)</b> 55:6;229:10 <b>recover (1)</b> 142:23 <b>re-create (1)</b> 70:9 <b>Recross (3)</b> 119:11;262:11;264:11 <b>recross-exam (1)</b>	227:19 <b>Recross-Examination (2)</b> 7:11;263:1 <b>recurring (1)</b> 203:1 <b>Redirect (15)</b> 7:10;111:5,6;117:5,11; 144:11,13;206:25;226:25; 227:3;257:5,9,12;261:1,3 <b>redo (1)</b> 114:20 <b>reduce (2)</b> 42:20;260:3 <b>reduced (4)</b> 41:19;59:4,5;202:1 <b>reducing (2)</b> 59:13,19 <b>reduction (11)</b> 62:13;72:3;76:5;85:10; 103:19;125:25;131:14; 148:11;181:12,13;236:2 <b>reductions (2)</b> 131:20;142:8 <b>reevaluated (1)</b> 52:6 <b>reevaluating (1)</b> 23:6 <b>refer (10)</b> 24:1;26:17;51:14;157:10; 164:11;169:10;177:16; 182:8;240:6,11 <b>reference (4)</b> 93:1;149:1;168:4;232:5 <b>referenced (2)</b> 212:19;221:19 <b>references (3)</b> 30:20,24;181:25 <b>referencing (2)</b> 20:19;69:17 <b>referred (11)</b> 18:5,20;20:17;26:18; 113:20;152:23;159:24; 169:11;176:1;216:17;263:3 <b>referring (18)</b> 14:14;17:17;18:4;23:19; 31:1;69:16;71:21;75:2; 97:24;98:11;104:14;116:5, 10;148:23;221:13;223:18; 240:7,19 <b>refers (2)</b> 17:10;58:21 <b>refine (2)</b> 179:17;182:19 <b>refined (1)</b> 83:5 <b>refining (1)</b> 182:11 <b>reflect (2)</b> 224:12;248:1 <b>reflected (4)</b> 24:22;54:4;120:19;247:15 <b>reflection (1)</b> 107:24
--	--	---	---

<b>reflects (1)</b> 220:13	186:10;201:13;222:20; 224:3	14:5,11,22;15:2,7,9,15,21; 16:7;17:7,21;21:10,11,14; 22:5;24:3,4,22;25:19,21; 26:19;28:14;29:22;30:14,20; 32:6;34:20;37:15;38:7,10, 18;42:11;43:16;44:8;51:13; 64:3,19;65:3;68:19;69:12, 17;70:16,17;71:16;93:6; 95:4;100:4,25;103:21,23; 104:13;108:16,25;109:3,19, 25;112:13;113:13;129:18; 149:4;153:8,11,25;154:1,3; 155:1,11,12,15;157:3,7,12, 17;159:21,24,24;160:12; 161:22;163:15,20;165:17; 169:10;177:15;181:21; 184:12;186:13;190:19; 192:6,8;193:6,18;204:24; 205:11;206:17;208:25; 215:13;217:11;222:19; 224:16,21;246:3,9,15;261:6	147:18 <b>required (5)</b> 133:21;175:13;193:2; 201:15;221:9 <b>requirement (2)</b> 139:20;188:13 <b>requirements (1)</b> 238:3 <b>requires (2)</b> 97:20;178:7 <b>resampling (1)</b> 68:20 <b>Research (1)</b> 155:3 <b>reserve (1)</b> 206:24 <b>Reservoir (12)</b> 52:1;104:18;105:6;107:4; 112:8;140:24;141:5;229:14, 23;234:20;237:15;238:2 <b>reservoirs (8)</b> 100:16;141:1;229:24; 234:7;235:9,10;254:2,4 <b>resistance (1)</b> 72:21 <b>resolved (1)</b> 135:14 <b>Resource (2)</b> 101:25;109:2 <b>Resources (6)</b> 151:12,16;152:2;155:3; 177:24;178:1 <b>respect (14)</b> 93:22;98:3;99:25;100:11; 101:7;102:1,6,13;103:11; 107:9,11;109:14;141:13; 143:25 <b>respectively (1)</b> 40:18 <b>respond (1)</b> 103:3 <b>responded (1)</b> 103:5 <b>response (25)</b> 25:20;75:15,18,21;76:9; 84:9;85:24;86:7,14;102:24; 108:18;109:10,12;116:14; 156:6;170:16;172:7,11; 188:11,11;189:19;191:18; 214:22;219:22;258:15 <b>responses (9)</b> 50:4;73:21;75:6;76:5; 91:3;190:24;220:7;224:22; 225:1 <b>responsibility (9)</b> 158:3;166:17;167:1,3,5; 187:12;198:23,25;226:4 <b>responsible (7)</b> 109:16;110:11;126:12; 156:20;159:3;241:1;254:22 <b>restate (2)</b> 146:13,16 <b>restricting (1)</b>
<b>reformulate (1)</b> 176:4	<b>relied (1)</b> 155:8		
<b>reformulating (1)</b> 176:5	<b>relief (19)</b> 156:3,4;174:20,23;176:9; 177:16,18;179:15;188:23; 191:23,24;193:1,2;196:14, 16;220:20;221:9,10;226:15		
<b>regard (8)</b> 158:2,3;160:9;161:21; 189:13;193:4;202:24;204:21	<b>relies (1)</b> 214:13		
<b>regarding (14)</b> 22:13;93:5;98:4,5;100:22; 101:13,21;110:3;154:10; 155:20;158:7,9;159:18; 188:10	<b>reluctance (1)</b> 219:15		
<b>regardless (1)</b> 138:21	<b>rely (1)</b> 228:3		
<b>region (2)</b> 104:2;107:2	<b>relying (1)</b> 183:9		
<b>regional (4)</b> 52:1;106:8;107:7;219:24	<b>remainder (1)</b> 23:1		
<b>regression (4)</b> 47:18,24;52:15;174:1	<b>remaining (1)</b> 254:1		
<b>regressions (1)</b> 47:22	<b>remember (15)</b> 22:17;59:16,19;106:8; 116:2;138:8;145:3;146:12, 15;217:16;227:7;259:1; 261:12,15,18	<b>reported (3)</b> 58:11;61:20;223:2	
<b>regular (1)</b> 122:1	<b>remembered (2)</b> 78:25;79:5	<b>REPORTER (20)</b> 9:6;33:5,7,10;64:11;78:15; 98:17,21;116:8;153:15; 185:14;190:17;222:11; 224:13;242:19,21,22;243:5, 10;249:19	
<b>regularly (1)</b> 254:17	<b>remote (4)</b> 27:7;32:21;121:12;199:19	<b>reporting (2)</b> 61:25;134:3	
<b>regulate (2)</b> 127:7,14	<b>remotely (3)</b> 10:10,19;228:11	<b>reports (6)</b> 13:17;30:19;98:2;168:22; 171:8;181:25	
<b>regulated (1)</b> 263:23	<b>removed (4)</b> 27:12;29:20;179:7;214:25	<b>represent (13)</b> 43:18;66:11;77:20; 105:16;106:1,20;112:7; 129:17;132:21;150:13; 166:2;216:15;246:8	
<b>regulating (1)</b> 241:1	<b>removing (1)</b> 27:1	<b>representation (12)</b> 51:21;106:16;131:25; 176:24;202:6,8,15;208:5,7; 218:24;220:7;228:4	
<b>regulation (1)</b> 260:3	<b>renew (1)</b> 137:23	<b>representative (7)</b> 51:23,24;119:23;120:2,7; 193:14,16	
<b>regulatory (1)</b> 204:17	<b>rent (7)</b> 238:14;254:17;255:5; 259:20;263:18,22;264:3	<b>represented (9)</b> 18:13;28:5;70:9;107:11; 215:3;218:16;247:11; 250:20;252:4	
<b>relate (3)</b> 98:23;190:14,18	<b>rental (16)</b> 245:2,6,7,19;254:20; 255:11;258:25;259:13; 260:11,20;262:14,17,19; 263:4,8;264:6	<b>representing (5)</b> 105:21;106:19;140:9; 153:5;202:20	
<b>related (15)</b> 12:9,10;15:4;17:19;26:11; 37:22;56:20;76:23;101:3; 118:18;152:1,20;155:5; 159:1;203:4	<b>rentals (9)</b> 237:16;238:7;257:10; 259:8,9,12,14,18;260:23	<b>represents (5)</b> 124:15;165:23;190:25; 248:3;251:17	
<b>relates (3)</b> 58:19;66:5;71:12	<b>renting (3)</b> 238:11;254:14;255:3	<b>reproduced (1)</b> 190:8	
<b>relating (8)</b> 10:19;84:21;122:6;150:3; 154:23;192:22;225:10; 228:10	<b>repeat (4)</b> 98:17;110:7;222:11; 225:16	<b>requested (1)</b> 143:7	
<b>relationship (3)</b> 103:1;208:3;211:24	<b>rephrase (2)</b> 131:12;185:19	<b>requesting (1)</b> 80:6	
<b>relative (6)</b> 93:2;94:25;96:23;202:11; 258:13,18	<b>replacement (1)</b> 219:16	<b>require (1)</b>	
<b>release (2)</b> 74:21;75:15	<b>replicate (1)</b> 225:20		
<b>released (1)</b> 84:12	<b>replied (1)</b> 117:16		
<b>relevant (4)</b> 88:1;93:24;198:4;206:10	<b>report (104)</b>		
<b>reliable (4)</b>			

<p>249:8 <b>restrictions (1)</b> 262:15 <b>result (17)</b> 56:16;62:23;76:11;92:14; 156:19;166:2,5,8;170:24; 187:3;196:11;202:2;217:17; 220:14;233:21;236:2;255:23 <b>resulted (4)</b> 33:21;79:10;99:18;259:10 <b>resulting (4)</b> 74:24;163:3;165:5;214:23 <b>results (14)</b> 69:4;76:17;77:3;79:13; 160:16;170:18;176:8;191:1, 2,3;218:12;220:1;225:7,24 <b>retained (3)</b> 90:10;164:22;211:25 <b>return (9)</b> 49:21;197:4,8,11,11,18,21; 198:8;261:20 <b>returns (2)</b> 197:10;198:11 <b>revealed (1)</b> 161:17 <b>revelation (1)</b> 129:5 <b>reversed (1)</b> 201:24 <b>reverted (1)</b> 28:7 <b>review (15)</b> 13:15;17:25;27:4;28:6; 38:21;40:8;50:18;73:11; 106:5;153:2;154:9,18,21,22; 167:22 <b>reviewed (10)</b> 30:8;61:10;77:2;82:8; 97:25;115:24;157:23,24; 172:23;220:4 <b>reviewing (2)</b> 61:18;158:15 <b>revise (1)</b> 244:16 <b>Rexburg (2)</b> 218:19;240:16 <b>RICHARD (2)</b> 122:4,19 <b>riders (1)</b> 132:24 <b>Rift (1)</b> 109:12 <b>right (74)</b> 9:15,24;10:15,23;12:8,10, 22;19:14;24:12,13,23,23; 33:22;34:15;38:11;55:5; 69:2,8,9;77:19;82:16;83:25; 89:8;92:18;104:4;107:3; 110:16;111:3,11;121:8,24; 122:2;123:18,19;126:2,6; 127:16;134:17;138:11; 146:8,11;149:18,23;152:19; 162:16;166:1;177:5;180:4;</p>	<p>183:6;184:11;185:16;195:9, 15;206:24;208:25;209:4,5, 13,16;210:11,14;220:14,14; 227:21,22;228:4;232:12,15; 246:25;248:3;256:20;258:1; 264:12;265:9 <b>rights (35)</b> 52:25;65:5;75:16;109:17; 110:12;125:1;126:7,8,25; 127:2,5,8;130:25;133:7,8; 141:13;144:1,3;151:25; 160:4;170:14;175:25; 208:21;209:11,23,25; 216:15;229:15;233:24; 234:18,20;237:15,24; 239:11;240:1 <b>Rimrock (1)</b> 49:21 <b>Ririe (1)</b> 230:20 <b>RISD (7)</b> 17:25;19:6,8,20;20:25; 22:11;57:13 <b>River (68)</b> 91:7;105:22;106:15;107:3, 4,5;144:20;151:17,22;159:8; 163:2;164:3,8;165:5;172:9; 189:7;195:9;202:5,6,7,9,13, 14,16,17,19;213:8;214:16, 23;215:1,2;218:10;220:7; 224:23,25;229:13,19,20; 230:23;232:3,10,16,17; 233:17;237:13,20;238:2,19, 21,25;239:6,12,14,18,22,24; 240:4,9;241:3,5,12,23;242:3, 4,8;254:10;260:3;261:21 <b>road (2)</b> 204:23;249:1 <b>roads (1)</b> 27:12 <b>Rob's (1)</b> 257:20 <b>robust (7)</b> 182:22;183:3;199:10; 200:6,17;201:25;203:5 <b>Rocky (3)</b> 152:7,8;190:11 <b>Roger (1)</b> 175:25 <b>role (1)</b> 159:14 <b>room (2)</b> 194:8;196:4 <b>roughly (3)</b> 47:15,16;126:6 <b>round (1)</b> 178:8 <b>row (2)</b> 130:5;191:20 <b>R-squared (22)</b> 49:5,7;102:13;103:1; 171:8,13,15;172:21;173:2,4, 7,11;174:1;176:14,19;201:6,</p>	<p>11;217:8;218:11;219:3,12; 220:12 <b>rule (1)</b> 259:22 <b>ruled (1)</b> 110:13 <b>rules (6)</b> 110:14;177:22;216:3; 257:1;262:14;263:4 <b>rulings (1)</b> 110:21 <b>run (8)</b> 56:6;99:7;115:5,18;166:7; 225:24;226:7;241:9 <b>running (3)</b> 80:3;91:14;191:7 <b>runoff (7)</b> 233:22,25;234:11,15,17; 235:24;254:4 <b>runs (3)</b> 80:5;225:16;226:1</p> <hr/> <p style="text-align: center;"><b>S</b></p> <hr/> <p><b>safe (7)</b> 137:9,14,18,21;138:13,15, 20 <b>salmon (1)</b> 263:10 <b>same (32)</b> 19:20;20:7;26:13;29:24; 31:7;48:10;69:22,23;74:15; 77:20;82:17;84:3;113:24,25; 115:19;128:12;156:8;163:7, 8;166:3;167:21;169:8;195:1, 2;197:19;198:3;226:8; 230:18;231:24;232:24; 256:22;259:17 <b>sampling (1)</b> 182:21 <b>Sarah (5)</b> 9:8,9;195:24;264:17;265:2 <b>satellite (2)</b> 96:3;200:2 <b>satisfaction (1)</b> 137:3 <b>saw (11)</b> 32:6;47:19;63:16;77:1; 78:3,3,4;82:2;94:15;108:19; 142:4 <b>saying (8)</b> 47:9;73:24;99:5;117:14, 18;120:7;203:22;222:9 <b>scale (2)</b> 189:2,2 <b>scenario (2)</b> 256:4,16 <b>scenarios (1)</b> 159:9 <b>school (1)</b> 228:24 <b>science (17)</b> 11:18;90:24;91:1,2;</p>	<p>170:24;171:22,23;174:14; 175:3,5,9;190:22;191:10; 192:14;229:1,3,3 <b>sciences (1)</b> 171:5 <b>scientific (1)</b> 175:6 <b>scientist (1)</b> 175:10 <b>scope (5)</b> 109:19,24;134:12;212:10; 248:23 <b>score (1)</b> 199:20 <b>scoring (1)</b> 199:18 <b>screw (1)</b> 169:23 <b>season (27)</b> 23:2;37:4;38:4,6;41:17; 44:15;53:13;85:19;91:19,21, 25;93:2;97:16;100:15; 116:21;127:19;134:5;168:2; 196:12,17;222:24;226:8; 229:16;253:23;254:1; 256:10;259:7 <b>seated (2)</b> 150:7;228:14 <b>second (14)</b> 11:11;17:22;19:14;29:19; 55:20;119:21;157:10;158:5; 163:15;170:8;183:25; 192:22;203:9;217:24 <b>Section (30)</b> 23:13;24:11;25:6;34:20; 35:20;48:23;55:2;58:17; 59:24;61:7;64:3,16;65:4,10; 67:16;69:17;71:12,15,19,21; 72:15;73:8;84:17,18,19; 87:5;103:22;104:5;119:21; 130:8 <b>sector (2)</b> 151:25;152:4 <b>secure (1)</b> 177:25 <b>sediments (1)</b> 106:17 <b>seed (4)</b> 125:14;194:23,25;195:3 <b>seeing (8)</b> 73:18,25,25;74:11;75:5; 80:3,4,7 <b>seeking (1)</b> 221:9 <b>seem (3)</b> 80:11;114:2,16 <b>seemed (4)</b> 46:8;48:10,14;63:19 <b>seemingly (1)</b> 63:3 <b>seems (14)</b> 18:11;28:7;36:17;38:21; 44:21;51:10;52:21;78:7;</p>
---	--	---	---



114:11;116:22;174:2; 188:12;233:10;236:4 <b>seeps (1)</b> 242:7 <b>select (3)</b> 97:1;261:7,19 <b>selected (5)</b> 40:10;46:23;53:23;96:24, 25 <b>selecting (1)</b> 44:21 <b>selection (4)</b> 36:25;38:24;57:6;101:1 <b>self-reported (1)</b> 117:23 <b>semi-irrigated (11)</b> 33:19,20,23;95:18,19; 118:9,12,15,19;119:4,7 <b>send (2)</b> 131:13;148:13 <b>sends (1)</b> 126:10 <b>senior (15)</b> 37:6;40:19;41:22;43:4; 59:5;97:11;109:16;110:12, 16;126:7;183:6;234:8,21; 239:25;256:19 <b>seniors (1)</b> 116:16 <b>sense (3)</b> 36:15;118:10;241:2 <b>sensing (3)</b> 27:7;32:21;199:19 <b>sensitivity (4)</b> 79:18,23;80:6,20 <b>sentence (3)</b> 17:22;30:14;120:17 <b>Sentinel (4)</b> 48:19;51:18,20;73:20 <b>separate (4)</b> 105:11;108:8;137:25; 148:25 <b>September (7)</b> 44:17;73:6;81:6,6;115:11; 130:17;225:11 <b>series (5)</b> 21:21;28:23;37:9;55:23; 190:5 <b>serious (2)</b> 221:16,17 <b>serve (1)</b> 124:5 <b>served (1)</b> 151:7 <b>service (9)</b> 185:12;209:24;247:25; 249:25;250:1,7,7;251:16,21 <b>Services (2)</b> 69:18;213:1 <b>serving (1)</b> 123:1 <b>set (10)</b> 67:4;126:1,1,2;133:22; 170:21;173:20;174:5,12; 203:14 <b>sets (2)</b> 66:14;128:16 <b>settled (1)</b> 239:10 <b>settlement (8)</b> 12:15;61:25;135:3,8; 136:11;145:18;146:18; 147:14 <b>several (3)</b> 16:3;46:15;182:11 <b>severe (1)</b> 204:18 <b>severely (1)</b> 214:18 <b>Shapefile (12)</b> 29:12,14,17;94:22;95:1, 10;208:13;209:4,6,9,12; 210:4 <b>shapefiles (6)</b> 27:2;36:7;93:13;208:17; 209:25;210:5 <b>share (9)</b> 85:13;129:25;137:1; 139:14;147:8,9,24;148:15; 243:16 <b>shared (1)</b> 139:23 <b>sheet (10)</b> 18:19;19:2;20:5,8;30:9; 58:9;113:15;114:11,17,23 <b>Shelley (2)</b> 218:19,20 <b>shift (9)</b> 40:22;41:12;49:17;57:7; 61:1;84:11;186:12,14; 200:21 <b>shifting (1)</b> 43:21 <b>shooting (2)</b> 175:18,21 <b>short (10)</b> 55:7;105:22;117:9;171:5; 219:13,14;221:15,24; 227:19;265:6 <b>shortage (3)</b> 88:23;115:15;139:12 <b>shortcomings (1)</b> 197:14 <b>shortfall (47)</b> 27:25;41:19;42:18,22; 43:1,7,9,10;55:19,21;56:3,8, 11,12;57:14,20,21,23;58:13, 25;59:21;60:6,11,20,24; 61:4;65:9;113:21,25;114:5, 6,9;115:20;116:20;178:5; 179:10;183:24;196:12; 197:8,12,21;198:9,13; 201:14;202:2;226:8,19 <b>shortfalls (3)</b> 54:2;114:13;169:14 <b>short-sighted (1)</b> 189:19 <b>short-term (8)</b> 167:14,18;170:25;171:9, 10;172:3,6;173:18 <b>Shoshone (1)</b> 124:14 <b>show (20)</b> 29:9;35:16;37:15;38:11, 13;45:17;47:23;48:5;54:24; 60:4;85:19;121:18;139:5; 164:5,5,6;166:6;191:4; 218:10;225:5 <b>showed (6)</b> 47:19;48:2;49:4;56:1; 84:9;225:4 <b>showing (16)</b> 31:11;48:15;55:14;58:12; 60:10,14;72:19,20,22;73:4; 77:10;82:15;96:6;200:3; 209:9,10 <b>shown (13)</b> 21:1;33:23,24,25;57:2; 70:22,24;83:3,5,7;94:18; 96:9;193:5 <b>shows (29)</b> 29:11;30:16;31:4,11; 46:18;54:7;56:1;60:11; 64:20;70:1,20;74:15;75:3, 15,18,20;76:16;85:21;99:11; 129:22,24;130:2,9;131:1; 148:17;165:21;166:3;173:7; 251:11 <b>shut (2)</b> 239:22;241:7 <b>shuts (1)</b> 241:2 <b>shutting (1)</b> 240:2 <b>Side (9)</b> 54:15;62:3;73:1;77:19; 82:16;127:6,14;140:21; 261:25 <b>sides (1)</b> 205:19 <b>signed (3)</b> 147:14,25;148:1 <b>significance (1)</b> 52:16 <b>significant (9)</b> 20:14;25:7;40:22;68:17; 70:12;83:24;84:1,4;103:19 <b>significantly (3)</b> 77:18;78:4;233:21 <b>Sigstedt (27)</b> 9:25;10:17;11:3,9;23:18; 33:5;78:15;87:16;89:19,23; 110:6;111:9,19,20;116:8; 119:16,20;121:8;129:18; 157:23;176:21;177:1,5; 189:15;201:11;211:21,24 <b>Sigstedt's (2)</b> 24:3;200:25 <b>silent (1)</b> 187:15 <b>similar (8)</b> 19:22;50:19;83:14; 108:19;191:4;215:22;220:1; 247:6 <b>similarly (2)</b> 54:15;118:13 <b>simple (1)</b> 178:8 <b>simplification (1)</b> 67:20 <b>simplified (1)</b> 66:11 <b>simply (4)</b> 68:21;146:1;231:8;247:17 <b>Simpson (21)</b> 89:9,10,18,22,24;98:22; 110:1,8,23;115:4;117:14; 119:11,12;132:6;140:4,7,8; 144:9,16;149:12;226:24 <b>simulation (6)</b> 43:8,9;65:4;72:2;163:1; 165:2 <b>simultaneously (1)</b> 190:16 <b>single (7)</b> 36:11;49:13;65:25;106:2; 185:11;204:11;220:5 <b>single-event (1)</b> 226:11 <b>single-layer (8)</b> 66:1;70:7;105:9,17,20; 176:22,22;202:20 <b>sinking (1)</b> 241:17 <b>sinks (2)</b> 241:23,25 <b>sit (3)</b> 87:19,20;149:21 <b>sites (3)</b> 230:15,25;231:6 <b>sitting (1)</b> 132:18 <b>situation (2)</b> 174:19;239:19 <b>six (3)</b> 148:1;192:14;262:19 <b>sketches (1)</b> 182:1 <b>skim (2)</b> 180:18;188:7 <b>Skyler (1)</b> 150:13 <b>slow (3)</b> 153:15,17,19 <b>slowly (1)</b> 71:25 <b>small (19)</b> 125:13;131:9,10;139:7; 178:25;217:18;220:4;255:7, 8,10,11;257:11;258:25; 259:14,19,21,25;260:2;263:7 <b>smallest (1)</b>
---

<p>33:1 <b>Snake (60)</b> 12:2,5;13:6,8;31:17,18; 35:4;44:1;49:24;50:5;65:14; 73:3,10;86:6;91:7;106:10; 123:12,25;124:11;130:5,6, 22;134:16;139:6;141:15; 142:13,20;143:11;144:1,20; 151:17,22;159:8,15;163:2; 164:3;165:5;170:2;176:17; 189:7;195:9;213:8;214:7; 223:14,19;229:19,20,23; 230:23;232:3,9,14,16,17; 233:6,17;237:12,20;238:2; 261:21 <b>Snake's (2)</b> 126:18;143:16 <b>snapshot (2)</b> 93:18;94:1 <b>SNOTEL (2)</b> 230:25;231:6 <b>snow (13)</b> 140:20;144:25;145:9; 230:14,15;231:8,9,10,11,13, 25;236:11;254:6 <b>snowmelt (2)</b> 254:5,9 <b>snowpack (17)</b> 98:12;128:22;140:12,18; 141:1,8;144:17,20;201:24, 24;202:1;230:24;231:7; 232:3;233:5,22;234:23 <b>snowpacks (1)</b> 140:15 <b>sobering (1)</b> 221:11 <b>soil (1)</b> 230:17 <b>solid (3)</b> 75:20;158:18;190:25 <b>solved (1)</b> 156:25 <b>somebody (4)</b> 195:19;213:2;228:6; 245:18 <b>somehow (1)</b> 95:7 <b>someone (3)</b> 175:16;212:23;260:10 <b>someone's (1)</b> 175:19 <b>someplace (1)</b> 189:7 <b>sometimes (7)</b> 29:14;195:15;204:11; 235:25;241:9;247:9,10 <b>somewhat (4)</b> 186:16;189:10;237:25; 247:8 <b>somewhere (4)</b> 132:24,25;178:10;197:22 <b>soon (2)</b> 169:5;249:3</p>	<p><b>sooner (1)</b> 225:1 <b>Sophia (28)</b> 9:25;10:9,15,17;11:4,9; 17:3;21:13;47:4;64:15; 87:24;90:2,4,92:3;101:7,18; 103:20;107:15;117:13; 121:4;129:18;173:1;176:16; 180:9;200:23;201:3;202:5; 220:13 <b>Sophia's (2)</b> 149:4;201:18 <b>sorry (21)</b> 11:10;23:24;24:14,16,18; 25:23;47:7,8;58:20,23; 62:18;78:15;98:17;109:21; 116:8;166:20;190:20; 224:14;242:22;246:1;248:16 <b>sort (17)</b> 15:1;18:8;37:4;40:20; 51:22,24;59:20;68:24;72:21; 79:1;81:18;84:14;159:22; 210:3;212:7;224:3;231:20 <b>sound (1)</b> 123:18 <b>snowmelt (2)</b> 116:18;123:19;161:15 <b>source (12)</b> 62:11,13,20;63:15,20; 81:20;82:1,4;154:13;182:4; 195:6;253:17 <b>sources (7)</b> 35:2;61:8;82:2;96:2; 159:5,6;199:19 <b>South (2)</b> 122:19;234:12 <b>southwest (2)</b> 105:3;123:21 <b>space (12)</b> 235:3,9,10,17,19;236:3; 245:6;254:21;259:10,15,16; 260:20 <b>Spackman (1)</b> 21:15 <b>spatial (4)</b> 208:3,3,5,7 <b>spatially (2)</b> 193:14,16 <b>speak (6)</b> 109:22;121:2;156:9; 167:11;175:6;198:14 <b>Speaking (2)</b> 190:16;249:20 <b>speaks (1)</b> 181:22 <b>specialists (1)</b> 82:7 <b>specialty (1)</b> 125:14 <b>specific (11)</b> 37:12,16;52:15;101:1; 108:16;159:24;176:4; 179:13;216:20;219:21;</p>	<p>258:21 <b>specifically (11)</b> 46:6;56:9;90:10;94:23; 96:12;107:20;166:17; 190:23;195:14;258:11; 259:25 <b>specification (1)</b> 166:15 <b>specifics (1)</b> 218:23 <b>specified (2)</b> 168:10;187:22 <b>specifies (1)</b> 166:11 <b>specify (4)</b> 105:1;145:23;147:5; 172:14 <b>spell (2)</b> 150:16;228:19 <b>spent (3)</b> 15:10;182:10;228:25 <b>SPF (5)</b> 18:11;19:14;20:17;30:20; 95:4 <b>spill (1)</b> 235:22 <b>splits (2)</b> 85:8,9 <b>spoke (1)</b> 157:5 <b>spoon-fed (1)</b> 177:7 <b>spot (1)</b> 199:25 <b>spread (1)</b> 259:13 <b>spreadsheet (6)</b> 18:1,17,22;61:11,19;130:9 <b>spring (9)</b> 66:22,23;95:25;96:7,7; 102:24;119:23;234:23;242:8 <b>springs (7)</b> 105:7;165:5;172:9;215:2; 217:4;242:2,5 <b>Spronk (2)</b> 19:15;20:18 <b>stabilize (3)</b> 51:3;131:22;142:9 <b>stabilizing (1)</b> 142:19 <b>staff (16)</b> 13:21;14:13;17:12;20:23; 21:3,13,22;22:18,21;23:22; 24:24;26:7;28:20;36:9; 55:13;92:13 <b>staff's (1)</b> 18:6 <b>stand (2)</b> 134:25;149:21 <b>standard (11)</b> 27:14;44:19;52:17;59:5,9; 75:13;103:7,18;175:3,5; 203:13</p>	<p><b>standing (1)</b> 228:4 <b>standpoint (1)</b> 39:1 <b>stands (1)</b> 106:23 <b>start (6)</b> 9:4;32:21;40:21;81:12; 241:13;264:15 <b>started (13)</b> 12:3,7;34:6,7,24;35:7; 90:13;204:23;211:15;254:4, 5,7,9 <b>starting (16)</b> 19:1;30:10;32:3,9;34:12; 40:20;42:17;56:22;59:20; 194:20;210:13,17;218:13; 219:4,6;244:20 <b>starts (3)</b> 29:11;37:4;43:10 <b>state (65)</b> 43:17;55:4;76:9,14;91:11; 103:24;110:14;115:1,3,18; 116:14;122:17;128:1,1,4,8; 130:1,4;139:5;143:6,13,17, 23;148:6,17;150:16;154:17; 158:4;161:6,12;162:2,23; 163:9,18,21;164:4,5,24; 165:13;166:2,5,8,10,15,19, 21;167:1,7,14,24;168:4,7,14; 177:25;187:11,22;192:9; 196:7,8,10,18;225:11;226:7; 229:2;256:18 <b>stated (7)</b> 153:4;167:23;168:3; 181:16;187:10;215:18,20 <b>statement (12)</b> 38:25;50:14;55:8,9; 101:11;120:4;161:3;163:22; 170:3;181:19;201:18;258:13 <b>statements (2)</b> 170:7,9 <b>states (5)</b> 120:6;132:23;138:13; 230:7,8 <b>state's (1)</b> 177:24 <b>stating (1)</b> 107:20 <b>station (1)</b> 230:19 <b>stations (1)</b> 35:2 <b>statistic (3)</b> 171:8;172:22;177:4 <b>statistical (1)</b> 203:7 <b>statistically (1)</b> 182:21 <b>statistics (1)</b> 172:23 <b>stay (3)</b> 21:11;26:3;126:12</p>
---	--	--	---

<b>steady (47)</b> 76:9,14;91:11;115:1,3,18; 116:14;128:1,8;130:1;143:5, 13,17,23;154:17;158:4; 161:5,12;162:1;163:9,18,21; 164:4,5;165:12;166:2,4,8,9, 15,19,21;167:1,7,14,24; 168:4,6,14;187:11,21;196:7, 8,10,18;225:11;226:7	<b>stress (3)</b> 76:12;205:25;206:4	<b>sufficiency (1)</b> 199:7	<b>supposed (2)</b> 31:9;38:16
<b>steady-state (6)</b> 162:23;163:1,5;164:24; 165:2,7	<b>stressed (1)</b> 76:11	<b>sufficient (2)</b> 180:23;185:23	<b>surcharge (1)</b> 127:13
<b>stem (6)</b> 229:21;239:17,22;240:19, 20;242:2	<b>stresses (2)</b> 91:4,6	<b>Sugar (3)</b> 124:24;125:13;240:16	<b>sure (24)</b> 34:7;37:18;38:3,21;66:9; 69:16;74:23;87:25;88:6; 96:16;104:10;111:5;119:6; 121:5;128:9;134:24;136:22; 137:3;144:22;145:7;157:13; 158:19;257:16;258:21
<b>stemming (1)</b> 68:21	<b>strike (2)</b> 13:1;99:14	<b>suggesting (1)</b> 222:13	<b>Surface (94)</b> 25:14,16;27:15;29:15; 36:7;37:2,6,23;39:3,11;40:1, 11,19;41:6;43:22;45:21; 46:14;51:25;53:2,11,12,24; 59:9;61:15;62:1,22;63:2; 68:16;88:24;92:7;95:13; 103:8;109:17;110:12,16; 125:23;127:2,4,5,8,15;131:5, 21;135:2,7,17;141:8;143:21; 146:19;151:7;169:13; 171:20;174:21;178:4,6; 179:10;181:9,9;183:15; 189:20;191:24;197:15; 200:19;201:15,22;203:18; 211:1,19;221:14;222:3,8,14, 14;223:16;226:16;227:20; 232:7;234:2;235:3;236:20; 238:10;240:19;243:21; 245:9;248:25;253:14,16; 254:14,16;255:4,9,17;256:5; 260:5
<b>step (1)</b> 205:24	<b>striving (1)</b> 177:12	<b>suggestion (1)</b> 136:24	<b>surfaces (1)</b> 27:12
<b>Stephanie (1)</b> 123:1	<b>strongly (1)</b> 39:8	<b>suggestions (4)</b> 176:13;223:21,24,24	<b>surface-water (1)</b> 256:16
<b>stepped (1)</b> 160:23	<b>struck (2)</b> 147:13;164:21	<b>suitability (1)</b> 169:19	<b>surprise (4)</b> 129:1;130:19;187:2;210:8
<b>stepwise (1)</b> 52:14	<b>structural (2)</b> 74:1;176:23	<b>suite (1)</b> 199:12	<b>surprised (1)</b> 140:16
<b>stick (1)</b> 261:16	<b>structure (3)</b> 65:22,25;66:10	<b>Sukow (3)</b> 43:6;55:23;161:10	<b>surprising (1)</b> 187:6
<b>still (19)</b> 22:5;28:15;95:6;108:11; 114:4;125:13;134:9;136:25; 139:1;152:3;167:19;169:8, 21;174:2;211:23;213:1; 239:23;241:12;245:19	<b>studies (1)</b> 106:7	<b>Sukow's (2)</b> 115:24;196:4	<b>survey (1)</b> 230:15
<b>stinking (1)</b> 200:2	<b>stuff (1)</b> 89:11	<b>Sullivan (4)</b> 157:23;173:1;181:16; 188:1	<b>surveys (1)</b> 195:5
<b>stippled (2)</b> 70:23,25	<b>sub (1)</b> 23:13	<b>summarize (5)</b> 42:1;48:7;169:15;177:17; 192:8	<b>sustain (1)</b> 201:14
<b>stipulated (1)</b> 150:22	<b>subbasins (1)</b> 231:25	<b>summarizes (1)</b> 22:7	<b>Swank (1)</b> 246:16
<b>stopped (2)</b> 248:11;251:25	<b>subcontract (2)</b> 151:21;195:8	<b>summary (7)</b> 16:9;17:18;28:16;29:2; 49:19;87:5;93:8	<b>SWC (18)</b> 16:9;25:9;28:16;29:16; 39:1;57:8;93:8;94:22;95:2,9; 99:18,23;100:19;102:20; 112:12;185:11;192:11; 200:14
<b>storage (55)</b> 37:25;67:11;71:24;74:15, 16;75:3;78:3,5,11;80:12,13, 15,19;82:18,20;84:7;235:1,2, 8,19;237:10,13,16,20;238:1, 7,11,14;242:18;243:2,7,13; 245:10,20;253:10,13,16,17, 24,24;254:15,17,22;255:10, 12,22;258:16,19;259:11,17; 260:6,13,17,22;263:19	<b>subdivision (1)</b> 95:20	<b>summer (3)</b> 96:8;183:2;239:7	<b>swear (2)</b> 10:14;228:2
<b>store (2)</b> 234:6,20	<b>subject (7)</b> 23:15;67:23;68:1;138:6, 21;157:20;224:9	<b>supplemental (28)</b> 23:6,12,14;24:21;62:12; 63:9;154:14;156:7,14;180:8, 21;181:1,6,18,23;183:10; 184:8,9;185:3,11,20;186:1; 207:9,15,18;210:18;222:17; 224:6	<b>switch (1)</b> 121:25
<b>stored (1)</b> 235:25	<b>submit (2)</b> 14:1,5	<b>supplies (7)</b> 97:15;100:15,17;222:14; 234:1;237:10;259:16	<b>swoop (1)</b> 236:25
<b>story (1)</b> 32:7	<b>submits (1)</b> 36:8	<b>supply (56)</b> 37:11,24;41:15,20;42:21; 43:24;44:3;46:3,9,13,21,24; 48:24;50:18,24;52:14,22,24; 53:4,15,16,17;59:1,2,2,3,6, 11,19;62:13;98:12,15,24; 100:20;101:13,15;102:19; 103:2;131:6;141:9,12; 171:20;178:5,10,17;180:21; 232:7;233:13,20;245:16; 247:9,10;259:7;260:1,2,12	
<b>straight (1)</b> 143:14	<b>submittal (1)</b> 27:1	<b>supplying (2)</b> 131:4;254:22	
<b>straightforward (1)</b> 210:6	<b>submittals (1)</b> 25:13	<b>support (6)</b> 12:9;106:4;175:1;181:10, 11;189:17	
<b>streams (1)</b> 261:22	<b>submitted (11)</b> 13:17;15:3;25:17;27:5; 29:15;61:25;95:2,13;120:25; 121:6;157:8	<b>suppose (2)</b> 223:6,6	

<p><b>sworn (4)</b> 10:18;122:5;150:3;228:10</p> <p><b>symbols (1)</b> 166:1</p> <p><b>synthetic (1)</b> 42:3</p> <p><b>system (30)</b> 66:6;70:22;71:4;72:1,22; 99:7;105:17,22;126:1; 133:22;140:17,24;141:5,15; 162:23;164:24;183:13; 213:7,9;229:23;234:3;236:2; 237:13;238:2;241:4;253:10, 13,24;256:6;260:7</p> <p><b>systems (3)</b> 222:8;247:11;261:20</p>	<p>191:22</p> <p><b>tan (1)</b> 33:25</p> <p><b>tap (1)</b> 221:3</p> <p><b>tapping (1)</b> 220:25</p> <p><b>target (3)</b> 67:21,24;186:22</p> <p><b>targets (5)</b> 66:19;69:4;77:5;171:9,10</p> <p><b>task (2)</b> 182:25;213:2</p> <p><b>tasked (2)</b> 159:25;212:18</p> <p><b>tasks (1)</b> 90:19</p> <p><b>taught (1)</b> 105:22</p> <p><b>TDF (1)</b> 245:25</p> <p><b>technical (83)</b> 12:17;13:8,10,20,23,24; 14:2,3;17:12,19;20:6,8,24; 21:21;22:20,24;24:20;26:8, 23;28:5,9,21,22;29:4,6; 30:15;32:16;35:22;40:9; 45:8,25;46:5,20;47:17;48:2, 11,17;51:20;53:21;54:22; 60:9;63:18;78:23;92:4,7; 93:9;100:9;116:23;152:24; 154:6,10;156:23;157:19; 158:6;161:3,5,12,16,18,21, 25;173:19;174:5,6,15,18; 177:11;189:10,12;192:1,9, 17;193:3;198:1,4;204:4,6, 19;206:11;214:7;219:6; 223:12,15</p> <p><b>technically (19)</b> 156:1,24;162:2;163:16; 165:14,15;167:8;168:12; 170:12;183:8,11;184:5; 185:24;186:3;187:20; 188:18;200:7;206:8;258:4</p> <p><b>Technology (2)</b> 11:19,21</p> <p><b>tempered (1)</b> 156:2</p> <p><b>temporal (1)</b> 189:2</p> <p><b>temporary (1)</b> 216:15</p> <p><b>tempting (1)</b> 174:11</p> <p><b>ten (8)</b> 11:25;12:4;65:20;90:7,8; 124:10;152:18;179:4</p> <p><b>tends (1)</b> 203:3</p> <p><b>tens (1)</b> 27:21</p> <p><b>tension (1)</b> 168:10</p>	<p><b>tenure (1)</b> 170:1</p> <p><b>term (3)</b> 53:9;109:7;215:22</p> <p><b>terms (62)</b> 21:3;27:22;32:18;35:14, 17;36:8;37:21,24;38:16; 39:22;40:13,16,19,20;41:17, 18,22;43:7;44:15;45:20; 52:6;54:1;57:9;58:11;59:10, 17;65:23;67:7;69:7;70:10; 72:20;73:19,21;74:10,12,15; 75:6;76:1;86:2;97:5;98:8; 100:7;101:5;103:15,19; 104:19;107:6;115:22;135:3, 8,17,18,24;141:16;142:20; 145:22;146:24;147:17; 174:19;203:6;220:24;233:20</p> <p><b>test (2)</b> 79:22;81:1</p> <p><b>tested (4)</b> 47:10;48:14,18;227:16</p> <p><b>testified (19)</b> 10:19;24:19;42:9;62:11; 92:18;93:5;101:18;110:8; 122:6;134:15;150:4;178:14; 207:9;213:24;215:17;219:2; 225:9;228:11;233:11</p> <p><b>testify (5)</b> 85:2,3;122:21;135:22; 136:1</p> <p><b>testifying (2)</b> 101:12;110:2</p> <p><b>TESTIMONY (68)</b> 7:4;9:14;12:10;14:15; 18:12;27:18;33:16;36:10; 49:15;50:10,23;55:25;64:24; 65:23;67:7;73:14;87:25; 88:6;90:5,12,16;92:3,6,22; 96:18;97:1;98:4,5,10;99:14, 20;100:22,25;101:16; 107:15,23;110:2;115:4,9; 119:6,25;120:18,20;132:18, 22;139:4;140:10;142:7,10; 160:21;161:11,14;179:23; 184:21;193:4;194:8;196:4; 197:1;198:16;200:25; 206:13;207:8,12;245:18; 249:9;251:8;258:18;261:8</p> <p><b>testing (1)</b> 80:20</p> <p><b>Teton (27)</b> 232:12,19;233:6;238:19, 21,25;239:3,6,9,12,13,17,20, 22,24;240:4,7,11,16,20; 241:3,5,12,22;242:3,8;256:5</p> <p><b>Teton-Sugar (1)</b> 240:12</p> <p><b>TFC (1)</b> 42:16</p> <p><b>TFCC (2)</b> 55:6;64:20</p> <p><b>Thanks (3)</b></p>	<p>9:24;227:17;240:5</p> <p><b>theme (1)</b> 203:1</p> <p><b>themes (1)</b> 202:22</p> <p><b>therefore (2)</b> 155:23;251:20</p> <p><b>thinking (2)</b> 148:7;163:15</p> <p><b>Third (8)</b> 39:13;40:25;155:25; 191:15,16,23;255:4,5</p> <p><b>Thompson (23)</b> 7:7;211:3,6,7;212:16,17; 218:7,9;222:13;224:15; 226:20;227:5;243:23;244:2, 3;246:5,8;249:12,24;251:9, 11;252:12;261:6</p> <p><b>thorough (1)</b> 48:12</p> <p><b>thoroughly (1)</b> 184:14</p> <p><b>though (4)</b> 55:6;168:24;187:4;206:1</p> <p><b>thought (14)</b> 74:7,9,21,22;120:17; 128:9;130:20;140:12,14; 141:11;153:17;175:22; 260:16;265:5</p> <p><b>thoughtful (2)</b> 170:15,16</p> <p><b>thousands (1)</b> 27:22</p> <p><b>three (13)</b> 33:18;37:10;48:15;60:23; 79:8;153:14;156:11;181:25; 183:20;199:20;205:22; 241:10;262:22</p> <p><b>three- (1)</b> 241:11</p> <p><b>three-year (1)</b> 133:25</p> <p><b>threshold (4)</b> 203:24;204:1,10;219:5</p> <p><b>thresholds (1)</b> 173:24</p> <p><b>throughout (7)</b> 15:2;65:25;101:22; 107:13;180:12;251:12; 256:18</p> <p><b>thumb (1)</b> 205:13</p> <p><b>thumbnail (1)</b> 182:1</p> <p><b>time' (2)</b> 162:24;164:25</p> <p><b>time-constrained (1)</b> 166:14</p> <p><b>times (6)</b> 47:11;134:9;144:23; 179:4;181:13;203:11</p> <p><b>timing (9)</b> 76:4,16;102:21,22,23,24;</p>
--	---	---	--

165:10;188:24;192:12 <b>tiny (1)</b> 151:9 <b>title (3)</b> 152:10,11;153:25 <b>titled (1)</b> 24:10 <b>TJ (3)</b> 237:6,7;258:15 <b>TJ's (1)</b> 111:2 <b>today (19)</b> 9:11;11:4;14:11,15;65:24; 67:8;85:4;91:3;93:5;122:16, 21;207:8;211:9;220:16; 222:20;231:13;235:14,18; 249:3 <b>together (5)</b> 15:21;55:14;139:22; 143:4;174:23 <b>told (3)</b> 131:6,16;137:17 <b>tolerance (2)</b> 173:20;175:6 <b>tomorrow (2)</b> 9:14;264:16 <b>Tony (29)</b> 228:3,19,21;231:12,20; 236:18,22;237:5;240:5; 242:10,21;244:3;245:24; 246:9;248:16,18;249:1,12, 24;250:24;251:3,11;252:3; 253:6;257:13;258:9;261:5; 263:4;264:12 <b>T-o-n-y (1)</b> 228:21 <b>took (4)</b> 28:10;56:4;99:1;210:9 <b>tool (29)</b> 67:2;77:3;102:14;167:13, 19;168:19;169:3,4,18,18,19, 21;174:12,13;179:20;191:2, 4;214:10,13,16,20,25; 215:15;220:22,23,24,25; 221:10;224:19 <b>toolbox (1)</b> 169:20 <b>tools (5)</b> 156:25;174:10;188:14,15, 15 <b>top (7)</b> 41:18;43:16;59:11; 103:23;104:3;202:16;231:9 <b>topic (3)</b> 25:8;238:16,17 <b>topics (1)</b> 157:25 <b>topography (1)</b> 195:15 <b>total (13)</b> 37:23;39:1,3;40:1,11; 43:21;44:18;45:21;46:25; 61:15;165:4;251:12,20	<b>totally (1)</b> 140:17 <b>touch (1)</b> 221:2 <b>touched (6)</b> 61:9;83:2;175:2,11; 177:16;185:9 <b>Towards (7)</b> 164:13;239:6;255:11; 259:11,14,17;260:22 <b>track (2)</b> 229:22;237:14 <b>tracking (1)</b> 175:7 <b>tract (4)</b> 194:25;195:12,17;209:6 <b>trained (1)</b> 182:22 <b>transactions (1)</b> 237:20 <b>transfer (5)</b> 12:10;191:4;214:10,20; 215:8 <b>transient (56)</b> 43:3,8,9;56:2;85:17;86:25; 91:11,13,25;115:1,5,12,16; 116:13;128:1,4;130:4;139:5; 143:14;148:6,17;154:8,16; 158:1,4;160:6,10,15;161:6, 13,21,25;162:2;165:24; 166:4,7,9,12,22,25;167:7,12, 14,24,25;168:3,7,9,13; 196:20;206:11;216:18; 224:22;225:14;226:12; 227:10 <b>transit (1)</b> 223:3 <b>transition (2)</b> 198:23;222:15 <b>transitioned (1)</b> 151:24 <b>transmissivity (15)</b> 67:11;71:24;72:21,23; 74:13;82:18;103:25;104:9, 19,20,21,24;105:2,12,15 <b>transparency (1)</b> 159:14 <b>Travis (2)</b> 211:7;244:3 <b>treated (1)</b> 118:13 <b>tremendous (1)</b> 221:8 <b>tribes (1)</b> 256:2 <b>tributaries (10)</b> 229:19;239:11,14,17,21; 240:2,22;241:16,21;242:7 <b>tributary (17)</b> 66:15;67:13;77:22;78:1; 80:10;83:17;165:5;232:9; 233:2;239:23;240:18,20; 241:4,8,13,14,19	<b>tried (3)</b> 56:5;80:8;158:5 <b>trigger (1)</b> 221:11 <b>trimester (1)</b> 109:4,7,8,14;110:3,9,20 192:12 <b>trouble (1)</b> 243:3 <b>true (11)</b> 96:17;102:10;108:6; 114:20;163:22;196:10; 219:11;224:25;245:21; 248:24;256:18 <b>truth (4)</b> 10:19;122:6;150:3;228:10 <b>try (9)</b> 15:13;48:8;79:19;123:7; 136:14;153:18;168:1; 181:10;264:24 <b>trying (19)</b> 47:5;66:17,24;67:22; 70:19;77:15;78:7;79:3;80:2; 96:15;97:11;114:19;115:10; 153:19;156:25;167:15; 175:8;187:5;249:20 <b>TSCHOHL (2)</b> 195:23;264:17 <b>Tuesday (1)</b> 160:20 <b>turn (15)</b> 16:7;17:6;22:4;77:6;93:7; 103:20;129:12;153:13; 162:17;165:17;180:13; 188:4;189:25;192:5;217:23 <b>turned (1)</b> 73:13 <b>turning (4)</b> 96:18;169:23;193:17; 241:14 <b>turnout (1)</b> 223:7 <b>TWG (4)</b> 16:10;17:9;28:17,18 <b>twice (1)</b> 170:1 <b>Twin (38)</b> 19:22;20:14;27:19;30:16, 18;31:5;42:14,16;46:9;49:4; 50:25;54:19;56:19;58:4,7, 14;59:12;60:14;94:4,23; 95:10;112:15;114:9;132:21, 23;174:1;197:5;209:23; 210:14,19;223:7;235:6,15, 18;236:3;260:12,13;261:24 <b>two (35)</b> 17:21;26:16;71:24;79:8; 85:23;86:22;111:1;112:8; 120:5;141:20;155:19;156:6, 15,17;160:24;161:17; 169:24;171:4;175:12;187:4; 190:21;191:9;192:13;	193:24;205:19;217:7,9; 219:20;224:17,19;226:6; 228:25;235:9,10;259:13 <b>twofold (1)</b> 163:13 <b>two-thirds (1)</b> 64:4 <b>type (13)</b> 12:6;27:8;68:7,9;74:19; 86:2;87:3;129:25;130:1; 162:4;173:5;221:13;256:22 <b>types (3)</b> 125:10;173:23;226:6 <b>typical (4)</b> 43:18;173:24;174:17; 254:2 <b>typically (5)</b> 66:21;125:17;239:6,15; 256:25 <b>typo (4)</b> 58:21;120:1,11,23 <b>typos (1)</b> 157:14
<b>U</b>			
			<b>ultimately (10)</b> 33:21;39:23;62:23,25; 75:4;79:7,9;80:25;81:8,17 <b>unable (6)</b> 22:10;179:5;184:25; 200:16;205:6,7 <b>uncertainties (1)</b> 76:22 <b>uncertainty (34)</b> 67:16,19,20;68:2,4,8,10; 71:19,20;72:6;76:20;83:24; 84:1,4,22,23;103:4,6,8,11; 107:22,25;108:9,10,11,13, 25;109:1,5;117:15,19; 158:10;200:18,18 <b>unclear (2)</b> 115:2;139:4 <b>under (44)</b> 16:14;22:18;23:13;34:25; 43:7,9;56:2;65:12,13;69:12; 75:25;76:13;80:20;87:2; 92:15;96:21;119:20;120:12, 12,14;127:8;130:3;131:3,7, 20;132:1;143:17,23;145:2,4, 18;151:21;179:23;185:12; 190:10;198:23;213:22; 238:3,7,21;245:6;255:6,8; 256:25 <b>underflow (5)</b> 67:13;77:23;78:1;80:10; 83:17 <b>underlying (2)</b> 183:18;208:14 <b>undermines (1)</b> 198:5 <b>underreported (1)</b> 183:23

<p><b>understood (4)</b> 87:25;88:6,25;140:16</p> <p><b>unheard (2)</b> 213:15,17</p> <p><b>unique (1)</b> 43:17</p> <p><b>United (2)</b> 230:7,8</p> <p><b>units (1)</b> 105:1</p> <p><b>University (5)</b> 34:25;151:3,19;228:25; 229:2</p> <p><b>unknown (1)</b> 94:20</p> <p><b>unless (4)</b> 111:3,23;113:18;172:8</p> <p><b>unlikely (2)</b> 51:10;236:4</p> <p><b>unnecessary (3)</b> 37:7,8;57:10</p> <p><b>unreasonable (5)</b> 248:8;250:5,21;251:15; 252:7</p> <p><b>unregulated (2)</b> 230:9,18</p> <p><b>unrelated (1)</b> 212:3</p> <p><b>unstructured (1)</b> 106:24</p> <p><b>unusually (1)</b> 234:11</p> <p><b>up (52)</b> 23:4;25:4;27:21;31:22; 34:25;35:3,18;37:2;43:16; 47:3;53:3;65:8;67:5;76:24; 77:4;81:14;83:23;85:19; 86:13;89:11;105:6;106:12; 109:22;111:10;121:2;123:7; 126:1;133:22,23,25;138:6, 24,25;141:5,19;142:2,3; 144:23;149:17;159:13; 198:22;200:3,24;201:3; 231:24;234:17;237:9;239:9; 249:19,22;257:25;262:13</p> <p><b>update (6)</b> 34:14;39:14,16;40:4; 55:16;223:22</p> <p><b>updated (6)</b> 18:22;25:14;29:25;32:4; 94:25;120:25</p> <p><b>updating (4)</b> 36:1;58:4,8;114:16</p> <p><b>upon (10)</b> 96:5;105:8;110:4;113:7; 170:19;174:8;176:2;213:19; 214:13;258:16</p> <p><b>Upper (12)</b> 144:20;229:22;232:3; 237:12,20;238:2;239:5,10, 20;240:7,9;242:3</p> <p><b>upriver (1)</b> 217:15</p>	<p><b>upstream (7)</b> 230:15,19,22;234:5,7,16; 241:18</p> <p><b>up-to-date (2)</b> 36:6,15</p> <p><b>use (111)</b> 23:6,12,14;24:21;27:8; 29:13;31:20,23;33:11,11,19; 35:4,5;36:18,19;39:6;52:23; 53:16,16,18;59:6,7;66:15; 74:7;78:19;79:4,14;88:13; 90:18,22;91:22;92:1,94:8, 20,22;96:1,2,3,13;101:14; 103:1;108:17;113:19;115:3, 16,18;118:4;124:25;126:11; 130:10;154:10,16,17;156:1, 2,14;158:7;163:8,21;168:2,4, 13;170:11;171:18;172:15; 174:12;177:23;178:2,16,17; 179:7;180:9;181:14,18,23; 183:10,12;184:2;185:4,17; 188:13;192:11;196:15; 197:24;200:8;207:10,15; 208:23;209:7,11,19,24; 210:14,15;211:20;215:4,8, 25;216:3,10,18;220:23; 221:20;222:1,18,20;225:11; 244:10,23;260:14;263:9</p> <p><b>used (94)</b> 17:24;18:15,19,20;19:3,7, 7,11,20;20:11,19,20,25;30:7, 11;31:5,12,19,24;32:1,3; 33:9;34:3;35:8;36:2,6,13; 37:3,16;38:23;39:17;42:5; 46:23;48:16;52:4;55:23,24; 58:8;63:21;65:7;67:1;91:10; 96:13;98:7;109:7,11;110:20; 112:22,24;113:1;117:15,17, 19,23,25;131:3;163:18,19; 166:10,12,15,16,21,25; 167:1,19;168:7,7,22,25; 170:13;173:9;177:7;179:20; 187:16,18,22;188:17; 192:17;198:24;199:12,18; 200:12;211:22;216:6,14; 220:20;224:16;225:15; 227:10;239:9;253:10;259:7; 264:7</p> <p><b>useful (8)</b> 158:22;169:22;172:22,24; 173:25;174:3;219:3,6</p> <p><b>user (3)</b> 40:19;178:13;263:14</p> <p><b>users (13)</b> 37:6;87:16;110:13; 124:24;133:16;141:9;147:1; 174:23;178:14;203:19; 222:7,14;256:1</p> <p><b>uses (8)</b> 23:4;106:2;124:21;167:6; 168:11;170:4;187:11;226:6</p> <p><b>USG (1)</b> 106:23</p>	<p><b>USGS (1)</b> 230:19</p> <p><b>using (56)</b> 18:11;27:6,14;28:8;29:21, 22;31:22;35:1;36:4,14; 38:23;40:7;50:16;55:15,17, 22;56:8;58:1,1,2,11,14; 60:22;61:16;65:5;68:16; 73:15;75:19,21;78:19;79:19, 22,23;81:22;82:8,13;86:24; 88:3,7,14,20;91:10;109:1; 113:3,14;118:3;159:10; 160:1;169:13,25;173:14; 214:10,19;221:20;224:19; 259:25</p> <p><b>usually (4)</b> 241:1,18;244:14,22</p> <p><b>Utah (1)</b> 229:2</p> <p><b>utilize (1)</b> 94:20</p> <p><b>utilizing (2)</b> 96:20;196:10</p>	<p>12:12;13:16;28:12;29:2; 33:4;53:11;56:2,66:13; 93:11,12;164:7;170:8,8; 211:23;219:12;229:14; 232:3;247:2</p> <p><b>vary (2)</b> 96:4;252:5</p> <p><b>verification (4)</b> 79:20,21;81:16;199:3</p> <p><b>verified (3)</b> 94:16;95:2;117:25</p> <p><b>verify (4)</b> 34:11;79:19;95:12;195:5</p> <p><b>version (29)</b> 20:5;66:11;72:10,23;73:5, 9,18;74:21;75:14,19,22,25; 76:17,25;80:17;81:5,8,13; 84:12;90:23;91:11,13,20; 92:1;106:22;111:2;170:22; 215:14;216:14</p> <p><b>versions (8)</b> 72:13;160:16;190:22; 213:25;219:20,20;224:17,19</p> <p><b>versus (5)</b> 41:23;57:3;83:11;102:23; 115:1</p> <p><b>valid (1)</b> 182:21</p> <p><b>Valley (10)</b> 86:6;102:2,5,7;123:13,13; 151:13;240:9,15;241:22</p> <p><b>valuation (1)</b> 177:20</p> <p><b>value (18)</b> 49:5,7;80:13,13,15;82:21, 22;83:3,5;84:7;107:6; 113:13;176:14,19;201:11; 213:11;219:3;220:12</p> <p><b>values (25)</b> 39:6,7;67:13;72:24;74:17; 78:5;83:13;102:13;104:20; 165:3;173:2,4;201:6;213:18; 217:8,14,14;218:11,16; 219:12;234:14;248:8; 250:19;251:15;252:7</p> <p><b>variabilities (1)</b> 49:9</p> <p><b>variability (7)</b> 171:14,17;173:7,11,18; 177:3;220:2</p> <p><b>variable (1)</b> 86:1</p> <p><b>variables (2)</b> 48:24;52:17</p> <p><b>variations (1)</b> 194:12</p> <p><b>varied (1)</b> 219:20</p> <p><b>varies (2)</b> 115:22;247:8</p> <p><b>variety (1)</b> 96:1</p> <p><b>various (18)</b></p>	<p style="text-align: center;"><b>V</b></p>
			<b>W</b>	
			<p><b>wades (1)</b> 160:12</p> <p><b>Wait (4)</b> 190:17;222:11;242:19,20</p> <p><b>wants (2)</b> 203:20;257:22</p> <p><b>Warner (1)</b> 175:25</p> <p><b>warranted (1)</b> 103:13</p>	

<p><b>water (324)</b> 12:8,10,13,16;20:18; 25:14,16;27:15,22,23,25; 29:15;36:7;37:2,6,11,21,23; 39:3,11;40:1,11,19,41:6; 43:22,24;44:2,2,6,10;45:21; 46:14;49:19;51:25;52:25; 53:2,12,12,24;55:7;59:10; 61:12,15;62:1,22;63:2,6; 66:5,21;67:12;68:2,8,16; 71:7,25;72:22;73:20;74:4; 75:6;76:10,19;77:4;78:8,9, 11;79:15;83:2,4,24;84:3,4; 88:24;91:16,24;92:7;95:13; 98:9,11,15,24;99:3;100:20; 101:9,25;103:2,8;107:25; 108:16;109:2,17;110:12,13, 16;112:22;113:4,5,7,25; 114:17,22;115:6,11;122:22; 123:14;124:24,25;125:1,16, 23;126:2,11;127:2,4,5,8,8, 15,16;130:2;131:4,5,7,11,21; 132:25;133:11;135:2,7,18; 139:7;140:22;141:4,9,9,12; 143:21;146:19;147:2,19,24; 150:2,14;151:5,7,12,16,19, 21,25;152:1,9,18,20;153:5; 154:13,14;155:3;159:3,6; 169:14;170:14;171:20,20; 172:2;174:21;175:20,25; 177:24;178:4,6,9;179:10; 180:8;181:9,10;182:5,13; 183:12,15;186:1;189:6,21; 191:24;195:9;197:15; 200:19;201:15,22;203:18; 208:21,25;209:5,11,13,24; 210:14;211:1,19,20;213:4, 11;214:3,24;221:14,16,17, 18,20;222:3,7,8,14,14; 223:16,17;226:16;227:20; 229:6,11,12,15,17,22;230:2, 3,14,23;231:3,11,14;232:7,7, 18;233:13,20,24,25;234:2,6, 20,20;235:3;236:1,12,20; 237:10,11,13,15,16,20,23; 238:1,10,11,14,20,22; 239:11,15,16,23;240:1,3,14, 19;241:2,8,11,15,17,20,30; 242:6;243:13,21;245:9,15, 16;246:16,17,25;247:9,9,19; 248:25;251:12;253:9,14,16, 17,17;254:1,14,16;255:1,3,4, 5,9,18;256:1,6,9,20;258:25; 259:20;260:5,6,8,9,11;261:7, 10,13,21;263:7,9,13,14,14, 18,22,23</p> <p><b>watermaster (11)</b> 229:5,8;230:1;233:19; 237:12;238:22;240:25; 246:3,16;248:7;260:4</p> <p><b>watermasters (2)</b> 252:23,24</p> <p><b>watershed (2)</b></p>	<p>229:3;233:17</p> <p><b>watersheds (1)</b> 234:1</p> <p><b>way (33)</b> 10:13;42:25;46:12;53:13; 62:21;64:4;67:2;69:9;82:10; 84:1;108:22;115:6,17;131:3; 147:18;156:18;168:6; 174:12;177:11;182:20; 184:24;185:19;187:16,21; 198:7;201:13;203:22;206:2, 2;219:25;242:11;254:19; 258:20</p> <p><b>ways (6)</b> 46:11;79:24;119:2; 163:21;169:24;183:4</p> <p><b>wear (1)</b> 176:22</p> <p><b>weather (1)</b> 35:2</p> <p><b>website (2)</b> 155:5;231:3</p> <p><b>week (1)</b> 244:14</p> <p><b>Weekly (1)</b> 223:10</p> <p><b>weeks (1)</b> 236:6</p> <p><b>weigh (1)</b> 231:8</p> <p><b>weighed (1)</b> 220:24</p> <p><b>weight (1)</b> 231:10</p> <p><b>welcome (1)</b> 87:20</p> <p><b>well-justified (1)</b> 79:6</p> <p><b>wells (7)</b> 48:18;51:19,20;73:20; 151:12;224:25;225:1</p> <p><b>weren't (4)</b> 99:2;129:9;179:22;242:14</p> <p><b>west (1)</b> 151:13</p> <p><b>wet (1)</b> 131:4</p> <p><b>whatever's (1)</b> 93:22</p> <p><b>what's (20)</b> 18:10;28:24;45:22;65:13, 24;70:5;93:25;94:18;109:7; 122:24;152:10,23;163:11; 168:18;174:24;185:10; 186:25;187:5;245:25;254:2</p> <p><b>wheeled (1)</b> 61:12</p> <p><b>whenever (2)</b> 56:12;84:11</p> <p><b>whereby (1)</b> 126:1</p> <p><b>wherever (1)</b> 78:10</p>	<p><b>white (2)</b> 129:13;170:7</p> <p><b>whole (8)</b> 107:2;160:24;172:10,11; 186:5;239:4;240:9,16</p> <p><b>Who's (1)</b> 152:6</p> <p><b>wide (2)</b> 50:20;103:16</p> <p><b>widespread (1)</b> 74:12</p> <p><b>Willow (5)</b> 232:14,22;233:7,13; 234:13</p> <p><b>W-I-M-S (1)</b> 183:12</p> <p><b>window (1)</b> 191:11</p> <p><b>windshield (1)</b> 195:5</p> <p><b>winter (3)</b> 144:17,20;254:3</p> <p><b>wish (6)</b> 155:19;207:2;217:21; 219:17;238:17;264:23</p> <p><b>withdraw (1)</b> 256:14</p> <p><b>withdrawal (1)</b> 146:4</p> <p><b>withdrawals (1)</b> 159:6</p> <p><b>within (27)</b> 27:17;36:20;37:12;70:4; 85:19,22;95:16;126:12; 130:14;144:1;157:24;168:2; 170:1;171:22;175:5;180:2; 183:14;185:11,16;209:13, 23;210:19;217:14;218:16; 229:13;230:2;250:2</p> <p><b>without (7)</b> 32:22;37:6;53:3;87:6; 194:19;195:12;218:23</p> <p><b>witness (46)</b> 9:17,25;10:11;12:9;23:21; 26:6;33:8,11;78:18;98:19; 110:7;111:24;116:11;121:9, 10,18,24;122:10;134:23; 135:5,9,12,15,20,22,23; 146:15;152:14;153:19; 162:13,15;185:13,15; 190:21;224:14;236:23; 243:3,9,12;248:10,13,18; 249:1;257:13,15,20</p> <p><b>witnesses (4)</b> 149:14;160:22;194:6; 202:23</p> <p><b>WMIS (3)</b> 183:14,19;224:11</p> <p><b>W-M-I-S (1)</b> 224:14</p> <p><b>wonder (2)</b> 111:8;221:11</p> <p><b>Wonderful (1)</b></p>	<p>14:10</p> <p><b>wondering (1)</b> 265:10</p> <p><b>WOOD (10)</b> 9:18;16:16,19;24:7,12,14, 17;162:9,11,14</p> <p><b>word (8)</b> 33:6,9;168:22,24;214:19; 216:1,3;262:7</p> <p><b>work (47)</b> 12:6,25;14:24;15:24;22:7; 24:25;25:6;35:23;92:5;93:1, 9;105:15;121:4;127:10; 151:4,11,18,21,25;152:1,1; 157:16;158:8,9,11,25;169:4; 170:18;174:15,18;175:9; 177:11;189:11,12;190:8; 192:1,17;193:3,8;197:15; 198:10;204:9,19;211:13; 220:16;221:10;264:17</p> <p><b>workaround (1)</b> 16:1</p> <p><b>worked (11)</b> 12:20;32:19;90:14; 151:15;155:3;159:1;194:23; 199:3;212:13,21;214:3</p> <p><b>working (56)</b> 12:3,4,17;13:20,23,24; 14:2,3;16:3;17:13,19;20:6,8, 24;21:21;22:20,25;24:20; 26:8,23;28:5,9,21,22;29:4,7; 32:16;34:24;35:23;40:9; 45:9,25;46:5,20;47:17;48:2, 11,17;51:20;53:21;54:22; 60:9;63:18;65:20;78:8,23; 81:12;90:5,14;92:8;100:10; 152:24;211:15;212:2,4; 223:16</p> <p><b>works (5)</b> 67:3;114:23;239:2; 243:14;257:16</p> <p><b>worry (1)</b> 169:5</p> <p><b>worst (4)</b> 217:18,20;218:25;219:1</p> <p><b>wrapped (1)</b> 200:24</p> <p><b>wrench (3)</b> 169:21;221:1,3</p> <p><b>wrestling (1)</b> 182:11</p> <p><b>writing (3)</b> 159:16;265:7,10</p> <p><b>written (2)</b> 14:12;132:22</p> <p><b>wrong (4)</b> 69:5;84:15;175:20;177:6</p> <p><b>wrote (1)</b> 98:7</p> <hr/> <p style="text-align: center;"><b>Y</b></p> <hr/> <p><b>yea (1)</b></p>
--	---	---	---

<p>142:18 <b>year (160)</b> 23:4;25:2;30:11;31:20; 32:4,10;34:13,14,16;36:11, 24;37:16;38:19,22;39:2,8,14, 17,18,19,20,21,23,24,25; 40:4,6,10,16;41:1,9,12,13, 22;42:3,12,15,19,21;43:19, 25;44:1,11,13,14,16,21,24; 45:15,17;47:23;49:13,19; 51:8,8;53:15,23;54:8,8; 55:16,16,17,19,20,23;56:10, 23;57:7,8,22;58:25;59:1,18, 22,25;61:2,16;62:7,7,8,25; 86:24;88:3,8,18,20;91:21; 94:14;95:23;96:19,20,21; 97:2,6,10,19,19;98:3,5,13, 15;99:3,17;100:20;101:1,4; 115:7,11,15,20;116:4; 125:19;127:11,23;128:14, 19;129:10;131:12,14; 133:24,24;136:10;138:12; 139:13,20;140:13;141:12; 145:6,10,12;146:22;163:8, 10,10;164:1,2;168:16;187:8; 191:15,16;199:20;201:23; 204:11;233:20;234:10; 237:21,21;244:9,12;247:5,7; 248:2,6;251:19,24;259:12, 24;261:11,13;264:9 <b>years (72)</b> 11:24,25;12:4;32:2,3;34:8; 35:6;37:1,18;40:23;45:7; 47:24;55:6;56:16,16,24; 57:1,1,3;60:12,17,19,23,25; 61:5,14;65:20;84:13;88:9, 15;89:1,2;90:7,8;94:7,17; 96:22,23;98:6;124:10; 128:23;132:13,15;141:17,18, 19,20,25;142:5;143:1,2; 144:25;147:11;182:11; 183:20;204:16;206:15; 214:18;221:15;228:25; 229:2,8,9;230:13;235:24; 239:9;240:25;247:22; 248:11;251:25;256:11;259:6 <b>yellow (2)</b> 75:12,18 <b>yep (1)</b> 32:2 <b>yesterday (2)</b> 111:2;132:18</p>	<p>130:17 <b>0.1 (1)</b> 171:15 <b>0079 (1)</b> 218:22 <b>04 (1)</b> 53:18 <b>05 (1)</b> 82:22 <b>05S31E27ABA1 (1)</b> 51:14 <b>06 (5)</b> 39:10,24;40:25;45:16; 53:18 <b>08 (3)</b> 39:10,24;41:1 <b>08-12 (2)</b> 41:3,4</p> <p style="text-align: center;"><b>1</b></p> <p><b>1 (28)</b> 40:15;131:10;151:21; 171:17;178:3,17;179:6; 213:12;221:21;229:6,11,12, 17,22;230:2,3,23;231:3; 233:25;237:12;238:22; 246:16;247:20;251:13; 252:5;261:7;263:14,23 <b>1,000 (5)</b> 163:6,7;164:1;165:8,9 <b>1.1 (1)</b> 159:11 <b>1:00 (1)</b> 111:14 <b>10 (13)</b> 28:16;49:12;60:10;93:6; 120:22;141:19,22;180:13, 16;204:16;213:16,22;252:5 <b>10,000 (2)</b> 27:21;61:21 <b>100 (8)</b> 39:10;40:24;41:10;42:6; 178:12;256:16;263:24;264:4 <b>100,000 (2)</b> 59:21;133:2 <b>100.00001 (1)</b> 203:12 <b>101 (6)</b> 40:1,24;41:1,6,10;45:20 <b>102,000 (1)</b> 125:8 <b>103 (4)</b> 14:14;21:10;23:24,25 <b>104 (3)</b> 40:11,15;41:7 <b>106 (1)</b> 42:15 <b>1092 (1)</b> 122:19 <b>11 (2)</b> 30:13;165:17 <b>11,500 (1)</b></p>	<p>54:12 <b>110,000 (1)</b> 54:18 <b>12 (7)</b> 32:12;39:24;41:1;141:19; 142:2;164:15,15 <b>120 (1)</b> 233:6 <b>120,000 (1)</b> 40:18 <b>124 (1)</b> 233:5 <b>125 (5)</b> 217:24;218:2,6,7,13 <b>13 (2)</b> 35:10,20 <b>13,324 (1)</b> 235:16 <b>15 (7)</b> 64:7;115:20;116:3,4; 141:23;196:20;225:17 <b>15,000 (5)</b> 30:17;31:4;64:21,24,25 <b>150 (1)</b> 144:23 <b>15-minute (1)</b> 193:24 <b>16 (4)</b> 56:16;57:1,3;218:19 <b>16th (3)</b> 21:15;26:14;45:24 <b>17 (2)</b> 38:18;229:9 <b>178 (1)</b> 233:7 <b>18 (1)</b> 42:10 <b>180- (1)</b> 133:1 <b>186 (1)</b> 233:7 <b>1884 (1)</b> 239:8 <b>1885 (1)</b> 239:7 <b>19 (2)</b> 30:17;45:4 <b>190 (1)</b> 218:2 <b>1900 (2)</b> 56:13,17 <b>194,732 (2)</b> 30:18;64:22 <b>195,000 (1)</b> 133:1 <b>1953 (4)</b> 128:16;130:15,25;226:18 <b>1961 (2)</b> 43:11;75:17 <b>1983 (1)</b> 229:3 <b>1986 (2)</b> 34:8;35:6</p>	<p><b>1990 (1)</b> 230:5 <b>1993 (1)</b> 144:3 <b>1996 (2)</b> 34:8;35:6 <b>1999 (3)</b> 205:22,25;215:13 <b>1st (4)</b> 234:15;244:15,18,23</p> <hr/> <p style="text-align: center;"><b>2</b></p> <hr/> <p><b>2 (7)</b> 23:13;112:8;126:5; 178:15;194:17;195:17; 221:20 <b>2,000 (4)</b> 164:1,2,6,7 <b>2.1 (6)</b> 18:5;72:24;84:9,10;108:3, 20 <b>2.2 (9)</b> 72:15;84:10;107:18;108:3, 20;125:19;126:4,6;220:6 <b>2.2.2 (1)</b> 119:21 <b>2.4 (1)</b> 126:5 <b>20 (4)</b> 43:15;76:1;143:2;204:16 <b>200,000 (1)</b> 125:7 <b>2000 (13)</b> 18:2;19:2,4,8;20:13;34:9; 37:18;38:24;39:2,15;40:5; 55:15;57:19 <b>2000s (1)</b> 222:21 <b>2000-to-2021 (1)</b> 45:10 <b>2001 (1)</b> 151:20 <b>2004 (1)</b> 237:23 <b>2005 (3)</b> 123:3;205:25;230:5 <b>2005-2007 (2)</b> 18:11;19:14 <b>2006 (11)</b> 32:14;34:7;35:6;39:1,6; 160:13;163:15,20;165:22; 206:1;230:4 <b>2008 (8)</b> 30:21;32:9;34:3,12;38:24; 39:3,6;69:18 <b>2010 (6)</b> 11:24;18:25;19:10;151:20, 24;198:22 <b>2011 (10)</b> 29:21;30:21;93:17;94:5, 11;95:3;246:9,15;261:6,10 <b>2012 (5)</b></p>
---	---	--	---



12:3,20,21;39:19;90:13 <b>2013 (12)</b> 12:3,21;18:6;19:6,20; 94:12,19,21;95:1,8;117:22; 206:3 <b>2014 (8)</b> 18:2,21;19:4,8;20:6,13; 39:16;47:21 <b>2015 (41)</b> 11:23;13:24;14:2,13; 16:10;17:9,11,23;18:18; 20:23;21:15,21;22:22;23:22; 24:20;25:20;26:7,14;28:9, 22;30:10;32:17;46:4,20; 47:14;48:11;50:19;52:20; 63:11,18;92:4;93:2;134:8, 10;135:3,8;136:11;141:25; 145:18;146:18;147:14 <b>2017 (9)</b> 29:25;30:22;32:10;34:13; 93:17;94:5,5,11;210:4 <b>2018 (29)</b> 40:7,10;42:15;43:18,23; 44:7,11,12;45:9,16;53:23; 55:17,22;56:8;57:7;59:24; 61:2,10,13,18;62:3;88:3,7, 20;96:20;98:4,12;99:3;101:5 <b>2019 (1)</b> 230:4 <b>202 (1)</b> 148:4 <b>202,000 (2)</b> 125:7;148:2 <b>2020 (7)</b> 40:7;45:9;73:4,6;76:24; 79:17;211:13 <b>2021 (8)</b> 30:5,22;34:16;40:6;58:10, 12;93:18;206:14 <b>2022 (24)</b> 13:21,23;14:2,16;18:23; 20:9,9;28:5,17,18;29:4,6; 40:9;47:17;48:2;52:20; 55:15;57:19;58:11;63:12; 93:9;100:10;152:23;211:16 <b>2023 (7)</b> 45:24;136:10;138:1; 154:20;203:24;211:17; 231:19 <b>205 (2)</b> 148:4,12 <b>205,000 (2)</b> 148:3,15 <b>20-year (1)</b> 88:16 <b>21 (3)</b> 188:8;192:23;218:21 <b>2-1 (4)</b> 16:9;17:8;21:1;32:12 <b>2-10 (1)</b> 58:18 <b>216 (1)</b> 233:8	<b>217,151 (1)</b> 130:10 <b>21st (1)</b> 127:22 <b>22 (2)</b> 46:17;48:4 <b>2-2 (2)</b> 20:1;35:10 <b>228 (1)</b> 7:5 <b>23 (3)</b> 56:16;119:20;180:16 <b>2-3 (5)</b> 28:16;31:1;38:7;93:7; 119:1 <b>237 (1)</b> 7:6 <b>24 (1)</b> 132:24 <b>2-4 (2)</b> 45:4,6 <b>240 (3)</b> 148:7,12,19 <b>240,000 (4)</b> 147:2,9,25;148:2 <b>240,000-acre-foot (1)</b> 145:23 <b>244 (1)</b> 7:7 <b>25 (3)</b> 54:6;142:4;189:25 <b>2-5 (2)</b> 46:17;47:12 <b>25,000 (1)</b> 54:20 <b>250,000 (1)</b> 235:12 <b>2500 (1)</b> 122:19 <b>253 (1)</b> 7:8 <b>258 (1)</b> 7:9 <b>26 (1)</b> 55:11 <b>2-6 (1)</b> 48:4 <b>261 (1)</b> 7:10 <b>263 (1)</b> 7:11 <b>27 (2)</b> 57:15;114:8 <b>2-7 (3)</b> 38:8;54:5,5 <b>28 (2)</b> 190:6;192:5 <b>2-8 (2)</b> 55:10;88:2 <b>28th (1)</b> 231:18 <b>29 (3)</b> 157:10,11;193:17	<b>2-9 (1)</b> 57:15 <b>2-acre (1)</b> 195:12  <b>3</b>  <b>3 (4)</b> 71:15;141:24;178:16,23 <b>3,262 (1)</b> 143:12 <b>3.3 (1)</b> 191:1 <b>3.4 (1)</b> 191:4 <b>3.4.2 (1)</b> 69:12 <b>3.4.3 (2)</b> 71:15;104:5 <b>3.4.4 (1)</b> 84:17 <b>3.8 (1)</b> 80:23 <b>3:30 (1)</b> 193:25 <b>30 (10)</b> 47:1,10;65:3;111:2; 155:17;162:17,19;209:5,7,19 <b>300 (4)</b> 154:19;162:9,10;182:21 <b>300- (1)</b> 86:15 <b>300,000 (3)</b> 83:18;88:16,19 <b>30th (3)</b> 128:16;130:15;226:18 <b>3-1 (4)</b> 70:15,20;84:18;129:18 <b>3-10 (1)</b> 120:22 <b>32 (1)</b> 68:19 <b>3-2 (1)</b> 70:15 <b>32,000 (1)</b> 40:18 <b>33 (2)</b> 70:15;104:10 <b>3-3 (2)</b> 72:16;104:11 <b>34 (3)</b> 71:15;103:20,23 <b>3-4 (1)</b> 75:2 <b>35 (1)</b> 188:4 <b>3-5 (1)</b> 75:9 <b>36 (2)</b> 72:17;188:4 <b>3-6 (1)</b> 76:7 <b>366 (6)</b>	227:24;231:15;236:9,12, 15,16 <b>37 (1)</b> 75:2 <b>3-7 (2)</b> 77:7,9 <b>38 (2)</b> 75:8;195:20 <b>3-8 (1)</b> 82:15 <b>387 (1)</b> 114:8 <b>39 (1)</b> 76:19 <b>3-9 (1)</b> 82:25 <b>3rd (1)</b> 233:4  <b>4</b>  <b>4 (3)</b> 23:13;24:11;57:1 <b>4,000 (1)</b> 62:2 <b>4,000-foot (1)</b> 54:10 <b>40 (3)</b> 77:8;209:8,20 <b>400,000 (1)</b> 86:15 <b>40-acre (3)</b> 195:12,17;209:6 <b>40-acre-tract (1)</b> 194:15 <b>41 (1)</b> 80:23 <b>42 (9)</b> 171:13,14;173:11,11,17, 18;177:3,9;218:21 <b>44,715 (1)</b> 19:19  <b>5</b>  <b>5 (10)</b> 27:14,17,20;173:25;178:9, 11;194:16;213:7;219:2,21 <b>5,000 (9)</b> 61:20,23;209:14;255:7; 259:9;260:1,2;263:7,17 <b>5.1 (3)</b> 143:16,18,20 <b>5.8 (1)</b> 178:8 <b>5:21 (1)</b> 265:15 <b>50 (2)</b> 21:12;59:20 <b>50,000 (2)</b> 59:14,20 <b>500 (9)</b> 153:13;164:11,15;190:1,2;
--	--	--	--

<p>206:17,19,21,22 <b>500,000 (1)</b> 43:12 <b>511 (1)</b> 157:13 <b>512 (2)</b> 217:23;218:1 <b>515 (2)</b> 182:7,18 <b>55 (1)</b> 22:4 <b>56 (4)</b> 23:11;24:4,5,22 <b>57 (1)</b> 191:21</p>	<p>129:13,17;145:14;148:23; 149:6,7 <b>83 (2)</b> 162:20;163:12 <b>83335 (1)</b> 122:20 <b>837 (14)</b> 14:7;16:13,17,19;17:7; 24:4,6;26:4;28:15;87:8,12, 13;129:19;148:24 <b>85,000 (1)</b> 54:20 <b>88,000 (1)</b> 131:1 <b>8th (1)</b> 9:4</p>		
<b>6</b>	<b>9</b>		
<p><b>6 (2)</b> 178:23;179:4 <b>60 (6)</b> 88:13;89:2;179:7;181:13; 185:16;197:23 <b>60,000 (4)</b> 42:17;43:1,10;59:18 <b>600,000 (1)</b> 83:21 <b>61 (1)</b> 218:20 <b>65 (1)</b> 132:24 <b>65,000 (1)</b> 54:17 <b>66 (3)</b> 25:19;26:4;89:1 <b>68 (1)</b> 26:16</p>	<p><b>9 (4)</b> 20:2;116:3;196:20;225:17 <b>9,000 (2)</b> 62:4,5 <b>9:00 (3)</b> 9:3;264:15;265:12 <b>900 (1)</b> 57:4 <b>90s (2)</b> 56:22;106:9 <b>916 (1)</b> 14:17 <b>93,000 (1)</b> 54:13 <b>940,000 (1)</b> 57:4 <b>941,000 (1)</b> 56:14 <b>97 (2)</b> 39:2;87:1 <b>97,000 (1)</b> 56:11</p>		
<b>7</b>			
<p><b>7 (2)</b> 213:14;231:17 <b>7.3 (1)</b> 80:4 <b>70 (1)</b> 87:1 <b>75 (1)</b> 191:20 <b>75,200 (1)</b> 235:16</p>			
<b>8</b>			
<p><b>8 (7)</b> 17:7;246:6,7;252:13,15, 17,18 <b>8,000 (1)</b> 209:13 <b>80s (1)</b> 142:3 <b>826 (1)</b> 88:1 <b>829 (6)</b></p>			

BEFORE THE DEPARTMENT OF WATER RESOURCES  
OF THE STATE OF IDAHO

IN THE MATTER OF DISTRIBUTION OF ) DOCKET NO.  
WATER TO VARIOUS WATER RIGHTS ) CM-DC-2010-001  
HELD BY OR FOR THE BENEFIT OF A&B )  
IRRIGATION DISTRICT, AMERICAN )  
FALLS RESERVOIR DISTRICT #2, )  
BURLEY IRRIGATION DISTRICT, )  
MILNER IRRIGATION DISTRICT, )  
MINIDOKA IRRIGATION DISTRICT, )  
NORTH SIDE CANAL COMPANY, AND )  
TWIN FALLS CANAL COMPANY )  
\_\_\_\_\_ )

BEFORE

HEARING OFFICER: GARY SPACKMAN

VOLUME IV

Date: June 9, 2023, 9:03 a.m.

Location: Idaho Department of Water Resources  
322 East Front Street, 6th Floor

REPORTED BY:

ANDREA L. CHECK, CSR No. 748, RPR, CRR

Notary Public

## A P P E A R A N C E S

for the Department of Water Resources:

Office of the Attorney General

Idaho Department of Water Resources

BY MR. PETER A. WOOD, ESQ.

322 East Front Street, Suite 648

Boise, Idaho 83720-0098

pete.wood@idwr.idaho.gov

For the City of Pocatello:

Somach Simmons & Dunn, P.C.

BY MR. MAXIMILIAN C. BRICKER, ESQ.

1155 Canyon Boulevard, Suite 110

Boulder, Colorado 80302

mbricker@somachlaw.com

For the Cities of Bliss, Burley, Carey, Declo, Dietrich,

Gooding, Hazelton, Heyburn, Jerome, Paul, Richfield,

Rupert, Shoshone, and Wendell:

McHugh Bromley, PLLC

BY MR. CHRIS M. BROMLEY, ESQ.

& MS. CANDICE M. MCHUGH, ESQ.

380 South 4th Street, Suite 103

Boise, Idaho 83702

cmchugh@mchughbromley.com

## A P P E A R A N C E S (Continued)

For the Surface Water Coalition, Twin Falls Canal  
Company, North Side Canal Company, and Milner Irrigation  
District, A & B, Burley Irrigation District:

Marten Law

BY MR. JOHN K. SIMPSON, ESQ.

101 South Capitol Boulevard, Suite 305

Boise, Idaho 83702

jsimpson@martenlaw.com

For the Minidoka Irrigation District, AFRD#2:

Fletcher Law Office

BY MR. W. KENT FLETCHER, ESQ.

1200 Overland Avenue

Burley, Idaho 83318-0248

wkf@pmt.org

For the City of Idaho Falls:

Holden, Kidwell, Hahn & Crapo

BY MR. ROBERT L. HARRIS, ESQ.

1000 Riverwalk Drive, Suite 200

P.O. Box 50130

Idaho Falls, ID 83405

rharris@holdenlegal.com

## A P P E A R A N C E S (Continued)

For Idaho Ground Water Appropriators, Inc.:

Racine Olson, PLLP

BY MR. THOMAS J. BUDGE, ESQ.

& MS. ELISHEVA M. PATTERSON, ESQ.

201 East Center Street

Pocatello, Idaho 83201

tj@racineolson.com

elisheva@racineolson.com

For Madison Ground Water District, Henry's Fork Ground  
Water District, Jefferson Clark Ground Water District:

Rigby, Andrus & Rigby Law, PLLC

BY MR. JERRY R. RIGBY, ESQ.

25 North 2nd East

Rexburg, Idaho 83440

jrigby@rex-law.com

For Bonneville-Jefferson Ground Water District:

Olsen Taggart, PLLC

BY MR. SKYLER C. JOHNS, ESQ.

P.O. Box 3005

Idaho Falls, Idaho 83403

sjohns@olsentaggart.com

A P P E A R A N C E S (Continued)

For Bingham Ground Water District:

Dylan Anderson Law

BY MR. DYLAN K. ANDERSON, ESQ.

P.O. Box 35

Rexburg, Idaho 83440

dylan@dylanandersonlaw.com

For Twin Falls Canal Company:

Marten Law

BY MR. TRAVIS L. THOMPSON, ESQ.

163 2nd Avenue West

Twin Falls, Idaho 83301

tthompson@martenlaw.com

## I N D E X

## W I T N E S S E S

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

TESTIMONY OF SCOTT KING	PAGE
Direct Examination by Ms. McHugh	14
Cross-Examination by Mr. Thompson	24
TESTIMONY OF DEAN DELOREY	
Direct Examination by Ms. McHugh	27
TESTIMONY OF CHARLES BROCKWAY, Ph.D., P.E.	
Direct Examination by Mr. Thompson	35
Cross-Examination by Mr. Budge	57
Cross-Examination by Mr. Harris	102
Cross-Examination by Mr. Anderson	123
Cross-Examination by Mr. Bricker	126
Redirect Examination by Mr. Thompson	132
Recross-Examination by Mr. Harris	138
TESTIMONY OF DAVID B. SHAW, P.E.	
Direct Examination by Mr. Thompson	141
Cross-Examination by. Mr. Budge	147
Cross-Examination by Mr. Bromley	156



I N D E X

W I T N E S S E S (Continued)

REBUTTAL TESTIMONY OF MATTHEW ANDERS, P.G.

Direct Examination by Mr. Wood 171

Cross-Examination by Mr. Budge 180

REBUTTAL TESTIMONY OF BRYCE CONTOR

Direct Examination by Mr. Johns 186

Cross-Examination by Mr. Fletcher 190

Cross-Examination by Mr. Harris 193

E X H I B I T S

NO.	MARKED	RECEIVED
-----	--------	----------

SWC

2 -	***	199
-----	-----	-----

4 -	***	56
-----	-----	----

5 -	***	56
-----	-----	----

6 -	***	56
-----	-----	----

7 -	***	56
-----	-----	----

IDAHO FALLS, POCA TELLO, AND COALITION OF CITIES

317 -	***	14
-------	-----	----

348 -	***	196
-------	-----	-----

349 -	***	196
-------	-----	-----

350 -	***	196
-------	-----	-----

E X H I B I T S (Continued)

NO.	MARKED	RECEIVED
<b>BONNEVILLE-JEFFERSON GROUND WATER DISTRICT</b>		
502 -	***	185
504 -	***	185
505 -	***	185
506 -	***	185
515 -	***	185
<b>McCAIN FOODS USA, INC.</b>		
600 -	***	14
601 -	***	14
602 -	***	14
603 -	***	14
604 -	***	14
<b>AMALGAMATED SUGAR COMPANY</b>		
700 -	***	28
701 -	***	28
702 -	***	28
703 -	***	28
<b>IGWA</b>		
837A -	198	199
838 -	101	102

E X H I B I T S (Continued)

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

NO.	MARKED	RECEIVED
COMMON EXHIBITS		
900 -	***	197
901 -	***	197
902 -	***	197
903 -	***	197
904 -	***	197
905 -	***	197
906 -	***	197
908 -	***	197
909 -	***	197
910 -	***	197
912 -	***	197
914 -	***	125
928 -	***	197

## P R O C E E D I N G S

1  
2  
3 HEARING OFFICER: The 9:00 o'clock hour has  
4 arrived. Let's go on the record.

5 Okay. Are there preliminary matters we need  
6 to discuss this morning?

7 MR. THOMPSON: I just have one, Director.  
8 This is Travis Thompson.

9 HEARING OFFICER: Yes.

10 MR. THOMPSON: Yeah. One of our witnesses,  
11 Chuck Brockway, had a procedure Tuesday. He thought he  
12 would recover in time to get here, but he's still  
13 feeling the effects of that. So I asked the parties  
14 last night if they would stipulate to allowing him to  
15 participate remotely. With your permission, he's able  
16 to do that, so I'd like to bring that up.

17 HEARING OFFICER: Any objection from the  
18 parties?

19 Okay. We've allowed that remote participation  
20 earlier in the hearing, so I'll allow it again. It  
21 causes some difficulties, but I recognize that there are  
22 circumstances that may arise.

23 I also, last night, received word from  
24 Sarah Klahn that she had an emergency and will not be  
25 here today, so she is excused. She said that her

1 interests will be adequately represented today by  
2 Mr. Bricker or others.

3 So thanks for being here, Mr. Bricker.

4 I also asked that Sarah, Andrea, and Pete Wood  
5 compile a list of exhibits.

6 Have those been compiled and distributed?  
7 Pete or Andrea, do you know?

8 MR. WOOD: I don't know. Let me send Sarah an  
9 email. I didn't do --

10 COURT REPORTER: She's was working on it,  
11 so --

12 MS. TSCHOHL: They were distributed to  
13 everyone, and they should be on your desk as well.

14 HEARING OFFICER: Okay. So the parties,  
15 apparently, have a list of those exhibits. And either  
16 at recess or lunchtime if you could review that exhibit  
17 list and ensure that the exhibits that you want received  
18 into evidence at least have been offered. And any that  
19 are -- have not been offered, we'll do some cleanup at  
20 the end, or you can offer those as testimony as  
21 presented.

22 Okay. Other matters we need to talk about?

23 The next witness?

24 MS. MCHUGH: Sorry. So many cords. Sorry.

25 MR. THOMPSON: Two for two.

1 MS. MCHUGH: Two for two. It's because I have  
2 flip-flops on, and I shouldn't be wearing those.

3 HEARING OFFICER: Apparently, you're calling a  
4 witness.

5 I'm glad to see you're light on your feet this  
6 morning, Ms. McHugh.

7 MS. MCHUGH: I know.

8 Yes. McCain Foods would call Scott King.

9 HEARING OFFICER: Mr. King, if you'll come  
10 forward.

11  
12 SCOTT KING,  
13 called by McCain Foods, having been first duly sworn to  
14 tell the truth relating to said cause, testified as  
15 follows:

16  
17 HEARING OFFICER: Please be seated here.

18 MS. MCHUGH: And can the witness have  
19 exhibit -- the McCain exhibit book. I think it should  
20 be --

21 Is it in front of you?

22 Okay. And then also there will be exhibits --  
23 the volume that includes Exhibit 317.

24 And, Mr. Director, I'll let you know, I had  
25 asked the parties if they would stipulate to the

1 exhibits offered by McCain, which were Exhibits 600 --  
2 well, I'll wait a minute -- Exhibit 600, which is water  
3 rights for the McCain factory. In your book you should  
4 have Water Rights 2749, 7130 -- oh, that's wrong --  
5 2747, 2748, 2758, and 13970.

6 And just for the parties' notes, when I  
7 submitted these originally, I had three additional water  
8 rights included in there, and those have been removed  
9 from Exhibit 600.

10 And then Exhibit 601, 602, 603, and 604, the  
11 parties have agreed to have those -- to stipulate to  
12 their admission.

13 And then Exhibit 317, that exhibit has also  
14 been stipulated for admission.

15 HEARING OFFICER: Is the stipulation that's  
16 represented by Ms. McHugh -- is the stipulation  
17 accurate, and the parties agree to the --

18 MR. FLETCHER: It is, from our extent.

19 HEARING OFFICER: -- to the admission of these  
20 documents?

21 MR. FLETCHER: Yes, the Surface Water  
22 Coalition has stipulated.

23 HEARING OFFICER: Okay. And no objection from  
24 anyone else?

25 Okay. So the documents marked as Exhibit 601

1 through 604 -- well, let's recite all of them, 601, 602,  
2 603, 604, and Exhibit 317 are received into evidence.

3 MS. MCHUGH: And Exhibit 600.

4 HEARING OFFICER: Pardon me?

5 MS. MCHUGH: And Exhibit 600.

6 HEARING OFFICER: Oh, I'm sorry. That's  
7 right. It started at 600. I apologize. And 600.

8 Thank you for the correction.

9 (Exhibits 600 - 604 and 317 received.)

10  
11 DIRECT EXAMINATION

12 QUESTIONS BY MS. MCHUGH:

13 Q. Good morning, Scott. Candice McHugh on behalf  
14 of McCain Foods.

15 Would you please state and spell your name for  
16 the record.

17 A. Scott King. S-c-o-t-t, K-i-n-g.

18 Q. And would you provide a brief background as it  
19 is relevant -- as it relates to today's proceeding?

20 A. I'm currently employed as a civil engineer  
21 with HDR, Inc. Previously with SPF Water Engineering,  
22 SPF --

23 COURT REPORTER: Okay. Slow down a little bit  
24 for me. Okay?

25 THE WITNESS: Will do. Sorry. Thank you.



1           SPF Water Engineering and HDR merged about a  
2 year ago, and I've been with SPF since around 2004.

3           As it relates to this hearing, I have worked  
4 on water right issues for McCain Foods going back to my  
5 time at SPF and continuing to HDR.

6           Q. (BY MS. McHUGH) And are you familiar with  
7 McCain's groundwater rights that divert from the Eastern  
8 Snake Plain Aquifer and serve the Burley facility?

9           A. Yes, I am.

10          Q. And could you look at Exhibit 600.

11          A. Yes.

12          Q. And you've been a consultant for McCain for,  
13 roughly, ten years? A little over ten years?

14          A. Yes. I believe I first started working for  
15 McCain Foods in late 2014.

16          Q. Does Exhibit 600 accurately show the water  
17 rights that McCain Foods uses for the Burley facility --  
18 currently uses for the Burley facility?

19          A. Yes.

20          Q. Are there other water rights that McCain has  
21 at the Burley facility?

22          A. Yes.

23          Q. And why aren't they included in Exhibit 600?

24          A. Those ones are not being used, and I  
25 understand that they're part of a mitigation plan

1 already. So they're unused water rights. McCain  
2 doesn't need them.

3 Q. Is it your understanding that they're already  
4 curtailed under maybe a nonused -- because of a  
5 different water --

6 A. Yes. If I said "mitigation plan," I was  
7 incorrect. It's unused because they're curtailed  
8 because of their junior priority.

9 Q. In this particular case relative to McCain's  
10 interests, what were you originally tasked with doing?

11 A. In 2014 -- currently or in 2014?

12 Q. Currently.

13 A. Okay. I was tasked with providing technical  
14 analysis of McCain's water use as it related to  
15 developing a mitigation plan to address shortfalls in  
16 curtailment due to the Surface Water Coalition call.

17 Q. And when did you start working on that task  
18 with McCain?

19 A. That was March of this year.

20 Q. And why did you start working on it in March  
21 of this year? Do you know?

22 A. That's when I was asked to begin working on  
23 it.

24 Q. Are you aware of the proposed curtailment date  
25 that's pending on the aquifer back to December 31st,

1 1953?

2 A. Yes.

3 Q. And when you learned that as a consultant with  
4 McCain, what was the response to that?

5 A. We had conversations. We met and discussed  
6 the plans that we had considered for mitigation before  
7 and were trying to develop alternatives to meet this  
8 deadline, this date.

9 Q. And when did you learn of the proposed  
10 curtailment back to 1953?

11 A. Sometime late in April.

12 Q. And did you assist McCain in figuring out what  
13 to do in response to that curtailment date?

14 A. Yes.

15 Q. Could you look at Exhibit 601.

16 A. Yes.

17 Q. And could you identify that document?

18 A. This is a letter from McHugh Bromley, your law  
19 office, to Southwest Irrigation District petitioning to  
20 join the district for mitigation purposes.

21 Q. And what happened after that letter was sent  
22 to Southwest Irrigation District?

23 A. The district accepted the petition and allowed  
24 McCain to join the district for mitigation purposes.

25 Q. And why did McCain decide it needed to send a

1 letter to Southwest Irrigation District rather than  
2 continue your work on developing its own mitigation  
3 plan?

4 A. We didn't have sufficient time to develop  
5 McCain's own plan, so Southwest Irrigation District was  
6 the best alternative to meet that deadline.

7 Q. Was it your understanding there was a deadline  
8 that McCain had to meet in order to avoid curtailment  
9 this season?

10 A. Yes.

11 Q. Do you remember what that date was?

12 A. I think that was May 5th.

13 Q. And was that based on an order by the  
14 Director?

15 A. Yes.

16 Q. Once the letter was sent to Southwest  
17 Irrigation District and they accepted McCain within  
18 their boundary, do you know what happened next?

19 A. That I believe you notified the Department of  
20 Water Resources that McCain Foods had been accepted into  
21 Southwest for mitigation purposes.

22 Q. Can you look at Exhibit 602.

23 A. Yes.

24 Q. Can you identify that document.

25 A. Yes. This is your notice of mitigation to the

1 Department of Water Resources that McCain Foods was  
2 accepted into Southwest Irrigation District for  
3 mitigation.

4 And in the last paragraph they're requesting  
5 some kind of acknowledgment from the Department of Water  
6 Resources that they had been accepted.

7 Q. Okay. And if you could turn to Exhibit 603.

8 A. Okay.

9 Q. Have you seen that document before?

10 A. Yes.

11 Q. And what is that document?

12 A. This is an email from Garrick Baxter to you  
13 acknowledging that IDWR understands that these four  
14 McCain Foods water rights that were in Exhibit 600 were  
15 brought into Southwest Irrigation District for  
16 mitigation.

17 Q. And what is your understanding of what will  
18 happen if Southwest Irrigation District is not in  
19 compliance with their mitigation plan?

20 A. Part of this email also states: "So long as  
21 Southwest Irrigation District is in compliance with its  
22 approved mitigation plan, the four rights should be  
23 protected from curtailment."

24 So I would understand, there, if Southwest is  
25 not in compliance, that it could mean that McCain Foods

1 could be curtailed.

2 Q. Does McCain have any water rights senior to  
3 December 31st, 1953?

4 A. No.

5 Q. And do you have an understanding of what would  
6 happen if McCain did not have any water rights -- valid  
7 water rights at its Burley facility?

8 A. My understanding that McCain Foods would not  
9 be able to operate without having water.

10 Q. And throughout this process, has McCain had  
11 any concern about the process relative to understanding  
12 when the curtailment date was announced and being able  
13 to protect its water rights?

14 A. Yes, that there was insufficient time to  
15 develop their own mitigation plan to meet the deadline.

16 Q. Was McCain Foods' interest in developing its  
17 own mitigation plan its first priority, or was it -- how  
18 did that work?

19 A. McCain Foods wanted to have their own  
20 mitigation plan that they would be in control of.

21 Q. Do you know whether McCain can or could  
22 mitigate for its own groundwater pumping for itself?

23 A. I believe that they could develop a mitigation  
24 plan to operate on their own, to have their own  
25 mitigation plan, but we have not been able to construct

1 that by this deadline.

2 Q. Can I have you look at Exhibit 317.

3 A. Yes.

4 Q. Have you seen that document before?

5 A. Yes.

6 Q. And can you tell me what that document is.

7 A. This is a FAQ document that's on the  
8 Department of Water Resources front page address,  
9 "Surface Water Coalition delivery call and the Amended  
10 5th Methodology and April 2023 As-Applied Orders."

11 Q. And can you turn to the -- I think it's the  
12 last page in that; I think it's page 3. It's a  
13 three-page document.

14 A. Yes.

15 Q. And do you see where that document discusses  
16 what would happen if you're a food producer and were  
17 under a mitigation plan or if you're a food producer  
18 without a mitigation plan?

19 And then I think the last paragraph says, "Can  
20 I file my own mitigation plan?"

21 Do you see that?

22 A. Yes.

23 Q. Can you read the last paragraph, question and  
24 answer.

25 A. The question: "Can I submit a mitigation plan

1 now and get it approved in time for this coming  
2 irrigation season?"

3 And the answer is: "It is unlikely that a  
4 mitigation plan can be approved before a potential  
5 curtailment order is issued. Once a plan is submitted,  
6 the plan must be advertised and is then subject to  
7 protest deadline. The plan is subject to hearing if  
8 protested or if the Director determines a hearing is  
9 necessary. This process can take many months."

10 Q. Can you turn to Exhibit 604.

11 A. Yes.

12 Q. Have you seen that document before?

13 A. Yes.

14 Q. Can you tell me what it is.

15 A. "This is the Notice of Possible Curtailment  
16 Call for Groundwater Rights with Priority Dates Junior  
17 to December 30th, 1953 - Surface Water Coalition  
18 Delivery Call," dated May 1, 2023.

19 Q. Is it your understanding that this is the  
20 letter that McCain received at its Burley facility?

21 A. Yes.

22 Q. I believe towards the end of that document --  
23 I think it's in bold and it may be underlined -- it says  
24 something along the lines that "during the consideration  
25 of the mitigation plan, curtailment will not be stayed."



1 Do you see that?

2 A. No, I don't. I'll have to read this. What  
3 was it?

4 MS. MCHUGH: I'm sorry, can I approach the  
5 witness, Director?

6 Q. (BY MS. MCHUGH) It's the end of the fifth  
7 paragraph.

8 A. Okay. Gotcha. I was looking at the last  
9 paragraph.

10 Q. If you would look at the fifth paragraph  
11 there.

12 A. Yes.

13 Q. Can you read the last, I think, three  
14 sentences.

15 A. Yes. Beginning about halfway through this  
16 paragraph: "Upon receipt of a proposed mitigation plan,  
17 the Director will publish notice for two successive  
18 weeks, after which ten days will be allowed for the  
19 filing of protests. The Director may hold a hearing if  
20 necessary to determine whether a proposed mitigation  
21 plan will mitigate an injury to the SWC," Surface Water  
22 Coalition, "caused by diversions of groundwater  
23 authorized by junior priority groundwater rights. If  
24 the proposed mitigation plan is protested, the Director  
25 will hold a hearing. Please be advised that a

1 curtailment order is not stayed pending evaluation of a  
2 mitigation plan."

3 Q. Was it your understanding as a consultant for  
4 McCain Foods and McCain's understanding that if they  
5 filed a mitigation plan, that they would still be  
6 subject to the curtailment order?

7 A. Yes.

8 Q. And do you know when that May 1st letter was  
9 received at the Burley facility from McCain?

10 A. I understand McCain received that on May 12th.

11 MS. MCHUGH: I have no further questions.

12 HEARING OFFICER: Other questions of Mr. King  
13 from the groundwater users?

14 Cross-examination?

15 MR. FLETCHER: I don't have any.

16 MR. SIMPSON: No.

17 MR. THOMPSON: I've got one.

18 HEARING OFFICER: Thank you, Mr. King --  
19 Mr. Simpson.

20 Mr. Thompson, do you have some questions?

21  
22 CROSS-EXAMINATION

23 QUESTIONS BY MR. THOMPSON:

24 Q. Good morning, Mr. King.

25 A. Good morning.

1 Q. Travis Thompson for A&B Irrigation District,  
2 et al.

3 A. Good morning.

4 Q. Just one question -- a couple questions.

5 Ms. McHugh asked you about timing of when  
6 McCain's could file a mitigation plan this spring.

7 Do you recall that?

8 A. Yes.

9 Q. Has McCain Foods attempted to file a  
10 mitigation plan anytime in the past?

11 Do you know?

12 A. Under this delivery call, not that I'm aware  
13 of.

14 Q. Anything that would prevent them from  
15 submitting a plan prior to this spring?

16 A. The only thing that I think that might prevent  
17 them is knowing what they need to submit the mitigation  
18 plan for, the details, the requirements of what they're  
19 mitigating.

20 Q. As far as the priority date?

21 A. Yes.

22 Q. I guess any of their rights junior to '53,  
23 would they have any reason to put a plan together before  
24 this year?

25 A. We weren't aware of what priority date would

1 require a mitigation plan, so -- and we didn't have  
2 water rights -- the 1953 date is new.

3 Q. Are they aware of the Surface Water  
4 Coalition's priority dates for their senior surface  
5 water rights?

6 A. I assume that they are, yes.

7 MR. THOMPSON: Thank you.

8 HEARING OFFICER: Any more cross-examination?  
9 Redirect, Ms. McHugh?

10 MS. MCHUGH: No.

11 HEARING OFFICER: Thank you, Mr. King.

12 Next witness?

13 MS. MCHUGH: Amalgamated Sugar Company would  
14 call Dean Delorey.

15 HEARING OFFICER: Mr. Delorey, if you would  
16 come forward, please.

17 Would you raise your right hand.

18  
19 DEAN DELOREY,  
20 called by Amalgamated Sugar Company, having been first  
21 duly sworn to tell the truth relating to said cause,  
22 testified as follows:

23  
24 HEARING OFFICER: Thank you. Please be  
25 seated.

1 Ms. McHugh.

2  
3 DIRECT EXAMINATION

4 QUESTIONS BY MS. MCHUGH:

5 Q. Thank you. Good morning, Mr. Delorey.

6 A. Good morning.

7 Q. Could you state and spell your name for the  
8 record, please.

9 A. Yes. Dean Delorey, D-e-a-n, D-e-l-o-r-e-y.

10 Q. And, Mr. Delorey, have you ever been a witness  
11 in a judicial or administrative proceeding before?

12 A. No.

13 Q. Would you briefly explain your position at  
14 Amalgamated Sugar Company?

15 A. Yes, I'm the director of environmental  
16 affairs. My primary focus is on environmental  
17 compliance. I've worked with the company for over  
18 30 years. I'm familiar with the -- each of our sugar  
19 beet processing facilities, and so my primary work is  
20 environmental compliance.

21 Q. Are you familiar with Amalgamated Sugar's  
22 groundwater rights that divert from the Eastern Snake  
23 Plain Aquifer for one of its beet processing facilities?

24 A. Yes, I'm familiar with the Mini-Cassia  
25 facility.

1 MS. MCHUGH: And, Mr. Director, I probably  
2 should have done this before I started my examination,  
3 but you should have in front of you exhibits for  
4 Amalgamated Sugar Exhibits 700, 701, 702, and 703, and  
5 the parties have stipulated to the admission of those  
6 four exhibits.

7 HEARING OFFICER: Based on Ms. McHugh's  
8 statement that the parties have stipulated the admission  
9 of these documents, I will receive the documents marked  
10 as Exhibits 700, 701, 702, and 703 into evidence.

11 (Exhibits 700 - 703 received.)

12 Q. (BY MS. MCHUGH) And so you are saying that  
13 you are familiar with the water rights for the  
14 Mini-Cassia facility that Amalgamated Sugar operates?

15 A. That's correct.

16 Q. Would you just generally tell me where that's  
17 located?

18 A. The Mini-Cassia facility?

19 Q. Yes.

20 A. The Mini-Cassia facility is located just  
21 outside Paul, Idaho.

22 Q. And if you look at Exhibit 700 in the binder  
23 in front of you.

24 A. Yes.

25 Q. Does that exhibit accurately show the water

1 rights for the Mini-Cassia factory except for the small  
2 domestic rights that are not subject to curtailment?

3 A. Yes.

4 Q. Are you aware of the proposed curtailment of  
5 the aquifer back to December 31st, 1953?

6 A. Yes.

7 Q. And what was Amalgamated's response when they  
8 learned that there was a potential curtailment back to  
9 December 31st, 1953?

10 A. Well, our initial response was to get legal  
11 involved. We've hired -- we've worked with you, and  
12 you're our groundwater expert and water rights expert,  
13 so that was our initial response. And I understand  
14 based on the initial response was for us to join the  
15 Magic Valley Ground Water District and see if we could  
16 be covered under their mitigation plan.

17 Q. If you could look at Exhibit 701.

18 Do you recognize this letter?

19 A. Yes.

20 Q. And what is it?

21 A. This is a letter requesting to allow  
22 Amalgamated to join the Magic Valley Ground Water  
23 District as a mitigation-only member.

24 Q. Was there any consideration of Amalgamated  
25 trying to develop its own mitigation plan, or was the

1 only option to look at Magic Valley?

2 A. We just haven't had time to look at our own  
3 mitigation plan, so this was the most efficient way of  
4 getting covered under a mitigation plan.

5 Q. And what happened after this letter was sent  
6 to Magic Valley Ground Water District?

7 A. We were just awaiting response from -- to find  
8 out if we would be part of the Magic Valley Ground Water  
9 District.

10 Q. And did they respond?

11 A. Yes.

12 Q. And if you would look at Exhibit 702.

13 In addition to some other things, could you  
14 explain what Exhibit 702 does relative to Amalgamated's  
15 enrollment in Magic Valley Ground Water District?

16 A. The primary purpose of this is a request to  
17 IDWR for notice of mitigation and for us to be covered  
18 under the Magic Valley Ground Water District and their  
19 approved mitigation plan.

20 Q. And would you look at Exhibit 703.

21 Have you seen this document before?

22 A. Yes.

23 Q. And what is it?

24 A. This is a response from IDWR stating that  
25 Amalgamated could be part of the Magic Valley Ground



1 Water District.

2 Q. And what is your understanding of what will  
3 happen if Magic Valley Ground Water District is not  
4 found to be in compliance with their mitigation plan?

5 A. There's potential for curtailment of our  
6 junior water rights.

7 Q. And Amalgamated has a couple water rights that  
8 are senior -- if you look back at Exhibit 700 --

9 A. Yes.

10 Q. -- that are senior to the December 31st, 1953,  
11 priority date.

12 What would Amalgamated -- what would happen to  
13 Amalgamated's operation at Mini-Cassia if it lost its  
14 water rights junior to the 1953 date?

15 A. Well, I would just say this -- are you saying  
16 the junior or the senior?

17 Q. I'm saying: What would happen if you lost  
18 your -- the water rights junior to 1953?

19 A. Well, we would -- to be honest, we just need  
20 time to evaluate or do a water balance to understand  
21 what -- how it would impact our facility.

22 So we would have to have -- I'd have to have  
23 discussions with the plant manager there to know what --  
24 in terms of what that potential -- if there would be any  
25 potential issues, so...

1 Q. And Amalgamated hasn't had -- hasn't done that  
2 yet or is in the process of doing that, I suppose,  
3 because it takes some time because the water use in your  
4 facility is pretty complex?

5 A. Yeah. The water balances are complex, so we  
6 just need the time to be able to evaluate the overall  
7 water balance in term of groundwater usage.

8 Q. And --

9 COURT REPORTER: Can you guys please slow down  
10 for me.

11 THE WITNESS: Oh, sorry.

12 Q. (BY MS. McHUGH) And when did Amalgamated  
13 become aware of the December 31st, 1953, curtailment  
14 date?

15 A. That was back in early May.

16 Q. And did you understand that there was a  
17 deadline that you needed to comply with at that time?

18 A. Yeah. Talking with you, I understand there's  
19 a deadline, yes.

20 Q. Okay. And was there any time for Amalgamated  
21 to evaluate its own mitigation plan and the impact of  
22 the curtailment date on its operations?

23 A. We haven't had time to evaluate a mitigation  
24 plan.

25 Q. Okay. And you're in the process of

1 understanding kind of how to react to curtailed water  
2 use, potentially?

3 A. Yeah. Based on my understanding and my short  
4 course on water rights, we would likely hire someone to  
5 assist us with a mitigation plan.

6 Q. And what is your understanding of whether  
7 Magic Valley Ground Water District is in compliance with  
8 its mitigation plan?

9 A. Magic Valley is not in compliance with their  
10 mitigation plan. And, likely, we need to put together a  
11 mitigation plan as a corrective measure.

12 Q. I guess what I was asking is: What's your  
13 understanding of whether Magic Valley Ground Water  
14 District is in compliance with its mitigation plan?

15 Do you know whether it's in compliance or not?

16 A. I guess, based on my discussions with you, I'm  
17 not sure that it's going to be approved. And they may  
18 not be in compliance with their plan.

19 MS. MCHUGH: I have nothing further.

20 HEARING OFFICER: Cross-examination?

21 Nothing?

22 Okay. Thank you.

23 THE WITNESS: Thank you. Appreciate it.

24 HEARING OFFICER: Next witness?

25 Are we shifting now? Are these Surface Water

1 Coalition witnesses that are being called?

2 MR. THOMPSON: Director, I think we'd call  
3 Chuck Brockway next. We might take a minute off the  
4 record to get it set up.

5 HEARING OFFICER: Let's go off the record for  
6 a moment.

7 (Break taken.)

8 HEARING OFFICER: Back on the record.

9 So we're back on the record, and it appears  
10 that Mr. Brockway is ready. And I think when you start  
11 to question him and he responds, Mr. Thompson, perhaps  
12 we'll see his full image on-screen.

13 Mr. Thompson, you -- oh, I need to swear him  
14 in, I forget, as they are online.

15 Mr. Brockway, if you'll stand, please, if you  
16 can, and raise your right hand.

17 Thank you.

18

19 CHARLES BROCKWAY, Ph.D., P.E.,  
20 called by the Surface Water Coalition, having been first  
21 duly sworn to tell the truth relating to said cause,  
22 testified remotely as follows:

23

24 HEARING OFFICER: Thank you. Thanks for  
25 audibly responding.

1 Mr. Thompson, you may question Mr. Brockway.

2  
3 DIRECT EXAMINATION

4 QUESTIONS BY MR. THOMPSON:

5 Q. Good morning, Chuck.

6 Can you hear me okay?

7 A. Good morning, Travis. I can hear you. I  
8 can't see you, though.

9 Q. Okay. That's probably better for you.

10 A. That's fine with me.

11 Q. Can you please --

12 HEARING OFFICER: Just a minute.

13 Why is that? Do we know?

14 MS. TSCHOHL: I believe our signal is just a  
15 little bit weak, so it's prioritizing audio.

16 HEARING OFFICER: Okay. Well, we can see  
17 Brockway. But anyway, let's -- we'd rather see the  
18 witness than Mr. Thompson anyway; right?

19 MR. THOMPSON: Absolutely.

20 HEARING OFFICER: All right. Here we go.

21 Q. (BY MR. THOMPSON) Chuck, can you please state  
22 and spell your name for the record.

23 A. Charles G. Brockway; C-h-a-r-l-e-s, G.,  
24 B-r-o-c-k-w-a-y.

25 Q. And where do you work?

1 A. Brockway Engineering.

2 Q. And what is your current occupation?

3 A. Civil engineer and owner of the company.

4 Q. Is your CV attached to what's been marked the  
5 Surface Water Coalition Exhibit 4?

6 A. Yes.

7 Q. And does that generally describe your  
8 education and work history?

9 A. Yes.

10 Q. Have you been qualified as an expert witness  
11 before IDWR in prior cases?

12 A. Yes.

13 Q. Can you generally describe what Exhibit 4 is.

14 A. It's an expert report that was prepared by  
15 myself as well as Erick Powell, who also works for  
16 Brockway Engineering, and Dave Shaw, ERO, relative to  
17 the Fifth Methodology Order and the As-Applied Order.

18 Q. And can you just generally describe what you  
19 were asked to do for that report.

20 A. We were asked to review the Fifth Methodology  
21 Order and the As-Applied Order and provide technical  
22 comments on those orders primarily as it relates to  
23 irrigated area, project efficiencies, and the baseline  
24 year.

25 Q. And it looks like this report is broken up

1 into parts by letters; is that correct?

2 A. Correct.

3 Q. And I'll try to just walk through some of  
4 these parts with you.

5 Could you please summarize your opinion for  
6 Part A, describe what that is?

7 A. So Part A has to do with a comparison of the  
8 project irrigated areas that the Twin Falls Canal  
9 Company utilized in the Fifth Methodology relative to  
10 the other members that are out there, primarily the 2011  
11 and the 2017 products that IDWR has set forth based on  
12 the irrigated lands dataset.

13 So we did a GIS comparison of those three  
14 shapefiles. I'll call them the methodology acres, the  
15 2011 acres, and the 2017 acres. Rasters filed were  
16 provided by IDWR for those --

17 COURT REPORTER: Okay. What kind of files?  
18 Can you repeat that? What kind of files were provided?

19 THE WITNESS: Raster files, r-a-s-t-e-r.

20 COURT REPORTER: Okay. You can keep going.  
21 Just maybe slow down a little bit.

22 THE WITNESS: All right.

23 Raster files were provided by IDWR.  
24 Shapefiles were created in ArcMap. The shapefile files  
25 were intersected to determine their differences.

1           And we found that the 2011 and 2017 shapefiles  
2 were nearly identical, so we focused on the 2017  
3 difference shapefile. And we, to the extent we could,  
4 explored the reason for the differences between the 2017  
5 shapefile and the methodology shapefile for the  
6 Twin Falls Canal Company.

7           So we found that there were a number of  
8 factors that entered into the differences between those  
9 two shapefiles, and those are outlined in the report:  
10 Primarily ditches, ponds, other waterways that were  
11 taken out in the '17; there were fields that were not,  
12 apparently, irrigated in the 2017 photo; some pivot  
13 corners that, apparently, were not irrigated.

14           And then the other primary category would be  
15 developed areas around the fringe of municipalities, as  
16 well as roadways.

17           So that's what we did for Part A.

18           Q. (BY MR. THOMPSON) And, Chuck, can you turn to  
19 Exhibit 5.

20           Do you have that?

21           A. Yes.

22           Q. And can you generally describe that, for the  
23 record?

24           A. So this is an exhibit that shows the acreage  
25 comparison between the 2017 and the methodology acres.



1 The red line is the Twin Falls Canal Company service  
2 area, and the blue lines in that map are the differences  
3 between the 2017 acres and the methodology acres.

4 Q. And is there a date for the photo that this is  
5 overlaid on?

6 A. It's the 2021 aerial photo.

7 Q. If you could turn to Exhibit 6 -- or is there  
8 anything else on Exhibit 5?

9 A. No.

10 Q. Could you please describe Exhibit 6, for the  
11 record.

12 A. Exhibit 6 is just an example of where the 2017  
13 irrigated area shapefile omits some fields that are  
14 definitely irrigated. So this is not meant to be a  
15 comprehensive analysis by any means. We simply pulled a  
16 snippet from a section of the shapefile to illustrate  
17 that there's a half-pivot that was omitted from the '17  
18 shapefile and a small field on the right side of the map  
19 that was also omitted.

20 Q. And does this exhibit depict what could be  
21 waterways or canals that have been taken out as well?

22 A. It does, yes.

23 Q. Can you describe Exhibit 7, for the record,  
24 please.

25 A. Exhibit 7, again, is a snippet that we pulled

1 from the overall shapefile just as an example, not meant  
2 to be comprehensive of another problem that we found  
3 with the 2017 and the 2011 shapefiles, which is that  
4 there are registration differences between the '17 and  
5 the methodology shapefile. And by that -- when I say  
6 "registration," by that I mean the rectification of the  
7 aerial photo with the section lines.

8 And what you see there, there is a shift. And  
9 so what that results in is a -- an inconsistency in the  
10 acres delineation. Because there are roadways that were  
11 rightly removed in the 2013 Methodology delineation and  
12 roadways that were rightly removed in the 2017  
13 delineation. However, in the 2017 delineation they were  
14 not added back in, so we have a double-counting of  
15 acreages that are removed.

16 Q. Now, turn your attention to the left side of  
17 that exhibit -- I guess the -- I'll call it the west  
18 side of the map if we're looking north.

19 A. Yes.

20 Q. Do you see a number of thin yellow lines  
21 horizontal in between the fields.

22 Do you see those?

23 A. Yes.

24 Q. Do you know what those may be depicting?

25 A. Those are likely --

1 COURT REPORTER: Can you start your answer  
2 over again? Because I had trouble hearing.

3 THE WITNESS: Those are likely depicting waste  
4 ditches that were present when these areas were  
5 gravity-irrigated. And now that it's been converted to  
6 a center pivot, those ditches are not there.

7 Q. (BY MR. THOMPSON) And over to the southeast  
8 side of that exhibit, I see some curved yellow lines.

9 Do you have an idea what those might be  
10 depicting?

11 A. Those are likely depicting, again, ditches or  
12 laterals that were removed in the 2017 delineation.

13 Q. Chuck, in your opinion, is it appropriate to  
14 remove ponds and waterways and consider them to have no  
15 consumptive use?

16 A. No, not in terms of demand, because a canal  
17 and a lateral and a ditch all evaporate from the water  
18 surface and have evapotranspiration from the vegetation  
19 on the ditch banks, and those are real consumptive  
20 demands that have to be met by the project diversion.

21 Q. So even if that is not an irrigated acre,  
22 would that still be considered a use or a demand of the  
23 water diverted from the Snake River?

24 A. Yes.

25 Q. I'd like to turn back to Exhibit 4, Part B. I

1 think it begins at page 6.

2 A. Travis, if you wouldn't mind, if I could just  
3 hit one more thing on Part A before we leave that.

4 Q. No, go ahead.

5 A. Well, one primary category of areas that are  
6 removed from the 2017 delineation are developed areas  
7 around the fringe of municipalities. These represent,  
8 typically, rural or semirural subdivisions on the edges  
9 of cities that are being developed. I think there are  
10 just some comments to keep in mind relative to that.

11 One is that these subdivisions are entitled to  
12 the same share delivery as the agricultural field was  
13 prior to the development. So the canal company has to  
14 be prepared to meet that same demand, even though the  
15 area is being developed and the actual irrigated acreage  
16 is going down. So while the consumptive use may be  
17 going down, the demand will usually not. And this is  
18 just a function of the nature of small residential  
19 developments.

20 Water use occurs in these developments at a  
21 much higher rate over a shorter period. So to even get  
22 the demand to stay the same as it was with the  
23 agricultural use, you have to enforce a strict rotation.  
24 So I think that's just an important demand side of the  
25 equation to keep in mind relative to subdivision

1 developments.

2 Q. At least in Twin Falls County, are you aware  
3 of requirements when land is developed to retain surface  
4 water for continued irrigation use?

5 A. Yes. The City of Twin Falls has that  
6 ordinance.

7 Q. If we could turn to Part B, page 6.

8 A. Okay.

9 Q. Can you generally describe what you reviewed  
10 and what this part addresses?

11 A. This section describes a statistical analysis  
12 of the annual water diversions for the Twin Falls Canal  
13 Company from Water District 1 adjusted for wheeled or  
14 recharge water for the years 2000 through 2021.

15 Figure 4 in our report shows those data points  
16 as well as a statistical trend line calculated for the  
17 data. In order to assess whether there was a trend in  
18 the data, we subject the data to a Mann-Kendall  
19 analysis -- that's M-a-n-n, dash, K-e-n-d-a-l-l -- to  
20 determine if there was a statistically significant trend  
21 in the data, and we found that the data shows that there  
22 was no trend.

23 And let me clarify something I said earlier.

24 The whole dataset was from 1977 through 2022,  
25 but the wheeled and recharge adjustments were only from

1 2000 through 2021 --

2 COURT REPORTER: Wait, wait. I apologize,  
3 Mr. Brockway. I couldn't hear that very well, so, "The  
4 whole dataset was from 1977 through 2022, but the  
5 wheeled and recharge adjustments were only from?"

6 THE WITNESS: 2000 through 2021.

7 I'm sorry, I'll speak more clearly.

8 Q. (BY MR. THOMPSON) Anything else on that part  
9 before we move on, Chuck?

10 A. No, Travis, other than just to make the  
11 observation that when you do a trend analysis, it's  
12 important to be very careful because the period that is  
13 selected for analysis can have a strong influence on  
14 whether or not a trend is detected. So, for example, if  
15 one were to use the period 2005 through the current, the  
16 analysis would likely show a trend upward. If one were  
17 to use the period 1990 through 2005, it would likely  
18 show a trend downward. So we felt that in order to get  
19 the full picture of what was happening to the Twin Falls  
20 Canal Company demands, we used the entire period of  
21 record.

22 Q. That period would capture years of above  
23 average water supply and below; is that correct?

24 A. That is correct.

25 Q. I'd like to turn to Part D, page 11.

1           Could you generally describe that section and  
2 what you looked at?

3           A. Part D was a general exposition on factors  
4 that affect project efficiency in any canal company but  
5 in particular large canal companies like the Twin Falls  
6 Canal Company.

7           And, again, just to restate what has been  
8 stated before, the project efficiency is defined as the  
9 crop water need, which is the consumptive irrigation  
10 requirement times the irrigated acres divided by the  
11 adjusted diversion. And the Fifth Methodology Order  
12 spells that out.

13           The project efficiency is a lumped parameter  
14 that essentially accounts for all of the operational  
15 water requirements that are needed for -- to operate the  
16 project but that do not directly go toward meeting the  
17 evapotranspirative demand of the crop.

18           So for a large company, these would, of  
19 course, start with the on-farm efficiency, which ranges  
20 from roughly 50 percent for gravity methods to roughly  
21 80 to 85 percent for a high-efficiency center pivot  
22 system. Then you, typically, have a significant amount  
23 of canal seepage or conveyance loss, which varies from  
24 project to project but may range from 20 to 30 percent  
25 of the total diversion.

1           Related to that, you have the required wetting  
2 of the canal system that has to occur during the spring,  
3 the initial startup of the project when the canal beds  
4 are dry.

5           Another big factor in a large company is the  
6 operational spill. And I think we heard Jay Barlogi  
7 testify to this earlier. This is always necessary to --  
8 in order to deliver water to users within the system,  
9 particularly those near the tail end of the system.

10          That spill has to be maintained in order to  
11 allow the buffering, if you will, for variations in  
12 demand by irrigators on the system. If you don't have  
13 that spill, you won't be able to reliably serve the tail  
14 ends of the system.

15          Another big factor is variations in  
16 meteorological conditions which affect on-farm demand by  
17 irrigators. For example, if a cool, rainy period comes  
18 in, that could lead to rapid decreases of on-farm demand  
19 as irrigators turn off, but that doesn't mean that a  
20 large canal company can simply reduce its diversion at  
21 the river. If it tried to do that, if it tried to  
22 follow every little variation and meteorological demand,  
23 then when the ordinary warm weather returned, they  
24 wouldn't be able to ramp up quick enough to meet that  
25 demand of returns. It's only if that cool period were



1 sustained for, you know, a number of days, maybe weeks  
2 that the project diversions could, potentially, be  
3 adjusted.

4 The other factor in project efficiency that's  
5 been talked a lot about is the conversion to sprinkler  
6 irrigation, which has happened across the plain,  
7 including on the Twin Falls Canal Company. And I think  
8 we heard some testimony that the current estimated  
9 sprinkler irrigation percentage on the Twin Falls Canal  
10 Company is about 50 to 60 percent.

11 So the important thing to keep in mind on  
12 sprinkler conversion is that it always leads to an  
13 increase in on-farm efficiency; that is, a center pivot  
14 system will, as a general statement, but will be more  
15 efficient than a gravity irrigation system. However,  
16 that does not always, necessarily, translate to an  
17 increase in overall project efficiency for a large  
18 system. And there are two general reasons for that.

19 One is a sprinkler irrigation farm has more of  
20 an on/off demand structure as opposed to a more  
21 continuous demand for a gravity irrigation system. So  
22 the canal company has to be prepared to deal with that  
23 on/off situation. So they have to maintain,  
24 essentially, the same diversion in the canal that they  
25 had before. And this goes, again, back to the

1 operational spill requirement.

2           The second factor, which is not unique to  
3 Twin Falls but it certainly occurs, to a great extent,  
4 on the Twin Falls Canal Company system, is that  
5 conversion to sprinkler irrigation results in a  
6 reduction of incidental recharge from irrigation, which  
7 leads to a reduction in drain flows that are relied upon  
8 for redelivery. So with gravity methods, there's a lot  
9 of irrigation infiltration, a lot of subsurface storage  
10 that occurs, drain flows are sustained, and that water  
11 is released later in the season. And that drain water  
12 is treated as project water that can be rediverted to  
13 meet obligations downstream and, again, potentially  
14 later in time.

15           So if there's -- if that drain flow goes down,  
16 that water that can't be rediverted has to be made up  
17 from somewhere, and so it has to come from a river.

18           So -- and this is all very case-specific, of course, but  
19 in the Twin Falls Canal Company tract, when irrigation  
20 began -- or since irrigation began, the groundwater  
21 levels have increased, you know, from a low of 20 to  
22 30 feet up to more than 100 feet in some areas.

23           And so that resulted in waterways flowing that  
24 ordinarily didn't flow. It augmented existing perennial  
25 streams. It created seeps and springs that didn't exist

1 before. And it created -- or it necessitated the  
2 development of hundreds and hundreds of drain tiles and  
3 seep tiles to lower the water table and capture that  
4 water and redivert it downstream.

5 So that's a factor that has to be taken into  
6 account in the Twin Falls Canal Company tract. And it  
7 is too simplistic just to say, well, diversion to  
8 sprinkler automatically must lead to a commensurate  
9 increase in project efficiency.

10 Finally, the other big factor in any big canal  
11 company is that in the shoulders of the irrigation  
12 system, efficiencies naturally tend to be low. So when  
13 the water is turned on in April, a major amount of water  
14 is needed to charge the system, to fill the canals, and  
15 that may take several days.

16 Similarly, that high initial seepage rate in  
17 the canals has to be overcome. During this time the  
18 crop water need is relatively low and so the overall  
19 project efficiency is, therefore, very low.

20 Similarly, in the late season, say in October,  
21 crop water need is lower, but the water is still in the  
22 canal system in order to convey the water to the end of  
23 the system to meet those tail end delivery obligations.  
24 Those don't go away just because we're in the tail end.

25 And my understanding and my reading of the

1 Fifth Methodology Order is that it does incorporate some  
2 provisions to ensure that the reasonable in-season  
3 demand is not underestimated in April or overestimated  
4 in October.

5 So I'm sorry, that's a very lengthy  
6 explanation of what we did, but it was just an overview  
7 of all the factors that have to be taken into account  
8 for a large canal company much beyond simple on-farm  
9 efficiency and conveyance losses.

10 Q. Do you have any other comments about  
11 challenges with project efficiency in large open canal  
12 systems, or does that pretty much cover it?

13 A. I think that pretty much covers it.

14 Q. Would you agree that changes in irrigated  
15 acres is not the only factor that would affect canal  
16 project efficiency?

17 A. Yes.

18 Q. Chuck, could you look at Part F, beginning at  
19 page 13. Can you generally describe that opinion?

20 A. Yes. So in Part F, we looked at the effect of  
21 an irrigated area reduction on the reasonable in-season  
22 demand as calculated in the methodology order.

23 Now, obviously, as a general principle, if  
24 there are fewer acres irrigated, everything else being  
25 equal, you would need to divert less for those acres.

1 However, in the methodology, the diversion demands are  
2 taken as a given whatever the acres may be for a  
3 project. Those diversions and those acres are used to  
4 then calculate the project efficiencies -- again, as the  
5 consumptive irrigation requirement times the acres  
6 divided by the diversion. Then those project  
7 efficiencies are used to calculate the reasonable  
8 in-season demand adjustments.

9 So, again, it's -- the diversions -- the  
10 actual observed diversions are taken as a given. So if  
11 the -- say the -- for example, the true acres, if we  
12 knew that, were 5 percent lower, then the project  
13 efficiencies would also be 5 percent lower, and the  
14 reasonable in-season demand adjustments, in theory,  
15 wouldn't change.

16 Now, I had time to look into the guts of the  
17 reasonable in-season demand spreadsheet to see what it  
18 may actually be doing, but what I just described is an  
19 accurate statement of the equations that are found in  
20 the Fifth Methodology Order.

21 And then, of course, the baseline year demand  
22 doesn't depend on acres at all, it's simply a selection  
23 of a year from, again, actual observed conditions --  
24 sorry -- actual observed diversions.

25 So I don't think it's valid to simply say,

1 well, if your true acres are 5 percent less than what  
2 you say they are, your demands ought to be 5 percent  
3 less. The equations and the methodology are not set up  
4 that way.

5 Q. So removing one irrigated acre would not  
6 automatically equal a reduction in that amount of water  
7 needed to divert at the river?

8 A. Correct.

9 Q. Anything else on that before I turn to Part G?

10 A. No.

11 Q. Could you generally describe the -- what was  
12 offered at Part G on page 14 of your report?

13 A. Well [unintelligible] --

14 COURT REPORTER: Mr. Brockway, can you start  
15 your answer over again.

16 THE WITNESS: Part G talks about supplemental  
17 groundwater usage, which is the usage of private wells  
18 for supplemental purposes on surface water irrigated  
19 lands, which does occur within the Surface Water  
20 Coalition members' service areas and within the  
21 Twin Falls Canal Company service area.

22 The percentage of land in the Twin Falls Canal  
23 Company service area is -- that is served by  
24 supplemental wells, in my experience, is fairly low due  
25 to the overall reliability of the surface water supply

1 within the company.

2 A couple of things that should be taken into  
3 account when determining -- or evaluating the effect of  
4 supplemental groundwater usage:

5 One is that these groundwater supply systems,  
6 in my experience, on a particular farm, they are rarely  
7 nice, clean-cut, stand-alone systems. They're always  
8 hydraulically interconnected with the surface water  
9 supply systems somehow. There's usually multiple  
10 fields, multiple pumps and booster pumps and application  
11 systems that may be interconnected and used in some  
12 complicated and sometimes mysterious fashion that's only  
13 known to the irrigator.

14 And so, really, it's hard to assess -- to make  
15 an accurate assessment of the degree to which  
16 groundwater usage is employed. Really, to do it right,  
17 you'd almost have to ground truth each individual system  
18 of the farm operator.

19 The second point to make is that, similarly to  
20 what I said in the previous section, if you could  
21 quantify an acreage or an equivalent acreage, if you  
22 will, of land that was supplied by groundwater, that  
23 could, potentially, reduce the number of acres that are  
24 irrigated with surface water.

25 But, again, since the diversions are taken as

1 a given, that would simply reduce the project efficiency  
2 a little bit, which is based on those diversions, and  
3 those lower efficiencies would then be utilized in the  
4 methodology to calculate the reasonable in-season demand  
5 adjustments.

6 So, again, it's not valid, I don't think, to  
7 say there's just a one-for-one reduction if we were to  
8 identify the acres that are irrigated with groundwater  
9 based on the methodology equations.

10 Q. (BY MR. THOMPSON) Chuck, just one last part,  
11 I guess.

12 Could you look at Part H and describe opinions  
13 offered in that section?

14 A. Yes. Part H talks about the baseline year  
15 selection. And it is a brief recapitulation of the  
16 requirements for selection of the baseline year in the  
17 methodology order and a reproduction of Matt Anders'  
18 chart that was presented on November 11th, 2022, to the  
19 technical working group, where it was indicated that  
20 2018 and 2020 were the only years that met all of the  
21 evaluation criteria, and those are highlighted in  
22 yellow; and then just a brief discussion as to the  
23 position, if you will, of 2018 within the overall  
24 dataset.

25 And there's different ways to do that. You



1 can look at a ranking analysis. You can look at  
2 different probability distribution fits. We chose to  
3 fit a normal distribution to the annual diversion volume  
4 data, which is a reasonable fit.

5 And, based on that, the 2018 year, which was  
6 selected by IDWR in the methodology, was at the 84th  
7 percentile. So it was certainly above average, and it  
8 was reasonably conservative, but it wasn't an extreme  
9 year like the highest year ever or the 95th percentile  
10 or 99th percentile.

11 So, again, consistent with the goal of being  
12 conservative to protect the senior surface water right  
13 holders, we felt that an 84th percentile was, again,  
14 reasonably conservative but not extreme.

15 Q. Chuck, in your opinion, I guess, does -- how  
16 that is used at the beginning of the year, protecting  
17 senior water rights in the event the water year does not  
18 turn out as forecast, is that a reasonable approach?

19 A. I think it's reasonable.

20 Q. That's all of the questions I have, Chuck.

21 MR. THOMPSON: I would move to admit  
22 Exhibits 4 through 7.

23 And we've tendered Dr. Brockway as an expert  
24 on the subjects addressed in the report.

25 COURT REPORTER: I'm sorry. I didn't get

1 that.

2 "And we tender Mr. Brockway" --

3 MR. THOMPSON: Dr. Brockway as an expert on  
4 the subjects addressed in the report.

5 HEARING OFFICER: It's my understanding that  
6 Mr. Brockway has been recognized as an expert through  
7 stipulation of the parties, so he is so recognized.

8 Any objection to the admission of the  
9 documents marked Exhibits 4 through 7?

10 Hearing no objection, the documents marked 4,  
11 5, 6, and 7 are received into evidence.

12 (Exhibits 4 - 7 received.)

13 HEARING OFFICER: Mr. Simpson?

14 MR. SIMPSON: Mr. Hearing Officer, if I could  
15 have a moment with Mr. Thompson?

16 HEARING OFFICER: Sure.

17 MR. FLETCHER: Go off the record just a  
18 second.

19 HEARING OFFICER: Let's go off the record.

20 (Discussion held off the record.)

21 HEARING OFFICER: Let's go back on the record.  
22 Further questions, Mr. Thompson?

23 MR. THOMPSON: No, thank you.

24 HEARING OFFICER: Any further questions from  
25 the Surface Water Coalition?

1 MR. FLETCHER: No, thank you.

2 HEARING OFFICER: Okay. What do we want to do  
3 at this point? Do we want to break for 15 and give the  
4 parties a chance to regroup and prepare?

5 All right. Let's break and come back at  
6 10:30.

7 (Break taken.)

8 HEARING OFFICER: Let's go on the record,  
9 Andrea.

10 Mr. Brockway, are you there?

11 THE WITNESS: I am here.

12 HEARING OFFICER: Good. It looks like  
13 Mr. Budge has come forward for cross-examination.

14 Mr. Budge, you may examine.

15

16 CROSS-EXAMINATION

17 QUESTIONS BY MR. BUDGE:

18 Q. Good morning, Chuck.

19 How are you?

20 A. Hey, TJ. Doing good.

21 Q. Chuck, how long have you worked for Twin Falls  
22 Canal Company?

23 A. Oh, goodness, probably since the '90s.

24 Q. And just generally speaking, what type of work  
25 do you do for the company?

1           A. We work as needed, whatever they may need  
2 relative to the water rights or water supply evaluations  
3 or general advice at board meetings. A little bit of  
4 everything.

5           Q. Do you do fieldwork for them as well, analysis  
6 out in the field?

7           A. No, haven't really done that, at least  
8 recently.

9           Q. Let me have you turn to your expert report,  
10 Exhibit 4.

11          A. Yes.

12          Q. And if you'd turn to -- the pages aren't  
13 numbered, but I guess the second page or the first page  
14 with text, Section A: "Evaluation of TFCC Project  
15 Evaluation Acres." I've got some questions about that  
16 section.

17          A. Yes, I'm there.

18          Q. In that first paragraph you referred to the  
19 acreage used in the Fifth Methodology Order, the  
20 194,732-acre figure. And then you say: [As read] "This  
21 is based on detailed aerial photo inspection and a  
22 delineation created by Twin Falls Canal Company  
23 consultants in 2013."

24                 Did you participate in creating that  
25 shapefile?

1           A. I may have had some input into that, but I  
2 believe the primary consultant on that was Dave Shaw.

3           Q. Okay. Are you familiar with that GIS  
4 shapefile?

5           A. Yes.

6           Q. Are you sufficiently familiar with it that  
7 you're comfortable testifying about it today, or is that  
8 something I need to discuss with Dave?

9           A. Well, you know, I haven't looked at every part  
10 of it, for sure, but I can certainly take a stab at it.

11          Q. Are you familiar with the parts of that  
12 shapefile that are included in your expert report?

13          A. Yes.

14          Q. Okay. Let me have you turn to that page of  
15 your report. I think it's page 5.

16          A. Yes.

17          Q. Page 1 of the report says that this was  
18 created with a detailed inspection of photo or satellite  
19 imagery aerial or satellite imagery.

20                 Can you explain the process that was used to  
21 create the 2013 shapefile?

22          A. That's a better question for Dave, but I think  
23 it just involved examination of the aerial photo and  
24 drawing lines on the map, if you will, in the GIS system  
25 to represent areas that were irrigated and excluding

1 those that did not appear to be irrigated.

2 Q. Okay. And looking at Exhibit 4, there's an  
3 excerpt of a portion of Twin Falls Canal Company's  
4 service area. And that image at the bottom, at the  
5 footer, says it's showing the difference between the  
6 2013 and 2017 area. And I want to make sure that I  
7 understand correctly what it depicts.

8 The yellow areas marked in that image, are  
9 those areas that the 2017 irrigated lands dataset shows  
10 as not being irrigated but the 2013 GIS shapefile shows  
11 as being irrigated?

12 A. That is correct.

13 Q. So if we were looking solely at the 2013 GIS  
14 shapefile, all of the land in yellow would have, you  
15 know, been blue, essentially?

16 A. Yes.

17 Q. In terms of the process to generate the 2013  
18 GIS shapefile, your request is that I discuss that with  
19 Dave Shaw?

20 A. I think he can shed more light on it than I  
21 can, yes.

22 Q. Okay. Do you know if, in 2013, those involved  
23 in that, if they excluded, from the irrigated area, what  
24 I would call rural farmsteads? They're, like, homes out  
25 in the country that you can see some of those, you know,

1 on this image?

2 A. I don't know.

3 Q. Do you know if they compared Twin Falls Canal  
4 Company delivery records to see if the water deliveries  
5 corroborated the aerial imagery?

6 A. I don't know.

7 Q. Do you know if there was any field  
8 verification involved with water users?

9 A. I don't know.

10 Q. Do you know if they took into account  
11 groundwater rights within the company's service area?

12 A. I don't know.

13 Q. Do you know if they took time to carve out  
14 private roads and subdivision roads, things of that  
15 nature?

16 A. It does appear so because they are excluded.

17 Q. There's some roads excluded?

18 A. It does appear so, yes. Again, certainly did  
19 not look at every square inch, but it does appear that  
20 roadways including major roads and driveways were  
21 excluded.

22 Q. Do you utilize GIS mapping frequently as part  
23 of your professional work?

24 A. Yes.

25 Q. If you were asked by Twin Falls Canal Company

1 to prepare a precise map that depicted irrigated acres,  
2 is that something you could do?

3 A. Yes.

4 Q. Twin Falls Canal Company has not asked you or  
5 your firm to do that?

6 A. No.

7 Q. Let me have you turn to page 4 of your report.  
8 I understand this is also an excerpt -- an image showing  
9 an excerpt of Twin Falls Canal Company service area; is  
10 that correct?

11 A. Yes.

12 Q. Did you create Exhibit 4?

13 A. Yes.

14 Q. And I understand the land that's highlighted  
15 in blue on Exhibit 4, that's land that is shown as  
16 irrigated in the Department's 2017 irrigated lands  
17 dataset?

18 A. Correct.

19 Q. And it looks like the irrigated lands dataset  
20 carves out things like roads, ditches, farmsteads, and  
21 some fields that were not irrigated at that time?

22 A. Correct.

23 Q. Do you know why the 2017 irrigated lands  
24 dataset was created?

25 A. Not exactly.



1 Q. Do you know who created it?

2 A. Well, my understanding is it was the  
3 Department staff.

4 Q. Do you understand they created that for use in  
5 the ESPA model?

6 A. I have heard that testimony, yes.

7 Q. Are you familiar with the ESPA model?

8 A. Yes, somewhat.

9 Q. Do you understand that that dataset is used in  
10 the ESPA model?

11 A. That is the testimony I've heard.

12 Q. You don't have personal knowledge of that?

13 A. No.

14 Q. Would you agree that when Department staff is  
15 evaluating irrigated acreage, their sole priority is to  
16 make sure that the data is as accurate as possible?

17 A. Well, I will give them that benefit of the  
18 doubt, TJ.

19 Q. You would agree that Department staff don't  
20 have any self-interest in showing more or less acreage  
21 than is actually irrigated?

22 A. Not that I'm aware of.

23 Q. If I just make a rough comparison of the 2013  
24 GIS shapefile versus the 2017 dataset, would it be fair  
25 to say that the 2013 GIS shapefile was created with more

1 of a brush approach, whereas, the 2017 dataset was  
2 created with more of a scalpel approach?

3 A. Oh, I'm not sure I would characterize it that  
4 way. Again, I haven't been able to examine every bit of  
5 both datasets.

6 Q. So I'm just -- Chuck, I'm just looking at the  
7 GIS -- the 2013 shapefile, and the only thing that's  
8 excluded are what appear to be two public roads. And  
9 then if I look at the 2017, it's much more precise.  
10 There's a lot of smaller areas and ditches and  
11 homesteads that are excluded.

12 Would you agree that the 2017 process was a  
13 more precise process?

14 A. Well, I would agree that it does exclude more  
15 areas.

16 Q. But your opinion today is that the 2013 GIS  
17 shapefile is a more accurate depiction or analysis of  
18 irrigated acreage than the 2017 irrigated lands dataset?

19 A. Well, I think it goes back to my direct  
20 testimony as just one example. I don't think that  
21 ditches and laterals should be excluded, because they  
22 are a real consumptive demand that has to be met by the  
23 system. So that would be one quibble.

24 Another quibble with the 2017 would be  
25 these --

1 Q. Hey, Chuck. Chuck.

2 A. Yes, sir.

3 Q. I'll just interrupt because I understand that.  
4 But just on the whole --

5 A. Yeah.

6 Q. -- is it your testimony today, this is your  
7 opinion, that the 2013 GIS shapefile is a more accurate  
8 representation of irrigated lands in Twin Falls Canal  
9 Company than the 2017 irrigated lands dataset?

10 A. I don't have enough information to say that,  
11 TJ.

12 Q. Okay. So --

13 A. My testimony is that -- yeah. Go ahead.

14 Q. Okay. So you're not rendering an opinion that  
15 the 2013 shapefile is more accurate than the 2017  
16 dataset?

17 A. Correct.

18 Q. Do you know why Twin Falls paid its  
19 consultants to develop the 2013 GIS shapefile?

20 A. Not exactly.

21 Q. You understand that that analysis was done  
22 prior to the 2015 settlement agreement between IGWA and  
23 the Surface Water Coalition?

24 A. Yes.

25 Q. You understand at that time, the way IGWA

1 provided mitigation is by renting and delivering storage  
2 water to members of the Surface Water Coalition?

3 A. Yes.

4 Q. You understand that if Twin Falls Canal  
5 Company could demonstrate a greater number of irrigated  
6 acres than had been used previously in the methodology  
7 order that the methodology order would calculate higher  
8 water demand for Twin Falls Canal Company?

9 A. If the order calculation methodology stayed  
10 the same, was not changed by the Department, then, yes.

11 Q. And so you understand that if Twin Falls Canal  
12 Company could show higher acreage, the methodology would  
13 create larger mitigation obligations, which means IGWA  
14 would have to provide larger amounts of storage to  
15 Twin Falls Canal Company to avoid curtailment?

16 A. Well, again, this goes back to my direct  
17 testimony relative to the equations and the methodology  
18 that are employed. The diversions from the river are  
19 taken as a given, whatever the acres may be, so --

20 COURT REPORTER: Wait. Mr. Brockway, sorry, I  
21 missed something. "The diversions from the river are  
22 taken as a given, whatever"?

23 THE WITNESS: Whatever the acres may be.

24 COURT REPORTER: Okay. And then you can  
25 continue.

1           THE WITNESS: If the true acres were larger,  
2 the same diversions would be used to calculate the  
3 project efficiencies. So the project efficiencies would  
4 just be a little bit higher. And then those  
5 efficiencies would be used in the reasonable in-season  
6 demand calculation.

7           Q. (BY MR. BUDGE) So, Chuck, do you agree that  
8 it would benefit Twin Falls Canal Company to be able to  
9 have a -- have the methodology order use as large of an  
10 irrigated acreage figure as possible?

11          A. No, for the reason I just described.

12          Q. Okay. You understand that the 2013 GIS  
13 shapefile was developed solely by Twin Falls Canal  
14 Company personnel and the company's consultants?

15          A. That's my understanding.

16          COURT REPORTER: "That's my understanding"?

17          THE WITNESS: That's my understanding.

18          Q. (BY MR. BUDGE) Chuck, I apologize there's  
19 occasions when we can't -- when there's like a technical  
20 glitch, and we don't hear your testimony, so if needed,  
21 we'll just ask you to repeat the answer.

22          A. I understand. That's fine.

23          Q. We did catch that one.

24                 That process of creating the 2013 shapefile,  
25 that was not a collaborative process with the Department

1 of Water Resources?

2 A. I don't know that for sure, but I don't think  
3 it was. It may have been.

4 Q. And that was -- there was no collaboration  
5 with groundwater users or others outside of the company  
6 besides the company's consultants?

7 A. Not that I'm aware of.

8 Q. It was not performed by an independent third  
9 party?

10 A. You mean other than Twin Falls Canal Company  
11 consultant?

12 Q. Correct.

13 A. Not that I know of.

14 Q. And it was not presented in a hearing where it  
15 was subject to scrutiny by the parties to this case?

16 A. I don't know.

17 Q. Okay. Let me have you flip back to page 2 of  
18 your report. And you'll see at the bottom of page 2,  
19 there's a series of numbered paragraphs where you  
20 identify factors that influence the determination of  
21 acreage within a large canal company.

22 Do you see that?

23 A. Yes.

24 Q. I want to ask you about some of those.  
25 Paragraph 1 discusses ponds and other waterways whether

1 private or company owned.

2 You understand that Twin Falls Canal Company's  
3 water rights are for irrigation; correct?

4 A. Correct.

5 Q. And you would agree that the Department should  
6 not be curtailing groundwater irrigation rights to  
7 deliver -- so that Twin Falls could deliver water to  
8 private ponds and waterways?

9 A. Well, let me clarify. What I mean is  
10 privately owned irrigation ditches and ponds used for an  
11 irrigation system.

12 Q. Okay. So to clarify your report, you're not  
13 talking about other types of waterways; you're talking  
14 solely about what we would call regulating ponds for  
15 irrigation purposes and then irrigation ditches?

16 A. Correct.

17 Q. Let me ask you about No. 2. You refer to  
18 fields not being irrigated some years, and then you say:  
19 "Fields may have been left idle due to a limited water  
20 supply."

21 Were you here when Jay Barlogi testified that  
22 he's not aware of any fields that have been dried up due  
23 to lack of water?

24 A. Yes.

25 Q. You don't have any personal knowledge as to

1 whether any farmer within Twin Falls Canal Company has  
2 dried up a field because they did not have adequate  
3 water?

4 A. No.

5 Q. And you understand that fields are sometimes  
6 left idle as part of a fallowing program?

7 A. Yes.

8 Q. You understand that fallowing is sometimes  
9 used as part of a crop rotation to maintain soil health?

10 A. Yes.

11 Q. And every year there's going to be some number  
12 of acres within Twin Falls Canal Company's service area  
13 that are idled as part of a fallowing program; right?

14 MR. THOMPSON: Objection; foundation.

15 THE WITNESS: I think that's a fair statement.

16 MR. BUDGE: There was an objection from  
17 Travis.

18 HEARING OFFICER: Oh, I didn't --

19 MR. THOMPSON: Sorry.

20 HEARING OFFICER: I heard a voice.

21 MR. BUDGE: I should have just kept going.

22 MR. THOMPSON: I objected to the foundation of  
23 the question. I think Mr. Budge was asking about every  
24 year that there are acres in a fallowing program, and I  
25 didn't see the foundation for that question.



1 HEARING OFFICER: Okay. I'm not sure all of  
2 that was audible, but, Andrea?

3 MR. THOMPSON: You can sustain it.

4 (Record read by reporter.)

5 HEARING OFFICER: Overruled.

6 Q. (BY MR. BUDGE) Chuck, let me ask you about  
7 paragraph 4. And you're discussing there development of  
8 ag land into residential subdivisions. There's been  
9 quite a bit of that happen around Twin Falls in the last  
10 decade or two; right?

11 A. Yes.

12 Q. You give an example that if you have a 40-acre  
13 parcel that's converted to a subdivision, you may end up  
14 with, you know, half of that land actually being  
15 irrigated?

16 A. Yeah.

17 Q. This is just a hypothetical, I understand?

18 A. It is, yes.

19 Q. And the remaining 20 acres that irrigation is  
20 typically going to consist of grass and maybe some, you  
21 know, gardens or other landscaping?

22 A. Yes.

23 Q. Is it your testimony that grass consumes twice  
24 as much water as other crops grown on Twin Falls' tract,  
25 like hay, corn, sugar beets, et cetera?

1 A. No.

2 Q. So you would agree that the amount of crop ET  
3 would decrease when a 40-acre tract of farmland is  
4 converted into a residential subdivision?

5 A. Yes.

6 Q. I think your testimony was that the timing of  
7 irrigation changes because subdivision water use  
8 typically happens during a shorter period of time with  
9 maybe higher diversion rates?

10 A. Yeah, that is correct. Just the nature of  
11 small residential systems. For example, in a typical  
12 quarter-acre lot with a sprinkler system, each circuit  
13 may be designed for 18 gallons per minute, let's say,  
14 which is 2 inches -- 2 miner's inches, or about 3.2  
15 shares in Twin Falls Canal Company.

16 I mean, that's about 12 times the amount on  
17 strictly a per-acre basis as compared to an agricultural  
18 parcel. It's just because small residentials have an  
19 extremely high flow rate for short periods of time. So  
20 unless there's a strict rotation in force, the actual  
21 demand will go up compared to an agricultural scenario.

22 Q. And in that context when you refer to  
23 "demand," you're referring to diversion rate?

24 A. Correct.

25 Q. You're not saying that the actual crop water

1 need, or ET, goes up. That actually goes down; right?

2 A. That actually goes down.

3 Q. Okay. Let me have you turn to the next page.  
4 In Item 5 you talk about land being fallow because the  
5 land is not fully covered by canal shares.

6 Do you understand that Twin Falls Canal  
7 Company does allow stockholders to buy and sell shares  
8 within the company?

9 A. Yes.

10 Q. So a farmer could sell shares they didn't need  
11 or if they needed income or something, but a farmer  
12 could sell part or all of their canal shares?

13 A. I believe that's the case, subject to company  
14 policies.

15 Q. And if a farmer utilized a fallowing program  
16 where, say, you know, one-fourth of its farm was fallow  
17 every year, it may not -- that farmer may not need  
18 enough shares to irrigate the whole farm every year?

19 A. I'm sorry, TJ. Run that scenario out again.  
20 I'm sorry.

21 Q. If a farmer utilizes a fallowing program as  
22 part of their crop rotation and leaves 25 percent of  
23 their farm fallow each year, that farmer may not desire  
24 or need to keep shares sufficient to irrigate the entire  
25 farm every year; correct?

1           A. He may not, yeah. Or he may keep his full  
2 shares and just use them on the remaining land.

3           Q. Okay. Let me ask you about paragraph 7.

4           You say: "The company's obligation is to be  
5 prepared to deliver water under all outstanding shares  
6 regardless of the status of the underlying land."

7           You're not testifying that when it comes to  
8 making curtailment decisions the Director should assume  
9 that parking lots, roads, driveways, and things like  
10 that are irrigated? You're not rendering that opinion,  
11 are you?

12          A. No, that's not what it says there.

13          Q. In terms of what the company needs to be  
14 prepared to deliver water to, they need to deliver water  
15 to land that's actually irrigated. Would you agree with  
16 that?

17          A. From the company's standpoint, their  
18 obligation is to deliver a particular user's shares at  
19 his authorized headgate. And what the user does with  
20 those shares or how many acres he irrigates with them is  
21 not governed by the company or even usually known by the  
22 company.

23          Q. So if the company has a tract of land in its  
24 service area that was formerly irrigated farmland and  
25 now it's a strip mall, should the company divert

1 water -- is it your opinion that the company should plan  
2 to divert water from the Snake River for delivery to  
3 that strip mall?

4 A. Well, I don't know. That's an extreme  
5 scenario. I mean, that would be a question for the  
6 company.

7 I mean, if a shareholder had shares and had a  
8 headgate, maybe his ditch goes somewhere else, to some  
9 other land that's being irrigated. I don't know.

10 Q. Yeah, but I'm talking about shares that are  
11 associated with the strip mall. You've put in your  
12 report that the company has to be prepared to deliver  
13 water to that strip mall.

14 Is it your testimony that the Director should  
15 curtail, potentially, junior groundwater users so that  
16 the company can deliver water to a strip mall?

17 A. No, I'm not making any opinion as to what  
18 should be curtailed or not curtailed.

19 Q. Would you agree that no irrigation occurs on a  
20 strip mall?

21 A. Correct.

22 Q. So you would agree, then, when crop water need  
23 is calculated, there shouldn't be an ET calculation or a  
24 demand calculation for land that's not actually  
25 irrigated?

1           A. The ET calculation could take that into  
2 account; that's right.

3           Q. Okay. And you would agree that the Department  
4 should not assume that acres that aren't capable of  
5 being irrigated -- they should not treat those as  
6 irrigated acres in the methodology order?

7           A. I think that's reasonable.

8           Q. At the bottom of page 2 -- and I do see a page  
9 number at this point -- you've got -- that last  
10 paragraph there, there's one sentence.

11                   And at the bottom of that, you say: "the  
12 acreage used in the Fifth Methodology is reasonable, and  
13 there is no clear and convincing evidence at this time  
14 to adopt a different figure."

15           A. Yes.

16           Q. You're not a licensed attorney, right, Chuck?

17           A. That's right.

18           Q. And you understand that "clear and convincing  
19 evidence" is a legal standard?

20           A. Yes.

21           Q. And you understand you're not qualified to  
22 render opinions as to satisfaction of legal standards?

23           A. Yes.

24                   MR. BUDGE: Director, based on the witness's  
25 testimony, I would move to strike, from his report, the

1 bottom paragraph on page 2 and have it redacted from the  
2 record.

3 HEARING OFFICER: I'll deny the motion. I  
4 think there's been enough reference in previous  
5 material, both submitted by the groundwater users,  
6 referring to "clear and convincing evidence" that I'm  
7 not going to start striking these references from  
8 individual reports.

9 Denied. Go on, Mr. Budge.

10 MR. BUDGE: Okay. And I will just note, for  
11 the record, that the groundwater users expert reports do  
12 not reference the clear and convincing standard. They  
13 do reference what is reasonable.

14 And I appreciate the ruling but did want to  
15 make that clear.

16 HEARING OFFICER: Well, certainly reasonable  
17 if you want to start -- if you want to start  
18 distinguishing between one legal standard and another,  
19 as it being appropriate, Mr. Budge, we can go through  
20 that. But the ruling is denied.

21 Go on, please.

22 MR. BUDGE: Okay.

23 Q. (BY MR. BUDGE) Chuck, are you familiar with  
24 the METRIC ET dataset used by the Department?

25 A. Somewhat.

1 Q. What's your experience with that dataset?

2 A. I personally don't have much experience with  
3 it, TJ --

4 Q. Okay.

5 A. -- just as a recognition that it's out there,  
6 general knowledge of how it's calculated, but not much  
7 direct experience.

8 Q. Thanks, Chuck. I appreciate that.

9 Chuck, were you involved or did you assist  
10 Twin Falls Canal Company in resolving their water right  
11 claims in the Snake River Basin Adjudication?

12 A. Yes.

13 Q. I understood from Mr. Barlogi's testimony that  
14 there was a process where the company and the Department  
15 worked together to identify the number of acres that  
16 were irrigated for purposes of the adjudication.

17 Were you involved in that process?

18 A. That was a long time ago, but I do remember  
19 being involved somewhat.

20 Q. Okay. Do you recall reviewing satellite  
21 imagery and working with the Department to determine the  
22 number of acres decreed under Twin Falls' water rights?

23 MR. THOMPSON: I'd like to lodge an objection,  
24 Director.

25 I guess the line of questioning regarding the



1 pre-partial decree process in the SRBA, I believe, is  
2 beyond the scope of this proceeding, isn't relevant.

3 We've had clear court decisions that say  
4 conjunctive administration is not a place to  
5 readjudicate a water right, so I think anything  
6 predecree, going into the process, what was done, is  
7 beyond the scope and irrelevant.

8 HEARING OFFICER: Well, thank you for the  
9 objection. I'll allow some exploration in this area,  
10 recognizing your statement is correct.

11 Mr. Budge, go ahead.

12 Q. (BY MR. BUDGE) Yeah, Chuck, were you involved  
13 in preparing the GIS shapefiles that were used in the --  
14 as part of the adjudication to define irrigated acres  
15 for Twin Falls Canal Company?

16 A. So, again, TJ, that was a long time ago, but  
17 my recollection is we had -- we did some work in aerial  
18 photo analysis.

19 I think -- my recollection was this may have  
20 been pre-GIS days, so it may have been some hand  
21 calculations. But, I'm sorry, I don't have a clear  
22 recollection of that.

23 Q. That's fine. And I appreciate that.

24 Let me have you turn back to your expert  
25 report, and we'll flip to page 14, I believe, involving

1 supplemental groundwater use.

2 A. Yes.

3 Q. I am looking at heading G on page 14 in the  
4 first paragraph. And you discuss there that there are  
5 groundwater wells used for supplemental purposes within  
6 Twin Falls Canal Company's service area, but the  
7 percentage of the water supply is generally low due to  
8 the overall reliability of the surface water shares.

9 Do you understand, Chuck, that the methodology  
10 order does not account for supplemental groundwater use?

11 A. Yes.

12 Q. And you understand that the methodology order  
13 assumes that every acre within the company is irrigated  
14 solely with surface water?

15 A. I would have to examine the methodology order  
16 closely, TJ, but I think that's probably implicit in the  
17 analysis, yes.

18 Q. Have you analyzed how many acres within  
19 Twin Falls Canal Company have supplemental groundwater  
20 rights?

21 A. No.

22 Q. Do you have a rough idea?

23 A. No.

24 Q. Is this something you could do if you were  
25 asked?

1           A. We could analyze the areas that are covered by  
2 groundwater rights. That would be what could be done  
3 without field investigation.

4           Q. And you could do that analysis because the  
5 Department has, in its database, groundwater right  
6 points of diversion and places of use?

7           A. Correct.

8           Q. And then you would have to work with the canal  
9 company to figure out how much of that groundwater  
10 irrigated land also receives surface water?

11          A. Yes.

12          Q. It's the --

13          A. I'm sorry. We work with the canal company and  
14 the water user.

15          Q. Okay. It would be both; you would have to  
16 have the canal company's cooperation so you know where  
17 they deliver water, and then you may also want to work  
18 with the individual farmers?

19          A. Correct.

20          Q. Without access to Twin Falls Canal Company's  
21 water delivery records, there wouldn't really be a very  
22 good way of calculating or determining which acres  
23 receive supplemental groundwater use?

24          A. I don't understand the question, TJ.

25          Q. So in order to evaluate supplemental

1 groundwater use in a reliable fashion, it would be  
2 important to know which parcels of farmland the company  
3 delivers surface water to?

4 A. Yes.

5 Q. And that's data that's held by the Twin Falls  
6 Canal Company; that's not data that's held by the  
7 Department of Water Resources; correct?

8 A. Correct.

9 Q. So that's not data that IGWA or other  
10 groundwater users have access to?

11 A. Not that I know of.

12 Q. So you would agree, then, that neither IGWA or  
13 the other groundwater users in this case even have  
14 access to the data that would be needed to analyze  
15 supplemental groundwater use within the company?

16 A. Well, that's a broad --

17 COURT REPORTER: Mr. Brockway, can you start  
18 your answer again, I apologize.

19 THE WITNESS: That's a broad question. Some  
20 analysis could probably be done given available public  
21 data. But, yes, I believe to the extent that actual  
22 share locations and delivery locations are needed to  
23 make that analysis. I'm not sure that's public  
24 information.

25 Q. (BY MR. BUDGE) So it would require Twin Falls

1 Canal Company's cooperation for somebody to do that type  
2 of analysis; correct?

3 A. I think to do it right, yes.

4 Q. Okay. So for that to be done right, the canal  
5 company holds the cards, essentially?

6 A. I don't know. That's a judgment call.

7 Q. Let me ask you a little bit about the Fifth  
8 Methodology Order.

9 I assume you've read that?

10 A. Yes.

11 Q. Have you been familiar with the methodology  
12 order prior to your preparation for this case?

13 A. Somewhat.

14 Q. Do you generally understand how the  
15 methodology functions as defined in the order?

16 A. I think so.

17 Q. If you'll turn to Exhibit 300 -- and I believe  
18 Mr. Thompson emailed that to you today -- that's the  
19 Fifth Methodology Order.

20 A. Yeah, I have it.

21 Q. And then, Chuck, if you could flip to page 9  
22 and draw your attention to paragraph 19.

23 A. I am there.

24 Q. Do you see in that paragraph where it talks  
25 about current conditions needing to be represented by

1 the net area of irrigated crops?

2 A. I see that.

3 Q. You understand that that net area is referring  
4 to actual irrigated acreage?

5 A. I'm not sure of the definition of the net  
6 area, frankly.

7 Q. Okay. Do you understand that the methodology  
8 order uses irrigated acreage to calculate water demand  
9 for members of the Surface Water Coalition?

10 A. Yes.

11 Q. And so you would agree that it's important to  
12 have --

13 A. Partially.

14 Q. I'm sorry, you would agree that it's important  
15 to have accurate irrigated -- accurate irrigated acreage  
16 information for use in the methodology by the  
17 Department?

18 A. Yes, I would agree that more accuracy is  
19 better.

20 Q. Thank you.

21 I believe Exhibit 337 was also emailed to you  
22 today. It's a collection of letters from legal counsel  
23 for certain members of the Coalition to the Director.

24 A. Yeah, I have that.

25 Q. Are you aware that members of the Surface

1 Water Coalition are required annually to submit their  
2 irrigated acreage to the Department for use in Step 1 of  
3 the methodology order?

4 A. Yes.

5 Q. Have you seen these letters before?

6 A. No.

7 Q. Does the company ever consult with you about  
8 its irrigated acreage in connection with preparing these  
9 letters?

10 A. No.

11 Q. So you don't maintain any type of database or  
12 analysis of irrigated acreage within the company?

13 A. No.

14 Q. Let me ask you just a couple other questions  
15 about the supplemental groundwater usage portion of your  
16 expert report. That's Exhibit 4, I'm on page 14,  
17 Section G.

18 A. Yes.

19 Q. That paragraph at the top that I quoted  
20 earlier states that "the percentage of water supply  
21 provided by groundwater is generally low due to the  
22 overall reliability of the surface water shares."

23 Can you explain that sentence?

24 A. The Twin Falls Canal Company water supply is  
25 generally reliable, obviously, during the shortages.

1       However, there hasn't been the need to develop  
2       supplemental groundwater on the Twin Falls tract as  
3       there has been, for example, on the North Side tract.

4               COURT REPORTER:   On the what tract?

5               THE WITNESS:   North Side.

6               COURT REPORTER:   Thank you.

7               Q.   (BY MR. BUDGE)   So, Chuck, you're aware of  
8       other surface water delivery entities where there's  
9       larger percentages of supplemental groundwater wells?

10              A.   Yes.

11              Q.   And that typically occurs when the surface  
12       water supply is less reliable?

13              A.   That's been my observation and experience.

14              Q.   Okay.  Were you here for the testimony of  
15       Jay Barlogi earlier this week?

16              A.   Yes.  I had to step out for a few moments of  
17       it, but I think I heard the bulk of it.

18              Q.   During part of his testimony, I was asking him  
19       about the types of crops grown within the company's  
20       service area, and there were quite a few, including  
21       wheat and barley.

22              Do you recall that part of his testimony?

23              A.   Yes.

24              Q.   And you understand that wheat and barley are  
25       typically harvested in, you know, early August?



1 A. Yes.

2 Q. And you would agree that once those crops are  
3 harvested, the crop water need within the company would  
4 decline?

5 A. Yes.

6 Q. Mr. Barlogi also testified about some of the  
7 efficiencies that the company has implemented in recent  
8 years.

9 Do you remember that part of his testimony?

10 A. Yes.

11 Q. He mentioned automation and the Kinyon Pond  
12 and also some lining projects.

13 Do you recall that?

14 A. I do.

15 Q. One of the projects he mentioned was a large  
16 canal lining project that happened in 2019 on the  
17 High Line Canal.

18 Is that something you are familiar with?

19 A. No, other than to know that it occurred.

20 Q. Okay. And then he mentioned an upcoming large  
21 lining project that's, I think, slated for 2024.

22 Is that something you're involved with?

23 A. No.

24 Q. Okay. You understand when a canal company is  
25 lined, that's typically done to minimize or eliminate

1 the amount of seepage out the bottom of the canal?

2 A. Yes.

3 Q. And so if the water is diverted into the  
4 canal, that results in a decrease in the total amount of  
5 water lost through the bottom of the canal?

6 A. Yes, that's the objectives.

7 Q. And when those lining projects are  
8 implemented, the canal efficiency improves; correct?

9 A. Correct. Well, sorry, TJ. Efficiency is  
10 calculated lots of different ways. Let's say it this  
11 way: The conveyance loss from the canal decreases.

12 Q. That's a better way of saying that. Thank  
13 you, Chuck.

14 And I sometimes hear canal companies say that  
15 through these types of projects, they're able to stretch  
16 their water further. Would that be fair to say?

17 A. Generally that's true.

18 Q. Let me ask a few questions about the increase  
19 in sprinkler irrigation efficiency within Twin Falls  
20 Canal Company, and I believe you mentioned that it's  
21 gone from about 25 percent to 50 to 60 percent.

22 Was that based on Mr. Barlogi's earlier  
23 testimony in this case?

24 A. Yes.

25 Q. And you testified that when a shareholder

1 converts from flood irrigation to sprinkler irrigation,  
2 less water is applied to the farm field?

3 A. I think that's generally true. The on-farm  
4 efficiency can improve.

5 Q. And then the corollary to that is on that  
6 particular field, less water is diverted from the canal?

7 A. To that particular field. The same shares may  
8 be diverted to other lands, but for that particular  
9 field that got converted, generally that on-farm  
10 diversion will increase.

11 Q. And also as a result, you have less wastewater  
12 runoff under sprinkler irrigation than flood irrigation?

13 A. Generally, yes.

14 Q. And wastewater is typically collected in  
15 drains or what's sometimes called waste ditches; is that  
16 right?

17 A. Yes.

18 Q. And Mr. Barlogi testified that some of those  
19 drains or waste ditches come back into the canal system.

20 Are you aware of that?

21 A. Yes.

22 Q. And others leave the system. They may  
23 discharge into a creek or into the canyon or something  
24 like that?

25 A. Yes. They may be lost from the system, if you

1 will.

2 Q. And so when a farmer converts from flood to  
3 sprinkler irrigation, there's some amount of system loss  
4 that is essentially saved to the system.

5 Would you agree with that?

6 A. When a farmer converts -- I'm sorry, say that  
7 again.

8 Q. When a farmer converts from flood to sprinkler  
9 irrigation, there's some amount of system loss that is  
10 saved to the system?

11 A. Well, by system loss, if you mean runoff from  
12 his farm.

13 Q. Yeah, that's --

14 A. I assume that's what you mean.

15 Q. That's a better way of saying it.

16 So there's some amount of farm runoff that is  
17 conserved or saved?

18 A. Or it decreases, the runoff decreases.

19 Q. And there's also a decrease in the amount of  
20 deep percolation or aquifer recharge when somebody  
21 converts from flood to sprinkler irrigation?

22 A. Yes.

23 Q. Let me ask a few questions about project  
24 efficiency.

25 You testified there's many factors that affect

1 project efficiency, including canal seepage, wetting of  
2 banks, operational spills, and sprinkler irrigation.

3 Do you recall that testimony?

4 A. Yes.

5 Q. And you testified that these and other factors  
6 should be taken into account when analyzing project  
7 efficiency?

8 A. When making a determination on evaluation or a  
9 judgment as to the reasonableness of a calculated  
10 efficiency. They're all factors that contribute to the  
11 need for water diversion that does not directly go to  
12 meet the ET of the crop.

13 Q. Okay. And you understand that the methodology  
14 order does not take any of these factors into account  
15 when it calculates project efficiency for members of the  
16 Surface Water Coalition?

17 A. Not directly, that's right.

18 Q. If I understood your testimony right, the  
19 methodology order uses an equation that simply divides  
20 the diversion volume by crop water need?

21 A. It divides the crop water need by diversion  
22 volume.

23 Q. I have that backwards. Thank you for the  
24 correction.

25 And so if the conveyance efficiencies of

1 Twin Falls Canal Company improve, the methodology order  
2 makes no change in the reasonable in-season calculation?

3 A. That is correct. Yes. That's a true  
4 statement.

5 Q. So when Twin Falls Canal Company installed  
6 their canal lining project in 2019, the methodology  
7 order didn't make any adjustments to account for that  
8 improvement?

9 A. Well, not directly, but to the extent that may  
10 have showed up as a change in the diversion volume, then  
11 the equation that you just spoke of would have picked it  
12 up.

13 Q. So if the company had reduced its diversion  
14 volume as a result of that improvement, then you would  
15 have seen some change in the diversion volume input into  
16 the methodology?

17 A. And some change in the efficiency, project  
18 efficiency.

19 Q. Okay. And we talked earlier that there's been  
20 a pretty substantial increase in the amount of sprinkler  
21 irrigated land, from 25 percent to 50 to 60 percent.

22 The methodology order does not do anything to  
23 directly account for that added efficiency?

24 A. Not directly.

25 Q. So if I understood your testimony, if

1 Twin Falls Canal Company becomes more efficient in using  
2 water, the equation used in the methodology order does  
3 not change the reasonable in-season demand?

4 A. Not directly, only if it shows up as a change  
5 in the diversion plan.

6 Q. And if irrigated acreage declined in the  
7 company, the methodology order would not change the  
8 reasonable in-season demand volume?

9 A. It's the same answer. The diversion volume is  
10 the baseline -- basis for the methodology calculation of  
11 the project efficiency.

12 So it's crop water need, which is a  
13 consumptive irrigation requirement, times irrigated area  
14 divided by the diversion point. The measure they  
15 observed diversion volume.

16 Q. So if Twin Falls' irrigated acreage decreased  
17 by one half, as long as they continued to maintain a  
18 stable diversion volume, their reasonable in-season  
19 demand would not change?

20 A. That's what the equations and the methodology  
21 set forth.

22 Q. Let me go back to your expert report. And we  
23 can turn to page 7.

24 A. Okay.

25 Q. And I'm looking at Figure 4, which you

1 discussed with Mr. Thompson.

2 And I understood your testimony to be, in your  
3 report, that this shows that Twin Falls Canal Company's  
4 diversions have remained relatively constant since the  
5 late 1970s?

6 A. Yes.

7 Q. And there's a statement in your report that  
8 diversions have all been within plus or minus  
9 150,000 acre-feet of the average?

10 A. Yes.

11 Q. So do those gray horizontal lines that  
12 parallel the average -- there's one above and one  
13 below -- does that reflect the plus or minus  
14 150,000 acre-feet figure you're talking about?

15 A. Yes.

16 Q. Okay. So I can see there's just a couple  
17 orange dots that are kind of outliers that reach that  
18 150,000 acre-feet figure?

19 A. Yes. The 150,000 figure, plus or minus --  
20 excuse me. Let me back up.

21 The average value plus or minus  
22 150,000 acre-feet represents the range of the data.

23 Q. Okay. I understood that correctly, then.

24 And then if we took out those outliers, you  
25 know, like 2005 and 2020 and we go back to, say, 2000,



1 it looks to me like diversions have probably been plus  
2 or minus maybe 50- or 75,000 acre-feet?

3 A. I would agree. It does appear to be -- it  
4 does appear that the variability in the data has been  
5 less in recent decades.

6 Q. And at the bottom of that section of your  
7 report -- and I'm looking right above the heading number  
8 "C" -- or labeled "C" -- you state at the end that:  
9 "there's no statistically significant trend in the data  
10 set, and if any trend exists, it is a very weak downward  
11 trend."

12 You're referring to the time period of  
13 46 years shown in that graph?

14 A. Yes.

15 Q. And I believe you testified earlier that if we  
16 were to look at a shorter time period, say, from the  
17 early 2000s, it would show an upward trend?

18 A. It could if you select the right starting and  
19 end date. That's the -- that's one of the bugaboos with  
20 trend analysis.

21 Q. Did you run that analysis with a shorter time  
22 frame to see what it would show?

23 A. I believe we did do some interdecadal, if you  
24 will, analysis to see what that would show, but I don't  
25 remember what the results were.

1 COURT REPORTER: A what kind of analysis?

2 THE WITNESS: Oh, let me change that word.

3 Let me say: We did analysis on certain  
4 periods within this dataset, but I don't remember what  
5 the results were.

6 Q. (BY MR. BUDGE) Just looking, you know, at the  
7 graph, isn't it obvious that if we used, like, from 2000  
8 to today, so the last two decades, there's an increasing  
9 trend?

10 A. I think so. I think the data would probably  
11 show that.

12 Q. And during your -- during the discussion we  
13 had just a moment ago about project efficiency and crop  
14 water need and reasonable in-season demand, reasonable  
15 in-season demand is driven largely just by diversions;  
16 correct?

17 A. In the methodology order, you mean?

18 Q. Yes.

19 A. Yes.

20 Q. So increasing diversions will show -- will  
21 produce increasing demand within the methodology order  
22 irrespective of whether crop water need is going up or  
23 down or efficiency is going up or down?

24 A. I'm not sure you can make that blanket  
25 statement, TJ. But it is -- again, it's -- the

1 methodology assumes that the diversions are what they  
2 are, they're a given, and those are used to calculate  
3 project efficiency. And those are used, together with  
4 the crop water need, to calculate the reasonable  
5 in-season demand adjustments. So those factors go into  
6 that equation.

7 And then, of course, the baseline year demand  
8 doesn't have anything to do with acres, it's just based  
9 on diversion.

10 Q. So as diversions go up, the baseline year goes  
11 up?

12 A. No. The baseline year is a discretionary  
13 selection by the Department.

14 Q. Do you understand the baseline year has to be  
15 above the average?

16 A. Yes.

17 Q. So as diversions go up and push the average  
18 up, that forces the baseline year to go higher?

19 A. It could if, as happened this year, the  
20 average becomes greater than the previously used  
21 baseline year, then I assume the Department would  
22 reevaluate that.

23 MR. BUDGE: I don't have any further  
24 questions.

25 Thanks, Chuck.

1 THE WITNESS: Thanks, TJ.

2 HEARING OFFICER: Further cross-examination by  
3 the groundwater users?

4 Mr. Harris?

5 MR. BUDGE: Hey, Director, do you mind if I  
6 ask -- there's a document I left on my desk that I  
7 forgot to ask Chuck about.

8 HEARING OFFICER: You're asking to displace  
9 Mr. Harris?

10 MR. BUDGE: He hasn't taken his seat yet.

11 MR. HARRIS: Come on up.

12 HEARING OFFICER: All right.

13 MR. THOMPSON: TJ, I just had a question about  
14 the numbering of that exhibit.

15 I think you had numbered that as a Coalition  
16 exhibit. I wonder if you can just renumber it to  
17 whatever IGWA's exhibit number is?

18 MR. BUDGE: Yeah, we can do that. And it's  
19 not labeled on its face, so when we get to the admission  
20 portion of it, we'll do that.

21 Q. (BY MR. BUDGE) Chuck, I had your attorney  
22 email to you a couple copies of your expert report.  
23 It's pages 4 and 5 that I've added some red highlighting  
24 on.

25 Do you have those?

1 A. I see those. Yes, I have those. Yes.

2 Q. Chuck, except for the red highlighting, do you  
3 recognize those as Figure 2 and Figure 3 from your  
4 expert report?

5 A. Yes.

6 Q. I'll represent that I've added the  
7 highlighting. And what I've done is identified areas  
8 that do not appear to be irrigated with water from  
9 Twin Falls Canal Company.

10 And I'll give you some examples. I'm looking  
11 at Figure 2 to begin with; that's the 2017 irrigated  
12 lands dataset, and I'll just start in the  
13 upper-right-hand corner. That upper-right-hand red box  
14 is what I call a farmstead. It's a house and a yard  
15 that's out in the country.

16 Do you see that?

17 A. Yes.

18 Q. I assume you are aware that rural farmsteads  
19 like this typically have domestic wells?

20 A. Yes.

21 Q. And they're typically using their domestic  
22 wells for their culinary use and their, you know, yard  
23 and garden and things of that nature?

24 A. They --

25 COURT REPORTER: Mr. Brockway, sorry. You're

1 going to need to start your answer over.

2 THE WITNESS: They are using it for in-house  
3 purposes for sure. Sometimes they irrigate their  
4 half-an-acre allowance with the domestic well; sometimes  
5 they use their surface water shares, in my experience.

6 Q. (BY MR. BUDGE) Okay. If you can just take a  
7 moment to look at the areas I've highlighted in red.  
8 There was some pivot corners, and then the others are  
9 all farmsteads.

10 If you can just confirm that you agree that  
11 that's what I've identified?

12 A. Yes, I see them, TJ.

13 Q. Okay. And so these are areas that are not  
14 irrigated with the canal water unless the farmstead is  
15 using canal water for its landscaping and gardening  
16 around the house.

17 Do all the red areas look okay on that, Chuck?

18 A. I'm sorry. What's the question?

19 Q. Okay. And maybe you answered this already,  
20 but you've had a chance to review the areas that I  
21 marked in red on that?

22 A. Yes.

23 Q. Okay. And you agree that they're representing  
24 either pivot corners or rural farmsteads?

25 A. It looks that way, yes.

1 Q. And then I've done the same thing on Figure 3.  
2 The one difference for Figure 3 is there's that chunk in  
3 the middle where the red is shaped like an E.

4 And on this hard copy version it's kind of  
5 hard to see, but as you're aware -- as you're familiar  
6 with the original, that highlighted area that looks like  
7 an E is actually some subdivision roads. It looks like  
8 a newly created subdivision that has roads but no homes  
9 yet.

10 Do you recognize that?

11 A. Yes.

12 Q. Other than that subdivision, as I've just  
13 described, the other areas, you'd agree, represent rural  
14 farmsteads or pivot corners?

15 A. It does appear that way.

16 MR. BUDGE: I would move to have this document  
17 marked as the next IGWA Exhibit No. --

18 MS. PATTERSON: 838.

19 MR. BUDGE: -- 838 and admitted into evidence.

20 (Exhibit 838 marked.)

21 HEARING OFFICER: Any objection to the  
22 admission of this document?

23 Hearing no objection, the document marked as  
24 Exhibit 838 -- is that correct -- is received into  
25 evidence.

1 (Exhibit 838 received.)

2 MR. BUDGE: Thank you. And thank you for the  
3 accommodation.

4 HEARING OFFICER: Mr. Harris.

5  
6 CROSS-EXAMINATION

7 QUESTIONS BY MR. HARRIS:

8 Q. Mr. Brockway, good afternoon.

9 Can you still only hear us? Or can you see us  
10 yet?

11 A. I can hear, but not see.

12 Q. Okay. Rob Harris here on behalf of the City  
13 of Idaho Falls.

14 Is it okay if I call you "Chuck" today?

15 A. Absolutely.

16 Q. Do you have, close to you or on your computer,  
17 Exhibit 300, which is the Fifth Methodology Order?

18 A. Yes.

19 Q. Your report, which is Exhibit 4, and then the  
20 expert report of Greg Sullivan with Spronk Water  
21 Engineers, that's Exhibit 347A. I'll be referring to  
22 those. So I wonder if you could just have those pulled  
23 up.

24 MR. THOMPSON: Rob, I think I'll have to email  
25 him that.



1 THE WITNESS: Okay. I have those pulled up,  
2 Rob.

3 MR. HARRIS: Okay. Great.

4 Q. (BY MR. HARRIS) You are described as one of  
5 the three authors of Exhibit 4; correct?

6 A. Correct.

7 Q. Did the three authors prepare different  
8 sections, or did you contribute to all of it and are  
9 able to testify as to all parts of it?

10 A. The three authors wrote different sections.

11 Q. What sections did you prepare?

12 A. I prepared -- well, let me clarify.

13 Brockway Engineering, myself and Erick Powell,  
14 prepared all but Section C; Dave Shaw prepared  
15 Section C.

16 Q. Okay. Thank you.

17 How long did it take you to prepare this  
18 report?

19 A. Probably three days.

20 Q. Would you have liked to have had more time to  
21 prepare it?

22 A. Yes.

23 Q. Okay. The Fifth Methodology Order describes  
24 the steps that the Director takes to calculate a  
25 material injury number for each member of the Coalition;

1 correct?

2 A. Yes.

3 Q. So it's essentially a formula. Would you  
4 agree with that?

5 A. Yes, or perhaps algorithm would be more  
6 appropriate.

7 Q. And it is an update to the Fourth Methodology  
8 Order that was issued in 2016; correct?

9 A. Correct.

10 Q. And the report is to be based on, "the best  
11 available science and underlying water data"; correct?

12 A. I don't know. Are you quoting from the order?

13 Q. I am. So if you look at page 2 of the Fifth  
14 Methodology Order, it uses a phrase there: "Apply the  
15 best available science and underlying water data."

16 Do you see that?

17 A. I do see that. Thank you.

18 Q. So from a technical standpoint, what does it  
19 mean to you to apply the best available science and  
20 underlying water data?

21 A. Well, goodness, that's, obviously, a broad  
22 question. That's open to interpretation by different  
23 people. Some things that occur to me would be that it  
24 would be using standard mathematical protocols, standard  
25 protocols for analyzing agricultural water use. The

1 underlying data should be available and reasonably  
2 accurate. I don't know, Rob, that's a -- that's not one  
3 that you can pin down precisely.

4 Q. I think you gave a good answer. And what I'm  
5 getting at is you said it had to have some reasonable  
6 accuracy; correct?

7 A. I would adopt that, yeah.

8 Q. So it doesn't, necessarily, mean that the data  
9 has to be perfect or 100 percent certain, does it?

10 A. No.

11 Q. Okay. I want to turn to page 1 of your  
12 report, so it's Section A, "The Evaluation of Twin Falls  
13 Canal Company Project Acres."

14 And would you agree with me that irrigated  
15 acres identifies land where there is the artificial  
16 application of water to grow crops?

17 A. Well, I -- that's a very narrow definition,  
18 but in the case of the methodology, it does need to  
19 include things like that, in my opinion, waterways that  
20 are a real consumptive demand that the system has to  
21 meet even though they don't meet your narrow definition.

22 Q. And I'll get to that here in a moment, but  
23 just in terms of irrigation, you would agree with me  
24 that it's the artificial application of water to land to  
25 grow a crop; right?

1 A. Yes.

2 Q. That didn't come through, but I think you said  
3 "yes"?

4 A. Yes.

5 Q. And so that would not include roads,  
6 sidewalks, parking lots, and other hardened acres?

7 A. Yes, right.

8 Q. And, in fact, if you have the Fifth  
9 Methodology Order in front of you, on page 10 --

10 A. Okay.

11 Q. -- paragraph 21, could you read paragraph 21  
12 for us. You don't need to read the citations, but go  
13 ahead and read that.

14 A. "Estimates of irrigated acres from the hearing  
15 show a trend of decreasing irrigated acreage. According  
16 to the Hearing Officer, beneficial use cannot occur on  
17 acres that have been hardened or otherwise not  
18 irrigated."

19 Q. So you would agree that the number of  
20 irrigated acres for each Coalition entity feeds into the  
21 Fifth Methodology calculation; correct?

22 A. Correct.

23 Q. And so the number of irrigated acres would  
24 affect the end result of projecting material injury,  
25 would it not?

1           A. Well, this goes back to my previous testimony  
2 that the equations in the methodology order assume that  
3 the diversion volumes, the observed diversion volumes  
4 are -- again, whatever the number of acres are -- the  
5 project efficiencies are calculated based on crop water  
6 need divided by diversions, and then those project  
7 efficiencies go back into the -- those calculated  
8 project efficiencies go back into the reasonable  
9 in-season demand adjustment equation.

10           Q. So I'll have you look at page 9 of that  
11 methodology order and look at paragraph 19.

12           And, Chuck, I understand your argument, and I  
13 would categorize your argument as twofold. One is the  
14 one you're making where you're saying irrigated acres  
15 don't really matter, but there's also a component of  
16 your report that indicates that because there are some  
17 errors that could happen with generation of a shapefile,  
18 that the acreage shouldn't be updated.

19           And I'm asking you about the latter one, which  
20 is whether or not acres can be depicted through  
21 shapefiles and how that factors into this methodology.

22           So paragraph --

23           A. Oh, I see.

24           Q. So paragraph 19, you would agree with me,  
25 says: "A baseline year must be recent enough to

1 represent current irrigation practices. Current  
2 conditions should be represented by (a) the net area of  
3 the irrigated crops."

4 Do you see that?

5 A. I do.

6 Q. And so is it your position, then, that the  
7 Director was in error to look at irrigated acres as he  
8 indicated he has in the Fifth Methodology Order?

9 A. No.

10 Q. Okay. So in terms of just calculating  
11 irrigated acres, you and your office are familiar with  
12 GIS software; correct?

13 A. Yes.

14 Q. You know how to generate and amend shapefiles?

15 A. Yes.

16 Q. You've used them in water transfers and other  
17 analyses; correct?

18 A. Correct.

19 Q. In fact, on your website, you indicate that  
20 you employ Jennifer Jennings who is, quote, a specialist  
21 in GIS mapping and analysis using ArcMap; is that right?

22 A. That is -- that was right up until a few days  
23 ago, but she's no longer with the firm.

24 Q. Oh, I'm sorry to bring that up.

25 Okay. But that's something you're personally

1 trained and others in your office on how to do that;  
2 right?

3 A. Yes.

4 Q. So as for polygons that are created with GIS,  
5 would you agree that they represent the best available  
6 technology to calculate the size of areas that are  
7 covered by the polygon?

8 A. Yes, I would say so.

9 Q. Pretty accurate in calculating acreage; right?

10 A. If the area photo is rectified properly, it  
11 can be quite accurate.

12 Q. And with the update to the Fourth Methodology  
13 Order from 2016 to the Fifth in 2023 to have the best  
14 available science, that would include an update to the  
15 actual irrigated acres; correct?

16 A. It would.

17 Q. And if we look at what qualifies as irrigated  
18 acres, would you agree that open water in ditches,  
19 ponds, or other waterways are not -- they're not  
20 irrigated, are they?

21 A. Under the definition you provided, no.

22 Q. And as I understand your testimony, I think  
23 what you're, essentially, saying -- and I'll get to your  
24 other arguments in paragraphs 2, 3, 5, and 6 -- but it's  
25 that irrigated acres don't matter; what matters is just

1 the diversions.

2 That's the second position in your report;  
3 correct?

4 A. Well, we can talk about that when we get  
5 there. It's just -- it's not that they don't matter.  
6 It's important to understand how they're utilized or not  
7 utilized in the methodology equations.

8 Q. I understand.

9 But you're basically -- well, let me -- if I  
10 were to say I'm not sure I understand your answer, could  
11 you just describe what it is you're arguing, then? If  
12 you're saying that it doesn't matter what the irrigated  
13 acres are, it's the baseline year, and that's determined  
14 by the historic diversions?

15 A. Right. The baseline year demand doesn't have  
16 anything to do with acres. It's simply a discretionary  
17 selection that fits the criteria outlined in the  
18 methodology order.

19 Q. Okay. I appreciate your answer. I'm just  
20 going through my questions because I think that answers  
21 a fair amount of them.

22 And actually TJ gave a hypothetical, but does  
23 that -- that I'll just ask again -- but does that mean  
24 that if Twin Falls Canal Company's acres go down  
25 100,000 acres, do we keep considering the diversions as



1 a given and compute project efficiency values lower and  
2 lower, say, down to 20 percent?

3 A. Well, that is a big hypothetical, obviously.  
4 If the acres were to reduce by 50 percent, it probably  
5 would show up as a reduced diversion demand, and so  
6 then, over time, that would show up as changes in the  
7 calculations that are in the methodology order.

8 Q. And I think Travis gave you an example of  
9 1 acre, so I gave you 100,000 just to cover the range.

10 But the -- based on at least some  
11 calculations, there's been approximately a 15,000-acre  
12 change in the system based on the shapefiles; correct?

13 A. Yeah, I've seen those numbers.

14 Q. And overstating the number of actual irrigated  
15 acres, from a technical standpoint, would result in a  
16 higher determination of material injury; correct?

17 A. Well, again, it's not that clear. It's not a  
18 one-for-one calculation like that based on the  
19 methodology equations.

20 Q. Okay.

21 A. I could go through that again if you'd like.

22 Q. No, I think I understand your testimony.

23 Thanks.

24 A. Okay.

25 Q. I do want to turn to Part B of your report,

1 which is the trend in the Twin Falls Canal Company  
2 diversion.

3 And I think you've taken the position that  
4 they've actually decreased over time; correct?

5 A. No. Rob, I don't think I would take that  
6 position. It's just if you look at the numerical value  
7 of the trend to calculate it, it's very slightly  
8 downward but not enough to be statistically significant  
9 and not enough to render that opinion.

10 Q. But your analysis of that begins in 1977;  
11 correct?

12 A. Correct.

13 Q. Okay. In the Fifth Methodology Order on  
14 page 3, the Director states: "To capture current  
15 irrigation practices, identification of a baseline year"  
16 -- abbreviated "BLY" -- "is limited to years subsequent  
17 to 1999."

18 Do you see that?

19 A. I do see that, yes.

20 Q. So the Director began his analysis in 2000.

21 Is it your position that the Director was  
22 incorrect to pick a time period after 2000 in his  
23 analysis?

24 A. No.

25 Q. Okay.

1 A. No. That's just a discretionary decision.

2 Q. Okay. And, in fact, I'll -- you indicated in  
3 your testimony to Mr. Budge that -- kind of just  
4 eye-balling recent diversions that it's likely  
5 increased.

6 I want to have you look at Greg Sullivan's  
7 expert report just a few pages from the very back. It's  
8 Table 2-1.

9 A. Uh-huh.

10 Q. And there's a chart in there that -- well, let  
11 me know when you get there.

12 HEARING OFFICER: What is the exhibit number?

13 MR. HARRIS: 347A.

14 HEARING OFFICER: Thank you.

15 THE WITNESS: Table 2-1. Okay. I'm there.

16 Q. (BY MR. HARRIS) Great.

17 This is a chart that summarizes the historic  
18 diversions of each of the Coalition entities.

19 Do you see the column for Twin Falls Canal  
20 Company?

21 A. I do.

22 Q. And do you see that there's some averages  
23 below them where you can actually see the average  
24 diversions from 2000 to 2014 of 1,045,120 acre-feet?

25 Do you see that?

1 A. Yes. Yes.

2 Q. And then do you see that there's an average of  
3 2015 to 2021 of 1,098,477 acre-feet?

4 A. I do see that.

5 Q. So, at least based on those time frames, it  
6 appears that there's been an increase of over  
7 50,000 acre-feet per year during the 2015-to-2021 time  
8 frame; correct?

9 A. I'm just checking to make sure these are  
10 adjusted volume. Yes. Yes. So assuming Greg's math is  
11 right, which I'm sure it is, then that is correct.

12 Q. Great. And so since the Fourth Methodology  
13 Order was issued in 2016 -- now we're in 2023 --  
14 certainly since 2016 Twin Falls Canal Company diversions  
15 have increased; correct?

16 A. Well, I'd have to do the analysis just for  
17 that short period, Rob. I don't know if I can answer  
18 that today.

19 Q. Well, it's got a time period of 2015 to 2021.  
20 I'm just saying since 2016, based on these data, up to  
21 2021, it looks like they've increased.

22 A. So you're asking me if the period 2016 to 2021  
23 is greater than --

24 Q. I said -- yeah, greater than 2000 to 2014.

25 A. Well, I'd have to calculate the average of

1 2016 to 2021. That's not shown on Table 2-1.

2 Q. Okay. But at least from 2015 to 2021 it  
3 appears it's increased?

4 A. Yes.

5 Q. On -- I'm now going to have you turn to Part D  
6 of your report.

7 A. Uh-huh.

8 Q. And so that's on page -- well, I'll have you  
9 turn to page 13.

10 You gave a hypothetical there in the middle  
11 paragraph. You say: "A simple example calculation  
12 demonstrates this."

13 Do you see that?

14 A. I do.

15 Q. So the example assumes 56 percent on-farm  
16 efficiency, 20 percent canal loss at the diversion, and  
17 operational spill of 15 percent with an overall project  
18 efficiency around 42 percent; right?

19 A. Yes.

20 Q. And --

21 A. Well, that's -- the 42 percent is a calculated  
22 number based on above assumptions.

23 Q. Right. And you were here -- or I believe you  
24 said you were listening in on Mr. Barlogi's testimony  
25 that sprinkler irrigation comprises 50 to 60 percent of

1 Twin Falls Canal Company's irrigation practices today?

2 A. Yes.

3 Q. So in your hypothetical, would you expect  
4 Twin Falls Canal Company's on-farm efficiency to be  
5 65 percent, in that range?

6 A. Oh, I think that may even be a little high,  
7 Rob. But that's maybe in the ballpark.

8 Q. But in your hypothetical you arrive at a  
9 calculated 42 percent project efficiency; right?

10 A. Right.

11 Q. In the methodology order it projects an  
12 efficiency that's 35 percent; correct?

13 A. On average.

14 Q. On average.

15 And so doesn't that mean that the company's  
16 collective losses, either conveyance losses or  
17 operational spills, must be greater than those in the  
18 hypothetical?

19 A. No. Because as I said in the last sentence  
20 there, this doesn't account for factors that are very  
21 difficult to even put a number on, such as the seasonal  
22 shoulder effects and the weather -- the short-term  
23 weather changes that reduce the crop water need but  
24 don't result in a diversion reduction.

25 So my only point with this paragraph is to say

1 using numbers that we have, that we can reasonably  
2 estimate, it's really easy to get to a number like  
3 42 percent.

4 So my point here is that it's not at all  
5 unreasonable for a large canal company with a thousand  
6 miles of ditches and laterals to have an efficiency of  
7 something like 35 percent.

8 Q. Did you review the project efficiency of other  
9 Coalition members?

10 A. No.

11 Q. Was there a reason you did not look at those  
12 numbers?

13 A. Our task was, in the interest of time,  
14 primarily to focus on the hot-button company for this  
15 matter, which was Twin Falls Canal Company.

16 Q. So you don't know why the other members have  
17 been able to operate with much greater project  
18 efficiency values? You wouldn't have any knowledge of  
19 that?

20 A. I have general knowledge, but I don't have any  
21 specifics for you.

22 Q. I have one more area of inquiry, and then I'll  
23 be done. And it's Part G under "Supplemental  
24 Groundwater Usage."

25 A. Yes.

1 Q. You testified before that you're familiar with  
2 GIS shapefiles; correct?

3 A. Yes.

4 Q. And your office utilizes ArcMap, which I'm  
5 also familiar with, so you know how to use the clip,  
6 merge, buffer, intersect functions that can show areas  
7 where groundwater shapefiles overlap with company  
8 shapefiles?

9 A. Yes.

10 Q. And you could perform a function that would  
11 yield a shape that would show where that overlap occurs;  
12 right?

13 A. Yes.

14 Q. And the same thing with points of diversion?

15 A. Well, clarify that, if you would.

16 Points of diversion for wells would be the  
17 individual private wells.

18 Q. Correct.

19 A. Whereas --

20 Q. Yeah. And you could at least get an initial  
21 list of the privately decreed groundwater rights that  
22 exist within Twin Falls Canal Company's service area?

23 A. Yes.

24 Q. Okay. And those shapefiles have attribute  
25 data associated with them; correct?



1 A. Yes.

2 Q. It would have things like legal descriptions  
3 or IDWR metal tag numbers or even WMIS diversion numbers  
4 in it; correct?

5 A. Yes.

6 Q. And in terms of knowing who owns the  
7 properties where these shapes are, have you utilized tax  
8 parcel data that's generated by the counties to show  
9 land ownership?

10 A. Yes.

11 Q. And that's fairly readily available these  
12 days; right?

13 A. It is.

14 Q. And so wouldn't that be a starting point of  
15 where groundwater may be used within the company?

16 A. Yes.

17 Q. Are you familiar with the -- well, you are  
18 familiar with the WMIS database maintained by the  
19 Department; correct?

20 A. Yes.

21 Q. And that's an acronym for Water Management  
22 Information System?

23 A. Yes.

24 Q. And that system tracks groundwater diversions  
25 either measured by flowmeters or calculated through PCC

1 calculations; correct?

2 A. Yes.

3 Q. Okay. And, in fact, I believe you've used  
4 those in transfers and other situations, have you not?

5 A. Yes.

6 Q. And so do you consider them to be a reliable  
7 source of information, albeit maybe not perfect, for  
8 historical groundwater diversions?

9 A. Yes.

10 Q. I believe you said "yes"?

11 A. Not perfect. Yeah, I would agree with you,  
12 Rob. Not perfect, but reasonably reliable in most  
13 cases.

14 Q. And best available; right?

15 A. I think so.

16 Q. Okay. And I think the point of the Director's  
17 order is that supplemental groundwater use may be looked  
18 at because it may contribute to the overall water  
19 supply.

20 Do you agree with that?

21 A. Sorry. Could you restate that?

22 Q. Yeah. I believe that the Director's order --  
23 the reason supplemental groundwater use is even  
24 mentioned is that it could be considered a source of  
25 water supply to irrigate acres within the Twin Falls

1 Canal Company's service area; correct?

2 A. So my apologies. I'm not familiar with where  
3 that's mentioned in the order. I would have to go  
4 reread that again.

5 Q. I'll refer you to page 10 at the bottom,  
6 paragraph 23.

7 Do you have that in front of you?

8 A. Okay. I'm there.

9 Q. It says: "There are lands within the service  
10 area of SWC entities that are irrigated with  
11 supplemental groundwater."

12 Do you see that?

13 A. I do see that.

14 Q. And that's under the section of the order  
15 under "Irrigation Practices," which is also under the  
16 available water supply to those that irrigate within the  
17 service area.

18 Do you see that?

19 A. I do see that.

20 Q. So as I understand the order, the analysis of  
21 supplemental groundwater is that it would provide  
22 another source of supply as to what could be irrigated  
23 acres within the company; right?

24 A. Right.

25 Q. Okay. And wouldn't WMIS data that's matched

1 to places of use points of diversion groundwater rights  
2 be a reliable starting point to determine how much  
3 supplemental groundwater is used?

4 A. It would be a starting point.

5 Q. And may be subject to some ground truthing as  
6 you said before; right?

7 A. Right.

8 Q. All right. I just have one more question.  
9 The last one is on the baseline year discussion.

10 Isn't it true that so long as Twin Falls Canal  
11 Company continues to increase its diversions, then the  
12 average will increase, and then in a few more years,  
13 there would be a higher baseline year with higher  
14 demand? Isn't that the end result of just looking at  
15 diversions?

16 A. If Twin Falls Canal Company diversions  
17 continue to increase, under that hypothetical, then,  
18 mathematically, their average will also continue to  
19 increase. What the Department does with that in the  
20 future is not something I can say.

21 Q. But if they continue to base mitigation  
22 obligations on that calculation, wouldn't that require  
23 the groundwater users to provide more upfront water?

24 A. Well, if -- under your assumption that a new  
25 baseline year is selected?

1 Q. Yes.

2 A. It could, yes.

3 MR. HARRIS: Director, I believe that's all of  
4 the questions I have.

5 Thank you.

6 HEARING OFFICER: Thank you, Mr. Harris.

7 THE WITNESS: Thank you, Rob.

8 HEARING OFFICER: I assume there is more  
9 cross-examination?

10 MR. BRICKER: Yeah.

11 HEARING OFFICER: Okay. Well, let's break for  
12 lunch. Come back at a quarter after 1:00. Thank you.

13 (Lunch break taken.)

14 HEARING OFFICER: Okay. Let's go back on the  
15 record. Next to examine.

16 Are we on, Andrea?

17 COURT REPORTER: Yes.

18 HEARING OFFICER: All right. Thank you.

19 Mr. Anderson, you may examine.

20 MR. ANDERSON: Thank you.

21

22 CROSS-EXAMINATION

23 QUESTIONS BY MR. ANDERSON:

24 Q. How are you, Mr. Brockway?

25 A. I'm doing fine, thank you.

1 Q. Good. I'm Dylan Anderson. I've seen you  
2 before. I don't know if we've actually met in person or  
3 not, but I just have a quick question for you.

4 As you explained with irrigated acres, as they  
5 would go down, the efficiency would go down, or as they  
6 would go up, the efficiency would go up, so they don't  
7 really affect the reasonable in-season demand. Is that  
8 an accurate representation as you've explained it?

9 A. They don't affect it on a direct proportionate  
10 basis; that's right.

11 Q. So if the Department wanted the actual  
12 irrigated acres to be reflected in the reasonable  
13 in-season demand, would they, then, need to somehow fix  
14 efficiency? "Fix," I mean make it static or control for  
15 that number?

16 A. That could be a way to do it.

17 MR. ANDERSON: That's it. That's the only  
18 questions I have.

19 Thanks.

20 HEARING OFFICER: Okay. Next?

21 Mr. Bricker, come forward.

22 MR. BRICKER: Before I begin the examination,  
23 Director, I believe the parties, we've all stipulated to  
24 admitting Exhibit 316 into evidence, and I just wanted  
25 to make that clear now.

1 HEARING OFFICER: 316?

2 MR. BRICKER: Yeah.

3 MR. FLETCHER: Which is the same as 914;  
4 right?

5 MR. BRICKER: Also 914, the same document.

6 HEARING OFFICER: Okay. There's a stipulation  
7 to the admission of 316 and what? Corresponding 914?

8 MR. BRICKER: Correct.

9 MR. FLETCHER: It's the same exhibit.

10 MR. BROMLEY: They just need 316.

11 MR. FLETCHER: Mr. Director, are we on the  
12 record?

13 HEARING OFFICER: We are.

14 MR. FLETCHER: Can we go off for just a  
15 second?

16 (Discussion held off the record.)

17 HEARING OFFICER: Back on the record.

18 So the parties have stipulated to the  
19 admission of Exhibit 914, which also corresponds to what  
20 was marked as 316. Thank you. It's received into  
21 evidence, Exhibit 914.

22 (Exhibit 914 received.)

23 MR. BRICKER: Good to go?

24 HEARING OFFICER: Yes.

25 ///

## 1 CROSS-EXAMINATION

2 QUESTIONS BY MR. BRICKER:

3 Q. Good afternoon, Mr. Brockway.

4 A. Good afternoon.

5 Q. My name is Max Bricker. I represent the City  
6 of Pocatello. I have a few questions for you here.7 So in your report, you state that: "The  
8 diversion volume in the Fifth Methodology baseline year  
9 of 2018 is at the 84 percentile and provides a  
10 reasonable factor of safety to protect senior water  
11 right holders."

12 Is that right?

13 A. I am getting there. One second. Are you  
14 looking at the conclusions?

15 Yes. Okay, I see that. Uh-huh.

16 Q. And you also state that: "Using 2018 as the  
17 BLY provides a reasonable factor of safety without being  
18 extreme."

19 Right?

20 A. Yes.

21 Q. Isn't it possible that diversions from a  
22 baseline year at a percentile lower than the 84th could  
23 still provide a reasonable factor of safety?24 A. Well, obviously, the word "reasonable" was up  
25 to interpretation. So in general, yes.



1 Q. Thanks.

2 Isn't there already an additional safety  
3 factor by using the forecast supply minus one standard  
4 deviation?

5 A. Yes.

6 Q. If the safety factor is too high, then won't  
7 the forecast shortage almost always be greater than the  
8 actual shortage determined at the November 1st  
9 reconciliation?

10 A. The conservatism built into the system or into  
11 the algorithm could be set such that that would be the  
12 case.

13 Q. And similarly, if the groundwater users have  
14 to provide mitigation water based on an overly  
15 conservative forecast shortage, won't they almost always  
16 end up overmitigating?

17 A. That is the same answer to my previous  
18 question.

19 Q. Thanks. Doesn't that suggest that there is a  
20 point at which too much conservatism in the forecast  
21 ends up being a waste of the resource?

22 A. That's a policy question not a technical  
23 question, so I don't have an opinion on that.

24 Q. Okay. Also in your report you state that:  
25 "Operational spill is always necessary in order to

1 deliver water to users within the systems. Spill must  
2 be maintained in order to account for variations in  
3 demands by irrigators. Without spill it would be  
4 impossible to reliably serve the tail ends of the  
5 system."

6 Correct?

7 A. That's true.

8 Q. Even if operational spills were necessary, the  
9 amount can be reduced with more prudent management;  
10 correct?

11 A. Possibly.

12 Q. And isn't there a point when operational  
13 spills become excessive?

14 A. Again, there's no bright line there. I think  
15 there would be, but there's no set point or a bright  
16 line.

17 Q. Fair enough.

18 Okay. Also in your report, you state that:  
19 "It is not unreasonable to see flat or declining project  
20 efficiencies even though sprinkler conversions are  
21 continuing to occur."

22 Is that right?

23 A. Yes.

24 Q. So if on-farm efficiencies increase as  
25 sprinkler conversions continue and conveyance losses

1 stay constant but project efficiencies stay flat, that  
2 must mean that operational spill rates have increased;  
3 right?

4 A. Well, that's one possibility, but there could  
5 be other operational factors that might enter into that,  
6 as I've indicated.

7 Q. You also state that: "It has been  
8 demonstrated herein that the project efficiency is  
9 reasonable."

10 Right?

11 A. Yes.

12 Q. How are you defining the term "reasonable"?

13 A. Well, the hypothetical calculation that  
14 Mr. Harris and I went through, I think, is a good  
15 foundation for that. There are just certain levels of  
16 system losses, if you will, that can be reasonably  
17 achieved. There's no set definition for reasonable, but  
18 there are, certainly -- I think the term has been  
19 used -- "industry standards" that can be used to define  
20 whether waste is going on. So my only point of that  
21 calculation was just to demonstrate how very easy it is  
22 for a large, slow-moving canal system to have  
23 efficiencies that are very low.

24 Q. And you agree that project efficiencies can  
25 change; right?

1 A. Yes.

2 Q. And you also agree that a project whose  
3 operations are reasonable at one point in time could at  
4 some point in the future cease to be reasonable?

5 A. No. That's -- I don't know about that.

6 Q. So as an example, just because something was  
7 reasonable in the year 1910 doesn't, necessarily, mean  
8 it's reasonable today; right?

9 A. Well, I believe the definition of reasonable  
10 is to compare it with current industry standards or  
11 current state of the art. I think I would generally  
12 agree with that.

13 Q. So if the technology changes, that could  
14 render an outdated operation no longer reasonable;  
15 right?

16 A. Possibly.

17 Q. Isn't it true that Twin Falls Canal Company's  
18 baseline year demands are equal to its 2018 diversions  
19 in the Fifth Methodology Order?

20 A. What are you asking me, if the Department  
21 chose 2018 as the baseline year?

22 Q. Yes.

23 A. That's true.

24 Q. And its diversions in that year are the  
25 baseline demand?

1 A. Correct.

2 Q. Isn't it also true that Twin Falls Canal  
3 Company claims to divert roughly 1,100,000 acre-feet  
4 annually?

5 A. I think that's the round number that is often  
6 cited or stated.

7 Q. Okay. So hypothetically here, when  
8 multiplying 1,100,000 acre-feet by an average project  
9 efficiency of .35, that equals an annual crop water need  
10 of roughly 385,000 acre-feet; right?

11 A. Yes.

12 Q. Now, in your example in your report, you  
13 arrived at a project efficiency of .42; right?

14 A. For that purely hypothetical example.

15 Q. Sure. So in my hypothetical, if you were to  
16 divide that calculated crop water need of  
17 385,000 acre-feet by a project efficiency of .42,  
18 doesn't that equal 917,000 acre-feet, roughly?

19 A. Yes.

20 Q. So if that crop water need were to stay  
21 consistent and the canal company in this hypothetical  
22 were to achieve a project efficiency of .42, its  
23 diversions could decrease by a magnitude of roughly  
24 200,000 acre-feet; right?

25 A. Yes.

1 Q. Doesn't that indicate that a change -- a minor  
2 change in project efficiencies -- we'll call it a few  
3 decimal places -- can make a significant difference in  
4 demand by a magnitude of tens of thousands of acre-feet?

5 A. Yes.

6 MR. BRICKER: That's all of the questions I  
7 have. Thank you.

8 HEARING OFFICER: Other questions from the  
9 groundwater group?

10 I don't see anybody.

11 Redirect, Mr. Thompson?

12 MR. THOMPSON: Good afternoon, Chuck. This is  
13 Travis Thompson back here for a few redirect questions.

14 THE WITNESS: Hey, Travis. I can see you this  
15 time, so that's good.

16 MR. THOMPSON: Good for you or me? I don't  
17 know.

18 THE WITNESS: Well, I don't know.

19  
20 REDIRECT EXAMINATION

21 QUESTIONS BY MR. THOMPSON:

22 Q. Can you -- you had a long discussion with  
23 Mr. Budge about irrigated acreage in the context of  
24 reasonable in-season demand and how that's calculated in  
25 the methodology.

1 Do you recall that?

2 A. I do.

3 Q. Can you provide a summary of your  
4 understanding?

5 A. Yes. Let me try to tidy this up because it's  
6 sort of been, I think, saved in a fractured manner. So  
7 let me try to summarize.

8 As a general principle for irrigation systems,  
9 of course the number of irrigated acres matters. You  
10 know, a diversion requirement is generally a requirement  
11 of irrigated acres. I don't think that's in dispute.

12 So my testimony is not that irrigated acres  
13 don't matter. But just looking at the mathematics  
14 outlined in the methodology that are required to make  
15 the reasonable in-season demand calculation right now  
16 for this year, the observed diversions are a given, and  
17 the historic project efficiencies are calculated as the  
18 consumptive irrigation requirement times the irrigated  
19 area divided by the observed diversions. Then the  
20 project efficiencies are used to calculate the  
21 reasonable in-season demand adjustments for this year.  
22 And, of course, the baseline year is not a function of  
23 acres at all.

24 So if the acreage s in the methodology are  
25 wrong, if you somehow knew that, then you would have to

1 go back and recalculate the historical project  
2 efficiencies, otherwise they would also be wrong. Then  
3 those different efficiencies will be used to calculate  
4 the reasonable in-season demand for this year.

5 Theoretically, the reasonable in-season demand  
6 calculated in that way might not change. Again, just  
7 talking about the specific calculation for this year.

8 Now, that may not exactly be true because  
9 things are confounded somewhat by the fact that the  
10 Department actually used different acres, historically,  
11 for some period in the past. And I have not delved into  
12 the guts of the reasonable in-season demand calculation  
13 spreadsheet to know exactly what it's doing. I'm just  
14 observing the mathematics in the methodology.

15 If the -- if a different acreage were used, it  
16 would not result in a direct proportional reduction in  
17 the reasonable in-season demand calculation for this  
18 year, as has been claimed.

19 So that's kind of a -- as tidy as I can make  
20 it a summary of how the acres play into or don't play  
21 into the calculation of the reasonable in-season demand.

22 MR. FLETCHER: Somebody needs to mute. They  
23 did.

24 Q. (BY MR. THOMPSON) Okay. Chuck, we're still  
25 here. Just had somebody, I think, that was off mute.



1           A.    Okay.

2           Q.    Did you hear the testimony of Jay Barlogi,  
3           that the Twin Falls Canal Company has over 100 miles of  
4           main canals and roughly 1,000 miles of laterals?

5           A.    I did.

6           Q.    And do you know the length of the lining  
7           project completed on the High Line in 2019 that  
8           Mr. Budge was discussing with you?

9           A.    I don't know the exact length.

10          Q.    I guess, would that be an important factor to  
11          consider to determine the impact on overall canal  
12          seepage?

13          A.    Yes.

14          Q.    And you've looked at the diversion data for  
15          large open canal systems in southern Idaho; is that  
16          correct?

17          A.    In general, yes.

18          Q.    Is 5 to 6 acre-feet per acre a reasonable  
19          diversion rate, in your opinion?

20          A.    Yes.

21          Q.    Getting back to these -- we talked about the  
22          regression analysis on trends and diversions for  
23          Twin Falls Canal Company.

24                    Do you recall that discussion?

25          A.    Yes.

1 Q. I think Mr. Harris pointed out to you the  
2 Fifth Methodology Order looking at a period of 1999 to  
3 2021.

4 A. Right.

5 Q. And do you recall if 2001 to 2005 were  
6 multiple years of drought?

7 A. Yes.

8 Q. Would those be considered years of limited  
9 supply?

10 A. I'm not sure if they all were, but, in  
11 general, yes.

12 Q. And I think Mr. Budge talked about a trend of  
13 -- 2015 to 2021 showing an increasing trend in  
14 diversion; is that correct?

15 A. I believe so.

16 Q. I guess by that same analysis, would -- what  
17 would 2020 through 2022 show?

18 A. Well, it's only three years, but they will be  
19 decreasing.

20 Q. So it certainly depends on the number of years  
21 and what you're looking at for a trend analysis; isn't  
22 that correct?

23 A. It does. That's correct.

24 Q. Mr. Budge asked you some questions about  
25 Exhibit 838.

1 Do you recall those?

2 A. Yes.

3 Q. And I think that was an exhibit that he had  
4 overlaid some red-shaded areas in.

5 Do you recall that?

6 A. I do.

7 Q. Would you agree that the interpretation of  
8 what is actually irrigated can vary depending upon the  
9 individual involved?

10 A. Yes, very much so.

11 Q. So an attorney's interpretation, like  
12 Mr. Budge's, could vary from an engineer's. Would you  
13 agree with that?

14 A. Yes, I agree with that.

15 Q. And the particular year could change what  
16 actually happens on the ground; is that correct?

17 A. Yes.

18 Q. So a corner left out of irrigation in 2021  
19 could actually be irrigated in 2023?

20 A. Yes, that's right.

21 Q. Finally, just a question Mr. Harris asked you  
22 about desiring to have more time to prepare your report  
23 in this case.

24 Do you recall that?

25 A. Yes.

1 Q. Do you work within the deadlines set for  
2 contested cases and adapt to what is required?

3 A. Oh, yes.

4 Q. Is that what you did here?

5 A. That's what I did here.

6 MR. THOMPSON: That's all of the questions I  
7 have.

8 Thank you, Chuck.

9 THE WITNESS: Thank you.

10 HEARING OFFICER: Recross, Mr. Budge?

11 Mr. Harris?

12 MR. HARRIS: I actually have just a couple.

13  
14 RE CROSS-EXAMINATION

15 QUESTIONS BY MR. HARRIS:

16 Q. Chuck, Rob Harris again.

17 Just to follow up, more of a foundational  
18 question to Mr. Thompson's question.

19 You said that you looked at the diversion data  
20 of large canals in southern Idaho.

21 What -- specifically, what canals were you  
22 looking at?

23 A. Well, let me clarify, Rob. Not for this case.  
24 My testimony is that I'm generally familiar with  
25 diversion data and volumes for large canal systems.

1 Q. Okay. And I guess, again, just a foundational  
2 question is: How are you familiar with those? Or what  
3 canals did you look at?

4 A. Just in the course of my general work. So it  
5 would be companies such as North Side -- excuse me --  
6 Aberdeen-Springfield and some of the other eastern Idaho  
7 canal systems.

8 Q. And North Side Canal Company is an on-demand  
9 system like Twin Falls Canal Company is; correct?

10 A. I believe so, yeah.

11 Q. And the tailwater from that system comes in  
12 below the Milner Dam into the Snake River Canyon?

13 A. Yes.

14 Q. Mr. Thompson asked you some questions about  
15 Exhibit 838 about those red-shaded areas and about  
16 individual interpretation, that it can be different.

17 Do you recall that testimony?

18 A. Yes.

19 Q. Would you say it's often different or -- based  
20 on the photos, you can typically see green vegetation  
21 growing to indicate it's growing; right?

22 A. You can. And then there are those areas that  
23 are not green and are subject to interpretation.

24 Q. But wasn't that the same process that was used  
25 in the Snake River Basin Adjudication to determine

1 irrigated acres, in your experience?

2 A. I think generally, yeah. I mean, they started  
3 as a -- from a -- as a first cut, if you will, looking  
4 at land that was green or showed an infrared signature  
5 and then applied some human brain power to look at some  
6 areas that may not have been so clear.

7 MR. HARRIS: That's all of the questions I  
8 have. Thank you.

9 HEARING OFFICER: Mr. Anderson --

10 THE WITNESS: Thank you.

11 HEARING OFFICER: Mr. Anderson, further  
12 questions?

13 MR. ANDERSON: No, Director. Thank you.

14 HEARING OFFICER: Mr. Bricker, further  
15 questions?

16 MR. BRICKER: Nope.

17 HEARING OFFICER: Any other recross?

18 All right. Thank you, Mr. Brockway, for  
19 participating today.

20 THE WITNESS: Thank you, Director. I  
21 appreciate you for accommodating my situation here.

22 HEARING OFFICER: Yep.

23 Next witness.

24 MR. THOMPSON: The Surface Water Coalition  
25 will call Dave Shaw.

1 HEARING OFFICER: Mr. Shaw, if you'll come  
2 forward, please.

3  
4 DAVID B. SHAW, P.E.,  
5 called by the Surface Water Coalition, having been first  
6 duly sworn to tell the truth relating to said cause,  
7 testified as follows:

8  
9 HEARING OFFICER: Thank you. Please be  
10 seated.

11 Mr. Thompson?

12 MR. THOMPSON: Thank you, Director.

13  
14 DIRECT EXAMINATION

15 QUESTIONS BY MR. THOMPSON:

16 Q. Dave, could you please state and spell your  
17 name for the record.

18 A. David, D-a-v-i-d, middle initial "B" as in  
19 "boy," Shaw, S-h-a-w.

20 Q. And where do you currently work?

21 A. I work for ERO Resources Corporation.

22 Q. And what is your occupation?

23 A. I'm an engineer.

24 Q. Is your CV attached to what's been labeled as  
25 Exhibit 4 in this case?

1           A. Yes, it was.

2           Q. Does that generally describe your education  
3 and work history?

4           A. It hits the high spot, yes.

5           Q. Have you been qualified as an expert witness  
6 before IDWR in prior cases?

7           A. Yes.

8           Q. Can you generally describe what you were asked  
9 to do for the report identified as Exhibit 4?

10           MR. HARRIS: Director, real quick.

11           Dave, could you pull the microphone a little  
12 closer just so we can hear a little better.

13           Thank you.

14           THE WITNESS: I was asked to look at the  
15 methodology order and the As-Applied Order and evaluate  
16 its implementation.

17           Q. (BY MR. THOMPSON) And if you could turn to  
18 that Exhibit 4, page 7. It should be behind you.

19           A. Okay.

20           Q. Does that Part C of pages 7 through 11  
21 generally reflect your work product in this report?

22           A. Yes, it is.

23           Q. And can you describe those opinions that  
24 you've offered there?

25           A. This was as a result of looking at



1 efficiencies. Mr. Sullivan and others were looking at  
2 the efficiencies and trying to do a trend analysis for  
3 changes in efficiencies over time. I thought it would  
4 be important to look at how the efficiencies were  
5 calculated, and that's primarily where I focused my  
6 effort.

7 Efficiency, I think everyone has talked about  
8 it before, it's crop water need times acres divided by  
9 diversion. Acres has been discussed here a lot. Crop  
10 water need, not so much. We know AgriMet is used for  
11 the ET values. Mr. Sullivan called them a CIR,  
12 consumptive irrigation requirement. But there wasn't --  
13 hasn't been such discussion about crop mix. And that's  
14 also an important element in determining water use  
15 efficiency and crop water need.

16 Q. And is that crop data layer, is that CDL data  
17 that the Department uses?

18 A. The Department's used that since 2007. Prior  
19 to 2007, that data was not available. The information  
20 was reported on a countywide average. My recollection  
21 is the Department averaged the crop mix for the county  
22 or counties in which a delivery organization was  
23 located, and then from that, created some kind of an  
24 average that they used for the water delivery  
25 organization.

1 Q. And do you have some recommendations on the  
2 use of that data in the methodology going forward?

3 A. I do.

4 Q. And could you describe those?

5 A. My understanding of the current methodology  
6 and the technical work group was provided with a copy of  
7 what IDWR calls their calculator worksheet during the  
8 TWG meetings during last fall and winter.

9 My understanding is for the period 2000  
10 through 2014, the crop mix for all of those years has  
11 been averaged together. So any trends, changes over  
12 time, have been lost. So the crop water need is  
13 calculated by the ET or CIR for a particular year  
14 against an average of the crops that have been raised  
15 over that 2000-to-2014 period.

16 Starting in 2015, IDWR took the prior three  
17 years -- so '12, '13, and '14 -- averaged that crop mix  
18 or those crop mixes and then used that average to  
19 calculate crop water need for 2015, and that's continued  
20 through last year.

21 Q. And does that data become available like as  
22 the actual data at the end of the year?

23 A. I understand it's available after the first of  
24 the year, so 2023 data will be available January 2024.

25 Q. And is there a question whether they'd go back

1 and insert the actual data into that number?

2 A. To have a true estimate of system efficiency,  
3 yes, they need to use the crop mix for the year they're  
4 using the diversion data from.

5 Q. Can you generally describe Figure 6 on  
6 page 11, what that depicts?

7 A. This is an estimate of alfalfa and corn from  
8 the CDL data for Twin Falls Canal Company for the period  
9 2007 through 2022.

10 And then there's a third line that are the  
11 diversions for Twin Falls Canal Company adjusted for  
12 recharge.

13 And it shows the trends of increasing both  
14 alfalfa and corn, and there's a slight increase in  
15 diversion. I did not test it to see if it was  
16 significant or not.

17 Q. Those graphs confirm what you heard from  
18 Twin Falls Canal Company's manager Jay Barlogi earlier  
19 this week?

20 A. He has said there have been recent increases  
21 in alfalfa and corn, yes.

22 Q. And does that sort of crop mix, increases in  
23 those type of crops, impact water demand within the  
24 project?

25 A. It does. Alfalfa, Twin Falls AgriMet on

1 average is a little over 40 inches per year. Small  
2 grains -- wheat, oats, barley -- is low, 20 inches per  
3 year. So not quite 100 percent increase, but pretty  
4 significant increase going from small grains, for  
5 example, to alfalfa. Corn is in the upper 20s, lower  
6 30, so even going from small grain to corn is roughly a  
7 50 percent increase.

8 Q. And do you have any comments on, I guess,  
9 challenges with project efficiency in large, open canal  
10 systems?

11 A. I've heard there are challenges, yes.

12 Q. Do you have familiarity and experience with  
13 large, open canal systems in Idaho?

14 A. I do.

15 Q. And do you have any opinions on how the  
16 Twin Falls Canal Company operates and maintains its  
17 system?

18 A. Compared to other water delivery organizations  
19 I've seen in Idaho, I think they're well-managed. They  
20 do a good job with maintenance. I think their delivery  
21 system and their plan for delivery is reasonable.

22 MR. THOMPSON: I don't have any other  
23 questions. We'd just tender Mr. Shaw as an expert in  
24 the fields that he testified to in his report.

25 HEARING OFFICER: Excuse me. You want

1 Mr. Shaw recognized?

2 MR. THOMPSON: As an expert for the subjects  
3 that he's testified to in his report.

4 HEARING OFFICER: And I believe the parties  
5 have stipulated to recognize Mr. Shaw as an expert, so  
6 he is so recognized.

7 No further questions, Mr. Thompson?

8 MR. THOMPSON: No, thank you.

9 HEARING OFFICER: Cross-examination?

10 Mr. Budge?

11

12 CROSS-EXAMINATION

13 QUESTIONS BY MR. BUDGE:

14 Q. Good afternoon, Dave. How are you?

15 A. Good, TJ. How are you?

16 Q. Very good. Thank you.

17 A. Besides wanting to go home.

18 Q. Yeah, I'm looking forward to that.

19 MR. FLETCHER: It's all up to you, TJ.

20 MR. BUDGE: It's only going to take me ten  
21 minutes, Kent.

22 MR. FLETCHER: Oh, gosh, the TJ multiplier  
23 coming on.

24 Q. (BY MR. BUDGE) Dave, if would please turn to  
25 page 2 of your report for the heading "Evaluation of

1 TFCC Project Acres."

2 A. What page was that?

3 Q. It's just on the second page. It's heading A.  
4 Are you looking at Exhibit 4?

5 A. I am.

6 Q. And this is part of the expert report that you  
7 submitted?

8 A. Yes.

9 Q. And do you see at the top of page 2 a  
10 heading A?

11 A. Yes.

12 Q. Titled "Evaluation of TFCC Project Acres"?

13 A. Oh, okay. Yes.

14 Q. You were here when I discussed this with  
15 Mr. Brockway earlier today?

16 A. Yes.

17 Q. You recall I was asking him about the process  
18 used to create the 2013 GIS shapefile of Twin Falls  
19 Canal Company's irrigated lands?

20 A. Yes.

21 Q. And I understand that you participated in  
22 developing that shapefile?

23 A. Yes, I did.

24 Q. Can you explain the process that you went  
25 through to develop that?

1           A. As we looked at both 2011 and, I believe, 2013  
2 aerial photography, we had done some prior work for  
3 Twin Falls where we had some historical photography  
4 for -- I think mostly areas along the boundary of the  
5 delivery organization, so we had some history on what  
6 had happened on some of those lands. So we tried to,  
7 very carefully, identify acres that were either  
8 irrigated in 2011 or 2013 or appeared they had been  
9 irrigated in recent years.

10           Q. And the data that went into that was you had  
11 aerial photography, I understand?

12           A. Yes.

13           Q. Or was it satellite imagery?

14           A. Aerial photography.

15           Q. Aerial photography.

16                   And then you said on the fringes of the  
17 company, you had some other type of information. Could  
18 you clarify what that was?

19           A. Yes. We had some historical photography, some  
20 old black-and-white photos from Department of Ag.

21           Q. Okay. And your goal was to identify acres  
22 that were irrigated or had been irrigated in years past?

23           A. In recent years past, yes.

24           Q. Going how far back?

25           A. Well, the oldest photography I recall we used

1 was 2011, so it would have been that.

2 Q. And if you'll turn to page 5 of your report.

3 A. Okay.

4 Q. And my understanding is this is an aerial  
5 image of a portion of Twin Falls Canal Company's service  
6 area that shows which -- that uses highlighting to  
7 identify which lands were shown as irrigated in the 2013  
8 GIS map versus which lands are shown as irrigated under  
9 the Department's 2017 irrigated lands dataset; is that  
10 correct?

11 A. That's my understanding also, yes.

12 Q. So if I want to use this map to understand  
13 just what was identified as irrigated in the 2013 GIS  
14 shapefile, I should consider everything with blue  
15 highlighting and yellow highlighting as having been  
16 identified as irrigated lands in the 2013 shapefile?

17 A. Yes. It looks like there's some yellow over  
18 the top of some of what we had already excluded. So it  
19 isn't everything that was yellow.

20 Q. So this photograph with the highlighting in  
21 blue, it has "2017 Irrigated Shape."

22 Do you see that?

23 A. Yes.

24 Q. So am I understanding correctly that  
25 everything in blue is identified as irrigated lands in



1 the 2017 dataset?

2 A. That's my understanding, yes.

3 Q. And then the yellow there in the legend says  
4 "2017 Difference." My understanding from talking to  
5 Mr. Brockway is that the land identified in yellow was  
6 shown as irrigated in the 2013 GIS shapefile but is not  
7 shown as irrigated in the 2017 dataset.

8 Am I understanding that correctly?

9 A. I don't think so. If you look at -- this is  
10 laying on its side, but the north/south yellow line kind  
11 of through the middle, some of those -- some of that  
12 area shows up as not being irrigated in the 2013  
13 dataset, but is kind of merged with the yellow.

14 Q. Yes, I see that. So if I look approximately  
15 in the center of the image, there's a horizontal sliver  
16 that's not highlighted with either blue or yellow.

17 Do you see that?

18 A. Yes.

19 Q. And my understanding is that is the roadway  
20 that had been excluded from the 2013 GIS analysis?

21 A. That's correct.

22 Q. And just north of that excluded sliver there's  
23 a yellow parallel sliver, it's highlighted yellow that  
24 refers to a roadway.

25 Is it your assumption that that roadway

1 identified in yellow, that's parallel, is the roadway  
2 that was excluded in 2013?

3 A. The area that has no color on it is what was  
4 excluded in 2013.

5 Q. Okay. And you heard me discuss with  
6 Mr. Brockway or identify a number of farmsteads, and  
7 there's a subdivision or development that shows as being  
8 irrigated under the 2013 GIS shapefile?

9 A. Yes.

10 Q. And none of those farmsteads were excluded  
11 from the 2013 GIS shapefile at least in this section of  
12 the service area; correct?

13 A. Yeah, I don't have that in front of me. But,  
14 yes, I understand that.

15 Q. As a general rule, when you were creating the  
16 2013 GIS shapefile, you did not exclude these  
17 residential properties that I've referred to as  
18 "farmsteads"?

19 A. No, I -- I think I tried to exclude hardened  
20 areas around farmsteads if there were large buildings or  
21 something like that.

22 Q. Okay. But none of those are excluded from  
23 either of these images?

24 A. Not from these images, no.

25 Q. Okay. And where there were subdivisions that

1 had been developed within the canal company service  
2 area, did you go through and carve out the roads and  
3 houses, or did you include the subdivision?

4 A. It's been too long, TJ. I remember I excluded  
5 the whole Twin Falls metropolitan area, but I can't  
6 remember for sure what we did with subdivisions.

7 Q. Okay. Generally, you were excluding land that  
8 was not capable at all of being irrigated, like parking  
9 lots and roads, things like that?

10 A. Yes.

11 Q. If it was irrigated or was capable of being  
12 irrigated, you generally included those lands?

13 A. Yes.

14 Q. As part of your analysis, you did not make an  
15 evaluation of supplemental groundwater rights within the  
16 company's service area?

17 A. That's correct.

18 Q. Did you compare your -- the 2013 GIS shapefile  
19 with company water delivery records to see if service  
20 water deliveries corresponded with the shapefile?

21 A. I didn't do that. Mr. Barlogi, at the time,  
22 was working in the central office, and I worked with him  
23 to get -- to do that kind of analysis and review what I  
24 had done.

25 Q. And you're not sure what he did in that

1 regard?

2 A. I'm not.

3 Q. You could have, with some additional time and  
4 effort, carved out farmsteads and subdivision roads and  
5 things like that if you had been asked to do that?

6 A. Well, at least as they existed in 2013,  
7 whatever the latest photography we had.

8 Q. And had you been asked to make an analysis of  
9 supplemental groundwater use, you had the ability to do  
10 that at that time?

11 A. Well, you could make an estimate. I've worked  
12 with place-of-use shapefiles from IDWR in other areas,  
13 and I keep being reminded not to put a lot of confidence  
14 in them.

15 I've also worked with WMIS data in other  
16 areas, and it's difficult to get like minds to agree on  
17 what the numbers are.

18 Q. You're familiar with the WMIS database?

19 A. Somewhat, yes.

20 Q. And, of course, you're very familiar with the  
21 Department's water rights database?

22 A. Yes.

23 Q. And if somebody asked you to do your best to  
24 analyze the extent of supplemental groundwater  
25 irrigation, it's within your expertise to do that?

1 A. Yes.

2 Q. But you've not been asked to do that for  
3 Twin Falls Canal Company?

4 A. That's correct.

5 Q. When that 2013 shapefile was created, I  
6 understand that was created strictly by Twin Falls Canal  
7 Company personnel and their consultants?

8 A. Yes.

9 Q. The Department was not involved as part of a  
10 collaborative process?

11 A. That's correct.

12 Q. And groundwater users or others were also not  
13 involved in that process?

14 A. That's correct.

15 Q. You understood at that time that it would  
16 benefit Twin Falls Canal Company to have as many acres  
17 identified as being irrigated as possible?

18 A. My direction was to accurately identify the  
19 acres being irrigated.

20 Q. I understand that, but you did understand that  
21 it would benefit the company to have as many acres  
22 identified as irrigated as possible?

23 A. Well, within their decree, yes.

24 MR. BUDGE: Okay. I have no further  
25 questions. Thank you.

1                   Thanks, Dave.

2                   HEARING OFFICER: Further cross-examination of  
3 Mr. Shaw?

4                   Mr. Bromley?

5                   MR. BROMLEY: Just a few.

6

7                                   CROSS-EXAMINATION

8                   QUESTIONS BY MR. BROMLEY:

9                   Q. Hi, Mr. Shaw.

10                  A. Mr. Bromley.

11                  Q. Okay. Figure 5 --

12                               Do you have your report there? It's on  
13 page --

14                  A. Yes.

15                  Q. -- page 9.

16                               So the Department's using the average of the  
17 three preceding years to determine the crop mix; is that  
18 correct?

19                  A. That's the average crop mix, yes.

20                  Q. But the Department's using the reference ET  
21 from the current year and methodology; correct?

22                  A. Correct.

23                  Q. So isn't it true that the differences between  
24 the 2018 to 2020 line and the 2021 line in Figure 5 are  
25 largely due to discrepancies in reference ET between

1 those years not due to differences in cropping?

2 A. And this is just for illustration purposes to  
3 show the difference that can occur between a three-year  
4 average and the next year.

5 Unfortunately, I didn't have CDL data to show  
6 here. So it's simply for illustration purposes.

7 Q. Thank you.

8 At the top of page 10, the first full  
9 sentence, I'll just go ahead and read that.

10 It says: "In Manager Barlogi's deposition we  
11 heard about the continual improvements being implemented  
12 by the Twin Falls Canal Co. (TFCC), and when CWN's were  
13 appropriately calculated, we believe those improvements  
14 will show continued reasonable use of the water  
15 resource."

16 Do you see that?

17 A. Yes.

18 Q. But as Dr. Brockway testified, if Twin Falls  
19 Canal Company doesn't actually reduce its diversions,  
20 then those improvements won't have any effect on the  
21 efficiencies used in the methodology; correct?

22 A. No. That was a no. Okay.

23 Q. Thank you.

24 All right. Let's look at the bottom of  
25 page 10, the last full sentence there, Mr. Shaw. And

1 I'll go ahead and read that.

2 A. I think we're -- maybe we're talking past each  
3 other.

4 Q. Okay.

5 A. I did not agree with Dr. Brockway.

6 Q. Oh, you don't agree with Dr. Brockway?

7 A. No.

8 Q. How is that?

9 A. Can you read your original question back to  
10 me?

11 Q. Sure thing. Absolutely.

12 So what we heard Dr. Brockway testify to a few  
13 times, both on cross with Mr. Harris and then, again,  
14 on, I believe, with City of Pocatello's attorney and,  
15 possibly, then with groundwater district's attorney, was  
16 that a number of statements that if Twin Falls Canal  
17 Company doesn't reduce its diversions, then a lot of  
18 what goes on in the calculations and the methodology  
19 order just continue to show increased need, even if, for  
20 example, acreage was reduced.

21 A. But if increases on diversions are necessary  
22 to meet increased crop demand because of improved  
23 efficiency from sprinklers or raising more  
24 water-intensive crops, then that would show up in  
25 improved efficiency, but it would not reduce diversions.



1 Q. Okay. So let me just ask the question one  
2 last time. And just answer it, please, so we can make  
3 sure that we're not talking past one another and that I  
4 didn't mishear what you said and you didn't mishear the  
5 question.

6 So as Dr. Brockway testified, if the canal  
7 company doesn't reduce its diversions, then these  
8 improvements won't have any effect on the efficiencies  
9 used in the methodology; correct?

10 A. No, I don't think that is correct.

11 Q. So at bottom of page 10, then, I'll just read  
12 this sentence -- the last sentence at the bottom of  
13 page 10.

14 "Figure 6 below shows the changes in alfalfa  
15 and corn acres since 2007 along with an increase in  
16 diversions by Twin Falls Canal Company to meet the  
17 demands of the more water-intensive crops."

18 And then we flip over to the next page, and we  
19 see Figure 6. So Figure 6 is a little "apples and  
20 oranges," isn't it? Because you're comparing alfalfa  
21 and corn acres to Twin Falls Canal Company diversions in  
22 acre-feet; correct?

23 A. Correct. That's why there are two y-axes.

24 Q. So you haven't actually computed the effect  
25 that the changes in alfalfa and corn acres has on crop

1 water need in acre-feet, have you?

2 A. No, I haven't.

3 Q. Still on page 11, Mr. Shaw, above paragraph D,  
4 the last paragraph there, there's discussion about  
5 changes in delivery that have occurred within the area  
6 of A&B Irrigation District.

7 Do you see that?

8 A. Yes, I do.

9 Q. Do you know if the A&B water rights have been  
10 updated through transfers to allow for surface water use  
11 on Unit B?

12 A. My recollection is they have a new permit for  
13 those acres.

14 Q. So this is the pipeline, then, from the river  
15 that's bringing surface water into some of those acres  
16 on Unit B?

17 A. Yes.

18 Q. Okay. When I read it, it was a little unclear  
19 to me if it was using -- I guess I would say, more  
20 senior A&B rights for irrigation.

21 But you've answered my question, which is it's  
22 that pipeline.

23 A. Yes.

24 Q. So thank you for that.

25 In your direct with Mr. Thompson, you said

1 Twin Falls Canal Company is a well-managed company  
2 compared to other Idaho canal systems.

3 Do you remember that?

4 A. I do.

5 Q. Have any of the systems that you were thinking  
6 of placed delivery calls?

7 A. Well, on some of those systems there are  
8 people shut off every year to supply water for the  
9 canal. That could be managed better.

10 Q. Okay. But have any of those companies filed a  
11 delivery call under the conjunctive management rules?

12 A. I don't know.

13 Q. Thank you.

14 Let's flip back to page 2, and this is  
15 paragraph 7.

16 And it says: "The company's" -- I'm sorry.  
17 Let's go to the second sentence of paragraph 7.

18 "The company has no way of knowing whether  
19 land covered by shares will or will not be irrigated and  
20 must prepare to meet the share delivery obligation."

21 Do you see that?

22 A. I do.

23 Q. Wouldn't you agree, based on your experience,  
24 Mr. Shaw, that farmers typically know which lands will  
25 be irrigated prior to the irrigation season because

1 they've already made cropping decisions, bought seed,  
2 bought chemicals?

3 A. Typically, yes.

4 Q. And in your experience for permissible places  
5 of use, is it a typical condition that the Department  
6 sometimes places, on rights with PPU's, to notify the  
7 Department as to which acres are going to be irrigated?

8 A. If there is a --

9 COURT REPORTER: Okay. Wait. I didn't hear  
10 that.

11 THE WITNESS: If there is a permissible place  
12 of use placed on the water right, then, yes, to  
13 Mr. Bromley's question.

14 Q. (BY MR. BROMLEY) So wouldn't it be reasonable  
15 for the company to ask its shareholders to notify it  
16 over the winter as to which acres will be irrigated and  
17 what crops will be planted?

18 A. No. I think it's up to the water user. If I  
19 am a water user, like Mr. Barlogi says, this is going to  
20 be a short year, and I've got 80 acres in new alfalfa  
21 and 40 acres of winter wheat, and I was going to plant  
22 potatoes but decided, no, I'll save my water for the  
23 crops I've got in the ground, I'm not going to irrigate  
24 that 40. And I wouldn't get my full water delivery,  
25 whatever it happens to be for the year, and I don't

1 think that matters to the companies.

2 Q. Okay. When I go over your Section 5 on crop  
3 water need, Mr. Shaw, I see a lot of suggestions to the  
4 Department as to how to get better and use more current  
5 data to better understand crop water need.

6 Is that a fair summary of what you're asking?

7 A. Yes.

8 Q. And then in Part A, though, of your report  
9 about Surface Water Coalition irrigated area,  
10 particularly Twin Falls Canal Company, you're advocating  
11 to use the 2017 shapefile for irrigated area for  
12 Twin Falls Canal Company; correct?

13 A. Not the 2017 shapefile, I don't believe.

14 Q. So you're using the 2017 shapefile, and then  
15 what are you doing with it?

16 A. We took the 2017 -- Mr. Brockway --  
17 Dr. Brockway and his shop the 2017 raster irrigated  
18 lands dataset and overlaid it over the 2013 shape that  
19 had been prepared for Twin Falls Canal Company. I don't  
20 think there's a recommendation that the 2017 be the  
21 determination of acres for Twin Falls Canal Company.

22 Q. So the methodology order is using 2017 acres,  
23 the 2017 shapefile; correct?

24 A. No.

25 Q. No?

1           A. To my understanding, it's using the  
2 194,000 acres from the 2013.

3           Q. Oh, that's correct. I'm sorry. That's a bad  
4 question.

5           So what you're advocating, though, for, with  
6 acres, is something that's from 2013, 2017 that's old  
7 data; correct?

8           A. Yeah. Well, its four years old, yes.

9           Q. But with crop water need, you're asking for  
10 current data, last year's data, as recent data as you  
11 can get; correct?

12          A. Well, crop water -- crop mixes can change from  
13 year to year, we know that, and that's a critical  
14 element in calculating crop water need that hasn't been,  
15 in my opinion, appropriately used. Irrigated acres may  
16 change over time. If there were resources to update  
17 that shapefile every year, you would have -- that would  
18 be the best solution. But we haven't seen that happen.

19          Q. And it would be seem to be consistent that if  
20 we're looking for use of best available information to  
21 use, in fact, what is best available information;  
22 correct?

23          A. And right now that's the 2013 shape.

24          Q. Even though that's from 2013 and we're in  
25 2022?

1 A. That's the best available we have, yes.

2 MR. BROMLEY: Nothing further. Thank you.

3 HEARING OFFICER: Additional  
4 cross-examination?

5 I don't see any hands in the air.

6 Redirect, Mr. Thompson?

7 MR. THOMPSON: I don't have anything.

8 HEARING OFFICER: Okay. Thank you, Mr. Shaw.  
9 Next witness?

10 Do we have another witness? I'm looking at  
11 the list, and I don't recall whether Alan Jackson  
12 intended to testify, whether the parties intended to  
13 call Alan Jackson.

14 MR. ANDERSON: No.

15 HEARING OFFICER: Do not intend to call  
16 Mr. Jackson?

17 MR. ANDERSON: No.

18 HEARING OFFICER: Are there any other  
19 witnesses slated to be called?

20 Mr. Anderson?

21 MR. ANDERSON: I don't think so. I just had a  
22 quick offer of proof I was going to put into the record.

23 HEARING OFFICER: Okay.

24 MR. ANDERSON: If that's appropriate now. I  
25 don't think we have any -- I created a quick outline

1 just to make it quick. I know we're -- it's Friday.

2 HEARING OFFICER: Well, in addition, I think  
3 we may have some rebuttal witnesses.

4 MR. ANDERSON: Right.

5 MR. FLETCHER: So far everyone said they don't  
6 have any rebuttal.

7 HEARING OFFICER: Well, I think the Department  
8 intends to recall Matt Anders, at least.

9 MR. ANDERSON: Well, I would think this would  
10 be appropriate before case in chief, if that's all  
11 right?

12 Just some quick background, Director. We have  
13 requested Mat Weaver as a witness; that was denied.

14 There are two exhibits identified in the  
15 City's exhibits -- one is Exhibit 340, one is 354 -- and  
16 then there are some questions and topics that would have  
17 come out of those exhibits. I've put those in outline  
18 form. I'd just like to offer that as an offer of proof.

19 MS. MCHUGH: You're offering those two  
20 exhibits as the offer of proof?

21 MR. ANDERSON: Well, and the information, as  
22 well, contained in the outline. Along with those  
23 exhibits, there would have been questions, had he been  
24 made available as a witness.

25 MR. FLETCHER: Can we address that?



1 HEARING OFFICER: Yeah. I don't even  
2 understand what I have in front of me.

3 MR. ANDERSON: Sure. I can explain a little  
4 bit.

5 Just in offering the exhibits as well as the  
6 not being able to question Mat Weaver and not having him  
7 made available as a witness, this is the evidence that  
8 we believe he would be able to testify to. He would  
9 have answers to these questions. We believe that  
10 they're relevant to the methodology order, to the  
11 amendments made.

12 Both of these exhibits show examples of  
13 information about the methodology order to individuals  
14 outside the Department and also gathering information  
15 from individuals outside the Department, and so that's  
16 why. That's the gist of our offer of proof. If there  
17 are any questions, I can go into further detail.

18 HEARING OFFICER: Mr. Fletcher?

19 MR. FLETCHER: Yeah, we'd move to strike this  
20 and these exhibits. These were settlement documents.  
21 They say right on the documents they're for purposes of  
22 settlement discussion.

23 We just had a hearing in front of the Director  
24 where this issue came up about trying to present  
25 settlement discussion topics to the Director, and the

1 Director ruled that no settlement discussion would be  
2 allowed, and this is a backdoor attempt to do that very  
3 thing. And so we would ask that this be stricken from  
4 the record and that it not be considered since it is  
5 purely settlement discussion material.

6 MR. ANDERSON: If I could address that?

7 HEARING OFFICER: Okay, Mr. Anderson.

8 MR. ANDERSON: I don't think we're offering  
9 this for the proof of the matter. There's nothing about  
10 these documents that we're saying, you know, that you  
11 need to consider even the content of the documents.  
12 What we're saying here is there's evidence that --  
13 information from the settlement agreement was used in  
14 the amendments of the methodology order.

15 HEARING OFFICER: By what? By a string of  
16 emails?

17 MR. ANDERSON: Well, the string of emails  
18 suggests that there was -- that the negotiations will  
19 inform the urgency of the finalization of the amendment  
20 to the methodology order. That suggests that there was  
21 information that came from the negotiations and, again,  
22 as far as settlement -- the privilege of settlement  
23 documents and settlement negotiations, again, we're not  
24 offering this for the proof of the matter. It's to show  
25 that information was used from those settlement

1 agreements to go to the methodology order. I think it's  
2 completely different, and it's not excluded by that  
3 evidentiary rule.

4 HEARING OFFICER: Okay. Mr. Anderson, I'm not  
5 even accepting this. I will tell you that I am always  
6 meeting with staff trying to establish priorities as to  
7 what I need to work on and what I don't need to work on,  
8 and that's what I'm doing here.

9 MR. ANDERSON: Well, I'm not intending to try  
10 to make you a witness, Director. I just -- this is  
11 information that was disclosed to us as part of a  
12 request.

13 HEARING OFFICER: That's fine. And we  
14 supplied this information in good faith, but I don't see  
15 anything in this that would either establish any  
16 nefarious intent or any reason to bring in this document  
17 that was -- I've never seen this document that I'm aware  
18 of. SWC discussion points, main discussion points, I've  
19 never seen any of this, and I think it's because it was  
20 part of settlement, and I was excluded from those  
21 discussions.

22 So my string of emails in here and what's  
23 included simply was an attempt on my part to say what do  
24 we need to prioritize and work on in the many  
25 responsibilities that the Department and the Director

1 has, and that was the intent of these emails. And we  
2 disclosed them in good faith, and I guess, from my  
3 perspective, for you to even insinuate that there was  
4 something nefarious, I find to be offensive, and I won't  
5 let it in. Thank you.

6 MR. ANDERSON: Okay.

7 HEARING OFFICER: Make sure we don't have that  
8 in the documents.

9 Okay. Rebuttal witnesses, Mr. Johns?

10 MR. JOHNS: I'd like to call Bryce Contor to  
11 rebut Mr. Brockway and Mr. Shaw's testimony, just  
12 briefly.

13 HEARING OFFICER: Do you want to wait until  
14 after Mr. Anders testifies, or do you want to call him  
15 now? I guess in the order of presentation, I'd prefer  
16 to have Mr. Anders go first.

17 MR. JOHNS: That works.

18 HEARING OFFICER: It seems to me it would work  
19 better for you as well.

20 MR. JOHNS: I think so. Thank you,  
21 Mr. Director.

22 HEARING OFFICER: There's Matt Anders.

23 If you'll come forward, Mr. Anders. You're  
24 already sworn in.

25 THE WITNESS: Oh, all right.

1 HEARING OFFICER: Please be seated.

2  
3 MATTHEW ANDERS, P.G.,  
4 called as a rebuttal witness by IDWR having been  
5 previously duly sworn to tell the truth relating to said  
6 cause, testified as follows:  
7

8 DIRECT EXAMINATION

9 QUESTIONS BY MR. WOOD:

10 Q. Hello, Matt.

11 A. Good afternoon.

12 Q. I realize you've already testified in this  
13 matter, but can you please state and spell your name for  
14 the record one last time.

15 A. Sure. Matt Anders, M-a-t-t, A-n-d-e-r-s.

16 Q. And can you briefly tell us where you work and  
17 what role you played in developing the Fifth Methodology  
18 Order?

19 A. Yeah, I work for the Idaho Department of Water  
20 Resources. I did research and development on some of  
21 the methods in updating the method in the Fifth  
22 Methodology Order. I also participated in drafting  
23 portions of the order.

24 Q. And did you listen to the testimony of Bryce  
25 Contor and Sophia Sigstedt yesterday?

1 A. I did.

2 Q. Matt, can you please find Ms. Sigstedt's  
3 expert report which was previously admitted as  
4 Exhibit 837. And I'll have you turn to page 20 --  
5 Exhibit 837, page 20, not page 16 of her report.

6 A. Page 20, I'm there.

7 Q. And does that have a bell-shaped figure at the  
8 top?

9 A. Yep, a blue one.

10 Q. And can you please find the sentence about  
11 halfway down the first paragraph that reads, "for 2018  
12 there is a note"?

13 A. Yes, I see it.

14 HEARING OFFICER: Where are you again? I'm  
15 sorry.

16 MR. WOOD: Yeah. So it's Exhibit 837,  
17 page 20, but realizing that there's -- the document has  
18 two different page numbers on it. So this one says  
19 "Exhibit 837, page 20" as opposed to the actual number  
20 of the document, which is 16.

21 HEARING OFFICER: I'm with you.

22 Q. (BY MR. WOOD) And can you find that sentence  
23 about halfway down that starts, "For 2018 there is a  
24 note"?

25 A. Yes, I found it.

1 Q. Can you please read that sentence into the  
2 record.

3 A. "For 2018 there is a note about AFRD2  
4 recharging between 5,000 - 10,000 acre-feet of recharge  
5 to Mile Post 31 for Magic Valley Ground Water District,  
6 and the calculation shows only 5,000 acre-feet of  
7 recharge was accounted for."

8 Q. And what is your understanding of what  
9 Ms. Sigstedt meant by that sentence?

10 A. My interpretation is that she's saying that we  
11 have missed or not adjusted the diversion for AFRD2 for  
12 5,000 acre-feet.

13 Q. And have you had a chance to investigate that  
14 allegation?

15 A. I did.

16 Q. And what was your conclusion?

17 A. So after Ms. Sigstedt's testimony yesterday,  
18 Kara Ferguson and I looked through the calculator, and  
19 we found the note that she was referring to. And it's  
20 on the "Demand" tab, and it's where we're adjusting the  
21 demand for recharge and wheeled water.

22 And we looked at it, and she is correct, there  
23 was an adjustment for 5,000 based on the recharge -- the  
24 way we do our recharge adjustments. In this case, for  
25 recharge, it's a subtraction.

1           But we also found that in what we call the  
2 "adjustment side," the adjustments coming from -- the  
3 lease is coming from Water District 1. There were two  
4 private leases in there as well, for 10,000 acre-feet.

5           So what we concluded was that -- what we  
6 should have done was subtract 10,000 acre-feet from  
7 AFRD2's diversion in 2018 for this recharge that she is  
8 referring to.

9           In actuality, we subtracted 15,000. And we  
10 think that's because the data are coming to us from two  
11 different places. We get them from the recharge program  
12 here at IDWR, and we get them from Water District 1.  
13 And those leases and that note were referring to the  
14 same water, but we didn't realize it. So we subtracted  
15 too much from AFRD2 in that case. So there is an error  
16 in our baseline year for AFRD2. It's 5,000 acre-feet  
17 too low.

18           Q. Too low?

19           A. Yes.

20           Q. Can you please read the next sentence, the one  
21 starting with "Additionally, IGWA's settlement."

22           A. Okay. "Additionally, IGWA's settlement  
23 performance report shows almost 4,000 acre-feet of  
24 recharge by North Snake Groundwater District through  
25 North Side Canal Company that is not accounted."



1 Q. And what is your understanding of what  
2 Ms. Sigstedt meant by that sentence?

3 A. Similar to the previous line, she thinks  
4 that -- or my interpretation is she thinks we have -- we  
5 missed making an adjustment for 5,000 acre-feet of  
6 recharge for Magic Valley.

7 Q. And have you had a chance to investigate this  
8 allegation?

9 A. We did.

10 Q. And what did you conclude?

11 A. So, again, we -- after her testimony  
12 yesterday, we were looking through the adjustments for  
13 Magic Valley Ground Water District -- maybe I should  
14 back up.

15 So we recorded the baseline year at the  
16 technical working group. And based on discussions with  
17 the technical working group, we decided we needed to go  
18 back through the adjustments and make sure that we had  
19 everything. Because we were going to use 2018 as a  
20 baseline year.

21 In that second review, Kara found that we had  
22 missed this 4,000 acre-feet that Ms. Sigstedt is  
23 referring to. So at the time of the technical working  
24 group, we didn't have it in the baseline there. We  
25 hadn't made the subtraction. But for the Fifth

1 Methodology Order, we did do the subtraction.

2 So there was a change in the numbers between  
3 the technical working group and the Fifth -- what  
4 actually came out in the Fifth Methodology.

5 Q. But the numbers in the Fifth Methodology Order  
6 are correct; is that true?

7 A. Yes, they are correct in this case.

8 Q. Matt, can you now turn to page 28 again, of  
9 Exhibit 837.

10 A. Okay. I am on page 28.

11 Q. And do you see the paragraph entitled, "2.4.4  
12 Bias in 2018 Baseline Year for Reasonable Carryover."

13 A. I do.

14 Q. And can you find the sentence about halfway  
15 through that starts "Figure 2-10 is IDWR's hindcast"?

16 A. So "Figure 2-10 is IDWR's hindcast analysis  
17 showing annual carryover volumes for Twin Falls Canal  
18 Company 1995 to 2022 under the Fourth Methodology Order  
19 (baseline year 06/08/12) and the Fifth Methodology Order  
20 (baseline year 2018)."

21 Q. Now, can you turn to Exhibit 300, which is the  
22 Fifth Methodology Order.

23 A. Okay. I have that.

24 Q. Well, let me back up. Let me back up for just  
25 a second.

1           Can you read the final sentence of that  
2 paragraph. I believe you didn't read the final  
3 sentence.

4           A. Oh, back on page 28?

5           Q. Yes. I'm sorry.

6           A. Okay. No problem.

7           "Under the Fifth Methodology Order, 19 out of  
8 the 30 years would have resulted in a carryover  
9 shortfall and that these occurred even in average and  
10 above-average years. Figure 2-1."

11          Q. Okay. So now let's turn to the Fifth  
12 Methodology Order, which is in Exhibit 300.

13          A. Yes.

14          Q. And can you turn to page 28 -- excuse me --  
15 23. And I'm looking for paragraph 68.

16          A. You said 23?

17          Q. Page 23, yes.

18          A. Okay. I'm on page 23, and I see paragraph 68.

19          Q. Can you explain what information is contained  
20 in paragraph 68?

21          A. So this paragraph describes the calculation  
22 that we use for calculating what we referred to as  
23 "maximum projected carryover need."

24                 We take the projected -- yes, the projected  
25 demand of the 2018 baseline year, and we subtract the

1 projected supply, which is the average supply for the  
2 '02-'04 irrigation seasons.

3 And then under it is a table that shows the  
4 calculation -- the numbers used in the calculation. And  
5 then on the right is the maximum projected carryover  
6 need.

7 Q. And can you read the footnote that's in  
8 Footnote 18 there?

9 A. "This Fifth Methodology Order updates this  
10 chart with the baseline year and calculates new maximum  
11 projected carryover need values."

12 Q. And can you now turn to paragraph 78, which is  
13 on page 29.

14 A. You said 78?

15 Q. 78.

16 A. Okay. I'm on page 29. I see 78.

17 Q. Can you explain what information is contained  
18 in paragraph 78?

19 A. So paragraph 78 is the reasonable carryover  
20 values that we are assigning for the Fifth Methodology.

21 In the pages that we went -- that we just went  
22 through before the -- between the previous table on  
23 page 23 and here on 29, we do some additional analysis,  
24 and we adjust some of the numbers.

25 So we adjust the maximum projected carryover

1 need numbers from the table in 68. Three of those we've  
2 adjusted in Table 78: AFRD2, BID, and Twin Falls Canal  
3 Company.

4 Q. And so am I correct in understanding that the  
5 Fifth Methodology Order used the adjusted carryover data  
6 in paragraph 78, not the maximum projected carryover  
7 data in paragraph 68?

8 A. That is correct.

9 Q. And Ms. Sigstedt's conclusion was based on the  
10 maximum carryover data in paragraph 68; is that correct?

11 A. I believe -- I'm not totally sure, but I  
12 believe that that was the case.

13 Q. And so Ms. Sigstedt -- if that's true, then  
14 Ms. Sigstedt's conclusion that 19 out of the last  
15 30 years would result in carryover shortfall was based  
16 on incorrect data; is that right?

17 A. Yes, that is correct.

18 Q. And when the adjusted carryover data in  
19 paragraph 78 is used, the proper data that was used in  
20 the Fifth Methodology Order, how many years out of the  
21 last 30 would have resulted in a shortfall?

22 A. Six.

23 MR. WOOD: Nothing further.

24 HEARING OFFICER: Okay. Examination? What's  
25 the order of examination? Do we have the groundwater

1 users go first?

2 Okay. Mr. Budge.

3  
4 CROSS-EXAMINATION

5 QUESTIONS BY MR. BUDGE:

6 Q. Matt, you had so much fun on Tuesday that you  
7 wanted to come back.

8 A. It's hard to resist. I agree.

9 Q. I just have a few follow-up questions on  
10 several of your comments related to the expert report of  
11 Sophia Sigstedt.

12 The first discussion that you have with  
13 Mr. Wood was related to some of the recharge data of  
14 AFRD2 and North Side Canal Company.

15 Do you recall that?

16 A. Yes, I do.

17 Q. And Ms. Sigstedt's comments were based on  
18 information the Department had produced concerning that  
19 aspect of the methodology order?

20 A. Yeah, the first --

21 Q. I'll reask the question.

22 A. Yeah.

23 Q. There was a discussion about how much recharge  
24 had happened through AFRD2.

25 Do you remember that?

1 A. Yes.

2 Q. And Ms. Sigstedt cited a Department document  
3 that showed that there had been between  
4 5,010,000 acre-feet of recharge through AFRD2?

5 A. Yes. The note that she is referring to  
6 comes -- is in our -- what we call "our calculator."

7 Q. And then when she brought that to the  
8 Department's attention, that caused you and Kara  
9 Ferguson to go explore that further?

10 A. Yes. Yep.

11 Q. You're not suggesting that Sophia made any  
12 type of intentional error or intentionally tried to  
13 mislead the Director by pointing that out in her report?

14 A. Oh, no. Certainly not. I mean, it was poorly  
15 documented in the calculator, it was ambiguous in there.  
16 And these are the kinds of things we want, the  
17 consultants to point out to us, like, you made an error,  
18 here, fix this, fix that.

19 So, no, not at all.

20 Q. Okay. And the same would be true for the  
21 issue involving North Side Canal Company recharge?

22 A. Yeah, the adjustments are very confusing, so  
23 it's hard to know if everything got included. So we  
24 appreciate the check.

25 Q. Okay. The Department didn't -- before issuing

1 the Fifth Methodology Order, there wasn't, like, a draft  
2 order that was provided for review by the parties;  
3 right? It was just issued on April 21st and implemented  
4 immediately?

5 A. That is correct.

6 Q. Had the process started sooner with either a  
7 hearing or some other collaborative process, these types  
8 of issues may have been raised before the Fifth  
9 Methodology Order was issued?

10 A. Possibly. Once we're drafting, things are  
11 always in flux. It's possible that we could have talked  
12 to them, but it's not guaranteed.

13 Q. I understand.

14 And you've sat through most of the hearing?

15 A. Yeah, I have. I've sat through all of it.

16 Q. Have you learned information at the hearing  
17 that you think may be useful or inform changes in the  
18 methodology in the future that may help it function more  
19 effectively?

20 A. Yeah --

21 MR. WOOD: Director, I'm going to object to  
22 that. That's outside the scope.

23 HEARING OFFICER: Sustained.

24 Q. (BY MR. BUDGE) Matt, have you learned  
25 anything at the hearing that may cause you to go back



1 and revisit certain parts of the Fifth Methodology  
2 Order?

3 MR. WOOD: Same objection.

4 HEARING OFFICER: Sustained.

5 MR. BUDGE: No further questions.

6 HEARING OFFICER: Thank you.

7 Other cross-examination? Any more questions  
8 for Mr. Anders?

9 I guess one of the reasons for my sustaining  
10 the objection is that the focus of the question -- or  
11 the focus of the questioning was very narrow in its  
12 scope to correct some information.

13 Thank you, Mr. Anders.

14 THE WITNESS: Thank you.

15 HEARING OFFICER: Now, I don't think -- I  
16 don't think the Department has any other information to  
17 put on in rebuttal.

18 MR. WOOD: That's correct.

19 HEARING OFFICER: Okay. We have a request for  
20 some additional rebuttal.

21 Was that from you, Mr. Johns?

22 MR. JOHNS: That's correct.

23 HEARING OFFICER: Okay.

24 MR. JOHNS: I'd like to call Bryce Contor back  
25 to the stand.

1 HEARING OFFICER: Mr. Contor, you're already  
2 sworn in. If you'll take a seat.

3 MR. JOHNS: Just one item, Director, and I  
4 talked with the Surface Water Coalition, and I assume  
5 the groundwater folks are okay, but we would like to  
6 offer Exhibits 502, 504, 505, 506, and 515 and request  
7 that they be admitted by stipulation.

8 HEARING OFFICER: Give me the numbers again.

9 MR. JOHNS: 502, 504, 505, 506, and 515.

10 HEARING OFFICER: And you represented that  
11 you've spoken to the Surface Water Coalition. What's  
12 the result of those conversations?

13 MR. JOHNS: I believe that they were okay with  
14 stipulating to the admission of those exhibits.

15 MR. FLETCHER: Did you say something? No.  
16 We're good.

17 MR. JOHNS: And yeah, 502, 504, 505, 506, and  
18 515.

19 MR. THOMPSON: [Unintelligible.]

20 COURT REPORTER: I can't hear you,  
21 Mr. Thompson.

22 I couldn't hear what he said.

23 MR. FLETCHER: Can you repeat those again  
24 slowly?

25 MR. JOHNS: 502, 504, 505, 506, and 515.

1 HEARING OFFICER: And based on your question,  
2 Mr. Fletcher, are these references a matter of first  
3 impression with you?

4 MR. FLETCHER: No. I was -- no. I should do  
5 one thing to the latest. I was going to ask the last  
6 witness if AFRD2 got paid extra for the extra 15,000  
7 that was reported, but I'm trying to keep this moving  
8 along.

9 HEARING OFFICER: So is there stipulation to  
10 the admission of these exhibits that have been --

11 MR. FLETCHER: There is from us.

12 HEARING OFFICER: Pardon me?

13 MR. SIMPSON: From us.

14 MR. FLETCHER: There is from the SWC.

15 HEARING OFFICER: And I assume there are no  
16 other objections.

17 All right. The documents that have been  
18 marked as Exhibits 502, 504, 505, 506, and 515 are  
19 received into evidence.

20 (Exhibits 502, 504 - 506, 515 received.)

21 MR. JOHNS: Thank you, Mr. Director. And I'll  
22 try to be concise with my rebuttal here.

23 ///

24 ///

25 ///

1                   BRYCE CONTOR,

2       called as a rebuttal witness by the Bonneville-Jefferson  
3       Ground Water District, having been previously first duly  
4       sworn to tell the truth relating to said cause,  
5       testified as follows:

6  
7                   DIRECT EXAMINATION

8       QUESTIONS BY MR. JOHNS:

9           Q.   Bryce, welcome back up to the stand.

10          A.   Thank you.

11          Q.   Just briefly, were you present during the  
12       testimony of Mr. Brockway and Mr. Shaw?

13          A.   Yes.

14          Q.   Do you recall discussions regarding fallowing  
15       of acres and how that factors into calculations in the  
16       methodology order?

17          A.   Yes.

18          Q.   Okay. Have you performed technical work  
19       pertaining to the fallowed acres similar in this regard?

20          A.   Yes. When I was making recommendations in the  
21       Snake River Basin Adjudication, I had to look at  
22       parcels -- aerial imagery and decide whether a field  
23       that was not green in that particular image was in  
24       general irrigated.

25                   When I worked for IWRRRI on the water budget

1 for the ESPAM model, we had to wrestle the same question  
2 in preparing the irrigated lands dataset. And now as I  
3 work helping clients prepare their claims in the Bear  
4 River Basin Adjudication, I have to wrestle the same  
5 question.

6 Q. So you have some expertise in this area?

7 A. Yes.

8 Q. Thank you.

9 MR. JOHNS: Would we be able to bring up -- or  
10 give him a copy of Exhibit 4?

11 MR. WOOD: Exhibit 4?

12 MR. JOHNS: Correct.

13 THE WITNESS: I have it here.

14 Q. (BY MR. JOHNS) Okay. Could you turn to  
15 page 2, and just quickly look over that. I just want to  
16 ask you just a couple questions that came up during  
17 Mr. Brockway and Mr. Shaw's discussions with counsel.

18 A. The one I have, the pages are not numbered,  
19 but I'm looking under Heading A, "Evaluation of TFCC  
20 Project Acres."

21 Q. And Item 5?

22 A. Item 5 is -- Item 5 that page is numbered, and  
23 it is numbered 2. Yes, I see that, Item 5.

24 Q. Now, I'm just going to ask you a couple  
25 questions.

1           First, is it reasonable that some fields would  
2 be fallowed in some years?

3           A. Yes.

4           Q. How so?

5           A. Well, so Dr. Brockway described a number of  
6 reasons that could occur. I think Mr. Barlogi did. And  
7 for the most part, those ring true to me. I couldn't  
8 repeat every discussion that they gave.

9           Q. But you agree it would be technically  
10 defensible to factor that into the methodology order?

11          A. Yes.

12          Q. If you were assigned to count acres, how would  
13 you treat fallowed acres?

14          A. So it would depend on the purpose. If I were  
15 trying to describe a permissible place of use, if I were  
16 trying to describe historical irrigation over a period  
17 of years, if I were trying to describe a service area,  
18 those acres definitely would want to be included if --  
19 unless they were -- had never, ever been irrigated.

20          Q. But in a future year, that field might not be  
21 fallowed?

22          A. Yeah, that's right. And so I didn't finish.  
23 I'm sorry. If I was trying to determine the actual  
24 quantity or amount of irrigated acres, then for that  
25 year, those acres should need to be excluded.

1 Q. So excluding the fallowed acres would not  
2 distort the total acreage?

3 A. No, because, as I think Dr. Brockway  
4 explained, this parcel may be fallowed this year and  
5 irrigated in the next year. But the underlying  
6 mechanisms that caused the fallowing, that caused the  
7 rotation, those will be ongoing. And so this parcel  
8 becomes irrigated, this parcel becomes fallowed next  
9 year, the -- not only would excluding them be  
10 technically defensible, it would be more defensible and  
11 more correct than including those.

12 Q. Anything else you need to add on fallowed  
13 acres that was discussed?

14 A. I don't think so, thank you.

15 MR. JOHNS: I don't have any more questions.

16 HEARING OFFICER: Cross-examination of the  
17 witness, Surface Water Coalition?

18 Do you need a moment?

19 MR. FLETCHER: No. I just -- I didn't really  
20 understand some of the testimony.

21 HEARING OFFICER: Okay. Mr. Fletcher.

22 MR. FLETCHER: Thank you.

23 ///

24 ///

25 ///

## 1 CROSS-EXAMINATION

2 QUESTIONS BY MR. FLETCHER:

3 Q. Thank you. Mr. Contor, I just need some  
4 clarification.5 So when you say a fallow acre should be  
6 excluded, excluded from what?

7 A. Oh, I'm sorry. Yeah, that was unclear.

8 So from the calculation of actual irrigated  
9 acres in a year when we're doing the evaluation, if that  
10 acre is not irrigated in that year, it should not be  
11 counted.12 Q. Okay. So if an acre on Twin Falls Canal  
13 Company, for example, is fallowed -- say a corner of a  
14 pivot, for example -- does that clearly indicate that  
15 the shares attributable to those acres aren't being used  
16 elsewhere?17 A. I don't think it does. But the underlying  
18 assumption is that if those shares are being irrigated  
19 elsewhere, that irrigation will appear in the dataset.  
20 And then in a following year, if that irrigation is  
21 moved back to this corner, then it will have to  
22 disappear from where it was, and that's the rationale.23 Q. So if -- are you saying that somehow each year  
24 someone should determine the actual irrigated acre s in  
25 that irrigation season?



1           A. So I'm saying that that may -- that is the  
2 best available science, whether it's attainable is a  
3 different question. What I'm saying is, is that if  
4 you -- it's going to be what I would call a "dynamic  
5 equilibrium." So this year this one's irrigated, this  
6 one's fallow; next year this one's irrigated, this one's  
7 fallow; next year this one's irrigated, this one's  
8 fallow. But any one of those snapshots would be a  
9 reasonable representation of the ongoing dynamic  
10 irrigated area.

11           All of the mechanisms that Dr. Brockway talked  
12 about, in my estimation, would be relatively constant  
13 year to year. That's what I was trying to say. So if  
14 you want to know exactly where every irrigated acre is,  
15 then, yes, you would have to do it every year. But if  
16 you want to know the quantity, the periodic snapshots  
17 should be adequate.

18           Q. Just because a farmer fallows an acre one year  
19 doesn't mean he, necessarily, fallows any acres the next  
20 year?

21           A. For an individual farmer, that is correct, but  
22 all of the mechanisms that Dr. Brockway described would  
23 operate in every year, and they would have similar  
24 effects year to year.

25           Q. So the Department is using data from prior

1 years in order to make this calculation; correct?

2 A. So currently, yes.

3 Q. And the shapefiles it's using are from prior  
4 years; correct?

5 A. Yes.

6 Q. So I guess it's your testimony that if an acre  
7 shows up as being fallow but has a right to be  
8 irrigated, it should not be included in the current year  
9 even though it could be irrigated in the current year?

10 A. So my testimony is that if the goal is to use  
11 prior data to do an estimate of the total quantity of  
12 acres that would be irrigated in the current year, that  
13 the best estimate -- given the fact that we have to use  
14 old data because the current year hasn't occurred yet --  
15 the best estimate of what would happen in 2023 would be  
16 what actually happened in 2022.

17 And if in 2022 some random fraction of acres,  
18 for a number of reasons that Dr. Brockway explained  
19 well, were not irrigated, it's likely that under those  
20 same mechanisms, approximately the same number of acres  
21 in 2023 also would not be irrigated. The probability  
22 that they would be the exact same locations is fairly  
23 low. But the probability that the 2022 representation  
24 would be the total correct number of acres is fairly  
25 high.

1 Q. You would agree with -- I think it was  
2 Dave Shaw's testimony that each farmer makes his own  
3 determinations; correct?

4 A. I would agree with that, yes.

5 Q. And it's not the canal company making that  
6 determination?

7 A. I would agree.

8 Q. And the farmer is determining if he's laying  
9 1 acre fallow or not fallow in any particular year?

10 A. I agree.

11 MR. FLETCHER: Thank you.

12 HEARING OFFICER: Redirect, Mr. Johns?

13 Do you have questions, Mr. Harris?

14 MR. HARRIS: I do have some follow-up.

15 HEARING OFFICER: Go ahead.

16 MR. JOHNS: Go ahead.

17  
18 CROSS-EXAMINATION

19 QUESTIONS BY MR. HARRIS:

20 Q. Mr. Contor, just to pick up from  
21 Mr. Fletcher's comments.

22 It's your understanding that irrigated acres  
23 is part of the methodology order; correct?

24 A. Yes.

25 Q. And the shapefile that was actually used in

1 the methodology order was the 2013 shapefile, which  
2 essentially is -- it's 194,732 acres?

3 A. Yes.

4 Q. There's a more recent shapefile that has less  
5 acres than that; correct?

6 A. That's my understanding.

7 Q. And that was not used in the methodology  
8 order?

9 A. That's my understanding.

10 MR. HARRIS: Okay. No further questions.

11 HEARING OFFICER: Any recross? I assume no  
12 recross.

13 MR. FLETCHER: No recross. That's not mine.

14 HEARING OFFICER: Well, I guess --

15 MR. FLETCHER: It wouldn't be me. It's his  
16 counsel.

17 HEARING OFFICER: Well, let's call it.

18 Is there any further examination of  
19 Mr. Contor?

20 I appreciate Mr. Contor being here for the  
21 duration.

22 Thank you, Mr. Contor.

23 Are there other witnesses?

24 I see heads shaking no.

25 Ms. McHugh's negotiated the cords once more.

1 Do you have something to say?

2 MS. MCHUGH: I was just getting close to a mic  
3 once we start discussing exhibits.

4 HEARING OFFICER: All right. Well, before we  
5 do that, let's break for 15 and come back. We've been  
6 here for almost two hours, and everybody can organize  
7 their thoughts and maybe organize their notes.

8 Come back at quarter after.

9 (Break taken.)

10 HEARING OFFICER: Back on the record.

11 Are we on?

12 COURT REPORTER: Yes.

13 HEARING OFFICER: Thank you, Andrea.

14 Are you at the podium to lead the discussion?

15 MS. MCHUGH: I'm at the podium to just offer  
16 the fact that I believe we have a stipulation to three  
17 more exhibits to be admitted into the record, and then  
18 I'm going to be done.

19 HEARING OFFICER: Okay.

20 MS. MCHUGH: So Exhibit 348, 349, and 350,  
21 which are summaries of the City of Pocatello, City of  
22 Idaho Falls, and Coalition of Cities water rights.

23 HEARING OFFICER: 348, 349, and 350.

24 And the parties have discussed these three  
25 exhibits? There's a stipulation for admission?

1 MR. FLETCHER: Yes.

2 MR. SIMPSON: Yes.

3 HEARING OFFICER: I hear no negatives.

4 MS. MCHUGH: They're all falling in line right  
5 now.

6 HEARING OFFICER: Okay.

7 MS. MCHUGH: Thank you.

8 HEARING OFFICER: So the documents marked as  
9 Exhibit 348, 349, and 350 are received into evidence.

10 (Exhibits 348 - 350 received.)

11 HEARING OFFICER: Have the parties reviewed  
12 the compilation of admitted exhibits, and is there any  
13 discrepancy?

14 Ms. Patterson?

15 MS. PATTERSON: No discrepancy. It looked  
16 accurate.

17 So I thank everybody, including our court  
18 reporter and Sarah, for keeping track of those.

19 IGWA would like to, with the stipulation of  
20 the other parties, admit the documents that were  
21 presented to the technical working group. And those are  
22 exhibits -- they're common exhibits, 900, 901, 902, 903,  
23 904, 905, 906, 908, 909, 910, 912, 914 was previously  
24 admitted, and 928, which was discussed.

25 HEARING OFFICER: And have all of these

1 documents been reviewed by the parties?

2 Are these documents that were reviewed or  
3 presented by the Department to the technical working  
4 group?

5 MS. PATTERSON: They were presented to the  
6 Department for the technical working group, and they  
7 were made available by the Department as a part of its  
8 notice of what the parties may take -- may use for the  
9 scope of this hearing.

10 HEARING OFFICER: Okay. So based on the  
11 represented -- or represented stipulation, I will  
12 receive into evidence the documents marked as  
13 Exhibits 900, 901, 902, 903, 904, 905, 906, 908, 909,  
14 910, 912, and 928.

15 Is that correct? Is that comprehensive?

16 MS. PATTERSON: That is.

17 (Exhibits 900 - 906, 908 - 910, 912, and 928  
18 received.)

19 MS. PATTERSON: And we have one last item.

20 Director, if you'll recall, at the end of  
21 Sophia's testimony you asked her about a portion of the  
22 report where it looked like there was a typo.

23 Ms. Sigstedt confirmed that that was a typo,  
24 and she sent in an updated expert report which removes  
25 the errata. I've circulated, for the parties, the

1 redline version so you can see what was updated, and we  
2 have a clean updated report that I would like to label  
3 as 837A, similar --

4 HEARING OFFICER: What's the number?

5 MS. PATTERSON: 837A.

6 And this is similar to what the Cities did for  
7 the updated report of Mr. Sullivan.

8 And so I would just ask that, you know, where  
9 we reference 837 in the record, we'll actually be  
10 referring to the updated report which removes errata.

11 (Exhibit 837A marked.)

12 HEARING OFFICER: So are you moving for the  
13 admission of 837A --

14 MS. PATTERSON: That is correct.

15 HEARING OFFICER: -- what has been marked as  
16 837A?

17 MS. PATTERSON: It's the updated expert report  
18 of Sophia Sigstedt, and it removes errata.

19 HEARING OFFICER: And have the parties had the  
20 chance to review the documents?

21 MR. FLETCHER: We did. I looked through it.  
22 I didn't have any issue. Most of it was just  
23 switching -- words had been switched and added an "A" in  
24 there. She did add a "not" somewhere, but that's okay.  
25 We talked about that.



1 HEARING OFFICER: Okay. So based on the  
2 represented stipulation, I'll receive the document  
3 marked as 837A into the record.

4 (Exhibit 837A received.)

5 MS. PATTERSON: Thank you.

6 HEARING OFFICER: Other corrections?

7 Mr. Thompson.

8 MR. THOMPSON: I believe the parties have  
9 stipulated to Exhibit 2 for the Surface Water Coalition.  
10 It's information contained in Exhibit 4, but it just has  
11 a little additional detail.

12 So I would offer that.

13 HEARING OFFICER: Okay. And based on the  
14 represented stipulation, I'll receive Exhibit 2 into the  
15 record.

16 (Exhibit 2 received.)

17 HEARING OFFICER: Others?

18 MR. BUDGE: Director. Last night I filed a  
19 motion to take official notice of the joint forecast.  
20 It was brought to my attention that the document I had  
21 attached to my motion is not the actual joint forecast  
22 of the Bureau and the Corps of Engineers. I've not been  
23 able to obtain what I understand to be the full joint  
24 forecast, so I'm going to withdraw that motion at this  
25 time.

1           If at some point we're able to locate the full  
2 document, then we may refile that motion at a future  
3 date.

4           HEARING OFFICER: Okay. Well, it is a  
5 document that the agency would typically rely upon, so I  
6 don't know that anybody would object as long as there's  
7 a disclosure to all of the parties.

8           MR. BUDGE: And I have discussed that with the  
9 Surface Water Coalition, and they agree.

10          So I'm just, for the record, withdrawing the  
11 motion that was filed yesterday.

12          HEARING OFFICER: Okay. Thank you.

13          Okay. Other cleanup?

14          All right. So let's just talk about  
15 post-hearing processes.

16          So as I have stated before, this is an  
17 expedited process. I apologize to everybody because of  
18 the -- in my opinion -- the urgency of holding this  
19 hearing, and as a result, I will allow some briefing,  
20 but I think it needs to come in within a week. I know  
21 that's probably a deadline that nobody likes, so I'll  
22 allow simultaneous briefs to be filed. No responses or  
23 replies.

24          So let's anticipate any briefs coming in by  
25 the close of business a week from today, which would be

1 nine plus -- is what, the 16th? Is that correct?

2 MR. BRICKER: Yes.

3 HEARING OFFICER: Well, let's talk a little  
4 bit about some of what I'm concerned about in the  
5 briefing.

6 And I've listened to four days of testimony  
7 from many witnesses, and I appreciate the participation  
8 of the attorneys. And I have respect for both the water  
9 bar and for the experts who work on these matters.

10 I want to answer the question that Mr. Budge  
11 asked of Mr. Anders and just say that there was much  
12 presented today that needs to be considered in the  
13 future as we refine the methodology order. It is a  
14 dynamic document. It's intended to be. And, honestly,  
15 that was the reason for reissuance.

16 So let's talk about some of that information  
17 that was presented and the context of that information  
18 in terms of the law and the delivery call as, at least,  
19 I remember it.

20 So people can correct me either here today or  
21 in the briefing. But my understanding in this delivery  
22 call is that there's been a determination of material  
23 injury already. And there's been a determination that  
24 pumping of the groundwater depletes flows in the  
25 Snake River, and those flows are flows that the Surface

1 Water Coalition depends upon for its water supply.

2 And it's also my understanding that the courts  
3 have said that at least there's a presumption that the  
4 senior water right holders are entitled to their water  
5 as described in the decrees that have been issued by the  
6 Snake River Basin Adjudication court. And so there's a  
7 presumption in favor of the senior water right holder  
8 that they're entitled to the quantities and the other  
9 elements that are in the water right.

10 And, from my perspective, the methodology  
11 order is an attempt to evaluate the actual use of water  
12 by the seniors to determine whether there is some  
13 adjustment that is appropriate from the decreed amounts.  
14 And that's the reason for the clear and convincing  
15 standard that's been imposed and that the Department has  
16 been told by the courts it needs to -- for any  
17 adjustment that that's the standard or the proof that  
18 needs to come to the Department. And that's the reason  
19 for safety factors built into the methodology order.

20 And so much of what I've listened to,  
21 honestly, is testimony about uncertainties in that  
22 process. And if there are uncertainties in determining  
23 by clear and convincing evidence that there's an  
24 adjustment that's appropriate, then I want to know what  
25 the fallback is legally.

1           Because, frankly, the presumption is that the  
2 senior is entitled to the elements of the water right.  
3 And if those adjustments are to be established by clear  
4 and convincing evidence and the evidence that comes in  
5 during the hearing establishes uncertainties about  
6 whether it's clear and convincing, then I want to know  
7 what the Department's fallback position is.

8           Is the position that we -- there's a  
9 determination of material injury, but there's so much  
10 uncertainty that the Department should not be  
11 administering the water rights? Is the question that  
12 there is so much model uncertainty that there is no  
13 determination of what a curtailment date should be.

14           And then I think -- associated with that, I  
15 think there's also a question about burdens of proof.  
16 In other words, in the conjunctive -- and I don't know  
17 the answer to this, necessarily, but under the  
18 conjunctive management rules, who bears the burden of  
19 establishing, by clear and convincing evidence, what  
20 those adjustments should be? Is it the Department's  
21 burden? Is it the senior burden? Or is it the junior  
22 burden?

23           And, honestly, who has that information? I  
24 mean, there was an attempt, I think, through the  
25 questions to say that the senior has total control over

1 determining whether there's supplemental groundwater use  
2 or not. And yet the groundwater diversions are  
3 diversions that are measured by the groundwater users  
4 and at least reported on an annual basis and reported  
5 long after the season is over.

6 So I guess my question is: Who bears that  
7 burden? I don't know the answer to that question, but  
8 it seems to me it has some relevance in what we're  
9 talking about.

10 So I think we need to be thinking rather than  
11 trying to look at all of the nuances and all of the  
12 deficiencies. I think we need to look at it in the  
13 framework of what have the courts told us and what are  
14 the standards that need to be applied in looking at how  
15 the methodology operates within the larger realm of  
16 water administration and conjunctive water  
17 administration?

18 Now, there's one other matter I just want to  
19 talk about, and I suspect that we will -- there will be  
20 arguments about due process and the fact that people  
21 didn't have enough time to prepare. And, you know, I  
22 think there are questions about whether there were any  
23 property interests that were injured prior to this  
24 hearing or the people that were deprived in some way in  
25 a property interest. Certainly, that harbinger of that

1 possibility is out there.

2 But I think the real question is, what do we  
3 do in terms of water administration and timely water  
4 administration and try to figure out what's adequate.

5 I'll also point out that there was a theme, I  
6 think, through the discussions about the inability to  
7 prepare. And I guess I feel a little bit -- you know, I  
8 don't know how to characterize this, but, you know, we  
9 have been involved in this dispute for 20 years now --  
10 or going on 18, I'd say. And there have been  
11 opportunities for people to develop mitigation plans;  
12 there have been opportunities for people to gather data;  
13 there have been opportunities for folks to take on  
14 responsibility to prepare.

15 And I find I'm a little incredulous that  
16 people will come into the hearing and say, "We haven't  
17 had an opportunity to get ready." And I guess I just  
18 turn around and say, "Doggone it, there have been years  
19 of opportunity to prepare."

20 Now, maybe not for a change from steady state  
21 to transient, and, certainly, that's an issue that can  
22 be taken to the courts or I need to reconsider; I don't  
23 know. But to say that there hasn't been an opportunity  
24 to put in place safeguards for the possibility of water  
25 administration, I'm a little incredulous at that.

1 All right. I don't know whether there are  
2 other issues. You're certainly welcome to raise them.

3 Mr. Thompson.

4 MR. THOMPSON: A page limit, maybe, for  
5 post-hearing briefs for Mr. Harris.

6 MR. HARRIS: Mr. Thompson just referred to me,  
7 that that's the only reason for a page limit.

8 HEARING OFFICER: Did he suggest a number?

9 MR. HARRIS: No, he suggested he needed it  
10 because of me.

11 HEARING OFFICER: Because of you?

12 MR. HARRIS: Because of me.

13 HEARING OFFICER: I'm -- I won't impose a page  
14 limit, but you know what, if -- just think about the  
15 number of those briefs that I might receive and how  
16 quickly I need to get through them. So I would suggest  
17 brevity.

18 And one of the reasons that I wanted to talk  
19 about issues was to try to get you to focus and maybe  
20 not spend so much time arguing about this little nuance  
21 or that little nuance in the expert reports, because I  
22 think there's a larger framework we really need to be  
23 thinking about. And I, hopefully, at least, made a  
24 crude attempt at trying to identify a framework.

25 All right. Anything else?



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

Thanks, everybody, for your help --

MR. BRICKER: Thank you.

HEARING OFFICER: -- and your patience.

We'll close the record.

(Hearing concluded at 3:36 p.m.)

REPORTER'S CERTIFICATE

I, ANDREA L. CHECK, CSR No. 748, Certified Shorthand Reporter, certify;

That the foregoing proceedings were taken before me at the time and place therein set forth, at which time the witness was put under oath;

That the testimony and all objections made were recorded stenographically by me and transcribed by me or under my direction;

That the foregoing is a true and correct record of all testimony given, to the best of my ability;

I further certify that I am not a relative or employee of any attorney or party, nor am I financially interested in the action.

IN WITNESS WHEREOF, I set my hand and seal this 13th day of June, 2023.

Andrea Check

ANDREA L. CHECK, CSR No. 748, RPR, CRR

Notary Public

P.O. Box 2636

Boise, Idaho 83701-2636

My Commission expires July 20, 2028.

*	<b>45:14</b> <b>accuracy (2)</b> 84:18;105:6	<b>across (1)</b> 47:6	<b>79:4;204:16,17;205:3,4,25</b> <b>administrative (1)</b> 27:11
*** (36) 7:16,17,18,19,20,22,23,24, 25;8:5,6,7,8,9,11,12,13,14, 15,17,18,19,20;9:5,6,7,8,9, 10,11,12,13,14,15,16,17	<b>accurate (14)</b> 13:17;51:19;53:15;63:16; 64:17;65:7,15;84:15,15; 105:2;109:9,11;124:8; 196:16 <b>accurately (3)</b> 15:16;28:25;155:18	<b>actual (20)</b> 42:15;51:10,23,24;72:20, 25;82:21;84:4;109:15; 111:14;124:11;127:8; 144:22;145:1;172:19; 188:23;190:8,24;199:21; 202:11	<b>admission (14)</b> 13:12,14,19;28:5,8;56:8; 98:19;101:22;125:7,19; 184:14;185:10;195:25; 198:13
/	<b>achieve (1)</b> 131:22	<b>actuality (1)</b> 174:9	<b>admit (2)</b> 55:21;196:20
/// (7) 125:25;185:23,24,25; 189:23,24,25	<b>achieved (1)</b> 129:17 <b>acknowledging (1)</b> 19:13	<b>actually (23)</b> 51:18;63:21;71:14;73:1,2; 74:15;75:24;101:7;110:22; 112:4;113:23;124:2;134:10; 137:8,16,19;138:12;157:19; 159:24;176:4;192:16; 193:25;198:9	<b>admitted (6)</b> 101:19;172:3;184:7; 195:17;196:12,24 <b>admitting (1)</b> 124:24
[	<b>acknowledgment (1)</b> 19:5	<b>add (2)</b> 189:12;198:24	<b>adopt (2)</b> 76:14;105:7
[As (1) 58:20 [unintelligible] (2) 52:13;184:19	<b>acre (13)</b> 41:21;52:5;80:13;111:9; 135:18;190:5,10,12,24; 191:14,18;192:6;193:9	<b>adapt (1)</b> 138:2 <b>add (2)</b> 189:12;198:24	<b>advertised (1)</b> 22:6 <b>advice (1)</b> 58:3
A	<b>acreage (28)</b> 38:24;42:15;53:21,21; 58:19;63:15,20;64:18;66:12; 67:10;68:21;76:12;84:4,8, 15;85:2,8,12;93:6,16; 106:15;107:18;109:9; 132:23;133:24;134:15; 158:20;189:2	<b>added (5)</b> 40:14;92:23;98:23;99:6; 198:23	<b>advised (1)</b> 23:25 <b>advocating (2)</b> 163:10;164:5
A&B (4) 25:1;160:6,9,20 abbreviated (1) 112:16 Aberdeen-Springfield (1) 139:6 ability (1) 154:9 able (17) 10:15;20:9,12,25;32:6; 46:13,24;64:4;67:8;88:15; 103:9;117:17;167:6,8;187:9; 199:23;200:1 above (7) 44:22;55:7;94:12;95:7; 97:15;115:22;160:3 above-average (1) 177:10 Absolutely (3) 35:19;102:15;158:11 accepted (5) 17:23;18:17,20;19:2,6 accepting (1) 169:5 access (3) 81:20;82:10,14 accommodating (1) 140:21 accommodation (1) 102:3 According (1) 106:15 account (12) 49:6;50:7;53:3;61:10; 76:2;80:10;91:6,14;92:7,23; 116:20;128:2 accounted (2) 173:7;174:25 accounts (1)	<b>acres (112)</b> 37:14,15,15;38:25;39:3,3; 40:10;45:10;50:15,24,25; 51:2,3,5,11,22;52:1;53:23; 54:8;58:15;62:1;66:6,19,23; 67:1;70:12,24;71:19;74:20; 76:4,6;78:15,22;79:14; 80:18;81:22;97:8;105:13,15; 106:6,14,17,20,23;107:4,14, 20;108:7,11;109:15,18,25; 110:13,16,24,25;111:4,15; 120:25;121:23;124:4,12; 133:9,11,12,23;134:10,20; 140:1;143:8,9;148:1,12; 149:7,21;155:16,19,21; 159:15,21,25;160:13,15; 162:7,16,20,21;163:21,22; 164:2,6,15;186:15,19; 187:20;188:12,13,18,24,25; 189:1,13;190:9,15;191:19; 192:12,17,20,24;193:22; 194:2,5 <b>acronym (1)</b> 119:21	<b>address (4)</b> 16:15;21:8;166:25;168:6 <b>addressed (2)</b> 55:24;56:4 <b>addresses (1)</b> 43:10 <b>adequate (3)</b> 70:2;191:17;205:4 <b>adequately (1)</b> 11:1 <b>Adjudication (7)</b> 78:11,16;79:14;139:25; 186:21;187:4;202:6 <b>adjust (2)</b> 178:24,25 <b>adjusted (9)</b> 43:13;45:11;47:3;114:10; 145:11;173:11;179:2,5,18 <b>adjusting (1)</b> 173:20 <b>adjustment (7)</b> 107:9;173:23;174:2; 175:5;202:13,17,24 <b>adjustments (15)</b> 43:25;44:5;51:8,14;54:5; 92:7;97:5;133:21;173:24; 174:2;175:12,18;181:22; 203:3,20 <b>administering (1)</b> 203:11 <b>administration (6)</b>	<b>aerial (13)</b> 39:6;40:7;58:21;59:19,23; 61:5;79:17;149:2,11,14,15; 150:4;186:22 <b>affairs (1)</b> 27:16 <b>affect (7)</b> 45:4;46:16;50:15;90:25; 106:24;124:7,9 <b>AFRD2 (9)</b> 173:3,11;174:15,16;179:2; 180:14,24;181:4;185:6 <b>AFRD2's (1)</b> 174:7 <b>afternoon (6)</b> 102:8;126:3,4;132:12; 147:14;171:11 <b>ag (2)</b> 71:8;149:20 <b>again (40)</b> 10:20;39:25;41:2,11;45:7; 47:25;48:13;51:4,9,23; 52:15;53:25;54:6;55:11,13; 61:18;64:4;66:16;73:19; 79:16;82:18;90:7;96:25; 107:4;110:23;111:17,21; 121:4;128:14;134:6;138:16; 139:1;158:13;168:21,23; 172:14;175:11;176:8;184:8, 23 <b>against (1)</b> 144:14 <b>agency (1)</b> 200:5 <b>ago (5)</b> 15:2;78:18;79:16;96:13; 108:23 <b>agree (49)</b>

<p>13:17;50:14;63:14,19; 64:12,14;67:7;69:5;72:2; 74:15;75:19,22;76:3;82:12; 84:11,14,18;87:2;90:5;95:3; 100:10,23;101:13;104:4; 105:14,23;106:19;107:24; 109:5,18;120:11,20;129:24; 130:2,12;137:7,13,14; 154:16;158:5,6;161:23; 180:8;188:9;193:1,4,7,10; 200:9</p> <p><b>agreed (1)</b> 13:11</p> <p><b>agreement (2)</b> 65:22;168:13</p> <p><b>agreements (1)</b> 169:1</p> <p><b>agricultural (5)</b> 42:12,23;72:17,21;104:25</p> <p><b>AgriMet (2)</b> 143:10;145:25</p> <p><b>ahead (8)</b> 42:4;65:13;79:11;106:13; 157:9;158:1;193:15,16</p> <p><b>air (1)</b> 165:5</p> <p><b>al (1)</b> 25:2</p> <p><b>Alan (2)</b> 165:11,13</p> <p><b>albeit (1)</b> 120:7</p> <p><b>alfalfa (9)</b> 145:7,14,21,25;146:5; 159:14,20,25;162:20</p> <p><b>algorithm (2)</b> 104:5;127:11</p> <p><b>allegation (2)</b> 173:14;175:8</p> <p><b>allow (8)</b> 10:20;29:21;46:11;73:7; 79:9;160:10;200:19,22</p> <p><b>allowance (1)</b> 100:4</p> <p><b>allowed (4)</b> 10:19;17:23;23:18;168:2</p> <p><b>allowing (1)</b> 10:14</p> <p><b>almost (5)</b> 53:17;127:7,15;174:23; 195:6</p> <p><b>along (5)</b> 22:24;149:4;159:15; 166:22;185:8</p> <p><b>alternative (1)</b> 18:6</p> <p><b>alternatives (1)</b> 17:7</p> <p><b>always (9)</b> 46:7;47:12,16;53:7;127:7, 15,25;169:5;182:11</p> <p><b>AMALGAMATED (15)</b> 8:16;26:13,20;27:14,21;</p>	<p>28:4,14;29:22,24;30:25; 31:7,12;32:1,12,20</p> <p><b>Amalgamated's (3)</b> 29:7;30:14;31:13</p> <p><b>ambiguous (1)</b> 181:15</p> <p><b>amend (1)</b> 108:14</p> <p><b>Amended (1)</b> 21:9</p> <p><b>amendment (1)</b> 168:19</p> <p><b>amendments (2)</b> 167:11;168:14</p> <p><b>amount (15)</b> 45:22;49:13;52:6;72:2,16; 88:1,4;90:3,9,16,19;92:20; 110:21;128:9;188:24</p> <p><b>amounts (2)</b> 66:14;202:13</p> <p><b>analyses (1)</b> 108:17</p> <p><b>analysis (39)</b> 16:14;39:15;43:11,19; 44:11,13,16;55:1;58:5; 64:17;65:21;79:18;80:17; 81:4;82:20,23;83:2;85:12; 95:20,21,24;96:1,3;108:21; 112:10,20,23;114:16; 121:20;135:22;136:16,21; 143:2;151:20;153:14,23; 154:8;176:16;178:23</p> <p><b>analyze (3)</b> 81:1;82:14;154:24</p> <p><b>analyzed (1)</b> 80:18</p> <p><b>analyzing (2)</b> 91:6;104:25</p> <p><b>ANDERS (11)</b> 7:4;166:8;170:14,16,22, 23;171:3,15;183:8,13; 201:11</p> <p><b>Anders' (1)</b> 54:17</p> <p><b>A-n-d-e-r-s (1)</b> 171:15</p> <p><b>Anderson (24)</b> 123:19,20,23;124:1,17; 140:9,11,13;165:14,17,20, 21,24;166:4,9,21;167:3; 168:6,7,8,17;169:4,9;170:6</p> <p><b>Andrea (6)</b> 11:4,7;57:9;71:2;123:16; 195:13</p> <p><b>announced (1)</b> 20:12</p> <p><b>annual (5)</b> 43:12;55:3;131:9;176:17; 204:4</p> <p><b>annually (2)</b> 85:1;131:4</p> <p><b>answered (2)</b> 100:19;160:21</p>	<p><b>anticipate (1)</b> 200:24</p> <p><b>apologies (1)</b> 121:2</p> <p><b>apologize (5)</b> 14:7;44:2;67:18;82:18; 200:17</p> <p><b>apparently (4)</b> 11:15;12:3;38:12,13</p> <p><b>appear (10)</b> 60:1;61:16,18,19;64:8; 95:3,4;99:8;101:15;190:19</p> <p><b>appeared (1)</b> 149:8</p> <p><b>appears (3)</b> 34:9;114:6;115:3</p> <p><b>apples (1)</b> 159:19</p> <p><b>application (3)</b> 53:10;105:16,24</p> <p><b>applied (3)</b> 89:2;140:5;204:14</p> <p><b>Apply (2)</b> 104:14,19</p> <p><b>Appreciate (9)</b> 33:23;77:14;78:8;79:23; 110:19;140:21;181:24; 194:20;201:7</p> <p><b>approach (4)</b> 23:4;55:18;64:1,2</p> <p><b>appropriate (7)</b> 41:13;77:19;104:6; 165:24;166:10;202:13,24</p> <p><b>appropriately (2)</b> 157:13;164:15</p> <p><b>approved (5)</b> 19:22;22:1,4;30:19;33:17</p> <p><b>approximately (3)</b> 111:11;151:14;192:20</p> <p><b>April (5)</b> 17:11;21:10;49:13;50:3; 182:3</p> <p><b>Aquifer (5)</b> 15:8;16:25;27:23;29:5; 90:20</p> <p><b>ArcMap (3)</b> 37:24;108:21;118:4</p> <p><b>area (43)</b> 36:23;39:2,13;42:15; 50:21;52:21,23;60:4,6,23; 61:11;62:9;70:12;74:24; 79:9;80:6;84:1,3,6;86:20; 93:13;101:6;108:2;109:10; 117:22;118:22;121:1,10,17; 133:19;150:6;151:12;152:3, 12;153:2,5,16;160:5;163:9, 11;187:6;188:17;191:10</p> <p><b>areas (29)</b> 37:8;38:15;41:4;42:5,6; 48:22;52:20;59:25;60:8,9; 64:10,15;81:1;99:7;100:7, 13,17,20;101:13;109:6; 118:6;137:4;139:15,22;</p>	<p>140:6;149:4;152:20;154:12, 16</p> <p><b>arguing (2)</b> 110:11;206:20</p> <p><b>argument (2)</b> 107:12,13</p> <p><b>arguments (2)</b> 109:24;204:20</p> <p><b>arise (1)</b> 10:22</p> <p><b>around (8)</b> 15:2;38:15;42:7;71:9; 100:16;115:18;152:20; 205:18</p> <p><b>arrive (1)</b> 116:8</p> <p><b>arrived (2)</b> 10:4;131:13</p> <p><b>art (1)</b> 130:11</p> <p><b>artificial (2)</b> 105:15,24</p> <p><b>As-Applied (4)</b> 21:10;36:17,21;142:15</p> <p><b>aspect (1)</b> 180:19</p> <p><b>assess (2)</b> 43:17;53:14</p> <p><b>assessment (1)</b> 53:15</p> <p><b>assigned (1)</b> 188:12</p> <p><b>assigning (1)</b> 178:20</p> <p><b>assist (3)</b> 17:12;33:5;78:9</p> <p><b>associated (3)</b> 75:11;118:25;203:14</p> <p><b>assume (12)</b> 26:6;74:8;76:4;83:9; 90:14;97:21;99:18;107:2; 123:8;184:4;185:15;194:11</p> <p><b>assumes (3)</b> 80:13;97:1;115:15</p> <p><b>assuming (1)</b> 114:10</p> <p><b>assumption (3)</b> 122:24;151:25;190:18</p> <p><b>assumptions (1)</b> 115:22</p> <p><b>attached (3)</b> 36:4;141:24;199:21</p> <p><b>attainable (1)</b> 191:2</p> <p><b>attempt (5)</b> 168:2;169:23;202:11; 203:24;206:24</p> <p><b>attempted (1)</b> 25:9</p> <p><b>attention (4)</b> 40:16;83:22;181:8;199:20</p> <p><b>attorney (4)</b> 76:16;98:21;158:14,15</p>
--	---	---	--

<p><b>attorneys (1)</b> 201:8</p> <p><b>attorney's (1)</b> 137:11</p> <p><b>attributable (1)</b> 190:15</p> <p><b>attribute (1)</b> 118:24</p> <p><b>audible (1)</b> 71:2</p> <p><b>audibly (1)</b> 34:25</p> <p><b>audio (1)</b> 35:15</p> <p><b>augmented (1)</b> 48:24</p> <p><b>August (1)</b> 86:25</p> <p><b>authorized (2)</b> 23:23;74:19</p> <p><b>authors (3)</b> 103:5,7,10</p> <p><b>automatically (2)</b> 49:8;52:6</p> <p><b>automation (1)</b> 87:11</p> <p><b>available (21)</b> 82:20;104:11,15,19;105:1; 109:5,14;119:11;120:14; 121:16;143:19;144:21,23, 24;164:20,21;165:1;166:24; 167:7;191:2;197:7</p> <p><b>average (26)</b> 44:23;55:7;94:9,12,21; 97:15,17,20;113:23;114:2, 25;116:13,14;122:12,18; 131:8;143:20,24;144:14,18; 146:1;156:16,19;157:4; 177:9;178:1</p> <p><b>averaged (3)</b> 143:21;144:11,17</p> <p><b>averages (1)</b> 113:22</p> <p><b>avoid (2)</b> 18:8;66:15</p> <p><b>awaiting (1)</b> 30:7</p> <p><b>aware (16)</b> 16:24;25:12,25;26:3;29:4; 32:13;43:2;63:22;68:7; 69:22;84:25;86:7;89:20; 99:18;101:5;169:17</p> <p><b>away (1)</b> 49:24</p>	<p>7,8;113:7;123:12,14;125:17; 132:13;134:1;135:21; 144:25;149:24;158:9; 161:14;175:14,18;176:24, 24;177:4;180:7;182:25; 183:24;186:9;190:21;195:5, 8,10</p> <p><b>backdoor (1)</b> 168:2</p> <p><b>background (2)</b> 14:18;166:12</p> <p><b>backwards (1)</b> 91:23</p> <p><b>bad (1)</b> 164:3</p> <p><b>balance (2)</b> 31:20;32:7</p> <p><b>balances (1)</b> 32:5</p> <p><b>ballpark (1)</b> 116:7</p> <p><b>banks (2)</b> 41:19;91:2</p> <p><b>bar (1)</b> 201:9</p> <p><b>barley (3)</b> 86:21,24;146:2</p> <p><b>Barlogi (10)</b> 46:6;69:21;86:15;87:6; 89:18;135:2;145:18;153:21; 162:19;188:6</p> <p><b>Barlogi's (4)</b> 78:13;88:22;115:24; 157:10</p> <p><b>base (1)</b> 122:21</p> <p><b>based (33)</b> 18:13;28:7;29:14;33:3,16; 37:11;54:2,9;55:5;58:21; 76:24;88:22;97:8;104:10; 107:5;111:10,12,18;114:5, 20;115:22;127:14;139:19; 161:23;173:23;175:16; 179:9,15;180:17;185:1; 197:10;199:1,13</p> <p><b>baseline (33)</b> 36:23;51:21;54:14,16; 93:10;97:7,10,12,14,18,21; 107:25;110:13,15;112:15; 122:9,13,25;126:8,22; 130:18,21,25;133:22; 174:16;175:15,20,24;176:12, 19,20;177:25;178:10</p> <p><b>basically (1)</b> 110:9</p> <p><b>Basin (5)</b> 78:11;139:25;186:21; 187:4;202:6</p> <p><b>basis (4)</b> 72:17;93:10;124:10;204:4</p> <p><b>Baxter (1)</b> 19:12</p> <p><b>Bear (1)</b></p>	<p>187:3</p> <p><b>bears (2)</b> 203:18;204:6</p> <p><b>become (3)</b> 32:13;128:13;144:21</p> <p><b>becomes (4)</b> 93:1;97:20;189:8,8</p> <p><b>beds (1)</b> 46:3</p> <p><b>beet (2)</b> 27:19,23</p> <p><b>beets (1)</b> 71:25</p> <p><b>began (3)</b> 48:20,20;112:20</p> <p><b>begin (3)</b> 16:22;99:11;124:22</p> <p><b>Beginning (3)</b> 23:15;50:18;55:16</p> <p><b>begins (2)</b> 42:1;112:10</p> <p><b>behalf (2)</b> 14:13;102:12</p> <p><b>behind (1)</b> 142:18</p> <p><b>bell-shaped (1)</b> 172:7</p> <p><b>below (5)</b> 44:23;94:13;113:23; 139:12;159:14</p> <p><b>beneficial (1)</b> 106:16</p> <p><b>benefit (4)</b> 63:17;67:8;155:16,21</p> <p><b>besides (2)</b> 68:6;147:17</p> <p><b>best (15)</b> 18:6;104:10,15,19;109:5, 13;120:14;154:23;164:18, 20,21;165:1;191:2;192:13, 15</p> <p><b>better (10)</b> 35:9;59:22;84:19;88:12; 90:15;142:12;161:9;163:4,5; 170:19</p> <p><b>beyond (3)</b> 50:8;79:2,7</p> <p><b>Bias (1)</b> 176:12</p> <p><b>BID (1)</b> 179:2</p> <p><b>big (5)</b> 46:5,15;49:10,10;111:3</p> <p><b>binder (1)</b> 28:22</p> <p><b>bit (12)</b> 14:23;35:15;37:21;54:2; 58:3;64:4;67:4;71:9;83:7; 167:4;201:4;205:7</p> <p><b>black-and-white (1)</b> 149:20</p> <p><b>blanket (1)</b> 96:24</p>	<p><b>blue (8)</b> 39:2;60:15;62:15;150:14, 21,25;151:16;172:9</p> <p><b>BLY (2)</b> 112:16;126:17</p> <p><b>board (1)</b> 58:3</p> <p><b>bold (1)</b> 22:23</p> <p><b>BONNEVILLE-JEFFERSON (2)</b> 8:4;186:2</p> <p><b>book (2)</b> 12:19;13:3</p> <p><b>booster (1)</b> 53:10</p> <p><b>both (8)</b> 64:5;77:5;81:15;145:13; 149:1;158:13;167:12;201:8</p> <p><b>bottom (12)</b> 60:4;68:18;76:8,11;77:1; 88:1,5;95:6;121:5;157:24; 159:11,12</p> <p><b>bought (2)</b> 162:1,2</p> <p><b>boundary (2)</b> 18:18;149:4</p> <p><b>box (1)</b> 99:13</p> <p><b>boy (1)</b> 141:19</p> <p><b>brain (1)</b> 140:5</p> <p><b>Break (8)</b> 34:7;57:3,5,7;123:11,13; 195:5,9</p> <p><b>brevity (1)</b> 206:17</p> <p><b>Bricker (16)</b> 11:2,3;123:10;124:21,22; 125:2,5,8,23;126:2,5;132:6; 140:14,16;201:2;207:2</p> <p><b>brief (3)</b> 14:18;54:15,22</p> <p><b>briefing (3)</b> 200:19;201:5,21</p> <p><b>briefly (4)</b> 27:13;170:12;171:16; 186:11</p> <p><b>briefs (4)</b> 200:22,24;206:5,15</p> <p><b>bright (2)</b> 128:14,15</p> <p><b>bring (4)</b> 10:16;108:24;169:16; 187:9</p> <p><b>bringing (1)</b> 160:15</p> <p><b>broad (3)</b> 82:16,19;104:21</p> <p><b>Brockway (43)</b> 10:11;34:3,10,15,19;35:1, 17,23;36:1,16;44:3;52:14; 55:23;56:2,3,6;57:10;66:20;</p>
<b>B</b>			
<p><b>back (49)</b> 15:4;16:25;17:10;29:5,8; 31:8;32:15;34:8,9;40:14; 41:25;47:25;56:21;57:5; 64:19;66:16;68:17;79:24; 89:19;93:22;94:20,25;107:1,</p>			

<p>82:17;99:25;102:8;103:13; 123:24;126:3;140:18; 148:15;151:5;152:6;157:18; 158:5,6,12;159:6;163:16,17; 170:11;186:12;187:17; 188:5;189:3;191:11,22; 192:18 <b>B-r-o-c-k-w-a-y (1)</b> 35:24 <b>broken (1)</b> 36:25 <b>Bromley (8)</b> 17:18;125:10;156:4,5,8, 10;162:14;165:2 <b>Bromley's (1)</b> 162:13 <b>brought (3)</b> 19:15;181:7;199:20 <b>brush (1)</b> 64:1 <b>BRYCE (6)</b> 7:8;170:10;171:24; 183:24;186:1,9 <b>Budge (48)</b> 7:6;57:13,14,17;67:7,18; 70:16,21,23;71:6;76:24; 77:9,10,19,22,23;79:11,12; 82:25;86:7;96:6;97:23;98:5, 10,18,21;100:6;101:16,19; 102:2;113:3;132:23;135:8; 136:12,24;138:10;147:10,13, 20,24;155:24;180:2,5; 182:24;183:5;199:18;200:8; 201:10 <b>Budge's (1)</b> 137:12 <b>budget (1)</b> 186:25 <b>buffer (1)</b> 118:6 <b>buffering (1)</b> 46:11 <b>bugaboos (1)</b> 95:19 <b>buildings (1)</b> 152:20 <b>built (2)</b> 127:10;202:19 <b>bulk (1)</b> 86:17 <b>burden (5)</b> 203:18,21,21,22;204:7 <b>burdens (1)</b> 203:15 <b>Bureau (1)</b> 199:22 <b>Burley (7)</b> 15:8,17,18,21;20:7;22:20; 24:9 <b>business (1)</b> 200:25 <b>buy (1)</b> 73:7</p>	<p style="text-align: center;"><b>C</b></p> <p><b>calculate (15)</b> 51:4,7;54:4;66:7;67:2; 84:8;97:2,4;103:24;109:6; 112:7;114:25;133:20;134:3; 144:19 <b>calculated (18)</b> 43:16;50:22;75:23;78:6; 88:10;91:9;107:5,7;115:21; 116:9;119:25;131:16; 132:24;133:17;134:6;143:5; 144:13;157:13 <b>calculates (2)</b> 91:15;178:10 <b>calculating (5)</b> 81:22;108:10;109:9; 164:14;177:22 <b>calculation (24)</b> 66:9;67:6;75:23,24;76:1; 92:2;93:10;106:21;111:18; 115:11;122:22;129:13,21; 133:15;134:7,12,17,21; 173:6;177:21;178:4,4;190:8; 192:1 <b>calculations (6)</b> 79:21;111:7,11;120:1; 158:18;186:15 <b>calculator (4)</b> 144:7;173:18;181:6,15 <b>call (29)</b> 12:8;16:16;21:9;22:16,18; 25:12;26:14;34:2;37:14; 40:17;60:24;69:14;83:6; 99:14;102:14;132:2;140:25; 161:11;165:13,15;170:10, 14;174:1;181:6;183:24; 191:4;194:17;201:18,22 <b>called (10)</b> 12:13;26:20;34:1,20; 89:15;141:5;143:11;165:19; 171:4;186:2 <b>calling (1)</b> 12:3 <b>calls (2)</b> 144:7;161:6 <b>came (4)</b> 167:24;168:21;176:4; 187:16 <b>can (119)</b> 11:20;12:18;18:22,24; 20:21;21:2,6,11,19,23,25; 22:4,9,10,14;23:4,13;32:9; 34:16;35:6,7,11,16,21;36:13, 18;37:18,20;38:18,22;39:23; 41:1;43:9;44:13;46:20; 48:12;50:19;52:14;55:1,1; 59:10,20;60:20,21,25;66:24; 71:3;75:16;77:19;82:17; 85:23;89:4;93:23;94:16; 96:24;98:16,18;100:6,10; 102:9,9,11;105:3;107:20;</p>	<p>109:11;110:4;113:23; 114:17;117:1;118:6;122:20; 125:14;128:9;129:16,19,24; 132:3,14,22;133:3;134:19; 137:8;139:16,20,22;142:8, 12,23;145:5;148:24;157:3; 158:9;159:2;164:11,12; 166:25;167:3,17;171:13,16; 172:2,10,22;173:1;174:20; 176:8,14,21;177:1,14,19; 178:7,12,17;184:23;195:6; 198:1;201:20;205:21 <b>Canal (142)</b> 37:8;38:6;39:1;41:16; 42:13;43:12;44:20;45:4,5,6, 23;46:2,3,20;47:7,9,22,24; 48:4,19;49:6,10,22;50:8,11, 15;52:21,22;57:22;58:22; 60:3;61:3,25;62:4,9;65:8; 66:4,8,11,15;67:8,13;68:10, 21;69:2;70:1,12;72:15;73:5, 6,12;78:10;79:15;80:6,19; 81:8,13,16,20;82:6;83:1,4; 85:24;87:16,17,24;88:1,4,5, 8,11,14,20;89:6,19;91:1; 92:1,5,6;93:1;94:3;99:9; 100:14,15;105:13;110:24; 112:1;113:19;114:14; 115:16;116:1,4;117:5,15; 118:22;121:1;122:10,16; 129:22;130:17;131:2,21; 135:3,11,15,23;138:25; 139:7,8,9;145:8,11,18;146:9, 13,16;148:19;150:5;153:1; 155:3,6,16;157:12,19; 158:16;159:6,16,21;161:1,2, 9;163:10,12,19,21;174:25; 176:17;179:2;180:14; 181:21;190:12;193:5 <b>canals (7)</b> 39:21;49:14,17;135:4; 138:20,21;139:3 <b>Candice (1)</b> 14:13 <b>canyon (2)</b> 89:23;139:12 <b>capable (3)</b> 76:4;153:8,11 <b>capture (3)</b> 44:22;49:3;112:14 <b>cards (1)</b> 83:5 <b>careful (1)</b> 44:12 <b>carefully (1)</b> 149:7 <b>Carryover (13)</b> 176:12,17;177:8,23;178:5, 11,19,25;179:5,6,10,15,18 <b>carve (2)</b> 61:13;153:2 <b>carved (1)</b> 154:4</p>	<p><b>carves (1)</b> 62:20 <b>case (16)</b> 16:9;68:15;73:13;82:13; 83:12;88:23;105:18;127:12; 137:23;138:23;141:25; 166:10;173:24;174:15; 176:7;179:12 <b>cases (4)</b> 36:11;120:13;138:2;142:6 <b>case-specific (1)</b> 48:18 <b>catch (1)</b> 67:23 <b>categorize (1)</b> 107:13 <b>category (2)</b> 38:14;42:5 <b>cause (7)</b> 12:14;26:21;34:21;141:6; 171:6;182:25;186:4 <b>caused (4)</b> 23:22;181:8;189:6,6 <b>causes (1)</b> 10:21 <b>CDL (3)</b> 143:16;145:8;157:5 <b>cease (1)</b> 130:4 <b>center (4)</b> 41:6;45:21;47:13;151:15 <b>central (1)</b> 153:22 <b>certain (5)</b> 84:23;96:3;105:9;129:15; 183:1 <b>certainly (12)</b> 48:3;55:7;59:10;61:18; 77:16;114:14;129:18; 136:20;181:14;204:25; 205:21;206:2 <b>cetera (1)</b> 71:25 <b>challenges (3)</b> 50:11;146:9,11 <b>chance (5)</b> 57:4;100:20;173:13; 175:7;198:20 <b>change (20)</b> 51:15;92:2,10,15,17;93:3, 4,7,19;96:2;111:12;129:25; 132:1,2;134:6;137:15; 164:12,16;176:2;205:20 <b>changed (1)</b> 66:10 <b>changes (11)</b> 50:14;72:7;111:6;116:23; 130:13;143:3;144:11; 159:14,25;160:5;182:17 <b>characterize (2)</b> 64:3;205:8 <b>charge (1)</b> 49:14</p>
---	---	---	--

<p><b>CHARLES (2)</b> 34:19;35:23</p> <p><b>C-h-a-r-l-e-s (1)</b> 35:23</p> <p><b>chart (4)</b> 54:18;113:10,17;178:10</p> <p><b>check (1)</b> 181:24</p> <p><b>checking (1)</b> 114:9</p> <p><b>chemicals (1)</b> 162:2</p> <p><b>chief (1)</b> 166:10</p> <p><b>chose (2)</b> 55:2;130:21</p> <p><b>Chuck (39)</b> 10:11;34:3;35:5,21;38:18; 41:13;44:9;50:18;54:10; 55:15,20;57:18,21;64:6; 65:1,1;67:7,18;71:6;76:16; 77:23;78:8,9;79:12;80:9; 83:21;86:7;88:13;97:25; 98:7,21;99:2;100:17;102:14; 107:12;132:12;134:24; 138:8,16</p> <p><b>chunk (1)</b> 101:2</p> <p><b>CIR (2)</b> 143:11;144:13</p> <p><b>circuit (1)</b> 72:12</p> <p><b>circulated (1)</b> 197:25</p> <p><b>circumstances (1)</b> 10:22</p> <p><b>citations (1)</b> 106:12</p> <p><b>cited (2)</b> 131:6;181:2</p> <p><b>CITIES (4)</b> 7:21;42:9;195:22;198:6</p> <p><b>City (6)</b> 43:5;102:12;126:5; 158:14;195:21,21</p> <p><b>City's (1)</b> 166:15</p> <p><b>civil (2)</b> 14:20;36:3</p> <p><b>claimed (1)</b> 134:18</p> <p><b>claims (3)</b> 78:11;131:3;187:3</p> <p><b>clarification (1)</b> 190:4</p> <p><b>clarify (7)</b> 43:23;69:9,12;103:12; 118:15;138:23;149:18</p> <p><b>clean (1)</b> 198:2</p> <p><b>clean-cut (1)</b> 53:7</p> <p><b>cleanup (2)</b></p>	<p>11:19;200:13</p> <p><b>clear (15)</b> 76:13,18;77:6,12,15;79:3, 21;111:17;124:25;140:6; 202:14,23;203:3,6,19</p> <p><b>clearly (2)</b> 44:7;190:14</p> <p><b>clients (1)</b> 187:3</p> <p><b>clip (1)</b> 118:5</p> <p><b>close (4)</b> 102:16;195:2;200:25; 207:4</p> <p><b>closely (1)</b> 80:16</p> <p><b>closer (1)</b> 142:12</p> <p><b>Co (1)</b> 157:12</p> <p><b>COALITION (32)</b> 7:21;13:22;16:16;21:9; 22:17;23:22;34:1,20;36:5; 52:20;56:25;65:23;66:2; 84:9,23;85:1;91:16;98:15; 103:25;106:20;113:18; 117:9;140:24;141:5;163:9; 184:4,11;189:17;195:22; 199:9;200:9;202:1</p> <p><b>Coalition's (1)</b> 26:4</p> <p><b>collaboration (1)</b> 68:4</p> <p><b>collaborative (3)</b> 67:25;155:10;182:7</p> <p><b>collected (1)</b> 89:14</p> <p><b>collection (1)</b> 84:22</p> <p><b>collective (1)</b> 116:16</p> <p><b>color (1)</b> 152:3</p> <p><b>column (1)</b> 113:19</p> <p><b>comfortable (1)</b> 59:7</p> <p><b>coming (6)</b> 22:1;147:23;174:2,3,10; 200:24</p> <p><b>commensurate (1)</b> 49:8</p> <p><b>comments (7)</b> 36:22;42:10;50:10;146:8; 180:10,17;193:21</p> <p><b>COMMON (2)</b> 9:4;196:22</p> <p><b>companies (5)</b> 45:5;88:14;139:5;161:10; 163:1</p> <p><b>COMPANY (132)</b> 8:16;26:13,20;27:14,17; 36:3;37:9;38:6;39:1;42:13;</p>	<p>43:13;44:20;45:4,6,18;46:5, 20;47:7,10,22;48:4,19;49:6, 11;50:8;52:21,23;53:1; 57:22,25;58:22;61:4,25; 62:4,9;65:9;66:5,8,12,15; 67:8,14;68:5,10,21;69:1; 70:1;72:15;73:7,8,13;74:13, 21,22,23,25;75:1,6,12,16; 78:10,14;79:15;80:13,19; 81:9,13;82:2,6,15;83:5;85:7, 12,24;87:3,7,24;88:20;92:1, 5,13;93:1,7;99:9;105:13; 112:1;113:20;114:14;117:5, 14,15;118:7;119:15;121:23; 122:11,16;131:3,21;135:3, 23;139:8,9;145:8,11;146:16; 149:17;153:1,19;155:3,7,16, 21;157:19;158:17;159:7,16, 21;161:1,1,18;162:15; 163:10,12,19,21;174:25; 176:18;179:3;180:14; 181:21;190:13;193:5</p> <p><b>Company's (26)</b> 60:3;61:11;67:14;68:6; 69:2;70:12;74:4,17;80:6; 81:16,20;83:1;86:19;94:3; 110:24;116:1,4,15;118:22; 121:1;130:17;145:18; 148:19;150:5;153:16;161:16</p> <p><b>compare (2)</b> 130:10;153:18</p> <p><b>compared (5)</b> 61:3;72:17,21;146:18; 161:2</p> <p><b>comparing (1)</b> 159:20</p> <p><b>comparison (4)</b> 37:7,13;38:25;63:23</p> <p><b>compilation (1)</b> 196:12</p> <p><b>compile (1)</b> 11:5</p> <p><b>compiled (1)</b> 11:6</p> <p><b>completed (1)</b> 135:7</p> <p><b>completely (1)</b> 169:2</p> <p><b>complex (2)</b> 32:4,5</p> <p><b>compliance (11)</b> 19:19,21,25;27:17,20; 31:4;33:7,9,14,15,18</p> <p><b>complicated (1)</b> 53:12</p> <p><b>comply (1)</b> 32:17</p> <p><b>component (1)</b> 107:15</p> <p><b>comprehensive (3)</b> 39:15;40:2;197:15</p> <p><b>comprises (1)</b> 115:25</p>	<p><b>compute (1)</b> 111:1</p> <p><b>computed (1)</b> 159:24</p> <p><b>computer (1)</b> 102:16</p> <p><b>concern (1)</b> 20:11</p> <p><b>concerned (1)</b> 201:4</p> <p><b>concerning (1)</b> 180:18</p> <p><b>concise (1)</b> 185:22</p> <p><b>conclude (1)</b> 175:10</p> <p><b>concluded (2)</b> 174:5;207:6</p> <p><b>conclusion (3)</b> 173:16;179:9,14</p> <p><b>conclusions (1)</b> 126:14</p> <p><b>condition (1)</b> 162:5</p> <p><b>conditions (4)</b> 46:16;51:23;83:25;108:2</p> <p><b>confidence (1)</b> 154:13</p> <p><b>confirm (2)</b> 100:10;145:17</p> <p><b>confirmed (1)</b> 197:23</p> <p><b>confounded (1)</b> 134:9</p> <p><b>confusing (1)</b> 181:22</p> <p><b>conjunctive (5)</b> 79:4;161:11;203:16,18; 204:16</p> <p><b>connection (1)</b> 85:8</p> <p><b>conservatism (2)</b> 127:10,20</p> <p><b>conservative (4)</b> 55:8,12,14;127:15</p> <p><b>conserved (1)</b> 90:17</p> <p><b>consider (5)</b> 41:14;120:6;135:11; 150:14;168:11</p> <p><b>consideration (2)</b> 22:24;29:24</p> <p><b>considered (6)</b> 17:6;41:22;120:24;136:8; 168:4;201:12</p> <p><b>considering (1)</b> 110:25</p> <p><b>consist (1)</b> 71:20</p> <p><b>consistent (3)</b> 55:11;131:21;164:19</p> <p><b>constant (3)</b> 94:4;129:1;191:12</p>
--	---	---	---

<b>construct (1)</b> 20:25	76:13,18;77:6,12;202:14,23;203:4,6,19	11:10;14:23;32:9;37:17,20;41:1;44:2;52:14;55:25;66:20,24;67:16;79:3;82:17;86:4,6;96:1;99:25;123:17;162:9;184:20;195:12;196:17;202:6	192:8,9,12,14
<b>consult (1)</b> 85:7	<b>cool (2)</b> 46:17,25	<b>courts (4)</b> 202:2,16;204:13;205:22	<b>currently (6)</b> 14:20;15:18;16:11,12;141:20;192:2
<b>consultant (5)</b> 15:12;17:3;24:3;59:2;68:11	<b>cooperation (2)</b> 81:16;83:1	<b>cover (2)</b> 50:12;111:9	<b>curtail (1)</b> 75:15
<b>consultants (6)</b> 58:23;65:19;67:14;68:6;155:7;181:17	<b>copies (1)</b> 98:22	<b>covered (7)</b> 29:16;30:4,17;73:5;81:1;109:7;161:19	<b>curtailed (6)</b> 16:4,7;20:1;33:1;75:18,18
<b>consumes (1)</b> 71:23	<b>copy (3)</b> 101:4;144:6;187:10	<b>covers (1)</b> 50:13	<b>curtailing (1)</b> 69:6
<b>consumptive (10)</b> 41:15,19;42:16;45:9;51:5;64:22;93:13;105:20;133:18;143:12	<b>cords (2)</b> 11:24;194:25	<b>creating (3)</b> 58:24;67:24;152:15	<b>curtailment (21)</b> 16:16,24;17:10,13;18:8;19:23;20:12;22:5,15,25;24:1,6;29:2,4,8;31:5;32:13,22;66:15;74:8;203:13
<b>contained (4)</b> 166:22;177:19;178:17;199:10	<b>corn (9)</b> 71:25;145:7,14,21;146:5,6;159:15,21,25	<b>creek (1)</b> 89:23	<b>curved (1)</b> 41:8
<b>content (1)</b> 168:11	<b>corners (4)</b> 38:13;100:8,24;101:14	<b>criteria (2)</b> 54:21;110:17	<b>cut (1)</b> 140:3
<b>contested (1)</b> 138:2	<b>corollary (1)</b> 89:5	<b>critical (1)</b> 164:13	<b>CV (2)</b> 36:4;141:24
<b>context (3)</b> 72:22;132:23;201:17	<b>Corporation (1)</b> 141:21	<b>crop (46)</b> 45:9,17;49:18,21;70:9;72:2,25;73:22;75:22;87:3;91:12,20,21;93:12;96:13,22;97:4;105:25;107:5;116:23;131:9,16,20;143:8,9,13,15,16,21;144:10,12,17,18,19;145:3,22;156:17,19;158:22;159:25;163:2,5;164:9,12,12,14	<b>CWN's (1)</b> 157:12
<b>continual (1)</b> 157:11	<b>Corps (1)</b> 199:22	<b>cropping (2)</b> 157:1;162:1	<b>D</b>
<b>continue (7)</b> 18:2;66:25;122:17,18,21;128:25;158:19	<b>correction (2)</b> 14:8;91:24	<b>crops (12)</b> 71:24;84:1;86:19;87:2;105:16;108:3;144:14;145:23;158:24;159:17;162:17,23	<b>Dam (1)</b> 139:12
<b>Continued (7)</b> 7:2;8:1;9:1;43:4;93:17;144:19;157:14	<b>corrections (1)</b> 199:6	<b>cross (1)</b> 158:13	<b>dash (1)</b> 43:19
<b>continues (1)</b> 122:11	<b>corrective (1)</b> 33:11	<b>Cross-Examination (24)</b> 7:6,10,11;24:14,22;26:8;33:20;57:13,16;98:2;102:6;123:9,22;126:1;147:9,12;156:2,7;165:4;180:4;183:7;189:16;190:1;193:18	<b>data (59)</b> 43:15,17,18,18,21,21;55:4;63:16;82:5,6,9,14,21;94:22;95:4,9;96:10;104:11,15,20;105:1,8;114:20;118:25;119:8;121:25;135:14;138:19,25;143:16,16,19;144:2,21,22,24;145:1,4,8;149:10;154:15;157:5;163:5;164:7,10,10,10;174:10;179:5,7,10,16,18,19;180:13;191:25;192:11,14;205:12
<b>continuing (2)</b> 15:5;128:21	<b>correctly (4)</b> 60:7;94:23;150:24;151:8	<b>culinary (1)</b> 99:22	<b>database (5)</b> 81:5;85:11;119:18;154:18,21
<b>continuous (1)</b> 47:21	<b>corresponded (1)</b> 153:20	<b>current (17)</b> 36:2;44:15;47:8;83:25;108:1,1;112:14;130:10,11;144:5;156:21;163:4;164:10;	<b>dataset (25)</b> 37:12;43:24;44:4;54:24;60:9;62:17,19,24;63:9,24;64:1,18;65:9,16;77:24;78:1;96:4;99:12;150:9;151:1,7,13;163:18;187:2;190:19
<b>CONTOR (11)</b> 7:8;170:10;171:25;183:24;184:1;186:1;190:3;193:20;194:19,20,22	<b>Corresponding (1)</b> 125:7		<b>datasets (1)</b> 64:5
<b>contribute (3)</b> 91:10;103:8;120:18	<b>corresponds (1)</b> 125:19		<b>date (16)</b> 16:24;17:8,13;18:11;20:12;25:20,25;26:2;31:11;14:32;14,22;39:4;95:19;200:3;203:13
<b>control (3)</b> 20:20;124:14;203:25	<b>corroborated (1)</b> 61:5		<b>dated (1)</b> 22:18
<b>conversations (2)</b> 17:5;184:12	<b>counsel (3)</b> 84:22;187:17;194:16		<b>Dates (2)</b> 22:16;26:4
<b>conversion (3)</b> 47:5,12;48:5	<b>count (1)</b> 188:12		<b>Dave (13)</b>
<b>conversions (2)</b> 128:20,25	<b>counted (1)</b> 190:11		
<b>converted (4)</b> 41:5;71:13;72:4;89:9	<b>counties (2)</b> 119:8;143:22		
<b>converts (5)</b> 89:1;90:2,6,8,21	<b>country (2)</b> 60:25;99:15		
<b>convey (1)</b> 49:22	<b>County (2)</b> 43:2;143:21		
<b>conveyance (6)</b> 45:23;50:9;88:11;91:25;116:16;128:25	<b>countywide (1)</b> 143:20		
<b>convincing (9)</b>	<b>couple (9)</b> 25:4;31:7;53:2;85:14;94:16;98:22;138:12;187:16,24		
	<b>course (9)</b> 33:4;45:19;48:18;51:21;97:7;133:9,22;139:4;154:20		
	<b>COURT (24)</b>		



36:16;59:2,8,22;60:19; 103:14;140:25;141:16; 142:11;147:14,24;156:1; 193:2 <b>DAVID (2)</b> 141:4,18 <b>D-a-v-i-d (1)</b> 141:18 <b>days (8)</b> 23:18;47:1;49:15;79:20; 103:19;108:22;119:12;201:6 <b>deadline (9)</b> 17:8;18:6,7;20:15;21:1; 22:7;32:17,19;200:21 <b>deadlines (1)</b> 138:1 <b>deal (1)</b> 47:22 <b>Dean (3)</b> 26:14,19;27:9 <b>D-e-a-n (1)</b> 27:9 <b>decade (1)</b> 71:10 <b>decades (2)</b> 95:5;96:8 <b>December (7)</b> 16:25;20:3;22:17;29:5,9; 31:10;32:13 <b>decide (2)</b> 17:25;186:22 <b>decided (2)</b> 162:22;175:17 <b>decimal (1)</b> 132:3 <b>decision (1)</b> 113:1 <b>decisions (3)</b> 74:8;79:3;162:1 <b>decline (1)</b> 87:4 <b>declined (1)</b> 93:6 <b>declining (1)</b> 128:19 <b>decrease (4)</b> 72:3;88:4;90:19;131:23 <b>decreased (2)</b> 93:16;112:4 <b>decreases (4)</b> 46:18;88:11;90:18,18 <b>decreasing (2)</b> 106:15;136:19 <b>decree (2)</b> 79:1;155:23 <b>decreed (3)</b> 78:22;118:21;202:13 <b>decrees (1)</b> 202:5 <b>deep (1)</b> 90:20 <b>defensible (3)</b> 188:10;189:10,10	<b>deficiencies (1)</b> 204:12 <b>define (2)</b> 79:14;129:19 <b>defined (2)</b> 45:8;83:15 <b>defining (1)</b> 129:12 <b>definitely (2)</b> 39:14;188:18 <b>definition (6)</b> 84:5;105:17,21;109:21; 129:17;130:9 <b>degree (1)</b> 53:15 <b>delineation (7)</b> 40:10,11,13,13;41:12; 42:6;58:22 <b>deliver (11)</b> 46:8;69:7,7;74:5,14,14,18; 75:12,16;81:17;128:1 <b>deliveries (2)</b> 61:4;153:20 <b>delivering (1)</b> 66:1 <b>delivers (1)</b> 82:3 <b>delivery (24)</b> 21:9;22:18;25:12;42:12; 49:23;61:4;75:2;81:21; 82:22;86:8;143:22,24; 146:18,20,21;149:5;153:19; 160:5;161:6,11,20;162:24; 201:18,21 <b>Delorey (6)</b> 26:14,15,19;27:5,9,10 <b>D-e-l-o-r-e-y (1)</b> 27:9 <b>delved (1)</b> 134:11 <b>demand (58)</b> 41:16,22;42:14,17,22,24; 45:17;46:12,16,18,22,25; 47:20,21;50:3,22;51:8,14,17, 21;54:4;64:22;66:8;67:6; 72:21,23;75:24;84:8;93:3,8, 19;96:14,15,21;97:5,7; 105:20;107:9;110:15;111:5; 122:14;124:7,13;130:25; 132:4,24;133:15,21;134:4,5, 12,17,21;145:23;158:22; 173:20,21;177:25 <b>demands (7)</b> 41:20;44:20;51:1;52:2; 128:3;130:18;159:17 <b>demonstrate (2)</b> 66:5;129:21 <b>demonstrated (1)</b> 129:8 <b>demonstrates (1)</b> 115:12 <b>Denied (3)</b> 77:9,20;166:13	<b>deny (1)</b> 77:3 <b>Department (48)</b> 18:19;19:1,5;21:8;63:3,14, 19;66:10;67:25;69:5;76:3; 77:24;78:14,21;81:5;82:7; 84:17;85:2;97:13,21;119:19; 122:19;124:11;130:20; 134:10;143:17,21;149:20; 155:9;162:5,7;163:4;166:7; 167:14,15;169:25;171:19; 180:18;181:2,25;183:16; 191:25;197:3,6,7;202:15,18; 203:10 <b>Department's (9)</b> 62:16;143:18;150:9; 154:21;156:16,20;181:8; 203:7,20 <b>depend (2)</b> 51:22;188:14 <b>depending (1)</b> 137:8 <b>depends (2)</b> 136:20;202:1 <b>depict (1)</b> 39:20 <b>depicted (2)</b> 62:1;107:20 <b>depicting (4)</b> 40:24;41:3,10,11 <b>depiction (1)</b> 64:17 <b>depicts (2)</b> 60:7;145:6 <b>depletes (1)</b> 201:24 <b>deposition (1)</b> 157:10 <b>deprived (1)</b> 204:24 <b>describe (21)</b> 36:7,13,18;37:6;38:22; 39:10,23;43:9;45:1;50:19; 52:11;54:12;110:11;142:2,8, 23;144:4;145:5;188:15,16, 17 <b>described (7)</b> 51:18;67:11;101:13; 103:4;188:5;191:22;202:5 <b>describes (3)</b> 43:11;103:23;177:21 <b>descriptions (1)</b> 119:2 <b>designed (1)</b> 72:13 <b>desire (1)</b> 73:23 <b>desiring (1)</b> 137:22 <b>desk (2)</b> 11:13;98:6 <b>detail (2)</b> 167:17;199:11	<b>detailed (2)</b> 58:21;59:18 <b>details (1)</b> 25:18 <b>detected (1)</b> 44:14 <b>determination (9)</b> 68:20;91:8;111:16; 163:21;193:6;201:22,23; 203:9,13 <b>determinations (1)</b> 193:3 <b>determine (11)</b> 23:20;37:25;43:20;78:21; 122:2;135:11;139:25; 156:17;188:23;190:24; 202:12 <b>determined (2)</b> 110:13;127:8 <b>determines (1)</b> 22:8 <b>determining (6)</b> 53:3;81:22;143:14;193:8; 202:22;204:1 <b>develop (9)</b> 17:7;18:4;20:15,23;29:25; 65:19;86:1;148:25;205:11 <b>developed (7)</b> 38:15;42:6,9,15;43:3; 67:13;153:1 <b>developing (5)</b> 16:15;18:2;20:16;148:22; 171:17 <b>development (5)</b> 42:13;49:2;71:7;152:7; 171:20 <b>developments (3)</b> 42:19,20;43:1 <b>deviation (1)</b> 127:4 <b>difference (6)</b> 38:3;60:5;101:2;132:3; 151:4;157:3 <b>differences (7)</b> 37:25;38:4,8;39:2;40:4; 156:23;157:1 <b>different (17)</b> 16:5;54:25;55:2;76:14; 88:10;103:7,10;104:22; 134:3,10,15;139:16,19; 169:2;172:18;174:11;191:3 <b>difficult (2)</b> 116:21;154:16 <b>difficulties (1)</b> 10:21 <b>Direct (14)</b> 7:5,9;14:11;27:3;35:3; 64:19;66:16;78:7;124:9; 134:16;141:14;160:25; 171:8;186:7 <b>direction (1)</b> 155:18 <b>directly (7)</b>
---	---	---	---

45:16;91:11,17;92:9,23, 24;93:4 <b>Director (42)</b> 10:7;12:24;18:14;22:8; 23:5,17,19,24;27:15;28:1; 34:2;74:8;75:14;76:24; 78:24;84:23;98:5;103:24; 108:7;112:14,20,21;123:3; 124:23;125:11;140:13,20; 141:12;142:10;166:12; 167:23,25;168:1;169:10,25; 170:21;181:13;182:21; 184:3;185:21;197:20;199:18 <b>Director's (2)</b> 120:16,22 <b>disappear (1)</b> 190:22 <b>discharge (1)</b> 89:23 <b>disclosed (2)</b> 169:11;170:2 <b>disclosure (1)</b> 200:7 <b>discrepancies (1)</b> 156:25 <b>discrepancy (2)</b> 196:13,15 <b>discretionary (3)</b> 97:12;110:16;113:1 <b>discuss (5)</b> 10:6;59:8;60:18;80:4; 152:5 <b>discussed (8)</b> 17:5;94:1;143:9;148:14; 189:13;195:24;196:24;200:8 <b>discusses (2)</b> 21:15;68:25 <b>discussing (3)</b> 71:7;135:8;195:3 <b>discussion (19)</b> 54:22;56:20;96:12;122:9; 125:16;132:22;135:24; 143:13;160:4;167:22,25; 168:1,5;169:18,18;180:12, 23;188:8;195:14 <b>discussions (7)</b> 31:23;33:16;169:21; 175:16;186:14;187:17;205:6 <b>displace (1)</b> 98:8 <b>dispute (2)</b> 133:11;205:9 <b>distinguishing (1)</b> 77:18 <b>distort (1)</b> 189:2 <b>distributed (2)</b> 11:6,12 <b>distribution (2)</b> 55:2,3 <b>DISTRICT (32)</b> 8:4;17:19,20,22,23,24; 18:1,5,17;19:2,15,18,21;	25:1;29:15,23;30:6,9,15,18; 31:1,3;33:7,14;43:13;160:6; 173:5;174:3,12,24;175:13; 186:3 <b>district's (1)</b> 158:15 <b>ditch (3)</b> 41:17,19;75:8 <b>ditches (13)</b> 38:10;41:4,6,11;62:20; 64:10,21;69:10,15;89:15,19; 109:18;117:6 <b>diversion (47)</b> 41:20;45:11,25;46:20; 47:24;49:7;51:1,6;55:3;72:9, 23;81:6;89:10;91:11,20,21; 92:10,13,15;93:5,9,14,15,18; 97:9;107:3,3;111:5;112:2; 115:16;116:24;118:14,16; 119:3;122:1;126:8;133:10; 135:14,19;136:14;138:19, 25;143:9;145:4,15;173:11; 174:7 <b>diversions (50)</b> 23:22;43:12;47:2;51:3,9, 10,24;53:25;54:2;66:18,21; 67:2;94:4,8;95:1;96:15,20; 97:1,10,17;107:6;110:1,14, 25;113:4,18,24;114:14; 119:24;120:8;122:11,15,16; 126:21;130:18,24;131:23; 133:16,19;135:22;145:11; 157:19;158:17,21,25;159:7, 16,21;204:2,3 <b>divert (7)</b> 15:7;27:22;50:25;52:7; 74:25;75:2;131:3 <b>diverted (4)</b> 41:23;88:3;89:6,8 <b>divide (1)</b> 131:16 <b>divided (6)</b> 45:10;51:6;93:14;107:6; 133:19;143:8 <b>divides (2)</b> 91:19,21 <b>document (27)</b> 17:17;18:24;19:9,11;21:4, 6,7,13,15;22:12,22;30:21; 98:6;101:16,22,23;125:5; 169:16,17;172:17,20;181:2; 199:2,20;200:2,5;201:14 <b>documented (1)</b> 181:15 <b>documents (19)</b> 13:20,25;28:9,9;56:9,10; 167:20,21;168:10,11,23; 170:8;185:17;196:8,20; 197:1,2,12;198:20 <b>Doggone (1)</b> 205:18 <b>domestic (4)</b> 29:2;99:19,21;100:4	<b>done (16)</b> 28:2;32:1;58:7;65:21; 79:6;81:2;82:20;83:4;87:25; 99:7;101:1;117:23;149:2; 153:24;174:6;195:18 <b>dots (1)</b> 94:17 <b>double-counting (1)</b> 40:14 <b>doubt (1)</b> 63:18 <b>down (17)</b> 14:23;32:9;37:21;42:16, 17;48:15;73:1,2;96:23,23; 105:3;110:24;111:2;124:5,5; 172:11,23 <b>downstream (2)</b> 48:13;49:4 <b>downward (3)</b> 44:18;95:10;112:8 <b>Dr (13)</b> 55:23;56:3;157:18;158:5, 6,12;159:6;163:17;188:5; 189:3;191:11,22;192:18 <b>draft (1)</b> 182:1 <b>drafting (2)</b> 171:22;182:10 <b>drain (5)</b> 48:7,10,11,15;49:2 <b>drains (2)</b> 89:15,19 <b>draw (1)</b> 83:22 <b>drawing (1)</b> 59:24 <b>dried (2)</b> 69:22;70:2 <b>driven (1)</b> 96:15 <b>driveways (2)</b> 61:20;74:9 <b>drought (1)</b> 136:6 <b>dry (1)</b> 46:4 <b>due (9)</b> 16:16;52:24;69:19,22; 80:7;85:21;156:25;157:1; 204:20 <b>duly (6)</b> 12:13;26:21;34:21;141:6; 171:5;186:3 <b>duration (1)</b> 194:21 <b>during (14)</b> 22:24;46:2;49:17;72:8; 85:25;86:18;96:12,12;114:7; 144:7,8;186:11;187:16; 203:5 <b>Dylan (1)</b> 124:1 <b>dynamic (3)</b>	191:4,9;201:14 <hr/> <b>E</b> <hr/> <b>earlier (10)</b> 10:20;43:23;46:7;85:20; 86:15;88:22;92:19;95:15; 145:18;148:15 <b>early (3)</b> 32:15;86:25;95:17 <b>Eastern (3)</b> 15:7;27:22;139:6 <b>easy (2)</b> 117:2;129:21 <b>edges (1)</b> 42:8 <b>education (2)</b> 36:8;142:2 <b>effect (5)</b> 50:20;53:3;157:20;159:8, 24 <b>effectively (1)</b> 182:19 <b>effects (3)</b> 10:13;116:22;191:24 <b>efficiencies (30)</b> 36:23;49:12;51:4,7,13; 54:3;67:3,3,5;87:7;91:25; 107:5,7,8;128:20,24;129:1, 23,24;132:2;133:17,20; 134:2,3;143:1,2,3,4;157:21; 159:8 <b>efficiency (52)</b> 45:4,8,13,19;47:4,13,17; 49:9,19;50:9,11,16;54:1; 88:8,9,19;89:4;90:24;91:1,7, 10,15,92:17,18,23;93:11; 96:13,23;97:3;111:1;115:16, 18;116:4,9,12;117:6,8,18; 124:5,6,14;129:8;131:9,13, 17,22;143:7,15;145:2;146:9; 158:23,25 <b>efficient (3)</b> 30:3;47:15;93:1 <b>effort (2)</b> 143:6;154:4 <b>either (10)</b> 11:15;100:24;116:16; 119:25;149:7;151:16; 152:23;169:15;182:6;201:20 <b>element (2)</b> 143:14;164:14 <b>elements (2)</b> 202:9;203:2 <b>eliminate (1)</b> 87:25 <b>else (8)</b> 13:24;39:8;44:8;50:24; 52:9;75:8;189:12;206:25 <b>elsewhere (2)</b> 190:16,19 <b>email (5)</b> 11:9;19:12,20;98:22;
--	---	---	---

102:24 <b>emailed (2)</b> 83:18;84:21 <b>emails (4)</b> 168:16,17;169:22;170:1 <b>emergency (1)</b> 10:24 <b>employ (1)</b> 108:20 <b>employed (3)</b> 14:20;53:16;66:18 <b>end (15)</b> 11:20;22:22;23:6;46:9; 49:22,23,24;71:13;95:8,19; 106:24;122:14;127:16; 144:22;197:20 <b>ends (3)</b> 46:14;127:21;128:4 <b>enforce (1)</b> 42:23 <b>engineer (3)</b> 14:20;36:3;141:23 <b>Engineering (5)</b> 14:21;15:1;36:1,16;103:13 <b>Engineers (2)</b> 102:21;199:22 <b>engineer's (1)</b> 137:12 <b>enough (9)</b> 46:24;65:10;73:18;77:4; 107:25;112:8,9;128:17; 204:21 <b>enrollment (1)</b> 30:15 <b>ensure (2)</b> 11:17;50:2 <b>enter (1)</b> 129:5 <b>entered (1)</b> 38:8 <b>entire (2)</b> 44:20;73:24 <b>entities (3)</b> 86:8;113:18;121:10 <b>entitled (5)</b> 42:11;176:11;202:4,8; 203:2 <b>entity (1)</b> 106:20 <b>environmental (3)</b> 27:15,16,20 <b>equal (4)</b> 50:25;52:6;130:18;131:18 <b>equals (1)</b> 131:9 <b>equation (6)</b> 42:25;91:19;92:11;93:2; 97:6;107:9 <b>equations (8)</b> 51:19;52:3;54:9;66:17; 93:20;107:2;110:7;111:19 <b>equilibrium (1)</b> 191:5	<b>equivalent (1)</b> 53:21 <b>Erick (2)</b> 36:15;103:13 <b>ERO (2)</b> 36:16;141:21 <b>errata (3)</b> 197:25;198:10,18 <b>error (4)</b> 108:7;174:15;181:12,17 <b>errors (1)</b> 107:17 <b>ESPA (3)</b> 63:5,7,10 <b>ESPAM (1)</b> 187:1 <b>essentially (8)</b> 45:14;47:24;60:15;83:5; 90:4;104:3;109:23;194:2 <b>establish (2)</b> 169:6,15 <b>established (1)</b> 203:3 <b>establishes (1)</b> 203:5 <b>establishing (1)</b> 203:19 <b>estimate (7)</b> 117:2;145:2,7;154:11; 192:11,13,15 <b>estimated (1)</b> 47:8 <b>Estimates (1)</b> 106:14 <b>estimation (1)</b> 191:12 <b>et (12)</b> 25:2;71:25;72:2;73:1; 75:23;76:1;77:24;91:12; 143:11;144:13;156:20,25 <b>evaluate (7)</b> 31:20;32:6,21,23;81:25; 142:15;202:11 <b>evaluating (2)</b> 53:3;63:15 <b>evaluation (11)</b> 24:1;54:21;58:14,15;91:8; 105:12;147:25;148:12; 153:15;187:19;190:9 <b>evaluations (1)</b> 58:2 <b>evaporate (1)</b> 41:17 <b>evapotranspiration (1)</b> 41:18 <b>evapotranspirative (1)</b> 45:17 <b>even (21)</b> 41:21;42:14,21;74:21; 82:13;105:21;116:6,21; 119:3;120:23;128:8,20; 146:6;158:19;164:24;167:1; 168:11;169:5;170:3;177:9;	192:9 <b>event (1)</b> 55:17 <b>everybody (4)</b> 195:6;196:17;200:17; 207:1 <b>everyone (3)</b> 11:13;143:7;166:5 <b>evidence (20)</b> 11:18;14:2;28:10;56:11; 76:13,19;77:6;101:19,25; 124:24;125:21;167:7; 168:12;185:19;196:9; 197:12;202:23;203:4,4,19 <b>evidentiary (1)</b> 169:3 <b>exact (2)</b> 135:9;192:22 <b>exactly (5)</b> 62:25;65:20;134:8,13; 191:14 <b>Examination (15)</b> 7:5,9;14:11;27:3;28:2; 35:3;59:23;124:22;132:20; 141:14;171:8;179:24,25; 186:7;194:18 <b>examine (5)</b> 57:14;64:4;80:15;123:15, 19 <b>example (19)</b> 39:12;40:1;44:14;46:17; 51:11;64:20;71:12;72:11; 86:3;111:8;115:11,15;130:6; 131:12,14;146:5;158:20; 190:13,14 <b>examples (2)</b> 99:10;167:12 <b>except (2)</b> 29:1;99:2 <b>excerpt (3)</b> 60:3;62:8,9 <b>excessive (1)</b> 128:13 <b>exclude (3)</b> 64:14;152:16,19 <b>excluded (20)</b> 60:23;61:16,17,21;64:8, 11,21;150:18;151:20,22; 152:2,4,10,22;153:4;169:2, 20;188:25;190:6,6 <b>excluding (4)</b> 59:25;153:7;189:1,9 <b>excuse (4)</b> 94:20;139:5;146:25; 177:14 <b>excused (1)</b> 10:25 <b>exhibit (92)</b> 11:16;12:19,19,23;13:2,9, 10,13,13,25;14:2,3,5;15:10, 16,23;17:15;18:22;19:7,14; 21:2;22:10;28:22,25;29:17; 30:12,14,20;31:8;36:5,13;	38:19,24;39:7,8,10,12,20,23, 25;40:17;41:8,25;58:10; 60:2;62:12,15;83:17;84:21; 85:16;98:14,16,17;101:17, 20,24;102:1,17,19,21;103:5; 113:12;124:24;125:9,19,21, 22;136:25;137:3;139:15; 141:25;142:9,18;148:4; 166:15;172:4,5,16,19;176:9, 21;177:12;187:10,11; 195:20;196:9;198:11;199:4, 9,10,14,16 <b>EXHIBITS (38)</b> 9:4;11:5,15,17;12:22;13:1, 1;14:9;28:3,4,6,10,11;55:22; 56:9,12;166:14,15,17,20,23; 167:5,12,20;184:6,14; 185:10,18,20;195:3,17,25; 196:10,12,22,22;197:13,17 <b>exist (2)</b> 48:25;118:22 <b>existed (1)</b> 154:6 <b>existing (1)</b> 48:24 <b>exists (1)</b> 95:10 <b>expect (1)</b> 116:3 <b>expedited (1)</b> 200:17 <b>experience (11)</b> 52:24;53:6;78:1,2,7;86:13; 100:5;140:1;146:12;161:23; 162:4 <b>examples (27)</b> 29:12,12;36:10,14;55:23; 56:3,6;58:9;59:12;77:11; 79:24;85:16;93:22;98:22; 99:4;102:20;113:7;142:5; 146:23;147:2,5;148:6;172:3; 180:10;197:24;198:17; 206:21 <b>expertise (2)</b> 154:25;187:6 <b>experts (1)</b> 201:9 <b>explain (8)</b> 27:13;30:14;59:20;85:23; 148:24;167:3;177:19;178:17 <b>explained (4)</b> 124:4,8;189:4;192:18 <b>explanation (1)</b> 50:6 <b>exploration (1)</b> 79:9 <b>explore (1)</b> 181:9 <b>explored (1)</b> 38:4 <b>exposition (1)</b> 45:3 <b>extent (6)</b>
---	--	--	--

<p>13:18;38:3;48:3;82:21; 92:9;154:24 <b>extra (2)</b> 185:6,6 <b>extreme (4)</b> 55:8,14;75:4;126:18 <b>extremely (1)</b> 72:19 <b>eye-balling (1)</b> 113:4</p>	<p>4,19;49:6;52:21,22;57:21; 58:22;60:3;61:3,25;62:4,9; 65:8,18;66:4,8,11,15;67:8, 13;68:10;69:2,7;70:1,12; 71:9;72:15;73:6;78:10; 79:15;80:6,19;81:20;82:5, 25;85:24;86:2;88:19;92:1,5; 93:1;94:3;99:9;102:13; 105:12;110:24;112:1; 113:19;114:14;116:1,4; 117:15;118:22;120:25; 122:10,16;130:17;131:2; 135:3,23;139:9;145:8,11,18, 25;146:16;148:18;149:3; 150:5;153:5;155:3,6,16; 157:12,18;158:16;159:16, 21;161:1;163:10,12,19,21; 176:17;179:2;190:12;195:22</p>	<p><b>Ferguson (2)</b> 173:18;181:9 <b>few (13)</b> 86:16,20;88:18;90:23; 108:22;113:7;122:12;126:6; 132:2,13;156:5;158:12; 180:9 <b>fewer (1)</b> 50:24 <b>field (12)</b> 39:18;42:12;58:6;61:7; 70:2;81:3;89:2,6,7,9;186:22; 188:20 <b>fields (11)</b> 38:11;39:13;40:21;53:10; 62:21;69:18,19,22;70:5; 146:24;188:1 <b>fieldwork (1)</b> 58:5 <b>fifth (40)</b> 23:6,10;36:17,20;37:9; 45:11;50:1,51:20;58:19; 76:12;83:7,19;102:17; 103:23;104:13;106:8,21; 108:8;109:13;112:13;126:8; 130:19;136:2;171:17,21; 175:25;176:3,4,5,19,22; 177:7,11;178:9,20;179:5,20; 182:1,8;183:1 <b>Figure (25)</b> 43:15;58:20;67:10;76:14; 81:9;93:25;94:14,18,19; 99:3,3,11;101:1,2;145:5; 156:11,24;159:14,19,19; 172:7;176:15,16;177:10; 205:4 <b>farmer (14)</b> 17:12 <b>file (3)</b> 21:20;25:6,9 <b>filed (6)</b> 24:5;37:15;161:10; 199:18;200:11,22 <b>files (5)</b> 37:17,18,19,23,24 <b>filing (1)</b> 23:19 <b>fill (1)</b> 49:14 <b>final (2)</b> 177:1,2 <b>finalization (1)</b> 168:19 <b>Finally (2)</b> 49:10;137:21 <b>find (7)</b> 30:7;170:4;172:2,10,22; 176:14;205:15 <b>fine (5)</b> 35:10;67:22;79:23; 123:25;169:13 <b>finish (1)</b> 188:22</p>	<p><b>firm (2)</b> 62:5;108:23 <b>first (20)</b> 12:13;15:14;20:17;26:20; 34:20;58:13,18;80:4;140:3; 141:5;144:23;157:8;170:16; 172:11;180:1,12,20;185:2; 186:3;188:1 <b>fit (2)</b> 55:3,4 <b>fits (2)</b> 55:2;110:17 <b>fix (4)</b> 124:13,14;181:18,18 <b>flat (2)</b> 128:19;129:1 <b>Fletcher (32)</b> 7:10;13:18,21;24:15; 56:17;57:1;125:3,9,11,14; 134:22;147:19,22;166:5,25; 167:18,19;184:15,23;185:2, 4,11,14;189:19,21,22;190:2; 193:11;194:13,15;196:1; 198:21 <b>Fletcher's (1)</b> 193:21 <b>flip (5)</b> 68:17;79:25;83:21; 159:18;161:14 <b>flip-flops (1)</b> 12:2 <b>flood (5)</b> 89:1,12;90:2,8,21 <b>flow (3)</b> 48:15,24;72:19 <b>flowing (1)</b> 48:23 <b>flowmeters (1)</b> 119:25 <b>flows (5)</b> 48:7,10;201:24,25,25 <b>flux (1)</b> 182:11 <b>focus (5)</b> 27:16;117:14;183:10,11; 206:19 <b>focused (2)</b> 38:2;143:5 <b>folks (2)</b> 184:5;205:13 <b>follow (2)</b> 46:22;138:17 <b>following (1)</b> 190:20 <b>follows (6)</b> 12:15;26:22;34:22;141:7; 171:6;186:5 <b>follow-up (2)</b> 180:9;193:14 <b>food (2)</b> 21:16,17 <b>FOODS (15)</b> 8:10;12:8,13;14:14;15:4,</p>
<b>F</b>			
<p><b>face (1)</b> 98:19 <b>facilities (2)</b> 27:19,23 <b>facility (13)</b> 15:8,17,18,21;20:7;22:20; 24:9;27:25;28:14,18,20; 31:21;32:4 <b>fact (9)</b> 106:8;108:19;113:2; 120:3;134:9;164:21;192:13; 195:16;204:20 <b>factor (14)</b> 46:5,15;47:4;48:2;49:5,10; 50:15;126:10,17,23;127:3,6; 135:10;188:10 <b>factors (14)</b> 38:8;45:3;50:7;68:20; 90:25;91:5,10,14;97:5; 107:21;116:20;129:5; 186:15;202:19 <b>factory (2)</b> 13:3;29:1 <b>fair (6)</b> 63:24;70:15;88:16; 110:21;128:17;163:6 <b>fairly (4)</b> 52:24;119:11;192:22,24 <b>faith (2)</b> 169:14;170:2 <b>fall (1)</b> 144:8 <b>fallback (2)</b> 202:25;203:7 <b>falling (1)</b> 196:4 <b>fallow (10)</b> 73:4,16,23;190:5;191:6,7, 8;192:7;193:9,9 <b>fallowed (9)</b> 186:19;188:2,13,21;189:1, 4,8,12;190:13 <b>fallowing (8)</b> 70:6,8,13,24;73:15,21; 186:14;189:6 <b>fallows (2)</b> 191:18,19 <b>FALLS (99)</b> 7:21;37:8;38:6;39:1;43:2, 5,12;44:19;45:5;47:7,9;48:3,</p>	<p><b>Falls' (3)</b> 71:24;78:22;93:16 <b>familiar (23)</b> 15:6;27:18,21,24;28:13; 59:3,6,11;63:7;77:23;83:11; 87:18;101:5;108:11;118:1,5; 119:17,18;121:2;138:24; 139:2;154:18,20 <b>familiarity (1)</b> 146:12 <b>FAQ (1)</b> 21:7 <b>far (4)</b> 25:20;149:24;166:5; 168:22 <b>farm (10)</b> 47:19;53:6,18;73:16,18, 23,25;89:2;90:12,16 <b>farmer (14)</b> 70:1;73:10,11,15,17,21,23; 90:2,6,8;191:18,21;193:2,8 <b>farmers (2)</b> 81:18;161:24 <b>farmland (3)</b> 72:3;74:24;82:2 <b>farmstead (2)</b> 99:14;100:14 <b>farmsteads (11)</b> 60:24;62:20;99:18;100:9, 24;101:14;152:6,10,18,20; 154:4 <b>fashion (2)</b> 53:12;82:1 <b>favor (1)</b> 202:7 <b>feeds (1)</b> 106:20 <b>feel (1)</b> 205:7 <b>feeling (1)</b> 10:13 <b>feet (3)</b> 12:5;48:22,22 <b>felt (2)</b> 44:18;55:13</p>	<p><b>Ferguson (2)</b> 173:18;181:9 <b>few (13)</b> 86:16,20;88:18;90:23; 108:22;113:7;122:12;126:6; 132:2,13;156:5;158:12; 180:9 <b>fewer (1)</b> 50:24 <b>field (12)</b> 39:18;42:12;58:6;61:7; 70:2;81:3;89:2,6,7,9;186:22; 188:20 <b>fields (11)</b> 38:11;39:13;40:21;53:10; 62:21;69:18,19,22;70:5; 146:24;188:1 <b>fieldwork (1)</b> 58:5 <b>fifth (40)</b> 23:6,10;36:17,20;37:9; 45:11;50:1,51:20;58:19; 76:12;83:7,19;102:17; 103:23;104:13;106:8,21; 108:8;109:13;112:13;126:8; 130:19;136:2;171:17,21; 175:25;176:3,4,5,19,22; 177:7,11;178:9,20;179:5,20; 182:1,8;183:1 <b>Figure (25)</b> 43:15;58:20;67:10;76:14; 81:9;93:25;94:14,18,19; 99:3,3,11;101:1,2;145:5; 156:11,24;159:14,19,19; 172:7;176:15,16;177:10; 205:4 <b>farmer (14)</b> 17:12 <b>file (3)</b> 21:20;25:6,9 <b>filed (6)</b> 24:5;37:15;161:10; 199:18;200:11,22 <b>files (5)</b> 37:17,18,19,23,24 <b>filing (1)</b> 23:19 <b>fill (1)</b> 49:14 <b>final (2)</b> 177:1,2 <b>finalization (1)</b> 168:19 <b>Finally (2)</b> 49:10;137:21 <b>find (7)</b> 30:7;170:4;172:2,10,22; 176:14;205:15 <b>fine (5)</b> 35:10;67:22;79:23; 123:25;169:13 <b>finish (1)</b> 188:22</p>	<p><b>firm (2)</b> 62:5;108:23 <b>first (20)</b> 12:13;15:14;20:17;26:20; 34:20;58:13,18;80:4;140:3; 141:5;144:23;157:8;170:16; 172:11;180:1,12,20;185:2; 186:3;188:1 <b>fit (2)</b> 55:3,4 <b>fits (2)</b> 55:2;110:17 <b>fix (4)</b> 124:13,14;181:18,18 <b>flat (2)</b> 128:19;129:1 <b>Fletcher (32)</b> 7:10;13:18,21;24:15; 56:17;57:1;125:3,9,11,14; 134:22;147:19,22;166:5,25; 167:18,19;184:15,23;185:2, 4,11,14;189:19,21,22;190:2; 193:11;194:13,15;196:1; 198:21 <b>Fletcher's (1)</b> 193:21 <b>flip (5)</b> 68:17;79:25;83:21; 159:18;161:14 <b>flip-flops (1)</b> 12:2 <b>flood (5)</b> 89:1,12;90:2,8,21 <b>flow (3)</b> 48:15,24;72:19 <b>flowing (1)</b> 48:23 <b>flowmeters (1)</b> 119:25 <b>flows (5)</b> 48:7,10;201:24,25,25 <b>flux (1)</b> 182:11 <b>focus (5)</b> 27:16;117:14;183:10,11; 206:19 <b>focused (2)</b> 38:2;143:5 <b>folks (2)</b> 184:5;205:13 <b>follow (2)</b> 46:22;138:17 <b>following (1)</b> 190:20 <b>follows (6)</b> 12:15;26:22;34:22;141:7; 171:6;186:5 <b>follow-up (2)</b> 180:9;193:14 <b>food (2)</b> 21:16,17 <b>FOODS (15)</b> 8:10;12:8,13;14:14;15:4,</p>

<p>15,17;18:20;19:1,14,25;20:8,19;24:4;25:9</p> <p><b>Foods' (1)</b> 20:16</p> <p><b>footer (1)</b> 60:5</p> <p><b>footnote (2)</b> 178:7,8</p> <p><b>force (1)</b> 72:20</p> <p><b>forces (1)</b> 97:18</p> <p><b>forecast (8)</b> 55:18;127:3,7,15,20; 199:19,21,24</p> <p><b>forget (1)</b> 34:14</p> <p><b>forgot (1)</b> 98:7</p> <p><b>form (1)</b> 166:18</p> <p><b>formerly (1)</b> 74:24</p> <p><b>formula (1)</b> 104:3</p> <p><b>forth (2)</b> 37:11;93:21</p> <p><b>forward (8)</b> 12:10;26:16;57:13; 124:21;141:2;144:2;147:18; 170:23</p> <p><b>found (10)</b> 31:4;38:1,7;40:2;43:21; 51:19;172:25;173:19;174:1; 175:21</p> <p><b>foundation (4)</b> 70:14,22,25;129:15</p> <p><b>foundational (2)</b> 138:17;139:1</p> <p><b>four (5)</b> 19:13,22;28:6;164:8;201:6</p> <p><b>Fourth (4)</b> 104:7;109:12;114:12; 176:18</p> <p><b>fraction (1)</b> 192:17</p> <p><b>fractured (1)</b> 133:6</p> <p><b>frame (2)</b> 95:22;114:8</p> <p><b>frames (1)</b> 114:5</p> <p><b>framework (3)</b> 204:13;206:22,24</p> <p><b>frankly (2)</b> 84:6;203:1</p> <p><b>frequently (1)</b> 61:22</p> <p><b>Friday (1)</b> 166:1</p> <p><b>fringe (2)</b> 38:15;42:7</p> <p><b>fringes (1)</b></p>	<p>149:16</p> <p><b>front (9)</b> 12:21;21:8;28:3,23;106:9; 121:7;152:13;167:2,23</p> <p><b>full (8)</b> 34:12;44:19;74:1;157:8, 25;162:24;199:23;200:1</p> <p><b>fully (1)</b> 73:5</p> <p><b>fun (1)</b> 180:6</p> <p><b>function (4)</b> 42:18;118:10;133:22; 182:18</p> <p><b>functions (2)</b> 83:15;118:6</p> <p><b>further (19)</b> 24:11;33:19;56:22,24; 88:16;97:23;98:2;140:11,14; 147:7;155:24;156:2;165:2; 167:17;179:23;181:9;183:5; 194:10,18</p> <p><b>future (6)</b> 122:20;130:4;182:18; 188:20;200:2;201:13</p>	<p><b>GIS (28)</b> 37:13;59:3,24;60:10,13, 18;61:22;63:24,25;64:7,16; 65:7,19;67:12;79:13;108:12, 21;109:4;118:2;148:18; 150:8,13;151:6,20;152:8,11, 16;153:18</p> <p><b>gist (1)</b> 167:16</p> <p><b>given (10)</b> 51:2,10;54:1;66:19,22; 82:20;97:2;111:1;133:16; 192:13</p> <p><b>glad (1)</b> 12:5</p> <p><b>glitch (1)</b> 67:20</p> <p><b>goal (3)</b> 55:11;149:21;192:10</p> <p><b>goes (11)</b> 47:25;48:15;64:19;66:16; 73:1,1,2;75:8;97:10;107:1; 158:18</p> <p><b>Good (30)</b> 14:13;24:24,25;25:3;27:5, 6;35:5,7;57:12,18,20;81:22; 102:8;105:4;124:1;125:23; 126:3,4;129:14;132:12,15, 16;146:20;147:14,15,16; 169:14;170:2;171:11;184:16</p> <p><b>goodness (2)</b> 57:23;104:21</p> <p><b>gosh (1)</b> 147:22</p> <p><b>Gotcha (1)</b> 23:8</p> <p><b>governed (1)</b> 74:21</p> <p><b>grain (1)</b> 146:6</p> <p><b>grains (2)</b> 146:2,4</p> <p><b>graph (2)</b> 95:13;96:7</p> <p><b>graphs (1)</b> 145:17</p> <p><b>grass (2)</b> 71:20,23</p> <p><b>gravity (4)</b> 45:20;47:15,21;48:8</p> <p><b>gravity-irrigated (1)</b> 41:5</p> <p><b>gray (1)</b> 94:11</p> <p><b>great (4)</b> 48:3;103:3;113:16;114:12</p> <p><b>greater (7)</b> 66:5;97:20;114:23,24; 116:17;117:17;127:7</p> <p><b>green (4)</b> 139:20,23;140:4;186:23</p> <p><b>Greg (2)</b> 102:20;113:6</p>	<p><b>Greg's (1)</b> 114:10</p> <p><b>GROUND (18)</b> 8:4;29:15,22;30:6,8,15,18, 25;31:3;33:7,13;53:17; 122:5;137:16;162:23;173:5; 175:13;186:3</p> <p><b>groundwater (66)</b> 15:7;20:22;22:16;23:22, 23;24:13;27:22;29:12;32:7; 48:20;52:17;53:4,5,16,22; 54:8;61:11;68:5;69:6;75:15; 77:5,11;80:1,5,10,19;81:2,5, 9,23;82:1,10,13,15;85:15,21; 86:2,9;98:3;117:24;118:7, 21;119:15,24;120:8,17,23; 121:11,21;122:1,3,23; 127:13;132:9;153:15;154:9, 24;155:12;158:15;174:24; 179:25;184:5;201:24;204:1, 2,3</p> <p><b>group (10)</b> 54:19;132:9;144:6;175:16, 17,24;176:3;196:21;197:4,6</p> <p><b>grow (2)</b> 105:16,25</p> <p><b>growing (2)</b> 139:21,21</p> <p><b>grown (2)</b> 71:24;86:19</p> <p><b>guaranteed (1)</b> 182:12</p> <p><b>guess (21)</b> 25:22;33:12,16;40:17; 54:11;55:15;58:13;78:25; 135:10;136:16;139:1;146:8; 160:19;170:2,15;183:9; 192:6;194:14;204:6;205:7, 17</p> <p><b>guts (2)</b> 51:16;134:12</p> <p><b>guys (1)</b> 32:9</p>
<b>G</b>		<p><b>gallons (1)</b> 72:13</p> <p><b>garden (1)</b> 99:23</p> <p><b>gardening (1)</b> 100:15</p> <p><b>gardens (1)</b> 71:21</p> <p><b>Garrick (1)</b> 19:12</p> <p><b>gather (1)</b> 205:12</p> <p><b>gathering (1)</b> 167:14</p> <p><b>gave (6)</b> 105:4;110:22;111:8,9; 115:10;188:8</p> <p><b>general (14)</b> 45:3;47:14,18;50:23;58:3; 78:6;117:20;126:25;133:8; 135:17;136:11;139:4; 152:15;186:24</p> <p><b>generally (28)</b> 28:16;36:7,13,18;38:22; 43:9;45:1;50:19;52:11; 57:24;80:7;83:14;85:21,25; 88:17;89:3,9,13;130:11; 133:10;138:24;140:2;142:2, 8,21;145:5;153:7,12</p> <p><b>generate (2)</b> 60:17;108:14</p> <p><b>generated (1)</b> 119:8</p> <p><b>generation (1)</b> 107:17</p>	<p style="text-align: center;"><b>H</b></p> <p><b>half (2)</b> 71:14;93:17</p> <p><b>half-an-acre (1)</b> 100:4</p> <p><b>half-pivot (1)</b> 39:17</p> <p><b>halfway (4)</b> 23:15;172:11,23;176:14</p> <p><b>hand (3)</b> 26:17;34:16;79:20</p> <p><b>hands (1)</b> 165:5</p> <p><b>happen (10)</b> 19:18;20:6;21:16;31:3,12, 17;71:9;107:17;164:18; 192:15</p> <p><b>happened (9)</b></p>

<p>17:21;18:18;30:5;47:6; 87:16;97:19;149:6;180:24; 192:16 <b>happening (1)</b> 44:19 <b>happens (3)</b> 72:8;137:16;162:25 <b>harbinger (1)</b> 204:25 <b>hard (5)</b> 53:14;101:4,5;180:8; 181:23 <b>hardened (3)</b> 106:6,17;152:19 <b>Harris (31)</b> 7:11;98:4,9,11;102:4,7,12; 103:3,4;113:13,16;123:3,6; 129:14;136:1;137:21; 138:11,12,15,16;140:7; 142:10;158:13;193:13,14, 19;194:10;206:5,6,9,12 <b>harvested (2)</b> 86:25;87:3 <b>hay (1)</b> 71:25 <b>HDR (3)</b> 14:21;15:1,5 <b>headgate (2)</b> 74:19;75:8 <b>heading (6)</b> 80:3;95:7;147:25;148:3, 10;187:19 <b>heads (1)</b> 194:24 <b>health (1)</b> 70:9 <b>hear (13)</b> 35:6,7;44:3;67:20;88:14; 102:9,11;135:2;142:12; 162:9;184:20,22;196:3 <b>heard (11)</b> 46:6;47:8;63:6,11;70:20; 86:17;145:17;146:11;152:5; 157:11;158:12 <b>HEARING (165)</b> 10:3,9,17,20;11:14;12:3,9, 17;13:15,19,23;14:4,6;15:3; 22:7,8;23:19,25;24:12,18; 26:8,11,15,24;28:7;33:20,24; 34:5,8,24;35:12,16,20;41:2; 56:5,10,13,14,16,19,21,24; 57:2,8,12;68:14;70:18,20; 71:1,5;77:3,16;79:8;98:2,8, 12;101:21,23;102:4;106:14, 16;113:12,14;123:6,8,11,14, 18;124:20;125:1,6,13,17,24; 132:8;138:10;140:9,11,14, 17,22;141:1,9;146:25;147:4, 9;156:2;165:3,8,15,18,23; 166:2,7;167:1,18,23;168:7, 15;169:4,13;170:7,13,18,22; 171:1;172:14,21;179:24; 182:7,14,16,23,25;183:4,6,</p>	<p>15,19,23;184:1,8,10;185:1,9, 12,15;189:16,21;193:12,15; 194:11,14,17;195:4,10,13, 19,23;196:3,6,8,11,25;197:9, 10;198:4,12,15,19;199:1,6, 13,17;200:4,12,19;201:3; 203:5;204:24;205:16;206:8, 11,13;207:3,6 <b>held (4)</b> 56:20;82:5,6;125:16 <b>Hello (1)</b> 171:10 <b>help (2)</b> 182:18;207:1 <b>helping (1)</b> 187:3 <b>herein (1)</b> 129:8 <b>Hey (4)</b> 57:20;65:1;98:5;132:14 <b>Hi (1)</b> 156:9 <b>high (8)</b> 49:16;72:19;87:17;116:6; 127:6;135:7;142:4;192:25 <b>high-efficiency (1)</b> 45:21 <b>higher (9)</b> 42:21;66:7,12;67:4;72:9; 97:18;111:16;122:13,13 <b>highest (1)</b> 55:9 <b>highlighted (6)</b> 54:21;62:14;100:7;101:6; 151:16,23 <b>highlighting (7)</b> 98:23;99:2,7;150:6,15,15, 20 <b>hindcast (2)</b> 176:15,16 <b>hire (1)</b> 33:4 <b>hired (1)</b> 29:11 <b>historic (3)</b> 110:14;113:17;133:17 <b>historical (5)</b> 120:8;134:1;149:3,19; 188:16 <b>historically (1)</b> 134:10 <b>history (3)</b> 36:8;142:3;149:5 <b>hit (1)</b> 42:3 <b>hits (1)</b> 142:4 <b>hold (2)</b> 23:19,25 <b>holder (1)</b> 202:7 <b>holders (3)</b> 55:13;126:11;202:4</p>	<p><b>holding (1)</b> 200:18 <b>holds (1)</b> 83:5 <b>home (1)</b> 147:17 <b>homes (2)</b> 60:24;101:8 <b>homesteads (1)</b> 64:11 <b>honest (1)</b> 31:19 <b>honestly (3)</b> 201:14;202:21;203:23 <b>hopefully (1)</b> 206:23 <b>horizontal (3)</b> 40:21;94:11;151:15 <b>hot-button (1)</b> 117:14 <b>hour (1)</b> 10:3 <b>hours (1)</b> 195:6 <b>house (2)</b> 99:14;100:16 <b>houses (1)</b> 153:3 <b>human (1)</b> 140:5 <b>hundreds (2)</b> 49:2,2 <b>hydraulically (1)</b> 53:8 <b>hypothetical (12)</b> 71:17;110:22;111:3; 115:10;116:3,8,18;122:17; 129:13;131:14,15,21 <b>hypothetically (1)</b> 131:7</p>	<p>155:18;206:24 <b>idle (2)</b> 69:19;70:6 <b>idled (1)</b> 70:13 <b>IDWR (15)</b> 19:13;30:17,24;36:11; 37:11,16,23;55:6;119:3; 142:6;144:7,16;154:12; 171:4;174:12 <b>IDWR's (2)</b> 176:15,16 <b>IGWA (8)</b> 8:21;65:22,25;66:13;82:9, 12;101:17;196:19 <b>IGWA's (3)</b> 98:17;174:21,22 <b>illustrate (1)</b> 39:16 <b>illustration (2)</b> 157:2,6 <b>image (8)</b> 34:12;60:4,8;61:1;62:8; 150:5;151:15;186:23 <b>imagery (6)</b> 59:19,19;61:5;78:21; 149:13;186:22 <b>images (2)</b> 152:23,24 <b>immediately (1)</b> 182:4 <b>impact (4)</b> 31:21;32:21;135:11; 145:23 <b>implementation (1)</b> 142:16 <b>implemented (4)</b> 87:7;88:8;157:11;182:3 <b>implicit (1)</b> 80:16 <b>important (10)</b> 42:24;44:12;47:11;82:2; 84:11,14;110:6;135:10; 143:4,14 <b>impose (1)</b> 206:13 <b>imposed (1)</b> 202:15 <b>impossible (1)</b> 128:4 <b>impression (1)</b> 185:3 <b>improve (2)</b> 89:4;92:1 <b>improved (2)</b> 158:22,25 <b>improvement (2)</b> 92:8,14 <b>improvements (4)</b> 157:11,13,20;159:8 <b>improves (1)</b> 88:8 <b>inability (1)</b></p>
<b>I</b>			
<p><b>IDAHO (11)</b> 7:21;28:21;102:13; 135:15;138:20;139:6; 146:13,19;161:2;171:19; 195:22 <b>idea (2)</b> 41:9;80:22 <b>identical (1)</b> 38:2 <b>identification (1)</b> 112:15 <b>identified (11)</b> 99:7;100:11;142:9;150:13, 16,25;151:5;152:1;155:17, 22;166:14 <b>identifies (1)</b> 105:15 <b>identify (11)</b> 17:17;18:24;54:8;68:20; 78:15;149:7,21;150:7;152:6;</p>	<p><b>holding (1)</b> 200:18 <b>holds (1)</b> 83:5 <b>home (1)</b> 147:17 <b>homes (2)</b> 60:24;101:8 <b>homesteads (1)</b> 64:11 <b>honest (1)</b> 31:19 <b>honestly (3)</b> 201:14;202:21;203:23 <b>hopefully (1)</b> 206:23 <b>horizontal (3)</b> 40:21;94:11;151:15 <b>hot-button (1)</b> 117:14 <b>hour (1)</b> 10:3 <b>hours (1)</b> 195:6 <b>house (2)</b> 99:14;100:16 <b>houses (1)</b> 153:3 <b>human (1)</b> 140:5 <b>hundreds (2)</b> 49:2,2 <b>hydraulically (1)</b> 53:8 <b>hypothetical (12)</b> 71:17;110:22;111:3; 115:10;116:3,8,18;122:17; 129:13;131:14,15,21 <b>hypothetically (1)</b> 131:7</p>	<p>155:18;206:24 <b>idle (2)</b> 69:19;70:6 <b>idled (1)</b> 70:13 <b>IDWR (15)</b> 19:13;30:17,24;36:11; 37:11,16,23;55:6;119:3; 142:6;144:7,16;154:12; 171:4;174:12 <b>IDWR's (2)</b> 176:15,16 <b>IGWA (8)</b> 8:21;65:22,25;66:13;82:9, 12;101:17;196:19 <b>IGWA's (3)</b> 98:17;174:21,22 <b>illustrate (1)</b> 39:16 <b>illustration (2)</b> 157:2,6 <b>image (8)</b> 34:12;60:4,8;61:1;62:8; 150:5;151:15;186:23 <b>imagery (6)</b> 59:19,19;61:5;78:21; 149:13;186:22 <b>images (2)</b> 152:23,24 <b>immediately (1)</b> 182:4 <b>impact (4)</b> 31:21;32:21;135:11; 145:23 <b>implementation (1)</b> 142:16 <b>implemented (4)</b> 87:7;88:8;157:11;182:3 <b>implicit (1)</b> 80:16 <b>important (10)</b> 42:24;44:12;47:11;82:2; 84:11,14;110:6;135:10; 143:4,14 <b>impose (1)</b> 206:13 <b>imposed (1)</b> 202:15 <b>impossible (1)</b> 128:4 <b>impression (1)</b> 185:3 <b>improve (2)</b> 89:4;92:1 <b>improved (2)</b> 158:22,25 <b>improvement (2)</b> 92:8,14 <b>improvements (4)</b> 157:11,13,20;159:8 <b>improves (1)</b> 88:8 <b>inability (1)</b></p>	

<p>205:6 <b>INC (2)</b> 8:10;14:21 <b>inch (1)</b> 61:19 <b>inches (4)</b> 72:14,14;146:1,2 <b>incidental (1)</b> 48:6 <b>include (4)</b> 105:19;106:5;109:14; 153:3 <b>included (8)</b> 13:8;15:23;59:12;153:12; 169:23;181:23;188:18;192:8 <b>includes (1)</b> 12:23 <b>including (6)</b> 47:7;61:20;86:20;91:1; 189:11;196:17 <b>income (1)</b> 73:11 <b>inconsistency (1)</b> 40:9 <b>incorporate (1)</b> 50:1 <b>incorrect (3)</b> 16:7;112:22;179:16 <b>increase (17)</b> 47:13,17;49:9;88:18; 89:10;92:20;114:6;122:11, 12,17,19;128:24;145:14; 146:3,4,7;159:15 <b>increased (8)</b> 48:21;113:5;114:15,21; 115:3;129:2;158:19,22 <b>increases (3)</b> 145:20,22;158:21 <b>increasing (5)</b> 96:8,20,21;136:13;145:13 <b>incredulous (2)</b> 205:15,25 <b>independent (1)</b> 68:8 <b>indicate (4)</b> 108:19;132:1;139:21; 190:14 <b>indicated (4)</b> 54:19;108:8;113:2;129:6 <b>indicates (1)</b> 107:16 <b>individual (7)</b> 53:17;77:8;81:18;118:17; 137:9;139:16;191:21 <b>individuals (2)</b> 167:13,15 <b>industry (2)</b> 129:19;130:10 <b>infiltration (1)</b> 48:9 <b>influence (2)</b> 44:13;68:20 <b>inform (2)</b></p>	<p>168:19;182:17 <b>information (27)</b> 65:10;82:24;84:16; 119:22;120:7;143:19; 149:17;164:20,21;166:21; 167:13,14;168:13,21,25; 169:11,14;177:19;178:17; 180:18;182:16;183:12,16; 199:10;201:16,17;203:23 <b>infrared (1)</b> 140:4 <b>in-house (1)</b> 100:2 <b>initial (7)</b> 29:10,13,14;46:3;49:16; 118:20;141:18 <b>injured (1)</b> 204:23 <b>injury (6)</b> 23:21;103:25;106:24; 111:16;201:23;203:9 <b>input (2)</b> 59:1;92:15 <b>inquiry (1)</b> 117:22 <b>in-season (25)</b> 50:2,21;51:8,14,17;54:4; 67:5;92:2;93:3,8,18;96:14, 15;97:5;107:9;124:7,13; 132:24;133:15,21;134:4,5, 12,17,21 <b>insert (1)</b> 145:1 <b>insinuate (1)</b> 170:3 <b>inspection (2)</b> 58:21;59:18 <b>installed (1)</b> 92:5 <b>insufficient (1)</b> 20:14 <b>intend (1)</b> 165:15 <b>intended (3)</b> 165:12,12;201:14 <b>intending (1)</b> 169:9 <b>intends (1)</b> 166:8 <b>intent (2)</b> 169:16;170:1 <b>intentional (1)</b> 181:12 <b>intentionally (1)</b> 181:12 <b>interconnected (2)</b> 53:8,11 <b>interdecadal (1)</b> 95:23 <b>interest (3)</b> 20:16;117:13;204:25 <b>interests (3)</b> 11:1;16:10;204:23</p>	<p><b>interpretation (8)</b> 104:22;126:25;137:7,11; 139:16,23;173:10;175:4 <b>interrupt (1)</b> 65:3 <b>intersect (1)</b> 118:6 <b>intersected (1)</b> 37:25 <b>into (58)</b> 11:18;14:2;18:20;19:2,15; 28:10;37:1;38:8;49:5;50:7; 51:16;53:2;56:11;59:1; 61:10;71:8;72:4;76:1;79:6; 88:3;89:19,23,23;91:6,14; 92:15;97:5;101:19,24; 106:20;107:7,8,21;124:24; 125:20;127:10,10;129:5; 134:11,20,21;139:12;145:1; 149:10;160:15;165:22; 167:17;173:1;185:19; 186:15;188:10;195:17; 196:9;197:12;199:3,14; 202:19;205:16 <b>investigate (2)</b> 173:13;175:7 <b>investigation (1)</b> 81:3 <b>involved (13)</b> 29:11;59:23;60:22;61:8; 78:9,17,19;79:12;87:22; 137:9;155:9,13;205:9 <b>involving (2)</b> 79:25;181:21 <b>irrelevant (1)</b> 79:7 <b>irrespective (1)</b> 96:22 <b>irrigate (6)</b> 73:18,24;100:3;120:25; 121:16;162:23 <b>irrigated (144)</b> 36:23;37:8,12;38:12,13; 39:13,14;41:21;42:15;45:10; 50:14,21,24;52:5,18;53:24; 54:8;59:25;60:1,9,10,11,23; 62:1,16,16,19,21,23;63:15, 21;64:18,18;65:8,9;66:5; 67:10;69:18;71:15;74:10,15, 24;75:9,25;76:5,6;78:16; 79:14;80:13;81:10;84:1,4,8, 15,15;85:2,8,12;92:21;93:6, 13,16;99:8,11;100:14; 105:14;106:14,15,18,20,23; 107:14;108:3,7,11;109:15, 17,20,25;110:12;111:14; 121:10,22;124:4,12;132:23; 133:9,11,12,18;137:8,19; 140:1;148:19;149:8,9,22,22; 150:7,8,9,13,16,21,25;151:6, 7,12;152:8;153:8,11,12; 155:17,19,22;161:19,25; 162:7,16;163:9,11,17;</p>	<p>164:15;186:24;187:2; 188:19,24;189:5,8;190:8,10, 18,24;191:5,6,7,10,14;192:8, 9,12,19,21;193:22 <b>irrigates (1)</b> 74:20 <b>Irrigation (63)</b> 17:19,22;18:1,5,17;19:2, 15,18,21;22:2;25:1;43:4; 45:9;47:6,9,15,19,21;48:5,6, 9,19,20;49:11;51:5;69:3,6, 10,11,15,15;71:19;72:7; 75:19;88:19;89:1,1,12,12; 90:3,9,21;91:2;93:13; 105:23;108:1;112:15; 115:25;116:1;121:15;133:8, 18;137:18;143:12;154:25; 160:6,20;161:25;178:2; 188:16;190:19,20,25 <b>irrigator (1)</b> 53:13 <b>irrigators (4)</b> 46:12,17,19;128:3 <b>issue (4)</b> 167:24;181:21;198:22; 205:21 <b>issued (6)</b> 22:5;104:8;114:13;182:3, 9;202:5 <b>issues (5)</b> 15:4;31:25;182:8;206:2,19 <b>issuing (1)</b> 181:25 <b>Item (7)</b> 73:4;184:3;187:21,22,22, 23;197:19 <b>IWRRI (1)</b> 186:25</p> <hr/> <p style="text-align: center;"><b>J</b></p> <hr/> <p><b>Jackson (3)</b> 165:11,13,16 <b>January (1)</b> 144:24 <b>Jay (5)</b> 46:6;69:21;86:15;135:2; 145:18 <b>Jennifer (1)</b> 108:20 <b>Jennings (1)</b> 108:20 <b>job (1)</b> 146:20 <b>Johns (21)</b> 7:9;170:9,10,17,20; 183:21,22,24;184:3,9,13,17, 25;185:21;186:8;187:9,12, 14;189:15;193:12,16 <b>join (4)</b> 17:20,24;29:14,22 <b>joint (3)</b> 199:19,21,23</p>
--	---	---	--

<p><b>judgment (2)</b> 83:6;91:9</p> <p><b>judicial (1)</b> 27:11</p> <p><b>junior (10)</b> 16:8;22:16;23:23;25:22; 31:6,14,16,18;75:15;203:21</p>	<p><b>lands (23)</b> 37:12;52:19;60:9;62:16, 19,23;64:18;65:8,9;89:8; 99:12;121:9;148:19;149:6; 150:7,8,9,16,25;153:12; 161:24;163:18;187:2</p> <p><b>landscaping (2)</b> 71:21;100:15</p> <p><b>large (19)</b> 45:5,18;46:5,20;47:17; 50:8,11;67:9;68:21;87:15, 20;117:5;129:22;135:15; 138:20,25;146:9,13;152:20</p> <p><b>largely (2)</b> 96:15;156:25</p> <p><b>larger (6)</b> 66:13,14;67:1;86:9; 204:15;206:22</p> <p><b>last (27)</b> 10:14,23;19:4;21:12,19, 23;23:8,13;54:10;71:9;76:9; 96:8;116:19;122:9;144:8,20; 157:25;159:2,12;160:4; 164:10;171:14;179:14,21; 185:5;197:19;199:18</p> <p><b>late (4)</b> 15:15;17:11;49:20;94:5</p> <p><b>later (2)</b> 48:11,14</p> <p><b>lateral (1)</b> 41:17</p> <p><b>laterals (4)</b> 41:12;64:21;117:6;135:4</p> <p><b>latest (2)</b> 154:7;185:5</p> <p><b>latter (1)</b> 107:19</p> <p><b>law (2)</b> 17:18;201:18</p> <p><b>layer (1)</b> 143:16</p> <p><b>laying (2)</b> 151:10;193:8</p> <p><b>lead (3)</b> 46:18;49:8;195:14</p> <p><b>leads (2)</b> 47:12;48:7</p> <p><b>learn (1)</b> 17:9</p> <p><b>learned (4)</b> 17:3;29:8;182:16,24</p> <p><b>lease (1)</b> 174:3</p> <p><b>leases (2)</b> 174:4,13</p> <p><b>least (14)</b> 11:18;43:2;58:7;111:10; 114:5;115:2;118:20;152:11; 154:6;166:8;201:18;202:3; 204:4;206:23</p> <p><b>leave (2)</b> 42:3;89:22</p> <p><b>leaves (1)</b></p>	<p>73:22</p> <p><b>left (5)</b> 40:16;69:19;70:6;98:6; 137:18</p> <p><b>legal (6)</b> 29:10;76:19,22;77:18; 84:22;119:2</p> <p><b>legally (1)</b> 202:25</p> <p><b>legend (1)</b> 151:3</p> <p><b>length (2)</b> 135:6,9</p> <p><b>lengthy (1)</b> 50:5</p> <p><b>less (10)</b> 50:25;52:1,3;63:20;86:12; 89:2,6,11;95:5;194:4</p> <p><b>letter (9)</b> 17:18,21;18:1,16;22:20; 24:8;29:18,21;30:5</p> <p><b>letters (4)</b> 37:1;84:22;85:5,9</p> <p><b>levels (2)</b> 48:21;129:15</p> <p><b>licensed (1)</b> 76:16</p> <p><b>light (2)</b> 12:5;60:20</p> <p><b>liked (1)</b> 103:20</p> <p><b>likely (9)</b> 33:4,10;40:25;41:3,11; 44:16,17;113:4;192:19</p> <p><b>likes (1)</b> 200:21</p> <p><b>limit (3)</b> 206:4,7,14</p> <p><b>limited (3)</b> 69:19;112:16;136:8</p> <p><b>line (13)</b> 39:1;43:16;78:25;87:17; 128:14,16;135:7;145:10; 151:10;156:24,24;175:3; 196:4</p> <p><b>lined (1)</b> 87:25</p> <p><b>lines (7)</b> 22:24;39:2;40:7,20;41:8; 59:24;94:11</p> <p><b>lining (6)</b> 87:12,16,21;88:7;92:6; 135:6</p> <p><b>list (5)</b> 11:5,15,17;118:21;165:11</p> <p><b>listen (1)</b> 171:24</p> <p><b>listened (2)</b> 201:6;202:20</p> <p><b>listening (1)</b> 115:24</p> <p><b>little (23)</b> 14:23;15:13;35:15;37:21;</p>	<p>46:22;54:2;58:3;67:4;83:7; 116:6;142:11,12;146:1; 159:19;160:18;167:3; 199:11;201:3;205:7,15,25; 206:20,21</p> <p><b>locate (1)</b> 200:1</p> <p><b>located (3)</b> 28:17,20;143:23</p> <p><b>locations (3)</b> 82:22,22;192:22</p> <p><b>lodge (1)</b> 78:23</p> <p><b>long (11)</b> 19:20;57:21;78:18;79:16; 93:17;103:17;122:10; 132:22;153:4;200:6;204:5</p> <p><b>longer (2)</b> 108:23;130:14</p> <p><b>look (41)</b> 15:10;17:15;18:22;21:2; 23:10;28:22;29:17;30:1,2, 12,20;31:8;50:18;51:16; 54:12;55:1,1;61:19;64:9; 95:16;100:7,17;104:13; 107:10,11;108:7;109:17; 112:6;113:6;117:11;139:3; 140:5;142:14;143:4;151:9, 14;157:24;186:21;187:15; 204:11,12</p> <p><b>looked (12)</b> 45:2;50:20;59:9;120:17; 135:14;138:19;149:1; 173:18,22;196:15;197:22; 198:21</p> <p><b>looking (27)</b> 23:8;40:18;60:2,13;64:6; 80:3;93:25;95:7;96:6;99:10; 122:14;126:14;133:13; 136:2,21;138:22;140:3; 142:25;143:1;147:18;148:4; 164:20;165:10;175:12; 177:15;187:19;204:14</p> <p><b>looks (9)</b> 36:25;57:12;62:19;95:1; 100:25;101:6,7;114:21; 150:17</p> <p><b>loss (6)</b> 45:23;88:11;90:3,9,11; 115:16</p> <p><b>losses (5)</b> 50:9;116:16,16;128:25; 129:16</p> <p><b>lost (5)</b> 31:13,17;88:5;89:25; 144:12</p> <p><b>lot (9)</b> 47:5;48:8,9;64:10;72:12; 143:9;154:13;158:17;163:3</p> <p><b>lots (4)</b> 74:9;88:10;106:6;153:9</p> <p><b>low (12)</b> 48:21;49:12,18,19;52:24;</p>
<b>K</b>			
<p><b>Kara (3)</b> 173:18;175:21;181:8</p> <p><b>keep (9)</b> 37:20;42:10,25;47:11; 73:24;74:1;110:25;154:13; 185:7</p> <p><b>keeping (1)</b> 196:18</p> <p><b>K-e-n-d-a-l-l (1)</b> 43:19</p> <p><b>Kent (1)</b> 147:21</p> <p><b>kept (1)</b> 70:21</p> <p><b>kind (13)</b> 19:5;33:1;37:17,18;94:17; 96:1;101:4;113:3;134:19; 143:23;151:10,13;153:23</p> <p><b>kinds (1)</b> 181:16</p> <p><b>King (8)</b> 12:8,9,12;14:17;24:12,18, 24;26:11</p> <p><b>K-i-n-g (1)</b> 14:17</p> <p><b>Kinyon (1)</b> 87:11</p> <p><b>Klahn (1)</b> 10:24</p> <p><b>knew (2)</b> 51:12;133:25</p> <p><b>knowing (3)</b> 25:17;119:6;161:18</p> <p><b>knowledge (5)</b> 63:12;69:25;78:6;117:18, 20</p> <p><b>known (2)</b> 53:13;74:21</p>			
<b>L</b>			
<p><b>label (1)</b> 198:2</p> <p><b>labeled (3)</b> 95:8;98:19;141:24</p> <p><b>lack (1)</b> 69:23</p> <p><b>land (25)</b> 43:3;52:22;53:22;60:14; 62:14,15;71:8,14;73:4,5; 74:2,6,15,23;75:9,24;81:10; 92:21;105:15,24;119:9; 140:4;151:5;153:7;161:19</p>			



<p>80:7;85:21;129:23;146:2; 174:17,18;192:23 <b>lower (9)</b> 49:3,21;51:12,13;54:3; 111:1,2;126:22;146:5 <b>lumped (1)</b> 45:13 <b>lunch (2)</b> 123:12,13 <b>lunchtime (1)</b> 11:16</p>	<p><b>MARKED (20)</b> 7:14;8:3;9:3;13:25;28:9; 36:4;56:9,10;60:8;100:21; 101:17,20,23;125:20; 185:18;196:8;197:12; 198:11,15;199:3 <b>Mat (2)</b> 166:13;167:6 <b>matched (1)</b> 121:25 <b>material (7)</b> 77:5;103:25;106:24; 111:16;168:5;201:22;203:9 <b>math (1)</b> 114:10 <b>mathematical (1)</b> 104:24 <b>mathematically (1)</b> 122:18 <b>mathematics (2)</b> 133:13;134:14 <b>Matt (9)</b> 54:17;166:8;170:22; 171:10,15;172:2;176:8; 180:6;182:24 <b>M-a-t-t (1)</b> 171:15 <b>matter (11)</b> 107:15;109:25;110:5,12; 117:15;133:13;168:9,24; 171:13;185:2;204:18 <b>matters (6)</b> 10:5;11:22;109:25;133:9; 163:1;201:9 <b>MATTHEW (2)</b> 7:4;171:3 <b>Max (1)</b> 126:5 <b>maximum (6)</b> 177:23;178:5,10,25;179:6, 10 <b>may (57)</b> 10:22;18:12;22:18,23; 23:19;24:8,10;32:15;33:17; 35:1;40:24;42:16;45:24; 49:15;51:2,18;53:11;57:14; 58:1;59:1;66:19,23;68:3; 69:19;71:13;72:13;73:17,17, 23;74:1,1;79:19,20;81:17; 89:7,22,25;92:9;116:6; 119:15;120:17,18;122:5; 123:19;134:8;140:6;164:15; 166:3;182:8,17,18,25;189:4; 191:1;197:8,8;200:2 <b>maybe (16)</b> 16:4;37:21;47:1;71:20; 72:9;75:8;95:2;100:19; 116:7;120:7;158:2;175:13; 195:7;205:20;206:4,19 <b>McCAIN (36)</b> 8:10;12:8,13,19;13:1,3; 14:14;15:4,12,15,17,20;16:1, 18;17:4,12,24,25;18:8,17,20;</p>	<p>19:1,14,25;20:2,6,8,10,16,19, 21;22:20;24:4,9,10;25:9 <b>McCain's (6)</b> 15:7;16:9,14;18:5;24:4; 25:6 <b>McHUGH (31)</b> 11:24;12:1,6,7,18;13:16; 14:3,5,12,13;15:6;17:18; 23:4,6;24:11;25:5;26:9,10, 13;27:1,4;28:1,12;32:12; 33:19;166:19;195:2,15,20; 196:4,7 <b>McHugh's (2)</b> 28:7;194:25 <b>mean (22)</b> 19:25;40:6;46:19;68:10; 69:9;72:16;75:5,7;90:11,14; 96:17;104:19;105:8;110:23; 116:15;124:14;129:2;130:7; 140:2;181:14;191:19;203:24 <b>means (2)</b> 39:15;66:13 <b>meant (4)</b> 39:14;40:1;173:9;175:2 <b>measure (2)</b> 33:11;93:14 <b>measured (2)</b> 119:25;204:3 <b>mechanism (1)</b> 191:22 <b>mechanisms (3)</b> 189:6;191:11;192:20 <b>meet (14)</b> 17:7;18:6,8;20:15;42:14; 46:24;48:13;49:23;91:12; 105:21,21;158:22;159:16; 161:20 <b>meeting (2)</b> 45:16;169:6 <b>meetings (2)</b> 58:3;144:8 <b>member (2)</b> 29:23;103:25 <b>members (8)</b> 37:10;66:2;84:9,23,25; 91:15;117:9,16 <b>members' (1)</b> 52:20 <b>mentioned (6)</b> 87:11,15,20;88:20;120:24; 121:3 <b>merge (1)</b> 118:6 <b>merged (2)</b> 15:1;151:13 <b>met (5)</b> 17:5;41:20;54:20;64:22; 124:2 <b>metal (1)</b> 119:3 <b>meteorological (2)</b> 46:16,22 <b>method (1)</b></p>	<p>171:21 <b>Methodology (119)</b> 21:10;36:17,20;37:9,14; 38:5,25;39:3;40:5,11;45:11; 50:1,22;51:1,20;52:3;54:4,9, 17;55:6;58:19;66:6,7,9,12, 17;67:9;76:6,12;80:9,12,15; 83:8,11,15,19;84:7,16;85:3; 91:13,19;92:1,6,16,22;93:2, 7,10,20;96:17,21;97:1; 102:17;103:23;104:7,14; 105:18;106:9,21;107:2,11, 21;108:8;109:12;110:7,18; 111:7,19;112:13;114:12; 116:11;126:8;130:19; 132:25;133:14,24;134:14; 136:2;142:15;144:2,5; 156:21;157:21;158:18; 159:9;163:22;167:10,13; 168:14,20;169:1;171:17,22; 176:1,4,5,18,19,22;177:7,12; 178:9,20;179:5,20;180:19; 182:1,9,18;183:1;186:16; 188:10;193:23;194:1,7; 201:13;202:10,19;204:15 <b>methods (3)</b> 45:20;48:8;171:21 <b>METRIC (1)</b> 77:24 <b>metropolitan (1)</b> 153:5 <b>mic (1)</b> 195:2 <b>microphone (1)</b> 142:11 <b>middle (4)</b> 101:3;115:10;141:18; 151:11 <b>might (7)</b> 25:16;34:3;41:9;129:5; 134:6;188:20;206:15 <b>Mile (1)</b> 173:5 <b>miles (3)</b> 117:6;135:3,4 <b>Milner (1)</b> 139:12 <b>mind (5)</b> 42:2,10,25;47:11;98:5 <b>minds (1)</b> 154:16 <b>mine (1)</b> 194:13 <b>miner's (1)</b> 72:14 <b>Mini-Cassia (6)</b> 27:24;28:14,18,20;29:1; 31:13 <b>minimize (1)</b> 87:25 <b>minor (1)</b> 132:1 <b>minus (6)</b></p>
<b>M</b>			
<p><b>Magic (15)</b> 29:15,22;30:1,6,8,15,18, 25;31:3;33:7,9,13;173:5; 175:6,13 <b>magnitude (2)</b> 131:23;132:4 <b>main (2)</b> 135:4;169:18 <b>maintain (4)</b> 47:23;70:9;85:11;93:17 <b>maintained (3)</b> 46:10;119:18;128:2 <b>maintains (1)</b> 146:16 <b>maintenance (1)</b> 146:20 <b>major (2)</b> 49:13;61:20 <b>makes (2)</b> 92:2;193:2 <b>making (7)</b> 74:8;75:17;91:8;107:14; 175:5;186:20;193:5 <b>mall (6)</b> 74:25;75:3,11,13,16,20 <b>managed (1)</b> 161:9 <b>Management (4)</b> 119:21;128:9;161:11; 203:18 <b>manager (3)</b> 31:23;145:18;157:10 <b>M-a-n-n (1)</b> 43:19 <b>manner (1)</b> 133:6 <b>Mann-Kendall (1)</b> 43:18 <b>many (10)</b> 11:24;22:9;74:20;80:18; 90:25;155:16,21;169:24; 179:20;201:7 <b>map (7)</b> 39:2,18;40:18;59:24;62:1; 150:8,12 <b>mapping (2)</b> 61:22;108:21 <b>March (2)</b> 16:19,20</p>	<p><b>marked (20)</b> 7:14;8:3;9:3;13:25;28:9; 36:4;56:9,10;60:8;100:21; 101:17,20,23;125:20; 185:18;196:8;197:12; 198:11,15;199:3 <b>Mat (2)</b> 166:13;167:6 <b>matched (1)</b> 121:25 <b>material (7)</b> 77:5;103:25;106:24; 111:16;168:5;201:22;203:9 <b>math (1)</b> 114:10 <b>mathematical (1)</b> 104:24 <b>mathematically (1)</b> 122:18 <b>mathematics (2)</b> 133:13;134:14 <b>Matt (9)</b> 54:17;166:8;170:22; 171:10,15;172:2;176:8; 180:6;182:24 <b>M-a-t-t (1)</b> 171:15 <b>matter (11)</b> 107:15;109:25;110:5,12; 117:15;133:13;168:9,24; 171:13;185:2;204:18 <b>matters (6)</b> 10:5;11:22;109:25;133:9; 163:1;201:9 <b>MATTHEW (2)</b> 7:4;171:3 <b>Max (1)</b> 126:5 <b>maximum (6)</b> 177:23;178:5,10,25;179:6, 10 <b>may (57)</b> 10:22;18:12;22:18,23; 23:19;24:8,10;32:15;33:17; 35:1;40:24;42:16;45:24; 49:15;51:2,18;53:11;57:14; 58:1;59:1;66:19,23;68:3; 69:19;71:13;72:13;73:17,17, 23;74:1,1;79:19,20;81:17; 89:7,22,25;92:9;116:6; 119:15;120:17,18;122:5; 123:19;134:8;140:6;164:15; 166:3;182:8,17,18,25;189:4; 191:1;197:8,8;200:2 <b>maybe (16)</b> 16:4;37:21;47:1;71:20; 72:9;75:8;95:2;100:19; 116:7;120:7;158:2;175:13; 195:7;205:20;206:4,19 <b>McCAIN (36)</b> 8:10;12:8,13,19;13:1,3; 14:14;15:4,12,15,17,20;16:1, 18;17:4,12,24,25;18:8,17,20;</p>	<p>19:1,14,25;20:2,6,8,10,16,19, 21;22:20;24:4,9,10;25:9 <b>McCain's (6)</b> 15:7;16:9,14;18:5;24:4; 25:6 <b>McHUGH (31)</b> 11:24;12:1,6,7,18;13:16; 14:3,5,12,13;15:6;17:18; 23:4,6;24:11;25:5;26:9,10, 13;27:1,4;28:1,12;32:12; 33:19;166:19;195:2,15,20; 196:4,7 <b>McHugh's (2)</b> 28:7;194:25 <b>mean (22)</b> 19:25;40:6;46:19;68:10; 69:9;72:16;75:5,7;90:11,14; 96:17;104:19;105:8;110:23; 116:15;124:14;129:2;130:7; 140:2;181:14;191:19;203:24 <b>means (2)</b> 39:15;66:13 <b>meant (4)</b> 39:14;40:1;173:9;175:2 <b>measure (2)</b> 33:11;93:14 <b>measured (2)</b> 119:25;204:3 <b>mechanism (1)</b> 191:22 <b>mechanisms (3)</b> 189:6;191:11;192:20 <b>meet (14)</b> 17:7;18:6,8;20:15;42:14; 46:24;48:13;49:23;91:12; 105:21,21;158:22;159:16; 161:20 <b>meeting (2)</b> 45:16;169:6 <b>meetings (2)</b> 58:3;144:8 <b>member (2)</b> 29:23;103:25 <b>members (8)</b> 37:10;66:2;84:9,23,25; 91:15;117:9,16 <b>members' (1)</b> 52:20 <b>mentioned (6)</b> 87:11,15,20;88:20;120:24; 121:3 <b>merge (1)</b> 118:6 <b>merged (2)</b> 15:1;151:13 <b>met (5)</b> 17:5;41:20;54:20;64:22; 124:2 <b>metal (1)</b> 119:3 <b>meteorological (2)</b> 46:16,22 <b>method (1)</b></p>	<p>171:21 <b>Methodology (119)</b> 21:10;36:17,20;37:9,14; 38:5,25;39:3;40:5,11;45:11; 50:1,22;51:1,20;52:3;54:4,9, 17;55:6;58:19;66:6,7,9,12, 17;67:9;76:6,12;80:9,12,15; 83:8,11,15,19;84:7,16;85:3; 91:13,19;92:1,6,16,22;93:2, 7,10,20;96:17,21;97:1; 102:17;103:23;104:7,14; 105:18;106:9,21;107:2,11, 21;108:8;109:12;110:7,18; 111:7,19;112:13;114:12; 116:11;126:8;130:19; 132:25;133:14,24;134:14; 136:2;142:15;144:2,5; 156:21;157:21;158:18; 159:9;163:22;167:10,13; 168:14,20;169:1;171:17,22; 176:1,4,5,18,19,22;177:7,12; 178:9,20;179:5,20;180:19; 182:1,9,18;183:1;186:16; 188:10;193:23;194:1,7; 201:13;202:10,19;204:15 <b>methods (3)</b> 45:20;48:8;171:21 <b>METRIC (1)</b> 77:24 <b>metropolitan (1)</b> 153:5 <b>mic (1)</b> 195:2 <b>microphone (1)</b> 142:11 <b>middle (4)</b> 101:3;115:10;141:18; 151:11 <b>might (7)</b> 25:16;34:3;41:9;129:5; 134:6;188:20;206:15 <b>Mile (1)</b> 173:5 <b>miles (3)</b> 117:6;135:3,4 <b>Milner (1)</b> 139:12 <b>mind (5)</b> 42:2,10,25;47:11;98:5 <b>minds (1)</b> 154:16 <b>mine (1)</b> 194:13 <b>miner's (1)</b> 72:14 <b>Mini-Cassia (6)</b> 27:24;28:14,18,20;29:1; 31:13 <b>minimize (1)</b> 87:25 <b>minor (1)</b> 132:1 <b>minus (6)</b></p>

<p>94:8,13,19,21;95:2;127:3 <b>minute (4)</b> 13:2;34:3;35:12;72:13 <b>minutes (1)</b> 147:21 <b>mishear (2)</b> 159:4,4 <b>mislead (1)</b> 181:13 <b>missed (4)</b> 66:21;173:11;175:5,22 <b>mitigate (2)</b> 20:22;23:21 <b>mitigating (1)</b> 25:19 <b>mitigation (52)</b> 15:25;16:6,15;17:6,20,24; 18:2,21,25;19:3,16,19,22; 20:15,17,20,23,25;21:17,18, 20,25;22:4,25;23:16,20,24; 24:2,5;25:6,10,17;26:1; 29:16,25;30:3,4,17,19;31:4; 32:21,23;33:5,8,10,11,14; 66:1,13;122:21;127:14; 205:11 <b>mitigation-only (1)</b> 29:23 <b>mix (8)</b> 143:13,21;144:10,17; 145:3,22;156:17,19 <b>mixes (2)</b> 144:18;164:12 <b>model (5)</b> 63:5,7,10;187:1;203:12 <b>moment (6)</b> 34:6;56:15;96:13;100:7; 105:22;189:18 <b>moments (1)</b> 86:16 <b>months (1)</b> 22:9 <b>more (41)</b> 26:8;42:3;44:7;47:14,19, 20;48:22;60:20;63:20,25; 64:2,9,13,14,17;65:7,15; 84:18;93:1;103:20;104:5; 117:22;122:8,12,23;123:8; 128:9;137:22;138:17; 158:23;159:17;160:19; 163:4;182:18;183:7;189:10, 11,15;194:4,25;195:17 <b>morning (11)</b> 10:6;12:6;14:13;24:24,25; 25:3;27:5,6;35:5,7;57:18 <b>most (5)</b> 30:3;120:12;182:14; 188:7;198:22 <b>mostly (1)</b> 149:4 <b>motion (6)</b> 77:3;199:19,21,24;200:2, 11 <b>move (5)</b></p>	<p>44:9;55:21;76:25;101:16; 167:19 <b>moved (1)</b> 190:21 <b>moving (2)</b> 185:7;198:12 <b>much (22)</b> 42:21;50:8,12,13;64:9; 71:24;78:2,6;81:9;117:17; 122:2;127:20;137:10; 143:10;174:15;180:6,23; 201:11;202:20;203:9,12; 206:20 <b>multiple (3)</b> 53:9,10;136:6 <b>multiplier (1)</b> 147:22 <b>multiplying (1)</b> 131:8 <b>municipalities (2)</b> 38:15;42:7 <b>must (7)</b> 22:6;49:8;107:25;116:17; 128:1;129:2;161:20 <b>mute (2)</b> 134:22,25 <b>myself (2)</b> 36:15;103:13 <b>mysterious (1)</b> 53:12</p>	<p>131:9,16,20;143:8,10,15; 144:12,19;145:3;158:19; 160:1;163:3,5;164:9,14; 168:11;169:7,7,24;177:23; 178:6,11;179:1;188:25; 189:12,18;190:3;204:10,12, 14;205:22;206:16,22 <b>needed (12)</b> 17:25;32:17;45:15;49:14; 52:7;58:1;67:20;73:11; 82:14,22;175:17;206:9 <b>needing (1)</b> 83:25 <b>needs (6)</b> 74:13;134:22;200:20; 201:12;202:16,18 <b>nefarious (2)</b> 169:16;170:4 <b>negatives (1)</b> 196:3 <b>negotiated (1)</b> 194:25 <b>negotiations (3)</b> 168:18,21,23 <b>neither (1)</b> 82:12 <b>net (4)</b> 84:1,3,5;108:2 <b>new (5)</b> 26:2;122:24;160:12; 162:20;178:10 <b>newly (1)</b> 101:8 <b>next (19)</b> 11:23;18:18;26:12;33:24; 34:3;73:3;101:17;123:15; 124:20;140:23;157:4; 159:18;165:9;174:20;189:5, 8;191:6,7,19 <b>nice (1)</b> 53:7 <b>night (3)</b> 10:14,23;199:18 <b>nine (1)</b> 201:1 <b>nobody (1)</b> 200:21 <b>none (2)</b> 152:10,22 <b>nonused (1)</b> 16:4 <b>Nope (1)</b> 140:16 <b>normal (1)</b> 55:3 <b>north (10)</b> 40:18;86:3,5;139:5,8; 151:22;174:24,25;180:14; 181:21 <b>north/south (1)</b> 151:10 <b>note (7)</b> 77:10;172:12,24;173:3,19;</p>	<p>174:13;181:5 <b>notes (2)</b> 13:6;195:7 <b>notice (6)</b> 18:25;22:15;23:17;30:17; 197:8;199:19 <b>notified (1)</b> 18:19 <b>notify (2)</b> 162:6,15 <b>November (2)</b> 54:18;127:8 <b>nuance (2)</b> 206:20,21 <b>nuances (1)</b> 204:11 <b>number (35)</b> 38:7;40:20;47:1;53:23; 66:5;70:11;76:9;78:15,22; 95:7;98:17;103:25;106:19, 23;107:4;111:14;113:12; 115:22;116:21;117:2; 124:15;131:5;133:9;136:20; 145:1;152:6;158:16;172:19; 188:5;192:18,20,24;198:4; 206:8,15 <b>numbered (6)</b> 58:13;68:19;98:15;187:18, 22,23 <b>numbering (1)</b> 98:14 <b>numbers (13)</b> 111:13;117:1,12;119:3,3; 154:17;172:18;176:2,5; 178:4,24;179:1;184:8 <b>numerical (1)</b> 112:6</p>
<b>N</b>			
<p><b>name (6)</b> 14:15;27:7;35:22;126:5; 141:17;171:13 <b>narrow (3)</b> 105:17,21;183:11 <b>naturally (1)</b> 49:12 <b>nature (4)</b> 42:18;61:15;72:10;99:23 <b>near (1)</b> 46:9 <b>nearly (1)</b> 38:2 <b>necessarily (5)</b> 47:16;105:8;130:7; 191:19;203:17 <b>necessary (6)</b> 22:9;23:20;46:7;127:25; 128:8;158:21 <b>necessitated (1)</b> 49:1 <b>need (69)</b> 10:5;11:22;16:2;25:17; 31:19;32:6;33:10;34:13; 45:9;49:18,21;50:25;58:1; 59:8;73:1,10,17,24;74:14; 75:22;86:1;87:3;91:11,20, 21;93:12;96:14,22;97:4; 100:1;105:18;106:12;107:6; 116:23;124:13;125:10;</p>	<p><b>newly (1)</b> 101:8 <b>next (19)</b> 11:23;18:18;26:12;33:24; 34:3;73:3;101:17;123:15; 124:20;140:23;157:4; 159:18;165:9;174:20;189:5, 8;191:6,7,19 <b>nice (1)</b> 53:7 <b>night (3)</b> 10:14,23;199:18 <b>nine (1)</b> 201:1 <b>nobody (1)</b> 200:21 <b>none (2)</b> 152:10,22 <b>nonused (1)</b> 16:4 <b>Nope (1)</b> 140:16 <b>normal (1)</b> 55:3 <b>north (10)</b> 40:18;86:3,5;139:5,8; 151:22;174:24,25;180:14; 181:21 <b>north/south (1)</b> 151:10 <b>note (7)</b> 77:10;172:12,24;173:3,19;</p>	<p><b>newly (1)</b> 101:8 <b>next (19)</b> 11:23;18:18;26:12;33:24; 34:3;73:3;101:17;123:15; 124:20;140:23;157:4; 159:18;165:9;174:20;189:5, 8;191:6,7,19 <b>nice (1)</b> 53:7 <b>night (3)</b> 10:14,23;199:18 <b>nine (1)</b> 201:1 <b>nobody (1)</b> 200:21 <b>none (2)</b> 152:10,22 <b>nonused (1)</b> 16:4 <b>Nope (1)</b> 140:16 <b>normal (1)</b> 55:3 <b>north (10)</b> 40:18;86:3,5;139:5,8; 151:22;174:24,25;180:14; 181:21 <b>north/south (1)</b> 151:10 <b>note (7)</b> 77:10;172:12,24;173:3,19;</p>	<p><b>newly (1)</b> 101:8 <b>next (19)</b> 11:23;18:18;26:12;33:24; 34:3;73:3;101:17;123:15; 124:20;140:23;157:4; 159:18;165:9;174:20;189:5, 8;191:6,7,19 <b>nice (1)</b> 53:7 <b>night (3)</b> 10:14,23;199:18 <b>nine (1)</b> 201:1 <b>nobody (1)</b> 200:21 <b>none (2)</b> 152:10,22 <b>nonused (1)</b> 16:4 <b>Nope (1)</b> 140:16 <b>normal (1)</b> 55:3 <b>north (10)</b> 40:18;86:3,5;139:5,8; 151:22;174:24,25;180:14; 181:21 <b>north/south (1)</b> 151:10 <b>note (7)</b> 77:10;172:12,24;173:3,19;</p>
<b>O</b>			
<p><b>oats (1)</b> 146:2 <b>object (2)</b> 182:21;200:6 <b>objected (1)</b> 70:22 <b>objection (12)</b> 10:17;13:23;56:8,10; 70:14,16;78:23;79:9;101:21, 23;183:3,10 <b>objections (1)</b> 185:16 <b>objectives (1)</b> 88:6 <b>obligation (3)</b> 74:4,18;161:20 <b>obligations (4)</b> 48:13;49:23;66:13;122:22 <b>observation (2)</b> 44:11;86:13 <b>observed (7)</b> 51:10,23,24;93:15;107:3; 133:16,19</p>	<p><b>oats (1)</b> 146:2 <b>object (2)</b> 182:21;200:6 <b>objected (1)</b> 70:22 <b>objection (12)</b> 10:17;13:23;56:8,10; 70:14,16;78:23;79:9;101:21, 23;183:3,10 <b>objections (1)</b> 185:16 <b>objectives (1)</b> 88:6 <b>obligation (3)</b> 74:4,18;161:20 <b>obligations (4)</b> 48:13;49:23;66:13;122:22 <b>observation (2)</b> 44:11;86:13 <b>observed (7)</b> 51:10,23,24;93:15;107:3; 133:16,19</p>	<p><b>oats (1)</b> 146:2 <b>object (2)</b> 182:21;200:6 <b>objected (1)</b> 70:22 <b>objection (12)</b> 10:17;13:23;56:8,10; 70:14,16;78:23;79:9;101:21, 23;183:3,10 <b>objections (1)</b> 185:16 <b>objectives (1)</b> 88:6 <b>obligation (3)</b> 74:4,18;161:20 <b>obligations (4)</b> 48:13;49:23;66:13;122:22 <b>observation (2)</b> 44:11;86:13 <b>observed (7)</b> 51:10,23,24;93:15;107:3; 133:16,19</p>	<p><b>oats (1)</b> 146:2 <b>object (2)</b> 182:21;200:6 <b>objected (1)</b> 70:22 <b>objection (12)</b> 10:17;13:23;56:8,10; 70:14,16;78:23;79:9;101:21, 23;183:3,10 <b>objections (1)</b> 185:16 <b>objectives (1)</b> 88:6 <b>obligation (3)</b> 74:4,18;161:20 <b>obligations (4)</b> 48:13;49:23;66:13;122:22 <b>observation (2)</b> 44:11;86:13 <b>observed (7)</b> 51:10,23,24;93:15;107:3; 133:16,19</p>

<b>observing (1)</b> 134:14	196:3,6,8,11,25;197:10; 198:4,12,15,19;199:1,6,13, 17;200:4,12;201:3;206:8,11, 13;207:3	<b>operate (5)</b> 20:9,24;45:15;117:17; 191:23	48:24
<b>obtain (1)</b> 199:23	<b>official (1)</b> 199:19	<b>operates (3)</b> 28:14;146:16;204:15	<b>ordinary (1)</b> 46:23
<b>obvious (1)</b> 96:7	<b>often (2)</b> 131:5;139:19	<b>operation (2)</b> 31:13;130:14	<b>organization (3)</b> 143:22,25;149:5
<b>obviously (5)</b> 50:23;85:25;104:21; 111:3;126:24	<b>old (4)</b> 149:20;164:6,8;192:14	<b>operational (11)</b> 45:14;46:6;48:1;91:2; 115:17;116:17;127:25; 128:8,12;129:2,5	<b>organizations (1)</b> 146:18
<b>occasions (1)</b> 67:19	<b>oldest (1)</b> 149:25	<b>operations (2)</b> 32:22;130:3	<b>organize (2)</b> 195:6,7
<b>occupation (2)</b> 36:2;141:22	<b>omits (1)</b> 39:13	<b>operator (1)</b> 53:18	<b>original (2)</b> 101:6;158:9
<b>occur (7)</b> 46:2;52:19;104:23; 106:16;128:21;157:3;188:6	<b>omitted (2)</b> 39:17,19	<b>opinion (16)</b> 37:5;41:13;50:19;55:15; 64:16;65:7,14;74:10;75:1, 17;105:19;112:9;127:23; 135:19;164:15;200:18	<b>originally (2)</b> 13:7;16:10
<b>occurred (4)</b> 87:19;160:5;177:9;192:14	<b>on/off (2)</b> 47:20,23	<b>opinions (4)</b> 54:12;76:22;142:23; 146:15	<b>others (8)</b> 11:2;68:5;89:22;100:8; 109:1;143:1;155:12;199:17
<b>occurs (6)</b> 42:20;48:3,10;75:19; 86:11;118:11	<b>Once (6)</b> 18:16;22:5;87:2;182:10; 194:25;195:3	<b>opportunities (3)</b> 205:11,12,13	<b>otherwise (2)</b> 106:17;134:2
<b>o'clock (1)</b> 10:3	<b>on-demand (1)</b> 139:8	<b>opportunity (3)</b> 205:17,19,23	<b>ought (1)</b> 52:2
<b>October (2)</b> 49:20;50:4	<b>one (54)</b> 10:7,10;24:17;25:4;27:23; 42:3,5,11;44:15,16;47:19; 52:5;53:5;54:10;64:20,23; 67:23;76:10;77:18;87:15; 93:17;94:12,12;95:19;101:2; 103:4;105:2;107:13,14,19; 117:22;122:8,9;126:13; 127:3;129:4;130:3;159:1,3; 166:15,15;171:14;172:9,18; 174:20;183:9;184:3;185:5; 187:18;191:8,18;197:19; 204:18;206:18	<b>opposed (2)</b> 47:20;172:19	<b>out (32)</b> 17:12;30:8;37:10;38:11; 39:21;45:12;55:18;58:6; 60:24;61:13;62:20;73:19; 78:5;81:9;86:16;88:1;94:24; 99:15;136:1;137:18;153:2; 154:4;166:17;176:4;177:7; 179:14,20;181:13,17;205:1, 4,5
<b>off (10)</b> 34:3,5;46:19;56:17,19,20; 125:14,16;134:25;161:8	<b>one-for-one (2)</b> 54:7;111:18	<b>option (1)</b> 30:1	<b>outdated (1)</b> 130:14
<b>offensive (1)</b> 170:4	<b>one-fourth (1)</b> 73:16	<b>orange (1)</b> 94:17	<b>outliers (2)</b> 94:17,24
<b>offer (9)</b> 11:20;165:22;166:18,18, 20;167:16;184:6;195:15; 199:12	<b>ones (1)</b> 15:24	<b>oranges (1)</b> 159:20	<b>outline (3)</b> 165:25;166:17,22
<b>offered (6)</b> 11:18,19;13:1;52:12; 54:13;142:24	<b>one's (6)</b> 191:5,6,6,6,7,7	<b>order (106)</b> 18:8,13;22:5;24:1,6;36:17, 17,21,21;43:17;44:18;45:11; 46:8,10;49:22;50:1,22; 51:20;54:17;58:19;66:7,7,9; 67:9;76:6;80:10,12,15; 81:25;83:8,12,15,19;84:8; 85:3;91:14,19;92:1,7,22; 93:2,7;96:17,21;102:17; 103:23;104:8,12,14;106:9; 107:2,11;108:8;109:13; 110:18;111:7;112:13; 114:13;116:11;120:17,22; 121:3,14,20;127:25;128:2; 130:19;136:2;142:15,15; 158:19;163:22;167:10,13; 168:14,20;169:1;170:15; 171:18,22,23;176:1,5,18,19, 22;177:7,12;178:9;179:5,20, 25;180:19;182:1,2,9;183:2; 186:16;188:10;192:1; 193:23;194:1,8;201:13; 202:11,19	<b>outlined (3)</b> 38:9;110:17;133:14
<b>offering (4)</b> 166:19;167:5;168:8,24	<b>on-farm (10)</b> 45:19;46:16,18;47:13; 50:8;89:3,9;115:15;116:4; 128:24	<b>orange (1)</b> 94:17	<b>outside (5)</b> 28:21;68:5;167:14,15; 182:22
<b>office (5)</b> 17:19;108:11;109:1; 118:4;153:22	<b>ongoing (2)</b> 189:7;191:9	<b>oranges (1)</b> 159:20	<b>outstanding (1)</b> 74:5
<b>OFFICER (143)</b> 10:3,9,17;11:14;12:3,9,17; 13:15,19,23;14:4,6;24:12,18; 26:8,11,15,24;28:7,33;20,24; 34:5,8,24;35:12,16,20;56:5, 13,14,16,19,21,24;57:2,8,12; 70:18,20;71:1,5;77:3,16; 79:8;98:2,8,12;101:21; 102:4;106:16;113:12,14; 123:6,8,11,14,18;124:20; 125:1,6,13,17,24;132:8; 138:10;140:9,11,14,17,22; 141:1,9;146:25;147:4,9; 156:2;165:3,8,15,18,23; 166:2,7;167:1,18;168:7,15; 169:4,13;170:7,13,18,22; 171:1;172:14,21;179:24; 182:23;183:4,6,15,19,23; 184:1,8,10;185:1,9,12,15; 189:16,21;193:12,15;194:11, 14,17;195:4,10,13,19,23;	<b>online (1)</b> 34:14	<b>order (106)</b> 18:8,13;22:5;24:1,6;36:17, 17,21,21;43:17;44:18;45:11; 46:8,10;49:22;50:1,22; 51:20;54:17;58:19;66:7,7,9; 67:9;76:6;80:10,12,15; 81:25;83:8,12,15,19;84:8; 85:3;91:14,19;92:1,7,22; 93:2,7;96:17,21;102:17; 103:23;104:8,12,14;106:9; 107:2,11;108:8;109:13; 110:18;111:7;112:13; 114:13;116:11;120:17,22; 121:3,14,20;127:25;128:2; 130:19;136:2;142:15,15; 158:19;163:22;167:10,13; 168:14,20;169:1;170:15; 171:18,22,23;176:1,5,18,19, 22;177:7,12;178:9;179:5,20, 25;180:19;182:1,2,9;183:2; 186:16;188:10;192:1; 193:23;194:1,8;201:13; 202:11,19	<b>overall (11)</b> 32:6;40:1;47:17;49:18; 52:25;54:23;80:8;85:22; 115:17;120:18;135:11
	<b>on-screen (1)</b> 34:12	<b>Orders (2)</b> 21:10;36:22	<b>over (25)</b> 15:13;27:17;41:2,7;42:21; 52:15;100:1;111:6;112:4; 114:6;135:3;143:3;144:11, 15;146:1;150:17;159:18; 162:16;163:2,18;164:16; 187:15;188:16;203:25;204:5
	<b>open (6)</b> 50:11;104:22;109:18; 135:15;146:9,13	<b>ordinance (1)</b> 43:6	<b>overall (11)</b> 32:6;40:1;47:17;49:18; 52:25;54:23;80:8;85:22; 115:17;120:18;135:11
		<b>ordinarily (1)</b>	<b>overcome (1)</b> 49:17
			<b>overestimated (1)</b> 50:3
			<b>overlaid (3)</b> 39:5;137:4;163:18
			<b>overlap (2)</b> 118:7,11
			<b>overly (1)</b> 127:14

<p><b>overmitigating (1)</b> 127:16</p> <p><b>Overruled (1)</b> 71:5</p> <p><b>overstating (1)</b> 111:14</p> <p><b>overview (1)</b> 50:6</p> <p><b>own (13)</b> 18:2,5;20:15,17,19,22,24, 24;21:20;29:25;30:2;32:21; 193:2</p> <p><b>owned (2)</b> 69:1,10</p> <p><b>owner (1)</b> 36:3</p> <p><b>ownership (1)</b> 119:9</p> <p><b>owns (1)</b> 119:6</p>	<p><b>Pardon (2)</b> 14:4;185:12</p> <p><b>parking (3)</b> 74:9;106:6;153:8</p> <p><b>part (47)</b> 15:25;19:20;30:8,25;37:6, 7;38:17;41:25;42:3;43:7,10; 44:8,25;45:3;50:18,20;52:9, 12,16;54:10,12,14;59:9; 61:22;70:6,9,13;73:12,22; 79:14;86:18,22;87:9;111:25; 115:5;117:23;142:20;148:6; 153:14;155:9;163:8;169:11, 20,23;188:7;193:23;197:7</p> <p><b>Partially (1)</b> 84:13</p> <p><b>participate (2)</b> 10:15;58:24</p> <p><b>participated (2)</b> 148:21;171:22</p> <p><b>participating (1)</b> 140:19</p> <p><b>participation (2)</b> 10:19;201:7</p> <p><b>particular (11)</b> 16:9;45:5;53:6;74:18; 89:6,7,8;137:15;144:13; 186:23;193:9</p> <p><b>particularly (2)</b> 46:9;163:10</p> <p><b>parties (25)</b> 10:13,18;11:14;12:25; 13:11,17;28:5,8;56:7;57:4; 68:15;124:23;125:18;147:4; 165:12;182:2;195:24; 196:11,20;197:1,8,25; 198:19;199:8;200:7</p> <p><b>parties' (1)</b> 13:6</p> <p><b>parts (5)</b> 37:1,4;59:11;103:9;183:1</p> <p><b>party (1)</b> 68:9</p> <p><b>past (6)</b> 25:10;134:11;149:22,23; 158:2;159:3</p> <p><b>patience (1)</b> 207:3</p> <p><b>PATTERSON (10)</b> 101:18;196:14,15;197:5, 16,19;198:5,14,17;199:5</p> <p><b>Paul (1)</b> 28:21</p> <p><b>PCC (1)</b> 119:25</p> <p><b>PE (2)</b> 34:19;141:4</p> <p><b>pending (2)</b> 16:25;24:1</p> <p><b>people (8)</b> 104:23;161:8;201:20; 204:20,24;205:11,12,16</p> <p><b>per (5)</b> 72:13;114:7;135:18;146:1, 2</p> <p><b>per-acre (1)</b> 72:17</p> <p><b>percent (29)</b> 45:20,21,24;47:10;51:12, 13;52:1,2;73:22;88:21,21; 92:21,21;105:9;111:2,4; 115:15,16,17,18,21,25; 116:5,9,12;117:3,7;146:3,7</p> <p><b>percentage (4)</b> 47:9;52:22;80:7;85:20</p> <p><b>percentages (1)</b> 86:9</p> <p><b>percentile (6)</b> 55:7,9,10,13;126:9,22</p> <p><b>percolation (1)</b> 90:20</p> <p><b>perennial (1)</b> 48:24</p> <p><b>perfect (4)</b> 105:9;120:7,11,12</p> <p><b>perform (1)</b> 118:10</p> <p><b>performance (1)</b> 174:23</p> <p><b>performed (2)</b> 68:8;186:18</p> <p><b>perhaps (2)</b> 34:11;104:5</p> <p><b>period (21)</b> 42:21;44:12,15,17,20,22; 46:17,25;72:8;95:12,16; 112:22;114:17,19,22; 134:11;136:2;144:9,15; 145:8;188:16</p> <p><b>periodic (1)</b> 191:16</p> <p><b>periods (2)</b> 72:19;96:4</p> <p><b>permissible (3)</b> 162:4,11;188:15</p> <p><b>permission (1)</b> 10:15</p> <p><b>permit (1)</b> 160:12</p> <p><b>person (1)</b> 124:2</p> <p><b>personal (2)</b> 63:12;69:25</p> <p><b>personally (2)</b> 78:2;108:25</p> <p><b>personnel (2)</b> 67:14;155:7</p> <p><b>perspective (2)</b> 170:3;202:10</p> <p><b>pertaining (1)</b> 186:19</p> <p><b>Pete (2)</b> 11:4,7</p> <p><b>petition (1)</b> 17:23</p> <p><b>petitioning (1)</b> 17:19</p>	<p><b>PG (2)</b> 7:4;171:3</p> <p><b>PhD (1)</b> 34:19</p> <p><b>photo (9)</b> 38:12;39:4,6;40:7;58:21; 59:18,23;79:18;109:10</p> <p><b>photograph (1)</b> 150:20</p> <p><b>photography (8)</b> 149:2,3,11,14,15,19,25; 154:7</p> <p><b>photos (2)</b> 139:20;149:20</p> <p><b>phrase (1)</b> 104:14</p> <p><b>pick (2)</b> 112:22;193:20</p> <p><b>picked (1)</b> 92:11</p> <p><b>picture (1)</b> 44:19</p> <p><b>pin (1)</b> 105:3</p> <p><b>pipeline (2)</b> 160:14,22</p> <p><b>pivot (8)</b> 38:12;41:6;45:21;47:13; 100:8,24;101:14;190:14</p> <p><b>place (4)</b> 79:4;162:11;188:15; 205:24</p> <p><b>placed (2)</b> 161:6;162:12</p> <p><b>place-of-use (1)</b> 154:12</p> <p><b>places (6)</b> 81:6;122:1;132:3;162:4,6; 174:11</p> <p><b>Plain (3)</b> 15:8;27:23;47:6</p> <p><b>plan (49)</b> 15:25;16:6,15;18:3,5; 19:19,22;20:15,17,20,24,25; 21:17,18,20,25;22:4,5,6,7, 25;23:16,21,24;24:2,5;25:6, 10,15,18,23;26:1;29:16,25; 30:3,4,19;31:4;32:21,24; 33:5,8,10,11,14,18;75:1; 93:5;146:21</p> <p><b>plans (2)</b> 17:6;205:11</p> <p><b>plant (2)</b> 31:23;162:21</p> <p><b>planted (1)</b> 162:17</p> <p><b>play (2)</b> 134:20,20</p> <p><b>played (1)</b> 171:17</p> <p><b>Please (25)</b> 12:17;14:15;23:25;26:16,</p>
<b>P</b>		
<p><b>page (70)</b> 21:8,12,12;42:1;43:7; 44:25;50:19;52:12;58:13,13; 59:14,15,17;62:7;68:17,18; 73:3;76:8,8;77:1;79:25;80:3; 83:21;85:16;93:23;104:13; 105:11;106:9;107:10; 112:14;115:8,9;121:5; 142:18;145:6;147:25;148:2, 3,9;150:2;156:13,15;157:8, 25;159:11,13,18;160:3; 161:14;172:4,5,5,6,17,18,19; 176:8,10;177:4,14,17,18; 178:13,16,23;187:15,22; 206:4,7,13</p> <p><b>pages (6)</b> 58:12;98:23;113:7; 142:20;178:21;187:18</p> <p><b>paid (2)</b> 65:18;185:6</p> <p><b>paragraph (43)</b> 19:4;21:19,23;23:7,9,10, 16;58:18;68:25;71:7;74:3; 76:10;77:1;80:4;83:22,24; 85:19;106:11,11;107:11,22, 24;115:11;116:25;121:6; 160:3,4;161:15,17;172:11; 176:11;177:2,15,18,20,21; 178:12,18,19;179:6,7,10,19</p> <p><b>paragraphs (2)</b> 68:19;109:24</p> <p><b>parallel (3)</b> 94:12;151:23;152:1</p> <p><b>parameter (1)</b> 45:13</p> <p><b>parcel (6)</b> 71:13;72:18;119:8;189:4, 7,8</p> <p><b>parcels (2)</b> 82:2;186:22</p>	<p><b>participate (2)</b> 10:15;58:24</p> <p><b>participated (2)</b> 148:21;171:22</p> <p><b>participating (1)</b> 140:19</p> <p><b>participation (2)</b> 10:19;201:7</p> <p><b>particular (11)</b> 16:9;45:5;53:6;74:18; 89:6,7,8;137:15;144:13; 186:23;193:9</p> <p><b>particularly (2)</b> 46:9;163:10</p> <p><b>parties (25)</b> 10:13,18;11:14;12:25; 13:11,17;28:5,8;56:7;57:4; 68:15;124:23;125:18;147:4; 165:12;182:2;195:24; 196:11,20;197:1,8,25; 198:19;199:8;200:7</p> <p><b>parties' (1)</b> 13:6</p> <p><b>parts (5)</b> 37:1,4;59:11;103:9;183:1</p> <p><b>party (1)</b> 68:9</p> <p><b>past (6)</b> 25:10;134:11;149:22,23; 158:2;159:3</p> <p><b>patience (1)</b> 207:3</p> <p><b>PATTERSON (10)</b> 101:18;196:14,15;197:5, 16,19;198:5,14,17;199:5</p> <p><b>Paul (1)</b> 28:21</p> <p><b>PCC (1)</b> 119:25</p> <p><b>PE (2)</b> 34:19;141:4</p> <p><b>pending (2)</b> 16:25;24:1</p> <p><b>people (8)</b> 104:23;161:8;201:20; 204:20,24;205:11,12,16</p> <p><b>per (5)</b> 72:13;114:7;135:18;146:1, 2</p> <p><b>per-acre (1)</b> 72:17</p> <p><b>percent (29)</b> 45:20,21,24;47:10;51:12, 13;52:1,2;73:22;88:21,21; 92:21,21;105:9;111:2,4; 115:15,16,17,18,21,25; 116:5,9,12;117:3,7;146:3,7</p> <p><b>percentage (4)</b> 47:9;52:22;80:7;85:20</p> <p><b>percentages (1)</b> 86:9</p> <p><b>percentile (6)</b> 55:7,9,10,13;126:9,22</p> <p><b>percolation (1)</b> 90:20</p> <p><b>perennial (1)</b> 48:24</p> <p><b>perfect (4)</b> 105:9;120:7,11,12</p> <p><b>perform (1)</b> 118:10</p> <p><b>performance (1)</b> 174:23</p> <p><b>performed (2)</b> 68:8;186:18</p> <p><b>perhaps (2)</b> 34:11;104:5</p> <p><b>period (21)</b> 42:21;44:12,15,17,20,22; 46:17,25;72:8;95:12,16; 112:22;114:17,19,22; 134:11;136:2;144:9,15; 145:8;188:16</p> <p><b>periodic (1)</b> 191:16</p> <p><b>periods (2)</b> 72:19;96:4</p> <p><b>permissible (3)</b> 162:4,11;188:15</p> <p><b>permission (1)</b> 10:15</p> <p><b>permit (1)</b> 160:12</p> <p><b>person (1)</b> 124:2</p> <p><b>personal (2)</b> 63:12;69:25</p> <p><b>personally (2)</b> 78:2;108:25</p> <p><b>personnel (2)</b> 67:14;155:7</p> <p><b>perspective (2)</b> 170:3;202:10</p> <p><b>pertaining (1)</b> 186:19</p> <p><b>Pete (2)</b> 11:4,7</p> <p><b>petition (1)</b> 17:23</p> <p><b>petitioning (1)</b> 17:19</p>	<p><b>PG (2)</b> 7:4;171:3</p> <p><b>PhD (1)</b> 34:19</p> <p><b>photo (9)</b> 38:12;39:4,6;40:7;58:21; 59:18,23;79:18;109:10</p> <p><b>photograph (1)</b> 150:20</p> <p><b>photography (8)</b> 149:2,3,11,14,15,19,25; 154:7</p> <p><b>photos (2)</b> 139:20;149:20</p> <p><b>phrase (1)</b> 104:14</p> <p><b>pick (2)</b> 112:22;193:20</p> <p><b>picked (1)</b> 92:11</p> <p><b>picture (1)</b> 44:19</p> <p><b>pin (1)</b> 105:3</p> <p><b>pipeline (2)</b> 160:14,22</p> <p><b>pivot (8)</b> 38:12;41:6;45:21;47:13; 100:8,24;101:14;190:14</p> <p><b>place (4)</b> 79:4;162:11;188:15; 205:24</p> <p><b>placed (2)</b> 161:6;162:12</p> <p><b>place-of-use (1)</b> 154:12</p> <p><b>places (6)</b> 81:6;122:1;132:3;162:4,6; 174:11</p> <p><b>Plain (3)</b> 15:8;27:23;47:6</p> <p><b>plan (49)</b> 15:25;16:6,15;18:3,5; 19:19,22;20:15,17,20,24,25; 21:17,18,20,25;22:4,5,6,7, 25;23:16,21,24;24:2,5;25:6, 10,15,18,23;26:1;29:16,25; 30:3,4,19;31:4;32:21,24; 33:5,8,10,11,14,18;75:1; 93:5;146:21</p> <p><b>plans (2)</b> 17:6;205:11</p> <p><b>plant (2)</b> 31:23;162:21</p> <p><b>planted (1)</b> 162:17</p> <p><b>play (2)</b> 134:20,20</p> <p><b>played (1)</b> 171:17</p> <p><b>Please (25)</b> 12:17;14:15;23:25;26:16,</p>

<p>24;27:8;32:9;34:15;35:11, 21;37:5;39:10,24;77:21; 141:2,9,16;147:24;159:2; 171:1,13;172:2,10;173:1; 174:20</p> <p><b>plus (6)</b> 94:8,13,19,21;95:1;201:1</p> <p><b>pm (1)</b> 207:6</p> <p><b>POCATELLO (3)</b> 7:21;126:6;195:21</p> <p><b>Pocatello's (1)</b> 158:14</p> <p><b>podium (2)</b> 195:14,15</p> <p><b>point (19)</b> 53:19;57:3;76:9;93:14; 116:25;117:4;119:14; 120:16;122:2,4;127:20; 128:12,15;129:20;130:3,4; 181:17;200:1;205:5</p> <p><b>pointed (1)</b> 136:1</p> <p><b>pointing (1)</b> 181:13</p> <p><b>points (7)</b> 43:15;81:6;118:14,16; 122:1;169:18,18</p> <p><b>policies (1)</b> 73:14</p> <p><b>policy (1)</b> 127:22</p> <p><b>polygon (1)</b> 109:7</p> <p><b>polygons (1)</b> 109:4</p> <p><b>Pond (1)</b> 87:11</p> <p><b>ponds (7)</b> 38:10;41:14;68:25;69:8, 10,14;109:19</p> <p><b>poorly (1)</b> 181:14</p> <p><b>portion (5)</b> 60:3;85:15;98:20;150:5; 197:21</p> <p><b>portions (1)</b> 171:23</p> <p><b>position (9)</b> 27:13;54:23;108:6;110:2; 112:3,6,21;203:7,8</p> <p><b>possibility (3)</b> 129:4;205:1,24</p> <p><b>Possible (7)</b> 22:15;63:16;67:10; 126:21;155:17,22;182:11</p> <p><b>Possibly (4)</b> 128:11;130:16;158:15; 182:10</p> <p><b>Post (1)</b> 173:5</p> <p><b>post-hearing (2)</b> 200:15;206:5</p>	<p><b>potatoes (1)</b> 162:22</p> <p><b>potential (5)</b> 22:4;29:8;31:5,24,25</p> <p><b>potentially (5)</b> 33:2;47:2;48:13;53:23; 75:15</p> <p><b>Powell (2)</b> 36:15;103:13</p> <p><b>power (1)</b> 140:5</p> <p><b>PPUs (1)</b> 162:6</p> <p><b>practices (4)</b> 108:1;112:15;116:1; 121:15</p> <p><b>preceding (1)</b> 156:17</p> <p><b>precise (3)</b> 62:1;64:9,13</p> <p><b>precisely (1)</b> 105:3</p> <p><b>predecree (1)</b> 79:6</p> <p><b>prefer (1)</b> 170:15</p> <p><b>pre-GIS (1)</b> 79:20</p> <p><b>preliminary (1)</b> 10:5</p> <p><b>preparation (1)</b> 83:12</p> <p><b>prepare (13)</b> 57:4;62:1;103:7,11,17,21; 137:22;161:20;187:3; 204:21;205:7,14,19</p> <p><b>prepared (10)</b> 36:14;42:14;47:22;74:5, 14;75:12;103:12,14,14; 163:19</p> <p><b>preparing (3)</b> 79:13;85:8;187:2</p> <p><b>pre-partial (1)</b> 79:1</p> <p><b>present (3)</b> 41:4;167:24;186:11</p> <p><b>presentation (1)</b> 170:15</p> <p><b>presented (8)</b> 11:21;54:18;68:14; 196:21;197:3,5;201:12,17</p> <p><b>presumption (3)</b> 202:3,7;203:1</p> <p><b>pretty (6)</b> 32:4;50:12,13;92:20; 109:9;146:3</p> <p><b>prevent (2)</b> 25:14,16</p> <p><b>previous (6)</b> 53:20;77:4;107:1;127:17; 175:3;178:22</p> <p><b>Previously (7)</b> 14:21;66:6;97:20;171:5;</p>	<p>172:3;186:3;196:23</p> <p><b>primarily (5)</b> 36:22;37:10;38:10; 117:14;143:5</p> <p><b>primary (6)</b> 27:16,19;30:16;38:14; 42:5;59:2</p> <p><b>principle (2)</b> 50:23;133:8</p> <p><b>prior (14)</b> 25:15;36:11;42:13;65:22; 83:12;142:6;143:18;144:16; 149:2;161:25;191:25;192:3, 11;204:23</p> <p><b>priorities (1)</b> 169:6</p> <p><b>prioritize (1)</b> 169:24</p> <p><b>prioritizing (1)</b> 35:15</p> <p><b>priority (9)</b> 16:8;20:17;22:16;23:23; 25:20,25;26:4;31:11;63:15</p> <p><b>private (6)</b> 52:17;61:14;69:1,8; 118:17;174:4</p> <p><b>privately (2)</b> 69:10;118:21</p> <p><b>privilege (1)</b> 168:22</p> <p><b>probability (3)</b> 55:2;192:21,23</p> <p><b>probably (10)</b> 28:1;35:9;57:23;80:16; 82:20;95:1;96:10;103:19; 111:4;200:21</p> <p><b>problem (2)</b> 40:2;177:6</p> <p><b>procedure (1)</b> 10:11</p> <p><b>proceeding (3)</b> 14:19;27:11;79:2</p> <p><b>process (25)</b> 20:10,11;22:9;32:2,25; 59:20;60:17;64:12,13;67:24, 25;78:14,17;79:1,6;139:24; 148:17,24;155:10,13;182:6, 7;200:17;202:22;204:20</p> <p><b>processes (1)</b> 200:15</p> <p><b>processing (2)</b> 27:19,23</p> <p><b>produce (1)</b> 96:21</p> <p><b>produced (1)</b> 180:18</p> <p><b>producer (2)</b> 21:16,17</p> <p><b>product (1)</b> 142:21</p> <p><b>products (1)</b> 37:11</p> <p><b>professional (1)</b></p>	<p>61:23</p> <p><b>program (6)</b> 70:6,13,24;73:15,21; 174:11</p> <p><b>project (65)</b> 36:23;37:8;41:20;45:4,8, 13,16,24,24;46:3;47:2,4,17; 48:12;49:9,19;50:11,16; 51:3,4,6,12;54:1;58:14;67:3, 3;87:16,21;90:23;91:1,6,15; 92:6,17;93:11;96:13;97:3; 105:13;107:5,6,8;111:1; 115:17;116:9;117:8,17; 128:19;129:1,8,24;130:2; 131:8,13,17,22;132:2; 133:17,20;134:1;135:7; 145:24;146:9;148:1,12; 187:20</p> <p><b>projected (8)</b> 177:23,24,24;178:1,5,11, 25;179:6</p> <p><b>projecting (1)</b> 106:24</p> <p><b>projects (5)</b> 87:12,15;88:7,15;116:11</p> <p><b>proof (8)</b> 165:22;166:18,20;167:16; 168:9,24;202:17;203:15</p> <p><b>proper (1)</b> 179:19</p> <p><b>properly (1)</b> 109:10</p> <p><b>properties (2)</b> 119:7;152:17</p> <p><b>property (2)</b> 204:23,25</p> <p><b>proportional (1)</b> 134:16</p> <p><b>proportionate (1)</b> 124:9</p> <p><b>proposed (6)</b> 16:24;17:9;23:16,20,24; 29:4</p> <p><b>protect (3)</b> 20:13;55:12;126:10</p> <p><b>protected (1)</b> 19:23</p> <p><b>protecting (1)</b> 55:16</p> <p><b>protest (1)</b> 22:7</p> <p><b>protested (2)</b> 22:8;23:24</p> <p><b>protests (1)</b> 23:19</p> <p><b>protocols (2)</b> 104:24,25</p> <p><b>provide (8)</b> 14:18;36:21;66:14; 121:21;122:23;126:23; 127:14;133:3</p> <p><b>provided (8)</b> 37:16,18,23;66:1;85:21;</p>
--	--	---	--

<p>109:21;144:6;182:2 <b>provides (2)</b> 126:9,17 <b>providing (1)</b> 16:13 <b>provisions (1)</b> 50:2 <b>prudent (1)</b> 128:9 <b>public (3)</b> 64:8;82:20,23 <b>publish (1)</b> 23:17 <b>pull (1)</b> 142:11 <b>pulled (4)</b> 39:15,25;102:22;103:1 <b>pumping (2)</b> 20:22;201:24 <b>pumps (2)</b> 53:10,10 <b>purely (2)</b> 131:14;168:5 <b>purpose (2)</b> 30:16;188:14 <b>purposes (11)</b> 17:20,24;18:21;52:18; 69:15;78:16;80:5;100:3; 157:2,6;167:21 <b>push (1)</b> 97:17 <b>put (9)</b> 25:23;33:10;75:11; 116:21;154:13;165:22; 166:17;183:17;205:24</p>	<p><b>quoted (1)</b> 85:19 <b>quoting (1)</b> 104:12</p> <p style="text-align: center;"><b>R</b></p> <p><b>rainy (1)</b> 46:17 <b>raise (3)</b> 26:17;34:16;206:2 <b>raised (2)</b> 144:14;182:8 <b>raising (1)</b> 158:23 <b>ramp (1)</b> 46:24 <b>random (1)</b> 192:17 <b>range (4)</b> 45:24;94:22;111:9;116:5 <b>ranges (1)</b> 45:19 <b>ranking (1)</b> 55:1 <b>rapid (1)</b> 46:18 <b>rarely (1)</b> 53:6 <b>Raster (3)</b> 37:19,23;163:17 <b>r-a-s-t-e-r (1)</b> 37:19 <b>Rasters (1)</b> 37:15 <b>rate (5)</b> 42:21;49:16;72:19,23; 135:19 <b>rates (2)</b> 72:9;129:2 <b>rather (3)</b> 18:1;35:17;204:10 <b>rationale (1)</b> 190:22 <b>reach (1)</b> 94:17 <b>react (1)</b> 33:1 <b>read (18)</b> 21:23;23:2,13;71:4;83:9; 106:11,12,13;157:9;158:1,9; 159:11;160:18;173:1; 174:20;177:1,2;178:7 <b>read] (1)</b> 58:20 <b>readily (1)</b> 119:11 <b>reading (1)</b> 49:25 <b>readjudicate (1)</b> 79:5 <b>reads (1)</b> 172:11</p>	<p><b>ready (2)</b> 34:10;205:17 <b>real (5)</b> 41:19;64:22;105:20; 142:10;205:2 <b>realize (2)</b> 171:12;174:14 <b>realizing (1)</b> 172:17 <b>really (9)</b> 53:14,16;58:7;81:21; 107:15;117:2;124:7;189:19; 206:22 <b>realm (1)</b> 204:15 <b>reask (1)</b> 180:21 <b>reason (10)</b> 25:23;38:4;67:11;117:11; 120:23;169:16;201:15; 202:14,18;206:7 <b>reasonable (54)</b> 50:2,21;51:7,14,17;54:4; 55:4,18,19;67:5;76:7,12; 77:13,16;92:2;93:3,8,18; 96:14,14;97:4;105:5;107:8; 124:7,12;126:10,17,23,24; 129:9,12,17;130:3,4,7,8,9, 14;132:24;133:15,21;134:4, 5,12,17,21;135:18;146:21; 157:14;162:14;176:12; 178:19;188:1;191:9 <b>reasonableness (1)</b> 91:9 <b>reasonably (6)</b> 55:8,14;105:1;117:1; 120:12;129:16 <b>reasons (5)</b> 47:18;183:9;188:6; 192:18;206:18 <b>rebut (1)</b> 170:11 <b>REBUTTAL (10)</b> 7:4,8;166:3,6;170:9;171:4; 183:17,20;185:22;186:2 <b>recalculate (1)</b> 134:1 <b>recall (19)</b> 25:7;78:20;86:22;87:13; 91:3;133:1;135:24;136:5; 137:1,5,24;139:17;148:17; 149:25;165:11;166:8; 180:15;186:14;197:20 <b>recapitulation (1)</b> 54:15 <b>receipt (1)</b> 23:16 <b>receive (6)</b> 28:9;81:23;197:12;199:2, 14;206:15 <b>RECEIVED (24)</b> 7:14;8:3;9:3;10:23;11:17; 14:2,9;22:20;24:9,10;28:11;</p>	<p>56:11,12;101:24;102:1; 125:20,22;185:19,20;196:9, 10;197:18;199:4,16 <b>receives (1)</b> 81:10 <b>recent (9)</b> 87:7;95:5;107:25;113:4; 145:20;149:9,23;164:10; 194:4 <b>recently (1)</b> 58:8 <b>recess (1)</b> 11:16 <b>recharge (20)</b> 43:14,25;44:5;48:6;90:20; 145:12;173:4,7,21,23,24,25; 174:7,11,24;175:6;180:13, 23;181:4,21 <b>recharging (1)</b> 173:4 <b>recite (1)</b> 14:1 <b>recognition (1)</b> 78:5 <b>recognize (5)</b> 10:21;29:18;99:3;101:10; 147:5 <b>recognized (4)</b> 56:6,7;147:1,6 <b>recognizing (1)</b> 79:10 <b>recollection (5)</b> 79:17,19,22;143:20; 160:12 <b>recommendation (1)</b> 163:20 <b>recommendations (2)</b> 144:1;186:20 <b>reconciliation (1)</b> 127:9 <b>reconsider (1)</b> 205:22 <b>record (36)</b> 10:4;14:16;27:8;34:4,5,8, 9;35:22;38:23;39:11,23; 44:21;56:17,19,20,21;57:8; 71:4;77:2,11;123:15;125:12, 16,17;141:17;165:22;168:4; 171:14;173:2;195:10,17; 198:9;199:3,15;200:10; 207:4 <b>recorded (1)</b> 175:15 <b>records (3)</b> 61:4;81:21;153:19 <b>recover (1)</b> 10:12 <b>Recross (5)</b> 138:10;140:17;194:11,12, 13 <b>RECROSS-EXAMINATION (1)</b> 138:14 <b>rectification (1)</b></p>
<p style="text-align: center;"><b>Q</b></p> <p><b>qualified (3)</b> 36:10;76:21;142:5 <b>qualifies (1)</b> 109:17 <b>quantify (1)</b> 53:21 <b>quantities (1)</b> 202:8 <b>quantity (3)</b> 188:24;191:16;192:11 <b>quarter (2)</b> 123:12;195:8 <b>quarter-acre (1)</b> 72:12 <b>quibble (2)</b> 64:23,24 <b>quick (7)</b> 46:24;124:3;142:10; 165:22,25;166:1,12 <b>quickly (2)</b> 187:15;206:16 <b>quite (4)</b> 71:9;86:20;109:11;146:3 <b>quote (1)</b> 108:20</p>			

40:6 <b>rectified (1)</b> 109:10 <b>red (8)</b> 39:1;98:23;99:2,13;100:7, 17,21;101:3 <b>redacted (1)</b> 77:1 <b>redelivery (1)</b> 48:8 <b>Redirect (6)</b> 26:9;132:11,13,20;165:6; 193:12 <b>redivert (1)</b> 49:4 <b>redverted (2)</b> 48:12,16 <b>redline (1)</b> 198:1 <b>red-shaded (2)</b> 137:4;139:15 <b>reduce (9)</b> 46:20;53:23;54:1;111:4; 116:23;157:19;158:17,25; 159:7 <b>reduced (4)</b> 92:13;111:5;128:9;158:20 <b>reduction (7)</b> 48:6,7;50:21;52:6;54:7; 116:24;134:16 <b>reevaluate (1)</b> 97:22 <b>refer (3)</b> 69:17;72:22;121:5 <b>reference (6)</b> 77:4,12,13;156:20,25; 198:9 <b>references (2)</b> 77:7;185:2 <b>referred (4)</b> 58:18;152:17;177:22; 206:6 <b>referring (11)</b> 72:23;77:6;84:3;95:12; 102:21;173:19;174:8,13; 175:23;181:5;198:10 <b>refers (1)</b> 151:24 <b>refile (1)</b> 200:2 <b>refine (1)</b> 201:13 <b>reflect (2)</b> 94:13;142:21 <b>reflected (1)</b> 124:12 <b>regard (2)</b> 154:1;186:19 <b>regarding (2)</b> 78:25;186:14 <b>regardless (1)</b> 74:6 <b>registration (2)</b>	40:4,6 <b>regression (1)</b> 135:22 <b>regroup (1)</b> 57:4 <b>regulating (1)</b> 69:14 <b>reissuance (1)</b> 201:15 <b>related (4)</b> 16:14;46:1;180:10,13 <b>relates (3)</b> 14:19;15:3;36:22 <b>relating (6)</b> 12:14;26:21;34:21;141:6; 171:5;186:4 <b>relative (9)</b> 16:9;20:11;30:14;36:16; 37:9;42:10,25;58:2;66:17 <b>relatively (3)</b> 49:18;94:4;191:12 <b>released (1)</b> 48:11 <b>relevance (1)</b> 204:8 <b>relevant (3)</b> 14:19;79:2;167:10 <b>reliability (3)</b> 52:25;80:8;85:22 <b>reliable (6)</b> 82:1;85:25;86:12;120:6, 12;122:2 <b>reliably (2)</b> 46:13;128:4 <b>relied (1)</b> 48:7 <b>rely (1)</b> 200:5 <b>remained (1)</b> 94:4 <b>remaining (2)</b> 71:19;74:2 <b>remember (10)</b> 18:11;78:18;87:9;95:25; 96:4;153:4,6;161:3;180:25; 201:19 <b>reminded (1)</b> 154:13 <b>remote (1)</b> 10:19 <b>remotely (2)</b> 10:15;34:22 <b>remove (1)</b> 41:14 <b>removed (6)</b> 13:8;40:11,12,15;41:12; 42:6 <b>removes (3)</b> 197:24;198:10,18 <b>removing (1)</b> 52:5 <b>render (3)</b> 76:22;112:9;130:14	<b>rendering (2)</b> 65:14;74:10 <b>renting (1)</b> 66:1 <b>renumber (1)</b> 98:16 <b>repeat (4)</b> 37:18;67:21;184:23;188:8 <b>replies (1)</b> 200:23 <b>report (60)</b> 36:14,19,25;38:9;43:15; 52:12;55:24;56:4;58:9; 59:12,15,17;62:7;68:18; 69:12;75:12;76:25;79:25; 85:16;93:22;94:3,7;95:7; 98:22;99:4;102:19,20; 103:18;104:10;105:12; 107:16;110:2;111:25;113:7; 115:6;126:7;127:24;128:18; 131:12;137:22;142:9,21; 146:24;147:3,25;148:6; 150:2;156:12;163:8;172:3,5; 174:23;180:10;181:13; 197:22,24;198:2,7,10,17 <b>reported (4)</b> 143:20;185:7;204:4,4 <b>REPORTER (23)</b> 11:10;14:23;32:9;37:17, 20;41:1;44:2;52:14;55:25; 66:20,24;67:16;71:4;82:17; 86:4,6;96:1;99:25;123:17; 162:9;184:20;195:12;196:18 <b>reports (3)</b> 77:8,11;206:21 <b>represent (7)</b> 42:7;59:25;99:6;101:13; 108:1;109:5;126:5 <b>representation (4)</b> 65:8;124:8;191:9;192:23 <b>represented (9)</b> 11:1;13:16;83:25;108:2; 184:10;197:11,11;199:2,14 <b>representing (1)</b> 100:23 <b>represents (1)</b> 94:22 <b>reproduction (1)</b> 54:17 <b>request (5)</b> 30:16;60:18;169:12; 183:19;184:6 <b>requested (1)</b> 166:13 <b>requesting (2)</b> 19:4;29:21 <b>require (3)</b> 26:1;82:25;122:22 <b>required (4)</b> 46:1;85:1;133:14;138:2 <b>requirement (8)</b> 45:10;48:1;51:5;93:13; 133:10,10,18;143:12	<b>requirements (4)</b> 25:18;43:3;45:15;54:16 <b>reread (1)</b> 121:4 <b>research (1)</b> 171:20 <b>residential (5)</b> 42:18;71:8;72:4,11;152:17 <b>residential (1)</b> 72:18 <b>resist (1)</b> 180:8 <b>resolving (1)</b> 78:10 <b>resource (2)</b> 127:21;157:15 <b>Resources (9)</b> 18:20;19:1,6;21:8;68:1; 82:7;141:21;164:16;171:20 <b>respect (1)</b> 201:8 <b>respond (1)</b> 30:10 <b>responding (1)</b> 34:25 <b>responds (1)</b> 34:11 <b>response (8)</b> 17:4,13;29:7,10,13,14; 30:7,24 <b>responses (1)</b> 200:22 <b>responsibilities (1)</b> 169:25 <b>responsibility (1)</b> 205:14 <b>restate (2)</b> 45:7;120:21 <b>result (11)</b> 89:11;92:14;106:24; 111:15;116:24;122:14; 134:16;142:25;179:15; 184:12;200:19 <b>resulted (3)</b> 48:23;177:8;179:21 <b>results (5)</b> 40:9;48:5;88:4;95:25;96:5 <b>retain (1)</b> 43:3 <b>returned (1)</b> 46:23 <b>returns (1)</b> 46:25 <b>review (8)</b> 11:16;36:20;100:20; 117:8;153:23;175:21;182:2; 198:20 <b>reviewed (4)</b> 43:9;196:11;197:1,2 <b>reviewing (1)</b> 78:20 <b>revisit (1)</b> 183:1
---	--	--	--

<p><b>right (90)</b> 14:7;15:4;26:17;34:16; 35:18,20;37:22;39:18;53:16; 55:12;57:5;70:13;71:10; 73:1;76:2,16,17;78:10;79:5; 81:5;83:3,4;89:16;91:17,18; 95:7,18;98:12;105:25;106:7; 108:21,22;109:2,9;110:15; 114:11;115:18,23;116:9,10; 118:12;119:12;120:14; 121:23,24;122:6,7,8;123:18; 124:10;125:4;126:11,12,19; 128:22;129:3,10,25;130:8, 15;131:10,13,24;133:15; 136:4;137:20;139:21; 140:18;157:24;162:12; 164:23;166:4,11;167:21; 170:25;178:5;179:16;182:3; 185:17;188:22;192:7;195:4; 196:4;200:14;202:4,7,9; 203:2;206:1,25</p> <p><b>rightly (2)</b> 40:11,12</p> <p><b>rights (45)</b> 13:3,4,8;15:7,17,20;16:1; 19:14,22;20:2,6,7,13;22:16; 23:23;25:22;26:2,5;27:22; 28:13;29:1,2,12;31:6,7,14, 18;33:4;55:17;58:2;61:11; 69:3,6;78:22;80:20;81:2; 118:21;122:1;153:15; 154:21;160:9,20;162:6; 195:22;203:11</p> <p><b>ring (1)</b> 188:7</p> <p><b>River (15)</b> 41:23;46:21;48:17;52:7; 66:18,21;75:2;78:11;139:12, 25;160:14;186:21;187:4; 201:25;202:6</p> <p><b>roads (13)</b> 61:14,14,17,20;62:20; 64:8;74:9;101:7,8;106:5; 153:2,9;154:4</p> <p><b>roadway (4)</b> 151:19,24,25;152:1</p> <p><b>roadways (4)</b> 38:16;40:10,12;61:20</p> <p><b>Rob (11)</b> 102:12,24;103:2;105:2; 112:5;114:17;116:7;120:12; 123:7;138:16,23</p> <p><b>role (1)</b> 171:17</p> <p><b>rotation (5)</b> 42:23;70:9;72:20;73:22; 189:7</p> <p><b>rough (2)</b> 63:23;80:22</p> <p><b>roughly (9)</b> 15:13;45:20,20;131:3,10, 18,23;135:4;146:6</p> <p><b>round (1)</b></p>	<p>131:5</p> <p><b>rule (2)</b> 152:15;169:3</p> <p><b>ruled (1)</b> 168:1</p> <p><b>rules (2)</b> 161:11;203:18</p> <p><b>ruling (2)</b> 77:14,20</p> <p><b>Run (2)</b> 73:19;95:21</p> <p><b>runoff (4)</b> 89:12;90:11,16,18</p> <p><b>rural (5)</b> 42:8;60:24;99:18;100:24; 101:13</p> <p style="text-align: center;"><b>S</b></p> <p><b>safeguards (1)</b> 205:24</p> <p><b>safety (6)</b> 126:10,17,23;127:2,6; 202:19</p> <p><b>same (24)</b> 42:12,14,22;47:24;66:10; 67:2;89:7;93:9;101:1; 118:14;125:3,5,9;127:17; 136:16;139:24;174:14; 181:20;183:3;187:1,4; 192:20,20,22</p> <p><b>Sarah (4)</b> 10:24;11:4,8;196:18</p> <p><b>sat (2)</b> 182:14,15</p> <p><b>satellite (4)</b> 59:18,19;78:20;149:13</p> <p><b>satisfaction (1)</b> 76:22</p> <p><b>save (1)</b> 162:22</p> <p><b>saved (4)</b> 90:4,10,17;133:6</p> <p><b>saying (16)</b> 28:12;31:15,17;72:25; 88:12;90:15;107:14;109:23; 110:12;114:20;168:10,12; 173:10;190:23;191:1,3</p> <p><b>scalpel (1)</b> 64:2</p> <p><b>scenario (3)</b> 72:21;73:19;75:5</p> <p><b>science (5)</b> 104:11,15,19;109:14; 191:2</p> <p><b>scope (5)</b> 79:2,7;182:22;183:12; 197:9</p> <p><b>Scott (4)</b> 12:8,12;14:13,17</p> <p><b>S-c-o-t-t (1)</b> 14:17</p> <p><b>scrutiny (1)</b></p>	<p>68:15</p> <p><b>season (7)</b> 18:9;22:2;48:11;49:20; 161:25;190:25;204:5</p> <p><b>seasonal (1)</b> 116:21</p> <p><b>seasons (1)</b> 178:2</p> <p><b>seat (2)</b> 98:10;184:2</p> <p><b>seated (4)</b> 12:17;26:25;141:10;171:1</p> <p><b>second (11)</b> 48:2;53:19;56:18;58:13; 110:2;125:15;126:13;148:3; 161:17;175:21;176:25</p> <p><b>section (16)</b> 39:16;40:7;43:11;45:1; 53:20;54:13;58:14,16;85:17; 95:6;103:14,15;105:12; 121:14;152:11;163:2</p> <p><b>sections (3)</b> 103:8,10,11</p> <p><b>seed (1)</b> 162:1</p> <p><b>seem (1)</b> 164:19</p> <p><b>seems (2)</b> 170:18;204:8</p> <p><b>seep (1)</b> 49:3</p> <p><b>seepage (5)</b> 45:23;49:16;88:1;91:1; 135:12</p> <p><b>seeps (1)</b> 48:25</p> <p><b>select (1)</b> 95:18</p> <p><b>selected (3)</b> 44:13;55:6;122:25</p> <p><b>selection (5)</b> 51:22;54:15,16;97:13; 110:17</p> <p><b>self-interest (1)</b> 63:20</p> <p><b>sell (3)</b> 73:7,10,12</p> <p><b>semirural (1)</b> 42:8</p> <p><b>send (2)</b> 11:8;17:25</p> <p><b>senior (14)</b> 20:2;26:4;31:8,10,16; 55:12,17;126:10;160:20; 202:4,7;203:2,21,25</p> <p><b>seniors (1)</b> 202:12</p> <p><b>sent (4)</b> 17:21;18:16;30:5;197:24</p> <p><b>sentence (17)</b> 76:10;85:23;116:19;157:9, 25;159:12,12;161:17; 172:10,22;173:1,9;174:20;</p>	<p>175:2;176:14;177:1,3</p> <p><b>sentences (1)</b> 23:14</p> <p><b>series (1)</b> 68:19</p> <p><b>serve (3)</b> 15:8;46:13;128:4</p> <p><b>served (1)</b> 52:23</p> <p><b>service (21)</b> 39:1;52:20,21,23;60:4; 61:11;62:9;70:12;74:24; 80:6;86:20;118:22;121:1,9, 17;150:5;152:12;153:1,16, 19;188:17</p> <p><b>set (9)</b> 34:4;37:11;52:3;93:21; 95:10;127:11;128:15; 129:17;138:1</p> <p><b>settlement (14)</b> 65:22;167:20,22,25;168:1, 5,13,22,22,23,25;169:20; 174:21,22</p> <p><b>several (2)</b> 49:15;180:10</p> <p><b>shaking (1)</b> 194:24</p> <p><b>shape (4)</b> 118:11;150:21;163:18; 164:23</p> <p><b>shaped (1)</b> 101:3</p> <p><b>shapefile (45)</b> 37:24;38:3,5,5;39:13,16, 18;40:1,5;58:25;59:4,12,21; 60:10,14,18;63:24,25;64:7, 17;65:7,15,19;67:13,24; 107:17;148:18,22;150:14, 16;151:6;152:8,11,16; 153:18,20;155:5;163:11,13, 14,23;164:17;193:25;194:1, 4</p> <p><b>shapefiles (15)</b> 37:14,24;38:1,9;40:3; 79:13;107:21;108:14; 111:12;118:2,7,8,24;154:12; 192:3</p> <p><b>shapes (1)</b> 119:7</p> <p><b>share (3)</b> 42:12;82:22;161:20</p> <p><b>shareholder (2)</b> 75:7;88:25</p> <p><b>shareholders (1)</b> 162:15</p> <p><b>shares (20)</b> 72:15;73:5,7,10,12,18,24; 74:2,5,18,20;75:7,10;80:8; 85:22;89:7;100:5;161:19; 190:15,18</p> <p><b>Shaw (19)</b> 36:16;59:2;60:19;103:14; 140:25;141:1,4,19;146:23;</p>
---	--	--	--



147:1,5;156:3,9;157:25; 160:3;161:24;163:3;165:8; 186:12 <b>S-h-a-w (1)</b> 141:19 <b>Shaw's (3)</b> 170:11;187:17;193:2 <b>shed (1)</b> 60:20 <b>shift (1)</b> 40:8 <b>shifting (1)</b> 33:25 <b>shop (1)</b> 163:17 <b>short (4)</b> 33:3;72:19;114:17;162:20 <b>shortage (3)</b> 127:7,8,15 <b>shortages (1)</b> 85:25 <b>shorter (4)</b> 42:21;72:8;95:16,21 <b>shortfall (3)</b> 177:9;179:15,21 <b>shortfalls (1)</b> 16:15 <b>short-term (1)</b> 116:22 <b>shoulder (1)</b> 116:22 <b>shoulders (1)</b> 49:11 <b>show (24)</b> 15:16;28:25;44:16,18; 66:12;95:17,22,24;96:11,20; 106:15;111:5,6;118:6,11; 119:8;136:17;157:3,5,14; 158:19,24;167:12;168:24 <b>showed (3)</b> 92:10;140:4;181:3 <b>showing (5)</b> 60:5;62:8;63:20;136:13; 176:17 <b>shown (7)</b> 62:15;95:13;115:1;150:7, 8;151:6,7 <b>shows (16)</b> 38:24;43:15,21;60:9,10; 93:4;94:3;145:13;150:6; 151:12;152:7;159:14;173:6; 174:23;178:3;192:7 <b>shut (1)</b> 161:8 <b>side (14)</b> 39:18;40:16,18;41:8; 42:24;86:3,5;139:5,8; 151:10;174:2,25;180:14; 181:21 <b>sidewalks (1)</b> 106:6 <b>signal (1)</b> 35:14	<b>signature (1)</b> 140:4 <b>significant (7)</b> 43:20;45:22;95:9;112:8; 132:3;145:16;146:4 <b>Sigstedt (9)</b> 171:25;173:9;175:2,22; 179:13;180:11;181:2; 197:23;198:18 <b>Sigstedt's (5)</b> 172:2;173:17;179:9,14; 180:17 <b>Similar (5)</b> 175:3;186:19;191:23; 198:3,6 <b>Similarly (4)</b> 49:16,20;53:19;127:13 <b>simple (2)</b> 50:8;115:11 <b>simplistic (1)</b> 49:7 <b>simply (9)</b> 39:15;46:20;51:22,25; 54:1;91:19;110:16;157:6; 169:23 <b>SIMPSON (6)</b> 24:16,19;56:13,14;185:13; 196:2 <b>simultaneous (1)</b> 200:22 <b>situation (2)</b> 47:23;140:21 <b>situations (1)</b> 120:4 <b>Six (1)</b> 179:22 <b>size (1)</b> 109:6 <b>slated (2)</b> 87:21;165:19 <b>slight (1)</b> 145:14 <b>slightly (1)</b> 112:7 <b>sliver (3)</b> 151:15,22,23 <b>Slow (3)</b> 14:23;32:9;37:21 <b>slowly (1)</b> 184:24 <b>slow-moving (1)</b> 129:22 <b>small (8)</b> 29:1;39:18;42:18;72:11, 18;146:1,4,6 <b>smaller (1)</b> 64:10 <b>Snake (11)</b> 15:8;27:22;41:23;75:2; 78:11;139:12,25;174:24; 186:21;201:25;202:6 <b>snapshots (2)</b> 191:8,16	<b>snippet (2)</b> 39:16,25 <b>software (1)</b> 108:12 <b>soil (1)</b> 70:9 <b>sole (1)</b> 63:15 <b>solely (4)</b> 60:13;67:13;69:14;80:14 <b>solution (1)</b> 164:18 <b>somebody (5)</b> 83:1;90:20;134:22,25; 154:23 <b>somehow (4)</b> 53:9;124:13;133:25; 190:23 <b>someone (2)</b> 33:4;190:24 <b>Sometime (1)</b> 17:11 <b>sometimes (8)</b> 53:12;70:5,8;88:14;89:15; 100:3,4;162:6 <b>somewhat (6)</b> 63:8;77:25;78:19;83:13; 134:9;154:19 <b>somewhere (3)</b> 48:17;75:8;198:24 <b>sooner (1)</b> 182:6 <b>Sophia (4)</b> 171:25;180:11;181:11; 198:18 <b>Sophia's (1)</b> 197:21 <b>Sorry (29)</b> 11:24,24;14:6,25;23:4; 32:11;44:7;50:5;51:24; 55:25;66:20;70:19;73:19,20; 79:21;81:13;84:14;88:9; 90:6;99:25;100:18;108:24; 120:21;161:16;164:3; 172:15;177:5;188:23;190:7 <b>sort (2)</b> 133:6;145:22 <b>source (3)</b> 120:7,24;121:22 <b>southeast (1)</b> 41:7 <b>southern (2)</b> 135:15;138:20 <b>Southwest (11)</b> 17:19,22;18:1,5,16,21; 19:2,15,18,21,24 <b>speak (1)</b> 44:7 <b>speaking (1)</b> 57:24 <b>specialist (1)</b> 108:20 <b>specific (1)</b>	134:7 <b>specifically (1)</b> 138:21 <b>specifics (1)</b> 117:21 <b>spell (5)</b> 14:15;27:7;35:22;141:16; 171:13 <b>spells (1)</b> 45:12 <b>spend (1)</b> 206:20 <b>SPF (5)</b> 14:21,22;15:1,2,5 <b>spill (9)</b> 46:6,10,13;48:1;115:17; 127:25;128:1,3;129:2 <b>spills (4)</b> 91:2;116:17;128:8,13 <b>spoke (1)</b> 92:11 <b>spoken (1)</b> 184:11 <b>spot (1)</b> 142:4 <b>spreadsheet (2)</b> 51:17;134:13 <b>spring (3)</b> 25:6,15;46:2 <b>springs (1)</b> 48:25 <b>sprinkler (18)</b> 47:5,9,12,19;48:5;49:8; 72:12;88:19;89:1,12;90:3,8, 21;91:2;92:20;115:25; 128:20,25 <b>sprinklers (1)</b> 158:23 <b>Spronk (1)</b> 102:20 <b>square (1)</b> 61:19 <b>SRBA (1)</b> 79:1 <b>stab (1)</b> 59:10 <b>stable (1)</b> 93:18 <b>staff (4)</b> 63:3,14,19;169:6 <b>stand (3)</b> 34:15;183:25;186:9 <b>stand-alone (1)</b> 53:7 <b>standard (8)</b> 76:19;77:12,18;104:24,24; 127:3;202:15,17 <b>standards (4)</b> 76:22;129:19;130:10; 204:14 <b>standpoint (3)</b> 74:17;104:18;111:15 <b>start (13)</b>
---	---	--	---

16:17,20;34:10;41:1; 45:19;52:14;77:7,17,17; 82:17;99:12;100:1;195:3 <b>started (5)</b> 14:7;15:14;28:2;140:2; 182:6 <b>starting (6)</b> 95:18;119:14;122:2,4; 144:16;174:21 <b>starts (2)</b> 172:23;176:15 <b>startup (1)</b> 46:3 <b>state (13)</b> 14:15;27:7;35:21;95:8; 126:7,16;127:24;128:18; 129:7;130:11;141:16; 171:13;205:20 <b>stated (3)</b> 45:8;131:6;200:16 <b>statement (8)</b> 28:8;47:14;51:19;70:15; 79:10;92:4;94:7;96:25 <b>statements (1)</b> 158:16 <b>states (3)</b> 19:20;85:20;112:14 <b>static (1)</b> 124:14 <b>stating (1)</b> 30:24 <b>statistical (2)</b> 43:11,16 <b>statistically (3)</b> 43:20;95:9;112:8 <b>status (1)</b> 74:6 <b>stay (4)</b> 42:22;129:1,1;131:20 <b>stayed (3)</b> 22:25;24:1;66:9 <b>steady (1)</b> 205:20 <b>Step (2)</b> 85:2;86:16 <b>steps (1)</b> 103:24 <b>still (8)</b> 10:12;24:5;41:22;49:21; 102:9;126:23;134:24;160:3 <b>stipulate (3)</b> 10:14;12:25;13:11 <b>stipulated (8)</b> 13:14,22;28:5,8;124:23; 125:18;147:5;199:9 <b>stipulating (1)</b> 184:14 <b>stipulation (12)</b> 13:15,16;56:7;125:6; 184:7;185:9;195:16,25; 196:19;197:11;199:2,14 <b>stockholders (1)</b> 73:7	<b>storage (3)</b> 48:9;66:1,14 <b>streams (1)</b> 48:25 <b>stretch (1)</b> 88:15 <b>stricken (1)</b> 168:3 <b>strict (2)</b> 42:23;72:20 <b>strictly (2)</b> 72:17;155:6 <b>strike (2)</b> 76:25;167:19 <b>striking (1)</b> 77:7 <b>string (3)</b> 168:15,17;169:22 <b>strip (6)</b> 74:25;75:3,11,13,16,20 <b>strong (1)</b> 44:13 <b>structure (1)</b> 47:20 <b>subdivision (11)</b> 42:25;61:14;71:13;72:4,7; 101:7,8,12;152:7;153:3; 154:4 <b>subdivisions (5)</b> 42:8,11;71:8;152:25;153:6 <b>subject (9)</b> 22:6,7;24:6;29:2;43:18; 68:15;73:13;122:5;139:23 <b>subjects (3)</b> 55:24;56:4;147:2 <b>submit (3)</b> 21:25;25:17;85:1 <b>submitted (4)</b> 13:7;22:5;77:5;148:7 <b>submitting (1)</b> 25:15 <b>subsequent (1)</b> 112:16 <b>substantial (1)</b> 92:20 <b>subsurface (1)</b> 48:9 <b>subtract (2)</b> 174:6;177:25 <b>subtracted (2)</b> 174:9,14 <b>subtraction (3)</b> 173:25;175:25;176:1 <b>successive (1)</b> 23:17 <b>sufficient (2)</b> 18:4;73:24 <b>sufficiently (1)</b> 59:6 <b>SUGAR (8)</b> 8:16;26:13,20;27:14,18; 28:4,14;71:25 <b>Sugar's (1)</b>	27:21 <b>suggest (3)</b> 127:19;206:8,16 <b>suggested (1)</b> 206:9 <b>suggesting (1)</b> 181:11 <b>suggestions (1)</b> 163:3 <b>suggests (2)</b> 168:18,20 <b>Sullivan (4)</b> 102:20;143:1,11;198:7 <b>Sullivan's (1)</b> 113:6 <b>summaries (1)</b> 195:21 <b>summarize (2)</b> 37:5;133:7 <b>summarizes (1)</b> 113:17 <b>summary (3)</b> 133:3;134:20;163:6 <b>supplemental (24)</b> 52:16,18,24;53:4;80:1,5, 10,19;81:23,25;82:15;85:15; 86:2,9;117:23;120:17,23; 121:11,21;122:3;153:15; 154:9,24;204:1 <b>supplied (2)</b> 53:22;169:14 <b>supply (20)</b> 44:23;52:25;53:5,9;58:2; 69:20;80:7;85:20,24;86:12; 120:19,25;121:16,22;127:3; 136:9;161:8;178:1,1;202:1 <b>suppose (1)</b> 32:2 <b>sure (26)</b> 33:17;56:16;59:10;60:6; 63:16;64:3;68:2;71:1;82:23; 84:5;96:24;100:3;110:10; 114:9,11;131:15;136:10; 153:6,25;158:11;159:3; 167:3;170:7;171:15;175:18; 179:11 <b>Surface (43)</b> 13:21;16:16;21:9;22:17; 23:21;26:3,4;33:25;34:20; 36:5;41:18;43:3;52:18,19, 25;53:8,24;55:12;56:25; 65:23;66:2;80:8,14;81:10; 82:3;84:9,25;85:22;86:8,11; 91:16;100:5;140:24;141:5; 160:10,15;163:9;184:4,11; 189:17;199:9;200:9;201:25 <b>suspect (1)</b> 204:19 <b>sustain (1)</b> 71:3 <b>sustained (4)</b> 47:1;48:10;182:23;183:4 <b>sustaining (1)</b>	183:9 <b>SWC (5)</b> 7:15;23:21;121:10; 169:18;185:14 <b>swear (1)</b> 34:13 <b>switched (1)</b> 198:23 <b>switching (1)</b> 198:23 <b>sworn (8)</b> 12:13;26:21;34:21;141:6; 170:24;171:5;184:2;186:4 <b>system (41)</b> 45:22;46:2,8,9,12,14; 47:14,15,18,21;48:4;49:12, 14,22,23;53:17;59:24;64:23; 69:11;72:12;89:19,22,25; 90:3,4,9,10,11;105:20; 111:12;119:22,24;127:10; 128:5;129:16,22;139:9,11; 145:2;146:17,21 <b>systems (16)</b> 50:12;53:5,7,9,11;72:11; 128:1;133:8;135:15;138:25; 139:7;146:10,13;161:2,5,7
<b>T</b>			
			<b>tab (1)</b> 173:20 <b>table (8)</b> 49:3;113:8,15;115:1; 178:3,22;179:1,2 <b>tag (1)</b> 119:3 <b>tail (5)</b> 46:9,13;49:23,24;128:4 <b>tailwater (1)</b> 139:11 <b>talk (8)</b> 11:22;73:4;110:4;200:14; 201:3,16;204:19;206:18 <b>talked (9)</b> 47:5;92:19;135:21; 136:12;143:7;182:11;184:4; 191:11;198:25 <b>Talking (10)</b> 32:18;69:13,13;75:10; 94:14;134:7;151:4;158:2; 159:3;204:9 <b>talks (3)</b> 52:16;54:14;83:24 <b>task (2)</b> 16:17;117:13 <b>tasked (2)</b> 16:10,13 <b>tax (1)</b> 119:7 <b>technical (16)</b> 16:13;36:21;54:19;67:19; 104:18;111:15;127:22; 144:6;175:16,17,23;176:3;

186:18;196:21;197:3,6 <b>technically (2)</b> 188:9;189:10 <b>technology (2)</b> 109:6;130:13 <b>ten (4)</b> 15:13,13;23:18;147:20 <b>tend (1)</b> 49:12 <b>tender (2)</b> 56:2;146:23 <b>tendered (1)</b> 55:23 <b>tens (1)</b> 132:4 <b>term (3)</b> 32:7;129:12,18 <b>terms (9)</b> 31:24;41:16;60:17;74:13; 105:23;108:10;119:6; 201:18;205:3 <b>test (1)</b> 145:15 <b>testified (19)</b> 12:14;26:22;34:22;69:21; 87:6;88:25;89:18;90:25; 91:5;95:15;118:1;141:7; 146:24;147:3;157:18;159:6; 171:6,12;186:5 <b>testifies (1)</b> 170:14 <b>testify (5)</b> 46:7;103:9;158:12; 165:12;167:8 <b>testifying (2)</b> 59:7;74:7 <b>TESTIMONY (46)</b> 7:4,8;11:20;47:8;63:6,11; 64:20;65:6,13;66:17;67:20; 71:23;72:6;75:14;76:25; 78:13;86:14,18,22;87:9; 88:23;91:3,18;92:25;94:2; 107:1;109:22;111:22;113:3; 115:24;133:12;135:2; 138:24;139:17;170:11; 171:24;173:17;175:11; 186:12;189:20;192:6,10; 193:2;197:21;201:6;202:21 <b>TFCC (5)</b> 58:14;148:1,12;157:12; 187:19 <b>thanks (11)</b> 11:3;34:24;78:8;97:25; 98:1;111:23;124:19;127:1, 19;156:1;207:1 <b>theme (1)</b> 205:5 <b>Theoretically (1)</b> 134:5 <b>theory (1)</b> 51:14 <b>therefore (1)</b> 49:19	<b>thin (1)</b> 40:20 <b>thinking (3)</b> 161:5;204:10;206:23 <b>third (2)</b> 68:8;145:10 <b>THOMPSON (62)</b> 10:7,8,10;11:25;24:17,20, 23;25:1;26:7;34:2,11,13; 35:1,4,18,19,21;38:18;41:7; 44:8;54:10;55:21;56:3,15, 22,23;70:14,19,22;71:3; 78:23;83:18;94:1;98:13; 102:24;132:11,12,13,16,21; 134:24;138:6;139:14; 140:24;141:11,12,15; 142:17;146:22;147:2,7,8; 160:25;165:6,7;184:19,21; 199:7,8;206:3,4,6 <b>Thompson's (1)</b> 138:18 <b>though (8)</b> 35:8;42:14;105:21; 128:20;163:8;164:5,24; 192:9 <b>thought (2)</b> 10:11;143:3 <b>thoughts (1)</b> 195:7 <b>thousand (1)</b> 117:5 <b>thousands (1)</b> 132:4 <b>three (13)</b> 13:7;23:13;37:13;103:5,7, 10,19;136:18;144:16; 156:17;179:1;195:16,24 <b>three-page (1)</b> 21:13 <b>three-year (1)</b> 157:3 <b>throughout (1)</b> 20:10 <b>tidy (2)</b> 133:5;134:19 <b>tiles (2)</b> 49:2,3 <b>timely (1)</b> 205:3 <b>times (7)</b> 45:10;51:5;72:16;93:13; 133:18;143:8;158:13 <b>timing (2)</b> 25:5;72:6 <b>Titled (1)</b> 148:12 <b>TJ (18)</b> 57:20;63:18;65:11;73:19; 78:3;79:16;80:16;81:24; 88:9;96:25;98:1,13;100:12; 110:22;147:15,19,22;153:4 <b>today (17)</b> 10:25;11:1;59:7;64:16;	65:6;83:18;84:22;96:8; 102:14;114:18;116:1;130:8; 140:19;148:15;200:25; 201:12,20 <b>today's (1)</b> 14:19 <b>together (5)</b> 25:23;33:10;78:15;97:3; 144:11 <b>told (2)</b> 202:16;204:13 <b>took (5)</b> 61:10,13;94:24;144:16; 163:16 <b>top (5)</b> 85:19;148:9;150:18; 157:8;172:8 <b>topics (2)</b> 166:16;167:25 <b>total (6)</b> 45:25;88:4;189:2;192:11, 24;203:25 <b>totally (1)</b> 179:11 <b>toward (1)</b> 45:16 <b>towards (1)</b> 22:22 <b>track (1)</b> 196:18 <b>tracks (1)</b> 119:24 <b>tract (8)</b> 48:19;49:6;71:24;72:3; 74:23;86:2,3,4 <b>trained (1)</b> 109:1 <b>transfers (3)</b> 108:16;120:4;160:10 <b>transient (1)</b> 205:21 <b>translate (1)</b> 47:16 <b>Travis (9)</b> 10:8;25:1;35:7;42:2; 44:10;70:17;111:8;132:13, 14 <b>treat (2)</b> 76:5;188:13 <b>treated (1)</b> 48:12 <b>trend (21)</b> 43:16,17,20,22;44:11,14, 16,18;95:9,10,11,17,20;96:9; 106:15;112:1,7;136:12,13, 21;143:2 <b>trends (3)</b> 135:22;144:11;145:13 <b>tried (5)</b> 46:21,21;149:6;152:19; 181:12 <b>trouble (1)</b> 41:2	<b>true (18)</b> 51:11;52:1;67:1;88:17; 89:3;92:3;122:10;128:7; 130:17,23;131:2;134:8; 145:2;156:23;176:6;179:13; 181:20;188:7 <b>truth (7)</b> 12:14;26:21;34:21;53:17; 141:6;171:5;186:4 <b>truthing (1)</b> 122:5 <b>try (7)</b> 37:3;133:5,7;169:9; 185:22;205:4;206:19 <b>trying (13)</b> 17:7;29:25;143:2;167:24; 169:6;185:7;188:15,16,17, 23;191:13;204:11;206:24 <b>TSCHOHL (2)</b> 11:12;35:14 <b>Tuesday (2)</b> 10:11;180:6 <b>turn (35)</b> 19:7;21:11;22:10;38:18; 39:7;40:16;41:25;43:7; 44:25;46:19;52:9;55:18; 58:9,12;59:14;62:7;73:3; 79:24;83:17;93:23;105:11; 111:25;115:5,9;142:17; 147:24;150:2;172:4;176:8, 21;177:11,14;178:12; 187:14;205:18 <b>turned (1)</b> 49:13 <b>TWG (1)</b> 144:8 <b>twice (1)</b> 71:23 <b>Twin (99)</b> 37:8;38:6;39:1;43:2,5,12; 44:19;45:5;47:7,9;48:3,4,19; 49:6;52:21,22;57:21;58:22; 60:3;61:3,25;62:4,9;65:8,18; 66:4,8,11,15;67:8,13;68:10; 69:2,7;70:1,12;71:9,24; 72:15;73:6;78:10,22;79:15; 80:6,19;81:20;82:5,25; 85:24;86:2;88:19;92:1,5; 93:1,16;94:3;99:9;105:12; 110:24;112:1;113:19; 114:14;116:1,4;117:15; 118:22;120:25;122:10,16; 130:17;131:2;135:3,23; 139:9;145:8,11,18,25; 146:16;148:18;149:3;150:5; 153:5;155:3,6,16;157:12,18; 158:16;159:16,21;161:1; 163:10,12,19,21;176:17; 179:2;190:12 <b>Two (17)</b> 11:25,25;12:1,1;23:17; 38:9;47:18;64:8;71:10;96:8; 159:23;166:14,19;172:18;
--	--	---	---

<p>174:3,10;195:6 <b>twofold (1)</b> 107:13 <b>type (6)</b> 57:24;83:1;85:11;145:23; 149:17;181:12 <b>types (4)</b> 69:13;86:19;88:15;182:7 <b>typical (2)</b> 72:11;162:5 <b>typically (14)</b> 42:8;45:22;71:20;72:8; 86:11,25;87:25;89:14;99:19, 21;139:20;161:24;162:3; 200:5 <b>typo (2)</b> 197:22,23</p>	<p>93:4;94:20;96:22,23;97:10, 11,17,18;98:11;102:23; 103:1;108:22,24;111:5,6; 114:20;124:6,6;126:24; 127:16,21;133:5;138:17; 147:19;151:12;158:24; 162:18;167:24;175:14; 176:24,24;186:9;187:9,16; 192:7;193:20 <b>upcoming (1)</b> 87:20 <b>update (4)</b> 104:7;109:12,14;164:16 <b>updated (8)</b> 107:18;160:10;197:24; 198:1,2,7,10,17 <b>updates (1)</b> 178:9 <b>updating (1)</b> 171:21 <b>upfront (1)</b> 122:23 <b>Upon (5)</b> 23:16;48:7;137:8;200:5; 202:1 <b>upper (1)</b> 146:5 <b>upper-right-hand (2)</b> 99:13,13 <b>upward (2)</b> 44:16;95:17 <b>urgency (2)</b> 168:19;200:18 <b>USA (1)</b> 8:10 <b>usage (7)</b> 32:7;52:17,17;53:4,16; 85:15;117:24 <b>use (52)</b> 16:14;32:3;33:2;41:15,22; 42:16,20,23;43:4;44:15,17; 63:4;67:9;72:7;74:2;80:1,10; 81:6,23;82:1,15;84:16;85:2; 99:22;100:5;104:25;106:16; 118:5;120:17,23;122:1; 143:14;144:2;145:3;150:12; 154:9;157:14;160:10;162:5, 12;163:4,11;164:20,21; 175:19;177:22;188:15; 192:10,13;197:8;202:11; 204:1 <b>used (52)</b> 15:24;44:20;51:3,7;53:11; 55:16;58:19;59:20;63:9; 66:6;67:2,5;69:10;70:9; 76:12;77:24;79:13;80:5; 93:2;96:7;97:2,3,20;108:16; 119:15;120:3;122:3;129:19, 19;133:20;134:3,10,15; 139:24;143:10,18,24; 144:18;148:18;149:25; 157:21;159:9;164:15; 168:13,25;178:4;179:5,19,</p>	<p>19;190:15;193:25;194:7 <b>useful (1)</b> 182:17 <b>user (4)</b> 74:19;81:14;162:18,19 <b>users (16)</b> 24:13;46:8;61:8;68:5; 75:15;77:5,11;82:10,13; 98:3;122:23;127:13;128:1; 155:12;180:1;204:3 <b>user's (1)</b> 74:18 <b>uses (7)</b> 15:17,18;84:8;91:19; 104:14;143:17;150:6 <b>using (18)</b> 93:1;99:21;100:2,15; 104:24;108:21;117:1; 126:16;127:3;145:4;156:16, 20;160:19;163:14,22;164:1; 191:25;192:3 <b>usually (3)</b> 42:17;53:9;74:21 <b>utilize (1)</b> 61:22 <b>utilized (6)</b> 37:9;54:3;73:15;110:6,7; 119:7 <b>utilizes (2)</b> 73:21;118:4</p>	<p>70:20 <b>volume (13)</b> 12:23;55:3;91:20,22; 92:10,14,15;93:8,9,15,18; 114:10;126:8 <b>volumes (4)</b> 107:3,3;138:25;176:17</p>
<p style="text-align: center;"><b>U</b></p>	<p style="text-align: center;"><b>V</b></p>	<p style="text-align: center;"><b>V</b></p>	<p style="text-align: center;"><b>W</b></p> <p><b>wait (6)</b> 13:2;44:2,2;66:20;162:9; 170:13 <b>walk (1)</b> 37:3 <b>warm (1)</b> 46:23 <b>waste (5)</b> 41:3;89:15,19;127:21; 129:20 <b>wastewater (2)</b> 89:11,14 <b>WATER (236)</b> 8:4;13:2,4,7,21;14:21; 15:1,4,16,20;16:1,5,14,16; 18:20;19:1,5,14;20:2,6,7,9, 13;21:8,9;22:17;23:21;26:2, 3,5;28:13,25;29:12,15,22; 30:6,8,15,18;31:1,3,6,7,14, 18,20;32:3,5,7;33:1,4,7,13, 25;34:20;36:5;41:17,23; 42:20;43:4,12,13,14;44:23; 45:9,15;46:8;48:10,11,12,16; 49:3,4,13,13,18,21,21,22; 52:6,18,19,25;53:8,24;55:12, 17,17;56:25;58:2,2;61:4,8; 65:23;66:2,2,8;68:1;69:3,7, 19,23;70:3;71:24;72:7,25; 74:5,14,14;75:1,2,13,16,22; 78:10,22;79:5;80:7,8,14; 81:10,14,17,21;82:3,7;84:8, 9;85:1,20,22,24;86:8,12; 87:3;88:3,5,16;89:2,6;91:11, 16,20,21;93:2,12;96:14,22; 97:4;99:8;100:5,14,15; 102:20;104:11,15,20,25; 105:16,24;107:5;108:16; 109:18;116:23;119:21; 120:18,25;121:16;122:23; 126:10;127:14;128:1;131:9, 16,20;140:24;141:5;143:8, 10,14,15,24;144:12,19; 145:23;146:18;153:19,20; 154:21;157:14;160:1,9,10, 15;161:8;162:12,18,19,22, 24;163:3,5,9;164:9,12,14; 171:19;173:5,21;174:3,12, 14;175:13;184:4,11;186:3, 25;189:17;195:22;199:9; 200:9;201:8;202:1,1,4,4,7,9, 11;203:2,11;204:16,16; 205:3,3,24 <b>water-intensive (2)</b></p>

158:24;159:17 <b>waterways (9)</b> 38:10;39:21;41:14;48:23; 68:25;69:8,13;105:19; 109:19 <b>way (15)</b> 30:3;52:4;64:4;65:25; 81:22;88:11,12;90:15; 100:25;101:15;124:16; 134:6;161:18;173:24;204:24 <b>ways (2)</b> 54:25;88:10 <b>weak (2)</b> 35:15;95:10 <b>wearing (1)</b> 12:2 <b>weather (3)</b> 46:23;116:22,23 <b>Weaver (2)</b> 166:13;167:6 <b>website (1)</b> 108:19 <b>week (4)</b> 86:15;145:19;200:20,25 <b>weeks (2)</b> 23:18;47:1 <b>welcome (2)</b> 186:9;206:2 <b>well-managed (2)</b> 146:19;161:1 <b>wells (8)</b> 52:17,24;80:5;86:9;99:19, 22;118:16,17 <b>weren't (1)</b> 25:25 <b>west (1)</b> 40:17 <b>wetting (2)</b> 46:1;91:1 <b>What's (11)</b> 33:12;36:4;78:1;89:15; 100:18;141:24;169:22; 179:24;184:11;198:4;205:4 <b>wheat (4)</b> 86:21,24;146:2;162:21 <b>wheeled (4)</b> 43:13,25;44:5;173:21 <b>whereas (2)</b> 64:1;118:19 <b>whole (5)</b> 43:24;44:4;65:4;73:18; 153:5 <b>whose (1)</b> 130:2 <b>winter (3)</b> 144:8;162:16,21 <b>withdraw (1)</b> 199:24 <b>withdrawing (1)</b> 200:10 <b>within (38)</b> 18:17;46:8;52:19,20;53:1; 54:23;61:11;68:21;70:1,12;	73:8;80:5,13,18;82:15; 85:12;86:19;87:3;88:19; 94:8;96:4,21;118:22;119:15; 120:25;121:9,16,23;128:1; 138:1;145:23;153:1,15; 154:25;155:23;160:5; 200:20;204:15 <b>without (6)</b> 20:9;21:18;81:3,20; 126:17;128:3 <b>witness (52)</b> 11:23;12:4,18;14:25;23:5; 26:12;27:10;32:11;33:23,24; 35:18;36:10;37:19,22;41:3; 44:6;52:16;57:11;66:23; 67:1,17;70:15;82:19;86:5; 96:2;98:1;100:2;103:1; 113:15;123:7;132:14,18; 138:9;140:10,20,23;142:5, 14;162:11;165:9,10;166:13, 24;167:7;169:10;170:25; 171:4;183:14;185:6;186:2; 187:13;189:17 <b>witnesses (7)</b> 10:10;34:1;165:19;166:3; 170:9;194:23;201:7 <b>witness's (1)</b> 76:24 <b>WMIS (5)</b> 119:3,18;121:25;154:15, 18 <b>wonder (2)</b> 98:16;102:22 <b>Wood (12)</b> 7:5;11:4,8;171:9;172:16, 22;179:23;180:13;182:21; 183:3,18;187:11 <b>word (3)</b> 10:23;96:2;126:24 <b>words (2)</b> 198:23;203:16 <b>work (29)</b> 18:2;20:18;27:19;35:25; 36:8;57:24;58:1;61:23; 79:17;81:8,13,17;138:1; 139:4;141:20,21;142:3,21; 144:6;149:2;169:7,7,24; 170:18;171:16,19;186:18; 187:3;201:9 <b>worked (9)</b> 15:3;27:17;29:11;57:21; 78:15;153:22;154:11,15; 186:25 <b>working (15)</b> 11:10;15:14;16:17,20,22; 54:19;78:21;153:22;175:16, 17,23;176:3;196:21;197:3,6 <b>works (2)</b> 36:15;170:17 <b>worksheet (1)</b> 144:7 <b>wrestle (2)</b> 187:1,4	<b>wrong (3)</b> 13:4;133:25;134:2 <b>wrote (1)</b> 103:10  <b>Y</b>  <b>yard (2)</b> 99:14,22 <b>y-axes (1)</b> 159:23 <b>year (96)</b> 15:2;16:19,21;25:24; 36:24;51:21,23;54:14,16; 55:5,9,9,16,17;70:11,24; 73:17,18,23,25;97:7,10,12, 14,18,19,21;107:25;110:13, 15;112:15;114:7;122:9,13, 25;126:8,22;130:7,18,21,24; 133:16,21,22;134:4,7,18; 137:15;144:13,20,22,24; 145:3;146:1,3;156:21;157:4; 161:8;162:20,25;164:13,13, 17;174:16;175:15,20; 176:12,19,20;177:25; 178:10;188:20,25;189:4,5,9; 190:9,10,20,23;191:5,6,7,13, 13,15,18,20,23,24,24;192:8, 9,12,14;193:9 <b>years (33)</b> 15:13,13;27:18;43:14; 44:22;54:20;69:18;87:8; 95:13;112:16;122:12;136:6, 8,18,20;144:10,17;149:9,22, 23;156:17;157:1;164:8; 177:8,10;179:15,20;188:2, 17;192:1,4;205:9,18 <b>year's (1)</b> 164:10 <b>yellow (16)</b> 40:20;41:8;54:22;60:8,14; 150:15,17,19;151:3,5,10,13, 16,23,23;152:1 <b>Yep (3)</b> 140:22;172:9;181:10 <b>yesterday (4)</b> 171:25;173:17;175:12; 200:11 <b>yield (1)</b> 118:11  <b>0</b>  <b>02-'04 (1)</b> 178:2 <b>06/08/12 (1)</b> 176:19  <b>1</b>  <b>1 (10)</b> 22:18;43:13;59:17;68:25; 85:2;105:11;111:9;174:3,12;	193:9 <b>1,000 (1)</b> 135:4 <b>1,045,120 (1)</b> 113:24 <b>1,098,477 (1)</b> 114:3 <b>1,100,000 (2)</b> 131:3,8 <b>1:00 (1)</b> 123:12 <b>10 (6)</b> 106:9;121:5;157:8,25; 159:11,13 <b>10,000 (3)</b> 173:4;174:4,6 <b>10:30 (1)</b> 57:6 <b>100 (4)</b> 48:22;105:9;135:3;146:3 <b>100,000 (2)</b> 110:25;111:9 <b>101 (1)</b> 8:23 <b>102 (1)</b> 8:23 <b>11 (4)</b> 44:25;142:20;145:6;160:3 <b>11th (1)</b> 54:18 <b>12 (2)</b> 72:16;144:17 <b>125 (1)</b> 9:16 <b>12th (1)</b> 24:10 <b>13 (3)</b> 50:19;115:9;144:17 <b>13970 (1)</b> 13:5 <b>14 (11)</b> 7:22;8:11,12,13,14,15; 52:12;79:25;80:3;85:16; 144:17 <b>15 (3)</b> 57:3;115:17;195:5 <b>15,000 (2)</b> 174:9;185:6 <b>15,000-acre (1)</b> 111:11 <b>150,000 (5)</b> 94:9,14,18,19,22 <b>16 (2)</b> 172:5,20 <b>16th (1)</b> 201:1 <b>17 (3)</b> 38:11;39:17;40:4 <b>171 (1)</b> 7:5 <b>18 (3)</b> 72:13;178:8;205:10 <b>180 (1)</b>
--	--	--	---

7:6 <b>185 (5)</b> 8:5,6,7,8,9 <b>186 (1)</b> 7:9 <b>19 (5)</b> 83:22;107:11,24;177:7; 179:14 <b>190 (1)</b> 7:10 <b>1910 (1)</b> 130:7 <b>193 (1)</b> 7:11 <b>194,000 (1)</b> 164:2 <b>194,732 (1)</b> 194:2 <b>194,732-acre (1)</b> 58:20 <b>1953 (11)</b> 17:1,10;20:3;22:17;26:2; 29:5,9;31:10,14,18;32:13 <b>196 (3)</b> 7:23,24,25 <b>197 (12)</b> 9:5,6,7,8,9,10,11,12,13,14, 15,17 <b>1970s (1)</b> 94:5 <b>1977 (3)</b> 43:24;44:4;112:10 <b>198 (1)</b> 8:22 <b>199 (2)</b> 7:16;8:22 <b>1990 (1)</b> 44:17 <b>1995 (1)</b> 176:18 <b>1999 (2)</b> 112:17;136:2 <b>1st (2)</b> 24:8;127:8	112:20,22;113:24;114:24; 144:9 <b>2000s (1)</b> 95:17 <b>2000-to-2014 (1)</b> 144:15 <b>2001 (1)</b> 136:5 <b>2004 (1)</b> 15:2 <b>2005 (4)</b> 44:15,17;94:25;136:5 <b>2007 (4)</b> 143:18,19;145:9;159:15 <b>2011 (7)</b> 37:10,15;38:1;40:3;149:1, 8;150:1 <b>2013 (40)</b> 40:11;58:23;59:21;60:6, 10,13,17,22;63:23,25;64:7, 16;65:7,15,19;67:12,24; 148:18;149:1,8;150:7,13,16; 151:6,12,20;152:2,4,8,11,16; 153:18;154:6;155:5;163:18; 164:2,6,23,24;194:1 <b>2014 (6)</b> 15:15;16:11,11;113:24; 114:24;144:10 <b>2015 (7)</b> 65:22;114:3,19;115:2; 136:13;144:16,19 <b>2015-to-2021 (1)</b> 114:7 <b>2016 (7)</b> 104:8;109:13;114:13,14, 20,22;115:1 <b>2017 (41)</b> 37:11,15;38:1,2,4,12,25; 39:3,12;40:3,12,13;41:12; 42:6;60:6,9;62:16,23;63:24; 64:1,9,12,18,24;65:9,15; 99:11;150:9,21;151:1,4,7; 163:11,13,14,16,17,20,22,23; 164:6 <b>2018 (16)</b> 54:20,23;55:5;126:9,16; 130:18,21;156:24;172:11, 23;173:3;174:7;175:19; 176:12,20;177:25 <b>2019 (3)</b> 87:16;92:6;135:7 <b>2020 (4)</b> 54:20;94:25;136:17; 156:24 <b>2021 (14)</b> 39:6;43:14;44:1,6;114:3, 19,21,22;115:1,2;136:3,13; 137:18;156:24 <b>2022 (10)</b> 43:24;44:4;54:18;136:17; 145:9;164:25;176:18; 192:16,17,23 <b>2023 (8)</b>	21:10;22:18;109:13; 114:13;137:19;144:24; 192:15,21 <b>2024 (2)</b> 87:21;144:24 <b>20s (1)</b> 146:5 <b>21 (2)</b> 106:11,11 <b>2-1 (4)</b> 113:8,15;115:1;177:10 <b>2-10 (2)</b> 176:15,16 <b>21st (1)</b> 182:3 <b>23 (6)</b> 121:6;177:15,16,17,18; 178:23 <b>25 (3)</b> 73:22;88:21;92:21 <b>2747 (1)</b> 13:5 <b>2748 (1)</b> 13:5 <b>2749 (1)</b> 13:4 <b>2758 (1)</b> 13:5 <b>28 (8)</b> 8:17,18,19,20;176:8,10; 177:4,14 <b>29 (3)</b> 178:13,16,23	<b>340 (1)</b> 166:15 <b>347A (2)</b> 102:21;113:13 <b>348 (5)</b> 7:23;195:20,23;196:9,10 <b>349 (4)</b> 7:24;195:20,23;196:9 <b>35 (3)</b> 116:12;117:7;131:9 <b>350 (5)</b> 7:25;195:20,23;196:9,10 <b>354 (1)</b> 166:15 <b>385,000 (2)</b> 131:10,17
<b>2</b>			<b>4</b>
<b>2 (20)</b> 7:16;68:17,18;69:17; 72:14,14;76:8;77:1;99:3,11; 104:13;109:24;147:25; 148:9;161:14;187:15,23; 199:9,14,16 <b>2.4.4 (1)</b> 176:11 <b>20 (12)</b> 45:24;48:21;71:19;111:2; 115:16;146:2;172:4,5,6,17, 19;205:9 <b>200,000 (1)</b> 131:24 <b>2000 (10)</b> 43:14;44:1,6;94:25;96:7;			<b>4 (27)</b> 7:17;36:5,13;41:25;43:15; 55:22;56:9,10,12;58:10; 60:2;62:7,12,15;71:7;85:16; 93:25;98:23;102:19;103:5; 141:25;142:9,18;148:4; 187:10,11;199:10 <b>4,000 (2)</b> 174:23;175:22 <b>40 (3)</b> 146:1;162:21,24 <b>40-acre (2)</b> 71:12;72:3 <b>42 (7)</b> 115:18,21;116:9;117:3; 131:13,17,22 <b>46 (1)</b> 95:13
		<b>3</b>	<b>5</b>
		<b>3 (6)</b> 21:12;99:3;101:1,2; 109:24;112:14 <b>3.2 (1)</b> 72:14 <b>3:36 (1)</b> 207:6 <b>30 (7)</b> 27:18;45:24;48:22;146:6; 177:8;179:15,21 <b>300 (4)</b> 83:17;102:17;176:21; 177:12 <b>30th (1)</b> 22:17 <b>31 (1)</b> 173:5 <b>316 (5)</b> 124:24;125:1,7,10,20 <b>317 (6)</b> 7:22;12:23;13:13;14:2,9; 21:2 <b>31st (6)</b> 16:25;20:3;29:5,9;31:10; 32:13 <b>337 (1)</b> 84:21	<b>5 (21)</b> 7:18;38:19;39:8;51:12,13; 52:1,2;56:11;59:15;73:4; 98:23;109:24;135:18;150:2; 156:11,24;163:2;187:21,22, 22,23 <b>5,000 (6)</b> 173:4,6,12,23;174:16; 175:5 <b>5,010,000 (1)</b> 181:4 <b>50 (7)</b> 45:20;47:10;88:21;92:21; 111:4;115:25;146:7 <b>50- (1)</b> 95:2 <b>50,000 (1)</b> 114:7 <b>502 (7)</b> 8:5;184:6,9,17,25;185:18, 20 <b>504 (7)</b> 8:6;184:6,9,17,25;185:18,

<p>20 <b>505 (6)</b> 8:7;184:6,9,17,25;185:18 <b>506 (7)</b> 8:8;184:6,9,17,25;185:18, 20 <b>515 (7)</b> 8:9;184:6,9,18,25;185:18, 20 <b>53 (1)</b> 25:22 <b>56 (5)</b> 7:17,18,19,20;115:15 <b>5th (2)</b> 18:12;21:10</p>	<p><b>8</b></p> <p><b>80 (2)</b> 45:21;162:20 <b>837 (6)</b> 172:4,5,16,19;176:9;198:9 <b>837A (8)</b> 8:22;198:3,5,11,13,16; 199:3,4 <b>838 (8)</b> 8:23;101:18,19,20,24; 102:1;136:25;139:15 <b>84 (1)</b> 126:9 <b>84th (3)</b> 55:6,13;126:22 <b>85 (1)</b> 45:21</p>		
<p><b>6</b></p>			
<p><b>6 (13)</b> 7:19;39:7,10,12;42:1;43:7; 56:11;109:24;135:18;145:5; 159:14,19,19 <b>60 (4)</b> 47:10;88:21;92:21;115:25 <b>600 (13)</b> 8:11;13:1,2,9;14:3,5,7,7,9; 15:10,16,23;19:14 <b>601 (5)</b> 8:12;13:10,25;14:1;17:15 <b>602 (4)</b> 8:13;13:10;14:1;18:22 <b>603 (4)</b> 8:14;13:10;14:2;19:7 <b>604 (6)</b> 8:15;13:10;14:1,2,9;22:10 <b>65 (1)</b> 116:5 <b>68 (6)</b> 177:15,18,20;179:1,7,10</p>	<p><b>9</b></p> <p><b>9 (3)</b> 83:21;107:10;156:15 <b>9:00 (1)</b> 10:3 <b>900 (4)</b> 9:5;196:22;197:13,17 <b>901 (3)</b> 9:6;196:22;197:13 <b>902 (3)</b> 9:7;196:22;197:13 <b>903 (3)</b> 9:8;196:22;197:13 <b>904 (3)</b> 9:9;196:23;197:13 <b>905 (3)</b> 9:10;196:23;197:13 <b>906 (4)</b> 9:11;196:23;197:13,17 <b>908 (4)</b> 9:12;196:23;197:13,17 <b>909 (3)</b> 9:13;196:23;197:13 <b>90s (1)</b> 57:23 <b>910 (4)</b> 9:14;196:23;197:14,17 <b>912 (4)</b> 9:15;196:23;197:14,17 <b>914 (8)</b> 9:16;125:3,5,7,19,21,22; 196:23 <b>917,000 (1)</b> 131:18 <b>928 (4)</b> 9:17;196:24;197:14,17 <b>95th (1)</b> 55:9 <b>99th (1)</b> 55:10</p>		
<p><b>7</b></p>			
<p><b>7 (13)</b> 7:20;39:23,25;55:22;56:9, 11,12;74:3;93:23;142:18,20; 161:15,17 <b>700 (6)</b> 8:17;28:4,10,11,22;31:8 <b>701 (4)</b> 8:18;28:4,10;29:17 <b>702 (5)</b> 8:19;28:4,10;30:12,14 <b>703 (5)</b> 8:20;28:4,10,11;30:20 <b>7130 (1)</b> 13:4 <b>75,000 (1)</b> 95:2 <b>78 (9)</b> 178:12,14,15,16,18,19; 179:2,6,19</p>			