

1 STATE OF MISSOURI  
PUBLIC SERVICE COMMISSION  
2 TRANSCRIPT OF PROCEEDINGS  
Evidentiary Hearing  
3 April 1, 2014  
Jefferson City, Missouri  
4 Volume 6  
5

In The Matter of the Application )  
6 of Union Electric Company, d/b/a )  
Ameren Missouri for Permission and )  
7 Approval and a Certificate of Public )  
Convenience and Necessity Authorizing )  
8 it to Construct, Install, Own, Operate, )  
Maintain, and Otherwise Control and )  
9 Manage a Utility Waste Landfill and )  
Related Facilities at its Labadie )  
10 Energy Center )  
11

File No. EA-2012-0281

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14 MORRIS L. WOODRUFF, Presiding  
CHIEF REGULATORY LAW JUDGE

15  
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16 WILLIAM P. KENNEY  
DANIEL Y. HALL  
17 STEPHEN M. STOLL  
COMMISSIONERS

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1 P R O C E E D I N G S

2 (Whereupon, the hearing began at 8:32 a.m.)

3 JUDGE WOODRUFF: Good morning

4 everyone. Welcome back for Day 2 of our hearing.

5 We'll begin today with Gary King from Ameren.

6 MR. WILLIAMS: Sir, before we do that

7 Staff would like to offer an exhibit.

8 JUDGE WOODRUFF: All right, go ahead.

9 MR. WILLIAMS: It's Ameren Missouri's

10 10K that was filed I believe March 3rd of this

11 year. I have a copy of it here, I have previously

12 provided to the parties electronically a copy of it

13 and I'm prepared to disseminate a copy to the

14 Commissioner and the parties again by e-mail

15 immediately.

16 JUDGE WOODRUFF: Okay. This will be

17 No. 107?

18 MR. WILLIAMS: Yes, it would be.

19 Staff offers Exhibit 107.

20 JUDGE WOODRUFF: Does anyone object

21 to the receipt of Exhibit 107?

22 Hearing no objection it will be

23 received.

24 All right. You may take the stand.

25

1 GARY KING

2 (Whereupon, the witness was sworn)

3 JUDGE WOODRUFF: You may inquire.

4 EXAMINATION

5 QUESTIONS BY MR. LOWERY:

6 Q. Would you please state your name for  
7 the record?

8 A. My name is Gary King.

9 Q. Mr. King did you cause to be prepared  
10 for filing in this docket surrebuttal testimony  
11 that's been pre-marked for identification as  
12 Exhibit 9?

13 A. Yes, I did.

14 Q. If I were to ask you the same  
15 questions that are posed in that testimony would  
16 your answers here today be the same?

17 A. Yes, they would.

18 Q. Are they true and correct to the best  
19 of your knowledge, information and belief?

20 A. Yes, they are.

21 Q. And do you have any corrections to  
22 that testimony?

23 A. No, I do not.

24 MR. LOWERY: With that Your Honor I  
25 would offer Exhibit 9 and tender the witness for

1 cross examination.

2 JUDGE WOODRUFF: For cross  
3 examination begin with Staff.

4 MR. WILLIAMS: Staff has no questions.

5 JUDGE WOODRUFF: Public Counsel?

6 MR. MILLS: No questions.

7 JUDGE WOODRUFF: LEO/Sierra Club?

8 EXAMINATION

9 QUESTIONS BY MS. SLATER:

10 Q. Good morning Mr. King.

11 A. Good morning.

12 Q. My name is Tamara Slater, I'm a Rule  
13 13 certified law student, student attorney in  
14 Missouri and I represent the Intervenors in this  
15 case, the Labadie Environmental Organization and  
16 Sierra Club.

17 I would like to start out by asking  
18 you a few questions about your testimony regarding  
19 some of Ameren's ground water monitoring of coal  
20 ash impoundments at some of its Illinois  
21 facilities.

22 Do you have your pre-filed testimony  
23 in front of you?

24 A. Yes, I do.

25 Q. Okay. Great. Would you please turn

1 to page 6 of your testimony and read the sentence  
2 beginning on line 14 starting with AER has been?

3 A. AER, excuse me. AER has been  
4 voluntarily -- is that the sentence?

5 Q. Yes. Thank you.

6 A. AER has been voluntarily monitoring  
7 ground water at coal ash impoundments at its power  
8 generating facilities in Illinois since 2010.

9 Q. And just to clarify AER is an  
10 affiliate of Ameren Missouri, is that correct?

11 A. That's correct.

12 Q. Thank you.

13 Would you now turn to page 10 of your  
14 surrebuttal testimony? On lines 3 through 5 we  
15 note that the Illinois Environmental Protection  
16 Agency or IEPA has quote, prepared a draft of a  
17 regulatory proposal that it's planning on filing  
18 with the Illinois Pollution Control Board in fall  
19 of 2013. Is that correct?

20 A. Yes, that's correct.

21 Q. And that regulatory proposal  
22 according, summarizing your testimony in that area,  
23 would require owners and operators of coal ash  
24 impoundments to conduct coal water monitoring in  
25 some instances, is that correct?

1           A.       Yes.   That's generally true.

2           **Q.       And are you aware that IEPA did**  
3   **follow those proposed rules entitled Coal**  
4   **Combustion Waste Surface Impoundments At Power**  
5   **Generating Facilities and they filed that in fall**  
6   **of 2013. Are you aware of that?**

7           A.       It was filed, the proposal was filed  
8   in October 28th, 2013. The first set of hearings  
9   occurred in February, the next set of hearings are  
10  scheduled for May.

11          **Q.       Okay, great. And you actually**  
12   **participated in those February hearings, is that**  
13   **correct?**

14          A.       That's correct.

15          **Q.       Thank you.**

16                 MS. SLATER: I believe we're on 355,  
17  could I please have this marked as Exhibit 355?

18                 JUDGE WOODRUFF: Yes, 355.

19                 (MARKED LEO/SIERRA CLUB EXHIBIT NO. 355)

20          **Q.       (BY MS. SLATER) All right. I just**  
21   **handed out an excerpt of IEPA's proposed rule**  
22   **making filing from the October 2013 filing that**  
23   **we've just spoke about. The excerpt I'm handing**  
24   **you includes the notes of filing, Statement of**  
25   **Reason and Attachment B.**



1                   **Have you seen this document before?**

2           A.       I would like to --

3           **Q.       I'm sorry.**

4           A.       If I can just take a moment.

5           **Q.       Yes, take your time.**

6           A.       (Reviewing document).

7           **Q.       So it's just the notes of filing,**  
8 **statement --**

9           A.       Yes, I have seen this.

10          **Q.       Thank you. And could you just**  
11 **describe briefly the document?**

12          A.       Yes. This is a, it's kind of a, when  
13 the Illinois Environmental Protection Agency files  
14 a proposal for rule making with the Illinois  
15 Pollution Control Board there's a set of procedural  
16 things they have to file that includes, they  
17 include a statement of reasons, the draft of the  
18 proposed rule which I don't see the draft of  
19 proposed rule here, but.

20          **Q.       Correct, it's not.**

21          A.       Okay. So that's part of the rule  
22 making proposal.

23          **Q.       Okay. Thank you. And would you also**  
24 **please read the text printed at the top of every**  
25 **page, just electronic filing?**

1           A.       Yeah. It just says electronic  
2     filing, received clerk's office 10/28/2013, R24  
3     dash 010.

4           Q.       Thank you.

5                    Would you please turn to page 5 of  
6     the Statement of Reason and read the highlighted  
7     text?

8           A.       Sure. The statement is, under the  
9     ash impoundment strategy the Illinois EPA  
10    identified facilities with CCW surface  
11    impoundments.

12                   If I just add CCW stands for coal  
13    combustion waste.

14          Q.       Thank you.

15          A.       Requested ground water monitoring  
16    well data, requested a potable water supply, excuse  
17    me, requested a potable water system surveys,  
18    requested hydrogeologic site assessments, required  
19    the installation of ground water monitoring and  
20    conferred with the Department of Natural Resources  
21    on dam safety.

22          Q.       So the IPA used the word required  
23    with regards to ground water monitoring there,  
24    correct? Towards the end of that sentence that you  
25    read.

1           A.       Well, yeah. They said they requested  
2 ground water monitoring well data and then at the  
3 end it said required the installation of ground  
4 water monitoring. Yes, it does say that.

5           Q.       Thank you.

6                    You were still working at the IEPA in  
7 2009, correct?

8           A.       Yes, I was.

9           Q.       Are you aware that IEPA sent letters  
10 to numerous power companies with coal ash  
11 impoundments in 2009 as a part of its initial steps  
12 to improve ground water monitoring?

13          A.       Yes, that's correct.

14          Q.       And were you involved at all in this  
15 process?

16          A.       No, I was not.

17          Q.       Would you please now turn to the page  
18 with the flagged, the orange Post-It note marked  
19 No. 1 in that same IEPA filing? It will take you  
20 to a letter from the IEPA to Ameren and Attachment  
21 B of the IEPA proposed rule making filing.

22                    Have you seen that letter before?

23          A.       Just so I'm in the right place this  
24 is May 15th, 2009 and it's a letter from Alan  
25 Keller, is that the document?

1 Q. No. Should be the next page.

2 A. April 10th, 2009?

3 Q. Yeah, the subject ash impoundment  
4 ground water protection, Edwards Station?

5 A. Right. I see that.

6 Q. Okay. And do you recognize the IEPA  
7 letterhead that this letter's on?

8 A. Yes, I do.

9 Q. And I'm sorry, do you recognize this  
10 letter, have you seen it before?

11 A. I recognize it from it being filed as  
12 far as the proceedings before the Illinois  
13 Pollution Control Board. I wasn't involved in the  
14 authorship of this letter.

15 Q. Okay. And what date is at the top of  
16 the letter?

17 A. April 10th, 2009.

18 Q. And would you please read the  
19 highlighted text towards the bottom of the letter?

20 A. There's, the highlighted sentence  
21 says, this assessment must include a ground water  
22 monitoring plan for this ash pond and a plan for  
23 identifying potable well use within 2,500 feet of  
24 the ash pond.

25 Q. Thank you. And then would you now

1 turn to the next Post-It note, for folks reading  
2 along that don't have another Post-It note, it's  
3 two letters later. The Post-It note --

4 A. This is dated April 10th, 2009?

5 Q. Yes, that's the one. And again do  
6 you recognize the IEPA letterhead that this letter  
7 is on?

8 A. Yes, I do.

9 Q. And it looks similarly familiar to  
10 this filing?

11 A. Yes, it was part of the proceedings.  
12 Again, I was not involved with preparation.

13 Q. No, I understand.

14 And can you again read the  
15 highlighted text towards the bottom of the letter?

16 A. Says this assessment must include a  
17 ground water monitoring plan for these ash ponds  
18 and a plan for identifying potable well use within  
19 2,500 feet of the ash ponds.

20 Q. Thank you.

21 Would you turn to the next letter,  
22 the yellow Post-It note marked No. 3? Does this  
23 look like the same letterhead, same deed, same  
24 general to the last two?

25 A. Yes, that's correct.

1           **Q.       And would you please read the**  
2     **highlighted text towards the bottom of this letter**  
3     **as well?**

4           A.       This assessment must include a ground  
5     water monitoring plan for these ash ponds and a  
6     plan for identifying potable well use within 250  
7     feet of the ash ponds.

8           **Q.       Thank you.   And just one more letter,**  
9     **if you turn to that last green Post-It note, for**  
10    **everybody else it's just the next letter.**

11                   **Again, can you read off the date?**

12          A.       Yeah, the date is also April 10th,  
13     2009.

14          **Q.       Thank you.   And the same IEPA**  
15    **letterhead and all of that.**

16          A.       That's correct.

17          **Q.       And would you please read the**  
18    **highlighted text towards the bottom of the letter?**

19          A.       Says this assessment must include a  
20    ground water monitoring plan for the ash pond and a  
21    plan for identifying potable well use within 2,500  
22    feet of the ash pond.

23          **Q.       Thank you very much.**

24                   MS. SLATER:   I'd like to move this  
25    exhibit into evidence.

1 JUDGE WOODRUFF: All right. Exhibit  
2 355 has been offered, no objection to its receipt?  
3 Hearing none it will be received.

4 MS. SLATER: Thank you.

5 Q. (BY MS. SLATER) You testify on page  
6 6 of your surrebuttal testimony that Ameren  
7 initiated ground water monitoring in 2010, is that  
8 correct?

9 A. Yes, that is correct.

10 Q. And 2010 is after these letters were  
11 sent to Ameren in 2009, correct?

12 A. That's correct.

13 Q. Okay.

14 Thank you, no further questions.

15 JUDGE WOODRUFF: Before we come up  
16 for questions from the bench I want to go back for  
17 a moment. I don't think, you offered Mr. King's  
18 surrebuttal, I don't think I ruled on it, did I?  
19 Anybody remember?

20 MR. LOWERY: I honestly don't  
21 remember but I assumed as a matter of habit that  
22 you did.

23 JUDGE WOODRUFF: I think I did but I  
24 didn't mark it down.

25 Anyone object to receipt of Mr.

1 King's surrebuttal, number 9?

2 Hearing no objections it will be  
3 received.

4 Okay. We're up to questions from the  
5 bench.

6 Mr. Chairman?

7 EXAMINATION

8 QUESTIONS BY CHAIRMAN KENNEY:

9 Q. Mr. King, good morning.

10 A. Good morning.

11 Q. How are you?

12 A. Very good.

13 Q. I'm going to ask you a few questions  
14 about your testimony and about the Illinois coal  
15 ash ponds that AER owns or operates or did operate  
16 at the relevant time, okay?

17 A. Yes.

18 Q. And let me just back up. One of the  
19 letters we were just discussing, there's three  
20 letters we just discussed, right, from Illinois  
21 Environmental Protection Agency to AER about three  
22 different stations, the Edwards --

23 A. I think there were actually four.

24 Were there four? All right. Edwards Station,  
25 Newton --



1 MS. SLATER: We skipped Newton.

2 CHAIRMAN KENNEY: Yeah, you did.

3 MS. SLATER: It's the following three  
4 after Newton.

5 CHAIRMAN KENNEY: So there are four  
6 letters in here though, right? Edwards, Meridocia  
7 and Venice, right?

8 A. Grand Tower is here too.

9 Q. (BY CHAIRMAN KENNEY) Was that an  
10 Ameren one?

11 A. Yes.

12 Q. All right. Well, let me turn away  
13 from the letters. Which coal ash pond, let me list  
14 them and you tell me if this is it. Coffeen.

15 A. Coffeen.

16 Q. Meridocia?

17 A. Yes.

18 Q. Grand Tower.

19 A. Yes.

20 Q. Joppa?

21 A. Yes.

22 Q. Newton?

23 A. Yes.

24 Q. Venice --

25 A. Excuse me, Venice is an Ameren

1 Missouri, that's not an AER facility.

2 Q. Okay. But it is in Illinois.

3 A. It is in Illinois, yes.

4 Q. Okay. And then Edwards.

5 A. Edwards, yes.

6 Q. Are those all the relevant --

7 A. There was, as far as the proceeding  
8 that Ameren initiated there were eight.

9 Q. So I'm missing one. Coffeen,  
10 Meridocia, Grand Tower, Joppa, Newton, Venice  
11 Edwards --

12 A. Duck Creek's in there.

13 Q. Duck Creek. And each of those had  
14 some sort of ash pond drain, right?

15 A. Yes. At least one.

16 Q. And were all eight of those the  
17 subject of some enforcement action or litigation  
18 brought by the Illinois attorney general?

19 A. No, none of them were.

20 Q. Okay. But all of them had letters  
21 issued requiring ground water monitoring similar to  
22 the letters we just were going through with  
23 counsel?

24 A. Yes, I believe that's correct.

25 Q. All right. So there weren't

1 regulations in place but the Environmental  
2 Protection Agency at least required it at some  
3 point that there be ground water monitoring.

4 A. They sent a letter, you know, the way  
5 the Illinois system works they really don't have  
6 much, there was no authority in terms of, there was  
7 no order that they would issue, there was no rule  
8 in place so they sent a letter out requesting that  
9 information be submitted.

10 Q. And requesting that there be ground  
11 water monitoring implemented.

12 A. Yes, exactly.

13 Q. So there may not have been an order  
14 or a statute or a rule that required it but they  
15 certainly sent a letter saying we want you to do  
16 this.

17 A. That's correct. And some of those,  
18 certainly Venice and -- Hudsonville was the other  
19 facility. Hudsonville was, Venice and Hudsonville  
20 were already being, had ground water monitoring  
21 systems in place.

22 Q. Now, the Labadie coal ash pond that's  
23 the subject of this CCN case, it's in a 100 year  
24 floodplain -- or it's in a floodplain, right?

25 A. From the testimony I heard yesterday

1 I believe that's correct. I don't have any  
2 specific knowledge.

3 Q. Well, let me ask you, are any of the  
4 eight coal ash ponds in Illinois, are those in a  
5 floodplain?

6 A. Some of them are, yes.

7 Q. Okay. Which ones?

8 A. Grand Tower is, Meridocia is, I  
9 believe, the ash ponds of those two definitely are.  
10 Parts of some of the other facilities are in the  
11 floodplain but I don't know that the ash ponds are.

12 Q. How about also in a region where  
13 there's seismic activity or a fault line?

14 A. I think, I can't ask, answer  
15 specifically on that but the seismic activities  
16 relative to Illinois are going to be very similar  
17 to Missouri.

18 Q. So you were at the IEPA at the time  
19 that these letters were issued?

20 A. Yes, I was employed, I was with the  
21 IEPA, I was in a different bureau.

22 Q. Are you able to offer any insight as  
23 to why the IEPA issued these letters requesting  
24 ground water monitoring at these sites?

25 A. Yeah. I discussed a little bit of

1 this in my testimony. After the, the TBA incident  
2 occurred --

3 Q. In Tennessee?

4 A. In Tennessee occurred, obviously  
5 there was a lot of publicity and a lot of concern  
6 raised about that. Current Governor Quinn was then  
7 Lieutenant Governor and he made some contacts to  
8 Illinois EPA and requested that some information be  
9 obtained relative to, you know, the ash ponds in  
10 Illinois.

11 Q. So there was some recognition that  
12 ground water monitoring within 2,500 feet of an ash  
13 pond is a good idea.

14 A. Yes, that's correct.

15 MR. LOWERY: Mr. Chairman I apologize  
16 but I couldn't quite hear your question, would you  
17 mind?

18 CHAIRMAN KENNEY: Sorry, something  
19 about it was a good idea to do ground water  
20 monitoring within 2,500 feet of an ash pond.

21 MR. LOWERY: Thank you.

22 Q. (BY CHAIRMAN KENNEY) And that was  
23 done, right?

24 A. Yes, that's correct.

25 Q. So whether it was an order or just a

1 letter Ameren headed the directive of the Illinois  
2 EPA and did that ground water monitoring.

3 A. Yes, they did.

4 Q. So how long have you been doing  
5 consulting for ARCADIS?

6 A. A couple years now. I was with  
7 Illinois EPA for about 35 years.

8 Q. And during that time all your work  
9 would have been done on behalf of the Illinois EPA.

10 A. That's correct.

11 Q. So it's just been in the last couple  
12 years that you've been consulting.

13 A. That's correct.

14 Q. So what's your hourly rate that  
15 you're charging Ameren?

16 A. 250.

17 Q. Is that to prepare your testimony?

18 A. Yes.

19 Q. And it was just the one piece of  
20 testimony, isn't that right?

21 A. That's correct.

22 Q. And is that the same rate to appear  
23 here at the hearing?

24 A. Yes.

25 Q. And in the couple years that you've

1    **been doing this have you consulted or prepared**  
2    **testimony exclusively for utilities or have you**  
3    **done that for community organizations?**

4           A.       Well, this is the first time that  
5    I've provided any testimony at a proceeding like  
6    this as a consultant, of course I did it many times  
7    when I was with the Illinois EPA.

8           Q.       **Sure. Right. All right. So thus**  
9    **far, have you done any consulting with respect or**  
10   **for environmental organizations like Sierra Club or**  
11   **similar to LEO?**

12          A.       No, I have not.

13          Q.       **All right Mr. King, I appreciate your**  
14   **time. I don't have any other questions**

15          A.       Thank you.

16                   JUDGE WOODRUFF: Mr. Stoll?

17                   COMMISSIONER STOLL: I have no  
18   questions Your Honor.

19                   JUDGE WOODRUFF: Mr. Kenney?

20                   COMMISSIONER KENNEY: I have no  
21   questions.

22                   JUDGE WOODRUFF: Mr. Hall?

23                   COMMISSIONER HALL: Similarly I have  
24   no questions.

25                   JUDGE WOODRUFF: And we'll move for

1 recross based on questions from the bench.

2 MR. WILLIAMS: No questions.

3 JUDGE WOODRUFF: Public Counsel?

4 MR. MILLS: No questions.

5 JUDGE WOODRUFF: Sierra Club?

6 MS. SLATER: I have no questions.

7 JUDGE WOODRUFF: Okay. Redirect?

8 EXAMINATION

9 QUESTIONS BY MR. LOWERY:

10 Q. Mr. King you were asked a number of  
11 questions both by Chairman Kenney and by LEO's  
12 attorney about these letters that were sent in  
13 2009, do you recall those?

14 A. Yes, I do.

15 Q. And I think the implication of  
16 Intervenor's questions was that the use of the word  
17 required by that professional engineer that wrote  
18 those 2009 letters suggested somehow that there was  
19 an Illinois EPA rule or standard or order that  
20 required Ameren to do something. Did you  
21 understand that that was essentially the import of  
22 the question?

23 A. Yes, I did.

24 Q. And I took it from your answers to  
25 Chairman Kenney's questions that that's not really



1     **a fair characterization of the circumstances, would**  
2     **you agree with that?**

3             A.       That's correct.

4             **Q.       Can you explain why there wasn't a**  
5     **requirement?**

6             A.       Well, for years Ameren had been  
7     pushing Illinois EPA to establish a state wide rule  
8     relative to coal ash impoundments and that had not  
9     happened, and in fact Ameren proceeded with a site  
10    specific rule change in 2009 to try to establish a  
11    system for closure at least for one of their ponds  
12    at their Hudsonville plant but, you know, that did  
13    not become effective as a rule until I believe  
14    2011. So there was just not a rule in effect to  
15    initiate enforcement action with regards to, and  
16    requirement to do that kind of monitoring.

17            **Q.       And so when you testified in your**  
18    **testimony that Ameren voluntarily pursued ground**  
19    **water monitoring you meant that because in fact**  
20    **Ameren wasn't required to do that monitoring, isn't**  
21    **that true?**

22            A.       That's correct.

23            **Q.       No further questions. Thank you.**

24                    CHAIRMAN KENNEY: I hate to do this  
25    to you, I've got some additional questions.

1 JUDGE WOODRUFF: Go ahead.

2 EXAMINATION

3 QUESTIONS BY CHAIRMAN KENNEY:

4 Q. Let me look at one of these April  
5 10th letters because this is important to me at  
6 least. Pick any one you want, I'm looking at the  
7 one from Edwards Station. I want to be clear about  
8 this. In the second paragraph of the letter to,  
9 regarding Edwards Station, it says that therefore  
10 pursuant to, I'm about halfway down through the  
11 second paragraph, section 4 and 12 of the IEPA  
12 Edwards Station must submit a hydrogeologic  
13 assessment plan to characterize the subsurface  
14 hydrogeology and evaluate the potential for  
15 contaminant migration from this ash pond. This  
16 assessment must include a ground water monitoring  
17 for this ash pond and a plan for identifying  
18 potable well use.

19 And you're a lawyer, right?

20 A. That's correct.

21 Q. So there is a citation to a statute  
22 and then there is the use of the word must twice  
23 and must is mandatory, not permissive, right?

24 A. That's correct.

25 Q. So --

1 A. Can I explain a little bit?

2 Q. Yeah, I want to understand that.

3 A. Section 4 and 12 have been part of  
4 the Illinois Environmental Protection Act since  
5 1970.

6 Q. Okay.

7 A. So, I mean, to out of the blue say  
8 that, you know, 40 years later they must submit  
9 something when there had been nothing intervening  
10 in terms of any kind of regulatory process, you  
11 know, it was a letter to motivate companies that  
12 weren't interested in doing ground water monitoring  
13 to do so. Ameren was willing to do so all along.

14 Q. And I respect that and I take no  
15 qualm with Ameren's willingness to do it  
16 irrespective of this letter but as I'm just looking  
17 at the four corners of this document it sounds like  
18 a directive from a state agency pursuant to some  
19 statutory authority. Whether they've ever used it  
20 before or not, we've been around 100 years and we  
21 have a general statute that gives us general  
22 authority to protect the health and safety of the  
23 rate paying public, it sounds like they've got this  
24 general section that they're citing to that's  
25 requiring, using the word that you must do this,

1    it's requiring hydrogeologic assessments and ground  
2    water monitoring. Irrespective Ameren can say  
3    we're going to do it anyway but this letter seems  
4    to be to me a directive and a requirement and not  
5    something permissive. And it's not an order but  
6    it's a letter from a state agency saying go do  
7    this.

8           A.     I guess I would -- it is a letter  
9    from the state agency and it carries the weight  
10   that a letter entails but it, I just would submit  
11   it's not the same thing as an order.

12           Q.     I agree it's not the same thing as an  
13   order but is it less mandatory?

14           A.     Oh, yeah, it's less mandatory. If  
15   you think of it in the terms of if there is an  
16   order issued, okay, and that order is based on an  
17   authority that order can be directly enforced.

18           Q.     Huh.

19           A.     Okay. This letter could not be  
20   enforced.

21           Q.     Is there any enforcement authority  
22   under sections 4 and 12 of the IEPA?

23           A.     The, section 4 is just an information  
24   gathering section, it's a general information  
25   gathering section, section 12 is a provision that

1 basically says that entities are not allowed to  
2 pollute waters in the state.

3 Q. So typically then if the IEPA sent  
4 this letter and then Acme Corporation disregarded  
5 it what would then ensue?

6 A. What would ensue is that --

7 Q. This is a hypothetical, I'm using  
8 Acme Corporation.

9 A. Okay. Use Acme. So if Acme received  
10 this letter and Acme chose not to do anything what  
11 Illinois EPA would have to do would be to develop a  
12 case, they would have to, they would have had to,  
13 Acme Corporation, let's assume Acme had coal ash  
14 impoundments, they would have had to go out and  
15 install ground water monitoring wells around those  
16 ash impoundments, take samples and then if they  
17 found exceedances proceed with an enforcement case  
18 against the company.

19 Q. All right.

20 I'm done. Thank you.

21 JUDGE WOODRUFF: Anyone? Further  
22 recross based on those questions from the Chairman?

23 MR. WILLIAMS: No questions.

24 JUDGE WOODRUFF: Any redirect?

25 MR. LOWERY: Just briefly Your Honor.

1 EXAMINATION

2 QUESTIONS BY MR. LOWERY:

3 Q. Does the fact that an individual  
4 engineer at Illinois EPA sent a letter to a company  
5 and the company then later did ground water  
6 monitoring or initiated ground water monitoring  
7 mean that it wasn't voluntary in your mind?

8 A. No, it does not.

9 Q. That's the only question I have.  
10 Thank you.

11 MR. WOODRUFF: Mr. King you may step  
12 down.

13 And I believe Mr. Gass will be here  
14 tomorrow.

15 MR. LOWERY: That's correct.

16 JUDGE WOODRUFF: So we'll move on to  
17 staff with Mr. Cassidy.

18 JOHN CASSIDY

19 (Whereupon, the witness was sworn)

20 JUDGE WOODRUFF: You may inquire.

21 EXAMINATION

22 QUESTIONS BY MR. WILLIAMS:

23 Q. Please state your name.

24 A. John Cassidy.

25 Q. And by whom are you employed and in

1     **what capacity?**

2             A.       The Missouri Public Service  
3     Commission and I'm a utility regulatory auditor 5.

4             Q.       **Mr. Cassidy, did you prepare**  
5     **testimony in written form that's been marked for**  
6     **identification, there are several pieces so I'll**  
7     **start with the first one, rebuttal testimony that's**  
8     **been marked as 100 HC and NP because some of the**  
9     **testimony is, has highly confidential information?**

10            A.       Yes.

11            Q.       **And would that be your testimony**  
12    **today or would you have any changes to it?**

13            A.       I have no changes.

14            Q.       **And did you also prepare in written**  
15    **form cross surrebuttal testimony that's been**  
16    **pre-marked and pre-filed in this case as Exhibit**  
17    **101 HC and NP?**

18            A.       Yes, I did.

19            Q.       **And would that be your testimony**  
20    **today or would you have any changes to make to it?**

21            A.       I have no changes.

22            Q.       **Did you also prepare supplemental**  
23    **testimony that's been marked for identification as**  
24    **Exhibit 102?**

25            A.       Yes.

1           **Q.       And would that be your testimony**  
2   **today or would you have changes to it?**

3           A.       I have no changes to that as well.

4           **Q.       So then our Exhibits 100 HC, 101 HC**  
5   **and 102 are your testimony here today you believe?**

6           A.       Yes.

7                   MR. WILLIAMS: With that I offer  
8   Exhibits 100, 101, 102.

9                   JUDGE WOODRUFF: Exhibits 100, 101  
10   and 102 have been offered. Any objections to their  
11   receipt?

12                   Hearing none they will be received.

13                   MR. WILLIAMS: I tender the witness  
14   for examination by others.

15                   JUDGE WOODRUFF: Okay. For cross we  
16   begin with Ameren.

17                   MR. LOWERY: Thank you.

18                               EXAMINATION

19   QUESTIONS BY MR. LOWERY:

20           **Q.       Good morning Mr. Cassidy.**

21           A.       Good morning.

22           **Q.       Mr. Cassidy in your rebuttal**  
23   **testimony you discussed analysis and cost studies**  
24   **relating to the project, correct?**

25           A.       Yes.



1           **Q.**       And you've seen Ameren Missouri's  
2       estimate for the construction and operation of the  
3       proposed well, is that true?

4           **A.**       Yes, I have.

5           **Q.**       Does anything about those estimates  
6       seem out of line to you?

7           **A.**       Nothing about those estimates gives  
8       me pause for concern at this time but Staff does  
9       plan to review all of those costs in a future rate  
10      case and that's part of why Staff is seeking that  
11      the Commission order, issue an order in this case  
12      granting a CCN that has no predetermined rate  
13      making treatment.

14          **Q.**       In effect the estimates look  
15      reasonable at this time but as would always be the  
16      case with the Staff you're going to review them for  
17      prudence, you're going to see what the costs draft  
18      be and you're going to review that in connection  
19      with a director of revenue requirement like you  
20      always would in a rate case, is that fair?

21          **A.**       Yes.

22          **Q.**       Based on those estimates would you  
23      agree that the revenue requirements calculated by  
24      Ameren Missouri for the three scenarios that Mr.  
25      Giesmann talks about in his surrebuttal testimony

1 are reasonably accurate?

2 A. Those estimates are reasonably  
3 accurate, yes.

4 Q. You've been involved in developing  
5 utility regulatory requirements for how long Mr.  
6 Cassidy?

7 A. This year it will be 24 years.

8 Q. Is it fair to say that from Staff's  
9 perspective if MDNR gives the required MDNR  
10 approvals the company ought to implement a CCR  
11 disposal option that has the lower present value  
12 revenue requirement?

13 A. Yes.

14 Q. And is there any reasonable doubt in  
15 your mind that the first option that Mr. Giesmann  
16 talks about building the newly developed Labadie  
17 site has the lowest present value of revenue  
18 requirement?

19 A. That is the lowest cost option.

20 Q. Mr. Cassidy, Staff's position  
21 statement supports the approval of the company  
22 application with three conditions, one of them  
23 being that DNR issue the construction permit, two  
24 that DNR issue a land disturbance permit and three,  
25 I don't know if this is a condition or not but it's

1 something the staff wants to see in the  
2 Commission's order that the Commission makes clear  
3 it's not making rate making determinations in this  
4 case. Is that correct?

5 A. Yes. Those are the recommendations  
6 of Mr. Beck and myself.

7 Q. And just to be clear the Staff's  
8 position is not that the Commission should wait for  
9 MDNR to act but rather the Commission should  
10 approve the CCN request but the company wouldn't be  
11 able to begin construction until those two DNR  
12 boxes are checked so to speak, is that fair to say?

13 A. By those two boxes you mean the  
14 permitting?

15 Q. Yes, the two permits.

16 A. Yes, I agree with that.

17 Q. In deciding your position and  
18 recommendations in this case did you consider the  
19 local public hearing testimony and Mr. Norris's  
20 testimony?

21 A. I did.

22 Q. I believe you attended Mr. Norris's  
23 deposition, is that right?

24 A. Yes.

25 Q. And obviously you've read his

1 testimony, is that true?

2 A. Yes.

3 Q. Did anything in those pre-filed  
4 testimonies or in his deposition cause you to  
5 change your position in this case about, that the  
6 request to CCN should be granted?

7 A. No, it did not.

8 Q. In particular Mr. Norris asserts that  
9 Ameren Missouri has not properly accounted for all  
10 capital and operating costs associated with the  
11 UWL. Do you agree with that criticism?

12 A. No, I don't. I think Mr. Giesmann  
13 has adequately addressed those concerns in his  
14 testimony, in his surrebuttal and cross surrebuttal  
15 testimonies.

16 Q. Thank you Mr. Cassidy.

17 JUDGE WOODRUFF: Public counsel?

18 MR. MILLS: No questions.

19 JUDGE WOODRUFF: LEO?

20 EXAMINATION

21 QUESTIONS BY MS. HUBERTZ:

22 Q. Hello Mr. Cassidy, my name is Liz  
23 Hubertz and I'm counsel for LEO and the Sierra  
24 Club.

25 I believe you said you are a utility

1 regulator auditor 5, is that correct?

2 A. Yes.

3 Q. And your experience is in utility  
4 rate making?

5 A. That's correct.

6 Q. And utility financial issues  
7 generally?

8 A. Generally.

9 Q. Okay. Would it be fair to say that  
10 your experience is not in coal ash landfill siting?

11 A. Not in siting.

12 Q. Would it also be fair to say that  
13 your experience is not in coal ash landfill  
14 operations?

15 A. Generally, no.

16 Q. Okay. Did you conduct any  
17 independent investigation into the costs of  
18 construction or operation of a, of the Labadie,  
19 proposed Labadie landfill?

20 A. I'm sorry?

21 Q. Sorry, that wasn't a very good  
22 question.

23 Did you conduct any investigation,  
24 independent investigation, into the cost of  
25 construction or operation of the proposed landfill

1 at Labadie?

2 A. No independent investigation.

3 Q. Did you conduct any independent  
4 investigation of the costs of any other alternative  
5 options to constructing the landfill at the Labadie  
6 site?

7 A. None other than what was provided to  
8 me.

9 Q. By Ameren.

10 A. Yes.

11 Q. Okay. Let's turn to your rebuttal  
12 testimony on page 4 and starting about at line 9,  
13 and I should mention the rebuttal testimony has  
14 been designated HC and I'm going to try to do what  
15 we did yesterday which is avoid mentioning the  
16 names of any other sites that might be confidential  
17 and any dollar figures so that we can, I think that  
18 there are some numbers later down on the page that  
19 aren't actually confidential but I'll make sure  
20 before I say them out loud.

21 MS. HUBERTZ: So is that acceptable  
22 to Ameren?

23 MR. LOWERY: Sure.

24 MS. HUBERTZ: Thank you.

25 Q. (BY MS. HUBERTZ) All right. Turning

1 to line 9 you were asked whether Ameren had  
2 examined the costs associated with its proposed  
3 construction of an additional landfill on land  
4 adjacent to the Labadie plant in comparison with  
5 other waste disposal options and you answered yes.  
6 Is that correct?

7 A. That is correct.

8 Q. Okay. Then continuing on you  
9 testified that Ameren engaged Reitz & Jens while in  
10 the planning stages of the utility and waste fill  
11 to review alternatives.

12 A. Is that a question?

13 Q. Yes it, is. I'm just asking you to  
14 verify that that's what it says. I'm sorry.

15 A. Yes, that's what it says.

16 Q. And then you also testified that R&J  
17 completed a study for Ameren Missouri which  
18 examined 22 possible sites across the region, is  
19 that correct?

20 A. Yes.

21 Q. Okay. And then finally, your  
22 testimony is, and this is where I'm going to  
23 mention the dollar figures that are in your  
24 testimony.

25 MS. HUBERTZ: Are those considered

1 highly confidential?

2 MR. LOWERY: Not the ranges, no.

3 MS. HUBERTZ: Okay. Thank you.

4 Q. (BY MS. HUBERTZ) So returning to  
5 lines 19 to 21. You testified that the study  
6 showed that a landfill adjacent to Labadie operated  
7 by Ameren would cost between \$5.40 and \$8 per ton  
8 and then you contrast it to the costs of using a  
9 site operated by a third party which you testified  
10 were \$15.87 to \$43.82 per ton. Do you see where  
11 that is?

12 MR. WILLIAMS: I'm going to object to  
13 the foundation on that question because what he's  
14 doing here is characterizing what R&J's study says,  
15 it's not his number.

16 MS. HUBERTZ: I mean I understand  
17 but he testified that he didn't do any independent  
18 investigation and that his knowledge comes solely  
19 from the R&J studies and the other documents  
20 admitted by Ameren. So I'm not asking him to say  
21 that these are true and correct, I'm saying he got  
22 them from what Reitz & Jens did, that's where those  
23 numbers came from.

24 MR. WILLIAMS: If that's the question  
25 I don't have an objection to that.



1 JUDGE WOODRUFF: For the record I'll  
2 overrule the objection, you can go ahead and answer  
3 the question that was just asked.

4 MS. HUBERTZ: I've forgotten what it  
5 was already.

6 JUDGE WOODRUFF: The court reporter  
7 can read it back.

8 (Whereupon, the reporter read from the record)

9 A. That's what the testimony says.

10 Q. (BY MS. HUBERTZ) Okay. Thank you.

11 Let's take look at some of the  
12 documents that you attached to your rebuttal  
13 testimony -- by the way, when was your rebuttal  
14 testimony filed? That should be on the first page.

15 A. Okay. That was filed on May 31st,  
16 2013.

17 Q. Thank you. Okay. Let's look at  
18 schedule 3 which was attached to the, your rebuttal  
19 testimony. Schedule 3 is an 11 page document with  
20 your data request number 2 and Craig Giesmann's  
21 response on behalf of Ameren to that question is  
22 page 1. Is that correct? I want to make sure  
23 we're in the same place.

24 A. Yes.

25 Q. Okay. And then pages 2 through 9 of

1 that, of schedule 3, is a document dated June 8th,  
2 2004 and entitled Utility Waste Landfill  
3 Feasibility Study. Do you see that document?

4 A. Yes.

5 Q. Okay. Let's take a look at the  
6 document that starts on page 2 of schedule 3 and  
7 ends on page 9. Does this study discuss any  
8 specific sites for the disposal of the Labadie  
9 plant coal ash that you recall?

10 A. Not that I recall but that is in  
11 additional information that Ameren provided in  
12 response to DR 2 which I've attached to subsequent  
13 testimony.

14 Q. Okay. I just want to go, this  
15 document doesn't discuss specific sites though,  
16 correct?

17 A. No.

18 Q. And this is not the document that  
19 discusses 22 sites across the region, is it?

20 A. No.

21 Q. Okay. Look at the -- now this study,  
22 would it be fair to say that this study discusses  
23 types of sites rather than specific locations?

24 A. Generally, yes.

25 Q. It discusses sites located in

1     abandoned pit quarries generically, that's on page  
2     6 of 11 in your schedule?

3             A.       Yes, and also on page 8.

4             Q.       Okay. Correct. And the same with  
5     above grade landfills, correct?

6             A.       Yes.

7             Q.       Okay. Turn to the bottom of page 8  
8     of your scheduling, you'll see that there's a  
9     little I'll call it a chart that it says landfill  
10    type and unit cost per ton of material landfilled.  
11    Do you see that, that chart?

12            A.       Yes.

13            Q.       Is that the source of your testimony  
14    that the per ton costs of disposal of the ash from  
15    Labadie landfill is between 5.40 per ton and \$8 per  
16    ton, it was at page 19 of your testimony, your  
17    rebuttal testimony?

18            A.       I think that's the above grade is  
19    where that came from partially.

20            Q.       Okay. And this document right here  
21    doesn't separate, it lumps Labadie, Rush Island and  
22    Sioux together, correct?

23            A.       Yes. At that time they were looking  
24    at, you know, a combined coal ash facility for  
25    several plants, so.

1           Q.       So it doesn't break out individually  
2     the costs specifically of disposal of Labadie's  
3     coal ash.

4           A.       No.

5           Q.       Okay. And this is pretty much  
6     consistent with what Ameren told you in response to  
7     your data request. Take a look at page 1 of  
8     schedule 3 which is the response to data request  
9     number 2, and in paragraph number 2 it reads,  
10    should be noted that Ameren Missouri did not review  
11    CCP disposal options for the Labadie energy center  
12    alone but rather took a holistic view of disposal  
13    needs of all the Ameren Missouri coal fired power  
14    plants, is that correct?

15          A.       Yes.

16          Q.       And is that your understanding of  
17    what this document, the landfill feasibility study  
18    does?

19          A.       Yes.

20          Q.       Okay. Let's take a look at page 10  
21    of your --

22                    MS. HUBERTZ: Am I on the microphone  
23    now?

24          Q.       (BY MS. HUBERTZ) Okay. Let's take a  
25    look at page 10 of schedule 3 and this is a

1 document headed Labadie Landfill Costs and Trucking  
2 Rates as of 9/25/2003. Do you see that document?

3 A. Yes, I do.

4 Q. Okay. Do you recall whether this is  
5 the source of your testimony about the costs of  
6 disposal of the Labadie waste at a third party  
7 landfill on page 4, line 20 of your rebuttal  
8 testimony?

9 A. It is.

10 Q. Okay. Now, let's take a look at the  
11 landfills on here. Take a look at Peerless  
12 landfill which is the first one. Do you see where  
13 it says sort of at the bottom right before the next  
14 landfill is announced, will only accept  
15 construction debris, correct?

16 A. Yes. I would point out that Mr.  
17 Giesmann has updated this schedule in subsequent  
18 filings of his as well, so.

19 Q. That's true. But you didn't have his  
20 updated schedule when you testified in your  
21 rebuttal testimony, did you?

22 A. Not at this time I didn't.

23 Q. Okay. That came later.

24 A. Right.

25 Q. Okay. Then so that one will only

1 accept construction debris so it can't be used for  
2 coal ash, is that correct, as far as you know?

3 A. Yes.

4 Q. Okay. And then the second landfill  
5 is North Side and that one is listed as closing  
6 next month, is that correct?

7 A. That's correct.

8 Q. Okay. So we've got one, two, three,  
9 four viable third party landfills and then you  
10 also, turn to page 11 of schedule 3, and this  
11 appears to be an e-mail from Paul Reitz to Doug  
12 Weeble of Fred Weber, Inc. and an e-mail from Doug  
13 Weeble to Paul Wright regarding ash transportation  
14 and disposal costs for Labadie specifically. Is  
15 that correct?

16 A. That's correct.

17 Q. Okay. And it's dated August 18th,  
18 2010? Well, yes, both e-mails are.

19 A. They both are dated then.

20 Q. Okay. Thank you.

21 Okay. And the costs listed on these,  
22 in these e-mails fall within the range of, within  
23 the range of possibilities for disposal of the  
24 third party landfill that you mentioned on the  
25 bottom at line 20 of page 4, is that right?

1 A. That's correct.

2 Q. Okay. Now let's turn to the  
3 documents that you attached as Schedule 5 to your  
4 cross surrebuttal testimony. And that document is  
5 what we've been calling a matrix, and this is a  
6 highly confidential document so I'm not, I'm going  
7 to, again not mention costs or not mention names of  
8 any particular sites and I'm also going to try to  
9 use technology here to display it because my  
10 version --

11 MR. LOWERY: You can't display it if  
12 it's highly confidential unless we go into in  
13 camera. Because it's on the Internet when you do  
14 that.

15 MS. HUBERTZ: Okay.

16 JUDGE WOODRUFF: Well, actually I  
17 don't have the camera on that. But there are  
18 people in the room who probably can't see it.

19 MS. HUBERTZ: All right. We'll try  
20 with a magnifying glasses then.

21 Q. (BY MS. HUBERTZ) Maybe your eyes are  
22 good enough to read these figures but mine  
23 definitely aren't.

24 Do you need a magnifying glass?

25 A. We'll see.

1 Q. Okay. All right. If you take a look  
2 at your Schedule 5 can you tell whether this  
3 document mentions Labadie at all?

4 A. It does not.

5 Q. Okay. And can you tell what the  
6 heading in the upper left-hand corner says?

7 A. It says Ameren UE Rush Island plant,  
8 100 Big Hollow Road, Festus, Missouri 63028.

9 Q. I won't make you read the latitude  
10 and longitude requirements.

11 A. Okay.

12 Q. And can you also look down, directly  
13 down from there and see that there's a date at the  
14 bottom of the page?

15 A. Yes, that date is 6/13/2008.

16 Q. Thank you. And if you can count  
17 across in the columns the ninth column across which  
18 is subdivided into three. Can you read what that  
19 header is?

20 A. Is that distance from Rush Island  
21 plant miles?

22 Q. Yes, that's it. Thank you.

23 Okay. Let's take a look now at  
24 Schedule 2 to your rebuttal testimony which  
25 includes your data request number 1, Ameren's



1 response and a spreadsheet. Taking a look at these  
2 documents do you recall when Ameren started buying  
3 the land on which it proposes to build the Labadie  
4 plant, the Labadie landfill adjacent to its Labadie  
5 plant?

6 A. I think land adjacent to the plant  
7 was actually first acquired in 1966 but it was  
8 completed in 2009. The majority of the land was  
9 acquired between '07 and '09.

10 Q. Okay. That's what I wanted -- so  
11 they started acquiring, their bulk of the purchases  
12 began in 2007.

13 A. Yes.

14 Q. Which is before the June 13th, 2008  
15 date on the matrix that we just looked at.

16 A. That's correct.

17 Q. Okay. Turning back to Schedule 5,  
18 the matrix. Does anywhere on this document discuss  
19 the costs of disposing of coal ash at any of those  
20 locations?

21 A. I don't believe any costs are  
22 identified.

23 Q. Okay. Let's take a look at another  
24 document that was attached to your cross  
25 surrebuttal testimony and it also discusses the 22

1 sites, this is the PowerPoint that you attached as  
2 Schedule 6 to your cross surrebuttal testimony.

3 Do you see that?

4 A. Yes.

5 Q. Okay. Thanks. And this discusses  
6 the same potential landfill sites mentioned on the  
7 matrix, correct?

8 A. Yes.

9 Q. Okay. Does Labadie appear anywhere  
10 on this document?

11 A. It does not.

12 Q. Okay.

13 A. Other than on a site that, I believe  
14 it is identified on page -- bear with me just a  
15 second.

16 On page 6 of 23 it mentions Labadie  
17 regional as a potential site.

18 Q. Does it contain any other discussion  
19 of Labadie Regional that you noticed?

20 A. Not in this document.

21 Q. Okay. On the following page, page 7,  
22 there's a map. Do you see that?

23 A. Yes.

24 Q. Does the Labadie plant appear on this  
25 map?

1 A. It does not.

2 Q. Does the Rush Island plant appear on  
3 this map?

4 A. Rush Island does.

5 Q. Does Meramec, does the Meramec plant  
6 appear on this map?

7 A. Yes.

8 Q. And as far as you can tell are all  
9 the sites on the map southeast of the St. Louis  
10 Metro area?

11 A. South or southeast.

12 Q. South or southeast. Is that correct?

13 A. Yes.

14 Q. Okay. Let's take a look at data  
15 request 8 that you sent to Ameren and Ameren's  
16 response. This is not attached to one of your  
17 schedules but we did admit this yesterday as  
18 Exhibit 340 HC.

19 MS. HUBERTZ: May I approach?

20 JUDGE WOODRUFF: You may.

21 Q. (BY MS. HUBERTZ) Okay. Give you a  
22 chance to look at it but take a look at part number  
23 3 of your data request. You asked Ameren to list  
24 all options and site location for each plant on a  
25 separate basis that Ameren Missouri has

1 investigated as possible future coal combustion  
2 product storage sites for Meramec, Sioux and Rush  
3 Island.

4 Do you see where you asked that  
5 question?

6 A. Yes.

7 Q. Okay. And then turn to the next page  
8 or flip over I guess and Ameren answers that  
9 request number 3 by saying in the second sentence,  
10 Ameren Missouri engineers reviewed possible sites  
11 south of the St. Louis metropolitan area for  
12 combined Rush Island and Meramec utility waste  
13 landfill.

14 Is that correct?

15 A. That's correct.

16 Q. Okay. And then continuing down, I'm  
17 skipping several sentences, but it, the document,  
18 or Ameren's response then reads the site screening  
19 information obtained from, site screening  
20 information was documented on the attached  
21 spreadsheet. Although the spreadsheet refers  
22 primarily to Rush Island holistic sites were  
23 reviewed for a potential waste management landfill  
24 for both Meramec and Rush Island.

25 Do you see where I, it's sort of in

1 the middle of the paragraph there?

2 A. I see that.

3 Q. And is the spreadsheet, as far as the  
4 spreadsheet that we've been talking about what  
5 we've been calling the matrix?

6 A. Yes.

7 Q. And the 22 site PowerPoint that goes  
8 with the matrix describes the same sites?

9 A. Yes.

10 Q. Okay. Let's turn back to the  
11 PowerPoint, Schedule 6, and take a look at page 8.  
12 To make it easier this page is headed with the name  
13 of a site that starts with an S.

14 A. I'm there.

15 Q. Okay. If you look at the second  
16 bullet point it reads, quote, dollar sign XX point  
17 XX per ton estimated disposal cost. Do you see  
18 that?

19 A. Yes.

20 Q. Okay. Is there any other information  
21 relating to costs on the costs at this site that  
22 starts with X listed on this page?

23 A. Not on this page.

24 Q. Okay. Flip forward to page 11 of the  
25 PowerPoint, and this document, this document is

1     headed with the name of a potential landfill site  
2     that has the initials KC. Do you see that?

3             A.       Yes.

4             Q.       And the second bullet point is the  
5     same giving dollar sign XX point XX as the per ton  
6     disposal cost, estimated disposal costs, correct?

7             A.       Yes.

8             Q.       Okay. And I won't make you  
9     individually read each of these but if you look at  
10    page 17 and page, 14, 17 and 20 there are three  
11    more sites with initials RI 3, F and CI and they  
12    also contain the identical bullet point using Xs  
13    after a dollar sign to describe the per ton costs.

14            A.       That's correct.

15            Q.       Okay. And this is consistent with  
16    Ameren's response to your data request number 3.  
17    And let me show this to you, this is not attached  
18    to your schedule and I don't think that it's been  
19    offered yet. It's also a highly confidential  
20    document.

21                    So let me offer this.

22                    JUDGE WOODRUFF: Your next number is  
23    356 and it would be 356 HC.

24                    (MARKED DEPOSITION EXHIBIT NO. 356)

25            Q.       (BY MS. HUBERTZ) Okay. Send Ameren

1 a data request and asked Ameren to quantify all  
2 capital costs that Ameren Missouri would have  
3 incurred with each of the 22 sites evaluated across  
4 the region.

5 Do you see that?

6 A. Could you repeat that?

7 Q. Sure. It's in question number 1.

8 A. Okay.

9 Q. You asked Ameren to quantify all  
10 capital costs that Ameren Missouri would have  
11 incurred with regard to each of the 22 sites it  
12 evaluated across the region, correct?

13 A. Yes, I'm there.

14 Q. Okay. And then Ameren responded to  
15 question number 1, specific costs for each  
16 evaluated site were not created.

17 A. It's part of their response, yes.

18 Q. Okay. And then they continued on to  
19 say the generalized costs developed in the  
20 feasibility study were used.

21 A. Yes.

22 Q. Okay. So we've got the feasibility  
23 study that didn't discuss any specific sites, we  
24 have the third part two documents related to third  
25 party landfills, we have an e-mail exchange and two

1 documents related to 22 sites that don't discuss  
2 any costs. Is that a fair description of what  
3 we've talked about this morning?

4 A. That is what we discussed.

5 Q. Okay. And based on these documents  
6 you are able to conclude that the on-site landfill  
7 at Labadie was the lowest cost option for utility  
8 waste landfill that is available to Ameren Missouri  
9 at this time.

10 A. No.

11 Q. It wasn't based on those documents?

12 A. It was on those documents and  
13 additional documents and through discussions and  
14 meetings with Ameren throughout the course of our  
15 review.

16 Q. Okay. So you went, you met with  
17 Ameren, is there anything documenting your meetings  
18 with Ameren?

19 A. In subsequent testimony I mentioned  
20 one of our meetings but these costs are provided  
21 in, you know, in other documents. Those costs in  
22 my testimony are referred to in other documentation  
23 and Mr. Giesmann has since updated those costs in  
24 subsequent testimony.

25 Q. I mean that's right, but we're, he



1 updated the costs on September 13th, 2013 in his  
2 surrebuttal testimony I believe.

3 A. In that testimony, yes.

4 Q. Okay. And that was the same date  
5 that you filed your cross surrebuttal testimony,  
6 correct?

7 A. Yes.

8 Q. Did you have a copy of his testimony  
9 before he filed it?

10 A. Well, those costs are when he updated  
11 the, that's when Mr. Giesmann updated the costs  
12 that are identified on page 4, lines 19 through 20  
13 of my rebuttal, he's updated all of those costs to  
14 current costs taking into consideration current  
15 transportation costs.

16 Q. And at the time you issued your  
17 rebuttal testimony though you didn't have access to  
18 that.

19 A. I did not at that time.

20 Q. And when you filed your cross  
21 rebuttal testimony you also didn't have access to  
22 that information, did you?

23 A. I did not.

24 Q. No further questions.

25 JUDGE WOODRUFF: Did you wish to

1 offer 356?

2 MS. HUBERTZ: And I do wish to offer  
3 356.

4 JUDGE WOODRUFF: Any objections to  
5 356 HC?

6 Hearing no objections it will be  
7 received. And we'll open up for questions from the  
8 bench then.

9 Mr. Chairman?

10 EXAMINATION

11 QUESTIONS BY CHAIRMAN KENNEY:

12 Q. Mr. Cassidy, good morning.

13 A. Good morning. How are you?

14 A. Fine.

15 Q. I just have a couple of questions.

16 Your testimony and your analysis is  
17 primarily limited to an economic analysis of the  
18 utility wasteland, correct?

19 A. That's correct.

20 Q. You didn't take into account any of  
21 the environmental or human health aspects?

22 A. No, I did not.

23 Q. That's all I have. Thank you.

24 JUDGE WOODRUFF: Commissioner Stoll?

25 COMMISSIONER STOLL: I have no

1 questions. Thank for your testimony.

2 JUDGE WOODRUFF: Commissioner Kenney?

3 COMMISSIONER KENNEY: I have no

4 questions. Thank you.

5 JUDGE WOODRUFF: Commissioner Hall?

6 COMMISSIONER HALL: No questions.

7 JUDGE WOODRUFF: Recross based on

8 questions from the bench.

9 Begin with Ameren?

10 MR. LOWERY: No questions.

11 JUDGE WOODRUFF: Public Counsel?

12 MR. MILLS: No.

13 JUDGE WOODRUFF: LEO?

14 MS. HUBERTZ: No.

15 JUDGE WOODRUFF: Redirect?

16 MR. WILLIAMS: No questions.

17 JUDGE WOODRUFF: Mr. Cassidy you can

18 step down and we'll move to Mr. Beck.

19 DANIEL I. BECK

20 (Whereupon, the witness was sworn)

21 JUDGE WOODRUFF: You may inquire.

22 EXAMINATION

23 QUESTIONS BY MR. WILLIAMS:

24 Q. Please state your name.

25 A. Daniel I. Beck.

1           Q.       By whom are you employed and in what  
2       capacity?

3           A.       I'm employed as a, with the Missouri  
4       Public Service Commission as a staff member and I  
5       am the manager of the engineering analysis section.

6           Q.       Are you familiar with what was  
7       labeled the rebuttal testimony of Clair M. Eubanks  
8       which was pre-filed in highly confidential and in  
9       public versions and has been marked for  
10      identification as Staff Exhibit No. 103?

11          A.       Yes, I am.

12          Q.       And aside from the first page and the  
13      first three lines of that particular exhibit which  
14      relates to the qualifications and identification  
15      information of Clair M. Eubanks if I were to ask  
16      you the questions that are contained in that  
17      exhibit here today would your answers be the same  
18      as set forth therein?

19          A.       Yes, the answers would be the same.

20          Q.       You wouldn't have any changes then to  
21      any of that document for it being your testimony  
22      here today?

23          A.       No, I would not.

24          Q.       And did you also cause to be prepared  
25      in written form testimony that's been marked as

1     **supplemental testimony of Daniel I. Beck that's**  
2     **been marked for identification as Exhibit No. 104?**

3             A.       Yes, I did.

4             Q.       **And would you have any changes to**  
5     **that document for it to be your testimony here**  
6     **today?**

7             A.       No, I have no changes.

8                     MR. WILLIAMS: Judge, with that I  
9     offer with the exception of page 1 and the first  
10    three lines of page 2 of Exhibit 103 and I offer  
11    Exhibit 104.

12                    JUDGE WOODRUFF: All right. 103 has  
13    HC and NP versions.

14                    MR. WILLIAMS: Correct.

15                    JUDGE WOODRUFF: 103 and 104 have  
16    been offered, any objections to their receipt?

17                    Hearing none they will be received.

18                    MR. WILLIAMS: And Judge I will point  
19    out that I did not offer the first page or the  
20    first three lines of Exhibit 103.

21                    JUDGE WOODRUFF: I understand.

22                    And for cross examination then  
23    beginning with Ameren.

24

25

1 EXAMINATION

2 QUESTIONS BY MR. LOWERY:

3 Q. Good morning Mr. Beck.

4 A. Good morning.

5 Q. Were you hear when I asked Mr.

6 Cassidy a few questions?

7 A. Yes, I was.

8 Q. Just to try to short circuit this if

9 I were to ask you the same questions about what

10 Staff's recommendation and position,

11 recommendations are and position in this case would

12 your answers be the same or in substance as those

13 given by Mr. Cassidy?

14 A. Yes, I believe so.

15 Q. In deciding on your position and

16 recommendation did you consider the local public

17 hearing testimony?

18 A. Yes, I did, and I attended both local

19 public hearings.

20 Q. You also attended Mr. Norris's

21 deposition, did you not?

22 A. Correct.

23 Q. And you read his testimony.

24 A. Yes.

25 Q. Did anything in his pre-filed

1 testimony or at his deposition or in the local  
2 public hearing testimony for that matter cause you  
3 to change your position in this case that the  
4 requested CCN should be approved?

5 A. With the conditions the Staff  
6 recommended, no.

7 Q. In particular did any of the  
8 criticisms lodged by Mr. Norris regarding the  
9 siting and design of the proposed UWL in any way  
10 affect your recommendation or your testimony in  
11 this case?

12 A. No, it did not.

13 Q. Did your review of his testimony or  
14 attendance at his deposition solidify your support  
15 of the application?

16 A. I think it did, yes.

17 Q. Thank you Mr. Beck.

18 MR. LOWERY: No further questions  
19 Your Honor.

20 JUDGE WOODRUFF: Public Counsel?

21 MR. MILLS: No questions.

22 JUDGE WOODRUFF: Sierra Club/LEO?

23 EXAMINATION

24 QUESTIONS BY MR. HOWARD:

25 Q. Good morning Mr. Beck.

1 A. Good morning.

2 Q. My name is Giles Howard and I'm a  
3 Rule 13 certified law student representing the  
4 intervenors in this case. How are you doing today?

5 A. Doing good.

6 Q. So I'd just like to start with a few  
7 preliminary questions about your role here today.

8 Clair Eubanks is the staff employee  
9 who pre-filed rebuttal testimony in this case,  
10 correct?

11 A. That's correct.

12 Q. And you're Ms. Eubanks' direct  
13 supervisor.

14 A. That's right.

15 Q. And you reviewed her rebuttal  
16 testimony before it was filed in May of 2013?

17 A. That's correct.

18 Q. And you approved that testimony.

19 A. Yes.

20 Q. And you've followed this case since  
21 Ameren first filed notice that it would seek a CCN  
22 in early 2012.

23 A. That's correct, yes.

24 Q. Thank you.

25 Now, let's turn to costs. Is it your



1     **opinion Mr. Beck that the 2004 report by Reitz &**  
2     **Jens Consulting demonstrates that the Labadie site**  
3     **is a low cost option?**

4             A.       Based on everything I've read so far  
5     a low cost option, yes.

6             **Q.       Okay. Thank you.**

7                     MR. HOWARD: May I approach Your  
8     Honor?

9                     JUDGE WOODRUFF: You may.

10            **Q.       (BY MR. HOWARD) I'm handing you part**  
11   **of what's been marked as Exhibit 2. Do you**  
12   **recognize this as the R&J report?**

13            A.       Yes.

14            **Q.       Okay. So please turn to page 4. And**  
15   **do you see the highlighted text in the third full**  
16   **paragraph of that page?**

17                     MR. LOWERY: Your Honor if I may, I'm  
18   not clear on what Exhibit 2 is.

19                     MR. HOWARD: Ameren's Exhibit 2 which  
20   I believe was Mr. Giesmann's surrebuttal testimony.

21                     MR. LOWERY: Thank you.

22            **Q.       (BY MR. HOWARD) And so you see the**  
23   **highlighted text in that third full paragraph Mr.**  
24   **Beck?**

25            A.       On this copy, yes.

1           Q.       Yes. And the highlighted portion  
2 reads, quote, potential UWL sites must be evaluated  
3 individually to weigh the pros and cons of each  
4 site.

5                     Did I read that correctly?

6           A.       The first highlighting on this page,  
7 yes.

8           Q.       Okay. But the Reitz & Jens report  
9 never evaluated the Labadie site individually,  
10 right?

11          A.       No, it did not. Well, to my  
12 knowledge it did not. John Cassidy is ultimately  
13 the one that did the most work on all the cost  
14 studies, but.

15          Q.       Right. But Ms. Eubanks' rebuttal  
16 testimony which you approved and adopted cited this  
17 report to demonstrate that Labadie is a low cost  
18 option, correct? We already talked about that.

19          A.       It was one of the components.

20          Q.       Okay. So Reitz & Jens never weighed  
21 the pros and cons of locating the UWL at the  
22 proposed Labadie site, did it?

23          A.       The 2004 study did not.

24          Q.       Okay. Thank you. Then let's look  
25 again at page 4 of that report. You see the second

1 highlighted portion of text in the fifth full  
2 paragraph?

3 A. Yes.

4 Q. And that text reads, quote, creating  
5 a landfill in an abandoned pit quarry will be the  
6 most cost effective.

7 Correct?

8 A. Yes.

9 Q. Thank you.

10 Now, Mr. Beck, I'd like to turn now  
11 to alternatives. Ms. Eubanks' testimony included  
12 the following question and answer on page 7 at  
13 lines 14 and 15. I'll give you a moment to get  
14 there.

15 Are you on page 7?

16 A. Page 7, lines 14 and 15?

17 Q. Yes. That reads, question, did  
18 Ameren Missouri consider other alternatives for ash  
19 disposal and the answer is yes. Ms. Eubanks  
20 continues on lines 22 and 23, quote, between 2005  
21 and 2008 R&J reviewed 22 potential sites ranging  
22 from 45 to 242 miles from Labadie Energy Center,  
23 close quote.

24 Did I read all that correctly?

25 A. That was from lines 14, 15, 22 and

1 23, yes.

2 Q. Okay. And you adopted that  
3 testimony.

4 A. That's correct.

5 Q. Mr. Beck the 22 sites identified in  
6 the R&J matrix were evaluated in relation to Rush  
7 Island, correct?

8 A. Between 2005 and 2008 I believe that  
9 would be a true statement.

10 Q. And the matrix calculated the  
11 distance based on the distance of a potential site  
12 from the Rush Island plant, correct?

13 A. Again, between 2005 and 2008 that  
14 would be a true statement.

15 Q. Well, when the 22 site matrix was  
16 initially prepared it did not include the distances  
17 from the Labadie plant, right?

18 A. Which it was prepared based on 2005  
19 through 2008 efforts.

20 Q. And after Staff asked Ameren for the  
21 distances between the 22 sites and Labadie then  
22 Ameren provided those distances in response to I  
23 think it was staff data request 2.5, right?

24 A. I do not recall the specific DNR that  
25 that was given as a response but I do, we did ask

1 that question and did receive a response.

2 Q. Okay. And the original matrix is  
3 dated June 13th, 2008, right?

4 A. I believe that's correct.

5 Q. Okay. But Ameren began buying land  
6 at the proposed Labadie site in 2007 for this  
7 project, correct?

8 A. As Mr. --

9 Q. Excluding the 1960s land purchase.

10 A. Yes.

11 Q. Okay. And even Ameren didn't claim  
12 that the 22 site matrix evaluated alternative sites  
13 of disposal for Labadie's coal ash, did it?

14 A. I know of no such claim that Ameren  
15 made that said that.

16 Q. Okay. And that's echoed in what was  
17 marked as Exhibit 340 HC which we went over in  
18 Staff's data request 8, if you recall that.

19 A. I remember that line of questioning.

20 Q. Okay. Mr. Beck, let's return now to  
21 Ms. Eubanks' testimony. Could you please turn to  
22 page 8 of her rebuttal testimony?

23 A. I am there.

24 Q. Okay. And that testimony included  
25 the following question and answer at line 10

1 through 12 and it reads, question, do the R&J  
2 studies support the siting of the UWL at the  
3 Labadie Energy Center in comparison to the other  
4 sites evaluated and the answer is yes, R&J narrowed  
5 down a 22 site matrix to four potential sites.

6 Did I read that correctly?

7 A. Yes, you did.

8 Q. And footnote 9 sites as authority for  
9 this statement the matrix PowerPoint presentation  
10 attached in response to Staff Data Request 2,  
11 right?

12 A. That's correct.

13 Q. So what were the four potential sites  
14 that R&J identified?

15 A. Off the top of my head I can not give  
16 those to you.

17 MR. LOWERY: And pardon me but the  
18 actual names of those sites would also be highly  
19 confidential, use initials for example.

20 Q. (BY MR. HOWARD) Would you like me, I  
21 can provide you with the PowerPoint and if you  
22 could point me to the initials of those four sites  
23 that would be helpful.

24 A. All right.

25 MR. HOWARD: May I approach Your

1 Honor?

2 JUDGE WOODRUFF: You may.

3 A. (Reviewing document).

4 MR. WILLIAMS: Is what you've handed  
5 the witness the same as page 6 of Schedule 6 to the  
6 cross surrebuttal testimony?

7 MR. HOWARD: It is, the matrix  
8 PowerPoint. It's already been admitted. I'm  
9 developing initials here to keep myself from.

10 Q. (BY MR. HOWARD) Have you located the  
11 four potential sites?

12 A. I have, although the slide  
13 presentation actually shows six under the  
14 heading -- well, on page 6 of 23 under the heading  
15 of Utility Waste Landfills and I believe that two  
16 of those did not meet the criteria of distance and,  
17 but it doesn't indicate that on this particular  
18 slide.

19 Q. Okay. So the initials of the four  
20 that you believe are the potential sites indicated  
21 on Ms. Eubanks' testimony, what are those initials  
22 Mr. Beck? Just so we can follow along as best as  
23 we can.

24 A. (Reviewing document).

25 Q. Mr. Beck if that doesn't refresh your

1     memory adequately we can always move on.

2             A.       I'm struggling in finding a map with  
3     all of them and I'm --

4             Q.       Okay. We'll just move on but you  
5     don't know offhand then or after looking at it what  
6     those four potential sites are that Ms. Eubanks  
7     discussed in her rebuttal.

8             A.       Not with 100 percent certainty.

9             Q.       Okay. But regardless R&J never  
10    compared the proposed Labadie site to any of the  
11    sites in that matrix, did it?

12            A.       No. R&J did not.

13            Q.       Okay. And as Ameren stated in its  
14    response to Staff data request 8 as we discussed  
15    earlier, the sites listed in the matrix were  
16    considered as possible disposal sites for coal ash  
17    from Rush Island and Meramec, right?

18            A.       That was the direction or the primary  
19    focus in 2005 through 8.

20            Q.       Okay. And the matrix was created  
21    after Ameren began purchasing land at the proposed  
22    Labadie site.

23            A.       That's correct.

24            Q.       Okay. So Mr. Beck I'd now like to  
25    discuss the Sioux UWL. Could you please turn to



1 page 4 of Ms. Eubanks' testimony?

2 A. Page 4, I'm sorry.

3 Q. Page 4. Okay. And please direct  
4 your attention to lines 10 through 13. Are you  
5 with me?

6 A. 10 through 14.

7 Q. 10 through 13.

8 A. 13.

9 Q. And that portion of testimony read,  
10 quote, is Ameren Missouri qualified to operate a  
11 UWL, answer, yes. Ameren Missouri currently owns a  
12 UWL, the Sioux power plant, the Sioux utility waste  
13 landfill began operation in late 2010.

14 Did I read that correctly?

15 A. Yes, you did.

16 Q. And you adopt that testimony.

17 A. That's correct.

18 Q. And the Sioux plant became  
19 operational in 2010, right?

20 A. The Sioux plant --

21 Q. I'm sorry, the Sioux UWL. I  
22 misspoke. The UWL at the Sioux plant became  
23 operational in 2010.

24 A. That's --

25 Q. That's what Ms. Eubanks testified.

1           A.       Yes. And I believe that's correct,  
2 I'm just trying to, because what took place here  
3 was that the scrubber was coming on line at the  
4 same time as this was and I'm trying to put it in  
5 my mind how that order took place.

6           Q.       Okay. Well, when it became  
7 operational though the UWL was not permitted as a  
8 dry ash landfill, was it?

9           A.       When the original, when the 2010  
10 landfill came, is that --

11          A.       Yes. That was permitted for the  
12 disposal of wet ash, not dry ash, right?

13          A.       That was my understanding at the  
14 time, yes.

15          Q.       But I assume you know of course that  
16 Ameren is proposing to dispose of dry ash, not wet  
17 ash at the Labadie UWL.

18          A.       That's correct.

19          Q.       Okay. And in July of 2011 Ameren  
20 submitted a permit modification to begin  
21 construction of a dry cell at Sioux, right?

22          A.       That's, yes.

23          Q.       The MDNR approved that modification  
24 in February of 2013, right?

25          A.       That approximate time frame sounds

1 correct.

2 Q. Okay. And the construction of the  
3 dry cell was scheduled to begin in the summer of  
4 2013, right?

5 A. Correct.

6 Q. Okay. And it wasn't even scheduled  
7 to be operational until 2014, was it?

8 A. I honestly don't recall when that was  
9 scheduled to be operational.

10 Q. I think we have a data request on  
11 that matter. Let me take a look.

12 We do.

13 MR. HOWARD: Your Honor could I have  
14 marked as I think we're on 357, is that correct?

15 JUDGE WOODRUFF: That sounds right.

16 (MARKED EXHIBIT NO. 357)

17 A. Might I have one of those?

18 Q. (BY MR. HOWARD) The court reporter  
19 will give you one once it's marked.

20 JUDGE WOODRUFF: Be sure to give it  
21 back.

22 Q. (BY MR. HOWARD) Mr. Beck, do you  
23 recognize that as Staff's data request number 17  
24 and Ameren's response?

25 A. Yes.

1 Q. Okay. And so if we go down to the  
2 bottom of that response it does indicate that the  
3 construction of the dry cell should begin in the  
4 summer of 2013. Is that correct?

5 A. That's correct.

6 Q. Okay. And Ms. Eubanks filed her  
7 rebuttal testimony relying on the Sioux UWL's  
8 operation, she filed that in May of 2013 though,  
9 right?

10 A. That is correct.

11 Q. So at the time that Ms. Eubanks filed  
12 her testimony Ameren had no experience operating a  
13 dry coal ash landfill, right?

14 A. I do not know what Ameren had, Ameren  
15 Missouri, what experience Ameren had. Ameren  
16 Missouri to my knowledge did not have any  
17 experience operating a dry ash pond, or dry ash  
18 landfill.

19 Q. Okay. And do you have any reason to  
20 believe that another part of the Ameren corporation  
21 besides Ameren Missouri had relevant experience?

22 A. Just simply the fact that they had  
23 multiple coal units in Illinois it's possible but I  
24 honestly don't know the specifics.

25 Q. So Ms. Eubanks relied on what you

1     **adopted as relying on the Sioux UWL and that wasn't**  
2     **operational.**

3             A.       Yes, which is an Ameren Missouri  
4     operation.

5             Q.       And that wasn't operational at the  
6     time her rebuttal testimony was filed in May of  
7     2013.

8             A.       That's correct.

9             Q.       And I'd like to talk about the Sioux  
10    UWL in a different context now. Are you aware Mr.  
11    Beck that Ameren performed ground water monitoring  
12    at the Sioux site beginning at least in June of  
13    2008?

14            A.       I remember that they, there was  
15    ground water monitoring prior to the actual  
16    operation but I don't remember the specific dates.

17            Q.       Okay. I believe I have a document  
18    that might shed light on this for us.

19                    MR. HOWARD: Your Honor can I have  
20    this marked as exhibit 358?

21                    (MARKED EXHIBIT NO. 358)

22            Q.       (BY MR. HOWARD) Mr. Beck has the  
23    court reporter handed you this exhibit?

24            A.       That's correct.

25            Q.       Okay. And this is a letter from MDNR

1 on March 30th of 2012 to Ameren Services. Does  
2 that look right to you?

3 A. That's correct.

4 Q. Okay. And could you please turn to,  
5 well before I ask you to do that, were you aware  
6 that of 15 ground water results taken from the DG  
7 12 well at Sioux between January 2012, or January  
8 2010 and January 2012 14 results showed arsenic  
9 above the maximum federal contaminant level? Were  
10 you aware of that?

11 A. I was aware that there was readings  
12 above the required level, the 14 out of 15, I  
13 cannot say I was aware of that.

14 Q. Can you please turn to page 3 of that  
15 document? And I believe it's under comment 7 there  
16 should be highlighted text, those two sentences?

17 A. Yes.

18 Q. Could you please read those?

19 MR. LOWERY: Your Honor I'm going to  
20 object to this line of questioning. I don't think  
21 there's any relevance to whether or not ground  
22 water monitoring results at the Sioux plant, what  
23 they do or don't show, there's no context given for  
24 what the concentrations are, I don't think Mr. Beck  
25 has any knowledge whatsoever about where these

1 monitoring wells are, what the sampling was, what  
2 the source of the contamination may be. It doesn't  
3 really bear any relevance to the Labadie UWL.  
4 There's just no relevance from this document to  
5 this --

6 MR. HOWARD: That's a longer speaking  
7 objection than I'm used to in law school but I  
8 would say the Staff based the Sioux UWL in its  
9 testimony as citation for Ameren's qualifications  
10 to operate a dry cell UWL at Labadie and especially  
11 considering that we found arsenic concentrations at  
12 Labadie above the federal standards I think that  
13 it's relevant here that Sioux may have experienced  
14 similar problems.

15 JUDGE WOODRUFF: The objection's  
16 overruled.

17 Answer the question.

18 A. I believe the question was for me to  
19 read these two sentences.

20 Q. (BY MR. HOWARD) Please.

21 A. The arsenic concentration in DG 12  
22 has exceeded the federal maximum contaminant level  
23 of 10 MG slash L in several of the background  
24 sampling events and the 2011 semiannual monitoring  
25 events. The FWMP considers this an area of

1 concern, parenthesis, AOC, and will continue to  
2 monitor the arsenic concentration in this  
3 compliance well.

4 Q. Thank you Mr. Beck.

5 And you're aware that ground water  
6 monitoring at the proposed site of the Labadie UWL  
7 has revealed arsenic levels in some instances as  
8 much as six times greater than the federal  
9 standard?

10 A. Ground water monitoring you said?

11 Q. Yes, Mr. Beck.

12 A. Yes. In one case.

13 MR. HOWARD: Your Honor, I'd like to  
14 move both this letter and the data request I  
15 offered into evidence.

16 MR. WILLIAMS: Judge, I object to  
17 Exhibit 358 coming in for lack of foundation.

18 JUDGE WOODRUFF: Let's deal with 357  
19 first, that's the DNR responses. It's been  
20 offered, any objection to its receipt?

21 358 then was the DNR letter and Staff  
22 has stated an objection to that. Any other  
23 objections?

24 Staff's objection was foundation, I'm  
25 going to overrule that objection and receive the



1 document.

2 MR. HOWARD: Okay.

3 Q. (BY MR. HOWARD) Thank you for your  
4 time today Mr. Beck. I have no further questions.

5 A. Thank you.

6 JUDGE WOODRUFF: And we'll come up  
7 then for questions from the bench.

8 Mr. Chairman?

9 CHAIRMAN KENNEY: Mr. Beck, good  
10 morning. Thank you.

11 A. Good morning.

12 CHAIRMAN KENNEY: No questions.  
13 Thank for being here.

14 JUDGE WOODRUFF: Mr. Stoll?

15 COMMISSIONER STOLL: I have no  
16 questions. Thank you.

17 JUDGE WOODRUFF: Mr. Kenney?

18 COMMISSIONER KENNEY: I have no  
19 questions. Thank you.

20 JUDGE WOODRUFF: Mr. Hall?

21 COMMISSIONER HALL: Just a few.

22 EXAMINATION

23 QUESTIONS BY COMMISSIONER HALL:

24 Q. Good morning.

25 A. Good morning.

1           Q.       Is it your understanding that the  
2       proposed UWL complies with all DNR requirements?

3           A.       Yes, at this point. I mean there's,  
4       obviously they have not made a final decision but  
5       everything I know about it indicates that it does  
6       meet DNR standards.

7           Q.       Do you know whether or not DNR  
8       requires consideration of other sites in the  
9       permitting process?

10          A.       Yes, it does.

11          Q.       And so in this case the fact that DNR  
12       has provided permits thus far though, I guess there  
13       are two left to be granted, there was a requirement  
14       that there be other sites considered and other  
15       sites were considered to DNR's satisfaction.

16          A.       In all the preliminary evaluations  
17       that have been done, yes.

18                   COMMISSIONER HALL: I have no further  
19       questions. Thank you.

20                   JUDGE WOODRUFF: Any recross based on  
21       questions from the bench?

22                   Beginning with Ameren?

23                   MR. LOWERY: No, Your Honor.

24                   JUDGE WOODRUFF: Public Counsel?

25                   MR. MILLS: No, thank you.

1 EXAMINATION

2 QUESTIONS BY MR. HOWARD:

3 Q. Mr. Beck I've just been handed the  
4 DNR relevant regulations.

5 MR. HOWARD: Can I have these marked  
6 please I believe we're at 359?

7 (MARKED EXHIBIT NO. 359)

8 Q. (BY MR. HOWARD) Mr. Beck can you  
9 tell me where in those regulations it requires the  
10 consideration of other sites?

11 A. (Reviewing document). I don't have  
12 the, I can spend time reviewing this, I don't have  
13 the detailed knowledge of this. What I have done  
14 is I have reviewed all of the information that was  
15 provided to DNR as part of their application and  
16 that application included information about other  
17 sites.

18 Q. But you're unaware of whether or not  
19 that's a DNR regulatory requirement. It was  
20 included in the process but you can't tell us if  
21 that was a requirement.

22 A. I can not specifically tell you that  
23 it is a requirement, it was part of their response  
24 to the requirements, or to, in their application.

25 Q. Mr. Beck before I relinquish you can

1 I consult with my co-counsel to see if there are  
2 any other questions?

3 JUDGE WOODRUFF: You may.

4 MR. HOWARD: Thank you, Your Honor.

5 (DISCUSSION HELD OFF THE RECORD)

6 Q. (BY MR. HOWARD) I just wanted to  
7 clarify Mr. Beck, in your discussion with  
8 Commissioner Hall you were discussing that DNR  
9 evaluated in that process other sites that were  
10 operated by Ameren, was that your statement?

11 A. I guess to know my specific response  
12 I'd have to ask for the transcript to be read but I  
13 guess --

14 Q. But that's what we were talking  
15 about.

16 A. We were talking about their operation  
17 of other facilities.

18 Q. Right. Not of their consideration of  
19 alternative sites but their operation of other  
20 facilities.

21 A. That was, yes.

22 Q. Okay.

23 Thank you for your time Mr. Beck.

24 JUDGE WOODRUFF: Did you want to  
25 offer 359?

1 MR. HOWARD: We may as well -- as a  
2 DNR regulation I don't need to offer it.

3 MR. LOWERY: And it's already in  
4 evidence as one of Mr. Giesmann's -- I'm almost  
5 positive.

6 JUDGE WOODRUFF: I'll show it as not  
7 offered. Okay.

8 And redirect?

9 MR. WILLIAMS: Thank you.

10 EXAMINATION

11 QUESTIONS BY MR. WILLIAMS:

12 Q. I think it's been cleared up but I'm  
13 not absolutely certain so I'm going to give the  
14 witness an opportunity to do so. Do you know  
15 whether or not DNR has a specific requirement that  
16 a utility whenever it's seeking an approval of a  
17 particular site include alternative sites in the  
18 application?

19 A. I do not specifically know that that  
20 is a requirement.

21 Q. Thank you.

22 MR. WILLIAMS: No further questions.

23 JUDGE WOODRUFF: Mr. Beck you can  
24 step down.

25 And I believe the next witness will

1 be Mr. Norris but before we call him we'll take a  
2 break and come back at 10:30.

3 (RECESS TAKEN BY PARTIES)

4 JUDGE WOODRUFF: Let's come to order  
5 please. We're back from our break and I believe  
6 Mr. Norris is ready to take the stand.

7 CHARLES H. NORRIS

8 JUDGE WOODRUFF: You may inquire.

9 MS. LIPETES: May I approach?

10 JUDGE WOODRUFF: You may.

11 EXAMINATION

12 QUESTIONS BY MS. LIPETES:

13 Q. Mr. Norris I'd like to hand you a  
14 copy of exhibits that were submitted yesterday as  
15 Exhibits 300 and 301. They're your cross  
16 surrebuttal testimony which is Exhibit 300 dated  
17 September 13, 2013 and your supplemental testimony,  
18 Exhibit 301, from January of this year, I believe.

19 For the record Mr. Norris can you  
20 state your full name and employment?

21 A. Charles H. Norris, N-O-R-R-I-S, I'm  
22 employed by Geo-Hydro Incorporated.

23 Q. Thank you. And the two documents I  
24 just put before you, Exhibits 300 and 301, are  
25 those the pre-filed testimony that you prepared in

1     **this case?**

2             A.       Yes.

3             **Q.       And are those correct to the best of**  
4     **your recollection?**

5             A.       Yes. With the exception of the  
6     enumeration that I gave in my cross surrebuttal  
7     testimony of states in which I hold license or  
8     registration as a professional geologist,  
9     subsequent to that testimony I have added the  
10    states of Georgia and South Carolina.

11            **Q.       Thank you. With that correction if**  
12    **we, you were asked the same questions today would**  
13    **you give the same answers?**

14            A.       Yes.

15            **Q.       And are the answers that you included**  
16    **in your testimony true and correct to the best of**  
17    **your knowledge, information and belief?**

18            A.       Yes.

19                    MS. LIPETES: I'd like to offer  
20    Exhibits 300 and 301 into evidence.

21                    JUDGE WOODRUFF: All right. 300 and  
22    301 have been offered.

23                    Any objections to their receipt?

24                    Hearing none they will be received.

25                    MS. LIPETES: Offer the witness for

1 cross examination.

2 JUDGE WOODRUFF: Okay. For cross we  
3 begin with Public Counsel?

4 MR. MILLS: No questions.

5 JUDGE WOODRUFF: Staff.

6 MR. WILLIAMS: No questions.

7 JUDGE WOODRUFF: For Ameren Missouri.

8 EXAMINATION

9 QUESTIONS BY MR. TRIPP:

10 Q. Good morning Mr. Norris.

11 A. Good morning.

12 Q. Mr. Norris let's first delve into  
13 your qualifications. You have a Bachelor's degree  
14 and a Masters degree in geology, is that correct?

15 A. Yes.

16 Q. And your CV states that you've  
17 completed course work at the University of Illinois  
18 for a Ph.D. in hydrogeology, isn't that true?

19 A. Ph.D. would be granted in geology,  
20 the specialization is hydrogeology.

21 Q. All right. And regarding your  
22 dissertation you've completed a summary used for  
23 that preliminary defense, an outline and some  
24 initial writing as I understand it, correct?

25 A. Correct.



1           **Q.       Now Mr. Norris you're licensed in**  
2       **several states as a professional geologist.**

3           **A.       Licensed or registered in now it's up**  
4       **to 13 states, yes.**

5           **Q.       All right. You were initially denied**  
6       **licensure by the Indiana Board of Licensure for**  
7       **professional geologists, true?**

8           **A.       That was their initial decision, yes.**

9           **Q.       And the board denied you licensure on**  
10       **ethical grounds based on their belief that you had**  
11       **perjured yourself in federal court, isn't that**  
12       **true?**

13          **A.       The list of complaints that they**  
14       **filed included that and based upon apparently their**  
15       **belief to that effect that was what they said, yes.**

16          **Q.       And the belief that you had perjured**  
17       **yourself was based upon a federal court determining**  
18       **that you quote, falsely stated that you had**  
19       **recently passed a second preliminary examination**  
20       **and that you had generally exaggerated your efforts**  
21       **to complete the other requirements for your Ph.D.,**  
22       **true?**

23          **A.       That is part of what Judge Chambers**  
24       **said, yes.**

25          **Q.       Now, Mr. Norris, in fact when you**

1 told me just a few minutes ago that you'd completed  
2 an outline of your dissertation and some initial  
3 writing after that, that statement itself was an  
4 exaggeration isn't it?

5 A. Not at all.

6 Q. While you've written a general  
7 summary of what you intended to do your  
8 dissertation on you've not prepared an outline and  
9 you've not done any initial writing, isn't that  
10 true?

11 A. No.

12 MR. TRIPP: May I approach the  
13 witness Your Honor?

14 JUDGE WOODRUFF: You may.

15 Q. (BY MR. TRIPP) The district court  
16 opinion that we referenced earlier, do you recall  
17 giving your deposition in relation to those  
18 allegations that you'd misstated your  
19 qualifications or the work you've done for a Ph.D,  
20 true?

21 A. Yes.

22 Q. And I've handed you a document from  
23 that, filed in that court that contains a portion  
24 of your deposition in that case, true?

25 A. That is what it is marked as being,

1 yes.

2 Q. Well, it is your deposition, isn't  
3 it?

4 A. I have no reason to think it isn't.

5 Q. All right. Well, if you'll turn back  
6 with me to the first page of that deposition, the  
7 cover sheet, Ohio River Valley Environmental  
8 Coalition, other parties, versus Michael Castle, do  
9 you see that?

10 A. Yes.

11 Q. And that says it's the deposition of  
12 Charles H. Norris, true?

13 A. Yes, it does.

14 Q. And that's you.

15 A. Yes.

16 Q. Okay. So turn to page 50 of that  
17 deposition. You were asked some questions about  
18 the work you've done, true?

19 A. That's correct.

20 Q. And you were asked as you sit here  
21 today do you have a draft of the dissertation and  
22 your answer was start to finish, no.

23 Correct?

24 A. Correct.

25 Q. And then you were asked do you have a

1 draft of chapters and your answer was no, I don't  
2 think I have anything that I would consider a draft  
3 of chapters, I have things organized in ways that  
4 are going to be chapters folders that are going to  
5 be specific parts of folders that will relate to  
6 the model and effort for example and things that,  
7 you know, are laying out how that's being done but  
8 until I contend I have the right numbers to put in  
9 the model I'm not going to run the model and  
10 there's no point in writing a draft chapter, model  
11 and chapter that you haven't got the results for  
12 yet.

13 Correct? That was your answer?

14 A. That is a correct reading of that  
15 statement.

16 Q. And this deposition which was taken  
17 in 2001 the person asked you, question, do you have  
18 an outline, what it's going to look like, a written  
19 outline of what you think it would look like. Your  
20 answer at that time was no.

21 A. That's correct.

22 Q. And you have data arranged in files  
23 and you said yes, correct?

24 A. Yes.

25 Q. And on page 51 of your deposition you

1     were asked the question at line 9, question,  
2     relating to the work that's what you will work from  
3     and your answer was when I get to the writing  
4     stage, yes. And the next question was have you  
5     ever had a draft of the chapter or a dissertation  
6     and your answer was again beyond the extent to  
7     which the preliminary proposal type documents are  
8     essentially the introductory chapter, no.

9                     That was your answer, correct?

10            A.     That's correct.

11            Q.     So you don't have an outline,  
12     correct?

13            A.     No, that's not correct.

14            Q.     Oh, you did an outline after 2001.

15            A.     I have continued to work and  
16     specifically I was continuing to work rather  
17     rigorously through about 2004 before I shelved it.

18            Q.     I thought you had previously told me  
19     you had ended your work by this time. But you  
20     worked until 2004.

21            A.     Yes.

22            Q.     All right.

23            A.     Actually I've had as recently in the  
24     last six months a discussion with Professor Nieto  
25     about the science of the project. It isn't really

1 related any longer because I'm not working on the  
2 thesis but it's never been something set completely  
3 aside.

4 Q. Mr. Norris, even the work that you  
5 did up through 2004, that wasn't work with the aim  
6 of actually going back and getting a Ph.D. was it?

7 A. At that time, absolutely it was.

8 Q. So are you telling the Commission  
9 that that's what you're intending to do today?

10 A. No.

11 Q. Mr. Norris, I want to ask you about  
12 some matters that you have listed on your CV that's  
13 attached to your pre-filed testimony. Do you have  
14 that in front of you?

15 A. Yes, I do.

16 Q. On page 3 of your CV Mr. Norris under  
17 the heading of Landfill Services you've listed  
18 several positions in which you served as quote, a  
19 project manager and hydrogeologist, correct?

20 A. Yes.

21 Q. The landfills there are municipal  
22 landfills, true?

23 A. Certainly for the most part, I  
24 believe there's at least one hazardous waste  
25 landfill in there.

1           Q.       Much of the work that you've listed  
2       as a project manager under Landfill Services was  
3       actually work you did on behalf of citizen's groups  
4       and other environmental groups, isn't that correct?

5           A.       Yes.

6           Q.       And much of your project manager work  
7       was actually work you performed on behalf of these  
8       groups for some legal or administrative proceeding,  
9       true?

10          A.       Yes. The same ones where I was a  
11       hydrogeologist for the company I was the project  
12       manager and that would be for the same clients,  
13       yes.

14          Q.       So when you identify yourself as a  
15       project manager under this Landfill Services  
16       heading on your Curriculum Vitae in these  
17       situations you're not actually talking about the  
18       person who's actually managing the hydrogeological  
19       issues and directing work at a particular landfill,  
20       isn't that true?

21          A.       No. I am project manager for  
22       Geo-Hydro's work on behalf of its clients.

23          Q.       Environmental groups and citizen  
24       groups primarily.

25          A.       Primarily, yes.

1           Q.       Now, under, in these same listings  
2 under landfill services or for the most part  
3 they're also repeated in a later section of your CV  
4 as reports, presentations and publications. True?

5           A.       Yes.

6           Q.       Now, you're listing those under two  
7 different categories but you didn't mean to imply  
8 to anyone that this was additional work in addition  
9 to what you had already listed.

10          A.       No, it's listed where it is there to  
11 call attention to the fact that if someone wanted  
12 to see a result of some of that work there might be  
13 a deposition or some other documentation that could  
14 be referenced. Could be sought.

15          Q.       All right Mr. Norris. Not intended  
16 to make it look longer than it is is what you're  
17 telling us.

18          A.       No.

19          Q.       Mr. Norris, let's talk about your  
20 involvement in this particular case.

21                   With regard to Ameren Missouri's  
22 proposed utility waste landfill at Labadie you were  
23 first retained as a consultant to review the work  
24 plan for the DSI, correct?

25          A.       I believe that was the first work I



1 did for Labadie.

2 Q. And assuming that that DSI was  
3 submitted to MDNR on May 14th, 2009 your consulting  
4 work on this project would have begun some time  
5 before that point.

6 A. Yes.

7 Q. And it was the Washington University  
8 law school environmental clinic that contacted you  
9 about consulting on the Labadie utility waste  
10 landfill.

11 A. I believe that to be the case, yes.

12 Q. And it's the law clinic that's paying  
13 you for the work you're doing in this case, true?

14 A. Yes.

15 Q. And it was the law clinic that also  
16 reviewed your pre-filed testimony in this matter.

17 A. Yes.

18 Q. And it was the law clinic who  
19 actually offered some edits to your pre-filed  
20 testimony also, isn't that true?

21 A. I did ask them to look for editorial  
22 changes, misspellings, things that were not clear.

23 Q. Well, in fact the law clinic came up  
24 with the idea that your cross surrebuttal testimony  
25 should include testimony related to the Illinois

1 coal ash ponds operated by Ameren affiliates  
2 because they actually drafted the questions  
3 regarding those plants, true?

4 A. They drafted the questions for the  
5 bulk of the entire testimony. I was responding to  
6 questions from the law clinic.

7 Q. It was their idea to include those  
8 questions then.

9 A. They were questions that they asked  
10 me, yes.

11 Q. And you were responding to questions  
12 that they were asking you is what you just told us.

13 A. Yes.

14 Q. And in fact that question found in  
15 your surrebuttal testimony at page 13, lines 11  
16 through 13, essentially asks you about your  
17 concerns about Ameren Missouri's qualifications to  
18 operate the utility waste landfill based on what  
19 had happened at coal plants operated by Ameren  
20 affiliates in Illinois, true?

21 A. Yes.

22 Q. And other than your recent work on  
23 behalf of the Sierra Club regarding the Coffeen  
24 plant you did not have any independent knowledge  
25 regarding the other three Illinois plants you

1 mentioned, Grand Tower, Meridocia and Newton, true?

2 A. As far as I know I had not looked at  
3 any information from those plants prior to those  
4 documents.

5 Q. And it was the law clinic that  
6 provided you with certain documents upon which you  
7 would rely in forming your answer to those  
8 questions that we talked about earlier, true?

9 A. Yes.

10 Q. And the law clinic provided you with  
11 no background information or any information other  
12 than the notes of violation, isn't that correct?

13 A. No.

14 Q. Well, do you recall giving your  
15 deposition in this case?

16 A. Yes, I do.

17 MR. TRIPP: May I approach?

18 JUDGE WOODRUFF: You may.

19 Q. (BY MR. TRIPP) If you'll turn to  
20 page 88 of your deposition and line 16.

21 At page 88, line 16 I asked you the  
22 question, did they provide you with an explanation  
23 as to how the actual notes of violation with regard  
24 to the ground water sampling came about, and your  
25 answer was beyond the analyses that are described

1 in those was your answer, correct?

2 A. Yes.

3 Q. And I next asked you in terms of how  
4 even the sampling results came to the attention of  
5 the Illinois EPA and your answer was I did not have  
6 anything other than the notices themselves. True?

7 A. Yes, that is what I answered.

8 Q. Now these concerns you had about  
9 Ameren Missouri's ability to operate a utility  
10 waste landfill based on issuance of NOVs by plants  
11 operated by Ameren affiliates in Illinois actually  
12 arose after the law clinic drafted the questions  
13 and provided you with those NOVs, true?

14 A. I'm sorry, can you repeat that  
15 question?

16 Q. Sure. Yeah.

17 The concerns that you have about  
18 Ameren Missouri's ability to operate a utility  
19 waste landfill based upon the issuance of the NOVs  
20 by plants operated by Ameren affiliates in Illinois  
21 actually arose after the law clinic drafted the  
22 question and then provided you the NOVs that you  
23 used in your answer, true?

24 A. No.

25 Q. Well, you didn't even know about

1 three of them at least you'll agree with me before  
2 you got the NOV's and you had the question asked to  
3 you, correct?

4 A. I received the NOV's and the notes and  
5 the complaints, the documents I received were a set  
6 of documents I received from Ameren substantially  
7 before I even began preparing this testimony.

8 Q. Let's just make sure we're clear here  
9 Mr. Norris. You told me that the law clinic  
10 drafted the question, correct?

11 A. Yes.

12 Q. The law clinic provided you the  
13 notices of violation, correct?

14 A. Yes.

15 Q. And the only plant that you were even  
16 familiar with prior to that was the Coffeen plant,  
17 isn't that fair? That's what you told me.

18 A. Yes.

19 Q. All right. And you don't even know  
20 what the relationship was or is even now between  
21 the Illinois companies and Ameren Missouri other  
22 than maybe what you heard in the hearing.

23 A. That's correct.

24 Q. All right. Now, before you filed  
25 your supplemental testimony in this case in

1 February Mr. Norris you reviewed the surrebuttal  
2 testimony of Ameren Missouri witness Gary King,  
3 true?

4 A. I did read through that, yes.

5 Q. And Mr. King testified there that it  
6 was AER, the operator of Coffeen, Grand Tower,  
7 Meridocia and Newton plants that not only conducted  
8 voluntary ground water monitoring at these sites  
9 but also proposed environmental standards for the  
10 closure of these ash ponds that led the Illinois  
11 EPA to provide a general rule for closure of the  
12 ash pants, true? Do you recall that testimony? I  
13 think you even said it today.

14 A. Yes.

15 Q. Your surrebuttal testimony, your  
16 supplemental testimony, I apologize, does not  
17 address let alone refute the facts or the opinions  
18 that Mr. King stated in his testimony stating those  
19 events in Illinois, isn't that true?

20 A. That does not address those comments,  
21 yes.

22 Q. Now timely you acknowledge, don't  
23 you, Mr. Norris, that the placement of coal ash and  
24 unlined ash ponds was a common approach in the  
25 industries in the 1970s, true?

1 A. True.

2 Q. And in fact some of those coal ash  
3 ponds would have been next to utilities that were  
4 located in floodplains, true?

5 A. They often were.

6 Q. Okay. Mr. Norris, I'm going to ask  
7 you some questions regarding your criticisms which  
8 begin at page 4, line 1 of your cross surrebuttal  
9 testimony that Ameren Missouri has not properly  
10 accounted for all capital and operating costs  
11 associated with utility waste landfills. All  
12 right? So are you there?

13 A. Page 4?

14 Q. Yes.

15 A. I'm there.

16 Q. All right. Mr. Norris, one of the  
17 costs that you say Ameren Missouri has failed to  
18 account for is the cost of off site clay that will  
19 be needed to construct the liner and the berm  
20 around the landfill, true?

21 A. True.

22 Q. You've not quantified in any way what  
23 those admitted costs were, true?

24 A. True.

25 Q. And you don't know how much of an

1 impact then that these omitted costs would have on  
2 the total project costs, true?

3 A. That is correct.

4 Q. And you reject Mr. Giesmann's  
5 testimony that the \$10 per cubic yard estimate for  
6 clay includes the cost for off site clay and its  
7 delivery to the site, true?

8 A. I find it highly questionable.

9 Q. You have not priced what it would  
10 cost per cubic yard to bring in off site clay to  
11 the Labadie plant, have you?

12 A. I have not. I find it unlikely it  
13 would be zero.

14 Q. I think I said a \$10 per cubic yard  
15 cost, but. You don't even have any idea what a  
16 cubic yard of the appropriate clay would cost in  
17 the Labadie area, isn't that true?

18 A. That's correct.

19 Q. Now Mr. Norris you also claim that a  
20 significant amount of off-site soils are needed in  
21 order to raise the base of the UWL four and a half  
22 feet in order to meet the proposed EPA requirement  
23 of a two foot separation between the base and the  
24 upper limit of the natural water table. True?

25 A. I have made that statement, I don't



1 think it was associated with what the questions  
2 were at page 4 but at some point I did make that  
3 statement in the course of my testimony.

4 Q. All right. You did make the  
5 statement, whether or not you were complaining  
6 about the cost is a different issue, fair enough?

7 A. Yes.

8 Q. All right. Now before I get the  
9 specifics of your criticism with regard to that  
10 need to raise the base of the landfill four and a  
11 half feet you will agree that a two foot separation  
12 requirement is not found in the Missouri Department  
13 of Natural Resources regulations, true?

14 A. Right. That issue arises over the  
15 representation that this landfill is being proposed  
16 to be compliant with proposed federal regulations.

17 Q. So my statement was true.

18 A. Yes.

19 Q. In fact MDNR actually allows for  
20 contact between the base of the landfill liner and  
21 the ground water as long as there's a demonstration  
22 that this contact will not adversely affect the  
23 liner, true?

24 A. That is how the regulation is  
25 written, yes.

1 Q. And in Appendix Z of the construction  
2 permit application for the Labadie landfill there's  
3 an analysis that, by Reitz & Jens, the engineers  
4 for Ameren Missouri, that demonstrates that  
5 intermittent contact between the liner and the  
6 ground water would not impact the liner's design,  
7 function or performance, isn't that correct?

8 A. They do make that assertion in the  
9 CPA, yes.

10 Q. And you see no comments from the  
11 Missouri Department of Natural Resources in  
12 response to that CPA statement suggesting that  
13 Ameren Missouri's demonstration did not meet the  
14 regulatory requirement, isn't that true?

15 A. To date I have not seen that.

16 Q. By the way Mr. Norris, you believe  
17 that the design of the facilities, the review of  
18 the design of the facilities is the responsibility  
19 of the Missouri Department of Natural Resources,  
20 true?

21 A. They pass judgment on it, the  
22 responsibility is both their's and the public's.

23 Q. Well, why don't you return to page 97  
24 of your deposition. And if you go to line 9. In a  
25 series of questions at 99, beginning before line 9

1 but line 9 I asked you this question: Because as  
2 to matters of environmental compliance,  
3 environmental enforcement --

4 A. Excuse me.

5 Q. Page 97? Did I say the wrong page?

6 A. I was on 96. I don't know.

7 Q. All right. On page 97, line 9.

8 A. All right.

9 Q. My question to you was, because as to  
10 matters of environmental compliance, environmental  
11 enforcement is MDNR not the Public Service  
12 Commission that has those obligations, true?

13 A. Yes, that's true.

14 Q. And your answer was the design of the  
15 facilities, the venue is the responsibility of the  
16 in DNR. Correct?

17 A. Yes.

18 Q. And there is no, I guess there is an  
19 ability for MDNR, I mean MDNR has a public hearing  
20 and they do take public comments, correct?

21 A. Correct.

22 Q. Other than that it's MDNR that  
23 actually says the construction permit application  
24 is sent, here's a construction permit, true?

25 A. That's correct.

1           Q.       Now, with regard to Franklin County  
2       and that ordinance there I am correct that the  
3       independent registered professional engineer has  
4       certified that the landfill design complies with  
5       Franklin County's design requirements including  
6       that the ordinance, the ordinance requirement that  
7       there's a two foot separation between the base and  
8       the water table, true?

9           A.       They have signed off on that, yes.

10          Q.       Now, your opinion as you said earlier  
11       was based on EPA's proposed rule.

12          A.       The opinion about raising it four and  
13       a half feet to comply with the EPA rule is my  
14       opinion, yes.

15          Q.       Yes. Thank you for clarifying that.

16                    The basis for that opinion is a  
17       calculation that you performed comparing the  
18       highest water level value that you could find in  
19       the DSI for any portion of the UWL site with the  
20       post settlement elevation of the liner under the  
21       sumps, isn't that correct?

22          A.       No.

23          Q.       Well, the water value you used,  
24       particularly the June 10th, 2010 value that was the  
25       highest of the DSI values in that area, isn't that

1 true?

2 A. Yes.

3 Q. And then you prepared it with, on,  
4 the post settlement elevation of the sumps, at the  
5 liner under the sumps.

6 A. And the liner under the landfill.

7 Q. Well, let's first talk about the  
8 water value. All right?

9 A. Okay.

10 Q. You contend that the proposed  
11 regulation requiring that the UWL base be located  
12 quote, a minimum of two feet above the upper limit  
13 of the natural water table, means that you must use  
14 the highest value you get of a water table at  
15 Labadie. True?

16 A. No.

17 Q. Well, turn to page 103 of your  
18 deposition Mr. Norris. At line 10 I asked you this  
19 question: And it's your testimony that the  
20 regulation that you set out at the top of page 17  
21 would require you to calculate it that way and your  
22 answer was, yes, it would be the highest value you  
23 get of a water table at that location.

24 That's exactly the question I asked  
25 you, isn't it?

1           A.       In the context -- well, yes, that's  
2     the answer to your question.

3           Q.       You agree with me that the proposed  
4     rule does not include a definition of upper limit  
5     of the natural water table, correct?

6           A.       That does not include that.

7           Q.       And you're aware that the 464 feet  
8     that is included in Ameren's construction permit  
9     application is a water table value that according  
10    to the Reitz & Jens engineering study constitutes  
11    an extreme event that occurs for a rather short  
12    duration, only about two times in a 10 year period,  
13    true?

14          A.       I understand that is their  
15    interpretation of that number

16          Q.       And with regard to the DSI and the  
17    collection of water table information during that  
18    study that was included in the DSI you will agree  
19    with me that the levels that were noted in that  
20    2010 period were among the higher water levels over  
21    the past 10 or 11 years of the river data, true?

22          A.       That year was a year of high water  
23    levels, high potential levels monitored -- well, it  
24    was the only year for which water levels were  
25    monitored. It is a year that had generally high

1 water levels throughout the year, it certainly is  
2 not a year for which the peak levels were highest.

3 Q. I think my question said higher water  
4 levels. Is that a true statement?

5 A. For the 11 years that were cited and  
6 over the course of a year, yes, it was a year that  
7 had higher than normal water levels.

8 Q. Now, you argued that the proposed  
9 rule would require you to use the highest point  
10 ever actually during the DSI period at any location  
11 in that footprint of the utility waste landfill,  
12 true?

13 A. No. If I felt that were the case I  
14 would have used a number substantially higher than  
15 the number I did to make my calculation.

16 Q. But you used the highest number in  
17 the DSI data, true?

18 A. No. I used the mapped contoured  
19 level in the vicinity of the sumps on January 10th,  
20 2010.

21 Q. All right. Now, Mr. Norris as I  
22 understand it your opinion is that actually no one  
23 knows what the water table elevation is from the  
24 DSI, isn't that true?

25 A. That's correct.

1           Q.       So if we had had a 750 year flood  
2       event during the period of the DSI monitoring,  
3       assuming the DSI monitoring was able to go on  
4       through that cataclysmic event, is it your opinion  
5       then that Ameren would have had to use the highest  
6       water table data that was available to it during  
7       the DSI period in order to meet the EPA regulation,  
8       the proposed regulation?

9           A.       No. I don't think so.

10          Q.       I guess there would be some  
11       engineering judgment involved.

12          A.       The concept of a water table in a  
13       flood situation where the soil is entirely  
14       saturated is one that, I mean that's, there is no  
15       water table at that point. Once soils are  
16       completely saturated and there's standing water  
17       there is no water table.

18          Q.       So then you would fall back into  
19       using your engineering judgment to determine what  
20       the water table was.

21          A.       I do not use engineering judgment.

22          Q.       Well, scientific judgment?

23          A.       Yes.

24          Q.       Okay. Let's talk about the other end  
25       of the comparison that you're making, the liner



1 under the sumps after it's reached the maximum  
2 settlement at some point in the future or at least  
3 settlement in the future. It's true that the  
4 proposed federal regulation states that it's the  
5 utility waste landfill's base that must be  
6 constructed a minimum of two feet above the upper  
7 limit of the proposed water treatment, true?

8 A. Yes.

9 Q. Proposed rule, true?

10 A. May change.

11 Q. May change. And you disagree that  
12 the phrase must be constructed indicates that the  
13 point of construction is the reference point in  
14 time at which that two foot separation requirement  
15 would apply as I understand it, correct?

16 A. I don't know of a definition as part  
17 of this rule as to what was intended by that, I  
18 went by the inference that the separation had an  
19 objective to accomplish that the liner was not to  
20 be within two feet of water and if that objective  
21 is to be met then you would be looking at the full  
22 construction of the landfill which is not until the  
23 cap is put on it and at that point there would be  
24 subsidence so that's why I took the subsidence  
25 point as opposed to the excavation point.

1           Q.       Exercised your own scientific  
2 judgment.

3           A.       Yes.

4           Q.       Because you'll admit that the  
5 proposed rule doesn't actually in your opinion say  
6 one way or the other.

7           A.       I don't know of any definition of  
8 that term in the rule.

9           Q.       It doesn't say one way or the other  
10 whether it's in construction, true? That's your  
11 opinion?

12          A.       I don't know whether the entire  
13 proposed rule says that or not.

14          Q.       Why don't you look at page 107 of  
15 your deposition Mr. Norris. At page 107, line 17 I  
16 asked you this question: Is it your opinion that  
17 the EPA requirement applies to the landfill as it  
18 exists at the time of the construction or at some  
19 post construction period where settlement has  
20 occurred, and your, you carefully reminded me that  
21 at present there is no EPA requirement and then I  
22 restated my question, proposed EPA requirement and  
23 your response was as the rule's proposed it does  
24 not say whether it is at construction or upon  
25 completion.

1 True?

2 A. That is what I responded.

3 Q. Now, despite your own view that that  
4 rule doesn't say one way or the other your opinion  
5 is that the design of the UWL doesn't meet the  
6 proposed rule based on your calculation that  
7 applies at post settlement elevation of the liner  
8 under the sumps, true?

9 A. Yes.

10 Q. The sumps are designed --

11 A. Well, not just the sumps, under the  
12 liner under the waste in places as well.

13 Q. The example you gave in your  
14 testimony involved the sumps, true? And I can get  
15 you the page number here in just a second.

16 A. Thank you.

17 Q. I think it's at page 17 of your cross  
18 surrebuttal testimony Mr. Norris. Lines 11 through  
19 17 is where you have your calculation.

20 A. Yes, I'm checking it out now.

21 Yes, that calculation was for the  
22 sumps.

23 Q. Now, the sumps are designed to  
24 collect any leachate that may collect at the bottom  
25 of the utility waste landfill, true?

1 A. Yes.

2 Q. And you'll agree that the sumps have  
3 to be located at a lower level than the remainder  
4 of the base so that gravity will cause that  
5 leachate to collect, correct?

6 A. Correct.

7 Q. According to Appendix Z of the  
8 construction permit calculation Reitz & Jens, the  
9 engineer, have calculated that 15 sumps represent  
10 less than point 15 percent of the entire utility  
11 waste landfill acreage, correct?

12 A. That is what they calculated.

13 Q. And while you define waste to include  
14 that area of the sumps in your calculations you'll  
15 agree with me that the proposed EPA regulation  
16 doesn't define the word base in its regulation,  
17 true? Do you have those rules?

18 A. Yeah. Can you remind me of the page?

19 MR. TRIPP: May I approach Your  
20 Honor?

21 JUDGE WOODRUFF: Yes.

22 Q. (BY MR. TRIPP) Mr. Norris, I've just  
23 got it tabbed here in this. I'm showing you the  
24 federal register that has the proposed rule in it  
25 and it's section 257.2 of the definitions for that

1 proposed rule, correct?

2 A. Yes.

3 Q. There's no definition of base in that  
4 regulatory section, is there?

5 A. (Reviewing document). There is no  
6 definition of base.

7 Q. So I guess at the end of the day the  
8 Franklin County ordinance which requires a two foot  
9 separation between the base and the water table at  
10 least in the opinion of the independent registered  
11 professional engineer for Franklin County, at least  
12 it's met that requirement which is a requirement,  
13 true?

14 A. His signature indicates that he  
15 believes it does, yes.

16 Q. Another set, we're going to go back  
17 to some of the costs that you say Ameren admitted.  
18 Another set of costs that you contend have been  
19 admitted are repair costs for damage caused by  
20 known and quantifiable hazards of flood damage and  
21 seismic damage, true?

22 A. True.

23 Q. And though you say they're  
24 quantifiable you haven't quantified those costs,  
25 true?

1 A. That's correct.

2 Q. And you can't point the Commission to  
3 any particular regulation, rule or ordinance that  
4 requires Ameren Missouri to include these costs in  
5 its construction permit application or it's CCN  
6 application, true?

7 A. True.

8 Q. And with regard to the hazards of  
9 flood damage and seismic damage Mr. Norris you'll  
10 agree with me that Ameren Missouri took those  
11 hazards into account when it designed the utility  
12 waste landfill for Labadie, true?

13 A. To the extent that they were required  
14 to by MDNR regulations related to a construction  
15 permit application.

16 Q. It took the hazards into account,  
17 fair enough, in the design?

18 A. Yes.

19 Q. In fact it took site specific seismic  
20 conditions into account when it designed the  
21 proposed utility waste landfill, true?

22 A. Yes.

23 Q. Mr. Norris, you did not offer any  
24 testimony either in your cross surrebuttal  
25 testimony or your supplemental testimony where you

1 criticized the seismic analysis performed by the  
2 engineers or the corresponding design  
3 considerations for the utility waste landfill based  
4 on that analysis, isn't that correct?

5 A. That's correct.

6 Q. And you agree that the highlight of  
7 the exterior berm of the proposed UWL is designed  
8 to be above the 100 year floodplain as well as the  
9 500 year floodplain, true?

10 A. Yes.

11 Q. And you've offered no testimony that  
12 specifically criticizes the design considerations  
13 of the proposed utility waste landfill based on  
14 that risk of flooding at that site, true?

15 A. That's correct.

16 Q. Now one of the last category of costs  
17 Mr. Norris that you claim Ameren Missouri has not  
18 accounted for includes costs associated with  
19 closure and post closure activities, isn't that  
20 correct?

21 A. That's correct.

22 Q. Now these costs are costs associated  
23 with remediation, monitoring and repair that in  
24 your opinion may be needed, true?

25 A. Yes.

1           Q.       Now included in your opinion that  
2       certain proposed closure costs associated with the  
3       proposed utility waste landfill are not included  
4       are closure costs for the existing ash ponds,  
5       correct?

6           A.       Only to the extent that they affect  
7       the cost of the existing utility waste landfill.

8           Q.       Right. Because you understand that  
9       the construction permit application is actually  
10      looking at the utility waste landfill and not the  
11      ash ponds, true?

12          A.       True.

13          Q.       Now these omitted costs are not costs  
14      that are required by the Missouri Department of  
15      Natural Resources guidance document governing  
16      closure plans for the proposed UWL, true?

17          A.       No, those are costs that are incurred  
18      prior to closure.

19          Q.       I'm not quite certain here, let me  
20      make sure I've got your answer here.

21                    The costs that you're referring to  
22      are costs that are part of, would not be part of  
23      any guidance document, or required by any guidance  
24      document by MDNR regarding closure, true?

25          A.       I'm afraid we're working from two



1 different questions.

2 Q. Yeah, I think so.

3 A. I'm back to your, I mean I was  
4 continuing with your thread on you suggested that  
5 the costs I was talking to were related to closing  
6 of the lagoons and I'm gathering now you've moved  
7 away from that?

8 Q. No, I think what we talked about  
9 earlier Mr. Norris, correct me if I'm wrong, I  
10 think what we talked about earlier was that you  
11 said to the extent that those costs affect the  
12 closure of the utility waste landfill Ameren  
13 Missouri has not included those. Isn't that what  
14 you just told me?

15 A. I don't believe it is. The  
16 non-closure of the lagoons affects the operating  
17 costs of the monitoring system during the life of  
18 operation as well as post closure monitoring  
19 period --

20 Q. Let's look at page 50 --

21 A. There are also costs that are not  
22 included that will be incurred post post closure.  
23 So there are two different aspects and two  
24 different sets of costs that are not included.

25 Q. Well, let's talk about costs that

1     **should be included. Are there any costs related to**  
2     **those issues you've just talked about that the MDNR**  
3     **guidance document regarding closure and post**  
4     **closure plans require but were not included?**

5           A.       Yes. The MDNR requires a monitoring  
6     system that is capable of monitoring leaks from the  
7     existing landfill and what the impacts of those  
8     leaks are. At present the monitoring system is not  
9     capable of doing that and it would cost  
10    considerably more to make it capable so that aspect  
11    of it is a set of costs that is there. That is not  
12    what I was testifying to but the answer to that  
13    question is yes, there are.

14           Q.       Well, okay. Aside from your, and  
15    we're going to get to your complaints about the  
16    ground water monitoring, all right? I'm talking  
17    about the costs that you told me about in your  
18    deposition at page 50. Do you want to turn there?

19           A.       (Reviewing document).

20           Q.       I'm sorry, at page 43 and 44. 43,  
21    and the question actually states, or begins on line  
22    23 of page 43.

23                    Are you there?

24           A.       I'm on page 43.

25           Q.       All right. At line 23 this question

1 that you answered begins when you state in your  
2 testimony, quote, the costs associated with closure  
3 and post closure activities do not reflect what  
4 will be needed, end quote. That opinion that you  
5 have was not obviously based on a comparison of the  
6 closure costs submitted with the guidance document  
7 that MDNR requires Ameren to file to prepare for  
8 those closure costs, is that fair? And your answer  
9 was the costs I'm referring to are not costs that  
10 are part of what would be generated in compliance  
11 with the guidelines.

12 That was your answer?

13 A. Yes.

14 Q. Now Ameren Missouri stated that it  
15 intends on closing those ash ponds as you're aware  
16 but you also will agree with me that the  
17 regulations governing the closure of ash ponds have  
18 not yet been adopted that would apply in Missouri,  
19 true?

20 A. I'm having a little trouble in that  
21 I'm trying to recall whether I have seen an  
22 assurance anywhere from Ameren regarding closure of  
23 the ash ponds with respect to have there been state  
24 wide regulations promulgated that would apply to  
25 all ash ponds, I don't believe there are.

1           Q.       And you'd agree with me that it's  
2   MDNR and not the PSC that's charged with matters of  
3   environmental compliance and enforcement, true?

4           A.       With respect to the performance of a  
5   permitted landfill for the, for the landfill, yes.  
6   I don't believe I would agree blanket that there is  
7   no concern on the basis of other state agencies --

8           Q.       Well that's not the question I asked  
9   you.

10          A.       With respect --

11          Q.       Let's look what you said in your  
12   deposition at page 97. Page 97, line 17. An  
13   environmental compliance and enforcement also is  
14   the responsibility of MDNR, this was in a series of  
15   questions we're going back and forth, but your  
16   answer at line 21 is that is also within their  
17   jurisdiction of responsibilities. You didn't make  
18   a distinction about anyone else having that  
19   jurisdiction or that responsibility, true? In your  
20   deposition?

21          A.       I'm reading several questions ahead  
22   to see what the context of that particular --  
23   (Reviewing document).

24                   As to your question I would offer  
25   that first of all I believe that question was

1 within the context of the construction and  
2 monitoring of a utility waste landfill and while  
3 certainly I do acknowledge in that answer that the  
4 responsibility of that facility, of the facilities  
5 coming from the previous question is their  
6 responsibility that does not preclude other state  
7 agencies from also having responsibility  
8 particularly after the responsibility of MDNR is  
9 over.

10 Q. In terms of approving the ground  
11 water monitoring plan, in terms of approving the  
12 construction permit application, in terms of  
13 issuing a construction permit, in terms of  
14 complying that that utility waste landfill has been  
15 designed and constructed as designed and in terms  
16 of reviewing the monitoring data from the ground  
17 water monitoring wells at anywhere on that site  
18 that's all within the purview of the Missouri  
19 Department of Natural Resources, true?

20 A. Right. Within the limitations of  
21 their regulations.

22 Q. Now, let's get back to kind of a  
23 little, chased a little bit of a rabbit here Mr.  
24 Norris but in terms of these closure and post  
25 closure costs you say Ameren Missouri has omitted

1 from their submission, whatever those are, you've  
2 not accounted for those costs, you've not  
3 quantified those costs in any way, isn't that true?

4 A. That's true.

5 Q. I want to ask you about your  
6 contention at page 8, lines 3 through 5 of your  
7 cross surrebuttal testimony. There you say Ameren  
8 Missouri is not qualified to operate the utility  
9 waste landfill because of its failure to address  
10 quote, potential and likely ground water  
11 contamination, quote, migrating from its existing  
12 ash pond toward and under the proposed utility  
13 waste landfill.

14 Mr. Norris, isn't it true that this  
15 specific criticism is not really related to the  
16 design of the landfill proper, rather your  
17 complaint really has to do with what you believe is  
18 happening on the site from the ash pond, true?

19 A. I believe the complaint is Ameren's  
20 lack of investigation of what is, what I believe is  
21 likely happening at that plant site.

22 Q. The primary basis for the opinion  
23 that you stated in your cross surrebuttal testimony  
24 that it was likely that the ash pond had  
25 contaminated the ground water was quote, your

1 professional experience in comparable settings,  
2 quote. True?

3 A. That would be the primary, primary  
4 basis of it, yes.

5 Q. So in other words other ash ponds  
6 have leaked, this one must be as well, that's  
7 essentially your opinion, or likely, I'm sorry?

8 A. Where ash ponds designed this way  
9 have been monitored they have been found to be  
10 leaking. Their, Ameren to date even though others  
11 of its properties have shown this propensity has to  
12 all appearances chosen not to monitor the ground  
13 water around these sites.

14 Q. And the reason you answered the  
15 question just the way you did Mr. Norris is because  
16 you can't point to any data that you can tell this  
17 Commission with a reasonable degree of scientific  
18 certainty or whatever judgment that you're using,  
19 that the ash ponds are contaminating the ground  
20 water at the Labadie site.

21 A. Ameren has carefully not collected  
22 any data around these ash ponds. The full answer  
23 to your question though is that there was a  
24 significant leak on the south side that for better  
25 than a decade put 30 gallons a minute of what

1 Ameren described as being leachate from the ash  
2 ponds into the ground water so there's more than  
3 just comparative expectation, we know that leachate  
4 has gotten in.

5 Q. We're going to get that to Mr. Norris  
6 but you evaded answering my question. My question  
7 was you can't point to any data that you can tell  
8 them with a reasonable degree of scientific  
9 certainty that the ash pond or anything at the site  
10 is contaminating ground water, isn't that true?

11 A. There is no such data.

12 Q. And we'll get to the complaint about  
13 the seep, but.

14 Now, I see my next question is about  
15 the seep. At page 11, line 2 of your cross  
16 surrebuttal testimony that you say that a seep from  
17 an ash pond on site at Labadie could be causing  
18 significant ground water contamination, isn't that  
19 true?

20 A. That is what I say.

21 Q. And you chose the word could on  
22 purpose, true?

23 A. Absolutely.

24 Q. As we've already established you  
25 don't have any data to point this Commission to



1     that proves your assertion that this seep is  
2     causing significant ground water contamination,  
3     isn't that right?

4             A.       That is correct. It has never been  
5     investigated.

6             Q.       And you accuse actually Ameren  
7     Missouri of burying that seep, don't you?

8             A.       No, I reported that they did bury  
9     that seep.

10            Q.       Well, bury is your word, correct?

11            A.       Yes. They put fill over it.

12            Q.       All right.

13            A.       I believe that was their words.

14            Q.       And the MPDS permit, actually you  
15     relied on the 2011 MPDS permit application for the  
16     basis for that statement, correct?

17            A.       It was either 2011 or 2001. I think  
18     it was 2011.

19            Q.       Okay.

20                    JUDGE WOODRUFF: Your next number  
21     would be 13.

22                    (MARKED EXHIBIT NO. 13)

23            Q.       (BY MR. TRIPP) Mr. Norris you have  
24     in front of you the permit reapplication that you  
25     relied on when you said Ameren's burying, that

1 Ameren buried that seep, true?

2 A. Yes.

3 Q. And if you'll go to page 19 under ash  
4 pond seeps, the end of that paragraph there, it  
5 talks about this seep, the low lying area on the  
6 southwest corner of the pond, true?

7 A. Yes.

8 Q. The latter of these were eliminated  
9 several years ago when the low lying area was  
10 filled in in anticipation of a development project,  
11 true?

12 A. Yes.

13 Q. And you don't have any idea what type  
14 of fill was used there, correct?

15 A. That's correct.

16 Q. In fact you actually have only been  
17 able to look at the ash ponds from the roadway I  
18 think somewhat you told me.

19 A. That's correct. Well, and from  
20 Google Earth, but.

21 Q. All right. Now, on page -- so even  
22 though this application uses the word eliminated  
23 your characterization of that is that Ameren buried  
24 it, didn't remediate it, true?

25 A. The only activity that I read in its

1 elimination was that it was filled in.

2 Q. Exactly right.

3 Now, if you'll go on the next page,  
4 page 20. At the same reapplication there's  
5 described the construction of a 590 foot long  
6 slurry wall 30 foot deep in the berm along the  
7 southwest side of the ash pond which was designed  
8 to stop seeps from the pond. True?

9 A. That is what it's described.

10 Q. All right. And at page 11 -- oh, one  
11 of the other things that you -- I'm sorry, let me  
12 tie this up here real quick.

13 So we have, at least Ameren's report  
14 is they've eliminated a seep by putting some type  
15 of fill that you're not sure what it is and they've  
16 already constructed a slurry wall and you also note  
17 that they've constructed an additional slurry wall  
18 around that ash pond, true?

19 A. They constructed two slurry walls,  
20 yes.

21 Q. All right. At line 11, pages 3 and 4  
22 of your cross surrebuttal testimony where you talk  
23 about the seep you state that Ameren has not  
24 disclosed results of the pre 1992 ground water  
25 monitoring. Correct? Page 11, lines 3 through 4

1     **Mr. Norris.**

2             A.       Yes.

3             **Q.       That statement kind of suggests that**  
4     **there were tests conducted but you just hadn't**  
5     **gotten the results, doesn't it?**

6             A.       The monitoring wells were certainly  
7     installed and there was no chemical data and no  
8     head data anywhere reported from those wells.

9             **Q.       And you don't even have evidence that**  
10    **sampling had been done in the first place -- in the**  
11    **first place, isn't that true?**

12            A.       It is an inference on my part that  
13    those wells were put in to monitor something and no  
14    results of any monitoring were available. I  
15    suppose it's possible they put them in and then  
16    took them out.

17            **Q.       Well, you don't have any reason to**  
18    **dispute Mr. Giesmann's testimony that there was no**  
19    **pre 1992 sampling, do you?**

20            A.       I believe his testimony was with  
21    respect strictly to quality. He referred to them  
22    as being polyphysometers to collect water level  
23    data and we've seen no water level data either.

24            **Q.       Well, but let's talk about what**  
25    **you're talking about Mr. Norris and what you're**

1 talking about is you're suggesting that there's pre  
2 1992 testing that would show some type of  
3 contamination but you've not seen the results. The  
4 fact is you don't have any basis to believe that  
5 there was any sampling of that nature done pre  
6 1992, isn't that true?

7 A. I have no evidence that it was done  
8 and I now have Mr. Giesmann's assurance that in  
9 spite of the opportunity Ameren chose not to  
10 collect such data.

11 Q. Mr. Norris as you sit here today  
12 despite what you say could be out there or is out  
13 there you can not tell this Commission whether or  
14 not that seep's actually leaking anything into the  
15 adjacent environment including the ground water,  
16 isn't that correct?

17 A. Today, no, I don't know whether that  
18 seep is still leaking.

19 Q. Mr. Norris, I want to ask you now  
20 about your cross surrebuttal at page 12, line 17  
21 through 20 where you make the statement that the  
22 Labadie community relies on the alluvial aquifer  
23 for drinking water, or I think actually you say  
24 community.

25 Are you there?

1 A. What page?

2 Q. Page 12, line 17 through 20.

3 A. Actually I do not go that far. I  
4 refer to the water in the aquifer as being potable  
5 water resource and I said that the community relies  
6 upon it but at no point have I said that it is  
7 being used for drinking water purposes directly in  
8 the aquifer by the community.

9 Q. Yeah, I forgot I need to parse your  
10 words carefully because potable water is drinking  
11 water, right?

12 A. Potable water is water of a quality  
13 that can be used for drinking water.

14 Q. When we normally talk about potable  
15 water Mr. Norris we're talking about drinking  
16 water.

17 A. Not when I use it, it's a water  
18 chemistry. It's a resource that can be used for  
19 it.

20 Q. Your statement there at page 12, line  
21 17 through 20, a fair reading of that would suggest  
22 that you're saying a community relies on that  
23 aquifer for drinking water. I guess you disagree  
24 with that.

25 A. No, my statement there is I think the

1 word holistic has been thrown out a time or two in  
2 these hearings but I do look at ground water,  
3 particularly ground water of a quality that can be  
4 used for drinking water --

5 Q. Mr. Norris --

6 A. As --

7 Q. Mr. Norris --

8 A. As being a water resource.

9 Q. I'd like to redirect you to the  
10 question I asked you and you can agree or disagree  
11 and then your attorney can ask you if she wants to  
12 to explain, all right, and if you can't tell me one  
13 way or the other just tell me that. My question  
14 simply was this: With regard to the statement that  
15 you make on page 12, line 17 through 20, a fair  
16 reading of that could be that a community relies on  
17 that alluvial aquifer for drinking water and I said  
18 can you agree or disagree with that. That was my  
19 question.

20 A. I disagree with that.

21 Q. All right. And the reason you can  
22 disagree with that is because you don't know of a  
23 single well public or private that taps that  
24 alluvial aquifer underlying the Labadie site for  
25 drinking water, isn't that true?

1 A. That's true.

2 Q. You have not undertaken any  
3 investigation to determine whether there are any  
4 public or private wells in the vicinity of the  
5 plant that relies on alluvial aquifer for drinking  
6 water, isn't that true?

7 A. If you are talking extracting it from  
8 the aquifer, that is true.

9 Q. You don't even know were the well  
10 closest to the Labadie plant is that is used for  
11 drinking water, isn't that true?

12 A. That's true.

13 Q. And in fact you qualified the  
14 question before suggesting there was more to your  
15 answer but when I asked you in your deposition do  
16 you know of any wells that rely on the alluvial  
17 aquifer for public drinking water your answer  
18 simply was I have not investigated that, I do not.  
19 True?

20 A. That's correct.

21 Q. Now, you don't even know where  
22 downstream in the Missouri River the closest intake  
23 for use is for public drinking water drawn from the  
24 river, isn't that true?

25 A. That's true.



1           Q.       So your opinion in essence is that  
2       there's a community someplace somewhere that relies  
3       on potable water from the alluvial aquifer but  
4       you're really unable to tell the Commission where  
5       that is.

6           A.       With what's known about the site  
7       right now no one can determine that.

8           Q.       Well nevertheless you cannot  
9       corroborate the suggestion that was made in the  
10      opening statement by counsel for the LEO that LEO  
11      is comprised of area land owners who rely on that  
12      alluvial aquifer for drinking water, isn't that  
13      true?

14                   MS. LIPETES: I object, I think  
15      that's mischaracterizing the opening. He said it  
16      relied on ground water in the area, he didn't  
17      specify alluvial.

18                   JUDGE WOODRUFF: I'll sustain the  
19      objection.

20                   MR. TRIPP: Okay.

21           Q.       (BY MR. TRIPP) Let me ask this  
22      question then Mr. Norris, because I apologize, I  
23      didn't mean to misstate the opening statement.

24           A.       I understand.

25           Q.       You can not corroborate any

1 suggestion that anyone relies on that alluvial  
2 aquifer at the Labadie site for drinking water,  
3 isn't that true?

4 A. I can not corroborate that statement.

5 Q. One of the last criticisms that you  
6 make in your cross surrebuttal testimony Mr. Norris  
7 is that Ameren Missouri could readily find an  
8 alternative site for the proposed UWL, it's not in  
9 a seismic impact zone, not in a carsed or sinkhole  
10 prone area and located along rail transportation,  
11 isn't that correct?

12 A. That's correct.

13 Q. Now, you don't take the position in  
14 your pre-filed testimony that Ameren Missouri  
15 doesn't need to actually develop an additional  
16 place for this disposal of the coal combustion  
17 waste in order to keep generating electricity at  
18 the Labadie plant, true?

19 A. True.

20 Q. Your opinion is that it's an additive  
21 risk to the site as I understand it by including  
22 the utility waste landfill in the Labadie bottoms,  
23 is that right?

24 A. Yes.

25 Q. Again you've not quantified whatever

1 the sedative risk is, true?

2 A. True.

3 Q. And even though you said Ameren  
4 Missouri could readily find an alternative site  
5 you, yourself, have not identified a single  
6 alternative site that meets those characteristics,  
7 isn't that true?

8 A. No, I have not attempted to do  
9 Ameren's work for it.

10 Q. I'm just asking you about the work  
11 that you should do to support your opinions Mr.  
12 Norris. You've not identified a single alternative  
13 site that meets those characteristics, isn't that  
14 true?

15 A. That's true.

16 Q. And you've done no site specific  
17 study of any particular alternative site?

18 A. That's correct.

19 Q. Didn't even look for one, true?

20 A. We looked for areas between the plant  
21 and 165 miles away or looked at conditions between  
22 the plant and 165 miles away as a comparison to the  
23 holistic suggestion that sites were considered  
24 looking to the southeast 165 miles and established  
25 that the terrains available for such a search

1 exists readily apparent over that stretch. Had  
2 comparisons, had comparative sites been looked at,  
3 looked for, to the west there's good terrain out  
4 there to look for it.

5 Q. Page 116 of your deposition, line 8,  
6 I asked you the question and we're talking about  
7 sites, alternative sites, you didn't even look for  
8 one, did you, and your answer was no.

9 A. Yes, that is my answer.

10 Q. And you have no idea how the  
11 construction costs would vary in any way at a  
12 different location, true?

13 A. I have some idea of how they would  
14 vary, I have no quantification of it. There are  
15 certainly things that a landfill in that area would  
16 not need that they do need in Labadie, but.

17 Q. Mr. Norris, why don't you go to page,  
18 bottom of 111 at your deposition and the top of  
19 112. My question was let me ask it this way:  
20 You've not stated in either your cross surrebuttal  
21 testimony or surrebuttal testimony that the design  
22 and construction of the utility waste landfill in a  
23 location other than the Labadie bottoms would be,  
24 would cost Ameren Missouri and its customers  
25 significantly less money or even just less money,

1 true, and your answer was this: I don't even know  
2 about what, I don't know about water construction  
3 costs, how they would vary with the different sites  
4 and my question on the next page was no idea, and  
5 your answer was no.

6 Isn't that right?

7 A. I'm sorry, what page are we on again?

8 A. 111 and 112 Mr. Norris.

9 A. I did answer no to that question.

10 Q. All right. Let's talk about the  
11 specific parameters that you contend should be  
12 considered for this unidentified alternative site.  
13 First, we've already, you said it shouldn't be in a  
14 seismic impact zone, correct?

15 A. If there's an alternative available  
16 it would be less of an environmental risk if it's  
17 outside a seismic impact zone.

18 Q. Well, when we talk about risks we  
19 have to take into account risks when we design a  
20 landfill, true?

21 A. Yes.

22 Q. Ameren did that.

23 A. With respect to the MDNR  
24 qualifications.

25 Q. You're suggesting by that I take it

1     that Ameren Missouri just met the bare  
2     requirements. Isn't it true Mr. Norris that the  
3     seismic analysis included in Appendix J to the  
4     construction permit application for example  
5     demonstrated in its slope stability analysis that  
6     quote, the calculated accumulative depravation is  
7     less than point 05 inch, much less than the maximum  
8     of six inches allowed under 10 CFR 80 dash 3.010.

9                     Isn't that true?

10            A.       I would not question your reading of  
11     that statement.

12            Q.       All right. Now, as for this other  
13     qualification for this other alternative site not  
14     being in a carsed or a sinkhole prone area, you're  
15     not suggesting to this Commission that you have  
16     evidence that the Labadie utility waste landfill  
17     site actually has carsed geology underneath it, are  
18     you?

19            A.       No.

20            Q.       And you're not telling this  
21     Commission that sinkholes actually are present  
22     where the proposed utility waste landfill site is,  
23     true?

24            A.       That's correct.

25            Q.       And, MDNR has reviewed the scientific

1 and technical information included in both the  
2 preliminary site investigation and the detailed  
3 site investigation and has approved the Labadie  
4 site for the utility waste landfill, true?

5 A. Yes.

6 Q. Now, regarding your suggestion Mr.  
7 Norris that there's an alternative site that could  
8 be located next to rail transportation, again  
9 you've not actually identified a particular site,  
10 as I understand it what you've included is a map of  
11 rail lines in Missouri, true?

12 A. Correct.

13 Q. And you don't address in your  
14 testimony whether the rail cars that deliver coal  
15 to the site could be used to carry away coal ash,  
16 isn't that true?

17 A. That's correct.

18 Q. And you can't point to any data that  
19 would contradict Mr. Giesmann's testimony that the  
20 costs associated with the costs of the transport of  
21 coal combustion waste are substantial, isn't that  
22 correct?

23 A. That's correct.

24 Q. In fact you would agree that there  
25 would be a significant cost to transport coal ash

1 by train from the Labadie site to some unidentified  
2 UWL located 166 miles west of Labadie, isn't that  
3 true?

4 A. If the site were 165 miles west of  
5 Labadie I would agree it would probably be a  
6 significant cost to go that far.

7 Q. One other opinion found at page 13 of  
8 your cross surrebuttal testimony, I'm shifting  
9 gears here, didn't pause, sorry, page 13, lines 1  
10 through 10 of your cross surrebuttal testimony Mr.  
11 Norris, this is the one we haven't discussed and  
12 it's your criticisms of the proposed ground  
13 monitoring system and the proposed UWL. Do you see  
14 that?

15 A. Starting at line 11 of page 13.

16 Q. Page 13, lines 1 through 10, I'm  
17 sorry. Lines 1 through 10.

18 A. Yes.

19 Q. The only explicit criticism that you  
20 lodge in your cross surrebuttal testimony that the  
21 ground water monitoring plan would be able to  
22 detect a breach or a flaw in the liner system that  
23 allows leachate to leak into the alluvial aquifer,  
24 isn't that true?

25 A. Yes.



1           Q.       You don't offer any specific  
2 criticisms of the monitoring plan in your cross or  
3 rebuttal testimony, isn't that correct?

4           A.       That's correct.

5           Q.       And you don't say that there are  
6 wells in the wrong location or that wells that  
7 aren't deep enough or that more are needed in your  
8 cross surrebuttal testimony, isn't that true?

9           A.       That's correct.

10          Q.       And the reason that you did not  
11 include more specific criticism of the ground water  
12 monitoring plan in your cross surrebuttal testimony  
13 was that you believe that the topic was to be dealt  
14 with by MDNR and not within the specific venue of  
15 the PSC. Isn't that true?

16          A.       The costs necessary are within I  
17 believe the PSC's. The technical details and the  
18 reason I didn't go into the technical details is  
19 because that is under the purview of MDNR.

20          Q.       Let's look at what you told me in  
21 your deposition when I asked you that question.  
22 Turn to page 120 Mr. Norris.

23          A.       I'm there.

24          Q.       Okay. I understand what your answer  
25 fits with the intervenor's theory in this case but

1     when I asked you at your deposiiton at page 120,  
2     line 19, how does this testimony standing on its  
3     own have any credibility other than the fact that  
4     someone several years ago completed the course work  
5     for a Ph.D. in hydrogeology, and bad question but  
6     the answer that you gave is what I want to focus on  
7     and this was related to your ground water  
8     monitoring criticisms. It was an honest answer to  
9     a legitimate question on a topic that really is to  
10    be dealt with within the MDNR. It is not within  
11    the specific venue of the PSC. I did not think  
12    there were any reasons to go into detailed  
13    critiques in this hearing.

14                   Isn't that true, that's what you told  
15    me in your deposition?

16           A.     That is the final answer in my  
17    deposition to a string of questions.

18           Q.     Well, I read that answer correctly  
19    didn't I Mr. Norris?

20           A.     You did read that answer correctly.

21           Q.     Now despite this the bulk of your  
22    supplemental testimony in this case which was filed  
23    in February of 2014 now addresses other concerns  
24    related to the ground water monitoring system,  
25    true?

1 A. Yes.

2 Q. And none of these concerns you now  
3 raise were based upon any independent ground water  
4 modeling that you conducted or any ground water  
5 study that you performed for the proposed UWL site,  
6 isn't that true?

7 A. That is true.

8 Q. In point of fact pages 3 through 8 of  
9 your supplemental testimony essentially adopts  
10 criticisms of the ground water monitoring plan made  
11 by Andrews Engineering, Franklin County's  
12 independent registered professional engineer.  
13 Isn't that true?

14 A. It discusses the concerns of Ameren,  
15 it is not an adoption of anything.

16 Q. You essentially set out what Andrews  
17 Engineering's criticisms are of the ground water  
18 monitoring plan, isn't that correct?

19 A. That's correct.

20 Q. Now, it was the environmental law  
21 clinic that provided with you this correspondence  
22 between Andrews Engineering and Ameren Missouri?

23 A. Yes.

24 Q. And you set out the concerns of  
25 Andrews Engineering, you contend, after you set

1 those out, and that's at pages 3 through 6 of your  
2 testimony, you contend that the seven additional  
3 ground water monitoring wells that Ameren Missouri  
4 agreed to install do not completely address any of  
5 Andrew's concerns, true?

6 A. No. I believe that's any of my  
7 concerns.

8 Q. Well, let's look at your testimony,  
9 page 6, lines 15 and 16. The changes Ameren made  
10 to the monitoring system do not completely address  
11 any of the concerns raised by Andrews although they  
12 partially address some of the concerns. Isn't that  
13 your testimony?

14 A. Oh, okay. I'm sorry. Yes.

15 Q. Now, after Ameren Missouri agreed to  
16 install seven additional wells Andrews Engineering  
17 issued a letter to Franklin County stating that the  
18 proposed utility waste landfill design including  
19 the design of its ground water monitoring plan  
20 complied with the Franklin County ordinance, true?

21 A. Yes.

22 Q. You don't mention that fact actually  
23 in your supplemental testimony, isn't that right?

24 A. It was mentioned by Ameren's  
25 witnesses, I was responding to Ameren's witnesses,

1 there was no need for me to state that. The  
2 Ameren --

3 Q. Didn't think it was particularly  
4 relevant is what you told me, right?

5 A. Not to my testimony, no.

6 Q. Now, MDNR has accepted the ground  
7 water monitoring plan, true?

8 A. Not yet completely.

9 Q. Have they, you've not seen any  
10 criticisms from you with regard to suggestions to  
11 the ground water monitoring plan that's been  
12 submitted with the revised CPA, have you?

13 A. Did you mean to say from them?

14 Q. From MDNR, I'm sorry, yes.

15 A. At present, no, I have not.

16 Q. Now Mr. Norris just a final kind of  
17 group of questions here. At page 12 of your  
18 supplemental testimony, and you kind of revisit an  
19 issue you raise in your cross surrebuttal testimony  
20 where you say there's evidence, and I'm going to  
21 quote you, suggestive of ground water contamination  
22 that might be attributable to the existing ash  
23 ponds. Isn't that true?

24 A. Yes.

25 Q. Now, for support you compare the

1 ground water data from wells in the bluffs out of  
2 the proposed utility waste landfill with ground  
3 water, I guess I should say data, data from down  
4 gradient wells at the proposed UWL site, isn't that  
5 true?

6 A. That is one of, I mean I did make  
7 that comparison, yes.

8 Q. All right. Now the upgradient wells  
9 in the bluffs, those wells all draw water from the  
10 bedrock aquifer, correct?

11 A. Yes.

12 Q. And the downgradient wells at the UWL  
13 site in the Labadie bottoms draws from the alluvial  
14 aquifer, correct?

15 A. Yes.

16 MR. TRIPP: Giles, can I use your  
17 easel?

18 MR. HOWARD: It's not my easel.

19 MR. TRIPP: Whosever it was. I think  
20 you had it out.

21 Q. (BY MR. TRIPP) I'm showing you Mr.  
22 Norris what's already be admitted as Commission  
23 Exhibit 1000, all right?

24 A. Yes.

25 Q. And you've seen this before, haven't

1     you?

2             A.       Yes, I have.

3             Q.       Now with regard to this admission,  
4     it's a conceptual model is what I think you  
5     understood it to be. With regard to this depiction  
6     of bedrock and the alluvial aquifers at the Labadie  
7     site I think what you side it's a general schematic  
8     of a conceptual model of that site, true?

9             A.       Yes.

10            Q.       Now for your comparison what you did  
11    was, I'll just hold up here, I'm sorry. For your  
12    comparison what you did was you prepared the  
13    readings from these wells in the bedrock up here,  
14    in the bedrock, I'm sorry, with the wells in this  
15    alluvial aquifer here, correct?

16            A.       The available comparison were three  
17    wells that are completed in the bedrock for the  
18    most part in the bluffs. One of those was below  
19    the bluffs with the water table wells in the  
20    alluvial aquifer, yes.

21            Q.       All right. Now, all the alluvium is  
22    in contact with the underlying bedrock, the  
23    alluvial and bedrock aquifers are considered  
24    distinct due to their physical characteristics,  
25    isn't that true?

1 A. By whom?

2 Q. Well, I mean you said they were two  
3 different lithologic types.

4 A. That's correct.

5 Q. And I was just trying to restate it  
6 more in terms I might understand. Did I state that  
7 incorrectly?

8 A. The definition of an aquifer varies  
9 depending on the purposes for it and as an example  
10 with respect to that bedrock and that aquifer if  
11 you do a search in the USGS database on the Ozark  
12 aquifer --

13 Q. Mr. Norris --

14 A. You get both alluvial wells --

15 JUDGE WOODRUFF: Please don't talk  
16 over each other.

17 Stop talking while he's talking.

18 MR. TRIPP: I'm sorry, Judge.

19 JUDGE WOODRUFF: I'm sorry. You're  
20 the attorney, you need to ask questions --

21 A. Even in mid answer?

22 JUDGE WOODRUFF: Even in mid answer.

23 A. Okay.

24 Q. (BY MR. TRIPP) Because I want to get  
25 you to answer the question I asked. All right?



1                   Mr. Norris when we look at this site  
2                   and we look at this conceptual model we see, we  
3                   look at that we see a bedrock aquifer and we see an  
4                   alluvial aquifer, isn't that correct? And I'll get  
5                   to the point that you were raising but generally  
6                   that's what we're looking at, isn't it?

7                   A.       They're commonly called the bedrock  
8                   aquifer and they have been for this hearing,  
9                   bedrock aquifer and alluvial aquifer.

10                  Q.       According to the DSI Mr. Norris the  
11                  bedrock in the area quote, typically possesses  
12                  weakly developed intercrystalline poor networks and  
13                  low formation permeability with the result that the  
14                  ground water movement is rather slow. Correct?

15                  A.       That is what it says.

16                  Q.       And according to the DSI when the  
17                  ground water's moving within the alluvial aquifer  
18                  encounters this less permeable, and permeable  
19                  meaning, what's permeable?

20                  A.       Permeable is the property of a rock  
21                  to conduct fluid flow through it.

22                  Q.       All right. So according to the DSI  
23                  when ground water moving within the alluvial  
24                  aquifer encounters this less permeable bedrock the  
25                  bedrock largely impedes flow due to its lower

1 permeability, correct?

2 A. That is what the DSI says, yes.

3 Q. Now as a result of the ground water  
4 in the alluvial aquifer according to the DSI  
5 preferentially flow parallel to this barrier due to  
6 more permeable sands and gravel of the alluvium and  
7 remain in the alluvial aquifer system, correct?

8 A. That is also what the DSI says.

9 Q. Now, if you're going to make a  
10 comparison between the water quality in the bedrock  
11 wells and the water quality of the alluvial aquifer  
12 in order to show whether or not there's a  
13 contamination by coal ash waste contaminants for  
14 constituents isn't it true that in order to show  
15 that correct relationship you have to assume that  
16 the only source of ground water in the alluvium is  
17 ground water from the bedrock aquifer?

18 A. No.

19 Q. Well, you say no because you can't  
20 tell the Commission that's the case, right?

21 A. Well, I know for instance that the  
22 alluvial aquifer receives precipitation and that  
23 becomes part of the water in the alluvial aquifer.

24 Q. It's not the only source of the water  
25 in the alluvial aquifer though, correct?

1           A.       It's not the only source. The  
2       Missouri River sometimes provides water to it.

3           Q.       But just in terms of a general  
4       scientific theory Mr. Norris if I want to say the  
5       water up here is not contaminated and the water  
6       down here is contaminated by this coal ash pond and  
7       I'm making that comparison in order for that to  
8       really say that that contamination's coming from  
9       the coal ash pond and nowhere else don't I have to  
10      show that we're talking about the same water?

11          A.       If you want to attribute solely to  
12      any particular source you have to do that, yes.

13          Q.       All right. And as we've already  
14      talked about there's multiple sources of recharge  
15      for that alluvial aquifer, the river,  
16      precipitation, could be runoff, those types of  
17      things, correct?

18          A.       Runoff might and bedrock, or.

19          Q.       Okay. Well, we'll get to that.

20                   Now isn't the real problem Mr. Norris  
21      that you can't point to any scientific data that  
22      would demonstrate the degree, if any, of the  
23      hydraulic connection between the bedrock aquifer  
24      and the alluvial aquifer?

25          A.       No, that's absolutely not the case.

1           Q.       Why don't you go to your deposition  
2       at page 139 and see how you answered it at that  
3       time.

4           A.       (Reviewing document).

5           Q.       On page 139 of your deposiiton at  
6       line 24 I asked you this question: Do you have any  
7       scientific data that you could point to to  
8       demonstrate the degree, if any, of a hydraulic  
9       connection between the bedrock aquifer and the  
10      alluvial aquifer and your answer was simply no.  
11      Isn't that right?

12          A.       Page 139 --

13          Q.       At the end and your answer is on 140,  
14      line 3.

15                    That was your answer wasn't it Mr.  
16      Norris?

17          A.       That was my answer to that question  
18      at the start of the series of exchanges where we  
19      ended up discussing exactly this diagram.

20          Q.       Let's talk about this. You can't  
21      tell me or this Commission what extent, if any, the  
22      alluvial aquifer is even influenced by the bedrock  
23      aquifer, isn't that correct?

24          A.       I cannot quantify such a fact.

25          Q.       Well you didn't qualify your answer

1 in your deposition. Let's look at page 141 when I  
2 ask you that question, line 4. Question beginning  
3 at line 4, I'll assume for a moment that your  
4 assumption or that the statement you were making is  
5 correct. You're not able to tell me what extent  
6 the alluvial aquifer is influenced by the bedrock  
7 aquifer, are you? Your answer was simply no,  
8 wasn't it Mr. Norris?

9 A. It was no then.

10 Q. As I understand it there are  
11 directional changes in the ground water flow of the  
12 alluvial aquifer that occur during a couple of the  
13 summer months during the DSI monitoring period  
14 where the alluvial aquifer would change direction  
15 and flow kind of southeast. Isn't that right?

16 A. Yes.

17 Q. All right. Now, you admit that you  
18 have absolutely no data to point to that would show  
19 that whenever this ground water flow direction of  
20 the alluvial aquifer changes its direction that it  
21 would impact a bedrock aquifer, isn't that correct?

22 A. I'm afraid I have to ask for that to  
23 be repeated. I don't know if you asked me if it  
24 was evidence, or?

25 Q. No. You have absolutely no data Mr.

1     Norris to point this Commission to that would show  
2     that whenever that ground water flow direction in  
3     the alluvial aquifer changes direction that it  
4     would impact the bedrock aquifer, isn't that true?

5             A.       There is no data to demonstrate that,  
6     that's correct.

7             Q.       Now, even if there were this  
8     direction connection between the bedrock aquifer  
9     and the alluvial aquifer you can't tell this  
10    Commission that the ash ponds themselves would even  
11    be the sole source of some of these constituents  
12    that we see in the alluvial aquifer sampling, true?

13            A.       That data too does not exist.

14            Q.       You do agree though Mr. Norris that  
15    there are natural sources of contamination or  
16    constituents, background constituents or  
17    concentrations at this site. True? You would  
18    assume that.

19            A.       As at any site.

20            Q.       Right. For example you'd expect that  
21    there'd be a background concentration of arsenic  
22    present in this alluvial aquifer, true?

23            A.       I would expect that, yes.

24            Q.       And your comparison that you made  
25    between the water results up here and the water

1 results down here, that doesn't take into account  
2 the background arsenic that may be present or was  
3 present in the alluvial aquifer, true?

4 A. That comparison does take into  
5 account all of the chemistry that came from the  
6 water table wells. It does not assess whether that  
7 is baseline, background and/or contaminated.

8 Q. And in fact we've already seen data  
9 from the USGS. You've seen that chart -- can you  
10 see that Mr. Norris?

11 A. Yes, I have seen that chart before.

12 Q. Right. And no doubt there's for  
13 example arsenic naturally occurring in the soils.

14 A. Yes.

15 Q. All right. And even at fairly high  
16 levels according at least to that chart, true? I  
17 mean if you take point 61 --

18 A. It certainly is high enough I  
19 wouldn't want my children playing in those soils.

20 Q. Okay. So when you say for example in  
21 your testimony Mr. Norris that there's a 220  
22 percent greater concentration of arsenic on average  
23 in the alluvial aquifer above what's in the bedrock  
24 aquifer that calculation doesn't take into account  
25 the background, what the background level of

1     arsenic is or to the degree in which the alluvial  
2     aquifer is recharged by the bedrock aquifer because  
3     you do not have that data, true?

4             A.     Did not have the data to parse out  
5     how much bedrock water is in the aquifer, in the  
6     alluvial aquifer.

7             Q.     Mr. Norris you can't point to any  
8     textbook, journal article or any geology textbook  
9     that supports the type of statistical comparison  
10    that you made here between the bedrock aquifer and  
11    the alluvial aquifer, isn't that right?

12            A.     I believe I said that that would, I  
13    mean I believe I would agree with that statement  
14    with the same qualification that I did in the  
15    answer in my transcript.

16            Q.     Nothing published at this site that  
17    would --

18            A.     There are no data at this site that  
19    would allow you to do that.

20            Q.     So, your opinion that there is  
21    evidence suggestive of ground water contamination  
22    that might be attributable to the existing ash  
23    ponds uses those qualifiers to suggest it might be  
24    because it would be an exaggeration to say that the  
25    comparison that you made demonstrates with any



1     certainty that the ash ponds are contaminating this  
2     site.  Isn't that fair?

3             A.       It's fair if you add definitively.

4             Q.       I'm sorry, I didn't hear you.

5             A.       It would be a fair statement as long  
6     as you added the qualifier definitively.

7             Q.       Well, you've used the qualifier  
8     suggesting it might be so I included that in the  
9     question.  All right?  Now, just let me ask you a  
10    few more questions about your testimony regarding  
11    this potential that the underlying ash pond I think  
12    you said is likely contaminating this site.

13                 First, I think you agree with me that  
14    ground water flow is the predominant factor for  
15    spreading contamination, true?  Or its primary  
16    movement will be in the direction of the ground  
17    water flow.

18             A.       All right, yeah.  I will agree with  
19    that statement.

20             Q.       All right.  At page 11, lines 19  
21    through 22 of your cross surrebuttal testimony.  
22    This is cross surrebuttal.

23             A.       Page 11?

24             Q.       Yes, sir.  Lines 19 through 22.  You  
25    state any contamination that leaks from the

1 existing ash ponds is being transported toward and  
2 across the area of the planned UWL --

3 A. Wait.

4 Q. I'm sorry, did I get the wrong one?

5 A. I'm not seeing that on page 11, 19  
6 through 22.

7 Q. Let me look here.

8 Are you at your cross surrebuttal  
9 testimony?

10 A. Yes.

11 Q. Okay. I've got marked as page 11.

12 A. Okay.

13 Q. And I'll read it verbatim, I may have  
14 added a word or two. Go to line 19. Are you  
15 there?

16 A. Yeah.

17 Q. Any contamination that leaks from the  
18 existing ash --

19 A. Okay.

20 MS. LIPETES: If I can interrupt I  
21 think when we paged the numbers the cover page got  
22 into the exhibit page so he may be, there are two  
23 numbers on each page for cross surrebuttal so it  
24 may be confusing.

25 Q. (BY MR. TRIPP) Here's where I am.

1                   You're in supplemental testimony Mr.  
2   **Norris.**

3           A.       Sorry. All right.

4           Q.       So page 11, at least my page 11. On  
5   line 19, are we there?

6           A.       Uh-huh.

7           Q.       You say any contamination that leaks  
8   from the existing ponds is being transported toward  
9   and across the area of the planned UWL. The  
10   documented flow pattern is consistent across  
11   seasons and there is no reason to believe that it  
12   has not existed for decades.

13                   That's what you said in your  
14   testimony, correct?

15          A.       Yes.

16          Q.       Let me get back to my question, I  
17   apologize.

18          A.       As for my looking at the wrong  
19   document, so I apologize.

20          Q.       Now, when you looked at the sampling  
21   data from the ground water monitoring wells you did  
22   not see arsenic levels at higher concentrations in  
23   the monitoring wells closest to the ash pond.  
24   Isn't that true?

25          A.       That's true.

1           Q.       And you agree that there was not even  
2       a discernable pattern in terms of the levels of  
3       arsenic for example from one sampling event to the  
4       other, true?

5           A.       True.

6           Q.       Now, Mr. Norris isn't it generally  
7       true that the higher concentrations of a  
8       contaminant in a plume are those closest to the  
9       source of the contamination?

10          A.       You're sampling within the plume,  
11       yes.

12          Q.       All right. Nevertheless you agree  
13       with me that neither sulphate nor boron  
14       concentrations are elevated in any of the three  
15       rounds of ground water sampling at the proposed  
16       site, true?

17          A.       Elevated above what?

18          Q.       Well, let me pull those out and we'll  
19       look at them.

20                   MR. TRIPP: May I approach the  
21       witness?

22                   JUDGE WOODRUFF: Yes.

23          Q.       (BY MR. TRIPP) Mr. Norris I've  
24       handed you two of the schedules from Bradley's  
25       schedule 13 which have two rounds of sampling

1 results and then I've handed you I think Exhibit  
2 352.

3 A. Yes.

4 Q. All right. Those are the three  
5 rounds of sampling I was talking about. All right?

6 A. Yes.

7 Q. Now. Under the, let's look at  
8 sulphate. MCL, SMCL for sulphate was 250, correct?  
9 And I'm looking at table 2, I'm not sure if it  
10 changed

11 A. Yes.

12 Q. Okay.

13 A. Found it.

14 Q. I was going to enlarge it, but --

15 A. No, I got it.

16 Q. Okay. Got it? And the highest  
17 sulphate concentration within actually the  
18 monitoring wells around the parameter of the UWL  
19 is, I can't quite read it, 54 maybe, I'm thinking  
20 and then there's a 128 in a different well, true?

21 MR. LOWERY: You need Maxine's  
22 magnifier.

23 Q. (BY MR. TRIPP) Are you able to see  
24 that Mr. Norris?

25 A. Well, I see the TMW 1 has sulphate of

1 128.

2 Q. Right.

3 A. And it appears to be the highest  
4 number for any of the three sampling events in any  
5 well.

6 Q. Okay. And with regard to boron, did  
7 I say, yeah, boron. Let's look at boron. Now  
8 there's only an RSL for boron and it's 3,100,  
9 right? Based on screen levels, 3,100?

10 A. That's what the tables have in for  
11 the boron.

12 Q. Highest I see one that says 156, I  
13 don't see a higher one for that table 2 results.  
14 Is that fair?

15 A. In table 2 I don't even see the 156,  
16 but. 146, 140.

17 Q. Anyway I guess we can agree that it's  
18 well below the 3,100, yes?

19 A. Yes.

20 Q. All right. And that's actually true  
21 for all three rounds of sampling, isn't it?

22 A. Yeah. We get above 200 at least in  
23 the third round, but. Yes, none of them approach  
24 the 3,100.

25 Q. Okay. I have one last set of

1 questions for you Mr. Norris and I know I said that  
2 already but I mean it this time.

3 As we discuss the basis for this  
4 comparison that you've made between the bedrock  
5 aquifer wells and the alluvial wells is that water  
6 flows north from the bedrock aquifer toward the  
7 Missouri River generally. True?

8 A. At the location of the Golder  
9 physiometers, yes.

10 Q. And not surprising ground water tends  
11 to move in a downgradient fashion, true? I mean  
12 there are things that can cause it to change but  
13 generally that's the case.

14 A. It always moves in a downgradient  
15 direction. It may or may not correspond to a  
16 downhill location.

17 Q. All of the drinking wells within the  
18 area of the utility waste landfill are situated on  
19 bedrock bluffs upgradient and out and east of the  
20 proposed utility waste landfill, isn't that true?

21 A. We don't know that.

22 Q. Well --

23 A. We know that they're located, the  
24 wells are located on the bluffs, we know nothing  
25 about the gradients except for the three wells that

1 Golder put in.

2 Q. And those, what do we know about  
3 those, downgradient, or they're upgradient from the  
4 alluvial aquifer, correct?

5 A. We know that most of the data is all  
6 higher than the elevations of the -- well, we have  
7 no, we have no head data or water table data time  
8 coincident with the Golder wells. We know that one  
9 of the Golder wells at times had a head that was  
10 below the elevation of the Mississippi, or the  
11 Missouri River. We don't know with respect because  
12 we don't have data whether it was below the heads  
13 in the aquifer or not.

14 Q. Mr. Norris, let's kind of cut to the  
15 chase here. You understand that one of the primary  
16 concerns of citizens in the Labadie area who've  
17 testified at the local public hearings and things  
18 that we've heard today is a concern that their  
19 drinking water wells would be contaminated by  
20 contaminants from the coal ash, true?

21 A. Yes.

22 Q. And it's true isn't it Mr. Norris  
23 that at no place in your cross surrebuttal  
24 testimony or your supplemental testimony that you  
25 filed in this case that you offer the opinion that



1 the drinking water wells which draw water from the  
2 bedrock aquifer have been contaminated by coal ash  
3 constituents, isn't that true?

4 A. Yes.

5 Q. And no place in either pre-filed  
6 sections of testimony do you even offer the opinion  
7 that drinking water wells which draw water from the  
8 bedrock aquifer will be contaminated by coal ash  
9 constituents. Not in your testimony, is it?

10 A. No.

11 Q. Okay.

12 No further questions.

13 JUDGE WOODRUFF: All right. Did you  
14 wish to offer 13? That was the response to DNR 14?

15 MR. TRIPP: Yeah, I'll offer it.

16 JUDGE WOODRUFF: 13 has been offered.

17 Any objections to its receipt?

18 Hearing none it will be received.

19 and move for questions from the  
20 bench.

21 Mr. Chairman?

22 EXAMINATION

23 QUESTIONS BY CHAIRMAN KENNEY:

24 Q. Mr. Norris good afternoon.

25 A. Good afternoon.

1           Q.       Almost all the questions I have have  
2       been asked, I just have a few clarifying questions.

3                   Alluvial aquifers and bedrock  
4       aquifers are different, right?

5           A.       The materials are different.

6           Q.       All right. So they're different.

7           A.       They are.

8           Q.       And let me just, I'm looking at the  
9       same thing, I think this is that.

10          A.       Yes.

11          Q.       So I'll turn your attention to that  
12       while I'm looking at this. So on the far left of  
13       the graphic, that's where the wells are that supply  
14       drinking water to the Labadie residents?

15          A.       Correct.

16          Q.       Okay. And that's the area that we  
17       refer to as the Ozark bedrock?

18          A.       That is, yes.

19          Q.       And it is upgradient of the proposed  
20       utility waste landfill, correct?

21          A.       It is upgradient at the point that we  
22       have data. We only have data from those three  
23       Golder wells.

24          Q.       So I'm not a hydrogeologist so I'm  
25       just looking at the picture and I had a little bit

1 of this discussion yesterday with somebody else but  
2 just looking at it it appears to me, it's uphill  
3 from, right?

4 A. Yeah. The land surface is definitely  
5 uphill.

6 Q. Uphill is not necessarily the same as  
7 upgradient.

8 A. That's correct.

9 Q. Okay. Maybe then I'm not clear.  
10 What's the difference between it being uphill and  
11 upgradient?

12 A. Gradient refers to the driving force  
13 of water.

14 Q. Uh-huh.

15 A. It's most easily measured by putting  
16 a well in and seeing how high in that well the  
17 water level rises.

18 Q. Okay.

19 A. And it's normally mapped as being an  
20 elevation. So it's the elevation of water in a  
21 well that is completed in that aquifer.

22 Q. So the three bedrock aquifers that  
23 are depicted on this graphic are up gradient from  
24 the proposed utility waste landfill.

25 Q. The three wells among themselves show

1     **water flowing in the direction of the Missouri**  
2     **River.**

3             **Q.       Meaning what? Upgradient from the**  
4     **proposed utility waste fill?**

5             A.       They are at least at times of the  
6     year all upgradient of the Missouri, or of the  
7     aquifer. Because one of them at times has an  
8     elevation that's below the river we know that at  
9     times those arrows at that location are not correct  
10    because --

11            **Q.       So the arrows that are moving left to**  
12    **right, those are the arrows you're referring to?**

13            A.       Right. The directions of flow.

14            **Q.       Would that be the documented flow**  
15    **pattern that you refer to in your testimony at page**  
16    **11 at line 19?**

17            A.       No. That documented flow is what the  
18    DSI documented under the proposed footprint.

19            **Q.       Is it the same as these arrows?**

20            A.       No.

21            **Q.       Okay.**

22            A.       That flow would be coming out this of  
23    diagram toward the viewer.

24            **Q.       Okay. So these arrows represent**  
25    **what?**

1           A.       That's a schematic of general  
2 principles that all things being equal we tend to  
3 think of bedrock highs discharging their water into  
4 alluvial floodplains that discharge the water into  
5 the river and the proof or the critical things are  
6 the, there are lots of exceptions to this general  
7 rule. The water from the bedrock areas is going to  
8 get either to the river or to somebody's well. The  
9 critical thing is to know how it gets to the river  
10 when it gets to a well and how that relates to a  
11 potential source of pollution. We know for  
12 instance that part of the year under the footprint  
13 of the landfill water is not moving to the river,  
14 it's moving away from the river, obliquely away  
15 from the river. If you look --

16           **Q.       I'm sorry, let me stop you. But it's**  
17 **not moving from right to left, it's moving left to**  
18 **right and then maybe out toward the viewer.**

19           A.       No, actually it's predominantly out  
20 toward the viewer.

21           **Q.       All right.**

22           A.       And part of the year it is moving  
23 from right to left as well as out of the --

24           **Q.       It's moving from right to left at**  
25 **which point on that diagram?**

1           A.       May I -- well, I don't know, does  
2       somebody have a copy of that diagram I can also  
3       look at?

4           Q.       **Mr. Williams is going to give you**  
5       **his.**

6           A.       Thank you.  
7                    The, where the wells are designated  
8       as being MW 1.

9           Q.       **Okay.**

10          A.       And MW 28 and MW 27 and MW 26.

11          Q.       **Okay.**

12          A.       Parts of the year those blue arrows  
13       that are moving left to right.

14          Q.       **The ones in the alluvium.**

15          A.       In the alluvium.

16          Q.       **Okay.**

17          A.       They move right to left.

18          Q.       **In the alluvium, not in the bedrock.**

19          A.       We don't know because there are no  
20       heads in the bedrock. If you look --

21          Q.       **So the only thing we do know is to**  
22       **the extent it does move right to left is in the**  
23       **alluvium, we don't know one way or the other,**  
24       **there's nothing that shows that it is moving from**  
25       **right to left in the bedrock.**

1           A.       There's one clue though that needs to  
2   be considered and that is the well at 2 GP dash A.

3           Q.       Uh-huh.

4           A.       Do you see it?

5           Q.       That's further up towards the bluffs.

6           A.       Right.

7           Q.       Yeah.

8           A.       And it is the lowest most of the  
9   three, of the three bedrock wells.

10          Q.       Sure.

11          A.       During the same times of the year  
12   that the DSI data showed movement from the river  
13   toward the left the elevation in that well is below  
14   the elevation of the river which means that that  
15   water can not be moving toward the river during  
16   those times of the year.

17          Q.       But that doesn't necessarily  
18   demonstrate that the alluvium is moving from right  
19   to left, the water in the alluvium wells or the  
20   alluvium aquifer is moving from right to left.  
21   You're saying it's a clue but it's not necessarily  
22   demonstrating that.

23          A.       Right. But the year that we  
24   collected water from the alluvium that was what was  
25   observed is it was moving right to left.

1           **Q.       Okay.**

2           A.       The other thing to keep in mind there  
3       was a discussion yesterday about how yes, it moves  
4       back toward the bluffs some times of the year,  
5       maybe one step but then it moves three steps  
6       towards the river. But the actual analysis that's  
7       in the construction permit application, the CPA,  
8       the analysis by the engineers that show they had a  
9       suggestion where to monitor by looking at the full  
10      year's worth of data and they added all of the  
11      footprints of the water and for the wells under the  
12      outside of the landfill the sum of that year's  
13      worth of data is the opposite, it's toward overall  
14      the course and the flow of that water over the  
15      course of the year is from on this diagram left to  
16      right. It's very predominant during several months  
17      of the year but that flow added to the flows back  
18      towards the Missouri River are not enough to  
19      overcome the movement to the bluff. That's the  
20      concern that the citizens are having.

21           **Q.       Right.**

22           A.       This water is in fact as analyzed by  
23      Ameren's witnesses, or not their witness, but their  
24      engineers, is in fact often the course of the only  
25      investigation that was made moving toward them not



1 away from them.

2 Q. But there's no evidence -- well,  
3 never mind. But there's no evidence that shows  
4 that it's going into the bedrock, right? The  
5 bedrock aquifer.

6 A. No, but --

7 Q. Let me stop you there, your attorney  
8 may have some additional questions.

9 Q. And the wells that are supplying  
10 drinking water are from the bedrock aquifer and not  
11 the alluvial aquifer, correct?

12 A. All of the wells the neighborhoods  
13 are using right now are from the bedrock aquifer,  
14 yes.

15 Q. I just have a few more questions  
16 about your experience testifying. There was a  
17 statement I believe in your testimony that you had  
18 testified regarding the disposal of coal ash from  
19 coal fired plants in several administrative  
20 hearings in Indiana, is that correct?

21 A. Yes.

22 Q. How many and on whose behalf?

23 A. I testified in two hearings and it  
24 was on behalf of the Hoosier Environmental Council.

25 Q. Have you ever offered any testimony

1 on behalf of a utility?

2 A. With respect to CCW, no.

3 Q. Okay. And then what's your hourly  
4 rate for preparing your testimony?

5 A. \$140 an hour.

6 Q. And do you charge a separate rate for  
7 appearing here at the hearing?

8 A. No.

9 Q. So it's also 140 an hour.

10 A. Yes.

11 Q. I think everything else I would have  
12 asked you has been thoroughly asked so thank for  
13 your time Mr. Norris.

14 JUDGE WOODRUFF: Mr. Stoll.

15 COMMISSIONER STOLL: I have no  
16 questions. I do thank you for your testimony.

17 JUDGE WOODRUFF: Commissioner Kenney?

18 COMMISSIONER KENNEY: Thank you Mr.  
19 Norris. No questions.

20 JUDGE WOODRUFF: Mr. Hall?

21 COMMISSIONER HALL: I have no  
22 questions at this time. I may have a few questions  
23 after the witness's Counsel redirects.

24 JUDGE WOODRUFF: I do have one  
25 question.

1 A. Yes.

2 EXAMINATION

3 QUESTIONS BY JUDGE WOODRUFF:

4 Q. Is there any connection between the  
5 Missouri River and the bedrock aquifer?

6 A. Only through the alluvium.

7 Q. So there's a possibility that the  
8 alluvium would leak down into the bedrock aquifer?

9 A. If the vertical gradient of the water  
10 is downward then alluvial water will flow into the  
11 bedrock.

12 Q. And is there any way of determining  
13 that?

14 A. Only by putting wells in that measure  
15 the head in both the bedrock and in the alluvial  
16 aquifer. At the same place.

17 Q. Okay. How would you do that?

18 A. Well, what you could do for example  
19 would be adding some deep wells, they have added  
20 some deep wells to the monitoring system to see if  
21 there is a downward gradient or an upward gradient  
22 within the alluvial aquifer, whether in addition to  
23 the horizontal flow there is flow upwards or  
24 downwards or whether that changes in the course of  
25 a year. If one were to similarly put a well into

1 the bedrock aquifer then you could also determine  
2 not only what the vertical flow is within the  
3 alluvial aquifer but you could determine whether  
4 that was the same flow between the alluvial aquifer  
5 or whether it was a different flow.

6 **Q. Is hypothetically the alluvial could**  
7 **be flowing left to right and the bedrock could be**  
8 **flowing, could be moving right to left and they**  
9 **would have no affect on each other.**

10 A. Only to the extent that where the  
11 boundaries meet there would be a little bit of  
12 mixing, but yes, you could have very different  
13 flows in the two aquifers.

14 **Q. The boundaries could be 10 feet of**  
15 **rock I'm assuming.**

16 A. Yes. There can be impermeable rock  
17 that separate, largely separate the two aquifers,  
18 yes.

19 **Q. And no way to think about the**  
20 **characteristics of the rock at Labadie?**

21 A. At Labadie the wells that they've put  
22 in have gone down and tagged boulder beds where  
23 they couldn't drill any further or in one case they  
24 described they hit weathered limestone but I'm  
25 unaware of any of the wells associated with the

1 utility waste landfill that has penetrated what  
2 would be considered an impermeable layer or a  
3 confining layer. That was one of the things that  
4 Andrews Engineering wanted but decided they could  
5 live without.

6 Q. Okay.

7 Thank you, sir.

8 JUDGE WOODRUFF: Recross based on  
9 questions from the bench then beginning with I  
10 believe Staff.

11 MR. WILLIAMS: No questions.

12 JUDGE WOODRUFF: Public Counsel.

13 MR. MILLS: No questions.

14 JUDGE WOODRUFF: Ameren?

15 MR. TRIPP: No questions Your Honor.

16 JUDGE WOODRUFF: All right.

17 Redirect?

18 A. Excuse me Your Honor, could I take a  
19 bathroom break?

20 JUDGE WOODRUFF: Yes.

21 (RECESS TAKEN BY PARTIES)

22 JUDGE WOODRUFF: Okay. We're back  
23 from our break and we will go ahead with  
24 redirect.

25

1 EXAMINATION

2 QUESTIONS BY MS. LIPETES:

3 Q. Mr. Norris I'd like to start with the  
4 question about the EPA regulations. You talked  
5 about the two foot, you talked with Mr. Tripp about  
6 the two foot separation that the proposed EPA  
7 regulations require between the base of the  
8 landfill, the two foot requirement in the proposed  
9 EPA regulations between the base of a landfill  
10 liner and the upper limit of the natural water  
11 table and most of the questions you got, or a lot  
12 of questions you got on that subject pertained to  
13 the sumps, the base of the liner in the vicinity of  
14 the sumps which is where the leachate collects  
15 coming out of the landfill with contaminants from  
16 the coal ash, correct?

17 A. Yes.

18 Q. And the questions were asking about  
19 the difference between where the landfill liner is  
20 when it's constructed versus after settlement, some  
21 of those questions, correct?

22 A. Yes.

23 Q. Now I think you testified that Ameren  
24 has said that the base of the landfill liner will  
25 be at -- sorry. The natural ground water table

1 Ameren has defined at elevation 464, correct?

2 A. Yes.

3 Q. Where does Ameren say in Appendix Z  
4 that the base of the liner will be in the vicinity  
5 of the sumps without considering settlement, just  
6 where it's being constructed?

7 Do you need to look at Appendix Z?

8 A. Well, within Z I don't specifically  
9 know where they talk about an unsubsidized feeling  
10 but throughout the permit most of the diagrams only  
11 show the constructed depths.

12 Q. Okay.

13 MS. LIPETES: Can I show the witness  
14 a document to refresh his recollection?

15 JUDGE WOODRUFF: You may.

16 Q. (MS. LIPETES) (Indicating).

17 Mr. Norris, have you had an  
18 opportunity to refresh your recollection upon  
19 reviewing Appendix Z which was submitted as an  
20 attachment to Giesmann's Schedule 23?

21 A. Yes.

22 Q. And does it indicate where Ameren  
23 intends the base of a landfill liner to be in the  
24 vicinity of the sumps at the point of construction  
25 without taking settlement into account?

1           A.       Within the text it makes that  
2       statement on page 3 just above, in the paragraph  
3       just above the section 2.0 technical basis.

4           Q.       And what information is provided in  
5       the text as to the elevation of the base of the  
6       landfill liner in the vicinity of the sumps at  
7       construction?

8           A.       Yeah. Upon construction it is  
9       designed to be at an elevation of 463.

10          Q.       And if it was two feet above what  
11       Ameren has defined as a natural water table what  
12       would the lowest point of the landfill liner need  
13       to be?

14          A.       It would need to be two feet above  
15       464 which would be 466.

16          Q.       Thank you.

17                    You made a statement about Ameren  
18       having avoided collecting some relevant ground  
19       water data and then I think you were directed into  
20       other areas and I'd like to go back so that you can  
21       complete your thoughts there. What additional,  
22       because, and there were many questions about the  
23       fact that you didn't have data to support this and  
24       you didn't have data to support that. But you  
25       don't have access to the Ameren plant site, do you?



1 A. No.

2 Q. And you don't have access to the  
3 proposed landfill site, do you?

4 A. No.

5 Q. Okay. What data would you need to  
6 determine first of all whether the existing ash  
7 ponds are leaking, are causing ground water  
8 contamination in that area so that you could answer  
9 definitively whether contamination is being caused  
10 and potentially affecting the utility waste  
11 landfill site?

12 A. Sure. You would need wells in the  
13 vicinity of the existing ash ponds, particularly  
14 the unlined ash pond because it is the one most  
15 likely to be impacting ground water so you would  
16 need wells there and at sufficient, at sufficient  
17 depths, in other words not just at a single  
18 elevation to establish whether or not contaminants  
19 are leaving the site. There were monitoring wells  
20 in at least part of that location at one point that  
21 are, it's been said there is no, there were no,  
22 there was no water quality data collected at those  
23 wells then further from the site. If you're  
24 establishing, if you've established that there is  
25 ground water contamination then you would want to

1 look in the direction the ground water's flowing to  
2 see how far the plume has gone and to do that you  
3 would need the horizontal direction of flow as well  
4 as the vertical direction of flow because as ground  
5 water flows down through an aquifer if that ground  
6 water has a plume it carries that plume with it and  
7 the further you get the more important, the further  
8 you get away from a potential source the more  
9 important that is. Particularly in alluvial  
10 aquifers where you are always adding fresh water to  
11 the top of the aquifer, every time it rains you're  
12 bringing in a source of fresh water so even if you  
13 contaminated the aquifer initially at the surface,  
14 at the water table say, as that water moves the  
15 plume goes down because if for no other reason  
16 you're adding fresh water on top of it and then if  
17 there's vertical flow downward that's also moving  
18 the plume downward. So the further away you are  
19 the more important it is to look within an aquifer  
20 and potentially even at the bottom of the aquifer  
21 in order to track the plume. So by the time you're  
22 3, 4, 5,000 feet away from the potential source in  
23 an alluvial aquifer like this you want to be  
24 looking for contamination, looking for the source,  
25 or looking for the position of any contaminants

1 that have left, the middle or the lower part of the  
2 aquifer and this is well documented and even has  
3 been documented at Ameren's Meramec site where the  
4 contamination from the lagoons at that site are  
5 virtually at the bottom of an 80 foot alluvial  
6 aquifer. So the opportunities that have been  
7 available during the DSI there it was years worth  
8 of data collected 20 to 30 feet below the top of  
9 water but down within the upper middle portion of  
10 the aquifer, at least it's low enough you might be  
11 able to pick up the upper part of a plume were it's  
12 going there and apparently absolutely no ground  
13 water quality data were collected, it's not  
14 required as part of the DSI but it strikes me as  
15 borderline bizarre that a company with knowledge  
16 that these kinds of facilities leak and trying to  
17 establish the efficacy of a monitoring program at a  
18 place that for all available data is downgradient  
19 from what one would request to be a contamination  
20 site would not just out of curiosity sake have  
21 checked to see whether or not that was the case.  
22 But they didn't. They've designed a monitoring  
23 system for the new landfill that is at the water  
24 table. Water table particularly an alluvial  
25 aquifer is one of the most difficult chemical

1 places to try and find inorganic contaminants for  
2 some of the reasons that have been discussed in  
3 other testimony and in particularly the force of  
4 oxygen that you see in ground water almost  
5 guarantees that the noise at the water table is  
6 going to obscure anything but the most catastrophic  
7 failure if the plume stays at the water table. My  
8 experience and model and I've done through the  
9 years makes it clear that the existence of a water  
10 tight landfill creates a downward movement of  
11 shallow water underneath it which means that the  
12 landfill itself is going to tend to create a  
13 downward flow of anything that does escape the  
14 landfill and it's very unlikely that a water table  
15 monitoring system is going to be able to detect  
16 leakage because the plume will just pass underneath  
17 the wells. This was one of the reasons explained  
18 by Andrews Engineering in its criticism that three  
19 dimensional data needed to be collected, you needed  
20 to have deep wells in order to know what the  
21 vertical gradients are at the site of the landfill  
22 in order to be sure you're monitoring in the right  
23 place at the right times to catch anything that  
24 leaks and Andrews also pointed out that that would  
25 give the opportunity to know whether or not there

1 is an existing plume under that site that will  
2 interfere with ground water monitoring of the new  
3 proposed facilities. So the water table wells are  
4 not a good choice to look for that plume. The DSI  
5 wells were at least reasonable but were not used  
6 for that purpose.

7 Q. Thank you.

8 Mr. Norris you were asked some  
9 questions about Commission Exhibit 1000 which is an  
10 Ameren schematic and it shows homes and wells due  
11 out of the plant. I'd like to hand you what, if I  
12 could just ask for a clarification, we've  
13 pre-marked all of the public hearing exhibits, I  
14 believe they're already all in evidence so I don't  
15 need to move them in.

16 JUDGE WOODRUFF: That is correct. At  
17 some point you'll need to offer them again just so  
18 we make it clear for the record that they are in  
19 the record.

20 MS. LIPETES: Would it be okay for me  
21 to do that now before I forget?

22 JUDGE WOODRUFF: Yes.

23 MS. LIPETES: Thank you. I'd like to  
24 move that Intervenor's Exhibit 302 to 309 be  
25 admitted formally into the record.

1 JUDGE WOODRUFF: Okay. As I  
2 indicated those are exhibits that were admitted at  
3 the public hearing so they're already in evidence.  
4 I just want to make clear that they are being  
5 received into the record today if there's an appeal  
6 and so forth.

7 Response?

8 MR. LOWERY: Just a point of  
9 clarification. The only ones we're talking are the  
10 ones the Commission ultimately ruled were going to  
11 be admitted into evidence, there were a number that  
12 were admitted at the Oakville hearings that have  
13 since been stricken from the record and those are  
14 not being moved for admission.

15 JUDGE WOODRUFF: That's correct. And  
16 LEO and Sierra Club pre-marked all these exhibits  
17 and I believe have already been given to the court  
18 reporter, is that correct?

19 MS. LIPETES: Yes.

20 JUDGE WOODRUFF: So 302 through 339  
21 will be received.

22 MS. LIPETES: May I display 333 on  
23 the Elmo?

24 JUDGE WOODRUFF: Sure.

25 Q. (BY MS. LIPETES) Mr. Norris, I guess

1     it's behind you, sorry, is a map, the exhibit  
2     markings just, there it is. This is Exhibit 333  
3     and it's a map that the red dots are wells  
4     identified, ground water wells identified by the  
5     Missouri Department of Natural Resources in the  
6     vicinity of the proposed landfill. The map was  
7     prepared at a point when the landfill footprint was  
8     a little bit larger than it currently is so that's  
9     the area in back of it then proposed landfill and I  
10    just wanted you to describe the wells in, with  
11    reference to the proposed landfill in the plant  
12    that they're not all due south, are they?

13           A.     No. On this diagram the dark black  
14    polygon is the original footprint of the, of the  
15    utility waste landfill, it is as you say somewhat  
16    smaller, in particular it is missing part of the  
17    northeast corner.

18           Q.     If you could focus on the wells and  
19    to what extent the wells might be at risk and to  
20    what, in a manner that would be different from what  
21    one might think by just looking at Exhibit 1000?

22           A.     The wells that are east and out of  
23    the footprint of the landfill are wells that are on  
24    a year round basis in the direction of flow from,  
25    in the alluvial aquifer under the proposed waste.

1 That these wells here if you take the flow  
2 directions that were mapped during the DSI, those  
3 are directly in the path of that flow.

4 Q. Okay.

5 A. That's the concern.

6 Q. And if the alluvial aquifer gets  
7 contaminated how might that contamination get to  
8 the bedrock aquifer where those wells draw their  
9 water?

10 A. Well, water will always move in a  
11 downgradient direction. At the location of the  
12 proposed landfill in the southern half of it the  
13 downgradient direction and the alluvial aquifer  
14 horizontally is from west northwest to east  
15 southeast. That water will continue to flow down  
16 gradient and for example if those wells in their  
17 collective pumping have reduced the heads in the  
18 bedrock then the down gradient direction is from  
19 the alluvial aquifer into the bedrock aquifer just  
20 as the schematic that says what you normally expect  
21 to see is that the bedrock aquifer flows toward the  
22 river and flows up through the alluvial aquifer to  
23 the river, the indication we have right now with no  
24 evidence beyond the south portion of the landfill  
25 footprint is that the downgradient direction



1 horizontally is toward the area of those bedrock  
2 wells. We know that in a community where water is  
3 being pumped the natural heads, the natural levels  
4 of water, are going to be reduced by that pumping.  
5 The degree to which the collective community drops  
6 that down depends on the property of the aquifer at  
7 that point and no one has looked into that yet.

8 Q. Just a couple more questions.

9 Attached to your cross surrebuttal  
10 testimony at the very back, the last three pages  
11 you have some maps here. Could you, and they  
12 address possible areas for alternative locations  
13 for utility waste landfill that would not have the  
14 same risks as are at the Labadie site with the  
15 ground water table, floodplain and earthquake and I  
16 realize that you already testified that you didn't  
17 try to do Ameren's work for them and that Ameren  
18 didn't look at alternative sites for the Labadie  
19 facilities but I'd like for you to explain what you  
20 did do to show what Ameren could have done if they  
21 had undertaken such an alternative evaluation.

22 A. Sure. The two principle aspects of  
23 the proposed utility waste landfill that are  
24 environmental problems for the existing facilities  
25 that could be pretty readily avoided are seismic

1 hazard and floodplain location. The suggestion has  
2 been offered that Ameren looked as far away as 165  
3 miles from the Labadie plant to the southeast and  
4 we said, well, what if you looked instead of going  
5 across a metropolitan area you prepared it for  
6 potential sites that would lie to the west, a  
7 comparable difference, as far away as 165 miles.  
8 So that's what these three images do. The first  
9 one is a map of the Missouri seismic hazard which  
10 locates the plant and it shows that as you move to  
11 the west away from the Labadie plant the seismic  
12 hazard drops off. And it drops off quickly enough  
13 that you don't have to go very far before you get  
14 out of territory that is designated as a seismic  
15 hazard area. It doesn't get you away from  
16 earthquakes and you still have to engineer around  
17 earthquakes, but the force of a total drop off in  
18 the seismic hazard is that if for instance you  
19 design for an earthquake that occurs with a two  
20 percent possibility in a 50 year period which is  
21 what the preliminary site investigation talked  
22 about then the one percent earthquake in a 50 year  
23 period which would be significantly bigger would  
24 not be as incrementally large as would be if you  
25 were out where the 50 year earthquake was smaller

1 so it would be the bigger earthquake so that the  
2 amount of variation between what you've designed  
3 for and what say the next population you might look  
4 for is not nearly as big the further you are out  
5 away from the center of your risk zone. So moving  
6 out lowers the engineering requirements for the  
7 facility itself and if you take the same  
8 engineering requirements with you will have much,  
9 if you take the same engineering design with you  
10 you will have a much more robust facility for that  
11 earthquake that occurs greater than what the design  
12 criteria is.

13                   Getting out of a floodplain is pretty  
14 easy, I think most of us know how to do that in a  
15 car but the next map is a map that has the location  
16 of the major rivers that occur to the west of the  
17 Labadie site for the next 165 miles. If you keep  
18 away from the rivers you're going to keep away from  
19 floodplains and there are major rivers that cross  
20 that terrain but they're not, they are not common  
21 and they're easy to avoid.

22                   The third potential set of risks are  
23 what are called geologic risks which are faults,  
24 sinkholes and land slide potentials and the third  
25 map depicts the state data on where those things

1 have been mapped and are shown and it is not a  
2 slough that is completely free of those things, you  
3 would need to avoid certain particular areas but  
4 compared to other areas of Missouri, particularly  
5 to the south and east where the suggestion is made  
6 that those sites were comparisons for Labadie the  
7 ability to avoid those kinds of situations is far  
8 greater as you move to the west. So you avoid  
9 populations, you avoid floodplains, you reduce the  
10 seismic effort and all at distances substantially  
11 less than 165 miles. So an alternative site could  
12 have been looked at for the Labadie site, were one  
13 to want to use rail that's available to you and  
14 certainly gondola cars can and have been used to  
15 transport coal combustion waste. The removal of  
16 the waste from the Kingstone collapse has been done  
17 using gondola cars, they do have to use containment  
18 to keep the ash from blowing but it's as simple as  
19 literally a big plastic bag that's called a  
20 burrito. It's asserted that's very expensive and  
21 would require prohibitive costs but no costs have  
22 been offered as to what that would be, but were one  
23 to look at it and as part of a whole package for an  
24 alternative consider that the railroads are there  
25 to do that.

1 Q. Just one last question Mr. Norris.

2 Mr. Tripp raised a licensing issue that had arisen  
3 a number of years ago in Indiana, that was reversed  
4 was it not?

5 A. Yes.

6 Q. And you've been licensed in Indiana  
7 since 2002 have you not?

8 A. I have.

9 Q. And regularly reinstated?

10 A. Yes.

11 Q. And you've also since that you've  
12 been licensed initially and then reviewed on a  
13 regular basis in Pennsylvania, Georgia, Kentucky,  
14 Virginia, Missouri, Georgia and South Carolina, is  
15 that correct?

16 A. With the exception that I have not  
17 been renewed yet in Georgia and South Carolina  
18 because I've just gotten that license to start  
19 with.

20 Q. Thank you.

21 MS. LIPETES: No further questions.

22 JUDGE WOODRUFF: Commissioners have  
23 any other questions?

24 COMMISSIONER STOLL: I have one.

25

1 EXAMINATION

2 QUESTIONS BY COMMISSIONER STOLL:

3 Q. Mr. Norris I want to ask you, we've  
4 had a lot of discussion about the potential risk of  
5 contamination with this utility waste landfill. I  
6 was wondering how do you, do you see a difference  
7 between the dry coal ash type landfill that Ameren  
8 has proposed here as compared to the slurry coal  
9 ash as far as potential for contamination?

10 A. Yes, I do. And short term certainly  
11 the lagoon setting is far worse. It is  
12 particularly far worse when it's an unlined lagoon,  
13 I mean that's the worst of all possible intentions  
14 probably. The reason being that water is what coal  
15 ash reacts to. It is created in an environment  
16 where when it comes in contact with water it reacts  
17 with it, it responds with it, water dissolves  
18 things from it, water causes the materials in coal  
19 ash, the oxides and the minerology to reform into  
20 other crystals, other forms of minerals and as part  
21 of that process some of the materials reach out  
22 into the water, if the water gets out then so do  
23 those minerals and so by putting it into a lagoon  
24 you're putting it into an environment that  
25 accelerates those activities. Those activities are

1 going to go on in a landfill where you only add  
2 enough water to keep the dust down or to form a  
3 particular texture, it will take longer but  
4 eventually as your containment fails and as parties  
5 have access to it it will create the same  
6 reactions, it would create the same  
7 responsibilities but it will be deferred down the  
8 road. To the extent that a problem deferred is  
9 better then I would say a landfill that does not  
10 transport the waste into it by liquid is preferable  
11 to one that does. But.

12 **Q. So what are the potential hazards**  
13 **from the dry coal ash landfill? Is it the runoff**  
14 **water that, and what it carries with it, or?**

15 A. It's water that comes in contact with  
16 the waste so within the context of a, well within  
17 really any context that's the definition of what a  
18 leachate is. It is water that has come in contact  
19 with the waste. So initially the design of a dry  
20 landfill is going to, is going to minimize that  
21 contact of water and you have a leachate that you  
22 hopefully are, have the liner systems and things  
23 that are designed right, remain right and you  
24 collect that water and you properly, you properly  
25 manage it. Through the generations when

1 measurement of the facilities ceases then the  
2 containment either disintegrates, plastic liners  
3 don't last forever, land lines grow on top of your  
4 cap and penetrate into the waste, you start getting  
5 more and more water infiltrating the waste, you  
6 produce more and more leachate and so it's the same  
7 problem, it's the leachate that comes off either  
8 facilities that creates the problem for the  
9 aquifer.

10 Q. Okay.

11 I will just finish with that then.

12 Thank you.

13 A. Sure.

14 JUDGE WOODRUFF: Commission Hall?

15 COMMISSIONER HALL: Yes, maybe one  
16 question, maybe a couple.

17 EXAMINATION

18 QUESTIONS BY COMMISSIONER HALL:

19 Q. Is it possible to quantify  
20 remediation costs for environmental hazards caused  
21 by this particular landfill? And I'm not asking  
22 whether you have quantified it, I'm asking whether  
23 it is possible?

24 A. Yes. It is. If you consider the  
25 larger earthquake you can look at the types of



1 failure that will occur and then you can make an  
2 engineering assessment of what it is you would have  
3 to do to return the integrity to the facilities so  
4 it will once again contain waste. If you have a  
5 landfill that creates a ground water plume, plumes  
6 are dealt with very frequently, designing  
7 hypothetical systems for a plume is just almost  
8 routine for some corporate entities, some  
9 engineering firms, that's what they do so you can  
10 play any number of what if situations to put a cost  
11 to remediation of ground water contamination, flood  
12 damage if your shields on this facility get washed  
13 away as a result of a larger flood it's very easy  
14 to figure out the costs of repairing the side of  
15 your berm and installing a new shield on it.  
16 That's not, there's no magic and there's no,  
17 nothing that prohibits any of those activities.

18 **Q. So it's your testimony that it is**  
19 **possible to quantify these costs but you have not**  
20 **made effort to do so.**

21 **A.** No. And we are not an engineering  
22 firm, I mean somebody would want to be an  
23 engineering firm, you'd want to use an engineering  
24 firm to come up with those costs. If I were to try  
25 and do -- well, I wouldn't be the one to do it

1     anyway, it would be someone I would retain to do  
2     it.

3             **Q.       Okay.   Thank you.**

4             JUDGE WOODRUFF:   Anyone wish to  
5     recross based on those additional questions from  
6     the bench?

7             Yes Mr. Tripp.

8                     EXAMINATION

9     QUESTIONS BY MR. TRIPP:

10            **Q.       Mr. Norris, you were just talking**  
11     **about quantifying I guess costs for these different**  
12     **scenarios, is that the line of questioning you were**  
13     **just responding to, do you recall that?**

14            A.       Yes.

15            **Q.       And we were kind of reminded**  
16     **yesterday about the practice of geology versus the**  
17     **practice of engineering.   You're a registered**  
18     **geologist, aren't you?**

19            A.       Yes.

20            **Q.       Not an engineer.**

21            A.       That's correct.

22            **Q.       So when you talk about the**  
23     **possibility that to quantify those things you refer**  
24     **necessarily then to engineers, correct?**

25            A.       Yes, that's what I indicated is that

1 would be who you would have make those cost  
2 estimates.

3 Q. Mr. Norris, have you ever even seen  
4 an engineering analysis done of the types of things  
5 that you're talking about in terms of what, 40  
6 years, 50 years down the road what could happen and  
7 what those costs might be, have you seen an  
8 engineering analysis of that?

9 A. No.

10 Q. All right.

11 MR. TRIPP: No other questions.

12 JUDGE WOODRUFF: Additional redirect?

13 MS. LIPETES: No.

14 JUDGE WOODRUFF: Then Mr. Norris you  
15 can step down.

16 And that ends the proceedings for  
17 today. We'll come back tomorrow at 8:30 with Dr.  
18 Gass.

19

20

21 (Whereupon, the hearing adjourned at 1:18 p.m.)

22

23

24

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## 1 REPORTER CERTIFICATE

2

3 I, SUZANNE BENOIST, Certified Shorthand  
4 Reporter, do hereby certify that there came before  
5 me at the Missouri Public Service Commission, 200  
6 Madison Street, Jefferson City, MO 65102, the  
7 above-referenced parties, that the proceeding was  
8 translated and proofread using computer-aided  
9 transcription, and the above transcript of  
10 proceedings is a true and accurate transcript of my  
11 notes as taken at the time of said event.

12 I further certify that I am neither attorney  
13 nor counsel for nor related nor employed by any of  
14 the parties to the action in which this examination  
15 is taken; further, that I am not a relative or  
16 employee of any attorney or counsel employed by the  
17 parties hereto or financially interested in this  
18 action.

19 Dated this 6th day of April, 2014.

20

21

22 SUZANNE BENOIST, RPR, CCR, CSR-IL

23

24

25

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