

ILLINOIS POLLUTION CONTROL BOARD

SIERRA CLUB, ENVIRONMENTAL LAW)
AND POLICY CENTER, PRAIRIE RIVERS)
NETWORK, and CITIZENS AGAINST) PCB 13-15
RUINING THE ENVIRONMENT,)
Complainants,)
vs.)
MIDWEST GENERATION, LLC,)
Respondent.)

REPORT OF THE PROCEEDINGS held in the
above-entitled cause before HEARING OFFICER
BRADLEY P. HALLORAN, taken by Raelene Stamm, CSR,
Certified Shorthand Reporter licensed by the State
of Illinois, at 100 West Randolph Street, Chicago,
Illinois, on the 13th day of June, 2023, commencing
at the hour of 9:00 a.m.

Reported By: Raelene Stamm, CSR

License No.: 084-004445

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APPEARANCES: (Continued)

MS. JENNIFER T. NIJMAN

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On behalf of the Respondent.

ALSO PRESENT:

MS. DAGMARA AVELAR, Public Comment

MS. DESTINY ORTIZ, Public Comment

MS. ANN TAYLOR, Public Comment

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I N D E X

WITNESS	DX	CX	RDX	RCX
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NUMBER	MARKED	ADMITTED
Respondent Exhibit		
No. 1701		184
No. 1702		185

1 HEARING OFFICER HALLORAN: All right. We're on
2 the record. Good morning, everybody. My name is
3 Brad Halloran. I'm a hearing officer with the
4 Illinois Pollution Control Board, and I'm,
5 likewise, assigned to this case. Today is June 13,
6 2023. This is continued on record from yesterday,
7 June 12. This is PCB 13-15. It's an enforcement
8 case, land and water.

9 I do want to let the record reflect that
10 we have Marie Tipsord from the Board here, general
11 counsel. We have Anand Rao, environmental
12 scientist. We have Essence Brown, environmental
13 scientist, and Vanessa Horton, staff attorney.

14 Right now we're from yesterday continuing
15 in the direct -- Midwest's direct of their two
16 experts, Mr. Maxwell and Mr. Dorgan. But before
17 that we declared, at least for now, public comment
18 day. And I believe Mr. -- Ms. Bugel has a party
19 that wishes to speak, and we can reserve a time if
20 she would like to sit up here or move up here. It
21 looks like the governor took the podium when he
22 left the building, so wherever you feel comfortable
23 with.

24 MS. BUGEL: Thank you. We have

1 Representative Dagmara Avelar present to offer
2 public comment.

3 HEARING OFFICER HALLORAN: Thank you. Could
4 you spell that for the court reporter, please?

5 MS. AVELAR: I'll just sit there, and I'm
6 hoping that I'm projecting high enough. The name
7 is spelled Dagmara, D-a-g-m-a-r-a, Avelar,
8 A-v-e-l-a-r. Can I proceed?

9 HEARING OFFICER HALLORAN: Yes, you may.

10 MS. AVELAR: Thank you. Good morning,
11 everybody, and thank you so much for having me
12 today and thank you for the opportunity to offer
13 public comment this morning. I'm State
14 Representative Dagmara Avelar. I represent the
15 85th District of Illinois which includes the NRG's
16 Will County coal ash pond in Romeoville.

17 I represent the district that's majority
18 Will County with a little bit of DuPage and issues
19 with regard to not just coal ash, but underground
20 groundwater monitoring, et cetera, having issues
21 that are very sensitive to our community.

22 I came here today to offer public comment.
23 Significant portions of my district surrounding the
24 coal ash site are environmental justice communities

1 with working class families living in the
2 surrounding areas. Constituents in my district
3 have been concerned about the impacts and legacy of
4 coal ash pollution for over a decade and have asked
5 to have these sites cleaned to no avail.

6 All of the venues to address coal ash
7 cleanup in the ongoing groundwater contamination at
8 the sites have not delivered action, and the
9 Illinois EPA still has not issued a single draft
10 closure permit. And as we know as well, the USEPA
11 is now only getting around to closing the
12 significant loopholes in its federal coal ash
13 standards.

14 I'm here today because I believe that the
15 Board has a critical -- a critically important
16 opportunity, a moral obligation to act on the issue
17 and help deliver the justice our communities have
18 been demanding for years. To be clear, I do have
19 concerns about the pollution impact of trucking
20 coal ash waste off site as our district is already
21 overburdened with dust and diesel emissions.
22 However, the current status of the coal ash at
23 Romeoville and the company's plan to cap the waste
24 in place are unacceptable.

1 So I am here to urge the Board to reach a
2 timely decision in the case and to require energy
3 to properly clean up their coal ash and remove it
4 from the groundwater. I hope I stayed at the
5 three-minute mark.

6 HEARING OFFICER HALLORAN: You did,
7 Representative. Thank you so much.

8 MS. AVELAR: Thank you so much. All right.

9 HEARING OFFICER HALLORAN: All right. We may
10 proceed with direct of Mr. Dorgan and Mr. Maxwell,
11 if Ms. Nijman is ready.

12 MS. NIJMAN: Thank you. Yes.

13 HEARING OFFICER HALLORAN: We can go off the
14 record for a second.

15 (WHEREUPON, a short recess was
16 taken.)

17 HEARING OFFICER HALLORAN: We're back on the
18 record.

19 (WHEREUPON, the witness was
20 duly sworn.)

21 HEARING OFFICER HALLORAN: Thank you.

22 You may proceed, Ms. Nijman.

23 MS. NIJMAN: Thank you.

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MICHAEL B. MAXWELL,
called as a witness herein, having been first duly
sworn, was examined and testified as follows:

BY DIRECT EXAMINATION

BY MS. NIJMAN:

Q. Good morning. When we left off yesterday,
we were discussing the Joliet 29 station.

Do you recall that, Mr. Maxwell?

A. Yes.

Q. And I believe you left off completing your
discussion about monitoring well one and its
relationship to the northeast area?

A. That's right. That sounds right.

Q. Did you also review sediment data for the
Des Plaines River that was performed in 2008?

A. Yes. We did review that information.

Q. And I believe you also said you reviewed
Army Corps information from 2021 or 2?

A. 2022, yes.

Q. So I'd like to discuss the 2008 data. You
should have in front of you Exhibit 1110, and I
would like to pull up on the screen --

A. 1100 you said?

Q. Yes. No, 1110.

1 A. Got it.

2 Q. Thank you.

3 I'm gonna direct you to -- is this the
4 document that you reviewed?

5 A. Yes, it is.

6 Q. Okay. If I can show you
7 Bates Page MWG 1315 underscore 107873?

8 A. Okay.

9 Q. What is this document, this page of
10 Exhibit 1110?

11 A. So this is titled, Figure 2,
12 Concentrations of Metals That Exceed Sediment
13 Quality Guidelines.

14 Q. And can you describe what we're seeing in
15 the top right-hand corner of this map?

16 A. So in the legend there's a circle that
17 has -- is basically broken up into various
18 different pie slices indicating a total of eight
19 different metal concentrations that is sort of the
20 key for the -- for reporting the data in the
21 various stretches of the river.

22 Q. And I see references to BR in the little
23 white boxes. There's references to BR, and there's
24 also references to DR.

1 **Can you explain what those references**
2 **mean?**

3 A. So BR signifies the Brandon reach of the
4 river which is defined as the reach upstream of the
5 Brandon damn. The DR abbreviation indicates the
6 Dresden reach of the river which is the -- which is
7 immediately downstream of the Brandon reach.

8 **Q. And where is the Joliet 29 station**
9 **relative to the BR and DR indications on this map?**

10 A. So the Joliet 29 station is located just
11 downstream of the BR sample locations. The
12 first -- the most upstream of the Dresden samples
13 are taken in the vicinity of the Joliet 29 station.

14 **Q. And the BR is above the damn.**

15 **Is that what you said?**

16 A. BR is at the damn and above.

17 **Q. And what are you seeing as the results of**
18 **the metals testing of sediment in the Des Plaines**
19 **River?**

20 A. So what they're doing here is they are
21 comparing the reported metals concentrations to a
22 couple of different sediment standards. The first
23 being the threshold effects concentration or TEC.
24 What this is is the concentration in which you're

1 going to have some adverse biological impact to the
2 river environment. And then second -- and that
3 signified -- if there's a concentration above TEC,
4 that's signified in yellow on this drawing or on
5 this figure.

6 And then the other indication or
7 comparison that's made is to the probable effects
8 concentration or PEC, and what this is is it's
9 basically the 50 percent point of impacts where if
10 you exceed that concentration, you're more likely
11 than not to have adverse impacts. So 50 percent --
12 or 51 percent or higher.

13 So the data presented on the various
14 circles throughout the course of the stream, the
15 river, indicate the -- how the concentrations
16 compare to these two standards.

17 **Q. And what are you seeing when you compare**
18 **the BR above the damn versus the DR?**

19 A. So what I'm seeing in the BR samples
20 including BR 08-3, BR 08-4, BR 08-2 and BR 08-1, a
21 majority of those sediment sample locations are
22 exhibiting concentrations that exceed the probable
23 effects concentration, the PEC, and therefore are
24 signified in red on this drawing and indicate that

1 there's more likely than not to be an adverse
2 biological impact based on these sediment
3 concentrations upstream of Joliet 29.

4 **Q. So what is that tell you about potential**
5 **impact to the river from Joliet 29 station?**

6 A. Well, what this tells me is that this
7 river, it's -- there's relatively consistent
8 concentrations of sediment that pose a risk
9 upstream of the river. And so what I'm seeing is
10 downstream of the river, downstream or at the
11 Joliet 29 station, I'm not seeing any type of
12 concentration that's higher than the upstream.

13 **Q. And if we turn to pages -- to**
14 **Bates Number 107876?**

15 A. Okay.

16 **Q. What is this table showing?**

17 A. This table summarizes the analytical data
18 that was just presented in graphic -- or on the
19 figure that we were looking at previously. And it
20 also shows the numeric numbers associated with the
21 TEC and the PEC.

22 **Q. And the TEC and PEC were the standards**
23 **being used?**

24 A. Correct.

1 **Q. Did you also have the opportunity to**
2 **review updated sediment data?**

3 A. We did. There was a study that was
4 performed by the U.S. Army Corps of Engineers
5 related to the characteristics of this reach of the
6 river as it relates to the potential construction
7 of a barrier to prevent the Asian carp, I believe,
8 from ultimately entering Lake Michigan.

9 **Q. Would you locate Exhibit 1111 on your**
10 **desk?**

11 A. Got it.

12 **Q. Have you had the opportunity to review**
13 **this report, the Kaskaskia, K-a-s-k-a-s-k-i-a,**
14 **Engineering Group report dated July 5, 2022,**
15 **revised October 10, 2022, revised October 31, 2022?**

16 A. Yes, I have.

17 **Q. Is this the report you were referring to**
18 **concerning the Army Corps project?**

19 A. Yes, it is.

20 **Q. How was this data relevant to the 2008**
21 **data you reviewed?**

22 A. This was -- this data was collected more
23 recently. It gave some additional insight into
24 what the sediment concentrations were like in the

1 vicinity of the Joliet 29 station.

2 Q. And was that information -- is that
3 information relevant to your opinions?

4 A. I think it is, yes.

5 Q. Why is that?

6 A. It shows that the concentrations are a bit
7 lower overall relative to the 2008 data, and I
8 would also like to point out that the sample
9 locations in 2000 -- in the more recent 2022 data
10 are more -- are closer to the shore, so a little
11 bit more relevant.

12 Q. We heard -- well, you were hear during
13 Mr. Quarles' testimony; is that right, Mr. Maxwell?

14 A. Yes.

15 Q. And did you recall in that -- my
16 discussion with Mr. Quarles that we talked about
17 shoreline samples that the Army Corps took as part
18 of this report?

19 A. When you say shoreline samples --

20 Q. I'm sorry, soil samples, borings.

21 A. Yes, yes.

22 Q. And did you review those boring samples in
23 this report?

24 A. Yes, I did.

1 **Q. What did you find -- well, first of all,**
2 **how many samples were taken?**

3 A. How many borings were taken?

4 **Q. Correct.**

5 A. I believe that there were 10 or 11 along
6 the shore of the northeast fill area.

7 **Q. Let's take a look. I think it was five.**

8 MR. RUSS: I just want to for the record
9 maintain that we have an objection to that exhibit
10 being used.

11 HEARING OFFICER HALLORAN: Okay. What exhibit
12 is it?

13 MS. NIJMAN: 1111.

14 HEARING OFFICER HALLORAN: Okay. So noted.
15 The transcript will so note.

16 BY MS. NIJMAN:

17 **Q. So if you would turn in this report to the**
18 **maps, Attachment A, and you'll see Page 5 of 7 on**
19 **the right-hand side of the maps?**

20 A. Yep.

21 **Q. Okay. So what is that map called?**

22 A. The title of this is, Attachment A, Boring
23 Location Plan.

24 **Q. And can you see the borings on this map?**

1 A. I can. They're noted right along the
2 shoreline, and there's lines pointing to circles
3 indicating the location of the borings.

4 **Q. And does that help you determine how many**
5 **borings there were?**

6 A. Let's see here. So one -- there's six
7 that are shown on Reach 5. And then I believe if
8 you turn to Reach 4, there's another one, two,
9 three, four, five, six, seven or six that are shown
10 on the prior page, Reach 4.

11 **Q. So turning back to Page 5, Map 5 out of 7,**
12 **did you have the opportunity to review the boring**
13 **logs for those borings?**

14 A. Yes, I did.

15 **Q. And what did you find?**

16 A. The materials that were presented in those
17 boring logs were a mixture of sand, silts and
18 clays, and those borings also extended to the
19 uppermost dolomite bedrock. And I think most
20 notably as far as the relevant information as far
21 as data that was useful to us was that none of the
22 borings indicated any CCR materials.

23 **Q. And what did you learn about the sediment**
24 **sampling from this project, Exhibit 1111?**

1 A. So our understanding of this -- the
2 purpose of this project was that sediment samples
3 were collected in order to get a better
4 understanding of what the characteristics of the
5 sediment were, we believe, for purposes of the
6 planned project so that once those dredge spoils
7 were removed, there would be some idea as to how
8 they should be properly managed from an
9 environmental standpoint.

10 **Q. And, again, you heard me discuss each of**
11 **these samples with Mr. Quarles.**

12 **Did you have your own method of reviewing**
13 **this data?**

14 A. I did look at the data, and I did put it
15 into my own summary table.

16 **Q. If I can refer you to the very last page**
17 **of the PowerPoint which is Exhibit 1702, and we'll**
18 **put that up.**

19 **Is this the summary chart of the data that**
20 **you reviewed?**

21 A. Yes, it is.

22 **Q. And what did this data review tell you?**

23 A. So it told me that the vast majority of
24 these concentrations that were reported based on

1 this data are below both the TEC and the PEC.

2 **Q. And why did you choose the BR samples at**
3 **the top of your chart? You selected 110 to 100?**

4 A. Yeah. Those are the most relevant to the
5 shore of the northeast fill area. They're the
6 closest and therefore the most relevant.

7 **Q. So I see in bold at BR 102 one number for**
8 **lead. Do you see that?**

9 A. Yes.

10 **Q. And was that lead finding that you**
11 **referred to in your testimony yesterday?**

12 A. Yes, it is.

13 **Q. And when you compare lead in 2022 with**
14 **what you saw in 2008 that we just reviewed, can you**
15 **come to any conclusions?**

16 A. The concentration of lead in the 2022 data
17 is -- has decreased compared to the 2008 data.

18 **Q. And do you have any indication that the**
19 **lead found in BR 102 was a result of the Joliet 29**
20 **station?**

21 A. No. We did not find that indication. Our
22 focus as directed by the Board was to focus on the
23 groundwater impacts. And the likelihood that
24 groundwater from the Joliet 29 station would be

1 impacting the sediment in this reach of the river
2 we don't think is very great, and the overall data
3 that we've looked at from the 2008 and 2022
4 indicates that the river is -- it's got
5 concentrations of heavy metals in it unrelated to
6 Joliet 29 upstream and downstream.

7 **Q. Did you see results -- higher results of**
8 **lead upstream?**

9 A. We did, yes.

10 **Q. How did this data provide further support**
11 **for your review of the 2008 data?**

12 A. Well, this was a -- it gave us a second
13 data point in time, a second temporal data point,
14 to get a feeling for are conditions improving or
15 are conditions deteriorating. And based on the
16 more recent data, the conditions in the river are
17 actually improving.

18 **Q. Did it help confirm any data from any**
19 **opinions you had from the 2008 data?**

20 A. It -- well, it confirmed that the
21 groundwater from Joliet 29 is not impacting the
22 sediments.

23 **Q. I'd like to go back to your PowerPoint**
24 **presentation and go to Slide 25 of Exhibit 1702. I**

1 believe that's where we left off yesterday. Yeah,
2 we'll come back.

3 Okay. So on slide 25, what are you
4 addressing on Joliet 29 slide 25 concerning data
5 analysis potential receptors?

6 A. So the purpose of this slide is to
7 summarize the data analysis that was performed in
8 terms of what the potential receptors were. What
9 we looked at were both on-site and surrounding land
10 use to begin with in order to be able to evaluate
11 what the risks were.

12 We talked at the beginning of the Joliet
13 section about the surrounding industrial land use
14 regarding the facilities to the north of Channahon
15 Road being industrial, the SRP site to the west
16 being a redeveloped -- an SRP site that was
17 redeveloped into a warehouse site. So the expected
18 future land use was expected to continue to be
19 industrial which played into how we analyzed the
20 data.

21 Relative to receptors, potential
22 receptors, the information from Patrick in the 2010
23 hydrogeologic investigation indicated that there
24 were no potable groundwater wells downgradient of

1 the station which eliminates the receptor in terms
2 of groundwater. Mr. Dorgan mentioned the risk
3 assessment triangle, if you will, if any one of
4 those sides of the triangle are eliminated, then
5 the risks can be controlled.

6 We point out that -- just as further
7 support for the -- that the lack of a risk with
8 regard to groundwater, that the City of Joliet is
9 actually in the process of converting Lake Michigan
10 water for their municipal water. So that's going
11 to just further minimize the chance that
12 groundwater actually poses a risk.

13 And on the prior slide we show Slide 24.
14 We show an ELUC that we discussed yesterday that
15 relates to the adjoining SRP site. That site
16 exhibited some soil and groundwater impacts, and
17 the ELUC was agreed to by Midwest Gen for the
18 benefit of the remedial applicant at that site.
19 And the reason was because there were impacts
20 emanating from that site onto the Midwest Gen
21 property. So that ELUC covers control -- it
22 prohibits the installation and use of groundwater
23 wells in that area.

24 And then the GMZ was also discussed.

1 That's shown in green on this slide here. That
2 applies in response to -- it related to the CCAs
3 that were -- the CCA that was entered in 2012. And
4 then that pretty much covers the on-site potential
5 receptors. The off-site receptors are potentially
6 the Des Plaines River which we've discussed here as
7 well as part of our evaluation.

8 **Q. Looking back at the map you just**
9 **identified on Page 24 of your Exhibit 1702, and you**
10 **show there the GMZ in green?**

11 A. Yes.

12 **Q. Was there a -- in order to obtain the GMZ,**
13 **what was the active control measure that had to**
14 **take place?**

15 A. So the CCA specified that the LEAF Pond 3
16 needed to be refined, and that was -- that was the
17 active -- that was the primary active remedial
18 measure that allowed for the GMZ ultimately to be
19 put in place.

20 **Q. Let's go to the next slide, Slide 26,**
21 **Joliet 29 Groundwater Trend Testing.**

22 **What does this chart describe?**

23 A. So this is a graphical summary of the
24 results of the Mann-Kendall trend testing that was

1 performed that was described in our expert report.

2 **Q. And can you describe what you were seeing**
3 **here at Joliet 29 based on your Mann-Kendall**
4 **testing?**

5 A. Yes. So I really like this summary
6 presentation. The pie chart indicates in dark blue
7 that there's 26 percent of the data that exhibited
8 a downward trend compared to just 10 percent of the
9 data that exhibited an upward trend. So just
10 comparing the upward to downward trends, there's
11 two and a half times the number of downward trends
12 as there are upward trends.

13 Something I don't think I have touched on
14 just yet is the idea of the Mann-Kendall being
15 capable of perform -- of resulting in a conclusion
16 about whether or not something is statistically
17 significant downward or upward. The Mann-Kendall
18 test is rigorous enough not only to identify just a
19 generic, if you will, upward or downward trend, but
20 it's capable of identifying basically a steep
21 downward and a steep upward trend.

22 And so that's indicated in our bar chart
23 on this figure here where only one statistically
24 significant upward trend was identified compared to

1 over ten statistically significant downward trends.
2 So that I think at Joliet in particular is quite
3 telling in terms of what the chemistry is showing.

4 **Q. And I can also refer you to Pages 43 and**
5 **44 of your report where you discuss this trend**
6 **testing. One of the things I see on this circle**
7 **chart is the no trend at 64 percent. What does**
8 **that mean?**

9 **First of all, what does no trend mean?**

10 A. So no trend means that when all of the
11 comparisons are made that is required by the
12 Mann-Kendall test, there's a matrix of comparisons
13 that get done of all of the data. And at the end
14 of the day what that is saying is that the number
15 of positive points when you make those comparisons
16 is equal to the number of negative points. So it's
17 essentially a flat -- a flat line.

18 **Q. Well, can no trend mean two different**
19 **things or --**

20 MR. RUSS: Object, leading question.

21 HEARING OFFICER HALLORAN: Sustained.

22 BY MS. NIJMAN:

23 **Q. How does the no trend data get interpreted**
24 **as to no detect?**

1 A. Yeah. So the fact that there's no trend
2 by itself isn't as telling. I think it is very
3 useful, and we've done so. We've sort of drilled
4 into the no trend results and taken a closer look
5 at the reasons why we're getting no trend. And we
6 were asked about this actually at the deposition,
7 and we drilled in a little bit further to try to
8 provide some useful information for the Board in
9 terms of the breakdown of that 64 percent no trend.

10 And so in looking at the -- at the data,
11 we identified that of the 64 percent of the trend
12 results that were no trends, that ended up being
13 85 individual results. 58 of those or 68 percent
14 of those were primarily related to non-detect data
15 meaning that the data was not reported by the
16 analytical lab.

17 So Mr. Quarles tried to interpret a
18 no trend data as being somehow not positive in
19 terms of the pattern of groundwater quality, but we
20 certainly have the opposite view that the majority
21 of the no trend data is related -- is because the
22 majority of the data isn't even detected which
23 obviously is a good thing.

24 **Q. And you have two notations at the bottom**

1 **of this circle chart. Take the first bullet, what**
2 **is that saying?**

3 A. So when you look at the downgradient
4 groundwater monitoring wells, the trend testing
5 indicates that we're seeing improving groundwater
6 quality in the long term. I should point out that
7 we looked at data from 2010 was the first sampling
8 event through the end of 2020. So we had a full
9 ten years worth of data which in the groundwater
10 statistics world is a pretty robust set of data, so
11 we feel like we can draw some reasonably reliable
12 conclusions based on the quantity of the data.

13 **Q. You mentioned that 68 percent of the**
14 **64 percent of the no trends were non-detect. What**
15 **about the rest of them? What are they?**

16 A. Well, I guess I would want to point out
17 that in many instances a good portion of that data
18 is non-detect as well, just not a majority of the
19 data is non-detect. So as I had indicated
20 previously, it's no trend because there's a few
21 detections here and there that ultimately when you
22 perform the comparisons per the Mann-Kendall test,
23 like I said, you end up with the same number of
24 positive trend signs as you do negative. So that

1 results in a no trend conclusion.

2 **Q. What does the second bullet under the**
3 **circle chart mean?**

4 A. So if you do have a statistically
5 significant increase, and here we've got one,
6 commonly what we'll do is we'll want to look to see
7 whether or not that's meaningful or not. And a
8 statistically significant upward trend by itself
9 wouldn't necessarily be meaningful, but if that
10 were paired with a situation where the
11 concentration was a statistically significant
12 upward trend combined with a concentration that was
13 above some type of a groundwater protection
14 standard, that might give us some concern.

15 The one statistically significant upward
16 trend that was identified at Joliet was not -- did
17 not exhibit any concentrations historically above
18 the Class 1 standard.

19 **Q. If you would look at the next page,**
20 **Page 27 of your Exhibit 1702, what is this map**
21 **showing?**

22 A. This is a map that shows the location of
23 the monitoring wells that we utilized for -- it's
24 actually both the trend analysis as well as the

1 potential groundwater impact to surface water
2 analysis that we'll be discussing here momentarily.

3 **Q. And how close are these wells to the**
4 **surface impoundments?**

5 A. Yes. So this figure here shows that
6 actually they are right up against the waste
7 boundary of the ponds. So, you know, from a
8 practical perspective they really couldn't get too
9 much closer. I think that we've gotten them about
10 as close as they can be to the waste boundary.

11 **Q. Do you recall Mr. Quarles' testimony where**
12 **he was concerned about the distance from the waste**
13 **boundary?**

14 A. I do.

15 **Q. Do you believe -- well, what is your**
16 **opinion about his concern?**

17 A. I think that concern is unfounded because,
18 as I just indicated, there's really not much
19 ability to move these wells any closer to the waste
20 pond than they are.

21 **Q. And earlier yesterday I think you referred**
22 **to the trend testing as conservative. What did you**
23 **mean by that as it relates to Joliet and these**
24 **locations?**

1 A. What I mean by that is that these
2 locations are not at the property line -- at the
3 downgradient property line. They're close to the
4 ponds as we indicated. And once the groundwater
5 flows past these wells, there's still opportunity
6 for natural mechanisms of adverse action dispersion
7 attenuation to take place on the groundwater as its
8 flowing further downgradient. That's only going to
9 act to further reduce the concentrations as they
10 move further down downgradient.

11 **Q. You mentioned your conclusion -- overall**
12 **conclusion about the Joliet 29 Mann-Kendall**
13 **testing. Do you expect your downward trend to**
14 **continue?**

15 A. We do. The reason for that is that the
16 station is no longer producing any CCR. We talked
17 yesterday that the station is going to be -- is
18 expected to stop producing power. So there's no
19 CCR materials there being produced. The ponds
20 don't -- the three ponds don't contain any CCR
21 currently, and the one pond that's subject to the
22 federal and state CCR rules, Pond 2, is undergoing
23 closure pursuant to those rules.

24 **Q. Let's look to Slide 28 of Exhibit 1702.**

1 **It's titled, Groundwater to Surface Water Analysis.**

2 **Is this the risk analysis we were talking**
3 **about yesterday?**

4 A. Yes, it is.

5 **Q. And what does this page show?**

6 A. So this summarizes the scope of the
7 groundwater to surface water risk analysis that we
8 performed.

9 **Q. And can you describe the systems that you**
10 **used?**

11 A. So in order to try to keep it high level,
12 we looked at the average concentration from
13 December 2010 through the end of 2020, the same set
14 of data that we utilized for the trend tests. We
15 utilized the Sanitas software to output the average
16 concentration for comparison purposes. The -- as
17 was mentioned earlier, there's a good quantity of
18 the data that actually is non-detect. And in
19 instances where we had 75 percent or more of those
20 samples that were not reported above the reporting
21 limit, we reported that data for purposes of the
22 comparison using the reporting limit, which again
23 we think is conservative, because if it's reported
24 as less than the reporting limit, using the

1 reporting limit itself is the maximum that
2 concentration could be.

3 That 75 percent threshold is a threshold
4 that's mentioned in the USEPA guidance document
5 regarding calculating the 95 percent upper
6 confidence limits. So that was the source of that.
7 We attempted to cast as wide a net in terms of
8 constituents. We looked at the detection
9 constituents from the 40 CFR 257 Appendix 3, and as
10 well as the assessment of constituents in
11 Appendix 4. And the points of comparison were the
12 surface water standards from 35 IAC 302. And if a
13 water quality standard wasn't available, we
14 compared to the water quality criteria.

15 And the last bullet is the -- is the
16 results, and those results indicate that none of
17 the groundwater concentrations here at Joliet at
18 those downgradient monitoring wells that were
19 marked on the prior figure exhibit a concentration
20 exceeding the surface water quality standard.

21 **Q. I'll also refer you to Page 46 of your**
22 **expert report, Exhibit 1701, where you discuss the**
23 **same results. If you would turn the page to**
24 **Slide 29 of Exhibit 1702 -- well, before we go on,**

1 in your expert report where are all the results of
2 your risk analysis? Are they in one -- I can refer
3 you to Appendix D if that's helpful.

4 A. From recollection, Appendix D.

5 Q. Okay. And so all the data for all the
6 stations is located in your expert report; is that
7 right?

8 A. Correct.

9 Q. Before we look at Slide 29, you had
10 mentioned yesterday that Mr. Seymour also did a
11 risk analysis?

12 A. Correct. Yes.

13 Q. And would you remind folks who Mr. Seymour
14 is?

15 A. Mr. Seymour was the expert for the
16 respondents in the liability phase of the hearing.

17 Q. And how did Mr. Seymour's analysis of risk
18 differ from yours or the Weaver analysis?

19 A. So ours was -- we sort of built upon the
20 risk that Seymour had performed. We use very
21 similar methods and ultimately came to similar
22 conclusions in terms of the risk.

23 Q. You noted that you used average, I think
24 you testified, average concentrations.

1 **What did Mr. Seymour use?**

2 A. I believe he used the individual
3 concentrations.

4 **Q. And you noted that you didn't use all of**
5 **the wells. What did Mr. Seymour use?**

6 A. Mr. Seymour did use all of the wells.

7 **Q. So how do you -- how does that compare**
8 **then?**

9 A. Well, I think that ultimately our
10 evaluation is sufficiently conservative primarily
11 because the wells that we utilized assume that the
12 surface water is right at the well essentially.
13 Whereas, in fact, as was mentioned, there's further
14 groundwater flow that happens before the
15 groundwater actually discharges into the surface
16 water. So we view our assessment as sufficiently
17 significant in terms of evaluating the risk.

18 **Q. How was your analysis -- how did it**
19 **confirm or not what Mr. Seymour found?**

20 A. Well, it confirmed that the overall
21 character of the groundwater is -- it doesn't rise
22 to a level or a concentration that is going to
23 result in an impact to surface waters upon
24 discharge to surface water.

1 Q. Thank you.

2 Looking at this Slide 4, boron, Joliet 29
3 Slide 29 of the PowerPoint Exhibit 1702.

4 What are you showing here?

5 A. This is a graphical presentation of the
6 boron concentrations that were part of our
7 analysis, and it compares to the surface water
8 standard which is shown with the bar towards the
9 top at roughly 7.7 or so milligrams per liter.

10 Q. So the bar at the top is -- would you
11 explain that again?

12 A. That bar is the surface water quality
13 standard that was the point of comparison to the
14 groundwater concentrations across the bottom.

15 Q. And what is this showing for boron at
16 seven wells at the down -- the seven downgradient
17 wells, I believe you said, at Joliet 29?

18 A. So the average concentrations in the wells
19 are substantially below the surface water standard
20 that's shown here with that bar on the upper part
21 of the graph.

22 Q. And you mentioned something a minute ago,
23 and I want to make sure I understand it.

24 Let's say I take MW-4, are you assuming

1 **that the -- in this analysis that the surface water**
2 **is actually at the location of MW-4 for the**
3 **purposes of risk analysis?**

4 A. That is correct. That's the conservative
5 nature of the analysis when that, in fact, isn't
6 true, but for purposes of a conservative
7 assessment.

8 **Q. If we could turn to Slide 30 of your**
9 **PowerPoint, Exhibit 1702, what are you showing**
10 **here?**

11 A. So this is the summary of the conclusions
12 that we've made based upon the data that we've
13 evaluated for the Joliet 29 station.

14 **Q. So what are these points that you've**
15 **listed to support your opinions?**

16 A. So the ponds aren't adversely impacting
17 groundwater. That conclusion is based on a few
18 different things. Primarily the concentrations
19 that are observed in the groundwater are not
20 exceeding the class water groundwater quality
21 standards. We do have this -- I guess let me
22 qualify that, not exceeding the class water
23 groundwater standards attributable to the ponds.

24 The seconds bullet point is MW-09. There

1 are concentrations there that exceed the Class 1
2 standard, and we reviewed the investigation there
3 that based on the 2020 borings that we believe is
4 sufficient to indicate that the concentrations that
5 are observed at MW-9 are related to natural
6 phenomena associated with the sulfite minerals
7 sourced from the native dolomite.

8 The trend analysis also indicates that the
9 concentrations in groundwater are decreasing
10 overall. We talked about that being expected to
11 continue based on the condition of the ponds. The
12 risk that's posed to both on-site and off-site
13 receptors at the Joliet station, we don't believe
14 there's any unacceptable risk based on the analysis
15 that we performed. The groundwater is located
16 based upon the historical hydrogeologic
17 investigations at some depth which provides some
18 separation between potential receptors, so the
19 depth of the groundwater is roughly 25, 30 feet.

20 The historical fill areas are the last two
21 bullets on this slide, and the -- there's a coal
22 combustion byproduct investigation performed at the
23 northwest historical fill area in order to show
24 that the majority of those materials actually do

1 meet the beneficial reuse requirements per the
2 Environmental Protection Act.

3 The southwest fill area, we looked at the
4 monitoring wells from the 1998 Phase 2. The data
5 from those indicates the RCRA metals concentrations
6 are below the Class 1 groundwater quality
7 standards. And we spent some time talking about
8 the lines of evidence with the northeast historical
9 fill area relating to the inspections that they're
10 regularly performed, that the lack of seeps, the
11 lack of stress vegetation, the fact that when
12 erosional issues are identified they get promptly
13 addressed.

14 We talked about the at least transient
15 flow from the northeast fill area historically in
16 the direction of MW-1 near Pond 3, and then,
17 lastly, as it relates to the northeast fill area,
18 the 2008 and the 2022 sediment and boring data that
19 was collected in proximity of the northeast fill
20 area.

21 **Q. Turning to your next slide, Slide 31, of**
22 **Exhibit 1702, and I can refer you to your expert**
23 **report at Page 51.**

24 **What are you summarizing here?**

1 A. So these are opinions in terms of what we
2 recommend moving forward. An important part of our
3 recommended remedies continue to follow the federal
4 and state CCR rules. Midwest Gen has taken the
5 steps to comply with those rules. The closure of
6 the ponds is -- the pond I should say, singular, is
7 proceeding -- the groundwater monitoring is
8 proceeding. So we want to -- we recommend that
9 that continue.

10 There's groundwater monitoring. That's a
11 requirement associated with the GMZ also in order
12 to confirm that the active remedial measure that
13 resulted in attainment of the GMZ continues to be
14 effective, so that quarterly monitoring will
15 continue.

16 Another key aspect of our recommendations
17 is at the time of our expert report we're aware
18 that there are state and federal proposed rules
19 that contemplate covering the historical fill areas
20 likely, and once those come into -- are
21 promulgated, if they become promulgated, we would
22 recommend that Midwest Gen follow those rules in
23 the same way that they follow the existing CCR
24 rules.

1 **Q. I'm looking at Bullet 2, and I see the**
2 **reference to CCR rules per the GMZ.**

3 **Should that be the CCA?**

4 MR. RUSS: Objection.

5 MS. NIJMAN: I'm asking whether there's a
6 typographical error here.

7 HEARING OFFICER HALLORAN: He may answer if
8 he's able.

9 MR. MAXWELL: The GMZ was implemented in
10 response to the CCA, correct.

11 MS. NIJMAN: Thank you.

12 BY MS. NIJMAN:

13 **Q. You mentioned complying with the potential**
14 **new rules -- the proposed new rules for historic**
15 **fill areas; is that right?**

16 A. Yes.

17 **Q. What is your concern about implementing**
18 **any other remedy prior to those rules being**
19 **promulgated?**

20 MR. RUSS: Objection, coaching the witness.

21 HEARING OFFICER HALLORAN: I didn't hear you,
22 Mr. Russ.

23 MR. RUSS: She's coaching the witness, leading
24 question.

1 HEARING OFFICER HALLORAN: Yeah, could you
2 rephrase, Ms. Nijman? Thank you.

3 BY MS. NIJMAN:

4 Q. Do you have an opinion about whether there
5 is a potential conflict that might exist?

6 A. I do, yes.

7 Q. And what is that?

8 A. Our concern is that -- and this is based
9 on instances in the past where Midwest Gen has
10 implemented something in the CCAs. For example,
11 they've lined the ponds in a certain way, and this
12 was pre-CCR rules being implemented. So they took
13 steps that -- in consultation with IEPA related to
14 the CCA to line these ponds in a certain way with
15 HDPE liners. And, low and behold, once the actual
16 CCR rules are implemented, something different is
17 required, and so they end up potentially having to
18 repeat efforts.

19 And so the concern would be that some
20 scope of remedy investigation, what have you, be
21 implemented. And for whatever reason -- based on
22 sound science, judgment, experts, what have you.
23 If that conflicts with the way the rules read when
24 they're ultimately promulgated, that could be

1 wasteful. It could be inefficient. It could
2 result in having to repeat work, and so we would
3 like to avoid that if at all possible.

4 **Q. Based on our discussion about Joliet, and**
5 **refer to Page 54 of your expert report, how does**
6 **this remedy relate to being economically**
7 **reasonable?**

8 A. So it certainly is economically
9 reasonable. The -- it's a continuation of the
10 measures that are in place. The groundwater
11 monitoring is economically reasonable. The
12 groundwater monitoring is there in order to make
13 sure that the concentrations continue on the
14 trajectory that they're own. If something
15 deviates, then something would need to be done; but
16 certainly in our opinion the recommendations, the
17 opinions, indicate that what we've performed is
18 economically reasonable.

19 **Q. And, similarly, how does it relate to the**
20 **question of technically reasonable?**

21 A. I think technically practicable is
22 applicable as well. And it -- the monitoring --
23 monitored natural attenuation or MNA approach is
24 something that -- there's a track record of it.

1 There's a USEPA history of it. So that puts it in
2 the category of it being technically practicable
3 and reasonable.

4 DOUGLAS G. DORGAN, JR.,
5 called as a witness herein, having been first duly
6 sworn, was examined and testified as follows:

7 DIRECT EXAMINATION

8 BY MS. NIJMAN:

9 Q. We are moving to the Powerton station, if
10 you could turn to, Mr. Dorgan, I believe you said
11 you took the lead for the Powerton station?

12 A. That's correct.

13 Q. Turning to Slide 33 of Exhibit 1702,
14 similar to Joliet 29, how did you begin your
15 analysis?

16 A. We took the same approach for each of the
17 four sites starting by looking at the background
18 and the setting in which the sedation is located,
19 in this particular case Powerton station. A few
20 key items that we formed the basis of our early
21 understanding of the sites was the fact that it's
22 been there and operating for just over a century,
23 started operations in 19 -- in the 1920s. That was
24 acquired by Midwest Gen in 1999.

1 The surrounding land uses are a mix with
2 the Illinois River and Powerton Lake being located
3 to the west and north. To the south we have more
4 agricultural uses once you move off the station and
5 across the roads. To the east we have primarily
6 industrial users, and we do have some mixed
7 industrial users further to the east as well. And
8 so that kind of roughed out our understanding of
9 the basic industrial setting that the site sits in.

10 And then of course we try to get our hands
11 around the various basins that exist at this site.
12 Powerton is a little bit unique in that it had more
13 basins than the other stations did. And so the
14 ones that have been previously identified that
15 we've discussed in our report include the ash surge
16 basin, of which each of these shown on the figure
17 to the right, the ash bypass basin, the metal
18 cleaning basin, the secondary ash basin also known
19 as the service water basin, the former ash basin,
20 the east yard runoff basin and the limestone runoff
21 basin.

22 **Q. And all of those basins are located in**
23 **this green area on your map?**

24 A. Yes, that's correct. They're east of the

1 intake channel and fall within the GMZ that was
2 established under the CCA terms.

3 Q. So the green area is for the GMZ
4 designation?

5 A. Yes, that's correct.

6 Q. I'd like you to turn to the second to last
7 page in this Exhibit 1702 which is the summary
8 chart Weaver prepared?

9 A. Yes, that's correct.

10 Q. Would you describe briefly the status of
11 the ponds and the status as it relates to more
12 recent CCR regulations?

13 A. Certainly. So I think a particular note
14 what we've done with this chart for all of the
15 stations is identify whether they are still
16 receiving CCR, and at Powerton only one of them
17 continues to receive CCR. That's the ash surge
18 basin. The others have ceased receiving CCR, and
19 under that column we have the N for no to show
20 that, and then what regulatory program they were
21 covered under relative to the -- when they received
22 materials.

23 And the specific state and federal
24 requirements are shown in that next column which

1 shows that three of the four were covered under the
2 federal and state program. And then just the one,
3 the metal cleaning basin, fell subject to the state
4 program, but not the federal program.

5 And then from there we provide an update
6 on the lining history as we understand it, what it
7 was lined with, when it was lined. You can see
8 most of that lining work dates back to the late
9 '70s. The liners were upgraded a time similar to
10 when the Joliet 29 station upgrades took place
11 ranging from 2010 to 2013, and those were for the
12 ponds that were regulated.

13 And then we move on to discussing what
14 additional steps have been taken as part of the
15 closure planning, and the closure plans for each of
16 those units has are -- have been submitted and, as
17 we understand it, are under review which will
18 eventually once approved allow them to go in and
19 move forward with the closure process.

20 And then a few pieces of information about
21 each basin are shown there in the comments section
22 just helping us keep straight what's planned to
23 occur with each one of them.

24 And then, finally, the groundwater

1 monitoring program that each basin falls under.
2 All of them fall subject to the CCA monitoring
3 program, and others fall under the CCR
4 requirements. And then to the extent ASDs were
5 submitted, those are referenced in the final column
6 of that chart.

7 **Q. Thank you.**

8 **Question, I see the listing for the former**
9 **ash basin, the FAB, and under your comments there.**
10 **Do you recall what the -- what this Board found in**
11 **its interim finding about the FAB?**

12 A. Yes. It's my recollection that the FAB
13 was not identified as a source. And there are two
14 components to the FAB, the north component and
15 south component, and they have plans for addressing
16 those as part of their closure process.

17 **Q. On your chart for the ash surge basin you**
18 **note ACD in the third column from the left.**

19 **What is that?**

20 A. So the alternate source demonstration was
21 an evaluation --

22 **Q. Sorry, ACD. I'm in the third column --**

23 A. Oh, I'm sorry.

24 **Q. -- from the left.**

1 A. Oh, okay. So the ash surge basin had an
2 alternate closure demonstration that was submitted
3 since that is a unit that will continue to receive
4 ash, and that was done because given the
5 circumstances at the site and the timing on how the
6 rules came out, they were going to need more time
7 to come up with their alternative management
8 system. And that's what that particular submittal
9 was helping to establish.

10 **Q. Is an ACD characterized as a delay?**

11 A. No. It's contemplated within the rules,
12 and it's -- the rules recognize that circumstances
13 at these different regulated stations are going to
14 need some flexibility. And that was built into the
15 rules giving them the option of submitting these
16 requesting extensions for, in most instances, a
17 defined time period.

18 **Q. And by rules, are you referring to**
19 **Illinois or federal rules?**

20 A. In this case both, but the federal rules
21 in particular.

22 **Q. Going back to the pages of the PowerPoint**
23 **at Page 34, Exhibit 1702, you mention a historic**
24 **fill area here. What are you describing?**

1 A. Yes. In the previous Board's findings
2 they had one historic fill area that was mentioned,
3 and that's the area south of the bypass basin which
4 is shown here to the bottom right of the figure.

5 MR. RUSS: I have to object to this line. It
6 mischaracterizes the Board opinion. There were
7 five historic fill areas at Powerton described in
8 the -- or historic ash areas described in the
9 Board's Opinion 1.

10 HEARING OFFICER HALLORAN: Well, if Ms. Nijman
11 can rephrase. If not, you can remedy on cross.
12 Thank you, Mr. Russ.

13 BY MS. NIJMAN:

14 **Q. What happened to the area south of the**
15 **bypass basin that was mentioned by the Board?**

16 A. That was an area where a number of years
17 ago there was a temporary need to set down cinders
18 during a turnover that was happening in one of the
19 other basins. And that material was set down, was
20 there for approximately two to three months and, as
21 I understand it in the winter, and then was moved
22 and managed in accordance with the requirements of
23 the site. So it was recognized as having been
24 placed. It was also recognized as having been

1 moved and managed accordingly within a fairly short
2 period of time.

3 Q. Now, in your expert report you also
4 mentioned two other areas that Mr. Quarles said he
5 suspected of being historic fill areas.

6 Do you recall that?

7 A. Yes, I do.

8 Q. And it's on Page 15, I believe, of your
9 expert report. And did you have the opportunity to
10 review Mr. Quarles' rebuttal report on this
11 question?

12 A. Yes, I did.

13 Q. What was Mr. Quarles referring to when he
14 said he believed there was an additional historic
15 area he was concerned about?

16 A. There was one area that was located at the
17 very farthest south area of our figure that he
18 considered to be a suspect historic fill area, and
19 then the second one that he identified was further
20 north. It would be the land in between the intake
21 and discharge channels which are shown kind of
22 towards the center of the figure up towards the --
23 where the Illinois River bend is shown.

24 Q. I'd like you to pull out Mr. Quarles'

1 rebuttal report, Exhibit 1102. It should be in
2 front of you. I'm sorry. Actually, it's in his --
3 well, we'll go there first, his rebuttal report
4 Exhibit 1102 on Page 27.

5 A. I have that.

6 Q. And in this rebuttal report in the first
7 paragraph after the bullet points, what does
8 Mr. Quarles refer to to support his opinion that
9 there might be other suspect areas?

10 A. He is referencing to a figure that was
11 included in his report that showed both a
12 topographic map and an aerial photo.

13 Q. So if we go now to that map, we have to go
14 to his original report at Exhibit 1101, and we have
15 to look at Figure 4.

16 A. I have that.

17 Q. Would you describe what we're looking at
18 here?

19 Let's pull that up on the map if we can,
20 on the screen.

21 A. So this is a split figure that has an
22 aerial photo with various of the site features
23 identified in it including the monitoring wells and
24 the basins. And then this is where he labels two

1 suspect -- well, actually three, but the two to the
2 north are adjacent to each other. So he's
3 identified three suspect disposal areas on this
4 figure, and then he includes the topographic map.
5 They're dated a little bit differently. The aerial
6 photo is from 1961. The topo map was from 1967,
7 but it basically shows the same areas of the
8 property.

9 **Q. And did you have an opportunity to**
10 **determine whether there's a basis for this suspect**
11 **disposal area identified by Mr. Quarles?**

12 A. Not -- not that we're aware of. We
13 mention that in our report and -- that there wasn't
14 any specific evidence or information presented
15 interpreting why he felt that there was the suspect
16 disposal areas, and we weren't aware of any as
17 well. So, again, he's -- I think his conclusion is
18 based exclusively from looking at these maps, and
19 I'm not sure how he got there.

20 **Q. And were you here yesterday during**
21 **Mr. Gnat's testimony?**

22 A. Yes, I was.

23 **Q. Did you hear what Mr. Gnat said about the**
24 **two areas between the intake and the discharge**

1 **channel?**

2 A. His comment was that what he understands
3 about those areas where there is disturbances and
4 the lack of vegetative growth is that's because of
5 the placement of dredging material from the two --
6 the discharge channel and the intake channel having
7 been put there at some point.

8 And I think the only other thing I would
9 point out on the 1967 photo, and you can still see
10 at least remanence of those -- or you can see
11 remnants of those features on the 1961 aerial.
12 There's railroad tracks that are shown utilizing
13 that area of the property for rail operation
14 support for the plant operations.

15 **Q. And why is that relevant to your opinion**
16 **that there were rail lines there?**

17 A. I don't see that they would be trying to
18 place CCR materials in that area if they're using
19 it as part of their facility rail operations.

20 **Q. Going back to your PowerPoint on Slide 35**
21 **of Exhibit 1702, what are we seeing on this map?**

22 A. Again, consistent with what we've done
23 with the other stations, we wanted to frame up the
24 historic investigation work that's occurred at the

1 stations. And this figure shows the locations
2 where soil probes and borings were advanced, where
3 samples were collected, where monitoring wells were
4 installed, and where sediment sampling was
5 performed as part of that historic investigation
6 approach.

7 **Q. Have there been -- has there been some**
8 **investigation to the west of the channels we were**
9 **just talking about, the intake and discharge**
10 **channels that are in the middle of this map?**

11 A. Yes. I think as this figure shows, the
12 investigation was located across the station.
13 Concentration obviously around the ash basins,
14 around the main plant itself, and then of course
15 there's additional borings and wells that were
16 installed further west as part of, in particular,
17 the earlier investigations.

18 **Q. If you would pull up Slide 36, please,**
19 **turn to Page 36 of your PowerPoint.**

20 **What does this summarize?**

21 A. Just a chronological listing of the
22 different investigations that have been performed
23 at the Powerton site.

24 **Q. Okay. So turning to the next page,**

1 **Page 37 is the 1998 Phase 2 ESA.**

2 **What did you learn from this?**

3 A. This was the very early documentation with
4 respect to the investigations that have occurred at
5 the site. There were quite a few data points that
6 were collected. They had 28 soil borings.

7 6 monitoring wells were installed as part of that
8 effort. 17 surface soil samples and 12 sediment
9 samples. And then particularly relevant from MW-1
10 and MW-2 which are near the east yard runoff basin
11 and the former ash basin, that investigation
12 detected no RCRA metals above the Class 1
13 groundwater standards.

14 And main conclusions as outlined in that
15 report was that the groundwater ingestion was not
16 deemed to be a potential exposure pathway, that
17 based on the industrial land use and low potential
18 for human exposure that there weren't direct
19 contact exposures that they were concerned about.
20 And then their ultimate conclusion was that their
21 findings suggested that under the Illinois
22 regulations at the time that there was no further
23 requirement to investigate or remediate the
24 property.

1 **Q. And this 1998 report, when was it prepared**
2 **in relation to Midwest Generation's acquisition of**
3 **Powerton?**

4 A. This was preceding their acquisition of
5 the plant.

6 **Q. Turning to the next page, slide 38 of**
7 **Exhibit 1702, what are you showing here?**

8 A. So this was -- a what they termed at the
9 time a geotechnical investigation that was
10 performed in 2005 similar to the other stations at
11 about the same time. They -- it's our
12 understanding they were beginning to consider their
13 ponds and what kind of condition they were in, and
14 beginning to collect information that would
15 ultimately allow them to plan O&M operations,
16 perhaps some upgrades. So there were a total of
17 nine probes that were done at that time as part of
18 that investigation.

19 **Q. Turning to the next slide, slide 39 of**
20 **Exhibit 1702, I can refer you to Page 38 of your**
21 **expert report for this discussion.**

22 **What are you addressing here in 2010?**

23 A. So in 2010 this now is the effort that was
24 initiated to begin taking a closer look at their

1 impoundments based upon their dialogue with the
2 IEPA. This was the initial voluntary investigation
3 that they did before the CCR rules had been
4 promulgated. They put a total of 10 wells in, and
5 groundwater samples were collected from those
6 wells.

7 Twelve of the CCR -- potential CCR related
8 analytes were not detected. Boron and manganese,
9 however, were detected above the 620 Class 1
10 standards both upgradient and downgradient of
11 select ponds. And this was a one-time event
12 getting a snapshot at the time that the
13 investigation was performed.

14 And then the final conclusion there is in
15 the case of boron, the sole exceedance was
16 identified in an upgradient well. So that was --
17 that was the initial look at the groundwater
18 conditions on a more current basis around their
19 regulated ponds.

20 **Q. And if we turn to the next page, you're**
21 **continuing this discussion?**

22 A. So some useful information came from this
23 effort as it normally does when you put a fairly
24 robust groundwater monitoring network in. They

1 were able to get a good understanding of the site
2 hydrogeology which is primarily sands and gravels
3 that near the surface with the silt seam that
4 intersects or underlies a portion of the site, and
5 then below that more sands and gravels.

6 Groundwater flow as a result of their
7 preliminary evaluation of the data that they
8 collected as part of this effort was that
9 groundwater was flowing to the north which I think
10 is consistent with what they would have expected
11 given the proximity to the river. They did do a
12 water well search as part of that effort, and there
13 were no water wells that were detected downgradient
14 of their ponds between the ponds and the Illinois
15 River.

16 But they did identify two supply wells
17 that provided water to the station, and those were
18 further to the west. They were tested, deemed to
19 have been found to not have exceedances of the
20 groundwater quality standards and were in use at
21 least at one time. I'm not sure about their
22 current status.

23 **Q. Turning to the next slide, Page 41, you**
24 **mentioned the flow direction in 2010. Has there**

1 **been some discussion about two aquifer units at**
2 **Powerton?**

3 A. Yes. As additional wells have been
4 installed, that's given them additional
5 hydrogeologic information, and what has come to be
6 determined is that there's really two monitored
7 units. Mr. Gnat yesterday testified that there is
8 a hydraulic connection between the two and that you
9 see saturated conditions through the soil column.
10 But what you find is that particularly on the
11 western side of this area of the station, you've
12 got this silty seam that is a lower hydraulic
13 conductivity zone, so it's holding up the flow of
14 groundwater.

15 And when you look at the well network in
16 and through and around that zone, you see two
17 separate potentiometric surfaces. You find a
18 shallow zone and a deeper zone. And the shallow
19 zone is being monitored. The deeper zone is being
20 monitored. And they're being contoured accordingly
21 as both a shallow zone and a deeper zone, and that
22 is what is shown on the figure that's up on the
23 screen, Slide 41.

24 **Q. And do you agree with these KPRG**

1 **groundwater flow analyses that you just described?**

2 A. We do. We think this is the proper
3 conclusion and analysis of the groundwater
4 conditions underneath the site. I would also
5 mention that these groundwater flow diagrams have
6 been routinely submitted to the agencies as part of
7 their compliance with the CCAs and with the CCR
8 rules. So the agency has seen these as well.

9 **Q. Do you recall Mr. Quarles disagreeing**
10 **during his testimony with this analysis?**

11 A. I do.

12 **Q. What did he argue?**

13 A. His basic argument was that because the
14 two zones are considered to be interconnected, they
15 should be mapped using all of the wells. And when
16 you do that, you get a much different
17 interpretation of the groundwater flow conditions
18 at the site.

19 **Q. And do you agree with Mr. Quarles?**

20 A. I do not.

21 **Q. For what reasons?**

22 A. Well, for the reasons previously stated.
23 We have at least one of the wells that screens
24 across that silty clay zone which is going to bias

1 the groundwater elevations. When you look at the
2 cross-section that looks at the wells screen and
3 the more shallow interval, the wells screen and the
4 more deeper interval, you clearly see that
5 different potentiometric surface, and as a
6 consequence the wells that KPRG has selected to map
7 these two zones we believe are the proper ones to
8 be using.

9 Q. And do you recall -- you said yesterday
10 you reviewed Mr. Kunkel's testimony in the first
11 phase of this hearing.

12 Do you recall his opinions about these two
13 mapping units?

14 A. I believe he agreed that there were two
15 units.

16 Q. I would like you to pull out Exhibit 1102.
17 Well, before I do, that, would you remind
18 everybody who Mr. Kunkel was?

19 A. Mr. Kunkel was an expert on behalf of the
20 complainants in the earlier phase of the
21 proceeding.

22 Q. Thank you.

23 Yes, Exhibit 1102, Mr. Quarles' rebuttal
24 report, if you would go to Page 28 of that report?

1 A. Yes, I'm there.

2 Q. There's the second full paragraph from the
3 bottom of the page that begins, according to, can
4 you take a minute to review that paragraph?

5 A. This would be the second full paragraph on
6 this page, correct?

7 Q. Yes.

8 A. Yes, I see that.

9 Q. What is Mr. Quarles saying here about the
10 CCR rule and CCR Illinois regulations?

11 A. So he has cited to the rule which in his
12 opinion would justify why all of the wells would be
13 evaluated to create a single contour map, but it's
14 my opinion that this hasn't been applied correctly
15 given the specific circumstances that exist at the
16 station.

17 Q. What do you mean? Would you explain that?

18 A. So if I could just read what the rule
19 states, it says, the uppermost aquifer means the
20 geologic formation nearest the natural ground
21 surface that is an aquifer, as well as lower
22 aquifers that are hydraulically interconnected with
23 this aquifer within the facility's property
24 boundary. Upper limit is measured at a point

1 nearest to the natural ground surface to which the
2 aquifer rises during the wet season.

3 **Q. What does that mean to you with regard to**
4 **groundwater flow mapping?**

5 A. So he earlier made the point that we're in
6 agreement that there is a hydraulic connection
7 between the upper and lower units, but in my
8 opinion the way that the agency specifically
9 recognizes the uppermost aquifer and then lower
10 aquifers that are hydraulically connected
11 acknowledges that there could be two different
12 zones that need to be monitored within the same
13 aquifer. That's what we're saying, and we think
14 that's the correct interpretation of this
15 particular citation.

16 **Q. Does the rule say anything about how to**
17 **map those zones, what you just read?**

18 A. It doesn't specifically, no. That's some
19 professional judgment needed in that.

20 **Q. In the chart -- and we started to talk**
21 **about it this morning, in the pond's chart that we**
22 **went through, you started to talk about -- when I**
23 **asked you about an ACD, you mentioned an**
24 **alternative source demonstration at Powerton?**

1 A. Yes, that's correct.

2 **Q. And I can refer you to Page 30 and 31 of**
3 **your expert report, Exhibit 1701, if you'd like to**
4 **refer to it.**

5 **What is the purpose of an ASD, alternative**
6 **source demonstration?**

7 A. Alternative source demonstration is
8 typically performed when you have been evaluating
9 your downgradient groundwater conditions with
10 respect to your background conditions. And when
11 you detect constituents that are part of your
12 monitoring program that exceed your relevant
13 standard, then you are required to consider the
14 source of that with the specific emphasis on the
15 regulated unit that is immediately upgradient of
16 these downgradient locations.

17 And so in this particular instance testing
18 was done of ash within the basins that we've
19 identified here on Page 30, and the conclusion that
20 was determined was that by comparison of the
21 leachate from the ash with the constituents being
22 detected in the groundwater, that there was not a
23 relationship, and that the regulated unit itself
24 was not the source of the downgradient groundwater

1 quality exceedances of the appropriate compliance
2 standard, and that some other alternative source
3 was responsible for those conditions.

4 **Q. When you mention other alternative source,**
5 **was that identified?**

6 A. It was not.

7 **Q. What do the rules state with regard to**
8 **identifying an other alternative source?**

9 A. They do not specify a course of action for
10 identifying alternative sources.

11 **Q. Do you recall what Mr. Quarles said about**
12 **ASDs and identification of alternative sources in**
13 **his testimony?**

14 A. I believe his basic testimony was that
15 alternate sources were again a way of avoiding a
16 remedy and a way of dispelling the idea that the
17 regulated units are responsible for what's being
18 detected in the downgradient wells.

19 **Q. Do you agree with his assessment?**

20 A. No. The process that they went through is
21 contemplated within the rules. It's there to
22 address these types of circumstances. From what
23 we've looked at and the means in which they were
24 approached and the information that was collected

1 and was submitted, they seem to be consistent with
2 what we would expect to see, and so I think they're
3 simply following through on the following the
4 regulatory requirements.

5 **Q. And if there were an alternate source**
6 **around the pond in this area, how does your**
7 **assessment, your remedy assessment, address that**
8 **alternate source?**

9 A. Our remedy assessment considers, as we've
10 testified previously, the groundwater conditions in
11 those downgradient wells with respect to posing
12 threats to off-site receptors. And so to that
13 extent, alternate sources that may be present, we
14 feel would be reflective -- reflected in the
15 groundwater monitoring that's being performed
16 through the wells that we've selected that are
17 protective of the human health and the environment
18 in the off-site receptors. So it's factored in
19 even if that specific source that might have been
20 referred to has not been identified.

21 **Q. Thank you.**

22 **Let's go to Page 42 of your PowerPoint at**
23 **Exhibit 1702. Is this the ongoing groundwater**
24 **monitoring you were just referencing?**

1 A. That's correct.

2 **Q. And what are you describing here?**

3 A. So at the site quarterly sampling of the
4 groundwater monitoring network continues since --
5 and has began when the CCAs were implemented in
6 202. There's a total of 12 monitoring wells.
7 Those wells are also complying as needed with the
8 federal CCR rules and the Illinois CCR rules. I
9 mentioned that additional monitoring wells were
10 installed after the 2010 study which did allow for
11 improved understanding of what was going on with
12 the groundwater flow and the groundwater
13 conditions.

14 As just we just recently testified, there
15 have been two units identified for purposes of
16 contouring the groundwater elevations. There's
17 this upper silty clay unit, and that unit flows
18 nearly directly west towards the discharge --
19 intake and discharge basins and ultimately Powerton
20 Lake, and then the lower gravelly -- more gravelly
21 sand unit which flows more westerly and
22 northwesterly more towards the Illinois River.

23 And that -- with the program that's in
24 place, there's sampling analysis taking place for a

1 total of 34 constituents four times a year, and
2 that's expected to continue.

3 **Q. Why did you believe it was important to**
4 **summarize this all in one place?**

5 A. So as we've discussed previously, our
6 overall remedy considers the fact that there is a
7 means to continue monitoring groundwater at the
8 stations. Specifically with respect to the MNA
9 alternative that we've been discussing, that's an
10 important component.

11 It allows us to demonstrate that MNA
12 continues to occur, at some point gives us some
13 ability to begin looking at how long it might take,
14 but, most importantly, the sites aren't just gonna
15 be walked away from. We'll continue to watch them
16 and evaluate them, especially now that some of the
17 changes are occurring with closures of the
18 different units that are no longer gonna be used.

19 **Q. Going to Slide 43 of Exhibit 1702, we've**
20 **talked about the GMZ already.**

21 **What are you showing here with regard to**
22 **the ELUC?**

23 A. The map on the left where the green
24 hatching is located is the GMZ that's been

1 established with the IEPA, and then with that goes
2 the environmental land use control, mentioned
3 previously that that document actually attaches to
4 the deed, make sure that any current or future
5 owner of the property understand that there's a
6 restriction in place prohibiting the installation
7 of groundwater use wells within that geographic
8 area of the property.

9 **Q. How did the CCA relining of the ponds, how**
10 **was that relevant to the GMZs?**

11 A. The relining had been a condition of the
12 CCAs when they were originally established. Those
13 relining steps as a means to address the agencies
14 concerned about those being potential sources was
15 corrective measures that was implemented allowing
16 the groundwater management zone to be established
17 and approved by the agency.

18 **Q. Turning to Slide 44, would you discuss**
19 **potential receptors at Powerton?**

20 A. Yes. So, again, our overall strategy was
21 to try to evaluate risk, and risk is a function of
22 whether there's a receptor. And so our evaluation
23 of Powerton looked at both the on-site and
24 surrounding land use. And as I mentioned I think

1 on one of the first slides, the surrounding land
2 uses are primarily industrial, and we would
3 envision that continuing into the foreseeable
4 future just given their character and what
5 properties are being used.

6 We do have some industrial properties to
7 the east, and then of course we've got the water
8 features that are present to the north and the
9 west. Downgradient groundwater quality, there
10 aren't any potable use wells that are in that
11 downgradient zone.

12 Based upon the report that Patrick
13 prepared in 2010, as part of their hydrogeologic
14 investigation, they didn't find any water wells
15 within a 2500-foot radius of the site, but what's
16 most important to us is what's going on
17 downgradient. Use of the groundwater is prohibited
18 under the ELUC, and the GMZ is giving us the means
19 by which to continue monitoring the groundwater and
20 adapting as necessary.

21 **Q. And I wanted to ask you about the water**
22 **well search by Patrick. I think you mentioned**
23 **earlier that there were two wells to the far west;**
24 **is that correct?**

1 A. That's correct. We understand that within
2 that 2500-foot radius there were two wells that are
3 on the Midwest Gen property, but they're located
4 farther to the west over towards Powerton Lake and
5 to the south. And my understanding is that they
6 are tested regularly and found to be compliant with
7 the potable groundwater standards.

8 **Q. And then, lastly, as far as potential**
9 **ecological receptors -- well, we can go into that**
10 **when we get to the additional risk analysis.**

11 **Let's turn to the next page, Page 45,**
12 **groundwater trend testing. What was done here at**
13 **Powerton similar to Joliet 29?**

14 A. Yes. Exactly what Mr. Maxwell testified,
15 this is just the output from the analysis of the
16 Powerton groundwater data. It provides a graphical
17 representation of the output of the trend testing,
18 and I think what we've identified here, the pie
19 chart to the left shows that the majority of the
20 tests were no trend. And similar to Joliet 29, the
21 majority of those no trends were because the data
22 was reported below the reporting limit.

23 So there's actually no data to -- when
24 there's no data to apply a trend to, it's

1 considered a no trend. But of the data that did
2 demonstrate a trend, 30 percent of the analysis
3 showed a downward trend. 6 percent showed an
4 upward trend. And similar to Joliet 29, when you
5 break out the trends, there's a difference between
6 the trend that's not statistically significant and
7 one that is.

8 And as you can see in the bar charts on
9 the right for the downward trends, roughly 25 out
10 of the 70 were statistically significant.
11 Conversely, for the upward trends, only 3 out of
12 the 15 were statistically significant upward
13 trends.

14 So this again is a means to allow us to
15 assess what's going on with the downgradient
16 groundwater quality and demonstrating the degree of
17 plume stability we have and what's happening with
18 the downgradient groundwater chemistry over time.

19 **Q. And similar as to Joliet, were you able to**
20 **look at the no trend data in more detail?**

21 A. We did. And I would maybe ask Mr. Maxwell
22 to touch on that, if he may.

23 **Q. Yes.**

24 **Mr. Maxwell, what did you find about the**

1 **no trend data at Powerton?**

2 BY MR. MAXWELL:

3 A. So the 64 percent at Powerton was a total
4 of 148 trend tests. Of those 148 no trend tests,
5 100 of them related to -- primarily related to
6 non-detect results. That accounts for 68 percent
7 of the total no trend results.

8 **Q. So out of the 64 percent of no trends,**
9 **68 percent of those were no detects.**

10 **Am I saying that correctly?**

11 A. You're saying that correctly. Primarily
12 non-detects, yes.

13 **Q. And when -- what were the others then, do**
14 **you know? So the other 23 percent.**

15 A. Those others would have been instances
16 where there -- in some cases there were some
17 non-detects, maybe just not quite as many. And
18 the -- they resulted in an evaluation. Again, when
19 you run through the Mann-Kendall test process, that
20 the number of upward -- the number of upward
21 comparisons to the data equals the number of
22 downward.

23 And so if you have some of the data that's
24 non-detect, the detection limit is generally

1 consistent, and so that just increases the chances
2 of being a no trend. So that's what accounts for
3 the rest of the no trend results.

4 **Q. Thank you.**

5 **Mr. Dorgan, does the Mann-Kendall testing**
6 **identify if constituents are above or below the**
7 **620 Illinois Groundwater Standards?**

8 BY MR. DORGAN:

9 A. It does not. It simply analyzes the
10 trends that will exist in the data over time.

11 **Q. And turning to -- well, what did this**
12 **chart on Page 45 of your Exhibit 1702 tell you**
13 **about?**

14 A. Yeah. The callout that is shown there
15 below the pie graph just simply summarizes that
16 there were only two constituents at one well with
17 statistically significant upward trends that had
18 concentrations above the Class 1 groundwater
19 standards. And that was for sulfate in TDS MW-13.
20 Just, you know, when you consider the volume of
21 data, these were the only two that exceeded those
22 standards.

23 **Q. At one location?**

24 A. Correct.

1 **Q. Turning to the next page, 46 of**
2 **Exhibit 1702, what are you showing here, Powerton**
3 **groundwater to surface water analysis?**

4 A. So as part of our risk evaluation, one was
5 human health, one was off-site groundwater
6 resources -- or surface water resources, excuse me.
7 So this just summarizes the steps we took to
8 evaluate the risks to the proximal surface waters.

9 **Q. So looking at this map on Page 46, what**
10 **are -- are these the wells that were used?**

11 A. That's correct.

12 **Q. And looking at this map, I'll ask the same**
13 **as I did with Mr. Maxwell.**

14 **How close are these wells that were used**
15 **for your Mann-Kendall, how close are they to the**
16 **waste areas of the ponds?**

17 A. They're very close to the waste boundaries
18 for the ponds that they're positioned near, about
19 as probably as close as you're going to be able to
20 get. And as you can see in this figure, it's cut
21 off. You can't see the Illinois River to the
22 north, but you can see Powerton Lake off there to
23 the northwest. So there's a great deal of distance
24 before you hit either Powerton Lake or the Illinois

1 River to the north.

2 Q. Again, Mr. Quarles mentioned that he was
3 concerned that the wells were -- for the
4 Mann-Kendall testing were too far down, excuse me,
5 that were not close enough to the waste boundary.

6 Do you agree with that?

7 A. I don't agree with that. I mean, you can
8 see it on these maps how close they are. I don't
9 know that you can get any closer, so . . .

10 Q. How does this relate to the conclusion in
11 your report that this -- you used a conservative
12 analysis?

13 A. So we -- again, similar to Mr. Maxwell's
14 testimony for Joliet 29, we looked at the
15 concentrations in those wells and compared them
16 directly to the surface water criteria. And that
17 would not provide any opportunity for those natural
18 groundwater transport mechanisms to take place such
19 as absorption, retardation, diffusion, attenuation.

20 So this would be in laymen's terms. Like
21 those wells are immediately next to the surface
22 waters. And we're showing that there's not a
23 threat even under that scenario, but the reality is
24 there's a great deal of distance that those natural

1 groundwater flow mechanisms are going to act on.
2 Any concentrations being detected in our
3 immediately perimeter downgradient wells are going
4 to attenuate by the time they reach those surface
5 water bodies.

6 **Q. When we were discussing about the**
7 **Mann-Kendall trend testing, I should have asked you**
8 **then. Do you expect those trends at Powerton to**
9 **continue?**

10 MR. RUSS: Object, leading question.

11 HEARING OFFICER HALLORAN: Sustained.

12 Rephrase, please.

13 BY MS. NIJMAN:

14 **Q. How do you see the trends in the future at**
15 **Powerton?**

16 A. Well, we think on the surface with what we
17 are looking at given the current circumstances, we
18 would anticipate continued improvement, continued
19 downward trends. But we also know that at Powerton
20 and the other stations the current regulated units,
21 most of them are going to be going through a
22 closure process, ash being removed, ponds being
23 closed in accordance with their closure permits.

24 We know that ongoing production of ash is

1 going to or has already or will be ceasing. And as
2 a result, that's just another variable that tells
3 us in the absence of ongoing production and
4 management, we should continue to see improvement
5 in that groundwater chemistry over time.

6 **Q. Turning to Page 47 of your Exhibit 1702,**
7 **is this the description of the risk assessment you**
8 **performed?**

9 A. Yes. This just outlines our technical
10 approach, how we did that evaluation.

11 **Q. And, generally, what did you find as to**
12 **the risk analysis at Powerton?**

13 **And I can refer you to Page 46 of your**
14 **expert report.**

15 A. In general, having looked at the average
16 concentrations over time, looked at the frequency
17 at which the data was actually detected in the
18 samples and what's been reported, we considered the
19 full list of monitored constituents including the
20 Appendix 3 detection monitoring parameters, as well
21 as the Appendix 4 assessment parameters. And then
22 we did the comparison to the surface water
23 standards that are outlined at 35 IAC 302. And
24 after having done that, we have assessed that

1 there's not a risk to the off-site surface water
2 conditions.

3 **Q. Let's look again at one example for boron,**
4 **Page 48 of your PowerPoint. What is this showing?**

5 A. So this is just an example of one of the
6 constituents that's being monitored, boron being
7 one of the CCR indicator constituents. What this
8 shows is the concentration on the left Y axis, the
9 wells that are being monitored, what their detected
10 average concentrations along the X axis. And then
11 the blue bar across the top, roughly, let's call it
12 7.7 milligrams would be the criteria for the
13 surface water that was compared against.

14 **Q. And as we talked about with Joliet, how is**
15 **travel distance assumed or addressed in this risk**
16 **assessment?**

17 A. It's not. As I mentioned, travel distance
18 will have an impact on these concentrations, but we
19 use these average concentrations at these wells for
20 purposes of that comparison. It's a more
21 conservative approach.

22 **Q. What is your opinion as to the sufficiency**
23 **of the investigation at Powerton for your remedial**
24 **assessment?**

1 A. We feel as though there's been a great
2 deal of data collected at the Powerton station,
3 that since the CCAs were agreed on and the wells
4 were installed and the wells began being subject to
5 a quarterly groundwater monitoring program, there's
6 been more data collected. We feel as that there's
7 a sufficient spacing and volume of data to allow us
8 the reasonable opportunity to assess a remedy that
9 would be appropriate for the site.

10 **Q. And have you visited the Powerton station?**

11 A. Yes, I have.

12 **Q. You said you were present during**
13 **Mr. Gnat's testimony about his site visits as I**
14 **recall?**

15 A. Yes, I was.

16 **Q. Do you recall what Mr. Gnat said about the**
17 **distance -- and you just touched upon it a minute**
18 **ago -- from the, for instance, the former ash basin**
19 **to the river?**

20 A. I don't recall the specific distance he
21 might have referenced, but it's considerable and
22 heavily vegetated between the water surface and the
23 ash basin.

24 HEARING OFFICER HALLORAN: Ms. Nijman, can you

1 keep your voice up, please? Thanks. I know it's
2 getting two hours in.

3 BY MS. NIJMAN:

4 Q. And in your opinion given the distance to
5 the Illinois River, would you expect to see seeps?

6 A. No, I would not.

7 Q. Looking at Page 49 of your PowerPoint at
8 Exhibit 1702, would you go through the summary then
9 of your conclusions for the remedial assessment
10 analysis?

11 A. So we looked at background data from the
12 upgradient wells to assess what's going on with the
13 regulated units. We feel that those units need to
14 remain compliant with the CCR rules. It appears to
15 us that the necessary steps are being taken to
16 provide that. That should continue. There are
17 regular inspections and notification obligations
18 that go with those programs and that they would be
19 followed.

20 The trend testing that we've done at the
21 downgradient monitoring wells shows that the
22 groundwater is improving over time, and we believe
23 that will continue over the long term. We don't
24 believe that there's an unacceptable risk to

1 on-site or off-site receptors. The downgradient
2 concentrations at downgradient monitoring wells did
3 not exceed the surface water standards.

4 The Board previously concluded that the
5 former ash basin is not a source, and it will be
6 undergoing closure in accordance with plans at the
7 site. There was one location that was identified
8 that ash had been placed and stored there
9 temporarily. That was for a short duration,
10 occurred during the winter months when we would
11 have expected the ground surfaces to be frozen, and
12 it was then removed and managed accordingly. So
13 pretty short duration thing that we concentrated
14 more on the regulated units in the period that
15 they've been operated.

16 And then as Mr. Gnat has testified, our
17 site visit was not as rigorous as what he's
18 required to do as part of his quarterly groundwater
19 sampling, but he had testified as having seen no
20 seeps, and we certainly didn't either during our
21 visit to the site.

22 **Q. Turning to your next page on Page 50 of**
23 **your PowerPoint, what is your recommendation as to**
24 **the remedial assessment for Powerton?**

1 A. Well, as noted, the site should continue
2 to follow both the federal and state CCR surface
3 impoundment rules. And those -- obviously as the
4 stations continue to close down and the different
5 ponds are being brought out of service, those will
6 be continued to be addressed under the rules
7 accordingly.

8 They're in assessment monitoring which
9 should continue. That's the larger, broader range
10 of constituents that are being monitored. If there
11 is exceedance of the groundwater protection
12 standard and it is attributable to the regulated
13 surface impoundments, then the proper corrective
14 action should take place. That's required by the
15 rules. And then complete for those ponds that do
16 need to continue being used, that they implement
17 the closures and as appropriate retrofits to make
18 sure that they are compliant with the current CCR
19 surface impoundment rules.

20 And then we've got the topic of the docket
21 that's before the Board with respect to state
22 regulations for the historic fill areas, and now
23 within the last several weeks there's been a
24 proposal for historic fill area regulations. And

1 as those become promulgated, assuming that they
2 will, that whatever those requirements are then be
3 applied to the site, and they follow whatever their
4 obligations are under those new sets of rules.

5 **Q. How do the GMZs -- GMZ at Powerton, how**
6 **does the GMZ at Powerton relate to your remedy**
7 **assessment?**

8 A. The GMZ is there as we mentioned
9 previously related to the steps that were taking --
10 taken under the compliance commitment agreements.
11 We envision that as long as there are exceedances
12 of the groundwater standards, that that GMZ would
13 continue to remain in place, that the ELUC that
14 goes with that GMZ would continue to remain in
15 place. And as a consequence it provides a means
16 for mitigating potential exposure concerns to use
17 of that groundwater.

18 **Q. How does this remedy analysis comport with**
19 **being technically practicable?**

20 A. We feel what's being done is technically
21 practicable, and we also feel that it's
22 economically reasonable and consistent with our
23 experience at other similar sites.

24 MS. NIJMAN: Mr. Hearing Officer, this would be

1 a good time for a short break, if you don't mind.

2 HEARING OFFICER HALLORAN: Okay. We'll take
3 10 minutes. Before we go off the record I do want
4 to note, and again I was remiss, this hearing today
5 was noticed up previously at 16-504. We are now in
6 16-503, and I have posted a note notifying the
7 people that we had moved. I posted that about
8 8:00 a.m. this morning.

9 Thank you. See you in 10.

10 (WHEREUPON, a short recess was
11 taken.)

12 HEARING OFFICER HALLORAN: We're back on the
13 record back from lunch. It's approximately 11:04.

14 Mr. Russ had a bit of a housekeeping
15 matter. You may proceed, Mr. Russ.

16 MR. RUSS: Thank you. So Exhibit 1111 was
17 admitted as an offer of proof in May, and the
18 testimony regarding that exhibit was marked as
19 being offer of proof testimony. And we're asking
20 that the testimony on this exhibit today also be
21 noted as an offer of proof.

22 HEARING OFFICER HALLORAN: Yes. I'm sorry.

23 Go ahead, Miss Nijman.

24 MS. NIJMAN: May I respond?

1 HEARING OFFICER HALLORAN: Yes, you may.

2 MS. NIJMAN: Experts are in a different
3 position. They are entitled to rely upon
4 information that is not necessarily in the record.
5 That does not make it part of the offer of proof.
6 This expert relied on that information to update
7 previous data, and they are entitled to do so.

8 HEARING OFFICER HALLORAN: Okay. What is
9 Exhibit 1111? I don't have it.

10 MS. NIJMAN: It's the 2012 -- 2022 sediment
11 Des Plaines sampling.

12 MR. RUSS: If I can clarify --

13 HEARING OFFICER HALLORAN: Okay. You know
14 what, let's hold this later cause I don't have the
15 exhibit in front of me, and I'm not sure I can deal
16 with it appropriately now.

17 MR. RUSS: Okay. That's fine.

18 HEARING OFFICER HALLORAN: So, yeah, Mr. Russ,
19 remind me. We'll talk about it later when I have
20 the exhibits in front of me.

21 MR. RUSS: Sure.

22 HEARING OFFICER HALLORAN: You may proceed,
23 Ms. Nijman.

24 MS. NIJMAN: Thank you.

1 BY MS. NIJMAN:

2 Q. Mr. Maxwell, I'd like to go back to
3 something. When we talked about Exhibit 1111,
4 would you pull that up in front of you? And we
5 were looking at the maps in that exhibit when I
6 asked you to identify boring locations?

7 BY MR. MAXWELL:

8 A. Yes.

9 Q. If you would turn to Map 4 of 7, if you
10 look at the legend on the right, what does that
11 say?

12 A. So there are both boring -- it says boring
13 location and sediment grab sample.

14 Q. And it has boring location as what color?

15 A. Pinkish.

16 Q. So when you were identifying boring
17 locations on this map, Map Area 4, were you
18 counting these pink items?

19 A. I believe that I mistakenly included some
20 of the yellow, and so I intended to only include
21 five of the borings along the shore. I counted
22 extra because it was a little confusing in terms it
23 of how it was presented.

24 Q. So if we go back to Page 5 of 7, are those

1 **the five borings you're referring to?**

2 A. Correct. There's five that are shown in
3 pink along the shore there.

4 Q. Thank you.

5 Mr. Maxwell, while we were talking with
6 you, let's move to Will County. If you would pull
7 up your PowerPoint again, Exhibit 1702, we can go
8 right to Page 52 of that exhibit.

9 A. Okay.

10 Q. Similar to Joliet 29 and Powerton, what
11 did you do with regard to background and setting?

12 A. Well, we wanted to take a look -- we
13 wanted to review the surrounding land uses in order
14 to try to get a sense for the overall setting of
15 the station. And in terms of the operation
16 history, first off, it started in 1955 in terms of
17 it actually producing power. There's four surface
18 impoundments that are noted there in purple on the
19 figure on the screen marked as Ponds 1N, 1S and
20 then 2S and 3S moving from north to south. Those
21 ponds were first constructed in 1977.

22 This station ceased burning coal in 2022,
23 so none of the ponds currently receive CCR
24 material. And in terms of the surrounding land

1 use, the -- it's surrounded on two sides by surface
2 water features, the Des Plaines River, and the
3 Chicago Sanitary Ship Canal to the east, the
4 Des Plaines River to the west. There's a gravel
5 quarry operation located to the south of the
6 station, just south of Material Road there shown on
7 the figure. And to the north is various heavy
8 industrial use including a refinery.

9 **Q. Now, on Pages 16 and 17 of your expert**
10 **report you talk about each of the impoundments, but**
11 **let's also go to the second to last page of this**
12 **Exhibit 1702 where you have your summary chart, and**
13 **the bottom station on the summary chart is Will**
14 **County.**

15 **Would you describe some of the key factors**
16 **on this chart regarding current status of Will**
17 **County ponds?**

18 **A. Yes. So Ponds 1N and 1S are the two**
19 **northern most ponds. As mentioned, none of them**
20 **are presently receiving CCR, so that applies to all**
21 **four of them, but those ponds are considered state**
22 **ponds in terms of the CCR rules. They were**
23 **originally lined with a Poz-O-Pac in the late 70s,**
24 **in 1977. 36 inches, if my memory serves, in terms**

1 of the thickness.

2 As part of the compliance commitment
3 agreement which Illinois EPA instituted in 2012,
4 a -- there was a system that's been installed to --
5 that removes the water from these ponds so that
6 they don't retain surface water. So that's been in
7 place, like I said, pursuant to the CCR rules.
8 There's current plans to close both Ponds 1N and 1S
9 under the Illinois CCR rules, and the groundwater
10 monitoring associated with Ponds 1N and 1S is
11 the -- there's overlap.

12 There's the CCA requirements as well as
13 the CCR groundwater monitoring requirements. And
14 because these ponds are state ponds and the state
15 rules have been promulgated most recently, there's
16 been a couple of new monitoring wells that have
17 been added to the system related to Ponds 1N and 1S
18 in terms of the groundwater monitoring program.

19 And the other two ponds, Ponds 2S and 3S
20 are considered both federal and state ponds, and
21 those also were lined with -- originally lined with
22 a Poz-O-Pac liner, upgrade -- subsequently upgraded
23 to HDPE liners and along with the protection and
24 warning layers associated with the HDPE. Those

1 ponds are also currently undergoing closure, and
2 there's groundwater monitoring that are -- that's
3 been conducted pursuant to the CCR rules, the
4 federal and the state CCR rules related to those
5 two ponds and --

6 **Q. Let me ask you, on Pond 2S you note ACD**
7 **withdrawn in your comments.**

8 **Do you know why the ACD was withdrawn?**

9 A. Yes. So the alternate closure
10 demonstration that was originally submitted in 2020
11 I believe is no longer required because that
12 alternate capacity is no longer needed because the
13 facility hasn't been producing CCR materials since
14 June of 2022. So there's no need for it at this
15 point in time.

16 **Q. Let's go back to Page 53 of your**
17 **PowerPoint. Would you identify what's on this**
18 **slide?**

19 A. This is a close-up of the four surface
20 impoundments that are referenced on our table that
21 we just discussed.

22 **Q. And the green area is?**

23 A. That green area is the ELUC and the GMZ
24 that has been established related to the prior CCA.

1 **Q. The area in the middle, just to remind**
2 **people, what is that area in the middle?**

3 A. That area in the middle is land that -- my
4 understanding is it's not owned by Midwest
5 Generation. It I believe is still owned -- I
6 believe on the record Com Ed is the owner of that
7 land, so it's sort of a carveout not owned by
8 Midwest Gen.

9 **Q. Turning to the next page, Page 54 of your**
10 **Exhibit 1702, what are you showing here?**

11 A. Two historic fill areas were identified by
12 the Board in the 2019 interim order by name. One
13 area was the area noted around the surface
14 impoundments which is the area around these -- the
15 ponds noted in purple on this drawing.

16 And then, secondly, there was an area to
17 the southeast -- in the southeast portion of the
18 station that was also called out by name by the
19 Board in the 2019 interim order.

20 **Q. And do you know the -- what is the status**
21 **of the southeast area?**

22 A. That area has been investigated. That
23 area was identified as part of the 1998 Phase 2 ESA
24 that was performed before Midwest Gen acquired and

1 started operating the stations. I think we're
2 gonna talk about that later, but there's been
3 borings and monitoring well -- two borings and a
4 monitoring well installed in that area, and we've
5 collected some data to characterize what's there.

6 **Q. And as to the areas around surface**
7 **impoundments, as it relates to your remedy**
8 **assessment, have you considered those areas in your**
9 **remedy assessment?**

10 A. Yes, we have. To the extent that CCR
11 materials may be present in the vicinity of the
12 ponds, our remedy does account for that -- those
13 materials, and we believe it is still protective of
14 human health and the environment, yes.

15 **Q. Looking at Page 55 of your PowerPoint**
16 **presentation, what are you showing here?**

17 A. This is a figure -- a diagram showing the
18 historical site investigation locations that have
19 been performed at this station over the course of
20 the facility record, and it's planning them all on
21 one figure so that we can have a comprehensive
22 understanding of all the various investigation work
23 that's been performed.

24 **Q. And is this also Figure 7 in your expert**

1 **report?**

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

3 **Q. Turning to the next slide, 56, concerning**
4 **Will County investigations, what does this**
5 **summarize?**

6 A. So this is just a bullet listing of the
7 individual historical investigations that have been
8 performed starting in 1998 before the acquisition
9 of the station and continuing right up until
10 current in terms of the ongoing groundwater
11 monitoring that's being performed under both the
12 CCA and the CCR rules.

13 **Q. Let's turn to Page 57 of the PowerPoint in**
14 **Exhibit 1702, and here you discuss the 1998 Phase 2**
15 **ESA. What was relevant to you about this**
16 **investigation?**

17 A. So this slide summarizes the scope of the
18 investigation. There were 18 borings, 5 monitoring
19 wells, 23 surface soil samples, 14 sediment samples
20 that were collected. The specific sample locations
21 are shown on the figure here to the right.

22 What was of particular importance is the
23 next two bullets, the borings down from the
24 southeast fill area, B1, B2 and MW-1. Although

1 coal ash mixed with soils was identified in the
2 boring logs in this particular area, the actual
3 analytical data that was collected once it was
4 compared to TACO Tier 1 site -- soil remediation
5 objectives actually indicated that the
6 concentrations were below the Tier 1 soil
7 remediation mediation objectives in terms of RCRA
8 metals.

9 **Q. I'd like to refer you to Page 39 of your**
10 **expert report, if you would pull that up. So the**
11 **last paragraph -- do you have it?**

12 A. Yeah, we do.

13 **Q. The last paragraph on Page 39 discusses**
14 **this information you were talking about in the**
15 **southeast area; is that right?**

16 A. Yes.

17 **Q. And then if you look to Page 40 of your**
18 **report?**

19 A. Right. So the top of that page notes that
20 although coal ash was noted within the southeast
21 portion of the station, sufficient investigation
22 has been performed to evaluate whether the area
23 presents an unacceptable risk to human health and
24 the environment.

1 **Q. Right. And then if you look at the next**
2 **paragraph, the last sentence, would you read that**
3 **starting with, this historical?**

4 A. This historical analytical data supports
5 the conclusion that the mere presence of CCR within
6 historical boring logs does not necessarily mean
7 that these areas serve as sources and represent a
8 threat to human health and the environment.

9 **Q. What do you mean by that?**

10 A. So we mentioned this a little earlier, but
11 in instances where CCR may be identified by name
12 and borings, in some cases it may be mixed with
13 soil. And if it's mixed with soil, that has an
14 impact on the chemistry once that sample is
15 analyzed.

16 And in this particular instance the soil
17 data indicated the concentrations were below the
18 generic Tier 1 soil remediation objectives under
19 TACO, so therefore wouldn't pose any type of an
20 acceptable risk.

21 **Q. Looking back at Slide 57 of your**
22 **PowerPoint, what were the conclusions of the ENSR**
23 **report?**

24 A. So ENSR in their Phase 2 for Will County

1 concluded that the groundwater ingestion is not a
2 potential exposure pathway. Based on the
3 industrial land use and the low potential for human
4 exposure to constituents of concern, they concluded
5 that there isn't a requirement under Illinois law
6 to further investigate or remediate the property.

7 **Q. Let's go to Page 58. Here you're**
8 **discussing the 2005 geotechnical investigation.**

9 **Why was that relevant to you?**

10 A. So these are some additional data points
11 that were collected again around the same time
12 frame as the other similar investigations at
13 Powerton and Joliet 29 intended to collect
14 information, intended to evaluate proactive
15 maintenance that was being considered in terms of
16 the infrastructure of the ponds.

17 And so this information that was gathered
18 provided some information on the physical
19 characteristics of the soils in the areas tested,
20 that they looked at a total of five soil probes,
21 and ultimately found that bedrock here encountered
22 is relatively shallow also 3 to 10 feet below
23 ground surface.

24 **Q. Turning to Slide 59, like the other**

1 **stations, this describes the 2010 hydrogeologic**
2 **investigation. What did you conclude?**

3 A. Yeah. So this, again, was the initial
4 voluntary hydrogeologic assessment of the site
5 conditions performed at the request of Illinois
6 EPA. The original 10 monitoring wells are shown
7 here in the figure off to the right, and they --
8 the monitoring wells were each installed in the
9 uppermost groundwater unit, and the depths of the
10 wells ranged from 8 to 11 feet.

11 They collected one round of groundwater
12 samples and found that upon analysis that 12 of
13 those analyzed were detected. And they did
14 identify manganese, boron, sulfate TDS above the
15 620 Class 1 groundwater quality standards on both
16 sides of the ponds, both east and west.

17 A potable well search was also performed,
18 and the conclusion was that there was no potable
19 well use within that shallow monitored aquifer at
20 the -- within 2500 feet.

21 **Q. Turning to Slide 60, here you describe a**
22 **2015 CCB investigation.**

23 **Would you explain that, please?**

24 A. So this was an assessment that was focused

1 on evaluating the coal combustion byproduct
2 viability of the materials here in this area to the
3 east of Pond 1. Similar to the investigation that
4 was performed in the northwest fill area at
5 Joliet 29, the objective was to try to categorize
6 whether or not these materials met the CCB
7 requirements under the Illinois Environmental
8 Protection Act, and that's done using the NLET
9 testing.

10 There was a total of 120 samples that were
11 collected from the vertical profile. We list the
12 metals there that were non-detect. The majority of
13 the metals that they looked at were non-detect.
14 They did identify boron, iron and sodium that were
15 detected, but below the Class 1 groundwater quality
16 standard in the NLET testing.

17 And a statistical analysis was presented
18 in KPRG's report documenting this work that
19 indicates that the materials exhibit
20 characteristics in terms of NLET that are below the
21 Class 1 standards. So, ultimately, this material
22 was found to meet -- to be considered coal
23 combustion byproduct.

24 **Q. And how does that finding relate to your**

1 **assessment of remedy with regard to this ash?**

2 A. So this is a data point -- well, it's
3 multiple data points that show that the leaching
4 characteristics of this ash comply with the Class 1
5 groundwater quality standards. The degree of
6 leaching under this test is acceptable in
7 accordance with the Illinois Environmental
8 Protection Act.

9 **Q. Turning to Page 60, the ongoing**
10 **groundwater monitoring, would you summarize that**
11 **slide, please?**

12 A. So this shows the -- or this summarizes
13 the groundwater monitoring network that's ongoing.
14 There's quarterly monitoring that's being performed
15 for -- under the CCA constituents since 2012.
16 There's 10 monitoring wells. There's a total of
17 34 constituents that are analyzed twice per year,
18 I'm sorry, four times per year. So a substantial
19 quantity of data continues to be collected.

20 On top of that, there's monitoring that's
21 intended to comply with both the federal and the
22 Illinois CCR rules. And I'll point out that there
23 has been two additional monitoring wells that were
24 installed on the west side of Pond 1N subsequent to

1 the May 2020 figure that's shown in this particular
2 slide. So the groundwater network has actually
3 been augmented and increased even since 2020. That
4 was something we found out during the May -- during
5 the May hearing.

6 **Q. And just for the record, I note that I**
7 **called this Page 60, but it's Page 61 of your**
8 **PowerPoint, the Will County ongoing groundwater**
9 **monitoring.**

10 A. And, lastly, just let me note that the
11 groundwater flow in the vicinity of the ponds is
12 shown as being predominantly from the east to the
13 west discharging to the Des Plaines River to the
14 west.

15 **Q. And the next slide, we've spoken briefly**
16 **about it, but would you describe the GMZ and ELUC**
17 **at Will County?**

18 A. So the green hashing here on the left side
19 of this figure on Slide 62 is signifying the GMZ.
20 The ELUC, it largely is consistent with the GMZ.
21 The ELUC, however, as Mr. Dorgan has noted before,
22 it goes on the property deed. And because the
23 property there in the middle isn't owned by Midwest
24 Gen, we can't put the ELUC on that property.

1 The GMZ however, does apply to that
2 property. And, again, the GMZ has been attained in
3 response to the various remedial measures that were
4 implemented pursuant to the CCA including the
5 dewatering system associated with Ponds 1N and 1S
6 and as well as the relining of Ponds 2S and 3S.

7 **Q. Turning to Slide 63 of your PowerPoint in**
8 **Exhibit 1701, this is your discussion of receptors**
9 **for the Will County station.**

10 **Would you describe that?**

11 A. Yes. So, again, similar to the prior two
12 stations, we wanted to look at both on-site
13 potential receptors as well as the surrounding land
14 use, and the on-site land use is industrial. We
15 expect that to continue into the foreseeable
16 future. We talked at the beginning of this section
17 about the historical or the surrounding land use in
18 terms of what the potential receptors may be.

19 The lack of a potable shallow groundwater
20 use is noted here in the second main bullet based
21 upon the historical water well search that's been
22 performed. The potable well use is prohibited by
23 the ELUC in addition to there being no wells, and
24 the GMZ is -- has been established and is being

1 actively monitored as well.

2 And then the potential off-site ecological
3 receptors is primarily the Des Plaines River which
4 is located off to the west of the ponds.

5 **Q. You mention the GMZ. How does the GMZ**
6 **relate to your analysis of receptors at Powerton?**
7 **Or Will County, excuse me.**

8 A. So the GMZ, that allows for groundwater --
9 a temporary exceedance of the groundwater quality
10 standards in order to allow for the remedial
11 measures to take effect. So that's the purpose of
12 the GMZ is to -- is to allow for that -- those
13 remedial measures to take place while the
14 groundwater quality is being evaluated.

15 **Q. Turning to Slide 64, this is titled, Will**
16 **County Groundwater Testing, similar to the other**
17 **stations. What does this graph show about the**
18 **Mann-Kendall groundwater testing at Will County?**

19 A. So the total number of downward trends is
20 27 percent compared to 16 percent upward trends, so
21 a much greater number of downward trends than
22 upward trends just in terms of the general trend.

23 When you look at the statistically
24 significant downward trends in comparison to the

1 statistically significant upward trends, there's
2 more than double the number of -- the number of
3 statistically significant downward trends is more
4 than double the number of statistically significant
5 upward trends.

6 And jumping back to the pie chart, the
7 57 percent no trend data, again, similar to the
8 prior two stations, of that 57 percent that ended
9 up testing out as no trend, that was a total of 80,
10 8-0, trend test results. 62 of those were
11 primarily related to the non-detect results which
12 accounts for 78 percent of the no trends data.

13 **Q. So I'm sorry. 78 percent of this no trend**
14 **data is what?**

15 A. Is primarily related to the non-detect.

16 **Q. The non-detect?**

17 A. The non-detect nature of the analytical
18 results.

19 **Q. Thank you.**

20 **And if we turn to the next slide on**
21 **Page 65 of your PowerPoint, what is that**
22 **identifying?**

23 A. So this lists the specific groundwater
24 wells that were utilized both for our surface water

1 analysis risk assessment as well as the trend
2 testing.

3 **Q. And I'll ask the same question we did**
4 **before.**

5 **How close to the waste impoundments, the**
6 **surface impoundments, are these monitoring wells?**

7 A. So we believe that these wells are located
8 quite close, about as close as they could
9 practicably be to the downgradient boundary of the
10 ash ponds which, as we've discussed previously, we
11 believe makes both the trend analysis as well as
12 the groundwater to surface water risk assessment
13 analysis conservative and contrary to the opinion
14 of Mr. Quarles that these wells are adequately
15 located close enough to the ponds.

16 **Q. And looking back at Slide 64 for a minute,**
17 **what is your statement underneath the circle chart?**

18 A. So, again, it's useful. We find it useful
19 to drill down to look at the situations when we've
20 got a statistically significant upward trend
21 whether or not you've got a situation where you
22 exceed the groundwater quality standard. And one
23 of these five statistically significant upward
24 trends, there happened to be a situation where the

1 Class 1 groundwater quality standard was exceeded.

2 **Q. And what does that mean to you?**

3 A. And that was at MW-9. What that means to
4 me is -- I guess the way I can best phrase it is
5 that nothing is perfect in nature. Our job when we
6 assess this data is to -- is to look at the data
7 from a high level perspective and to expect that
8 you're going to have 100 percent of one thing or
9 the other. It's just not reality. So it's a
10 situation that exists, but do we think it has
11 significance in terms of our overall assessment of
12 a remedy, we don't.

13 **Q. And the trend that you analyzed here, the**
14 **downward trends, do you expect them to continue at**
15 **Will County?**

16 MR. RUSS: Objection, leading question.

17 HEARING OFFICER HALLORAN: Sustained, rephrase.

18 BY MS. NIJMAN:

19 **Q. What do you expect to happen to the trends**
20 **at Will County?**

21 A. So with -- we've recommended that the
22 existing Illinois and CCR rules continue to be
23 followed including groundwater monitoring,
24 including the closure process. There's no CCR

1 that's being produced at this site any longer, so
2 there's no materials being added -- CCR materials
3 being added to the pond. The closure is going to
4 contribute to improved groundwater quality with
5 time. So all these factors we believe are gonna
6 contribute individually to the downward trends
7 continuing.

8 And I'll just point out that in the event
9 that they don't, there is a groundwater monitoring
10 network that's in place, and we can deviate from
11 the existing closure plans if needed if the
12 groundwater data happens to show something
13 unexpected moving forward.

14 **Q. Going to Page 66 of your PowerPoint at**
15 **Exhibit 1702, you're discussing the groundwater to**
16 **surface water analysis or what we've been referring**
17 **to as the risk assessment?**

18 A. That's correct.

19 **Q. And what were your conclusions with the**
20 **Will County risk assessment?**

21 A. The surface water standard that -- well,
22 this just -- Slide 66 just lists the summary, so
23 the --

24 **Q. Oh, I can refer you to Page 46 of your**

1 **expert report.**

2 A. Yeah, that'd be helpful. Hang on just a
3 moment. So there was a -- with one exception, the
4 constituent concentrations in the groundwater are
5 compliant with the surface water standards. The
6 exception was noted at Well MW-9 for PH, and what
7 we indicate is that -- again, MW-9 is located some
8 distance from the Des Plaines River itself. The
9 assumption was that the surface water was present
10 right at the well.

11 In fact, there's some distance where
12 further natural mechanisms of groundwater flow will
13 have an opportunity to take effect, and so it's
14 believed that that PH that was noted at that well
15 is going to ultimately result in a PH that meets
16 the surface water quality standard before it
17 actually discharges to the surface water, the
18 Des Plaines River.

19 **Q. How does your finding at MW-9 relate to**
20 **your previous testimony about where these wells are**
21 **assessed compared to surface water distance?**

22 A. So these wells are assessed some distance
23 away from the actual surface water. So I guess the
24 way I could best describe it would be there's a

1 buffer zone further downgradient of these wells
2 that's relevant as we're assessing this data.

3 **Q. Let's turn to -- looking at boron again on**
4 **Page 67 of your presentation, and again the**
5 **remaining constituents that you reviewed I believe**
6 **you said were in Appendix D?**

7 A. Correct.

8 **Q. So what are you showing on Page 67 as to**
9 **the risk assessment relating to boron?**

10 A. So this -- the bar graph lists the average
11 concentrations of boron at the wells that are the
12 subject of the evaluation, and the line at the top
13 indicates the boron surface water standard. And
14 the -- across the board there, the concentrations
15 of boron that are noted in the groundwater in
16 comparison to the surface water are substantially
17 below the surface water standard.

18 And just one other point that I'd like to
19 make in terms of the conservative nature of our
20 assessment, in addition to the location issue of
21 the monitoring wells, once surface water actually
22 discharges -- I'm sorry. Once groundwater actually
23 discharges into surface water, there's a mixing
24 that occurs. And so the very nature of using

1 groundwater concentrations in comparison to surface
2 water numbers, the surface water numbers are in
3 surface water, and so this mixing is just going to
4 further impact the groundwater as the groundwater
5 discharges to the surface water which is just
6 another layer that makes this assessment -- this
7 risk assessment conservative.

8 **Q. You again mentioned a second ago the**
9 **location issue. And by location issue, what do you**
10 **mean?**

11 **When I look at MW-07 on your chart, where**
12 **is MW-07 being assessed as compared to surface**
13 **water?**

14 **A. It's not -- well, it's not being assessed**
15 **at the actual location where surface water**
16 **discharge occurs which makes it conservative**
17 **because the assumption is that the surface water**
18 **discharge would occur right at that well.**

19 **Q. Have you had the opportunity to visit the**
20 **Will County station personally?**

21 **A. Yes, I have.**

22 **Q. And were you able to see the Des Plaines**
23 **River during your visit?**

24 **A. Yes. We did observe the river.**

1 Q. And you were -- I think you said you were
2 here during Mr. Gnat's testimony?

3 A. Correct.

4 Q. And did you see -- what did Mr. Gnat say
5 in your recollection about whether he saw seeps?

6 A. So my recollection is that seeps are not
7 observed along that part of the station, and we
8 observe -- while we were there we observed the --
9 we observed the river, but from our vantage point
10 we couldn't necessarily see the slope of the river.

11 Q. I'd like to go to Exhibit 1102 which is
12 Mr. Quarles' rebuttal report.

13 A. All right.

14 Q. And if you turn to Page 30 of that
15 report -- are you there?

16 A. I am, yes.

17 Q. So you see in Section 2.4.6, Mr. Quarles
18 has comments about Will County?

19 A. Yes, I do.

20 Q. And in his first sentence he makes a
21 citation to WCG which is your Weaver at 68?

22 A. Yes.

23 Q. What is your understanding of his
24 reference to the pages in your report?

1 A. So I believe he -- Mr. Quarles has a
2 statement at the front of this report indicating
3 that those pages are to the PDF and not necessarily
4 to the sequential page numbers in the hard copy of
5 our report which makes it a little confusing if
6 you're looking at a paper copy, but I believe
7 that's what's indicated in his report.

8 **Q. Okay. And on the top of Page 31 of the**
9 **rebuttal report, do you see where Mr. Quarles is**
10 **discussing an investigation of the former slag**
11 **bottom ash disposal area and the area east of**
12 **Pond 1 North?**

13 A. Yes.

14 **Q. And looking at that paragraph at the last**
15 **sentence, what is Mr. Quarles saying about**
16 **consistent methodologies here?**

17 A. Are you speaking about the bullet on the
18 top of Page --

19 **Q. No, the first paragraph under the bullet?**

20 A. Okay.

21 **Q. The last sentence.**

22 A. Okay. Where he claims that a completed
23 nature and extent investigation?

24 **Q. Correct.**

1 A. Okay. I think what he's trying to say
2 here is that basically we haven't done enough or
3 that the historical investigations have not been
4 sufficient or have been haphazard or inconsistent
5 in some way.

6 And, you know, my response to that is
7 that, first off, the historical investigations were
8 done for different purposes. The 1998 Phase 2 ESA
9 wasn't even coordinated by Midwest Gen, so that was
10 done for a completely different reason.

11 And then, secondly, the phase -- the CCB
12 investigation that was performed to the east of ash
13 pond -- of the Ash Pond 1N, again, the purpose of
14 that was to evaluate the CCB characteristics of
15 those materials. So each of those investigations
16 was done for different purposes. So to expect that
17 you would have a consistent comprehensive
18 investigation related to those two -- those two
19 investigations, just isn't -- it's not warranted.

20 **Q. In your experience is it -- how often**
21 **would you see or do you see one area of a site**
22 **investigated more than another?**

23 A. Quite often. You know, we try to avoid a
24 one-size-fits-all approach. We will try to use all

1 data that we've got at our disposal whether it's
2 boring data, groundwater data, historical data. We
3 try to use that to come to as comprehensive an
4 understanding as we can in terms of -- within the
5 applicable regulations that we're working under in
6 order to help guide where we investigate.

7 So it's sort of the same ideas as the
8 lines of evidence idea that we've put forth in our
9 looking at with the historical fillers at these
10 stations. We have some information, and we're
11 gonna use that information to the best that we can
12 to try to figure out where we want to investigate
13 maybe in a little bit more detail and maybe where
14 we want to investigate in a little bit less detail,
15 depending on what data we might have at the time.

16 **Q. And what is your opinion about the**
17 **sufficiency of the investigation for your remedial**
18 **assessment at Will County?**

19 A. So when you take a sum total of the
20 historical data that's been collected, we believe
21 that it is sufficient in order to help inform the
22 remedy that we have put forward.

23 **Q. Let's turn to Slide 68, and if you would**
24 **describe the factors that led to your conclusion.**

1 A. Sure. So there's background data that's
2 been utilized from upgradient wells to -- it is
3 used to help assess the regulated units. We've
4 collected regular groundwater elevation contour
5 maps to show what the groundwater flow
6 configuration has been over time. The -- we don't
7 have evidence of groundwater flow from the ponds in
8 the -- to the west in the direction of the
9 upgradient wells making the data on the west side
10 of the ponds upgradient.

11 The units are undergoing the process and
12 are scheduled to close under the CCR rules, both
13 the federal and the state rules. So we are
14 certainly recommending that those regulations
15 continue to be followed, that those steps be taken.

16 The trend testing at the downgradient
17 monitoring wells on the west side of the ponds, as
18 we've talked about, does show improving groundwater
19 quality over the long term. And, again, that data
20 was collected from 20 -- the end of 2010 to 2020.
21 So there's a substantial quantity of data.

22 Given that the station isn't producing CCR
23 any longer, the ponds are going to be undergoing
24 closure. The downward trends we do expect to

1 continue. And the off-site risk assessment with
2 comparison of the surface water standards is
3 indicating that we don't have an unacceptable
4 off-site risk to potential receptors in the
5 Des Plaines River.

6 **Q. And turning to Slide 69 of your PowerPoint**
7 **in Exhibit 1702, what is your remedy assessment for**
8 **Will County?**

9 A. Yeah. So this -- these bullets summarize
10 the four main points of our recommended remedy, and
11 that is as Midwest Gen has done to this point,
12 continue to follow the -- as they've taken the
13 steps to this point, continue to follow the federal
14 and state CCR rules. Regular groundwater
15 monitoring should be continuing under the
16 CCR rules, both the federal and the state.

17 The closure of the CCR surface
18 impoundments is part of continuing to follow the
19 federal and state CCR rules, so that would warrant
20 its own bullet here because that's particularly
21 important. And to the extent that these proposed
22 federal rules and the state rules that may pertain
23 to historic fill areas, historical landfills, to
24 the extent that those may become promulgated at

1 some point, if those do become regulation, that the
2 station -- if there are areas of the station that
3 are found to be applicable under those new rules,
4 that those new rules be followed as well.

5 **Q. And how did your previous discussion of**
6 **the GMZ at Will County relate to this remedy**
7 **assessment?**

8 A. So the GMZ is again integral to our
9 remedy. The GMZ is there to allow the time for the
10 remedial measures that have been previously
11 implemented to take effect, and it -- a GMZ to some
12 degree goes hand in glove with an MNA approach.
13 And our recommendation is to continue to follow the
14 MNA approach based -- and continue to monitor in
15 order to confirm that the trends that we've
16 observed to this point will continue.

17 **Q. And how is -- what is your opinion as to**
18 **whether you're selected remedy assessment is**
19 **technically practicable to implement?**

20 A. Yeah. There's a nice historical record at
21 many sites of monitoring natural attenuation being
22 a viable method, so that's -- that certainly makes
23 it technically practicable. There's -- similarly,
24 there's, you know, many CCR ponds that are

1 undergoing a closure process and following the CCR
2 rules, so that makes that part of it technically
3 practical as well.

4 **Q. And similar question, how does this**
5 **opinion relate to -- your opinion on remedy**
6 **assessment relate to whether this is economically**
7 **reasonable?**

8 A. Yes. Certainly in comparison to some of
9 the other remedies that we considered at least at a
10 high level, the -- this particular remedy, it is
11 more economically feasible than a number of other
12 remedies that at least were part of our evaluation
13 process such as pump and treat or removal.

14 MS. NIJMAN: Mr. Hearing Officer, it's five to
15 twelve. This is the end of this station, so it to
16 would be a good time to --

17 HEARING OFFICER HALLORAN: Okay. That's good.
18 Before we go off the record, I did take a look at
19 my May 15 notes when Midwest offered Exhibit 1111.
20 I took it as an offer of proof. However, I believe
21 Ms. Nijman is correct that experts can rely on
22 articles, opine on articles that are not in
23 evidence. With that said, I would allow the direct
24 testimony to stand, and I will allow Midwest

1 obviously cross outside the offer of proof.

2 MR. RUSS: Thank you.

3 HEARING OFFICER HALLORAN: Anyway, try to be
4 back here at no later than five after one, please.
5 Thank you.

6 (WHEREUPON, a short recess was
7 taken.)

8 HEARING OFFICER HALLORAN: All right. Good
9 afternoon, everyone. We just came back from lunch.
10 I thank everyone for getting back here before one.
11 We have some public comment we've agreed to take
12 place at 1 o'clock. I believe we have three or
13 four people. You can step up, and we had a public
14 comment here this morning. She sat here in front
15 of the court reporter. Maybe sign your name, and I
16 think we agreed to like around three minutes each.

17 MS. BUGEL: And, Hearing Officer, we just have
18 two members of the public to comment.

19 HEARING OFFICER HALLORAN: Okay. You may
20 proceed.

21 MS. ORTIZ: My name is Destiny Ortiz. I'm a
22 resident of Romeoville, Illinois, and an elected
23 member of the Will County Board. The Will County
24 Generating Station is less than two miles from my

1 home and is adjacent to the Des Plaines River and
2 the Heidelberg Materials, formerly known as the
3 Hanson Materials Service Quarry, which is set to
4 contain their blasting area. The dangerously close
5 proximity of the blasting is likely to damage the
6 coal ash pond liners cracking the structures and
7 causing contaminants from the waste ponds to leach
8 into the groundwater, private wells --

9 HEARING OFFICER HALLORAN: If you could slow
10 down.

11 MS. ORTIZ: Sorry.

12 HEARING OFFICER HALLORAN: I'm not transcribing
13 it. Rae is.

14 MS. ORTIZ: Oh, I'm so sorry. I'm sorry.

15 HEARING OFFICER HALLORAN: Thank you.

16 MS. ORTIZ: Thereby further limiting the scarce
17 clean water sources. Last week Midwest Generation
18 hosted two public hearings where I presented a
19 bipartisan statement rejecting their proposal for a
20 cap-and-place closure method for four coal ash
21 ponds in my district.

22 The statement signed over -- signed by
23 over 20 local and state elected officials reads as
24 follows, signed on June 7, 2023, and addressed to

1 Midwest Generation's CEO, CPO and the Illinois EPA
2 Director. We support the residents of Romeoville
3 and the surrounding areas who are petitioning for
4 the clean closure of the Will County Generating
5 Station's coal ash ponds by excavation and complete
6 removal of the ash from the waste ponds. We demand
7 Midwest Generation amend their proposal to cap and
8 place and instead remove the ash from the ponds for
9 beneficial reuse to a federally regulated lined
10 landfill away from water sources.

11 The groundwater near the Will County
12 Generating Station is reported as contaminated from
13 coal ash at a magnitude that exceeds federal health
14 based guidelines since soil testing showed that
15 arsenic and molybdenum contaminants were twice as
16 high as safe levels recommended by the EPA.
17 Romeoville relies on aquifers for its water supply,
18 and recent studies have revealed that these
19 aquifers are not viable long-term sources for the
20 village's potable water supply.

21 Midwest Generation should not be allowed
22 to put people's water supply at risk as Romeoville
23 will soon need a new source of clean water. It's
24 crucial for Romeoville where the water is such a

1 precious resource to make sure that the water is
2 left as clean as possible. The cap-and-place
3 closure does not prevent leaching by groundwater
4 contact with coal ash underneath the cap. And if
5 the cap is left in contact with groundwater, toxic
6 contaminants will -- I'm sorry. If the ash is left
7 in contact with groundwater, toxic contaminants
8 will continue to leach into the drinking water and
9 perpetuity.

10 Cap-and-place also leaves coal ash ponds
11 permanently vulnerable to catastrophic failure due
12 to floods or cap failure during extreme storms.
13 Removal of the coal ash mitigates both the source
14 of groundwater pollution and the risk of
15 catastrophic spills from impoundment failures due
16 to floods and other extreme weather events.

17 Clean closure is a permanent solution to
18 waste pond water pollution and allows restoration
19 of wetlands, rivers, streams and lakes. Clean
20 closure of coal ash ponds is a more thorough
21 process that employs more people and therefore
22 leads to greater wages and spending in the
23 community.

24 Our community is calling on Midwest

1 Generation to submit an application to the IEPA to
2 remove the coal ash from the Will County Generating
3 Station's waste pond. We hope that one way or the
4 other this is made possible. Thank you.

5 HEARING OFFICER HALLORAN: Thank you. The
6 Board thanks you for your public comment.

7 MS. ORTIZ: Thank you.

8 HEARING OFFICER HALLORAN: Good afternoon.

9 MS. TAYLOR: Good afternoon, everyone. I'm
10 Waukegan Mayor Ann Taylor. The City of Waukegan is
11 home to, according to the census, approximately
12 90,000 residents; however, we know we service
13 125,000 to 127,000. It is a 64 percent Latino
14 community, 19 percent Caucasian and 17 percent
15 African American, and I'm here today to speak on
16 their behalf.

17 Before I begin my statement, I want to
18 thank the dedicated members of this Board for all
19 their work to restore, protect and enhance the
20 quality of Illinois' environment. I appreciate you
21 allowing me to make this statement today.

22 Midwest Generation's coal plant in
23 Waukegan has negatively impacted Waukeganites
24 during the operation and continues to negatively

1 impact residents since it ceased its coal-fired
2 operations last year. The coal plant in Waukegan,
3 unlike many other communities, is very -- in very
4 close proximity to Lake Michigan, adjacent to the
5 Waukegan municipal beach and the city's water
6 treatment plant. Our Waukegan residents, both
7 young and old, have increased rates of asthma and
8 upper respiratory challenges.

9 Midwest Generation has not been a good
10 partner with the city. The city has been
11 requesting that Midwest Generation clean up all the
12 toxic coal ash from the coal ponds in the city and
13 other surface coal ash, but they have blatantly
14 refused. This has happened even as Midwest
15 Generation's own hazard assessment states that a
16 hypothetical failure at their coal ash ponds quote,
17 unquote, has the potential to flow directly into
18 Lake Michigan and cause off-site environmental
19 impacts.

20 Despite overwhelming public input in favor
21 of removing all the coal ash from the site at their
22 public closure meetings, Midwest Generation has not
23 changed its original plans to leave unlined coal
24 ash at the site. The company wants to do even less

1 than the bare legal minimum and not what is right
2 or best for the residence of Waukegan.

3 The scientists and experts hired by NRG
4 themselves have reported unacceptable high levels
5 of toxic metals in the groundwater around the
6 Waukegan plant. Groundwater testing at the site
7 shows that arsenic exceeds safe levels in the
8 groundwater monitoring wells by over 2,000 times.
9 Boron levels are more than 16 times Illinois'
10 drinking water standard, and chromium exceeds safe
11 levels by more than 480 times. Lithium, mycelium
12 and sulfite also exceed safe levels many times
13 over. These toxic metals cause cancer,
14 neurological congenital disabilities and can harm
15 the liver, kidneys, stomach and reproductive
16 organs.

17 Waukegan already has five EPA superfund
18 sites within its borders. Waukegan residents can't
19 afford the costs associated with another
20 environmental disaster caused by a private company,
21 a company that will just reported having a net
22 income of \$1.2 billion last year.

23 I'd ask every person on this Board, would
24 you allow a company to do this to your family or to

1 your neighbors? Waukegan residents deserve better.
2 They deserve to be listened to. They deserve to be
3 heard. They deserve clean and safe drinking water.
4 And they deserve not to have to worry about what
5 happens to unaddressed coal ash and how it'll
6 impact their children and grandchildren in years to
7 come.

8 Today I ask that the Illinois Pollution
9 Control Board consider our Waukegan residents and
10 take urgent action to ensure that Midwest
11 Generation removes the coal ash from the coal ash
12 ponds and all other surface coal ash. In short, we
13 want Midwest Generation to treat Waukegan residents
14 respectfully. In doing so, they will help protect
15 current Waukeganites and residents for generations
16 while protecting Lake Michigan, a vital and
17 irreplaceable water source for millions of people.
18 Thank you.

19 HEARING OFFICER HALLORAN: Thank you, Mayor,
20 for your comment.

21 MS. TAYLOR: Thank you.

22 HEARING OFFICER HALLORAN: We can call your
23 witnesses, Ms. Nijman.

24 MS. NIJMAN: Certainly.

1 HEARING OFFICER HALLORAN: Mr. Dorgan,
2 Mr. Maxwell, you're still under oath.

3 BY MS. NIJMAN:

4 Q. Mr. Dorgan, if you would turn to Page 70
5 of your PowerPoint which is Exhibit 1702 and let's
6 go right to the -- well, just so I understand, I
7 believe you said at the beginning of your testimony
8 that you took the lead for the Waukegan station; is
9 that a fair statement?

10 BY MR. DORGAN:

11 A. Yes, that's correct.

12 Q. And turning to Page 71 of your PowerPoint,
13 as with the other stations, would you describe the
14 review you undertook of background and setting?

15 A. Yes. So we initially just wanted to frame
16 our basic understanding of the history and the
17 setting of the site. In this particular case, the
18 plant began operating in 1923. Midwest Gen
19 acquired the property in 1999. Just last year in
20 June they ceased burning coal. And the surrounding
21 land uses are a mix of primarily industrial
22 properties.

23 To the north we have the Johns-Manville
24 superfund site. To the west we have the former

1 Griess-Pfleger Tannery and also General Boiler
2 properties. To the south is the waste water
3 treatment plant, and then of course to the east as
4 you can see in the figure is Lake Michigan.

5 **Q. Turning to your next slide, slide 72, what**
6 **are you describing here?**

7 A. This is just to provide the geographic
8 context of the historic fill area that had been
9 identified in previous phases of this matter known
10 as the former slag area or often times also just
11 referenced as the FS area, and that's shown just to
12 the west of the west ash pond.

13 **Q. And if you would refer to the second to**
14 **last page in this PowerPoint which is the summary**
15 **of the ponds that you -- that Weaver created, would**
16 **you provide me a summary of what's the status of**
17 **the two ponds listed at Waukegan?**

18 A. Yes. So as I mentioned, the site's no
19 longer burning coal. So it's no longer generating
20 ash, and therefore neither the east pond or the
21 west pond is currently receiving ash. Both of the
22 two ponds are regulated under both the federal and
23 state CCR rules. They were initially lined in 1977
24 and went through modifications to those liners in

1 the case of the east pond in 2003 and the west pond
2 in 2004.

3 And then there are closure plans that are
4 in place for them with respect to their closure,
5 and in one instance they plan on reusing the west
6 pond for other needs for liquids management. And
7 there is an adjusted standard that was -- that's
8 pending to address that. In the case of the east
9 pond, that's proposed for a cap-and-place, and
10 there's an alternate closure demonstration that's
11 been submitted in support of that.

12 And then, finally, both the east and the
13 west ponds are covered under a detection monitoring
14 program and then also the CCA monitoring
15 requirements.

16 **Q. And if we turn to Page 73 of Exhibit 1702,**
17 **what are you presenting here?**

18 A. So as we've done with the other three
19 stations, this figure captures the past
20 environmental investigations that have occurred and
21 specifically shows the locations of individual
22 samples, wells, sediment samples. The legend on
23 the left side references which particular
24 investigation that these borings and monitoring

1 wells and samples were collected.

2 Q. And I've asked this with other stations,
3 why was it relevant for you to place this all on
4 one map?

5 A. To provide a visual of the investigations
6 that have occurred at the site and the coverage of
7 the site through those investigations.

8 Q. Turning to Page 74 of Exhibit 1702, would
9 you describe this summary?

10 A. Yes. This is, again, a chronological
11 summary of the past investigations that identify
12 the first was prior to Midwest Generation's
13 ownership of the site performed in 1998. It was a
14 Phase 2 environmental site assessment. Then
15 Midwest Gen first initiated further investigation
16 of the site in 2005 when they did a geotechnical
17 investigation proximal to various ponds located on
18 the property.

19 Then in response to the request from the
20 agency to investigate their ponds, they implemented
21 an investigation in 2010 which involved the
22 advancement of monitoring wells. And then in 2020
23 there was an investigation performed of the FS area
24 specifically that was also undertaken by KPRG. As

1 I mentioned, there is ongoing groundwater
2 monitoring occurring under both the CCR rules and
3 the CCA.

4 **Q. Okay. Looking at your next slide,**
5 **slide 75, what about the Phase 2 ESA was relevant**
6 **to your analysis of Waukegan?**

7 A. Well, the Phase 2 provided understanding
8 of the site hydrogeology, the groundwater
9 conditions at the time of the investigation, some
10 of the soil conditions. As referenced here, that
11 investigation included 22 soil borings with
12 5 monitoring wells installed. There were
13 13 surface oil samples collected and 6 sediment
14 samples.

15 **Q. And the second bullet you have B-22 noted.**
16 **What is the relevance of that?**

17 A. Yes. That was a specific boring advanced
18 just at the north -- northern end of the FS area
19 west of the ash -- west ash pond. And the
20 significance there, the findings of the sampling
21 that were done, was that other than arsenic, the
22 RCRA metals in that sample were all below the
23 Tier 1 site mediation objectives under TACO.

24 And the arsenic concentration that was

1 detected was at 14 milligrams per kilogram which is
2 just slightly against the site remediation
3 objective which is based on area background of 13
4 parts per million.

5 **Q. And what were the conclusions drawn by the**
6 **consultants in 1998?**

7 A. Their basic conclusions was that
8 groundwater ingestion was not a concern based upon
9 the absence of potable wells, based on the
10 industrial land use that there was a low potential
11 for human exposure to the constituents of concern.
12 And their opinion at the time was that there was no
13 requirement under Illinois environmental law to
14 further investigate or remediate the site.

15 **Q. I'd like to turn to Page 76 of your**
16 **PowerPoint. What are you referencing on this map?**

17 A. So Waukegan has two locations just to the
18 west of their property that were historical
19 industrial operations. The one that's highlighted
20 with the yellowish circle is the former
21 Griess-Pfleger Tannery, and then also south and
22 east of that you can see the former General Boiler
23 site. Both of these sites are known to be causing
24 contamination that is migrating from those

1 properties onto the Waukegan station property.

2 **Q. Why was it important to you to call out**
3 **these off-site sources?**

4 A. It just shows that there are other
5 contributing factors to the groundwater quality at
6 the site that will need to be considered as part of
7 an ongoing evaluation of the risks and the remedy.

8 **Q. And do you recall what the Board found in**
9 **its interim order regarding these locations?**

10 A. I believe the Board recognized and
11 acknowledged that there was contamination coming
12 from these properties onto the Waukegan station.

13 **Q. The next slide, 77, is the 2005**
14 **geotechnical investigation. And briefly describe**
15 **that as you did with the other stations.**

16 A. Yes. That was done to begin collecting
17 data about the conditions around their ponds as
18 they were beginning to consider what their
19 operations and maintenance needs needed to look
20 like and even some preliminary planning around
21 potential upgrades to liner systems.

22 **Q. The next slide, Slide 78, Exhibit 1702,**
23 **would you describe the key factors that related to**
24 **your assessment concerning the 2010 hydrogeologic**

1 **investigation at Waukegan?**

2 A. So their initial efforts resulted in these
3 five monitoring wells being installed. That was
4 done voluntarily through discussion with the IEPA.
5 This was before the CCR regulations came into play.
6 Groundwater was sampled from each of the five
7 wells. Fourteen of the potential CCR related
8 analytes were not detected as part of that sampling
9 event.

10 However, antimony, arsenic and boron were
11 detected above the Part 620 groundwater quality
12 standards downgradient of the east pond during that
13 one sampling event. However, there were also
14 concentrations that exceeded the Class 1
15 groundwater standards in the upgradient well, and
16 those were for more on manganese sulfate and total
17 dissolved solids.

18 **Q. On that last point, the last bullet, why**
19 **was that relevant to you?**

20 A. It showed that there were conditions
21 impacting MW-5 that were not likely related to the
22 pond operations themselves.

23 **Q. Turning to the next slide, slide 79, would**
24 **you describe the continuation of the 2010**

1 **hydrogeologic investigation?**

2 A. So the findings of this investigation
3 helped assess the type of soil stratigraphy present
4 at the site which was described as being
5 predominantly sands and silts underlain by sand and
6 gravel. The uppermost groundwater unit was
7 encountered at depths of approximately 22 to
8 23 feet below ground surface.

9 The well network installed. They
10 determined that the groundwater flow was to the
11 east towards Lake Michigan, and then they did a
12 water well search and found that there were no
13 water wells located downgradient of the ash ponds
14 that would have been used for potable water
15 purposes.

16 **Q. As to this last point on the water well**
17 **search, have you had opportunity to review updated**
18 **water well searches?**

19 A. I have. I understood that there was the
20 requirement that as part of their permitting
21 process that an update to the water well search be
22 performed.

23 **Q. And do you know if that was for all four**
24 **stations?**

1 A. I believe so.

2 **Q. And do you know if there were any changes**
3 **or a significant change to --**

4 A. I don't -- I don't believe so. I don't --
5 I think it was consistent with the earlier findings
6 in terms of downgradient groundwater wells.

7 **Q. Turning to the next slide, Slide 80 of**
8 **Exhibit 1702, what are you referencing here with**
9 **the 2020 FS area investigation?**

10 **And I can refer you to Page 41 of your**
11 **expert report, if you want.**

12 A. So this figure is showing a callout of the
13 FS area. You can see that the mapping to the left
14 is a blowup of the area immediately to the west of
15 the west pond, and it shows the location of
16 40 probes that were advanced. They were done on a
17 1,000-by-400-foot grid. In this investigation they
18 found that coal ash was present ranging from near
19 the ground surface to varying depths between 7 and
20 17 feet below ground.

21 They used the natural PH LEAF methodology
22 for the various metals associated with CCR
23 materials to evaluate the leach potential of those
24 constituents. And the concentrations were

1 primarily below the Class 1 groundwater quality
2 standards. Although, they did find boron at three
3 locations and arsenic at one location that exceeded
4 those standards.

5 **Q. Do you know why this analysis was**
6 **performed?**

7 A. There was documentation in the record of
8 this alleged presence of this slag fill area west
9 of the west ash pond. It previously mentioned the
10 groundwater quality that was detected at MW-5. So
11 there was a feeling that further evaluation of this
12 specific suspected area was necessary to further
13 evaluate the contributions to MW-5.

14 **Q. Let's turn to Page 81. You already**
15 **mentioned the ongoing groundwater monitoring.**

16 **Would you describe the details of that**
17 **monitoring that occurs at Waukegan?**

18 A. So at present there are a total of now
19 12 monitoring wells that have been installed around
20 the ponds in the FS area. Those 12 wells are
21 subject to both the detection monitoring under
22 Appendix 3 and the assessment monitoring under
23 Appendix 4.

24 They also include the constituents

1 required under the Illinois CCC -- CCR rules.
2 Quarterly sampling is taking place and has been
3 since 2012. And so at present they're sampling and
4 analyzing for 34 constituents 4 times a year for a
5 total of 12 wells.

6 **Q. Turning to your next slide, 82.**

7 **What are we describing in here?**

8 A. So these are two environmental land use
9 controls that have been attached to the property.
10 The heavy -- well, they're both relatively heavy,
11 but the darker dashed area on the western part of
12 the site was actually implemented at the request of
13 the adjacent property owner. That was done
14 voluntarily by Midwest Generation to prohibit the
15 installation of potable groundwater wells within
16 that area of the property to avoid creating
17 receptors to the groundwater contamination
18 migrating from the adjacent former tannery site.

19 And then the other ELUC which is shown on
20 the southern half of the site extending from the
21 eastern boundary of the western ELUC all the way to
22 Lake Michigan, that is the ELUC that was put into
23 place pursuant to the 2012 compliance commitment
24 agreement.

1 **Q. How do these ELUCs relate to your opinion**
2 **with regard to risk?**

3 A. They're one element in our evaluation of
4 the potential receptors being impacted by the
5 groundwater at the site. The presence of this area
6 having been covered under an ELUC eliminates the
7 potential for groundwater wells to go in and keeps
8 there from being receptors that could come in
9 contact with the groundwater.

10 **Q. Is an ELUC in and of itself a remedy?**

11 A. Not necessarily. An ELUC is often done as
12 part of a remedy to acknowledge that there are
13 groundwater impacts and that those groundwater
14 impacts need to be managed by avoiding people
15 coming in contact with the contaminated
16 groundwater.

17 **Q. Turning to your next slide, Slide 83,**
18 **would you discuss your analysis of potential**
19 **receptors for the Waukegan site?**

20 A. As I mentioned with the first slide, this
21 is in a very heavily industrialized area that's
22 been that historically. So the site to the north
23 we have a superfund site across East Greenwood
24 Avenue. We have both the Griess-Pfleger and the

1 General Boiler sites to the west that have gone
2 through an SRP process. We know from those sites
3 we have contamination migrating onto the Midwest
4 Generation station.

5 We've got the sewage treatment plant to
6 the south, and then further to the south of that we
7 have another superfund site. So it's a pretty,
8 pretty heavy industrialized area that's likely to
9 stay that way for sometime to come.

10 And then ultimately we wanted to --
11 obviously as part of our risk evaluation, we're
12 looking at potential receptors. The fact that
13 there weren't any wells in the downgradient
14 location that would be impacted by station
15 conditions was a variable that we considered, and
16 of course the future installation of wells is
17 restricted by the presence of the ELUC. And then
18 ultimately we considered Lake Michigan as a
19 potential off-site receptor as well.

20 **Q. Now, you noted the ELUC on your map, but**
21 **not a GMZ; is that correct?**

22 A. That's correct.

23 **Q. Do you know why there's no GMZ at**
24 **Waukegan?**

1 A. As I understand it, the GMZ was not
2 considered for Waukegan because of the timing on
3 the pond relining and the requirements of the CCA.

4 **Q. What do you mean about timing of the pond**
5 **relining?**

6 A. Well, the ponds at Waukegan were
7 undergoing their relining before the CCR
8 regulations came out, and so they were still being
9 done on a voluntary basis with the agency.

10 **Q. When we were looking at your chart of**
11 **ponds, I think you noticed -- noted on Waukegan --**
12 **well, let me do it this way.**

13 If you could -- I can refer you to Page 32
14 of your report where you discuss an ASD for
15 Waukegan, alternate source demonstration?

16 A. Yes.

17 **Q. And when you noted that on Page 32 in your**
18 **discussion, what was the relevance of that**
19 **discussion?**

20 A. Well, what KPRG had determined was that
21 there were statistical evaluations that determined
22 that in the downgradient wells there were
23 statistically significant increases for boron,
24 PH and sulfate. And the alternate source

1 demonstration was designed to evaluate those
2 particular constituents with respect to the
3 condition of the ash within the ponds themselves.

4 **Q. And was it relevant to your remedy**
5 **assessment at Waukegan to know that alternative**
6 **source for those constituents?**

7 A. It was an element of understanding the
8 potential contribution from the ponds themselves
9 relative to the findings of the alternate source
10 demonstration.

11 **Q. And how did that fit into your assessment,**
12 **your remedy assessment?**

13 A. It let us know the conditions of the ponds
14 and the contributions from the ponds wasn't driving
15 the conditions that were being observed in those
16 downgradient wells.

17 **Q. And does your remedy for Waukegan account**
18 **for the fact that there might be an alternative**
19 **source -- alternate source in that area?**

20 A. Yes, it does.

21 **Q. How does it do that?**

22 A. Two components, one is the continued
23 evaluation of the downgradient conditions with
24 respect to off-site receptors, both groundwater and

1 ecological. And then as our report indicates,
2 we've considered additional actions for the former
3 slag area as well.

4 **Q. Let's turn to Page 84 of your PowerPoint**
5 **in Exhibit 1702. This is entitled, Groundwater**
6 **Trend Testing.**

7 **As you did with the other stations, would**
8 **you describe the Mann-Kendall trend testing done**
9 **for the Waukegan station?**

10 A. Yes. So in the three previous stations we
11 had similar presentation. The same methodology was
12 used to evaluate the data at Waukegan. We have
13 presented it the same way on this particular
14 figure. The high points are that the
15 no trend results accounted for 60 percent of the
16 overall output. Somewhat unique from the other
17 three locations, the downward and upward trends
18 were more evenly divided. In fact, there's a
19 slightly more number of upward trends than there is
20 downward trends. 21 percent of the trends were
21 upward while 19 percent were downward.

22 The other three sites were relatively
23 consistent. This one's a little bit unique that
24 way. However, of those trends, when you look at

1 the graphs on the right, the downward trend,
2 roughly 9 of the 26 were deemed to be statistically
3 significant, and you have of the upward trends,
4 6 out of the roughly 28 are deemed to be
5 statistically significant. So that ratio held
6 somewhat consistent.

7 **Q. And why was that relevant to that ratio?**

8 A. It is telling us that of the trends that
9 are occurring, even though they're relatively
10 similar in terms of total number, the statistically
11 significant trends weight toward the downward from
12 the upward. So that is demonstrating some ongoing
13 groundwater improvement, but the trends themselves
14 are more evenly divided.

15 **Q. As to the no trend data, were you able to**
16 **develop or drill down into that information as you**
17 **did in the other stations?**

18 A. I did. And I would again defer to
19 Mr. Maxwell since he crunched the numbers.

20 **Q. Mr. Maxwell, what was found with regard to**
21 **the no trend data at Waukegan?**

22 BY MR. MAXWELL:

23 A. What we found was out of the 81 no trend
24 test results for Waukegan, 67 of those 81 were

1 primarily related to non-detect analytical results
2 which accounts for 83 percent of the no trend
3 results on the chart.

4 **Q. And would you explain the notation at the**
5 **bottom of the circle chart?**

6 BY MR. DORGAN:

7 A. Yes. As we did with some basic takeaways
8 from our evaluation of the trend testing, we noted
9 that with the exception of boron at MW-2 there was
10 no well with a statistically significant upward
11 trend that had exceeded the Class 1 groundwater
12 protection standards.

13 **Q. Turning to your next page, Page 85 of**
14 **Exhibit 1702, would you describe the wells being**
15 **shown on this map?**

16 A. Yes. The four wells east of the east ash
17 pond were the wells that we used for both our risk
18 assessment and our analysis for potential risks to
19 the surface water bodies.

20 **Q. And is that -- are those the same wells as**
21 **used for the risk analysis?**

22 A. Yes, they are.

23 **Q. And how close in your opinion are those**
24 **wells to the --**

1 **(Reporter clarification.)**

2 BY MS. NIJMAN:

3 **Q. How close are those wells to the**
4 **boundaries of the pond?**

5 A. They are quite close. They sit just off
6 the perimeter access road that routes around the
7 east side of the east ash pond.

8 **Q. Would you determine whether there's -- is**
9 **there any concern in your mind that these wells are**
10 **too far downgradient from the ponds?**

11 A. No.

12 **Q. We mentioned in the other stations that**
13 **the location of these ponds was conservative.**

14 **Can you describe that here at Waukegan?**

15 A. I think how we've been discussing that is
16 because these wells which are already there
17 providing monitoring for the east and west ash
18 ponds, they are near the ponds and not near the
19 downgradient property boundary, which is what we
20 would normally be looking at, so that we feel
21 looking at those with respect to the chemistry
22 conditions in them is conservative and that the
23 distance between there and the nearest surface
24 water body there'd be natural geochemical

1 interactions occurring that would further lower the
2 concentrations by the time that water would reach
3 the adjacent surface water. So from that
4 perspective we consider that to be a conservative
5 evaluation.

6 **Q. How did your trend analysis at Waukegan --**
7 **how is it relevant to your opinion for Waukegan,**
8 **your ultimate remedy opinion?**

9 A. Well, the trend analysis showed us we had
10 slightly different conditions going on at Waukegan
11 than we did at the other sites. Ultimately, we did
12 feel as though we've got good protection for the
13 off-site receptors and potential receptors for both
14 the groundwater and surface water, but we did feel
15 as though additional actions relative to the slag
16 area would be warranted.

17 **Q. Turning to Page 86 of Exhibit 1702, that's**
18 **the risk analysis that we've been talking about?**

19 A. Yes, that's correct.

20 **Q. And would you describe what's on this**
21 **slide for Waukegan's risk analysis?**

22 A. Yes. This is the surface water component
23 of that risk analysis. What we did as we did with
24 the other stations, we took a look at the historic

1 data record for the groundwater wells and the wells
2 that we referenced previously. We created average
3 groundwater concentrations using the Sanitas
4 software.

5 What we found is that the constituents
6 were non-detect in 75 percent or more of the
7 samples, and the report -- in those instances the
8 reporting limit rather than half the reporting
9 limit was used for purposes of the trend testing.
10 Often -- and the surface water, the averaging of
11 the groundwater.

12 Often times in certain applications, one
13 day is non-detect. You might use half the
14 detection limit, but another means to create more
15 conservatism was to use the full reporting limit.
16 And then the constituents analyzed are the CCR
17 constituents under Appendices 3 and 4. And then
18 that groundwater data was compared to the surface
19 water standards that we've -- same surface water
20 standards we've discussed previously.

21 **Q. I can refer you to Page 47 of your expert**
22 **report where you discuss the findings of your risk**
23 **analysis.**

24 A. 47?

1 **Q. 47.**

2 A. Yes. So second paragraph of that page,
3 our conclusion was that the results of the surface
4 water risk evaluation indicate that downgradient
5 groundwater conditions at each of the four stations
6 do not pose unacceptable risk to surface water
7 receptors.

8 And it's WCG's opinion it's consistent
9 with the expert report of John Seymour who
10 concluded that it was his opinion that groundwater
11 conditions do not pose risk to surface water
12 receptors.

13 **Q. You noted a finding in the paragraph above**
14 **on Page 47 that there was a different view as to**
15 **Monitoring Well 1.**

16 **Can you describe your analysis there?**

17 A. Yes. At Monitoring Well 1, the difference
18 of MW-1 was that there was a slightly higher
19 PH concentration than in the other wells. That
20 PH concentration was measured at an average basis
21 at 9.74 units, and the surface water standard for
22 PH ranges between 6.5 and 9. So in that particular
23 instance the average concentration for PH does
24 exceed the surface water concentration.

1 **Q. And what was the conclusion in the risk**
2 **analysis for MW-1?**

3 A. Well, as I've mentioned previously as
4 we've noted here, there's approximately 700 feet of
5 distance between MW-1 and Lake Michigan. So those
6 processes of absorption, diffusion, dispersion,
7 would be having an impact on that PH as it migrated
8 eastward, and we felt would not be at a
9 concentration exceeding those surface water
10 standards by the time it reached the surface water
11 body.

12 **Q. Turning to the next slide in 1702, as we**
13 **did with the other stations, would you review the**
14 **risk analysis findings for boron at Waukegan?**

15 A. Yes. Again, this was provided as an
16 example of one of the constituents that were
17 averaged. This is boron again showing the range of
18 concentrations on the left-hand side, the Y axis.
19 The wells themselves are along the X axis at the
20 bottom.

21 We show the average concentration for
22 boron for both total and dissolved at each of those
23 four wells. And then the blue bar across the top
24 of the graph shows the groundwater protection or

1 the surface water protection standard.

2 **Q. And as with the other stations, for this**
3 **testing looking at, say, MW-2, what was the**
4 **location of MW-02 relative to the actual surface**
5 **water?**

6 A. Again, this is roughly 700 feet from the
7 surface water. So similar to the discussion about
8 PH, these concentrations would likely be much lower
9 through these other hydrogeochemical processes by
10 the time it would reach the surface water.

11 **Q. So does your analysis account for any**
12 **travel time as we see it on this Page 87?**

13 A. Yes, it does. It picks up that distance
14 that the groundwater would -- you know, one way of
15 looking at this as it's been described previously
16 would be even if the -- these wells were right at
17 the beach for Lake Michigan and this groundwater
18 was flowing directly into Lake Michigan, it would
19 not be flowing in at a concentration posing a risk.

20 **Q. You had the opportunity to visit the**
21 **Waukegan station?**

22 A. Yes, I have.

23 **Q. And you just talked about the**
24 **700-foot distance to the lake. Given that**

1 **distance, what is your opinion about the potential**
2 **for seeps?**

3 A. I don't think it's likely, and I believe
4 there's been previous testimony that others that
5 have walked and inspected those areas of the
6 downgradient slope from the site have not seen any
7 seeps.

8 **Q. Turning to Page 88 of Exhibit 1702, would**
9 **you summarize the main points relating to your**
10 **remedy assessment at Waukegan?**

11 A. Yes. So we have quite a bit of background
12 data from upgradient wells that help us understand
13 contributions to what's going on at the regulated
14 units. There's regular groundwater elevation data
15 that's being contoured and contour maps that are
16 showing a consistent groundwater gradient.

17 There's no evidence of groundwater flow
18 from the ponds to the upgradient wells. And as
19 noted previously, the units that have been
20 receiving coal ash are no longer receiving them
21 now, nor will they in the future. And the ponds
22 will either be closed or repurposed for other
23 needs.

24 The trend testing that we've done on the

1 downgradient groundwater wells shows that the
2 downgradient groundwater quality shows that they're
3 lightly more upward trends than downward when you
4 look just simply at the trends, not at the
5 statistically significant trends. We don't think
6 that that's entirely unexpected given the presence
7 of what we know coming from off site and
8 upgradients and also what we believe to be
9 contributed from the uncapped fill area to the west
10 of the west pond.

11 And as a consequence, we believe that a
12 remedy for that area is warranted so that as part
13 of that remedy a groundwater management zone would
14 be instituted coupled with what's already in place
15 from an environmental land use control to continue
16 providing adequate protection of potential
17 receptors. But even with that, in looking at
18 on-site and off-site, we don't see that there are
19 receptors present which would support the overall
20 strategy that we're proposing.

21 HEARING OFFICER HALLORAN: Ms. Nijman, could
22 you raise your voice a little, please? Thank you.

23 BY MS. NIJMAN:

24 **Q. Referring you to Slide 89 on Exhibit 1702,**

1 **what was your remedy analysis then for Waukegan?**

2 A. Several components to that. Consistent
3 with the other stations, we feel as though the
4 federal and state CCR surface impoundment rules
5 should continue to be complied with and to continue
6 following the steps necessary to close the surface
7 impoundments. We agree that the continued
8 monitoring of the groundwater is appropriate under
9 the various frameworks that are already in place.

10 We believe, as I noted, to close the
11 surface impoundments and repurpose them as needed.
12 We have proposed a presumptive remedy including a
13 capping of the FS area. And then consistent with
14 the other three stations, we know that there's both
15 a state and a federal rulemaking that's in the
16 process and that when they, assuming that they are,
17 and when they are promulgated, that whatever those
18 requirements may lay out as it applies to the
19 station, that they be followed.

20 **Q. And let's turn to the next slide which**
21 **describes, I believe, the presumptive remedy, the**
22 **cap you mentioned.**

23 **Would you describe that, please?**

24 A. So we know that there's some cover on the

1 fill area as shown by the borings that were done
2 and by the fact that it is supporting a vegetative
3 cover, but that is not an engineered cover. So
4 we're proposing to have a low permeability cap
5 installed over that area which we have used
6 regularly to address similar conditions at other
7 sites both in Illinois and in the area as a whole.

8 What that cap will do and based upon
9 preliminary modeling that we've already done using
10 standard modeling software is basically eliminate
11 the infiltration of rainwater into the unsaturated
12 ash that would exist below the cap once the cap is
13 installed. You can see it goes from 0.4 inches per
14 year to 0.0003 inches which is nearly -- it says
15 here a 99.9 percent reduction. So we'd basically
16 be eliminating ongoing contribution of rainwater
17 migrating through those unsaturated fills. And
18 then we feel that that will help us drive the
19 groundwater conditions to a condition below the
20 Class 1 groundwater standards quicker than if
21 nothing was done.

22 And then of course we have this
23 complicating factor of the federal and state
24 historic fill area rules that may have an influence

1 on what happens here as well. So there's some
2 timing issues with respect to when this cap should
3 be done versus when there's some certainty around
4 what those rules may require for this area.

5 **Q. When you say that about the timing, what**
6 **is your concern?**

7 A. Well, I think we've highlighted previously
8 that there have been past actions that Midwest Gen
9 has taken voluntarily before the rules came out,
10 and after the rules came out, those voluntary
11 actions had to be redone to bring in particular
12 with the lining of the ponds into compliance with
13 the rules after they were promulgated.

14 And so we're just leery of there being
15 conflicts between what might be done as part of our
16 proposed cap remedy which we think is
17 appropriate -- an appropriate remedy given the
18 circumstances of the site, but also want to be
19 careful that we don't have to go back and redo
20 something if the new rules demand other actions for
21 these types of areas.

22 **Q. How does your analysis of the cap over the**
23 **FS area relate to what you explained yesterday**
24 **about the mass of contaminants that exist -- a**

1 **finite mass that exists in CCR?**

2 A. So I think yesterday I mentioned that our
3 primary concern with the former slag area is that
4 there is a majority -- in fact, the analysis we've
5 done says something on the order of 80 percent of
6 the waste materials that are there are in the
7 VADOSE zone. That's in the area above the
8 groundwater table so that they're not in regular
9 contact with groundwater.

10 We do acknowledge that approximately
11 20 percent of that waste mass is in contact with
12 the groundwater, but the part that's in contact
13 with groundwater has been for many years based upon
14 our understanding of this -- the ash that's in this
15 particular area.

16 So as you mentioned, there's a finite
17 amount of inorganics that are contained in that ash
18 that will leach out over time, and that amount of
19 leaching will diminish with the passage of time.
20 However, the same can't be said for the ash in the
21 VADOSE zone. So as precipitation events occur, the
22 surface water, some will shed off of the area, but
23 much of it will infiltrate through the soil cover,
24 through the ash materials, ultimately down to the

1 water table.

2 And so our remedy would cut that migration
3 potential off. So we would have a situation where
4 those VADOSE zone ashes which are regularly wetted
5 and given the opportunity to leach materials from
6 the ash, we would eliminate that because there
7 would no longer be rainfall infiltrating through
8 the VADOSE zone ash materials.

9 **Q. You mentioned a few minutes ago that the**
10 **off-site groundwater from off-site sources, I think**
11 **you said the tannery and the boiler?**

12 A. That's correct.

13 **Q. Will contaminated groundwater from off**
14 **site continue moving onto the Waukegan station in**
15 **your opinion?**

16 A. Yes, we do think so.

17 **Q. And how does this contamination from**
18 **off-site migration factor into your remedy**
19 **assessment?**

20 A. Well, we know it's a condition that we'll
21 be managing for sometime, but we have had the ELUCs
22 put into place which is prohibiting the
23 installation of wells within those areas. Our
24 remedy for the FS area is not going to do anything

1 about what's being contributed from those
2 off-gradient -- or off-site upgradient sources.

3 In that case, we're still relying more on
4 that downgradient receptor evaluation that we've
5 done for each of the four stations to help us
6 understand that even with these ongoing
7 contributions, some of those mechanisms that we've
8 talked about frequently hydrogeologically are going
9 to continue to influence even those plumes, and
10 that we should be protective with the monitoring
11 network that we have in place and the conditions
12 that we've already modeled.

13 **Q. Either you or Mr. Maxwell mentioned before**
14 **that caps are a common remedial approach.**

15 **Am I correct in that?**

16 A. Yes, that's correct.

17 **Q. Okay. Could you give me some examples of**
18 **when you have installed a cap as a remedial**
19 **approach?**

20 A. So I think a good example would be a
21 project that both Mr. Maxwell and I worked on
22 together, a steel mill in northwest Indiana. There
23 were a mix of steelmaking waste materials that had
24 been placed in a remote area of the property and

1 had been sitting there for many years. That site
2 was subject to a RCRA corrective action process, so
3 that area was designated as a solid waste
4 management unit.

5 And the remedy that we proposed and had
6 approved through both state and federal agencies in
7 that instance was to place a cap over the shmoo
8 area and then continue monitoring it, and that cap
9 was very successful in interrupting the rainwater
10 infiltration to the point that we were even able to
11 discontinue our monitoring after not too many years
12 after the cap went into place.

13 **Q. Do you have examples of using a cap if**
14 **waste materials are in contact with groundwater?**

15 A. Yes. And this site was one where that was
16 the case.

17 **Q. Do you recall Mr. Quarles testifying about**
18 **a report that he reviewed from EPRI, the Electric**
19 **Power Research Institute?**

20 A. Yes. I recall his reference to that
21 document, and I've reviewed that document myself.

22 **Q. If you would pull it out, it should be in**
23 **front of you, Exhibit 1103.**

24 A. I have that.

1 **Q. What is the date on this report?**

2 A. On the second page behind the cover page,
3 it says that it's the final report dated
4 September of 2001.

5 **Q. Does this -- in the title says it refers**
6 **to three unlined coal ash impoundments.**

7 **Do you see that?**

8 A. I do.

9 **Q. What does an impoundment refer to in this**
10 **2001 report?**

11 A. The impoundments that they're referring to
12 here were in most instances comprised of several
13 ponds that were receiving sluiced ash material from
14 an ongoing operation.

15 **Q. And this 2000 date was prior to any -- to**
16 **the federal CCR regulations?**

17 A. That's correct.

18 **Q. Do you know if EPRI was referring to**
19 **the federal definition of an impoundment?**

20 MR. RUSS: Objection, leading.

21 HEARING OFFICER HALLORAN: Sustained.

22 MR. DORGAN: I'm not sure if it was or not.

23 HEARING OFFICER HALLORAN: I think you were
24 supposed to rephrase, but that's fine.

1 BY MS. NIJMAN:

2 Q. At the same time that we're looking at
3 this, could you pull up Exhibit 1102, Mr. Quarles'
4 rebuttal report, at Page 11?

5 A. I have this.

6 Q. Do you see Section 2.3.5 where he
7 discusses this EPRI article? Second full
8 paragraph.

9 A. Yes, I see it.

10 Q. What is Mr. Quarles' concern with the cap
11 that Weaver is proposing in the FS area?

12 A. I think the operative statement he made in
13 this paragraph is the second sentence where he
14 says, WCG's plan to construct a cap over saturated
15 CCRs at the FS -- FAS area at Waukegan might
16 increase, emphasis added, groundwater
17 contamination -- contaminant concentrations rather
18 than improving conditions stated by WCG.

19 Q. And going on there, does he rely on this
20 EPRI report?

21 A. Yes. He specifically referenced the
22 findings of this particular study to support that
23 conclusion.

24 Q. What is your opinion about applying this

1 **EPRI discussion to the Waukegan station?**

2 A. I think this is a kind of apples and
3 oranges comparison. When you read this, you can
4 see and even the figures show individual ponds
5 within what they're considering to be an
6 impoundment area. They were receiving ongoing
7 contributions of ash that was being sluiced, so it
8 was a combination of both ash and water. The water
9 was going in. The water was leaching out.

10 And they had -- of the three instances,
11 there was one area where the amount of accumulated
12 ash in one of the ponds still sat within the
13 groundwater table. And what I found particularly
14 interesting is when they discussed the watering in
15 the context of this report, they're talking about
16 stopping the inflow of water. They're not talking
17 about removal of groundwater. So, again, I didn't
18 think that they're particularly related as a
19 consequence. I'm not sure that I agree with
20 Mr. Quarles' findings.

21 **Q. And in this study was a cap actually**
22 **placed on the pond that Mr. Quarles was concerned**
23 **about?**

24 A. No. They had done modeling to project

1 what they thought was gonna happen, but they never
2 actually put the caps in.

3 Q. And you mentioned the age of these
4 impoundments. Why was that relevant in the EPRI
5 study?

6 A. I don't know that I necessarily mentioned
7 the age. I think what I was referring to is that
8 these had been operational ponds for quite sometime
9 receiving sluiced ash and water, and so the fact
10 that they had been used unlined for as long as they
11 had was more of what I'm referring to.

12 Q. If you look at the EPRI report at
13 Page 3-1?

14 A. I'm there.

15 Q. In the first paragraph under the site
16 description in about two-thirds of the way down
17 there's a sentence that begins, the west
18 impoundment and unlined portions of the east
19 impoundment were removed from service in late 1996.

20 Do you see that statement?

21 A. Yes, I do.

22 Q. So given what you said about the date of
23 this report in 2001, does that date of 1996 have
24 any relevance?

1 A. Certainly the fact that they did the study
2 in 2001 after these were removed from service in
3 1996 would have allowed conditions to have changed
4 between the two dates, but I still look at it more
5 from the fact that we're not dealing with the pond
6 for the former slag area. These were -- they're
7 much different circumstances.

8 **Q. Thank you.**

9 **I'd like to go back to Mr. Quarles'**
10 **rebuttal report just one page back at Page 29.**

11 A. I'm sorry. What page?

12 **Q. Page 29. And if we focus on the last**
13 **bullet on Page 29, Mr. Quarles refers to a former**
14 **fly ash storage area located in the northwest**
15 **corner of the property, not illustrated on the WCG**
16 **figure. See Figure 6, my prior report.**

17 Do you see that?

18 A. Yes, I do.

19 **Q. And have you had an opportunity to look at**
20 **Mr. Quarles' Figure 6 of his prior report?**

21 A. I did.

22 **Q. If we can turn to Exhibit 1101 and look at**
23 **Figure 6?**

24 A. It's -- I'm looking at that figure.

1 **Q. And what is this Figure 6?**

2 A. This is from his report. It's titled,
3 Historic Site Conditions 1972 Waukegan Station.

4 **Q. And if you look to the northwest in the**
5 **corner, Mr. Quarles has identified a former fly ash**
6 **storage area up there?**

7 A. Yes, that's correct.

8 **Q. Is that on Midwest Generation's property?**

9 A. No, it's not.

10 **Q. And do you know if -- well, do you have an**
11 **opinion of the location groundwaterwise of that**
12 **property?**

13 A. It remains upgradient of the Waukegan
14 station.

15 **Q. What is your opinion about the sufficiency**
16 **of the investigations for the purposes of your**
17 **remedy assessment at Waukegan station?**

18 A. We feel that, as we've demonstrated in our
19 report, there's been quite a bit of historic work
20 performed at the Waukegan station, that the
21 monitoring network that's in place allows us to
22 evaluate potential risks to on-site and off-site
23 receptors; and that while as we've acknowledged
24 with the other stations, there may be some data

1 gaps at some point that we need to address that in
2 totality we feel that there's a reasonable amount
3 of information allowing us to help the Board
4 evaluate appropriate remedies for the conditions
5 that have been represented at the sites, and we
6 continue to believe that.

7 **Q. Let's turn to your next slide, slide 91 of**
8 **Exhibit 1702. We'll jump right to slide 92, your**
9 **overall conclusions for the four stations.**

10 **Would you go over these, please?**

11 A. Yes. So this is our summary of what we're
12 proposing for the stations as a whole, similar
13 components for each starting with the continued
14 monitoring of groundwater under the federal and
15 state CCR rules. Skipping ahead just a little bit,
16 we also recommend that the monitoring that's being
17 done under the terms of the CCAs relative to the
18 GMZs be continued, so fundamentally continue doing
19 the groundwater monitoring that's ongoing at the
20 sites.

21 Close and/or retrofit the surface
22 impoundments under the CCR rules, and in each
23 instance I believe that process is already under
24 way. Continue to evaluate the groundwater

1 conditions with respect to ongoing implementation
2 of the monitored natural attenuation strategy. We
3 believe it's occurring. We believe it will
4 continue to occur, and we believe that the
5 groundwater monitoring will give us the basis to
6 continue evaluating that.

7 Maintain institutional controls, we talked
8 about the ELUCs that existed at each of the four
9 sites. Those should be maintained. The only way
10 that they wouldn't would be to remove them from the
11 deed. We certainly don't envision that happening.
12 Then we're recommending this cap as a presumptive
13 remedy for the Waukegan FS area west of the west
14 pond.

15 And then, again, as we've noted a number
16 of times, as the new regulations with respect to
17 historic fill areas are promulgated at both the
18 state and federal level, that whatever those rules
19 end up looking like, they should be adhered to and
20 implemented for each of the four stations.

21 **Q. When you have on this bullet, the third**
22 **bullet from the bottom, maintain institutional**
23 **controls, does that also include the groundwater**
24 **management zones?**

1 A. Yes, it does.

2 **Q. And how does the Waukegan -- I know you've**
3 **answered this.**

4 **The Waukegan FS area presumptive remedy,**
5 **how does that relate to groundwater management**
6 **zones?**

7 A. So once we propose a remedy that we agree
8 to implement will have the ability to seek a
9 groundwater management zone for the relevant areas
10 of the Waukegan station.

11 **Q. The second bullet you have, the closing**
12 **and retrofitting of the surface impoundments under**
13 **the CCR rules, can you describe whether that --**
14 **whether you consider that to be a closure or,**
15 **excuse me, a control mechanism?**

16 A. Well, we know that with the exception of
17 one basin at Powerton, all the other basins are no
18 longer receiving or will be receiving coal ash. In
19 fact, none of them but one are currently receiving
20 coal ash. So through a remove -- through a closure
21 process materials will be appropriately managed,
22 whether that be through clean closure or closure in
23 place, and we would see that as at least helping to
24 address potential contributions from the surface

1 impoundments that are present at each of the
2 stations. So in some measure, yes, that would be a
3 control for at least those materials at the sites.

4 Q. Before we go on, I just want to make sure
5 the record is correct on one thing. If we go back
6 to your chart of ponds for Powerton?

7 A. Yes, I'm looking at it.

8 Q. So the first three ash basins, ash surge,
9 bypass and metal cleaning, the comments under
10 current closure plans is two retrofits. So I
11 didn't -- you made a statement about one pond, and
12 I just wanted to clarify whether --

13 A. No. I'm sorry. I was referring to the
14 one pond that's still receiving ash at Powerton
15 which is the ash surge basin. I wasn't necessarily
16 referring to the closure plans.

17 Q. Okay. Because these -- to your
18 understanding, these two other ponds may also
19 receive some ash?

20 MR. RUSS: Objection, leading.

21 HEARING OFFICER HALLORAN: Sustained.

22 Rephrase, please.

23 BY MS. NIJMAN:

24 Q. What is your understanding about the two

1 **other ponds receiving ash as the -- for the purpose**
2 **of the retrofitting?**

3 A. Yes. I was speaking to what's receiving
4 ash now. There's one pond that's receiving ash
5 currently. They are addressing the other two ponds
6 that may be used occasionally for ash management,
7 but they're not currently receiving ash.

8 **Q. Thank you.**

9 I can refer you to your report, expert
10 report, which is Exhibit 1701, at Pages 53 and 54
11 where you provide some information to the Board
12 about 33C and 42H factors.

13 Do you recall that section of your report?

14 A. Yes, I do.

15 **Q. And if we go to your slides, your**
16 **PowerPoint?**

17 A. Yes.

18 **Q. Number Page 93 of your PowerPoint at**
19 **Exhibit 1702, what are you addressing here?**

20 A. So Section 4.9 of your report is titled,
21 Relevant Section 33C and 42H Criteria. Our
22 understanding was that the Board wanted these
23 criteria to be evaluated with respect to what would
24 be an appropriate remedy and relief for the four

1 Midwest Generation stations. So we considered
2 those criteria with respect to what we're proposing
3 as a remedy, and we've outlined each of them.

4 And the first was the character and degree
5 of injury caused by the conditions at the site, and
6 several of the variables that should be considered
7 as part of that are the longevity and the location
8 of the injury. And what we just wanted to
9 highlight here is that two of the stations have
10 been in operation for over 50 years, two of the
11 other stations for more than a hundred years. And
12 that previously we established that the predominant
13 land use at each of the four stations is
14 industrial, not the exclusive, but the predominant.

15 And particularly at Waukegan, we know that
16 there are multiple superfund sites and other SRP
17 sites located in close proximity to that particular
18 station. We know at Joliet 29 we have the former
19 Caterpillar site to the west. That's an SRP site
20 that's gone through the SRP and has contributed
21 contamination to the western side of that parcel.

22 At Will County, we've got a quarry to the
23 south and a refinery to the north that have been
24 there for many years and will likely continue to be

1 operating there in the years to come. And then
2 Powerton, a little bit different from the other
3 three stations. It's located along the river.
4 Generally, the surrounding land uses are
5 industrial, but we also have the water bodies to
6 the northwest and some residential off to the east.

7 **Q. Turning to Slide 94, technical**
8 **practicability and economic reasonableness, what**
9 **did you consider -- what would you like to point**
10 **out here?**

11 A. Well, there's been past testimony and
12 documentation in this matter that's looked at
13 alternative remedial approaches for the stations,
14 and a number of them have been determined to be not
15 technically practicable or economically reasonable.
16 So we believe that what we've laid out in the
17 recommended actions that we proposed to take are
18 consistent with Brownfield's TACO type of a
19 strategy, which we've got a lot of experience in
20 Illinois with, and that they would be -- could be
21 approvable under that type of a framework.

22 We believe that the trend testing, our
23 evaluation of risk, the presence of the
24 institutional controls, the evaluation of off-site

1 receptors all demonstrates that what we're
2 proposing to do is appropriately protective. And
3 then we have the monitoring that's ongoing and
4 various controls that are applied through the CCR
5 rules with respect to the regulated units at each
6 of the sites.

7 Alternative remedies were considered, but
8 in that process of considering them, they were
9 deemed to be not technically practicable and
10 economically reasonable which is why we landed
11 where we did. And then, finally, again, it keeps
12 coming up I know, but these proposed ash fill area
13 rules at the state and federal level has an impact
14 on the way that we look at that just knowing that
15 there's a new framework that's going to be applied
16 at some point in the not too distance future.

17 **Q. And then turning to 95, Page 95 of your**
18 **Exhibit 1702, subsequent compliance and due**
19 **diligence, what factors did you want to point out**
20 **here?**

21 A. Well, a few things that we felt were
22 important to consider was that Midwest Gen
23 voluntarily initiated investigation of the sites
24 once they acquired the properties in consultation

1 and coordination with the Illinois Environmental
2 Protection Agency. They voluntarily agreed to
3 install monitoring wells and conduct hydrogeologic
4 investigations pursuant to those communications and
5 ongoing dialogue with the IEPA.

6 It's my understanding that they were one
7 of the, if not, the only operator in Illinois that
8 agreed to do that. They were one of many. Midwest
9 Gen voluntarily then entered into the compliance
10 commitment agreements in 2012 that led to a lot of
11 the later work that has been performed at the
12 sites. All of that work was performed, and the
13 agency ultimately acknowledged that that work was
14 performed consistent with their expectations
15 through future subsequent documentation.

16 Midwest Gen voluntarily relined their
17 ponds before the CCR rules came out. In some
18 instances they relined them again after the
19 CCR rules came out. They're actively complying
20 with the monitoring required under the CCAs that
21 allows them to continue applying the GMZs at three
22 of the four sites.

23 And we feel as though the fact that the
24 agency has not taken further enforcement actions

1 with respect to the conditions that have been
2 reported to them and the steps that have been taken
3 is a sign of a degree of acceptance on their part.

4 **Q. And then turning to Slide 96, duration and**
5 **gravity, what factors would you like to point out**
6 **under that consideration?**

7 A. So, as noted, Midwest Gen entered into the
8 CCAs voluntarily. That allowed them to establish
9 the GMZ which gives them the opportunity to monitor
10 the monitored natural attenuation that's taking
11 place while the GMZs are in place, and we have
12 exceedances of the groundwater protection standards
13 that stays those conditions from being considered a
14 violation. So we agree that they should continue
15 to remain in place.

16 The violations that were identified before
17 the GMZs were in place and even the one instance of
18 open dumping were of very limited duration. They
19 did not go on for an extended period of time. They
20 were not ignored. They were -- steps were taken to
21 address the conditions in a matter consistent with
22 what the IEPA was asking.

23 The comparison of the groundwater data to
24 the surface water standards shows that we don't

1 have an observed risk to the proximal surface water
2 bodies for each of the four stations. The ELUCs
3 are an important instrument to prevent the use of
4 groundwater for portable purposes at these
5 stations, especially downgradient of the areas that
6 we've discussed at each of the four stations. So
7 we don't have potential receptors for that
8 groundwater. We're eliminating one of those
9 components of the risk triangle.

10 And then, finally, as I mentioned the
11 12D violation at Powerton or, actually, 21A, at
12 Powerton was a very brief two- to three-month type
13 of thing and occurred during the winter when the
14 records suggest the ground was frozen and then it
15 was remedied. And so we feel as though the
16 likelihood of that having been a substantial
17 contributor to ongoing contamination was limited.

18 **Q. How do the historic fill areas identified**
19 **at the stations fit into these factors that you've**
20 **identified on Exhibit 94, 95, 96 -- Pages 94, 95,**
21 **96?**

22 A. They certainly factor in. We are aware of
23 both documented and suspected fill areas. We,
24 again, have looked holistically at these sites with

1 respect to this off-site receptor, potential
2 receptor scenario. So we feel as though we do have
3 means by which to assess some of these fill areas.
4 There may be, as I've said before, some data gaps
5 that get addressed.

6 Perhaps there's additional work done as
7 part of the new fill area rules, but that in the
8 totality of what's in place now and the historic
9 dataset with respect to what we were asked to do by
10 the Board, we feel like we've taken a reasonable
11 approach, supported it technically, and that we've
12 come to a reasonable outcome that's workable.

13 MS. NIJMAN: Mr. Hearing Officer, I believe I
14 am about done, if I could just take two minutes.

15 HEARING OFFICER HALLORAN: Sure. Off the
16 record.

17 (WHEREUPON, a short recess was
18 taken.)

19 HEARING OFFICER HALLORAN: We're back on the
20 record. It's approximately 2:37. Ms. Nijman is
21 still in her direct with her experts.

22 You may proceed.

23 MS. NIJMAN: Thank you.

24

1 BY MS. NIJMAN:

2 Q. Just a couple of things to finish up.

3 Mr. Maxwell, you have provided the numbers
4 for each of the stations for defining no trends,
5 what that meant?

6 BY MR. MAXWELL:

7 A. Correct, yes.

8 Q. I neglected to ask you how you calculated
9 those numbers, how you reached them.

10 A. Yeah. So what I did was I looked at the
11 percentages or the data that was 100 percent
12 non-detect and also added to that the data that was
13 at least 90 percent non-detect. So when I say -- I
14 was using the phrase primarily non-detect. I meant
15 90 percent or more non-detect.

16 Q. And why did you take that
17 90 percent threshold?

18 A. That was intended to reflect an
19 overwhelming majority of the data were non-detect.
20 As I think I mentioned, there were others that fell
21 into the no trend category that still had less than
22 90 percent non-detects, but 90 percent was the
23 threshold that I used to be considered
24 substantially non-detect.

1 Q. And whether it was a hundred percent or
2 90 percent, did that change your opinion?

3 A. It did not, no.

4 Q. And then, Mr. Dorgan, at Waukegan you
5 mentioned the VADOSE zone at 80 percent, I believe,
6 the ash -- the material in the FS area; is that
7 right?

8 BY MR. DORGAN:

9 A. Yes, that's correct.

10 Q. How did you calculate that figure?

11 A. Well, I looked at the data. Mr. Maxwell
12 and I looked at it together. He's the one that
13 looked at the individual boring logs, so I'll maybe
14 let him answer that question.

15 BY MR. MAXWELL:

16 A. So we took the boring logs from the 2020
17 FS area investigation and looked at the total sum
18 footage of ash, and then looked at the total sum
19 footage of wet that was logged on the boring logs.
20 So as an example, if there was a thousand feet of
21 total ash that was logged, and 200 feet were logged
22 as wet, 200 over a thousand would be considered
23 20 percent.

24 And I'm just using round numbers, but

1 that's the results of our analysis without having
2 the logs in front of me.

3 **Q. And did you go through each log to do that**
4 **in the FS area?**

5 A. I did. I went through and marked out
6 where it was wet and then obviously the total
7 thickness of ash in order to come to that
8 calculation.

9 **Q. Thank you.**

10 **Mr. Dorgan, have your opinions today been**
11 **given with a reasonable degree of scientific**
12 **certainty?**

13 BY MR. DORGAN:

14 A. Yes they have.

15 **Q. And, Mr. Maxwell, have your opinions today**
16 **been given with a reasonable degree of scientific**
17 **certainty?**

18 BY MR. MAXWELL:

19 A. Yes, they have.

20 MS. NIJMAN: At this point, Mr. Hearing
21 Officer, I move to admit Exhibit 1701, the expert
22 report.

23 MR. RUSS: No objection.

24 HEARING OFFICER HALLORAN: Admitted, 1701

1 admitted.

2 (WHEREUPON, Exhibit No. 1701 was
3 admitted into evidence.)

4 MS. NIJMAN: And I move to admit 1702, the
5 PowerPoint presentation we went through today.

6 MR. RUSS: Is this not as a demonstrative?

7 MS. NIJMAN: No, as an exhibit as we have done
8 with the our PowerPoints in this hearing.

9 MR. RUSS: I mean, I don't recall how we
10 admitted them in the past, to be honest, but this
11 seems like a demonstrative to me more than --

12 MS. NIJMAN: Well, interestingly enough, I made
13 that objection at the first hearing.

14 MR. RUSS: That may be true.

15 MS. NIJMAN: And it was overruled, and all the
16 PowerPoints were allowed in as exhibits.

17 HEARING OFFICER HALLORAN: I don't see a
18 problem with it, Mr. Russ.

19 MR. RUSS: Yeah. So the two problems I guess
20 are that, one, we had some demonstratives that were
21 just demonstratives. So for consistency I think it
22 would be the same. But also because we have some
23 objections to the facts presented in this exhibit,
24 this set of slides, as being inaccurate.

1 We still maintain that this is -- this
2 presentation was used as a tool for them to
3 testify, but I don't believe it was -- it doesn't
4 take the form of an exhibit that the Board can rely
5 on.

6 HEARING OFFICER HALLORAN: Okay. Well said.
7 It's noted in the transcript, but I'm going to
8 admit 1702, admitted and not as a demonstrative.

9 (WHEREUPON, Exhibit No. 1702 was
10 admitted into evidence.)

11 MS. NIJMAN: Thank you, Mr. Hearing Officer.
12 I'm completed with my direct.

13 HEARING OFFICER HALLORAN: All right.

14 Mr. Russ, cross.

15 MR. RUSS: Thank you.

16 HEARING OFFICER HALLORAN: Thank you.

17 CROSS-EXAMINATION

18 BY MR. RUSS:

19 **Q. And thank you both for sitting through**
20 **this for so many days. My name is Able Russ. I'm**
21 **an attorney for the Environmental Integrity Project**
22 **in D.C. I'm gonna start with some background**
23 **questions.**

24 **Yesterday one or both of you, I can't**

1 **remember who it was, said that you had implemented**
2 **multiple monitoring well networks at various sites.**

3 **Maybe both of you have.**

4 HEARING OFFICER HALLORAN: You have to say yes
5 or no.

6 MR. DORGAN: Both of us have, but I think
7 Mr. Maxwell answered affirmatively to that
8 question.

9 MR. MAXWELL: Yes.

10 BY MR. RUSS:

11 **Q. Okay. So I'll ask you both this question.**

12 **Mr. Maxwell, how would you go about**
13 **designing a monitoring well network generally**
14 **speaking?**

15 BY MR. MAXWELL:

16 A. Just completely -- I mean, without a site?

17 **Q. A 40-acre rectangle of landfill, I**
18 **believe.**

19 A. Well, I guess that's little hard to
20 answer. It obviously is dependent on the
21 regulations. I'll start off by saying that. We,
22 when presented with that type of a problem, would
23 default to the regulations. The most substantial
24 groundwater monitoring networks that I've designed

1 in my career are related to solid waste landfills
2 and CCR units. So, again, you know, those
3 regulations would apply.

4 So, you know, very generally you would --
5 you would -- you know, the state requirements are a
6 little bit different, but you want to, for the most
7 part, begin -- I mean, the starting point would be
8 if you got a rectangle, as you referenced, you want
9 to do it in phases to be efficient ideally. You
10 want to maybe start with the four corners to see
11 what information might be available specific to
12 your site.

13 Before you even did that, you would want
14 to look at whatever information you can get from
15 the literature in order to try to get a feel for
16 what the groundwater units would be. So that would
17 get me going in terms of just hypothetically how it
18 would -- how I would go about designing a network.

19 **Q. And with respect to groundwater flow, I**
20 **presume you would want to install some upgradient**
21 **wells or one at least; is that right?**

22 A. In most cases -- well, there are
23 provisions in the rules that allow for an intrawell
24 type of an approach. That is an option under many

1 regulations. So in some instances identifying
2 upgradient, it may be difficult.

3 **Q. Right.**

4 A. And so you've got that option in your
5 pocket to use intrawell.

6 **Q. Okay. If the groundwater flow allows for
7 an upgradient well, is that something you would
8 typically install?**

9 A. If we could discern and we were confident
10 that the -- we were -- we knew upgradient to a
11 reasonable degree of certainty, you would design
12 your network to try to identify some upgradient,
13 some downgradient, because the idea is you want to
14 try to identify a change between upgradient and
15 downgradient.

16 **Q. Right, right. Thank you. That's
17 basically where I was headed with that.**

18 **So when you said some downgradient,
19 what's -- I mean, I know it varies by site, but
20 what's a number of wells that you would want to
21 start with, a minimum number of downgradient wells?**

22 MS. NIJMAN: Objection, vague.

23 HEARING OFFICER HALLORAN: He can answer if
24 he's able. Overruled.

1 MR. MAXWELL: Highly dependent on the
2 regulation that you're dealing with, the size of
3 the site. It's just too hard to -- too hard to
4 answer just as a generic question.

5 BY MR. RUSS:

6 Q. Have you ever implemented a groundwater
7 monitoring network with just one downgradient well?

8 A. I don't recall ever having done that.
9 It -- I mean, when you say a groundwater monitoring
10 network, I'm thinking of a large network. We
11 monitor groundwater as part of Brownfield's
12 investigations, just as an example.

13 UST site investigations, as an example,
14 it's certainly very possible that I have installed
15 just one downgradient well in order to identify
16 potential impacts associated with the UST, as an
17 example.

18 Q. Right.

19 A. Again, it's just so site specific.

20 Q. And for the record, UST is an underground
21 water storage tank?

22 A. Correct.

23 Q. And it's not very large?

24 A. Exactly. So one may be able to cover you

1 in that particular example.

2 **Q. Okay. What about a 40-acre rectangle?**

3 MS. NIJMAN: Object to --

4 BY MR. RUSS:

5 **Q. How many wells --**

6 HEARING OFFICER HALLORAN: I'm sorry. Counsel,
7 we can't talk over one another.

8 Ms. Nijman has an objection, and what is
9 your objection?

10 MS. NIJMAN: Object to vagueness of the
11 hypothetical.

12 HEARING OFFICER HALLORAN: You can rephrase,
13 Mr. Russ, please.

14 BY MR. RUSS:

15 **Q. Would you recommend a monitoring well**
16 **network for a 40-acre rectangle that only had one**
17 **downgradient monitoring well?**

18 MS. NIJMAN: Same objection.

19 HEARING OFFICER HALLORAN: He can answer if
20 he's able.

21 MR. MAXWELL: I -- the question is have I
22 ever -- would I recommend a one monitoring well
23 downgradient for a 40-acre hypothetical site?
24

1 BY MR. RUSS:

2 Q. That's my question, yes.

3 MS. NIJMAN: Same objection.

4 HEARING OFFICER HALLORAN: Same ruling.

5 MR. MAXWELL: I don't know that I can answer
6 that, sir. I -- it really -- it really depends on
7 the site, the regulation you're under. Is it
8 possible, maybe. I just -- I can't give you a yes,
9 no.

10 BY MR. RUSS:

11 Q. You've mentioned the federal and CCR rules
12 a number of times, right?

13 Are you familiar with the minimum
14 requirements for the monitoring well networks under
15 the federal CCR rule?

16 A. I believe that I am.

17 Q. How many downgradient wells do they
18 require?

19 A. I believe that they require a minimum of
20 four.

21 Q. Mr. Dorgan, same question, have you ever
22 designed a monitoring well network or a monitoring
23 well situation with just one downgradient well?
24

1 BY MR. DORGAN:

2 A. Possibly. Same circumstances, a small
3 site, something like a LUST or a related spill area
4 maybe.

5 Q. Okay. Have you ever designed a monitoring
6 well network with more than one downgradient well?

7 A. Yes, I have.

8 Q. Okay. I'm gonna move on. I think we're
9 good there. This is another question for both of
10 you.

11 I'll start with you, Mr. Dorgan, cause
12 both of your resumes say that you have experience
13 with fate and transport modeling.

14 Can you explain what that is?

15 A. Fate and transport modeling is -- there's
16 several different ways of doing it. It is where
17 you look at a particular contaminant. You look at
18 the hydrogeologic setting, and then you model the
19 potential migration over time of that contaminant
20 within that hydrogeologic setting.

21 Q. And so within the rubric of fate and
22 transport modeling, have you done groundwater
23 related fate and transport modeling?

24 A. Yes, I have.

1 **Q. What are some of the software packages**
2 **you've used in that work?**

3 A. Probably -- well, there's two-dimensional
4 model which are fairly routine. Once you start to
5 get into more three-dimensional modeling, the one
6 that's most frequently used is MODFLOW. There are
7 others, but that's one that's used regularly.

8 **Q. Okay. And, Mr. Maxwell, have you ever**
9 **used MODFLOW?**

10 BY MR. MAXWELL:

11 A. When you say used --

12 **Q. Let me ask a background question.**

13 **Are you familiar with MODFLOW?**

14 A. I'm familiar with it. I refer to the
15 results from those types of models.

16 **Q. Okay.**

17 A. Honestly, at this point in my career I
18 would have to say that I rely on some support staff
19 to actually do the modeling itself.

20 HEARING OFFICER HALLORAN: You have to speak
21 up, Mr. Maxwell, please. Thank you.

22 MR. MAXWELL: Sorry.

23 BY MR. RUSS:

24 **Q. Understood.**

1 Now, moving on to a different topic, just
2 doing some background cleanup before I get into
3 some other questions I have, but this has come up a
4 number of times, the difference between dissolved
5 in total or unfiltered and filtered. And I
6 believe, sorry again, apologies for not remembering
7 who said it.

8 Somebody said that they're basically the
9 same at these sites for these constituents; is that
10 right?

11 BY MR. DORGAN:

12 A. I believe that was my testimony at some
13 point yesterday.

14 Q. Okay. And is that true for all of the
15 constituents that we've been looking at --

16 A. Well --

17 Q. -- equally?

18 A. I don't think we said it was a 100 percent
19 correlation. I think what the past testimony and
20 our observation of the data is that there's very
21 little variability between dissolved and total. So
22 for all practical purposes, in some instances
23 there's quite a bit of difference, and that's just
24 not the case in most of the data that's been

1 collected for these four sites.

2 Q. Okay. And, Mr. Maxwell, do you agree,
3 same opinion about the difference between filtered
4 and unfiltered?

5 BY MR. MAXWELL:

6 A. Yes, I do. I do. And I would just add
7 that I think all of these sites, I think the
8 primary reason for that is the way we sample. The
9 way we sample is with low flow methodology which
10 tends to create minimal disturbance and sediment
11 stir-up as the sample is removed resulting in the
12 total concentrations being about the same as the
13 dissolved.

14 Q. So the methods you use don't produce a lot
15 of suspended solids, is that --

16 A. We don't do the monitoring, but the
17 procedures that are implemented result in a sample
18 that doesn't tend to create a lot of suspended
19 sediments, at least that's the intent of the sample
20 protocol.

21 Q. Okay. Thank you.

22 Now, yesterday and then again today
23 Ms. Nijman was asking about mass analysis, do you
24 remember that? I believe this was you, Mr. Dorgan.

1 BY MR. DORGAN:

2 A. Yes, I do.

3 Q. And you listed some of the information you
4 need to perform a mass analysis, if I remember
5 correctly?

6 A. I think I referenced to information that
7 might be used for that, but I don't know that I
8 provided a comprehensive list.

9 Q. One of the things you said was how much
10 contact there is, and I was wondering what you
11 meant by how much contact.

12 A. I think what I was referencing there was
13 the period of time in which the mass has been in
14 contact with the fluid, and I think we were
15 specifically speaking to groundwater at that point
16 in time. So the longer duration of the exposure,
17 the more likelihood that more of the mass has been
18 pulled out of that matrix.

19 Q. So the amount of time that there's been
20 contact between the mass and the groundwater is
21 what you're talking about?

22 A. Yes, I am.

23 Q. And would the amount of contact, you know,
24 three-dimensionally also be a relevant factor?

1 A. Not necessarily. With a more homogeneous
2 waste you'd have relatively similar starting
3 concentrations, so the aerial element of it would
4 be less of a variable than the time would be.

5 Q. So pivoting to you, Mr. Maxwell, sorry to
6 do this, but you were talking about at the former
7 slag ash area at Waukegan, 80 percent of the coal
8 ash is the VADOSE zone and 20 percent -- or maybe
9 it was you, Mr. Dorgan -- 20 percent is in the
10 water table or saturated.

11 So that -- to the question of how much
12 contact when you're doing a mass analysis, is that
13 the kind of information, 80 percent, 20 percent,
14 that you would use when you're conducting a mass
15 analysis?

16 BY MR. MAXWELL:

17 A. I think as Mr. Dorgan said, it would be
18 one consideration. Quantifying it we felt was
19 useful which is why we went through the exercise,
20 but it would be one aspect of an evaluation that
21 will would be useful to us.

22 Q. Okay. Is starting concentration in the
23 mass a relevant factor?
24

1 BY MR. DORGAN:

2 A. That's an interesting question because in
3 the circumstance we're referring to, we're not sure
4 we could know the starting concentration because
5 the contact has been as long as it has. So where
6 it started is difficult to know.

7 Q. Good point.

8 So in that situation, I guess, the current
9 concentration is something you would want to know?

10 A. Current concentration is useful, yes.

11 Q. Did you perform a mass analysis at any of
12 these four sites?

13 A. When you say mass analysis, what are you
14 referring to?

15 Q. I don't know. It's what you said. So
16 whatever you were talking about when you said mass
17 analysis, I'm just wondering if you did that at
18 these --

19 A. I was referring to the mass of the
20 contaminant within the matrix itself and how that
21 might change over time. I wasn't necessarily
22 trying to quantify in the terms of an analysis. I
23 was simply referencing that the longer that mass
24 has been in contact with the groundwater, the more

1 past leaching has occurred and diminishing the
2 original mass of the contaminant at whatever
3 concentration that may have been.

4 **Q. What do you mean by matrix?**

5 A. In this particular case I'm referring to
6 ash, but it could be other waste types that could
7 have been deposited in a condition where it comes
8 in contact with groundwater.

9 **Q. Is it possible to calculate the change in**
10 **mass over time?**

11 A. That would be very difficult. It would
12 require a lot of very specific information both
13 about the current conditions and the past history.
14 So I don't want to say it couldn't be done, but it
15 would be extremely difficult.

16 **Q. Okay. Now, shifting gears again,**
17 **Ms. Nijman asked you about Slide 14 in your**
18 **presentation and the Phase 2 ESA at -- oh, I didn't**
19 **write down the name of the site, but it's Slide 14**
20 **in your presentation, if you could turn to that.**
21 **Probably Joliet given the low number. Yeah.**

22 **Do you have it front of you?**

23 A. Yes, we do.

24 **Q. I guess this would be for Mr. Maxwell.**

1 **Ms. Nijman was asking you about wells M-3 -- MW-3**
2 **and MW-5, and you discussed the sampling of those**
3 **wells. And it says here eight RCRA metals.**

4 **What are the eight RCRA metals?**

5 BY MR. MAXWELL:

6 A. Let's see if I -- this is a little pop
7 quiz. Arsenic is one of them, chromium, lead,
8 cadmium, nickel, mercury. Without looking --
9 they're heavy metals. They're common heavy metals
10 that -- they're the most commonly analyzed when
11 you're looking at heavy metals.

12 **Q. Right. Is boron one of the eight RCRA**
13 **metals?**

14 A. Boron is not.

15 **Q. Is sulfate?**

16 A. Sulfate isn't considered a metal.

17 **Q. So here where you're talking about the**
18 **eight RCRA metals at MW-3 and 5, this doesn't**
19 **include boron and sulfate data, right?**

20 A. I don't believe boron and sulfate data
21 were within the scope of that -- of that Phase 2
22 ESA. Those -- the purpose of the Phase 2 ESA was
23 more to assess impacts to human health in the
24 environment as it relates to less common

1 constituents. Those boron and sulfate are more
2 common wet chemistry type constituents.

3 Q. Okay. Now I'm gonna turn to your trend
4 analysis which is discussed on Pages 42 to 44 of
5 your report and Appendix C of your report, as you
6 know. I'll give you second to just get those up in
7 front of you. Some of these questions will be a
8 little redundant, but bear with me. I want to make
9 sure the record is clear.

10 On Page 3 of 3 for the Joliet summary
11 trends, it's not paginated the way that your report
12 is, so I don't know what -- it's Bates Page 81507,
13 if that helps.

14 A. Got it.

15 Q. At the bottom of this -- well, first of
16 all, right below the table is a summary. And this
17 is something we talked about before during direct,
18 so I'm not gonna ask this question actually.

19 Then below that first set of statistics,
20 below the bold text there's three rows of text, and
21 the first row says 47 total tests.

22 Do you see that?

23 A. Yes.

24 Q. Why did you compare the number of downward

1 **trends to the number 47 in this table?**

2 A. So 47 is the sum of 34 and 13 which is the
3 downward -- the total number of downward and upward
4 trends. So the idea was where there was a trend
5 that was detected or identified, we wanted to look
6 to see what percentage of those trends were upward,
7 what percentage of those percentages were downward.

8 **Q. Yeah. And I know we've already talked**
9 **about this, but just for the record, why did you**
10 **exclude the no trend tests from that total of 47?**

11 A. No trend is a flat slope, a flat curve,
12 and that to me just is not meaningful in the way of
13 is it trending upward or is it trending downward.
14 There's no trend. It's flat. So -- and as we had
15 discussed, in the majority of the instances it's
16 flat because the majority of the data is
17 non-detect. So we believe that it was appropriate
18 to treat that separate from the results that
19 actually returned a trend.

20 **Q. And in your deposition you said that no**
21 **trend means that it's non-detect, right.**

22 **Do you remember that?**

23 A. I don't believe that I stated it that way.

24 **Q. Can you turn to your deposition at**

1 Page 176? On Line 15 there's a question.

2 So is it fair to say a majority of

3 the trend tests were not downward?

4 Ms. Nijman, objection, misstates --

5 Mr. Maxwell, the majority of the

6 trend tests were no trends.

7 64 percent of them were no trends,

8 and I would point out that no trend

9 actually indicates the constituent

10 wasn't detected. So no trend

11 means that essentially no constituent

12 was detected, and so that's the

13 majority of the trend test. In this

14 instance, 85 of the 132 are no trend.

15 Did I read that correctly?

16 A. You did. And I would point out that I did
17 use the word essentially. I didn't necessarily say
18 one hundred percent.

19 Q. Right. And to be fair, later in your
20 deposition you said in most instances it's flat
21 because there were non-detects. That's what you
22 said today.

23 Could you now turn to Page 81517 of your
24 report? That's the Bates. Again, the pagination

1 gets confusing, so I'm gonna use the Bates page for
2 this stuff.

3 A. Okay.

4 Q. I'm sorry. Bear with me for just a
5 second.

6 Can you explain what this is showing?

7 A. The page that says trend test at the top?

8 Q. That's the one, yep.

9 A. Okay. So this is the output from the
10 Sanitas statistical software that is a fairly
11 concise summary of the trend test results that were
12 performed. It lists the constituents and the wells
13 along the left side, and then the data following
14 the wells is the -- is the statistical output that
15 we used in order to tally up the various results
16 from the individual trend tests. So each row here
17 equates to a row in the summary tables preceding
18 this statistical output.

19 Q. Okay. Can you explain what the slope
20 column is showing?

21 A. I'm sorry. Could you repeat that, sir?

22 Q. Can you explain the column that says slope
23 at the top is showing?

24 A. So that's a calculation of the slope for

1 each individual constituent at each individual
2 well, and the -- so in instances where there's no
3 slope, that equates to no trend.

4 Q. So slope of zero is no trend; is that
5 right?

6 A. Correct.

7 Q. Okay. Can you explain what the column
8 that says at the top, percent NDs, is showing?

9 A. That is percent non-detects in the data.
10 ND refers to non-detect.

11 Q. Okay. And in your deposition when you
12 refer to situations where no constituent was
13 detected, that's the same as a non-detect, right?

14 Just to clarify, in your deposition you
15 said no constituent was detected. That phrase is
16 the same as saying a non-detect; is that right?

17 A. Correct.

18 Q. And that's the same as an ND in this
19 table?

20 A. ND indicates non-detect.

21 Q. Right.

22 A. Yes.

23 Q. Thank you.

24 Now, on 81517, the row for arsenic, comma,

1 **total and MW-04, do you see that?**

2 A. Yes.

3 **Q. Does this table also have a row for**
4 **dissolved arsenic in the same well?**

5 A. Yes, it does.

6 **Q. And I believe you said earlier that at**
7 **these sites total and dissolved are basically the**
8 **same?**

9 MS. NIJMAN: Objection, that misstates --

10 HEARING OFFICER HALLORAN: Can you speak up,
11 Ms. Nijman?

12 MS. NIJMAN: Objection, it misstates the
13 testimony which related to TDS.

14 MR. RUSS: I don't believe it did refer to TDS.
15 So earlier --

16 HEARING OFFICER HALLORAN: I'll allow him to
17 answer the question, and if need be, you can remedy
18 on redirect.

19 You may continue.

20 MR. MAXWELL: Would you repeat the question,
21 sir?

22 BY MR. RUSS:

23 **Q. Earlier in our cross you said that at**
24 **these sites the dissolved and total concentrations**

1 **were basically the same; is that right?**

2 A. For purposes of looking to add the
3 analytical results for purposes of a trend test, we
4 wanted to be thorough. Okay. So that's why we
5 included both. We just -- we didn't want to be
6 questioned about why certain data wasn't included.
7 So for purposes of attempting to be thorough, we
8 did the tests.

9 Q. **But just to be clear, in the case of**
10 **arsenic in Well MW-4, there are two results for**
11 **arsenic in Well MW-4; is that right?**

12 A. There are two --

13 Q. **There are two rows with results in this**
14 **table that would have been counted separately; is**
15 **that right?**

16 A. For purposes of tallying the trend tests.

17 Q. **Yeah. Are there other constituents with**
18 **both dissolved and total results in this table?**

19 A. I believe that there are, yes.

20 Q. **So for a number of well constituent pairs,**
21 **there will be two results that you're tallying?**

22 A. There'll be a total. There'll be a
23 dissolved result. We tested for trend. Again,
24 just attempting to be thorough here, it's

1 information -- I'll point out that I don't know
2 that we -- I'm quite sure we've never said that the
3 total and dissolves are identical. They are -- in
4 most cases they're similar. They're not
5 necessarily identical. You don't necessarily see
6 that in nature. So because they're not identical,
7 we thought there was value in testing both, again,
8 just to be thorough.

9 **Q. Okay. Now, if you turn back to**
10 **Page 81507, so just 10 pages earlier, did you find**
11 **a trend for dissolved selenium at MW-1 at**
12 **Joliet 29?**

13 A. That resulted in an upward trend.

14 **Q. Okay. And was it statistically**
15 **significant in the fourth column?**

16 A. We indicate no.

17 **Q. What's the difference between an up trend**
18 **that is statistically significant and one that**
19 **isn't?**

20 A. So it -- it has to do with the --
21 basically the slope of the line or the steepness of
22 the line. A line that's only slightly up or
23 slightly down is going to dispute what I'll refer
24 to as a regular trend.

1 A statistically significant trend is a
2 trend that's even -- that rises to a level of
3 statistical -- a statistical level of upward or
4 downward. So it's generally a steeper trend upward
5 or downward.

6 **Q. And in your line of work I assume you use**
7 **statistical significance in a lot of context. It's**
8 **not just for trends; is that right?**

9 A. Statistical evaluation of data is
10 something that we do outside of the scope of trend
11 testing.

12 **Q. Yeah. I mean, you calculate a value with**
13 **a certain degree of statistical confidence. I'll**
14 **leave it there for now, but there was a trend for**
15 **selenium in MW-1. It was not significant.**

16 So now please turn to 81519, 12 pages
17 forward. This is gonna be the corresponding details
18 in the -- so for selenium in MW-01, what is the
19 slope for that row?

20 A. That slope is a positive number that's
21 actually cut off.

22 **Q. Because it's very small, right?**

23 A. Cause it's very small. The three dots
24 indicate that it's cut off. So the slope is a

1 positive number that resulted in us indicating a
2 positive trend in the summary table.

3 **Q. Right. With a shallow slope?**

4 A. Correct. It wasn't statistically
5 significant.

6 **Q. Right. And then in that same well, and**
7 **looking again at selenium in MW-01, what percent of**
8 **the data was non-detect?**

9 A. In that particular well, 37.5 percent of
10 the data was non-detect.

11 **Q. Okay. So like you were saying earlier**
12 **with Ms. Nijman, you can have some non-detects and**
13 **still have enough detected data to calculate a**
14 **trend. I think that's what this is showing.**

15 A. That's what this is showing. That
16 37.5 number, that suggests that over a third of the
17 data is non-detect, but enough of the data was
18 detected where we were able to -- and we had enough
19 different numbers essentially to be able to
20 differentiate a slope or, I'm sorry, a slight
21 upward trend in this instance.

22 **Q. Okay. Now, flipping just two pages back,**
23 **81517, arsenic total in MW-04, what's the slope for**
24 **that one?**

1 A. That's a zero slope.

2 Q. What percent of the data was non-detect in
3 that case?

4 A. 45 percent of that data was non-detect.

5 Q. I'm sorry. I'm looking at arsenic total.

6 A. Oh, I'm sorry. I was looking at arsenic
7 dissolved.

8 Q. Yeah.

9 A. Arsenic total, which well?

10 Q. MW-4?

11 A. So that slope is zero, and the percent NDs
12 are zero.

13 Q. Okay. So you had a hundred percent of the
14 data above the detection limit in this case, and
15 the slope was zero?

16 A. That's right.

17 Q. Okay. As you were saying earlier,
18 sometimes you have no trend because of non-detects,
19 and sometimes you have no trend and it's not
20 related to non-detects?

21 A. This is an instance where there was
22 enough -- the number of upward and downward
23 indications in the data were equal.

24 Q. Yeah.

1 A. The same number of upward as there were
2 downward, that zeros out.

3 **Q. Okay. So in this case arsenic total in**
4 **MW-04, there are no non-detects. Do you consider**
5 **that to be a relevant data point?**

6 A. I think that to some degree all data
7 points are relevant. This is a data point. We've
8 evaluated the data. We've summed the total upward,
9 downward and no trends. And, you know, we have
10 come to the conclusion that the data -- the trend
11 testing data demonstrates, especially in the case
12 of Joliet, that the concentrations generally are
13 downwards.

14 Are they downward everywhere, no, but the
15 overall assessment of the data indicates that the
16 groundwater conditions are improving.

17 **Q. Yeah. I guess what I'm getting at is, you**
18 **in your summary statistics omitted the no trend**
19 **data. So you were comparing the downward and the**
20 **upward, and you left the no trend data out. And I**
21 **think your explanation in your deposition was that**
22 **that's usually related to non-detects, and so we're**
23 **not gonna look at that.**

24 **Here we have a data point that's not**

1 **related to non-detects, and I'm wondering if you**
2 **still agree with keeping this out of your summary**
3 **statistics.**

4 A. Well, the point I would make is this is
5 one data point. My testimony has been that -- was
6 at the deposition and is now, that a substantial
7 number of the non -- of the no trends are related
8 to non-detects. You've picked one example that
9 doesn't necessarily change the conclusions that the
10 majority of the no trend data are related to the
11 non-detect issue.

12 **Q. Right. But I'm asking about the summary**
13 **statistics where you calculate how many are going**
14 **down out of the total number of relevant data**
15 **points, and I'm wondering if you still agree with**
16 **keeping a data point like this out of that summary**
17 **calculation because this isn't related to the**
18 **non-detects.**

19 MS. NIJMAN: Asked and answered.

20 MR. RUSS: I don't think he did answer.

21 HEARING OFFICER HALLORAN: I disagree. I don't
22 think he answered.

23 MR. MAXWELL: I don't think that -- I don't
24 think that if we were to add the situations where

1 there was zero non-detects into the -- into the
2 analysis of the summary, that it's going to change
3 our conclusions.

4 BY MR. RUSS:

5 Q. Okay. Let's look at another example. Can
6 you look at barium dissolved on the same page in
7 Well MW--7?

8 A. Okay.

9 Q. What percentage of the -- what's the slope
10 for that?

11 A. That slope is zero.

12 Q. And how many non-detects?

13 A. There's zero.

14 Q. Okay. And MW-4 boron total, same page,
15 what slope?

16 A. I'm sorry. You said boron?

17 Q. Yeah, boron total in the MW-04.

18 A. Yeah, that's zero.

19 Q. And how many non-detects?

20 A. That's zero.

21 Q. Okay. That's just on one page. I found a
22 few. Now let's look at a different situation. On
23 the next page, 81518, chloride in Well MW-2. I'm
24 sorry. Don't bother with that one. That's another

1 zero zero.

2 Lithium total in MW-3 on this page, do you
3 see that row?

4 A. Yep.

5 Q. What's the slope for that?

6 A. Slope is zero.

7 Q. And what percentage of the data were
8 non-detect?

9 A. Ten.

10 Q. Okay. So that's not zero, but you still
11 had enough data to generate a slope estimate; is
12 that right?

13 A. That's correct.

14 Q. Okay. On Page 81519, the next page,
15 selenium dissolved in Well MW-3, what's the slope
16 there?

17 A. That slope is zero.

18 Q. And what percentage of the data were
19 non-detect?

20 A. 32 and a half.

21 Q. And again that's enough -- you still have
22 enough data to calculate a slope, right?

23 A. 32 and a half is still a third of the data
24 being non-detect which does bias the data, and so

1 there's enough non-detects here that it still is
2 influencing the no trend result.

3 And I just want to point out that we're
4 talking in the case of Joliet of 135 total tests
5 performed. Okay. So we've talked about a handful
6 and, however, that's a handful. And the majority
7 of the no trends are at least related to the non --
8 to some of them being non-detect.

9 Q. Right. Well, in fact, I think you gave us
10 the numbers in your testimony earlier today. There
11 are -- let's see if I can remember. Let's see.
12 That's Waukegan. Well, I'm probably not gonna be
13 able to find it now, but at Joliet -- at each of
14 the four sites you gave a number that were related
15 to the non -- a number of no trends that related to
16 non-detects and another number that were not
17 related to non-detects; is that right?

18 And as you're saying, the majority were
19 due to non-detects in your opinion?

20 A. I believe we just focused on the
21 non-detects.

22 Q. Right. You might not have given a number,
23 but you gave a number that were related to
24 non-detects out of the total and so you could

1 subtract --

2 A. Yeah, of course.

3 Q. Okay. I don't have to belabor the point.
4 I mean, I had a whole bunch of questions to go
5 through all of the examples of the non-detects --
6 the no trends not being related to non-detects at
7 Joliet, but I don't want to belabor it.

8 MS. NIJMAN: I'll object to the reference of a
9 whole bunch of data.

10 HEARING OFFICER HALLORAN: Sustained.

11 BY MR. RUSS:

12 Q. Okay. Did you conduct -- so looking at
13 your summary of trends tests in your report which
14 would be at -- for Joliet 29 starts on Page 81505,
15 the very first page of Appendix C.

16 Did you conduct any trend tests for MW-5
17 at Joliet 29?

18 A. While we didn't look at MW-5 at Joliet 29,
19 I believe that the prior expert, Mr. Seymour, did
20 look at MW-5. I know that he looked at additional
21 monitoring wells in addition to the ones that we
22 used. And as we explained in our prior testimony,
23 the wells that we focused on were at the
24 downgradient edge of the ponds which we felt were

1 most appropriate in terms of evaluating whether or
2 not the -- in assessing the overall character of
3 the groundwater.

4 **Q. Okay. Did you do trend tests for MW-08 at**
5 **Joliet 29?**

6 A. Again, I believe that Mr. Seymour
7 performed trend tests for that well. The reason
8 that we didn't is because that well was not deemed
9 to be at the downgradient edge of the ponds and,
10 therefore, most appropriate to include within the
11 scope of our evaluation.

12 **Q. Okay. And I apologize for the tedious**
13 **questions, but did you do trend tests for MW-09 at**
14 **Joliet 29?**

15 A. I would give the same answer. Again,
16 given the location of MW-9, the fact that there are
17 additional monitoring wells that are further
18 downgradient and more appropriate for our
19 evaluation, we focused on those wells that were
20 most appropriate for our evaluation.

21 **Q. Okay. Can you now turn to Exhibit -- I**
22 **think we put them in front of you -- 1307. I**
23 **believe that starts on Bates Page 118236, and this**
24 **should be the fourth quarter 2021 Joliet 29**

1 groundwater monitoring results for the CCA.

2 Does that look right?

3 A. Yes, that's correct.

4 Q. Can you turn to Page 118355 which is also
5 called Figure 2? I'm sorry. Did I get this wrong?
6 Yeah. I'm sorry. That's not the figure. 118355
7 is a chart of data, I believe.

8 MS. NIJMAN: Sorry, is this Exhibit 1307?

9 MR. RUSS: Yeah.

10 MS. NIJMAN: 118 --

11 MR. RUSS: 355, it should be near the end.
12 It's one of the data trend charts over time.

13 MR. DORGAN: That doesn't line -- sorry, but
14 that doesn't line up with the cited Bates number.

15 MR. RUSS: Shoot.

16 MR. DORGAN: Do you have a figure number?

17 MR. RUSS: Bear with me just a second. Let me
18 grab my copy. I may have made a mistake with the
19 numbering here.

20 HEARING OFFICER HALLORAN: Let's go off the
21 record.

22 (WHEREUPON, a short recess was
23 taken.)

24 HEARING OFFICER HALLORAN: We're back on the

1 record. Thank you.

2 BY MR. RUSS:

3 Q. In the back of this quarterly monitoring
4 report, there should be some data plots of
5 constituents over time.

6 Do you see those?

7 BY MR. DORGAN:

8 A. Yes, we do.

9 Q. Can you find the chart for dissolved boron
10 versus time?

11 A. I think we have that.

12 Q. Okay. Just to clear up my own confusion,
13 can you tell me what the Bates page is on that
14 chart?

15 A. 18355.

16 Q. Okay. Great. That's what I said. We're
17 good.

18 So what does this chart show?

19 A. This is a chart showing boron
20 concentrations in the various monitoring wells at
21 the station over time.

22 Q. Okay. As dissolved --

23 MS. NIJMAN: I'm sorry. Are we talking about
24 Joliet?

1 MR. RUSS: Yeah.

2 MS. NIJMAN: This is Powerton.

3 MR. DORGAN: This is Powerton. I'm sorry. Oh.

4 MR. RUSS: Oh, yeah. That's interesting. All
5 right. I'm so sorry. Scratch that. Forget about
6 this for a minute. Yeah. That's a mistake in my
7 notes.

8 BY MR. RUSS:

9 Q. Let's turn to a different exhibit. Let's
10 turn to Exhibit Number 1314 which should be the
11 quarterly -- the annual and quarterly groundwater
12 monitoring report for Will County.

13 Do you have that?

14 BY MR. MAXWELL:

15 A. Yes, we have it.

16 Q. Okay. Can you turn to Page 118465? I
17 believe I got it right this time. This should show
18 dissolved boron at Will County.

19 A. Okay.

20 Q. All right. Great. Has dissolved boron in
21 Well MW-2 at Will County ever exceeded the standard
22 shown on this chart?

23 A. It looks like -- yes.

24 Q. Okay.

1 A. Certain concentrations of boron are higher
2 than the standard of two for MW-2.

3 **Q. Right. Was boron exceeding the standard**
4 **in the most recent sample shown here?**

5 A. Yes, it was.

6 **Q. And, in fact, that looks like it's**
7 **probably the highest it ever was up to that point**
8 **in time over the period of data shown here; is that**
9 **right?**

10 A. That's what this graph indicates.

11 **Q. Okay. Has dissolved boron in Well MW-3 at**
12 **Will County ever exceeded the standard?**

13 A. We're trying to decipher the color.

14 **Q. Yeah. There's a lot of wells here. The**
15 **dark green squares look like MW-3.**

16 A. There's an awful lot of data on the chart.

17 **Q. Might be easier to look below the standard**
18 **and see whether MW-3 shows up there very often.**

19 A. I'm having a difficult time deciphering
20 the color. There's a dark square that shows up
21 below the standard for a good period. I can't --
22 just based on the way the color is printed, I can't
23 quite make out --

24 **Q. Okay.**

1 A. -- if that's MW-3 or not.

2 Q. Okay. Fair enough.

3 How about MW-04, can you distinguish that
4 from the other data?

5 A. Yeah. That one's easier to distinguish.

6 Q. And is that ever below the standard at
7 Will County?

8 MS. NIJMAN: Object to ever.

9 BY MR. RUSS:

10 Q. Do you see any values for MW -- for
11 dissolved boron in MW-4 below the standard on this
12 chart?

13 A. This chart does not indicate any
14 concentrations that are below the standard.

15 Q. Okay. Now, did you include any of the
16 wells we just talked about in your trend test at
17 Will County?

18 A. I'd have to refer to my report.

19 Q. Sure. That would be on Page 81511.

20 A. So, again, those wells weren't included in
21 our trends analysis because those wells are further
22 upgradient at the station, and for purposes of the
23 evaluation that we undertook for trend, the wells
24 that were on the downgradient edge were the wells

1 that we focused on --

2 Q. Right.

3 A. -- because those were deemed most relevant
4 and useful in terms of the trend analysis that was
5 performed.

6 Q. Okay. Can you turn back to the same
7 exhibit we were looking at before, 13 -- 1314, Will
8 County? Figure 2, it's on Page 118383. I got that
9 right.

10 Do you see that?

11 A. Figure 2?

12 Q. Yeah.

13 A. Yeah.

14 Q. Which of these wells are the downgradient
15 ones we were just talking about?

16 A. So the groundwater flow that's depicted
17 here is generally from the east to the west, and
18 the wells that are downgradient are the wells along
19 the west side of the ponds.

20 Q. Okay. So does that include some of these
21 pink wells?

22 A. Those pink wells are non-CCA wells
23 according to this figure. And it looks like our
24 analysis -- our trend analysis does include MW-11,

1 MW-12. However, MW-13, 14 and 15 I believe are
2 more recent wells that were installed after we
3 conducted our trend analysis. So Wells 13, 14 and
4 15, those were not included because we weren't
5 aware of them, and they weren't -- I don't believe
6 that they were installed --

7 **Q. Right.**

8 A. -- at the time of our trend testing.

9 **Q. That's my understanding, too.**

10 I have a question about how you know that
11 these are downgradient. The -- can you explain how
12 you know from looking at a chart like this what the
13 downgradient wells are?

14 A. You said a chart. What chart are you
15 referring to?

16 **Q. I'm sorry. An image like this, a**
17 **potentiometric contour map, how do you know where**
18 **the downgradient wells are when you look at**
19 **something like this?**

20 A. So the contour lines are in blue on this
21 chart. The contour lines signify equal groundwater
22 elevations.

23 **Q. Yeah.**

24 A. And then you can see on the figure that

1 the pinkish arrows or the reddish arrows are
2 perpendicular to the contour lines. That signifies
3 the groundwater flow direction.

4 **Q. How do the contour lines relate to the**
5 **little numbers in purple underneath each well**
6 **label?**

7 **Do you see what I'm talking about?**

8 A. The purple -- like, for example, MW-05,
9 582 --

10 **Q. Yeah.**

11 A. -- point 62?

12 **Q. Yeah.**

13 A. The 582.62 is the groundwater elevation
14 that's been measured at that well.

15 **Q. So the contour lines interpolating the**
16 **data from the wells?**

17 A. First off, just I want to point out,
18 Weaver didn't prepare this.

19 **Q. Sure. Understood. Understood.**

20 A. So just to be clear.

21 **Q. Yeah.**

22 A. These contour lines -- the data that's
23 shown there in purple, that's the basis -- those
24 are the data points by which the contour surface is

1 generated.

2 Q. And so is it fair to say that the well --
3 it looks to me like the wells on the downgradient
4 side have lower groundwater elevations; is that
5 correct?

6 A. Yeah. Groundwater will flow from higher
7 elevations to lower elevations, correct.

8 Q. Okay. So the -- when you're talking about
9 the downgradient edge, you mean the wells with the
10 lowest elevation?

11 A. I don't like to use the term lowest.
12 That's too extreme. We've utilized the wells that
13 are on the downgradient side of the ponds as stated
14 previously.

15 Q. Okay. Now, I want to go back to the
16 exhibit that was giving me a problem before, but I
17 think I can -- I think this is gonna be okay.
18 Exhibit 1303 for Joliet, can you turn to
19 Page 118138?

20 Do you see that?

21 A. Is that Figure 2?

22 Q. Yes, Figure 2, same kind of map we were
23 just looking at, but for Joliet 29.

24 A. Okay.

1 Q. Which of the wells here are the
2 downgradient wells?

3 A. MW-7, MW-6, MW-4, MW-3, MW-2.

4 Q. Okay. Now, what about MW-5, what's the
5 groundwater elevation in MW-5?

6 A. That's 505.46 according to this drawing.

7 Q. Okay. Do you see any wells with a
8 groundwater elevation lower than that on this map?

9 A. Not on this map which of course represents
10 one -- one point in time.

11 Q. Sure. For this point in time, MW-5 is
12 downgradient, is it not?

13 A. I think -- when you say downgradient, I'm
14 not quite sure what you're referencing.

15 Downgradient of what?

16 Q. Well, I mean, you were talking about how
17 you selected wells on the downgradient edge. MW-5
18 has the lowest elevation of all of these wells.
19 I'm wondering why you wouldn't have selected that.
20 There aren't any wells downgradient of MW-5.

21 A. Not on this particular drawing, no. What
22 we did was, though, we looked at an evaluation of
23 the data as a whole and looked to identify those
24 wells that were downgradient most consistently.

1 **Q. Okay. So you didn't run any trend tests**
2 **on MW-5? That would be 81505 in your report.**

3 A. Again, MW-5 was looked at before by
4 Mr. Seymour in terms of the trend tests. So,
5 again, we didn't feel as though that one was as
6 useful as the other monitoring wells. MW-5 is
7 close to MW-6, and so we did capture MW-6 in the
8 evaluation. And so that's what we included in our
9 evaluation.

10 **Q. Okay. Can you now turn to Exhibit 1310**
11 **which is the same kind of report, but for Waukegan?**
12 **It should start on 118489.**

13 MS. NIJMAN: So this is January 2022?

14 MR. RUSS: Yeah.

15 MS. NIJMAN: Is that the right one?

16 MR. RUSS: That's the right one.

17 BY MR. RUSS:

18 **Q. Can you turn to Page 118493 which is also**
19 **like the other ones in Figure 2?**

20 BY MR. DORGAN:

21 A. I've opened to that page.

22 **Q. Which wells are downgradient here?**

23 A. This particular figure as represented by
24 the data collected on this date would suggest for

1 historical downgradient Wells MW-01, 2, 3 and 4,
2 would be downgradient, as would MW-7 which is -- on
3 this particular date has a component of flow that's
4 in that direction.

5 Q. Okay. And when you say in that direction,
6 there's some groundwater that's flowing south at
7 this point in time; is that right?

8 A. Yes. At the date that this data was
9 collected, that was the case.

10 Q. Okay. MW-7, is that one that you did
11 trend tests for? That would be on Page 81515.

12 A. We did not include MW-7.

13 Q. Okay. I'm gonna do the same thing with
14 Powerton, so Exhibit 1307, January 14, 2022, fourth
15 quarter 2021, CCA groundwater report for Powerton,
16 starts on 118236.

17 Can you look at Page 118241, Figure 3?

18 A. Yes.

19 Q. Which wells are downgradient here?

20 A. So the wells in a downgradient position on
21 this particular date as represented by this figure
22 would include MW-02, 03, 04, 05 and 07.

23 Q. Okay. And can you turn to Page 81509 --
24 I'm sorry.

1 81508 of your report in this is where the
2 **Powerton stuff starts?**

3 A. Yes.

4 Q. Did you include trend tests for MW-2?

5 I think you just said that was a
6 **downgradient well.**

7 A. This particular date, it reflects a
8 downgradient flow position, but it was not included
9 in our trend testing.

10 Q. Okay. So the trend tests exclude some
11 **wells that are at least some of the time on the**
12 **downgradient edge; is that right?**

13 A. Trend testing that we did. Trend testing
14 was performed by Mr. Seymour on all of the wells.
15 We then concentrated on the predominant groundwater
16 flow direction and the wells that are in that
17 direction.

18 Q. Okay. Now, I want to just go back to the
19 **Waukegan exhibit one more time. This is a**
20 **different kind of a question. This is**
21 **Exhibit 1310, starts on 118489.**

22 Can you turn to Page 118603? Should be
23 **dissolved boron over time at Waukegan.**

24 A. I'm at that figure.

1 **Q. Okay. Which of these wells have exceeded**
2 **concentration of 10 milligrams per liter?**

3 A. Well, that's a little difficult to
4 interpret because the scatter on the graph and the
5 fact that you had so many of the data points around
6 the standard that's reflected on here.

7 There's certainly some that are
8 demonstrated to be above it. Picking out each one
9 would take some time.

10 **Q. Yeah, right. I agree. That's why I'm**
11 **asking about not the standard necessarily -- which**
12 **I believe is 2 milligrams per liter; is that right?**

13 A. That looks to be the case, yes.

14 **Q. I'm wondering how many wells show**
15 **concentrations that are greater than 10 milligrams**
16 **per liter, so at least five times the standard.**

17 A. Well, again, there's quite a bit of data
18 here, but it looks like there's at least two and
19 maybe a third that has had a couple -- at least a
20 couple incidents where concentrations were detected
21 above 10.

22 **Q. Okay. And that would be MW-5, 6 and 7; is**
23 **that right?**

24 A. That looks to be the three, correct.

1 **Q. And did you do trend tests on any of these**
2 **wells, 5, 6 and 7, at Waukegan?**

3 A. No, we did not. But again, as stated
4 previously, it's been done by earlier experts in
5 the matter.

6 **Q. Okay. I'm gonna move on from that.**

7 Now I want to ask you about some of the
8 **historic ash areas at Joliet, and so we're on the**
9 **same page about what those are. I'm hoping you can**
10 **turn to the 2019 Board opinion and order which I**
11 **believe you have a copy of. And on Pages 26 to 28,**
12 **the opinion describes the areas.**

13 **You've read this, correct?**

14 A. Yes.

15 Is my mic still on.

16 **Q. Yes.**

17 **Are you familiar with what the Board**
18 **describes as the northeast area?**

19 MS. NIJMAN: Which page are you on?

20 MR. RUSS: I'm on Page 26.

21 MR. MAXWELL: Yes, I see that referenced here
22 on Page 26.

23 BY MR. RUSS:

24 **Q. Do you know what the Board is talking**

1 **about when they describe the northeast area?**

2 BY MR. MAXWELL:

3 A. I think I'm generally aware having read
4 this -- these particular pages many times. There's
5 some confusing references in terms of the language
6 that's presented here. I think I'm generally aware
7 as to which area they're referring to.

8 **Q. Okay. And are you familiar with the**
9 **southwest area that the Board mentions on Page 27?**

10 A. Again, I would give the same answer that I
11 think that when they say southwest area on Page 27
12 in that heading, I think I know generally where
13 they're referring to.

14 **Q. Okay. And not to belabor it -- I'm sorry.**
15 **I think your answers are perfectly acceptable, but**
16 **on Page 28 for the northwest area, would you give**
17 **the same answer?**

18 A. I would. We're generally familiar with
19 that area. Although, later on in the language
20 there's references to different phrasing in terms
21 of historical ash areas, historical coal ash
22 storage and fill areas. There's some confusing
23 language to me that's difficult to decipher, but
24 generally I'm aware of where those areas are.

1 **Q. Okay. Great. Thanks.**

2 **This is -- you'll recognize these**
3 **questions from your deposition, but for the**
4 **northeast area of Joliet when you were developing**
5 **your opinions, did you evaluate the depth of ash in**
6 **that area?**

7 A. The depth of the ash wasn't necessarily a
8 consideration when you looked at our overall
9 remedy. So are we generally aware of the -- of
10 that area? Yes. Did we consider the depth? We
11 did consider it in the overall evaluation of our
12 remedy.

13 **Q. How so?**

14 A. Well, the -- I don't think -- I don't
15 think that there was a reason to look at the -- to
16 investigate the depth of the ash in the
17 northwest -- in the northeast fill area.

18 **Q. Okay. So you did not consider the depth**
19 **of the ash then?**

20 A. Would it be possible to refer to our
21 deposition?

22 **Q. Sure, of course. If you turn to**
23 **Page 65 -- cause actually Mr. Dorgan answered the**
24 **questions about Joliet, this set of questions. I**

1 don't know why, but that's the way it is. And,
2 actually, if you want to start with the original
3 question, it starts on Page 64 at Line 23.

4 The question begins, okay. Let's
5 start with northeast -- the northeast
6 ash fill area, what you call the
7 northeastern portion of the
8 facility. Did you consider any
9 information on the depth of the
10 ash in that area?

11 And Mr. Dorgan said, I don't recall at
12 this point what depth of information
13 was available that we considered
14 as part of our evaluation.

15 A. I'm sorry. What page are you on?

16 Q. I'm on Page -- it starts on Page 64,
17 Line 23, and then it moves over to Page 65.

18 BY MR. DORGAN:

19 A. Okay. So since I answered this question
20 in the deposition, let's see if I can field it for
21 you now. So what's the question?

22 Q. Sure.

23 Did you consider the depth of ash when you
24 were developing your opinions in the northeast

1 **area?**

2 A. Well, there's been testimony that there's
3 ash present. We knew that from the inspections
4 that Mr. Gnat has been performing. He's described
5 ash being present in some of the erosion rails. We
6 also looked at the absence of the seeps that have
7 never been documented to be present along the
8 northeast ash area.

9 So while we didn't have any specific
10 information or knowledge that there had been a
11 quantification of ash in that area, we certainly
12 considered that it was there relative to the remedy
13 that we had proposed.

14 **Q. Okay. So I guess I'm just wondering, do**
15 **you know how deep the ash is in that area?**

16 MS. NIJMAN: Object, misstatements of the ash
17 in that area, misstates testimony.

18 HEARING OFFICER HALLORAN: Can you rephrase,
19 Mr. Russ?

20 BY MR. RUSS:

21 **Q. Do you have any information about ash at**
22 **any depth in that area?**

23 BY MR. DORGAN:

24 A. I'm not aware of any specific information

1 that documents the depth of ash in that area.

2 Q. Okay. Did you evaluate whether there was
3 any ash in contact with groundwater in that area?

4 A. Only to the extent that we considered
5 whether or not there were any seeps which would be
6 indicative of groundwater being in ash, but no, we
7 did not evaluate ash depths with respect to the
8 relationship with groundwater. We're not aware of
9 that information being available.

10 Q. Okay. And did you calculate the square
11 footage of that area in terms where the ash might
12 be?

13 A. No, we did not.

14 Q. Okay. So since -- I mean, I'm sorry for
15 the redundant questions, but since you don't know
16 the thickness or the square area, it wasn't
17 possible to calculate the volume of ash; is that
18 right?

19 A. That's correct.

20 Q. Okay. And in your deposition you said,
21 and I think you said basically the same thing
22 today, you didn't feel it was particularly
23 relevant; is that right?

24 A. That's right.

1 Q. Is that still your opinion?

2 A. It is.

3 Q. Okay. These questions are gonna get
4 redundant. I'm sorry.

5 Turning to the southwest area at Joliet,
6 did your team estimate the horizontal extent of ash
7 in that area?

8 A. No, we did not.

9 Q. Did you estimate the volume of ash in that
10 area?

11 A. No, we did not.

12 Q. Did you evaluate the extent to which that
13 ash is in contact with groundwater?

14 A. No, we did not.

15 Q. For the northwest area, did you estimate
16 the volume of ash in that area?

17 A. We did not estimate the volume, nor did we
18 calculate the square footage.

19 Q. Okay. And did you estimate the extent of
20 any contact between ash and groundwater in the
21 northwest area?

22 A. We weren't aware of any contact of ash and
23 groundwater in the northwest area.

24 Q. Okay. Now, on Page 69 of your deposition

1 on Lines 8 and 9, you were asked, did you consider
2 whether ash on the southwest side was in contact
3 with groundwater. You've already answered that
4 question, but I'm gonna read your response from the
5 transcript here.

6 I don't recall as I sit here today if
7 we specifically considered ash being
8 in contact with groundwater as we did
9 not feel that that was particularly
10 relevant to our ability to assess the
11 remedy which we proposed.

12 Did I read that right?

13 A. Yes, you did.

14 Q. And on the same page, Line 19, starting
15 on -- there's a question on Line 15.

16 Did anyone on your team calculate the
17 volume of ash in the are on the
18 southwest side?

19 Your answer was, as I sit here today I'm
20 not aware that anybody calculated the
21 volume of ash. And again I'd state
22 that we didn't feel it was
23 particularly relevant to our
24 ability to assess an appropriate

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remedy for the site.

Is that right?

A. That's how it reads, yes.

Q. And if you recall from your deposition, this went back and forth for a while, same kinds of questions and the same kinds of answers. And you said frequently, not particularly relevant at this site; is that right?

MS. NIJMAN: I'm gonna object to the frequently reference.

HEARING OFFICER HALLORAN: Yeah. Rephrase, please.

MR. RUSS: Sure. I didn't want to go through them all, but okay.

BY MR. RUSS:

Q. So on Page 70, Line 3 --

MS. NIJMAN: Sorry, one more interruption before we continue. I'm not understanding how this is an impeachment with his deposition. What are we impeaching?

HEARING OFFICER HALLORAN: Well, a couple of times or at least once Mr. Maxwell asked Mr. Russ to go to his deposition I guess to reflect or recall his recollection.

1 MS. NIJMAN: Right, but I'm not sure what we're
2 referencing now going through pieces of the
3 deposition. In response to what? What is this
4 cross-examination of? You said he answered the
5 question here, that he didn't find it relevant.

6 HEARING OFFICER HALLORAN: Mr. Russ.

7 MR. RUSS: There two components to the answer.
8 One is whether they did the analysis, and one is
9 why they didn't. And I'm getting to the second
10 part which is why they didn't. And the way --

11 MS. NIJMAN: But you haven't asked that
12 question.

13 MR. RUSS: Well, I have asked that question. I
14 asked what you said in your deposition, is it still
15 your opinion that you didn't think it was relevant.

16 MS. NIJMAN: Right. So then what are we
17 crossing? What's the --

18 MR. RUSS: I have to establish that that was
19 the reason in a number of different instances.

20 HEARING OFFICER HALLORAN: Overruled.

21 You may continue, Mr. Russ.

22 MR. RUSS: Thank you.

23 BY MR. RUSS:

24 **Q. So on Page 70, Line 3, there was a**

1 question that started on Page 69, Line 22.

2 Did you consider the horizontal
3 extent of the ash on the southwest
4 side?

5 Your response was, we certainly considered
6 the extent as it was mapped on the
7 drawings that we reviewed as part of
8 our evaluation. However, again
9 didn't feel that the aerial extent
10 was particularly relevant to the
11 remedy that we identified as being
12 appropriate for the site.

13 Is that right?

14 BY MR. DORGAN:

15 A. That's how it reads.

16 Q. Is that still your opinion?

17 A. Yes, it is.

18 Q. Now, I don't have to go through the
19 transcript. I just want -- I can ask in a general
20 way if you'd prefer.

21 With the historic sites, you didn't
22 evaluate the volume of ash in those historic areas;
23 is that right?

24 A. We looked at the mapping that had been

1 done through the record about where these were
2 located. We looked at what the Board had to say
3 about the individual fill areas that were
4 referenced. We considered the area certainly as it
5 was mapped, but we're not aware that there was any
6 specific information that had been generated about
7 ash volumes, ash in contact with groundwater.

8 But even now we feel as though with the
9 information that is available, we have the ability
10 to move towards a remedy that's appropriate for the
11 risks that exist at the site.

12 Q. Right. I understand. Just for
13 completeness so it's clear on the record, I guess I
14 should ask you about the Waukegan former slag area
15 as you've described it.

16 That's one place where you actually do
17 have information about the depth of ash and
18 groundwater; is that right?

19 A. That's correct.

20 Q. Setting that unit aside, for the historic
21 ash areas at Joliet northeast, northwest,
22 southwest, you've already answered these questions.

23 Turning to Powerton, the Board opinion at
24 Page 41, sorry, 40 to 41, this is where the Board

1 has a heading that says, Historical Coal Ash Sites.
2 And the first three that they mention are actually
3 basins that I think you guys would have included as
4 impoundments; is that right?

5 A. I believe that's correct.

6 Q. And then after that, there's a heading
7 that says, Coal Ash Fill Through the Site, on
8 Page 41; is that right?

9 A. Yes, that's correct.

10 Q. Then on Page 42 there's a heading that
11 says, Ash Cinders Stored on Land; is that right?

12 A. That's what it says, yes.

13 Q. In your PowerPoint slides you said there
14 was only one area that the Board identified as a
15 historic ash site at Powerton?

16 MS. NIJMAN: Objection, misstates the testimony
17 in the slide.

18 BY MR. RUSS:

19 Q. Okay. Let's turn to that slide. It's
20 Slide 34.

21 A. Yes.

22 Q. So it says historic fill area, and the
23 slide says just one area mentioned by the Board?

24 MS. NIJMAN: Historic fill area, correct.

1 MR. RUSS: Well --

2 MS. NIJMAN: That wasn't your question. That
3 was my objection. Thank you.

4 MR. RUSS: Can I continue?

5 BY MR. RUSS:

6 Q. So the area that you describe on this
7 slide is the area where cinders were temporarily
8 stored in the winter; is that right?

9 A. That's correct.

10 Q. Is that a fill area?

11 A. I'm not sure if that was characterized
12 that way in the Board's order specifically, but it
13 was one of the violations that was found to have
14 occurred at the Powerton site, and it's why we
15 referenced it here.

16 Q. Okay. And this slide doesn't mention the
17 area described by the Board on Page 41 which is
18 coal ash fill through the site; is that right?

19 A. That's correct.

20 Q. Did you evaluate that area described by
21 the Board as coal ash fill through the site?

22 A. We certainly considered it. And part of
23 the issue is it's referencing to very specific
24 locations where ash had been detected, so it's not

1 referring to an area per se. So it wasn't
2 something that we were trying to map or could map.

3 So we considered it in that there's
4 documentation of ash at these locations, but,
5 again, our focus had looked at the downgradient
6 conditions and their off-site receptors and
7 potential risks related to that. So this was
8 considered, but we didn't specifically map it in
9 our figure.

10 **Q. Okay. To be clear for the record,**
11 **slide 34 where it says just one area mentioned by**
12 **the Board is not accurate, right?**

13 MS. NIJMAN: Objection, asked and answered.

14 HEARING OFFICER HALLORAN: He may answer if
15 he's able.

16 MR. DORGAN: The Board mentioned three basins,
17 and we included those and discussed those at
18 length. The Board then discussed coal ash fill
19 throughout the site referencing to specific borings
20 where coal ash was encountered.

21 And then it references to ash cinders
22 stored on land. That's what this is specifically
23 highlighting because that was a location that was
24 referenced and documented.

1 MR. RUSS: Okay.

2 (Technical difficulty.)

3 MR. DORGAN: I'll speak up.

4 HEARING OFFICER HALLORAN: Sure, thank you.

5 The state apologizes.

6 BY MR. RUSS:

7 Q. I have to do this for the record. I
8 apologize.

9 Did you evaluate the horizontal extent of
10 the ash fill described on Page 41 under the
11 heading, Coal Ash Fill Through the Site?

12 A. As I stated previously, this coal ash fill
13 throughout the site is referring to specific
14 borings. It's not referring to some map area or
15 geographic -- geographically coded portion of the
16 site.

17 So, yes, it was considered, but it's not
18 included in a map because it wasn't a specific
19 area.

20 Q. So at Waukegan there was the former slag
21 area, and there's that nice grid, 40 borings laid
22 out in a hundred-foot grid; is that right?

23 A. I don't recall the specific dimension of
24 the grid, but it had a grid that was implemented.

1 **Q. And you cited that in your report?**

2 A. Yes, we did.

3 **Q. How -- why did you find that useful?**

4 A. At Waukegan, as I described in my
5 testimony earlier today, we found conditions that
6 were a bit different than what we were seeing at
7 the other three stations. We had MW-5 upgradient
8 of the west pond that was showing CCR constituents
9 that were being detected, and we've got the further
10 upgradient wells that are being impacted by some of
11 the off-site properties.

12 And then in between those areas we had
13 this pretty well-defined and documented -- the
14 Board documented the presence of a slag fill area,
15 and Midwest Generation elected to undertake some
16 investigation of that area. Certainly as we did
17 with all of the sites, we wanted to consider all
18 the investigatory data that had been collected, and
19 so we looked at that information. And we coupled
20 the impacts that we're seeing in MW-5 with the
21 potential leaching from, in particular, the VADOSE
22 zone coal ash at that location, which is why we
23 ended up with an additional remedy proposal for
24 Waukegan as compared to the other stations.

1 **Q. Yeah. The reason I brought it up is I'm**
2 **wondering if something similar could have been done**
3 **at Powerton.**

4 **Is there any reason you couldn't have done**
5 **a sampling grid like that at Powerton to determine**
6 **where the ash is in this area discussed by the**
7 **Board?**

8 **A. We were tasked, again, through the Board**
9 **order with assessing a remedy and the appropriate**
10 **relief. We had a lot of historic information**
11 **already. We didn't believe we were being tasked**
12 **with going out and doing additional investigation.**

13 **So as I've mentioned any number of times**
14 **today, there may be some additional investigation**
15 **that occurs in these areas as a result of the**
16 **upcoming state and federal coal ash fill**
17 **regulations that are being promulgated. If that's**
18 **the case, that'll certainly happen, but we relied**
19 **on the information that we had at our disposal to**
20 **assess remedy and relief.**

21 **Q. Okay. If you had a sampling grid like the**
22 **one at Waukegan at Powerton, would that information**
23 **be useful to you?**

24 **MS. NIJMAN: Object to vague as to what areas**

1 we're talking about.

2 HEARING OFFICER HALLORAN: Sustained.

3 BY MR. RUSS:

4 Q. So on Page 41 of the Board order they talk
5 about coal ash fill through the site. If you read
6 through that paragraph, you starting on Line 1, 2,
7 3, 4, 5, 6, 7, you see where a sentence starts,
8 another five borings taken in 2005 by KPRG.

9 Do you see that sentence?

10 A. I see that sentence.

11 Q. It goes on to say, during the geotechnical
12 testing showed coal ash fill starting at around
13 2 feet below surface and going as deep as 14 feet
14 mainly in areas around secondary basin, ash surge
15 basin and ash bypass basin.

16 So -- and then if you scan down a couple
17 lines, there's a sentence in the middle of the
18 paragraph that starts, soil borings from
19 December 2010 when MWG installed monitoring wells,
20 particularly borings for Wells MW-9, 11 and 12,
21 shows cinders in fill that extends from the surface
22 to as much as 24.5 feet below the surface.

23 Do you see that?

24 A. I see that.

1 **Q. So there are two areas, one around the**
2 **secondary basin, ash surge basin and ash bypass**
3 **basin, and another around MW-9, 11 and 12.**

4 **In those areas if you had a sampling grid**
5 **like we have for Waukegan, would that information**
6 **be useful to you?**

7 **A. Any information would be useful, but that**
8 **information wasn't available to us. We had the**
9 **data that came from these specific borings that**
10 **were done that are referenced in the order.**

11 **They're referenced in our report. They -- most of**
12 **these data points were from around the ash basins**
13 **which we've mapped and shown on our drawings and**
14 **have considered in our remedy choices.**

15 **Q. Okay. So in the Waukegan boring grid, as**
16 **Mr. Maxwell testified, he estimates that 80 percent**
17 **of the ash is in the VADOSE zone and 20 percent is**
18 **below the water table.**

19 **Do you have enough information at Powerton**
20 **to make that kind of calculation from these**
21 **borings?**

22 **A. You could perhaps do the same analysis in**
23 **the individual borings, especially the monitoring**
24 **wells, but that would not necessarily be**

1 representative of a larger area. You'd be limited
2 to just what's going on in the individual boring
3 log.

4 Q. Right. And if you had a grid of
5 40 borings evenly spaced, would that more helpful
6 in estimating that kind of thing?

7 A. If you had a grid with more spacing, you
8 would certainly look at that in its totality to
9 assess what's going on in that area.

10 Q. Okay. Thanks. Turning back to the
11 tedious questions, I just have to get these clear
12 in the record.

13 Did you evaluate the extent to which the
14 fill we're talking about at Powerton, the coal ash
15 fill through the site, is in contact with
16 groundwater?

17 A. We did not do a specific analysis of the
18 coal ash that's encountered in some of these
19 borings around the site in terms of how much fill
20 area was in contact with groundwater.

21 Q. Okay.

22 A. Cause that wasn't necessarily suggested by
23 the data.

24 Q. Okay. And also, I'm assuming, because you

1 **didn't feel like it was relevant to your remedy?**

2 MS. NIJMAN: Objection, he answered that part
3 of the question.

4 HEARING OFFICER HALLORAN: I agree. Sustained.

5 MR. RUSS: Okay.

6 BY MR. RUSS:

7 **Q. Now turning to Will County, Page 56 of the**
8 **Board order, there is a paragraph with a heading,**
9 **Coal Ash Buried Around the Ash Ponds.**

10 **Do you see that?**

11 A. Yes, I do.

12 **Q. And you talked about this earlier today.**
13 **You're familiar with the area that the**
14 **Board is describing here?**

15 A. Yes, I am.

16 **Q. Did your team ever investigate the**
17 **horizontal extent of the ash fill around the ash**
18 **bonds?**

19 A. Our team evaluated the information that
20 was already included in the record, so in terms of
21 an evaluation took place but with the data that was
22 already available.

23 **Q. So you don't necessarily know the lateral**
24 **extent how far it goes two-dimensionally, that area**

1 **described by the Board; is that right?**

2 A. Not other than the data that has already
3 been looked at in the wells and borings that are
4 available.

5 Q. Okay. And did you try to estimate the
6 volume of ash around these ash ponds?

7 A. We did not estimate independently the
8 volume of ash around the ash ponds.

9 Q. Okay. And did you estimate the extent of
10 contact between that ash fill and the groundwater
11 at Will County?

12 A. No, we did not.

13 Q. Okay. Thank you. Those questions are
14 done I'm sure everyone will be pleased to know.

15 Now I'm gonna ask some questions about the
16 Waukegan soil investigation. You mentioned it on
17 Page 41 of your report, I believe, if you want to
18 turn to that.

19 MS. NIJMAN: Can we take a bathroom break?

20 MR. RUSS: I'd be happy to take one, if you'd
21 like. You want to take a break?

22 HEARING OFFICER HALLORAN: Sure. I was
23 thinking 5:20-ish again.

24 MR. RUSS: Sure.

1 HEARING OFFICER HALLORAN: Okay. Off the
2 record. Thank you.

3 (WHEREUPON, a short recess was
4 taken.)

5 HEARING OFFICER HALLORAN: We're back on the
6 record, Mr. Russ.

7 MR. RUSS: Thank you.

8 BY MR. RUSS:

9 Q. Turning to your report on Page 41 which is
10 Bates Page 81458, this -- the top should say
11 4.2.4 Waukegan.

12 Do you see that?

13 A. Yes, I do.

14 Q. And down at the bottom, the third
15 paragraph starts with a discussion of the FS area.

16 Do you see that?

17 A. Yes, I do.

18 Q. And this goes on to describe the boring
19 grid that we were just talking about a few minutes
20 ago; is that right?

21 A. Yes, that's right.

22 Q. On the next page, Page 42, you describe
23 the L-E-A-F, LEAF test, right?

24 A. That's correct.

1 **Q. Can you describe what that is?**

2 A. The Leaching Environmental Assessment
3 Framework is another one of the leaching tests
4 that's been discussed at various times in the
5 record. Again, it's a means to -- similar to the
6 synthetic precipitation leaching procedure which
7 was mentioned earlier in the sentence, just another
8 leaching methodology that follows a certain
9 standard with respect to subjecting a sample to
10 evaluation to see what leaches out of it.

11 **Q. And you actually mention this more on**
12 **Page 30. If you turn to Page 30 of your report,**
13 **this is under the Powerton ASD, but you're talking**
14 **about the LEAF test again in the second paragraph.**

15 Do you see that?

16 A. Yes, I do.

17 **Q. The fourth line from the bottom -- fifth**
18 **line from the bottom, there's a sentence that**
19 **starts, natural PH results are believed to be the**
20 **most applicable to field conditions.**

21 Do you see that?

22 A. Yes, I do.

23 **Q. Can you explain how using a leach test at**
24 **the natural PH is useful to you?**

1 A. So this particular method looks at
2 leaching potential at a range of different PH, and
3 the natural PH is the PH of the pour water in the
4 sample when it's collected. So that's
5 representative of what the ash is encountering in
6 the environment rather than the other PH ranges
7 that the sample is subjected to which aren't
8 present in the environment where the ash sample is
9 collected from.

10 **Q. How is it helpful to have the -- why is**
11 **the PH significant to the result? I guess I should**
12 **ask that.**

13 A. Varying PHs can lead to varying degrees of
14 leaching of different constituents, and different
15 constituents can respond to different types of
16 PH ranges whether acidic or corrosive.

17 **Q. Okay. Here you say the natural PH**
18 **represents the best approximation of field**
19 **conditions, right?**

20 A. That's what's stated in the report, yes.

21 **Q. Is that your opinion still?**

22 A. Yes, we believe that.

23 **Q. Another leach test that has been mentioned**
24 **and that you cite in your report is NLET test,**

1 **right?**

2 A. That's correct.

3 **Q. What does the N stand for?**

4 A. Neutral.

5 **Q. And is that in reference to PH?**

6 A. That's correct.

7 **Q. So that leach test uses a PH of seven; is**
8 **that right?**

9 A. I believe it's seven or around seven.

10 **Q. Okay. And not the natural PH?**

11 A. That's correct. The natural PH can be
12 different than seven.

13 **Q. Right.**

14 A. Depends on the sample itself.

15 **Q. Okay. Thank you.**

16 **So Page -- going back to Page 42 for**
17 **Waukegan, which constituents had LEAF samplings**
18 **that exceeded Class 1 standards here?**

19 **You talk about that in the only real full**
20 **paragraph on Page 42.**

21 A. I've had a chance to look at this, but can
22 you repeat your question?

23 **Q. Sure.**

24 **Which constituents had LEAF samples that**

1 **exceeded Class 1 standards?**

2 A. I believe you're referring to boron which
3 was detected in several of the samples, and I
4 believe arsenic was also detected in one of the
5 samples slightly above the Class 1 groundwater
6 standard.

7 Q. Right. Okay. Thanks.

8 If you turn to Page 814, excuse me, 81487
9 of your report, that will be towards the back or
10 somewhere in the middle. It's where the tables
11 are. And this may be hard to read. I have a
12 magnifying glass if it'll help you. It should say
13 Table 4 historical leaching data.

14 Do you see that?

15 A. Yes, I do.

16 Q. And the box on the far right, the box of
17 six columns or seven columns says at the top, KPRG.
18 I believe it says, Bates soil investigation,
19 November 2020; is that right?

20 A. I believe that's what it says.

21 Q. And is this the same data that we were
22 just looking at your discussion of on Page 42?

23 Feel free to take a moment to flip back.
24 I just want to make sure it's the same.

1 A. I believe it is based upon a review of
2 some of the references both from Page 42 and then
3 what's on the headings for the columns.

4 **Q. Okay. Now, according to this table, how**
5 **many of these soil probes were subjected to a LEAF**
6 **test for boron?**

7 A. It looks like three of them.

8 **Q. Okay. Yep.**

9 **And how many exceeded the SRO?**

10 A. All three exceeded the Tier 1 SRO.

11 **Q. Right, okay. Thanks. And, you know,**
12 **while we're here, for molybdenum, it's also the**
13 **case that all three exceeded the SRO; is that**
14 **right?**

15 A. This shows that the three samples that
16 were subjected to the LEAF analysis exceeds the
17 Tier 1 SRO reference that they include on the table
18 which is the soil migration for protection of
19 groundwater standard.

20 **Q. Okay. When you say they include on the**
21 **table, did someone else prepare this table?**

22 A. I believe this was -- I believe this is a
23 table we created using their data.

24 **Q. Okay. I think that's probably right just**

1 because you have some KPRG data, and you have some
2 other data here, too.

3 Given these results for the historic ash
4 area or the historic fly -- it goes by different
5 names, the historic -- the former slag and fly ash
6 storage area is I think what the Board calls it.

7 Is it fair to assume that the ash in the
8 ponds is also leaching boron, molybdenum and
9 sometimes arsenic at levels above the SRO?

10 MS. NIJMAN: Objection, foundation.

11 HEARING OFFICER HALLORAN: Mr. Russ.

12 MR. RUSS: I don't -- I don't know. I mean,
13 the results are what they are.

14 BY MR. RUSS:

15 Q. You have results for some coal ash for
16 Waukegan here. Is it fair to assume that the same
17 results would be obtained from the ash ponds?

18 MS. NIJMAN: Same --

19 MR. DORGAN: I'm not sure which ash samples
20 you're referring to.

21 BY MR. RUSS:

22 Q. These soil investigation results I believe
23 are soil borings from the former slag and fly ash
24 area which we've talked about earlier today

1 **contains --**

2 A. Yes, but I thought your question had to do
3 with ash in the ponds.

4 **Q. My question is whether -- you have these**
5 **results for the ash in the former slag area.**

6 **Is it safe to assume that you'd get the**
7 **same results from the ash in the ponds at Waukegan?**

8 MS. NIJMAN: Same objection to foundation.

9 HEARING OFFICER HALLORAN: Yeah, sustained.

10 BY MR. RUSS:

11 **Q. Do you have any LEAF test data from the**
12 **ash in the ponds at Waukegan?**

13 A. I'm not sure if there is LEAF from the ash
14 in the ponds, but I would not say you can draw the
15 conclusion that pond data and the ash data from the
16 slag area are going to be representative of the
17 same thing. They're different materials, different
18 sources generated at different times located in
19 different areas.

20 So could there be similarities, I'd like
21 to say they'd be the same. If one is indicative of
22 the other, I wouldn't go there.

23 **Q. You wouldn't want to take the leach test**
24 **data from one area and apply it to another area, is**

1 **what I'm getting at.**

2 MS. NIJMAN: Misstates testimony.

3 HEARING OFFICER HALLORAN: He can answer it. I
4 think he already did, but you can answer if you're
5 able.

6 MR. DORGAN: On this table there's LEAF data
7 that was collected from the samples that were
8 drilled in the former slag area or the fly ash area
9 that you do reference. That's what we were just
10 discussing were those results.

11 So if you're speaking to specific results
12 from other LEAF samples from other ash materials
13 from the site, I can't necessarily speak to that,
14 but I would stipulate that they would not be
15 necessarily the same.

16 BY MR. RUSS:

17 Q. Okay. Thank you.

18 I actually think -- I wasn't gonna ask
19 about this, but it does appear to me that you have
20 LEAF test data from the ponds in this table.

21 The two middle columns where it says, KPRG
22 alternate source demonstration composite, appear to
23 be east pond ash, west pond ash LEAF test results;
24 is that right?

1 A. That's what it's referenced as in the
2 header, yes.

3 **Q. Okay. And indeed as you were saying, the**
4 **results for boron are different.**

5 **They're below the SRO; isn't that right?**

6 A. Boron was detected at concentrations at --
7 either at or below the referenced standard.

8 **Q. Right. Okay. So like you were saying,**
9 **different material, different history, different**
10 **profile, you get different results?**

11 MS. NIJMAN: Objection, misstates testimony.

12 HEARING OFFICER HALLORAN: I can't hear you,
13 Ms. Nijman.

14 MS. NIJMAN: Misstates testimony.

15 HEARING OFFICER HALLORAN: Could you rephrase?

16 MR. RUSS: Sure.

17 HEARING OFFICER HALLORAN: Thanks.

18 BY MR. RUSS:

19 **Q. Do these results corroborate what you were**
20 **saying before, that when you sample different ash**
21 **from different areas, you can get different**
22 **results?**

23 MS. NIJMAN: Again, misstates his testimony.

24 HEARING OFFICER HALLORAN: He can answer if

1 he's able. I think he somewhat answered.

2 MR. DORGAN: There are differences in the boron
3 concentrations between the samples collected from
4 the former slag area and the samples collected
5 from -- as represented by the two ash samples that
6 are referred here. They're not -- we're talking
7 relative differences at this point between a
8 concentration of two and a concentration of five,
9 but I would -- I would agree that there are some
10 differences, yes.

11 BY MR. RUSS:

12 Q. Okay. And just to be clear for the
13 record, not to be rude or anything, but the boron
14 result for Boring C705 is 13, right?

15 A. Yes, that's correct.

16 Q. Okay. Did you review any LEAF test data
17 from the northeast area at Joliet?

18 A. I don't recall that there's LEAF test data
19 from the northeast area of Joliet. If you'd like
20 to point me to that --

21 Q. Well, I guess I can -- yeah, I can point
22 you to just a couple pages before. 81483 I guess
23 is where the historical leaching data for Joliet
24 start. You can see where the different types of

1 tests were used.

2 Looking at this page and at the next page,
3 do you see any LEAF test data at all for Joliet 29?

4 A. I'd need to relate back to what this
5 summary table was. This was I believe based upon
6 the title at the top of the columns for the sample
7 locations, this is the CCB determination that was
8 done in the northwest area which was discussed as
9 having been performed for purposes of evaluating if
10 that material could have been used to build a
11 windscreen.

12 So this data is not related to the
13 northeast area. And to answer your specific
14 question, I do not see that there is LEAF data
15 here, but for the CCB beneficial reuse purposes,
16 they use the NLET method which is the data that's
17 presented on this table.

18 Q. Right. Okay. Thanks. So my
19 understanding of these tables, and correct me if
20 I'm wrong, is that they compile all of the leaching
21 data for the four sites; but if I'm wrong, that's
22 fine.

23 The next -- the table continues on to the
24 next page, and it talks about the ash slag removal.

1 And then it switches over to Powerton, and you'll
2 see starting on Page 81485 that there are a lot of
3 different areas of Powerton described in that
4 table.

5 MS. NIJMAN: I'm sorry. Is there a question?

6 MR. RUSS: Yeah, there is.

7 BY MR. RUSS:

8 Q. The question is, do you -- am I wrong --
9 do you recall whether there's any leaching data
10 that you didn't include in these tables or is this
11 a summary of all the leaching data that you had
12 available to you?

13 A. Best of my recollection, the data that we
14 had available to us was represented --

15 Q. Okay.

16 A. -- or maybe data that's been collected
17 since then which clearly wouldn't be in here,
18 but . . .

19 Q. Okay. That's -- I'll move on. I think we
20 have enough to go on.

21 There was -- now, at Joliet 29 there was
22 some leach testing done at the northwest area; is
23 that right? We talked about that earlier today.

24 A. I believe I just referenced it a moment

1 ago.

2 Q. Yeah. And can you explain how those data
3 were used? We just talked about the removal of
4 ash.

5 How were the leach data used to inform the
6 removal of ash?

7 BY MR. MAXWELL:

8 A. So the purpose of that particular
9 investigation was a CCB, a coal combustion
10 byproduct, beneficial reuse investigation. And so
11 the purpose of that particular investigation was to
12 look at whether or not the material qualified for
13 beneficial reuse under the Environmental Protection
14 Act.

15 So the specific test that we used was --
16 or that was used was dictated by the regulations,
17 and that was the test that was implemented, the
18 NLET test.

19 Q. Right. Okay. Now, if you turn to your
20 report at Page 81453, it looks like, if I'm reading
21 this correctly, the top paragraph, particularly the
22 second half of the top paragraph, talks about
23 concentrations of NLET copper and lead below the
24 Class 1 quality groundwater standards which

1 adequately delineated the limited extent of the
2 soils exhibiting concentrations of NLET copper and
3 lead above the Class 1 groundwater quality
4 standards; is that right?

5 A. I think you've read the last part of that
6 paragraph.

7 Q. Okay. And if you -- for more context on
8 the prior page, Page 35, the bottom paragraph, the
9 middle of that bottom paragraph there's a sentence
10 that says, concentrations of copper and lead from
11 GP 14A were higher than the Class 1 groundwater
12 quality standards; is that right?

13 A. That was the information that was utilized
14 to -- that informed the subsequent decision to
15 further delineate the area in the vicinity of
16 GP 14A as it related to the results from GP 14A for
17 copper and lead.

18 Q. Yeah. And is it your understanding that
19 the area where the test results exceeded the
20 Class 1 groundwater quality standards was the area
21 that was excavated?

22 A. That it exceeded the -- yes. The area
23 that was excavated was delineated -- the
24 delineation was utilized in order to map out the

1 area of soils that were -- that were -- that did
2 not exhibit the NLET results below Class 1
3 groundwater standards.

4 Q. Okay. And turning to Page -- one of the
5 slides in your slideshow talks about this. I
6 believe it's -- yeah, slide 12.

7 Do you see the area that we were just
8 talking about where there was ash excavated?

9 A. So, yes, there's -- on Figure 5 from our
10 report there is an area that's marked in green in
11 the vicinity of GP 14A in the northwest fill area.

12 Q. Okay.

13 A. That area that's in green in the legend is
14 indicated KPRG approximate removal area.

15 Q. Okay. And I believe you said in your
16 report, 52 trucks loads and a little over a
17 thousand tons of ash; is that right? Page 36.

18 A. Yes. Also, Slide 18 references 52 trucks
19 loads.

20 Q. Oh, yeah. Okay. Thanks.

21 And just to be clear, so there's -- the
22 northwest historical fill area as it's shown on
23 this map is much bigger than the area that was
24 excavated; is that right?

1 A. The majority of the northwest fill area
2 exhibited concentrations using the NLET test that
3 were below Class 1 standards. So that was the
4 standard -- that was the regulatory standard.

5 So, correct, there was no need to do
6 anything further for purposes of this investigation
7 on the majority of the area. It was just this one
8 particular location that warranted action in
9 light --

10 **Q. Right.**

11 A. -- of the objectives of this study.

12 **Q. Right. Okay. Just had to make that clear**
13 **for the record. Thanks.**

14 While we're on the topic of removal, has
15 any other ash been removed from Joliet 29 that
16 you're aware of?

17 A. Historically, there's ash that's been
18 removed from the ponds when the ponds operated, so
19 they were routinely emptied as warranted and as
20 needed.

21 **Q. Do you know where all that ash -- not to**
22 **say a lot, you know -- where did that ash go?**

23 **Do you know?**

24 A. My understanding is that the operational

1 procedures were to take that to the Lincoln Stone
2 Quarry on the south side of the river after it was
3 removed from the ash ponds.

4 Q. Similar to some of the other sites, I
5 think in your report you talked about how a lot of
6 these ash ponds are used for temporary storage of
7 ash; is that right?

8 A. I don't know that I would use the term
9 storage. In fact, I -- well, if you -- if by
10 storage you mean temporary, with that
11 clarification.

12 Q. Yeah. I just mean temporary because it
13 was taken somewhere else. At Powerton, for
14 example, some of those ash ponds were periodically
15 cleaned out; is that right?

16 A. That's our understanding.

17 Q. Do you know where that ash was sent?

18 BY MR. DORGAN:

19 A. I don't know offhand.

20 BY MR. MAXWELL:

21 A. I don't either.

22 Q. Okay. That's fine. I'll move on.

23 So turning to Powerton, on Page 81485 of
24 your report, that's gonna be a table with a little

1 tiny Bates number. I think it's Table 2,
2 Historical Leaching Data for Powerton. I think
3 it's gonna be hard to read this. Again, I have a
4 magnifying glass if it will help.

5 What areas as shown in this table were
6 tested with a LEAF test?

7 BY MR. DORGAN:

8 A. Yeah. It looks like, as summarized on
9 this table, the very far right columns reference
10 data that was collected as part of the alternate
11 source demonstrations that KPRG performed.

12 Q. Okay. And then turning to Page 81447 of
13 your report, which is the text --

14 A. 447?

15 Q. Yep. In the third paragraph, second
16 sentence, it says, KPRG recommended that the ash
17 surge basin and bypass basin be shifted from
18 detection monitoring into assessment monitoring.

19 Did the groundwater -- so how did the
20 groundwater monitoring program change in response
21 to the -- how did the LEAF data influence the
22 decision to change from detection monitoring to
23 assessment monitoring?

24 MS. NIJMAN: Objection, foundation.

1 MR. RUSS: Just looking at the description they
2 made in the report.

3 HEARING OFFICER HALLORAN: Try to rephrase. It
4 was -- yeah. I think you can do it, Mr. Russ.
5 Thank you.

6 MR. RUSS: You want me to rephrase?

7 HEARING OFFICER HALLORAN: Yeah, try.

8 BY MR. RUSS:

9 Q. So the first sentence of the third -- the
10 second paragraph discusses the LEAF test results
11 for the ASD; is that right?

12 A. There's discussion of the ASD and LEAF
13 samples in the first couple sentences of that
14 paragraph, yes.

15 Q. And this is what we were -- this is what
16 we were looking at earlier where further down in
17 the second paragraph you talk about how the natural
18 PH results are believed to be the most applicable
19 to field conditions, right?

20 Is that right?

21 A. That's what it states, yes.

22 Q. And then the third paragraph starts, KPRG
23 concluded that the data relative to the bypass
24 basin was not definitive, and potential

1 contribution of leachate from the bypass basin to
2 the local downgradient groundwater impacts could
3 not be ruled out.

4 My question is, where it says KPRG
5 concluded that the data, are you talking about the
6 LEAF test data in that section of your report?

7 A. We don't cite specifically to the data,
8 but you had alternate source demonstrations
9 happening for the two basins. The LEAF data was
10 referenced for the ash surge basin. And in the
11 case of the bypass basin, they felt there was less
12 definition to a clear outcome of that analysis.

13 If I go back -- so I believe we are
14 referencing to the LEAF data since the LEAF data is
15 included on the table we were looking at previously
16 for both the ash bypass basin and ash surge basin.

17 Q. Okay. Great. Thank you. So I guess just
18 my -- I just want to make sure I'm reading this
19 right.

20 The LEAF test data informed KPRG's
21 recommendation that the ash surge basin and the
22 bypass basin be shifted from detection monitoring
23 to assessment monitoring?

24 MS. NIJMAN: Again, foundation as to what KPRG

1 concluded.

2 MR. RUSS: I'm just reading what they wrote in
3 their report and trying to understand it.

4 HEARING OFFICER HALLORAN: Yeah, I'll allow it.

5 MR. DORGAN: So I think we stated in our
6 report, and there's a footnote to that particular
7 citation or there's a citation there to KPRG's
8 report which shows at the bottom of this page and
9 explains their thought process around the findings
10 for the ash surge basin and the bypass basin.

11 And if you look at that, this is a
12 reference to what's stated in KPRG's reports. We
13 were just highlighting previous conclusions by the
14 other consultant.

15 BY MR. RUSS:

16 **Q. Okay. I'll stop there on that. Going**
17 **back to 81485, the table of leach data from**
18 **Powerton that we were looking at before, other than**
19 **the ash bypass basin and the ash surge basin, do**
20 **you see any other LEAF test data at Powerton in**
21 **this table?**

22 MS. NIJMAN: Asked and answered.

23 HEARING OFFICER HALLORAN: I thought I heard
24 you object asked and answered?

1 MS. NIJMAN: Yes, sir.

2 HEARING OFFICER HALLORAN: I don't remember,
3 but if he can answer, please do so.

4 MR. DORGAN: Other than the two basins
5 referenced, the ash bypass basin and the ash surge
6 basin, in two different efforts on the part of KPRG
7 there's no other LEAF data represented on this
8 table.

9 BY MR. RUSS:

10 Q. Okay. Do you -- can you explain what the
11 other data -- the big block of data that says at
12 the top, Andrews Environmental Engineering, do you
13 remember what that's referring to?

14 A. I believe that was part of their -- what
15 we refer to as the geotechnical investigation. I
16 need to go back and just double-check that real
17 quick, but we had highlighted that earlier in our
18 testimony earlier with respect to Powerton.

19 Q. Okay. So in your testimony earlier --
20 maybe this will help. If we look at your slides,
21 Page -- let's see. One of those site-wide maps of
22 Powerton might help explain this, maybe Slide 35.

23 In the legend on Page 35 there's a
24 description of the Andrews 2004 basin sampling test

1 pit location?

2 A. Yes, I see that.

3 Q. I -- oh, man. I don't -- now, I used to
4 think I knew where this was on the map, but I don't
5 see it now.

6 Do you recall where that is?

7 A. On our map we have it shown as being just
8 to the east of the ash surge basin, and there's a
9 callout of that --

10 Q. Oh, yeah.

11 A. -- Figure 6 of our report.

12 Q. Okay. Great. Figure 6 of your report,
13 I'm gonna turn to that. Thank you. So what I want
14 to clarify is whether the test pit there -- yes,
15 this is perfect.

16 So is this what has elsewhere been
17 described as the limestone runoff basin? Do you
18 recall?

19 A. No. I don't believe that's the case.

20 Q. Let's look at the Board opinion, Page 40.
21 There's a heading that says, Limestone Runoff
22 Basin. It says, limestone runoff basin is located
23 east of the ash surge basin. And then in the
24 middle of the paragraph, right in the middle, there

1 is a sentence that starts, in 2004 Anders
2 Engineering analyzed samples from the test pits in
3 the nine locations in the basin. I believe they
4 meant Andrews.

5 Does this refresh your memory about that
6 area?

7 A. Yes. Thank you. Yes. I believe as you
8 flip between these, that this area east of the ash
9 surge basin, the callout on the test pits and the
10 reference under the limestone runoff basin is
11 referring to the same effort.

12 Q. Okay. Thank you.

13 I think you've already answered the
14 question I was going to ask next, but aside from
15 the limestone runoff basin and the ash bypass basin
16 and the ash surge basin, there's one other area of
17 leach test data in the that table on 81485. I'm
18 wondering if you can explain what that is. It
19 looks like it says -- correct me if I'm wrong.

20 You've got Andrews Environmental
21 Engineering first. Then you come to the MWG bottom
22 ash sampling from February 27, 2007?

23 A. We're referring to the Table 2?

24 Q. Yes. Yep.

1 Do you recall where that sample came from?

2 A. I would need to refresh from taking a
3 quick look if that's discussed in our report, if I
4 could.

5 Q. Sure. Yeah. So that would be -- well, I
6 actually don't know exactly where in your report
7 that would be, but I assume it would be near
8 Page 30 cause that's where the rest of this is
9 discussed. I might be wrong. You know what, we
10 can move on. I'll try to find it myself, and we
11 can come back to this tomorrow.

12 I know I'm gonna get an objection on this,
13 but I want to get it clear for the record.

14 Other than the areas we just discussed
15 shown on 81485, are you familiar -- are you aware
16 of any other leach testing data at Powerton?

17 A. Not that I'm aware of, at least at the
18 time our report was generated.

19 Q. Okay. Thank you.

20 Can you now turn to Page 814 Waukegan --
21 818 -- no, I got this wrong. 81486 is what I think
22 I meant to type as the next page, and it's where
23 the Will County data starts. I believe these
24 leaching data in the first set, MWG bottom ash

1 sampling December 2010, it says, Composite 3 south
2 bottom ash.

3 My understanding is that that ash was
4 taken from Pond 3 south. Do you recall if that's
5 right?

6 BY MR. MAXWELL:

7 A. Yeah. That's what our table indicates
8 here.

9 Q. Okay. Sorry to ask an obvious question
10 like that. The next -- now I wanted to really ask
11 about the next couple sets of data.

12 The CCB determination, I believe this is
13 what we were talking about earlier, that area east
14 of Ash Pond 1N; is that right?

15 A. I believe that's correct.

16 Q. So that's that set, and that goes all the
17 way over towards the end. And then there are two
18 remaining columns, the KPRG alternate source
19 demonstration. And it looks like there's a row
20 below that that describes where the samples were
21 taken from, I think, AP 2S ash, AP 3S ash.

22 Is it your understanding that that means
23 these are ash samplings from those two ponds,
24 Ponds 2S and 3S?

1 A. Yeah. AP I do believe signifies Ash
2 Pond 2S and 3S.

3 **Q. Okay.**

4 A. That was collected as part of the
5 alternate source demonstration.

6 **Q. Okay. And are you aware of any other**
7 **leach testing data for Will County other than**
8 **what's shown in this table?**

9 A. Again, at the time that we performed or
10 that we prepared our report, I don't believe that
11 we knew of any additional leach testing.

12 And I would just like to point out, too,
13 that leach testing is summarized here. We also
14 have groundwater monitoring testing as well --

15 **Q. Right.**

16 A. -- that helped to inform our opinion as to
17 remedies.

18 So I just want to put a reminder out there
19 about that.

20 **Q. Fair enough. Yeah. So that's all I'm**
21 **gonna ask about leaching for a moment. I'm gonna**
22 **switch gears entirely for my last 13 minutes here.**

23 On Page 53 of your report you discuss the
24 **HELP model, H-E-L-P model, and you also included**

1 **HELP model files as Appendix E to your report; is**
2 **that right?**

3 **(Reporter clarification.)**

4 MR. DORGAN: Well, we do discuss the HELP
5 modeling that was performed at the top of Page 53.
6 And just scanning through here -- do you have a
7 Bates number for the Appendix?

8 BY MR. RUSS:

9 Q. Oh, yeah. It's far into the depths of the
10 report. Let's see.

11 A. I think I found it.

12 Q. Okay.

13 A. 82178.

14 Q. It's the last bunch of pages there. For
15 the record, it starts on Page 82178. That's the
16 title page anyway. And then 82179 is where the
17 actual HELP model documentation starts; is that
18 right?

19 A. Yes.

20 Q. Okay. So on Page 53 of your report
21 starting on Line 3, you wrote, according to the
22 model result, the cap has significantly reduced
23 infiltration and thereby would be expected to
24 mitigate potential leaching from ash materials to

1 **groundwater; is that right?**

2 A. That's what that states, yes.

3 **Q. Okay. And then I think earlier today you**
4 **said something slightly different which is that the**
5 **cap would be expected to mitigate potential**
6 **leaching from ash in the VADOSE zone; is that**
7 **right?**

8 A. That's right also.

9 **Q. Okay. So would the cap mitigate potential**
10 **leaching from ash below the water table?**

11 A. Well, first of all, the first part of your
12 question regarding the differences between the two
13 representations are basically saying the same thing
14 but in different ways.

15 **Q. Okay.**

16 A. So leaching to groundwater implies --

17 **Q. Sure.**

18 A. -- the ash above the groundwater to the
19 groundwater.

20 And then the leaching from the VADOSE zone
21 would be the unsaturated zone of ash above the
22 groundwater to the groundwater. So I just want to
23 clarify that's really just the same thing stated
24 differently.

1 **Q. Okay.**

2 A. So then I believe the second part of your
3 question had to do with groundwater, and so we
4 were -- this HELP model only looked at the
5 inhibition of infiltration as a result of the cap.

6 **Q. Okay. So the HELP model doesn't estimate**
7 **changes in leaching behavior, for example; is that**
8 **right?**

9 A. No, it doesn't. It simply models what the
10 cap design you input how much infiltration and
11 passage of water through that cap you're likely to
12 see.

13 **Q. Okay. So you can use the HELP model to**
14 **calculate how much infiltration would change, but**
15 **the HELP model doesn't give you a number for how**
16 **much leaching would change; is that right?**

17 A. Right. The HELP model simply looks at the
18 infiltration through the cap.

19 **Q. Okay. Are there other models that would**
20 **be able to estimate changes in leaching behavior?**

21 A. There would be models that you could
22 attempt to use. The earlier study that we
23 referenced was using a model to try to predict what
24 might happen with respect to leaching, but we did

1 not do that as part of this analysis.

2 Q. Okay. And the earlier study, do you mean
3 the EPRI document we were talking about?

4 A. That's correct.

5 Q. Okay. I have a couple questions about
6 that, and I think that might be a good way to close
7 out the last few minutes here. I believe the
8 document you're referring to is Exhibit Number 1103
9 that starts on Bates Page 65921. Make sure I have
10 my copy here. Here we go.

11 On Page 3-10 of this report, it talks
12 about HELP results at the top, and then it talks
13 about MODFLOW slash MT 3D results at the bottom; is
14 that right?

15 A. That's what the heading of that
16 paragraph is, yes.

17 Q. And MODFLOW is -- I believe MODFLOW is one
18 of those groundwater fate transport models that you
19 were talking about earlier today?

20 A. That's correct.

21 Q. So that's the kind of model that you could
22 use to estimate changes in leaching behavior?

23 A. Theoretically, that could be applied given
24 the circumstances and the type of outcomes or the

1 types of outputs you were looking for.

2 Q. Okay. Now, on Page Roman Numeral 6,
3 Paragraph 2 of this report?

4 A. I'm sorry. I'm not with you.

5 Q. Oh, okay.

6 A. Where are you?

7 Q. There's a page -- one of the early pages,
8 Roman Numeral 6?

9 A. Yes.

10 Q. In Paragraph 2, second sentence, the
11 authors write, this site differed from the other
12 two in that a portion of the ash was below the
13 current water table, and the full extent of which
14 was not known prior to closure of the site was not
15 reflected in the closure model; is that right?

16 A. That's what that says.

17 Q. And so this is talking about one of the
18 three impoundments that they modeled, right?

19 A. One of the three impoundments that were
20 comprised of multiple ponds at each of the
21 impoundments.

22 Q. Okay. I should say maybe then one of the
23 three sites. Although, they say -- I mean, the
24 first sentence in that paragraph says one of the

1 three impoundments, right?

2 A. Yes.

3 Q. So on Paragraph 2, Line 4, or, yeah,
4 Line -- starts on Line 5. It says, in this
5 particular case -- I'm sorry. That's not the
6 sentence I meant to direct your attention to.

7 On Line 4, the sentence starts at the
8 beginning of the line. It says, dewatering and
9 closure were not effective at this site because
10 leaching continued from the saturated ash; is that
11 right?

12 A. That's what the statement says, yes.

13 Q. And then it goes on to say that in this
14 particular case concentrations actually increased
15 because the contact time of groundwater moving
16 through the saturated ash increased when the
17 hydraulic gradient of the pond was removed. A cap
18 would have had little or no effect on this process.

19 Did I read that right?

20 A. You read that correctly, but this is the
21 same topic that I testified to earlier when I
22 mentioned that this study references dewatering.

23 Q. Yeah.

24 A. And that dewatering that they're referring

1 to is of ponds --

2 **Q. Yep.**

3 **A. -- not of the groundwater.**

4 This is talking about stopping the
5 infiltration of water coming into the pond. So
6 that's why I was drawing the distinction between
7 the way in which this study was conducted and its
8 findings versus the conditions that we were
9 referring to at Waukegan.

10 **Q. Right. I understand that. And my**
11 **question -- I have a couple questions related to**
12 **that, but not exactly the same thing.**

13 **Can you just for background describe what**
14 **hydraulic gradient means? They refer to the**
15 **hydraulic gradient being removed.**

16 **A. Well, again, I believe in this context,**
17 **the hydraulic gradient they're referring to is the**
18 **incoming water which is creating its own gradient,**
19 **that water is infiltrating and finding a path to**
20 **migrate through.**

21 In other instances gradient is a
22 reflection of the groundwater surface conditions
23 and the difference over distance between data
24 points expressing a groundwater surface which would

1 give you an understanding of what your groundwater
2 gradient is.

3 Q. Okay. And the infiltration at Waukegan
4 that you were talking about, is that also hydraulic
5 gradient?

6 A. That would be a form of hydraulic gradient
7 which would be the precipitation moving vertically
8 through the unsaturated zone as it migrates towards
9 the groundwater table.

10 Q. Okay. And so at this site described by
11 EPRI when the hydraulic gradient was removed, it
12 affected groundwater flow. A cap at Waukegan would
13 also remove the hydraulic gradient of infiltration;
14 is that right?

15 A. Can you restate that question?

16 Q. Sure.

17 A. I want to make sure I answer it properly.

18 Q. I'll ask the second part, keep it simple.
19 Would -- the cap that you're proposing at
20 Waukegan would eliminate or virtually eliminate
21 infiltration, right?

22 A. That's the -- that's the goal.

23 Q. And so that would also eliminate the
24 hydraulic gradient associated with that

1 **infiltration?**

2 A. That would eliminate the gradient of
3 surface water infiltrating to groundwater.

4 Q. Okay. And at the site EPRI described,
5 when they removed the hydraulic gradient, the
6 groundwater started moving more slowly.

7 Is that your understanding?

8 A. That's because they eliminated the
9 incoming water flow to the ponds. That was part of
10 the ash management system. So you had ponds that
11 were receiving large quantities of ash and water
12 that were then migrating in addition to the
13 precipitation. So it wasn't simply surface
14 precipitation infiltration. It was a combination
15 of that with the incoming water from the sluicing
16 operations.

17 (Reporter clarification.)

18 MR. RUSS: Okay. I think I'm done with that
19 line of questioning. Probably a good time to stop.

20 HEARING OFFICER HALLORAN: Okay. Yeah. We can
21 adjourn until tomorrow at 9:00 a.m., June 14, 2023.

22 Thank you.

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(WHEREUPON, proceedings were
adjourned until June 14, 2023,
at 9:00 a.m.)

1 STATE OF ILLINOIS)
2) SS:
3 COUNTY OF C O O K)
4

5 RAELENE STAMM being first duly sworn, on
6 oath says that she is a court reporter doing
7 business in the City of Chicago; and that she
8 reported in shorthand the proceedings of said
9 hearing, and that the foregoing is a true and
10 correct transcript of her shorthand notes so taken
11 as aforesaid, and contains the proceedings given at
12 said hearing.

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Certified Shorthand Reporter

<p style="text-align: center;">A</p> <p>A-v-e-l-a-r 8:8</p> <p>a.m 1:19 87:8 292:21 293:3</p> <p>abbreviation 13:5</p> <p>ABEL 3:13</p> <p>ability 31:19 70:13 171:8 240:10,24 244:9</p> <p>able 23:10 42:8 60:1 74:19 77:19 112:22 146:15 162:10 185:20 188:24 189:24 190:20 210:18,19 216:13 247:15 264:5 266:1 286:20</p> <p>above-entitled 1:14</p> <p>absence 80:3 134:9 237:6</p> <p>absorption 78:19 152:6</p> <p>acceptable 98:20 102:6 234:15</p> <p>acceptance 178:3</p> <p>access 148:6</p> <p>account 95:12 144:17 153:11</p> <p>accounted 145:15</p> <p>accounts 75:6 76:2 106:12 147:2</p> <p>accumulated 165:11</p> <p>accurate 247:12</p> <p>ACD 49:18,22 50:10 65:23 93:6,8</p> <p>acidic 258:16</p> <p>acknowledge 141:12 159:10</p> <p>acknowledged</p>	<p>135:11 168:23 177:13</p> <p>acknowledges 65:11</p> <p>acquired 45:24 94:24 129:19 176:24</p> <p>acquisition 58:2,4 96:8</p> <p>act 9:16 32:9 40:2 79:1 101:8 102:8 269:14</p> <p>action 9:8 32:6 67:9 85:14 128:10 162:2 272:8</p> <p>actions 145:2 149:15 158:8,11 158:20 175:17 177:24</p> <p>active 25:13,17,17 41:12</p> <p>actively 105:1 177:19</p> <p>actual 43:15 97:2 110:23 112:15 153:4 284:17</p> <p>adapting 72:20</p> <p>add 195:6 207:2 213:24</p> <p>added 92:17 109:2,3 164:16 181:12</p> <p>addition 104:23 111:20 217:21 292:12</p> <p>additional 16:23 48:14 52:14 56:15 61:3,4 69:9 73:10 99:10 102:23 145:2 149:15 180:6 217:20 218:17 249:23 250:12,14</p>	<p>283:11</p> <p>address 9:6 67:22 68:7 71:13 131:8 157:6 169:1 171:24 178:21</p> <p>addressed 40:13 81:15 85:6 122:24 180:5</p> <p>addressing 23:4 49:15 58:22 173:5,19</p> <p>adequate 155:16</p> <p>adequately 107:14 270:1</p> <p>adhered 170:19</p> <p>adjacent 54:2 122:1 126:4 140:13,18 149:3</p> <p>adjoining 24:15</p> <p>adjourn 292:21</p> <p>adjourned 293:2</p> <p>adjusted 131:7</p> <p>admit 183:21 184:4 185:8</p> <p>admitted 6:2 87:17 183:24 184:1,3,10 185:8 185:10</p> <p>advanced 56:2 133:17 138:16</p> <p>advancement 132:22</p> <p>adverse 14:1,11 15:1 32:6</p> <p>adversely 38:16</p> <p>aerial 53:12,22 54:5 55:11 197:3 243:9</p> <p>affirmatively 186:7</p> <p>afford 127:19</p> <p>aforsaid 294:11</p> <p>African 125:15</p> <p>afternoon 121:9</p>	<p>125:8,9</p> <p>age 166:3,7</p> <p>agencies 62:6 71:13 162:6</p> <p>agency 62:8 65:8 71:17 132:20 143:9 177:2,13 177:24</p> <p>ago 37:22 51:17 82:18 112:8 160:9 256:20 269:1</p> <p>agree 61:24 62:19 67:19 78:6,7 156:7 165:19 171:7 178:14 195:2 213:2,15 232:10 254:4 266:9</p> <p>agreed 24:17 63:14 82:3 121:11,16 177:2 177:8</p> <p>agreement 65:6 92:3 140:24</p> <p>agreements 86:10 177:10</p> <p>agricultural 46:4</p> <p>ahead 87:23 169:15</p> <p>alleged 139:8</p> <p>allow 48:18 58:15 69:10 74:14 82:7 105:10,12 119:9 120:23,24 127:24 187:23 206:16 277:4</p> <p>allowed 25:18 123:21 167:3 178:8 184:16</p> <p>allowing 71:15 125:21 169:3</p> <p>allows 70:11 105:8 124:18 168:21 177:21</p>	<p>188:6</p> <p>alternate 49:20 50:2 67:15 68:5 68:8,13 93:9,12 131:10 143:15 143:24 144:9,19 264:22 274:10 276:8 282:18 283:5</p> <p>alternative 50:7 65:24 66:5,7 67:2,4,8,10,12 70:9 144:5,18 175:13 176:7</p> <p>amend 123:7</p> <p>American 125:15</p> <p>amount 159:17,18 165:11 169:2 196:19,23</p> <p>analyses 62:1</p> <p>analysis 23:5,7 30:24 31:2 33:1 33:2,7 35:2,11 35:17,18 36:18 37:7 38:1,3,5 39:8,14 45:15 62:3,10 69:24 73:10,15 74:2 77:3 78:12 80:12 83:10 86:18 100:12 101:17 105:6 107:1,11,13 109:16 133:6 139:5 141:18 147:18,21 149:6 149:9,18,21,23 150:23 151:16 152:2,14 153:11 156:1 158:22 159:4 183:1 195:23 196:4 197:12,15 198:11,13,17,22 201:4 214:2</p>
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