ILLINOIS POLLUTION CONTROL BOARD

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

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

APPEARANCES:

ILLINOIS POLLUTION CONTROL BOARD
MS. MARIE TIPSORD, General Counsel
MS. VANESSA HORTON, Staff Attorney
MS. ESSENCE BROWN, Environmental Scientist
MR. ANAND RAO, Chief Environmental Scientist

MS. FAITH BUGEL
1004 Mohawk Road
Wilmette, Illinois 60091
(312) 282-9119
fbugel@gmail.com
On behalf of Complainant,
Sierra Club;

APPEARANCES: (Continued)

MR. GREG WANNIER
SIERRA CLUB
2101 Webster Street
Suite 1300
Oakland, California 64612
(415) 977-5646
greg.wannier@sierraclub.org
On behalf of Complainant,
Sierra Club;

MR. ABEL RUSS
ENVIRONMENTAL INTEGRITY PROJECT
Vermont Avenue, NW
Suite 1100
Washington, DC 20005
(202) 296-8800
On behalf of Complainant,
Prairie Rivers;

APPEARANCES: (Continued)

MS. JENNIFER T. NIJMAN
MS. KRISTEN LAUGHRIDGE GALE
MR. ANDREW NISHIOKA
NIHMAN FRANZETTI, LLP
10 South LaSalle Street
Chicago, Illinois 60603
On behalf of the Respondent.

ALSO PRESENT:

MS. DAGMARA AVELAR, Public Comment
MS. DESTINY ORTIZ, Public Comment
MS. ANN TAYLOR, Public Comment

I N D E X

E X H I B I T S

NUMBER	MARKED	ADMITTED
Respondent Exhibit		
No. 1701		184
No. 1702		185

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

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

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

MS. BUGEL: Thank you. We have

Representative Dagmara Avelar present to offer public comment.

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

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

HEARING OFFICER HALLORAN: Yes, you may.

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

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

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

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

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

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

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

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

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

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

MS. NIJMAN: Thank you. Yes.

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

(WHEREUPON, a short recess was taken.)

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

(WHEREUPON, the witness was duly sworn.)

HEARING OFFICER HALLORAN: Thank you.

You may proceed, Ms. Nijman.

MS. NIJMAN: Thank you.

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.

A. Got it.

Q. Thank you.

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

A. Yes, it is.

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

A. Okay.

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

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

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

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

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

Can you explain what those references mean?

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

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

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

Q. And the BR is above the damn.

Is that what you said?

A. BR is at the damn and above.

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

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

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

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

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

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

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

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

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

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

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

A. Okay.

Q. What is this table showing?

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

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

A. Correct.

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

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

Q. Would you locate Exhibit 1111 on your desk?

A. Got it.

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

A. Yes, I have.

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

A. Yes, it is.

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

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

vicinity of the Joliet 29 station.

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

A. I think it is, yes.

Q. Why is that?

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

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

A. Yes.

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

A. When you say shoreline samples --

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

A. Yes, yes.

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

A. Yes, I did.

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

A. How many borings were taken?

Q. Correct.

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

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

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

HEARING OFFICER HALLORAN: Okay. What exhibit is it?

MS. NIJMAN: 1111.

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

BY MS. NIJMAN:

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

A. Yep.

Q. Okay. So what is that map called?

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

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

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

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

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

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

A. Yes, I did.

Q. And what did you find?

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

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

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

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

Did you have your own method of reviewing this data?

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

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

Is this the summary chart of the data that you reviewed?

A. Yes, it is.

Q. And what did this data review tell you?

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

this data are below both the TEC and the PEC.

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

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

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

A. Yes.

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

A. Yes, it is.

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

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

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

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

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

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

A. We did, yes.

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

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

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

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

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

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

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

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

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

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

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

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

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

And then the GMZ was also discussed.

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

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

A. Yes.

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

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

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

What does this chart describe?

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

performed that was described in our expert report.

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

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

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

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

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

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

First of all, what does no trend mean?

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

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

MR. RUSS: Object, leading question.

HEARING OFFICER HALLORAN: Sustained.

BY MS. NIJMAN:

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

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

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

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

Q. And you have two notations at the bottom

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

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

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

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

results in a no trend conclusion.

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

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

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

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

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

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

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

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

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

A. I do.

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

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

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

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

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

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

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

It's titled, Groundwater to Surface Water Analysis.

Is this the risk analysis we were talking about yesterday?

A. Yes, it is.

Q. And what does this page show?

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

Q. And can you describe the systems that you used?

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

reporting limit itself is the maximum that concentration could be.

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

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

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

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

A. From recollection, Appendix D.

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

A. Correct.

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

A. Correct. Yes.

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

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

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

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

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

What did Mr. Seymour use?

A. I believe he used the individual concentrations.

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

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

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

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

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

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

Q. Thank you.

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

What are you showing here?

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

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

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

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

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

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

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

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

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

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

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

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

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

The seconds bullet point is MW-09. There

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

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

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

meet the beneficial reuse requirements per the Environmental Protection Act.

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

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

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

What are you summarizing here?

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

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

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

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

Should that be the CCA?

MR. RUSS: Objection.

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

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

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

MS. NIJMAN: Thank you.

BY MS. NIJMAN:

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

A. Yes.

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

MR. RUSS: Objection, coaching the witness.

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

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

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

BY MS. NIJMAN:

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

A. I do, yes.

Q. And what is that?

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

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

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

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

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

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

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

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

DOUGLAS G. DORGAN, JR.,

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

DIRECT EXAMINATION

BY MS. NIJMAN:

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

A. That's correct.

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

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

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

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

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

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

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

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

A. Yes, that's correct.

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

A. Yes, that's correct.

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

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

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

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

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

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

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

And then, finally, the groundwater

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

Q. Thank you.

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

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

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

What is that?

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

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

A. Oh, I'm sorry.

Q. -- from the left.

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

Q. Is an ACD characterized as a delay?

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

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

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

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

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

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

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

BY MS. NIJMAN:

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

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

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

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

Do you recall that?

A. Yes, I do.

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

A. Yes, I did.

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

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

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

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

A. I have that.

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

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

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

A. I have that.

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

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

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

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

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

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

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

A. Yes, I was.

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

channel?

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

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

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

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

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

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

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

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

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

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

What does this summarize?

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

Q. Okay. So turning to the next page,

Page 37 is the 1998 Phase 2 ESA.

What did you learn from this?

A. This was the very early documentation with respect to the investigations that have occurred at the site. There were quite a few data points that were collected. They had 28 soil borings. 6 monitoring wells were installed as part of that effort. 17 surface soil samples and 12 sediment samples. And then particularly relevant from MW-1 and MW-2 which are near the east yard runoff basin and the former ash basin, that investigation detected no RCRA metals above the Class 1 groundwater standards.

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

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

A. This was preceding their acquisition of the plant.

Q. Turning to the next page, Slide 38 of Exhibit 1702, what are you showing here?

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

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

What are you addressing here in 2010?

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

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

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

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

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

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

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

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

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

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

been some discussion about two aquifer units at Powerton?

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

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

Q. And do you agree with these KPRG

groundwater flow analyses that you just described?

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

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

A. I do.

Q. What did he argue?

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

Q. And do you agree with Mr. Quarles?

A. I do not.

Q. For what reasons?

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

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

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

Do you recall his opinions about these two mapping units?

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

Q. I would like you to pull out Exhibit 1102.

Well, before I do, that, would you remind everybody who Mr. Kunkel was?

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

Q. Thank you.

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

A. Yes, I'm there.

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

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

Q. Yes.

A. Yes, I see that.

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

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

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

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

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

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

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

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

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

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

A. Yes, that's correct.

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

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

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

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

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

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

A. It was not.

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

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

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

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

Q. Do you agree with his assessment?

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

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

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

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

Q. Thank you.

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

A. That's correct.

Q. And what are you describing here?

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

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

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

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

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

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

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

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

What are you showing here with regard to the ELUC?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q. Yes.

Mr. Maxwell, what did you find about the

no trend data at Powerton?

BY MR. MAXWELL:

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

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

Am I saying that correctly?

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

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

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

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

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

Q. Thank you.

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

BY MR. DORGAN:

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

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

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

Q. At one location?

A. Correct.

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

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

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

A. That's correct.

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

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

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

River to the north.

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

Do you agree with that?

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

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

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

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

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

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

MR. RUSS: Object, leading question.

HEARING OFFICER HALLORAN: Sustained.

Rephrase, please.

BY MS. NIJMAN:

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

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

We know that ongoing production of ash is

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

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

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

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

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

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

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

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

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

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

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

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

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

Q. And have you visited the Powerton station?

A. Yes, I have.

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

A. Yes, I was.

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

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

HEARING OFFICER HALLORAN: Ms. Nijman, can you

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

BY MS. NIJMAN:

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

A. No, I would not.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Thank you. See you in 10.

(WHEREUPON, a short recess was taken.)

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

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

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

HEARING OFFICER HALLORAN: Yes. I'm sorry.

Go ahead, Miss Nijman.

MS. NIJMAN: May I respond?

HEARING OFFICER HALLORAN: Yes, you may.

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

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

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

MR. RUSS: If I can clarify --

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

MR. RUSS: Okay. That's fine.

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

MR. RUSS: Sure.

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

MS. NIJMAN: Thank you.

BY MS. NIJMAN:

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

BY MR. MAXWELL:

A. Yes.

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

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

Q. And it has boring location as what color?

A. Pinkish.

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

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

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

the five borings you're referring to?

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

Q. Thank you.

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

A. Okay.

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

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

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

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

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

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

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

of the thickness.

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

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

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

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

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

Do you know why the ACD was withdrawn?

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

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

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

Q. And the green area is?

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

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

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

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

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

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

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

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

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

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

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

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

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

Q. And is this also Figure 7 in your expert

report?

A. I believe that's correct, yes.

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

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

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

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

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

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

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

A. Yeah, we do.

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

A. Yes.

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

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

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

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

Q. What do you mean by that?

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

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

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

A. So ENSR in their Phase 2 for Will County

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

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

Why was that relevant to you?

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

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

Q. Turning to Slide 59, like the other

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

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

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

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

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

Would you explain that, please?

A. So this was an assessment that was focused

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

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

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

Q. And how does that finding relate to your

assessment of remedy with regard to this ash?

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

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

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

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

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

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

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

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

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

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

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

Would you describe that?

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

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

actively monitored as well.

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

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

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

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

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

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

statistically significant upward trends, there's more than double the number of -- the number of statistically significant downward trends is more than double the number of statistically significant upward trends.

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

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

A. Is primarily related to the non-detect.

Q. The non-detect?

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

Q. Thank you.

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

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

analysis risk assessment as well as the trend testing.

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

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

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

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

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

Class 1 groundwater quality standard was exceeded.

Q. And what does that mean to you?

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

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

MR. RUSS: Objection, leading question.

HEARING OFFICER HALLORAN: Sustained, rephrase.

BY MS. NIJMAN:

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

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

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

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

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

A. That's correct.

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

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

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

expert report.

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

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

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

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

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

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

A. Correct.

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

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

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

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

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

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

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

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

A. Yes, I have.

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

A. Yes. We did observe the river.

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

A. Correct.

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

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

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

A. All right.

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

A. I am, yes.

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

A. Yes, I do.

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

A. Yes.

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

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

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

A. Yes.

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

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

Q. No, the first paragraph under the bullet?

A. Okay.

Q. The last sentence.

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

Q. Correct.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

obviously cross outside the offer of proof.

MR. RUSS: Thank you.

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

(WHEREUPON, a short recess was taken.)

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

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

HEARING OFFICER HALLORAN: Okay. You may proceed.

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

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

HEARING OFFICER HALLORAN: If you could slow down.

MS. ORTIZ: Sorry.

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

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

HEARING OFFICER HALLORAN: Thank you.

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

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

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

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

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

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

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

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

Our community is calling on Midwest

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

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

MS. ORTIZ: Thank you.

HEARING OFFICER HALLORAN: Good afternoon.

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

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

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

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

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

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

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

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

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

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

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

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

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

MS. TAYLOR: Thank you.

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

MS. NIJMAN: Certainly.

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

BY MS. NIJMAN:

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

BY MR. DORGAN:

A. Yes, that's correct.

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

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

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

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

Q. Turning to your next slide, Slide 72, what are you describing here?

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

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

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

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

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

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

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

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

wells and samples were collected.

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

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

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

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

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

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

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

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

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

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

And the arsenic concentration that was

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

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

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

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

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

properties onto the Waukegan station property.

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

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

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

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

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

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

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

investigation at Waukegan?

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

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

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

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

Q. Turning to the next slide, Slide 79, would you describe the continuation of the 2010

hydrogeologic investigation?

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

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

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

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

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

A. I believe so.

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

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

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

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

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

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

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

Q. Do you know why this analysis was performed?

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

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

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

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

They also include the constituents

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

Q. Turning to your next slide, 82.

What are we describing in here?

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

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

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

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

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

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

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

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

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

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

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

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

A. That's correct.

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

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

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

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

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

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

A. Yes.

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

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

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

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

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

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

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

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

A. Yes, it does.

Q. How does it do that?

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

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

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

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

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

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

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

Q. And why was that relevant to that ratio?

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

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

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

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

BY MR. MAXWELL:

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

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

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

BY MR. DORGAN:

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

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

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

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

A. Yes, they are.

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

(Reporter clarification.)

BY MS. NIJMAN:

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

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

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

A. No.

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

Can you describe that here at Waukegan?

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

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

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

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

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

A. Yes, that's correct.

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

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

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

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

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

Q. I can refer you to Page 47 of your expert report where you discuss the findings of your risk analysis.

A. 47?

Q. 47.

A. Yes. So second paragraph of that page, our conclusion was that the results of the surface water risk evaluation indicate that downgradient groundwater conditions at each of the four stations do not pose unacceptable risk to surface water receptors.

And it's WCG's opinion it's consistent with the expert report of John Seymour who concluded that it was his opinion that groundwater conditions do not pose risk to surface water receptors.

Q. You noted a finding in the paragraph above on Page 47 that there was a different view as to Monitoring Well 1.

Can you describe your analysis there?

A. Yes. At Monitoring Well 1, the difference of MW-1 was that there was a slightly higher PH concentration than in the other wells. That PH concentration was measured at an average basis at 9.74 units, and the surface water standard for PH ranges between 6.5 and 9. So in that particular instance the average concentration for PH does exceed the surface water concentration.

Q. And what was the conclusion in the risk analysis for MW-1?

A. Well, as I've mentioned previously as we've noted here, there's approximately 700 feet of distance between MW-1 and Lake Michigan. So those processes of absorption, diffusion, dispersion, would be having an impact on that PH as it migrated eastward, and we felt would not be at a concentration exceeding those surface water standards by the time it reached the surface water body.

Q. Turning to the next slide in 1702, as we did with the other stations, would you review the risk analysis findings for boron at Waukegan?

A. Yes. Again, this was provided as an example of one of the constituents that were averaged. This is boron again showing the range of concentrations on the left-hand side, the Y axis. The wells themselves are along the X axis at the bottom.

We show the average concentration for boron for both total and dissolved at each of those four wells. And then the blue bar across the top of the graph shows the groundwater protection or

the surface water protection standard.

Q. And as with the other stations, for this testing looking at, say, MW-2, what was the location of MW-02 relative to the actual surface water?

A. Again, this is roughly 700 feet from the surface water. So similar to the discussion about PH, these concentrations would likely be much lower through these other hydrogeochemical processes by the time it would reach the surface water.

Q. So does your analysis account for any travel time as we see it on this Page 87?

A. Yes, it does. It picks up that distance that the groundwater would -- you know, one way of looking at this as it's been described previously would be even if the -- these wells were right at the beach for Lake Michigan and this groundwater was flowing directly into Lake Michigan, it would not be flowing in at a concentration posing a risk.

Q. You had the opportunity to visit the Waukegan station?

A. Yes, I have.

Q. And you just talked about the 700-foot distance to the lake. Given that

distance, what is your opinion about the potential for seeps?

A. I don't think it's likely, and I believe there's been previous testimony that others that have walked and inspected those areas of the downgradient slope from the site have not seen any seeps.

Q. Turning to Page 88 of Exhibit 1702, would you summarize the main points relating to your remedy assessment at Waukegan?

A. Yes. So we have quite a bit of background data from upgradient wells that help us understand contributions to what's going on at the regulated units. There's regular groundwater elevation data that's being contoured and contour maps that are showing a consistent groundwater gradient.

There's no evidence of groundwater flow from the ponds to the upgradient wells. And as noted previously, the units that have been receiving coal ash are no longer receiving them now, nor will they in the future. And the ponds will either be closed or repurposed for other needs.

The trend testing that we've done on the

downgradient groundwater wells shows that the downgradient groundwater quality shows that they're lightly more upward trends than downward when you look just simply at the trends, not at the statistically significant trends. We don't think that that's entirely unexpected given the presence of what we know coming from off site and upgradients and also what we believe to be contributed from the uncapped fill area to the west of the west pond.

And as a consequence, we believe that a remedy for that area is warranted so that as part of that remedy a groundwater management zone would be instituted coupled with what's already in place from an environmental land use control to continue providing adequate protection of potential receptors. But even with that, in looking at on-site and off-site, we don't see that there are receptors present which would support the overall strategy that we're proposing.

HEARING OFFICER HALLORAN: Ms. Nijman, could you raise your voice a little, please? Thank you.

BY MS. NIJMAN:

Q. Referring you to Slide 89 on Exhibit 1702,

what was your remedy analysis then for Waukegan?

A. Several components to that. Consistent with the other stations, we feel as though the federal and state CCR surface impoundment rules should continue to be complied with and to continue following the steps necessary to close the surface impoundments. We agree that the continued monitoring of the groundwater is appropriate under the various frameworks that are already in place.

We believe, as I noted, to close the surface impoundments and repurpose them as needed. We have proposed a presumptive remedy including a capping of the FS area. And then consistent with the other three stations, we know that there's both a state and a federal rulemaking that's in the process and that when they, assuming that they are, and when they are promulgated, that whatever those requirements may lay out as it applies to the station, that they be followed.

Q. And let's turn to the next slide which describes, I believe, the presumptive remedy, the cap you mentioned.

Would you describe that, please?

A. So we know that there's some cover on the

fill area as shown by the borings that were done and by the fact that it is supporting a vegetative cover, but that is not an engineered cover. So we're proposing to have a low permeability cap installed over that area which we have used regularly to address similar conditions at other sites both in Illinois and in the area as a whole.

What that cap will do and based upon preliminary modeling that we've already done using standard modeling software is basically eliminate the infiltration of rainwater into the unsaturated ash that would exist below the cap once the cap is installed. You can see it goes from 0.4 inches per year to 0.0003 inches which is nearly -- it says here a 99.9 percent reduction. So we'd basically be eliminating ongoing contribution of rainwater migrating through those unsaturated fills. And then we feel that that will help us drive the groundwater conditions to a condition below the Class 1 groundwater standards quicker than if nothing was done.

And then of course we have this complicating factor of the federal and state historic fill area rules that may have an influence

on what happens here as well. So there's some timing issues with respect to when this cap should be done versus when there's some certainty around what those rules may require for this area.

Q. When you say that about the timing, what is your concern?

A. Well, I think we've highlighted previously that there have been past actions that Midwest Gen has taken voluntarily before the rules came out, and after the rules came out, those voluntary actions had to be redone to bring in particular with the lining of the ponds into compliance with the rules after they were promulgated.

And so we're just leery of there being conflicts between what might be done as part of our proposed cap remedy which we think is appropriate -- an appropriate remedy given the circumstances of the site, but also want to be careful that we don't have to go back and redo something if the new rules demand other actions for these types of areas.

Q. How does your analysis of the cap over the FS area relate to what you explained yesterday about the mass of contaminants that exist -- a

finite mass that exists in CCR?

A. So I think yesterday I mentioned that our primary concern with the former slag area is that there is a majority -- in fact, the analysis we've done says something on the order of 80 percent of the waste materials that are there are in the VADOSE zone. That's in the area above the groundwater table so that they're not in regular contact with groundwater.

We do acknowledge that approximately 20 percent of that waste mass is in contact with the groundwater, but the part that's in contact with groundwater has been for many years based upon our understanding of this -- the ash that's in this particular area.

So as you mentioned, there's a finite amount of inorganics that are contained in that ash that will leach out over time, and that amount of leaching will diminish with the passage of time. However, the same can't be said for the ash in the VADOSE zone. So as precipitation events occur, the surface water, some will shed off of the area, but much of it will infiltrate through the soil cover, through the ash materials, ultimately down to the

water table.

And so our remedy would cut that migration potential off. So we would have a situation where those VADOSE zone ashes which are regularly wetted and given the opportunity to leach materials from the ash, we would eliminate that because there would no longer be rainfall infiltrating through the VADOSE zone ash materials.

Q. You mentioned a few minutes ago that the off-site groundwater from off-site sources, I think you said the tannery and the boiler?

A. That's correct.

Q. Will contaminated groundwater from off site continue moving onto the Waukegan station in your opinion?

A. Yes, we do think so.

Q. And how does this contamination from off-site migration factor into your remedy assessment?

A. Well, we know it's a condition that we'll be managing for sometime, but we have had the ELUCs put into place which is prohibiting the installation of wells within those areas. Our remedy for the FS area is not going to do anything

about what's being contributed from those off-gradient -- or off-site upgradient sources.

In that case, we're still relying more on that downgradient receptor evaluation that we've done for each of the four stations to help us understand that even with these ongoing contributions, some of those mechanisms that we've talked about frequently hydrogeologically are going to continue to influence even those plumes, and that we should be protective with the monitoring network that we have in place and the conditions that we've already modeled.

Q. Either you or Mr. Maxwell mentioned before that caps are a common remedial approach.

Am I correct in that?

A. Yes, that's correct.

Q. Okay. Could you give me some examples of when you have installed a cap as a remedial approach?

A. So I think a good example would be a project that both Mr. Maxwell and I worked on together, a steel mill in northwest Indiana. There were a mix of steelmaking waste materials that had been placed in a remote area of the property and

had been sitting there for many years. That site was subject to a RCRA corrective action process, so that area was designated as a solid waste management unit.

And the remedy that we proposed and had approved through both state and federal agencies in that instance was to place a cap over the shmoo area and then continue monitoring it, and that cap was very successful in interrupting the rainwater infiltration to the point that we were even able to discontinue our monitoring after not too many years after the cap went into place.

Q. Do you have examples of using a cap if waste materials are in contact with groundwater?

A. Yes. And this site was one where that was the case.

Q. Do you recall Mr. Quarles testifying about a report that he reviewed from EPRI, the Electric Power Research Institute?

A. Yes. I recall his reference to that document, and I've reviewed that document myself.

Q. If you would pull it out, it should be in front of you, Exhibit 1103.

A. I have that.

Q. What is the date on this report?

A. On the second page behind the cover page, it says that it's the final report dated September of 2001.

Q. Does this -- in the title says it refers to three unlined coal ash impoundments.

Do you see that?

A. I do.

Q. What does an impoundment refer to in this 2001 report?

A. The impoundments that they're referring to here were in most instances comprised of several ponds that were receiving sluiced ash material from an ongoing operation.

Q. And this 2000 date was prior to any -- to the federal CCR regulations?

A. That's correct.

Q. Do you know if EPRI was referring to the federal definition of an impoundment?

MR. RUSS: Objection, leading.

HEARING OFFICER HALLORAN: Sustained.

MR. DORGAN: I'm not sure if it was or not.

HEARING OFFICER HALLORAN: I think you were supposed to rephrase, but that's fine.

BY MS. NIJMAN:

Q. At the same time that we're looking at this, could you pull up Exhibit 1102, Mr. Quarles' rebuttal report, at Page 11?

A. I have this.

Q. Do you see Section 2.3.5 where he discusses this EPRI article? Second full paragraph.

A. Yes, I see it.

Q. What is Mr. Quarles' concern with the cap that Weaver is proposing in the FS area?

A. I think the operative statement he made in this paragraph is the second sentence where he says, WCG's plan to construct a cap over saturated CCRs at the FS -- FAS area at Waukegan might increase, emphasis added, groundwater contamination -- contaminant concentrations rather than improving conditions stated by WCG.

Q. And going on there, does he rely on this EPRI report?

A. Yes. He specifically referenced the findings of this particular study to support that conclusion.

Q. What is your opinion about applying this

EPRI discussion to the Waukegan station?

A. I think this is a kind of apples and oranges comparison. When you read this, you can see and even the figures show individual ponds within what they're considering to be an impoundment area. They were receiving ongoing contributions of ash that was being sluiced, so it was a combination of both ash and water. The water was going in. The water was leaching out.

And they had -- of the three instances, there was one area where the amount of accumulated ash in one of the ponds still sat within the groundwater table. And what I found particularly interesting is when they discussed the watering in the context of this report, they're talking about stopping the inflow of water. They're not talking about removal of groundwater. So, again, I didn't think that they're particularly related as a consequence. I'm not sure that I agree with Mr. Quarles' findings.

Q. And in this study was a cap actually placed on the pond that Mr. Quarles was concerned about?

A. No. They had done modeling to project

what they thought was gonna happen, but they never actually put the caps in.

Q. And you mentioned the age of these impoundments. Why was that relevant in the EPRI study?

A. I don't know that I necessarily mentioned the age. I think what I was referring to is that these had been operational ponds for quite sometime receiving sluiced ash and water, and so the fact that they had been used unlined for as long as they had was more of what I'm referring to.

Q. If you look at the EPRI report at Page 3-1?

A. I'm there.

Q. In the first paragraph under the site description in about two-thirds of the way down there's a sentence that begins, the west impoundment and unlined portions of the east impoundment were removed from service in late 1996.

Do you see that statement?

A. Yes, I do.

Q. So given what you said about the date of this report in 2001, does that date of 1996 have any relevance?

A. Certainly the fact that they did the study in 2001 after these were removed from service in 1996 would have allowed conditions to have changed between the two dates, but I still look at it more from the fact that we're not dealing with the pond for the former slag area. These were -- they're much different circumstances.

Q. Thank you.

I'd like to go back to Mr. Quarles' rebuttal report just one page back at Page 29.

A. I'm sorry. What page?

Q. Page 29. And if we focus on the last bullet on Page 29, Mr. Quarles refers to a former fly ash storage area located in the northwest corner of the property, not illustrated on the WCG figure. See Figure 6, my prior report.

Do you see that?

A. Yes, I do.

Q. And have you had an opportunity to look at Mr. Quarles' Figure 6 of his prior report?

A. I did.

Q. If we can turn to Exhibit 1101 and look at Figure 6?

A. It's -- I'm looking at that figure.

Q. And what is this Figure 6?

A. This is from his report. It's titled, Historic Site Conditions 1972 Waukegan Station.

Q. And if you look to the northwest in the corner, Mr. Quarles has identified a former fly ash storage area up there?

A. Yes, that's correct.

Q. Is that on Midwest Generation's property?

A. No, it's not.

Q. And do you know if -- well, do you have an opinion of the location groundwaterwise of that property?

A. It remains upgradient of the Waukegan station.

Q. What is your opinion about the sufficiency of the investigations for the purposes of your remedy assessment at Waukegan station?

A. We feel that, as we've demonstrated in our report, there's been quite a bit of historic work performed at the Waukegan station, that the monitoring network that's in place allows us to evaluate potential risks to on-site and off-site receptors; and that while as we've acknowledged with the other stations, there may be some data

gaps at some point that we need to address that in totality we feel that there's a reasonable amount of information allowing us to help the Board evaluate appropriate remedies for the conditions that have been represented at the sites, and we continue to believe that.

Q. Let's turn to your next slide, Slide 91 of Exhibit 1702. We'll jump right to Slide 92, your overall conclusions for the four stations.

Would you go over these, please?

A. Yes. So this is our summary of what we're proposing for the stations as a whole, similar components for each starting with the continued monitoring of groundwater under the federal and state CCR rules. Skipping ahead just a little bit, we also recommend that the monitoring that's being done under the terms of the CCAs relative to the GMZs be continued, so fundamentally continue doing the groundwater monitoring that's ongoing at the sites.

Close and/or retrofit the surface impoundments under the CCR rules, and in each instance I believe that process is already under way. Continue to evaluate the groundwater

conditions with respect to ongoing implementation of the monitored natural attenuation strategy. We believe it's occurring. We believe it will continue to occur, and we believe that the groundwater monitoring will give us the basis to continue evaluating that.

Maintain institutional controls, we talked about the ELUCs that existed at each of the four sites. Those should be maintained. The only way that they wouldn't would be to remove them from the deed. We certainly don't envision that happening. Then we're recommending this cap as a presumptive remedy for the Waukegan FS area west of the west pond.

And then, again, as we've noted a number of times, as the new regulations with respect to historic fill areas are promulgated at both the state and federal level, that whatever those rules end up looking like, they should be adhered to and implemented for each of the four stations.

Q. When you have on this bullet, the third bullet from the bottom, maintain institutional controls, does that also include the groundwater management zones?

A. Yes, it does.

Q. And how does the Waukegan -- I know you've answered this.

The Waukegan FS area presumptive remedy, how does that relate to groundwater management zones?

A. So once we propose a remedy that we agree to implement will have the ability to seek a groundwater management zone for the relevant areas of the Waukegan station.

Q. The second bullet you have, the closing and retrofitting of the surface impoundments under the CCR rules, can you describe whether that -- whether you consider that to be a closure or, excuse me, a control mechanism?

A. Well, we know that with the exception of one basin at Powerton, all the other basins are no longer receiving or will be receiving coal ash. In fact, none of them but one are currently receiving coal ash. So through a remove -- through a closure process materials will be appropriately managed, whether that be through clean closure or closure in place, and we would see that as at least helping to address potential contributions from the surface

impoundments that are present at each of the stations. So in some measure, yes, that would be a control for at least those materials at the sites.

Q. Before we go on, I just want to make sure the record is correct on one thing. If we go back to your chart of ponds for Powerton?

A. Yes, I'm looking at it.

Q. So the first three ash basins, ash surge, bypass and metal cleaning, the comments under current closure plans is two retrofits. So I didn't -- you made a statement about one pond, and I just wanted to clarify whether --

A. No. I'm sorry. I was referring to the one pond that's still receiving ash at Powerton which is the ash surge basin. I wasn't necessarily referring to the closure plans.

Q. Okay. Because these -- to your understanding, these two other ponds may also receive some ash?

MR. RUSS: Objection, leading.

HEARING OFFICER HALLORAN: Sustained.

Rephrase, please.

BY MS. NIJMAN:

Q. What is your understanding about the two

other ponds receiving ash as the -- for the purpose of the retrofitting?

A. Yes. I was speaking to what's receiving ash now. There's one pond that's receiving ash currently. They are addressing the other two ponds that may be used occasionally for ash management, but they're not currently receiving ash.

Q. Thank you.

I can refer you to your report, expert report, which is Exhibit 1701, at Pages 53 and 54 where you provide some information to the Board about 33C and 42H factors.

Do you recall that section of your report?

A. Yes, I do.

Q. And if we go to your slides, your PowerPoint?

A. Yes.

Q. Number Page 93 of your PowerPoint at Exhibit 1702, what are you addressing here?

A. So Section 4.9 of your report is titled, Relevant Section 33C and 42H Criteria. Our understanding was that the Board wanted these criteria to be evaluated with respect to what would be an appropriate remedy and relief for the four

Midwest Generation stations. So we considered those criteria with respect to what we're proposing as a remedy, and we've outlined each of them.

And the first was the character and degree of injury caused by the conditions at the site, and several of the variables that should be considered as part of that are the longevity and the location of the injury. And what we just wanted to highlight here is that two of the stations have been in operation for over 50 years, two of the other stations for more than a hundred years. And that previously we established that the predominant land use at each of the four stations is industrial, not the exclusive, but the predominant.

And particularly at Waukegan, we know that there are multiple superfund sites and other SRP sites located in close proximity to that particular station. We know at Joliet 29 we have the former Caterpillar site to the west. That's an SRP site that's gone through the SRP and has contributed contamination to the western side of that parcel.

At Will County, we've got a quarry to the south and a refinery to the north that have been there for many years and will likely continue to be

operating there in the years to come. And then Powerton, a little bit different from the other three stations. It's located along the river. Generally, the surrounding land uses are industrial, but we also have the water bodies to the northwest and some residential off to the east.

Q. Turning to Slide 94, technical practicability and economic reasonableness, what did you consider -- what would you like to point out here?

A. Well, there's been past testimony and documentation in this matter that's looked at alternative remedial approaches for the stations, and a number of them have been determined to be not technically practicable or economically reasonable. So we believe that what we've laid out in the recommended actions that we proposed to take are consistent with Brownfield's TACO type of a strategy, which we've got a lot of experience in Illinois with, and that they would be -- could be approvable under that type of a framework.

We believe that the trend testing, our evaluation of risk, the presence of the institutional controls, the evaluation of off-site

receptors all demonstrates that what we're proposing to do is appropriately protective. And then we have the monitoring that's ongoing and various controls that are applied through the CCR rules with respect to the regulated units at each of the sites.

Alternative remedies were considered, but in that process of considering them, they were deemed to be not technically practicable and economically reasonable which is why we landed where we did. And then, finally, again, it keeps coming up I know, but these proposed ash fill area rules at the state and federal level has an impact on the way that we look at that just knowing that there's a new framework that's going to be applied at some point in the not too distance future.

Q. And then turning to 95, Page 95 of your Exhibit 1702, subsequent compliance and due diligence, what factors did you want to point out here?

A. Well, a few things that we felt were important to consider was that Midwest Gen voluntarily initiated investigation of the sites once they acquired the properties in consultation

and coordination with the Illinois Environmental Protection Agency. They voluntarily agreed to install monitoring wells and conduct hydrogeologic investigations pursuant to those communications and ongoing dialogue with the IEPA.

It's my understanding that they were one of the, if not, the only operator in Illinois that agreed to do that. They were one of many. Midwest Gen voluntarily then entered into the compliance commitment agreements in 2012 that led to a lot of the later work that has been performed at the sites. All of that work was performed, and the agency ultimately acknowledged that that work was performed consistent with their expectations through future subsequent documentation.

Midwest Gen voluntarily relined their ponds before the CCR rules came out. In some instances they relined them again after the CCR rules came out. They're actively complying with the monitoring required under the CCAs that allows them to continue applying the GMZs at three of the four sites.

And we feel as though the fact that the agency has not taken further enforcement actions

with respect to the conditions that have been reported to them and the steps that have been taken is a sign of a degree of acceptance on their part.

Q. And then turning to Slide 96, duration and gravity, what factors would you like to point out under that consideration?

A. So, as noted, Midwest Gen entered into the CCAs voluntarily. That allowed them to establish the GMZ which gives them the opportunity to monitor the monitored natural attenuation that's taking place while the GMZs are in place, and we have exceedances of the groundwater protection standards that stays those conditions from being considered a violation. So we agree that they should continue to remain in place.

The violations that were identified before the GMZs were in place and even the one instance of open dumping were of very limited duration. They did not go on for an extended period of time. They were not ignored. They were -- steps were taken to address the conditions in a matter consistent with what the IEPA was asking.

The comparison of the groundwater data to the surface water standards shows that we don't

have an observed risk to the proximal surface water bodies for each of the four stations. The ELUCs are an important instrument to prevent the use of groundwater for portable purposes at these stations, especially downgradient of the areas that we've discussed at each of the four stations. So we don't have potential receptors for that groundwater. We're eliminating one of those components of the risk triangle.

And then, finally, as I mentioned the 12D violation at Powerton or, actually, 21A, at Powerton was a very brief two- to three-month type of thing and occurred during the winter when the records suggest the ground was frozen and then it was remedied. And so we feel as though the likelihood of that having been a substantial contributor to ongoing contamination was limited.

Q. How do the historic fill areas identified at the stations fit into these factors that you've identified on Exhibit 94, 95, 96 -- Pages 94, 95, 96?

A. They certainly factor in. We are aware of both documented and suspected fill areas. We, again, have looked holistically at these sites with

respect to this off-site receptor, potential receptor scenario. So we feel as though we do have means by which to assess some of these fill areas. There may be, as I've said before, some data gaps that get addressed.

Perhaps there's additional work done as part of the new fill area rules, but that in the totality of what's in place now and the historic dataset with respect to what we were asked to do by the Board, we feel like we've taken a reasonable approach, supported it technically, and that we've come to a reasonable outcome that's workable.

MS. NIJMAN: Mr. Hearing Officer, I believe I am about done, if I could just take two minutes.

HEARING OFFICER HALLORAN: Sure. Off the record.

(WHEREUPON, a short recess was taken.)

HEARING OFFICER HALLORAN: We're back on the record. It's approximately 2:37. Ms. Nijman is still in her direct with her experts.

You may proceed.

MS. NIJMAN: Thank you.

BY MS. NIJMAN:

Q. Just a couple of things to finish up.

Mr. Maxwell, you have provided the numbers for each of the stations for defining no trends, what that meant?

BY MR. MAXWELL:

A. Correct, yes.

Q. I neglected to ask you how you calculated those numbers, how you reached them.

A. Yeah. So what I did was I looked at the percentages or the data that was 100 percent non-detect and also added to that the data that was at least 90 percent non-detect. So when I say -- I was using the phrase primarily non-detect. I meant 90 percent or more non-detect.

Q. And why did you take that 90 percent threshold?

A. That was intended to reflect an overwhelming majority of the data were non-detect. As I think I mentioned, there were others that fell into the no trend category that still had less than 90 percent non-detects, but 90 percent was the threshold that I used to be considered substantially non-detect.

Q. And whether it was a hundred percent or 90 percent, did that change your opinion?

A. It did not, no.

Q. And then, Mr. Dorgan, at Waukegan you mentioned the VADOSE zone at 80 percent, I believe, the ash -- the material in the FS area; is that right?

BY MR. DORGAN:

A. Yes, that's correct.

Q. How did you calculate that figure?

A. Well, I looked at the data. Mr. Maxwell and I looked at it together. He's the one that looked at the individual boring logs, so I'll maybe let him answer that question.

BY MR. MAXWELL:

A. So we took the boring logs from the 2020 FS area investigation and looked at the total sum footage of ash, and then looked at the total sum footage of wet that was logged on the boring logs. So as an example, if there was a thousand feet of total ash that was logged, and 200 feet were logged as wet, 200 over a thousand would be considered 20 percent.

And I'm just using round numbers, but

that's the results of our analysis without having the logs in front of me.

Q. And did you go through each log to do that in the FS area?

A. I did. I went through and marked out where it was wet and then obviously the total thickness of ash in order to come to that calculation.

Q. Thank you.

Mr. Dorgan, have your opinions today been given with a reasonable degree of scientific certainty?

BY MR. DORGAN:

A. Yes they have.

Q. And, Mr. Maxwell, have your opinions today been given with a reasonable degree of scientific certainty?

BY MR. MAXWELL:

A. Yes, they have.

MS. NIJMAN: At this point, Mr. Hearing Officer, I move to admit Exhibit 1701, the expert report.

MR. RUSS: No objection.

HEARING OFFICER HALLORAN: Admitted, 1701

admitted.

(WHEREUPON, Exhibit No. 1701 was admitted into evidence.)

MS. NIJMAN: And I move to admit 1702, the PowerPoint presentation we went through today.

MR. RUSS: Is this not as a demonstrative?

MS. NIJMAN: No, as an exhibit as we have done with the our PowerPoints in this hearing.

MR. RUSS: I mean, I don't recall how we admitted them in the past, to be honest, but this seems like a demonstrative to me more than --

MS. NIJMAN: Well, interestingly enough, I made that objection at the first hearing.

MR. RUSS: That may be true.

MS. NIJMAN: And it was overruled, and all the PowerPoints were allowed in as exhibits.

HEARING OFFICER HALLORAN: I don't see a problem with it, Mr. Russ.

MR. RUSS: Yeah. So the two problems I guess are that, one, we had some demonstratives that were just demonstratives. So for consistency I think it would be the same. But also because we have some objections to the facts presented in this exhibit, this set of slides, as being inaccurate.

We still maintain that this is -- this presentation was used as a tool for them to testify, but I don't believe it was -- it doesn't take the form of an exhibit that the Board can rely on.

HEARING OFFICER HALLORAN: Okay. Well said. It's noted in the transcript, but I'm going to admit 1702, admitted and not as a demonstrative.

(WHEREUPON, Exhibit No. 1702 was admitted into evidence.)

MS. NIJMAN: Thank you, Mr. Hearing Officer. I'm completed with my direct.

HEARING OFFICER HALLORAN: All right.

Mr. Russ, cross.

MR. RUSS: Thank you.

HEARING OFFICER HALLORAN: Thank you.

CROSS-EXAMINATION

BY MR. RUSS:

Q. And thank you both for sitting through this for so many days. My name is Able Russ. I'm an attorney for the Environmental Integrity Project in D.C. I'm gonna start with some background questions.

Yesterday one or both of you, I can't

remember who it was, said that you had implemented multiple monitoring well networks at various sites. Maybe both of you have.

HEARING OFFICER HALLORAN: You have to say yes or no.

MR. DORGAN: Both of us have, but I think Mr. Maxwell answered affirmatively to that question.

MR. MAXWELL: Yes.

BY MR. RUSS:

Q. Okay. So I'll ask you both this question. Mr. Maxwell, how would you go about designing a monitoring well network generally speaking?

BY MR. MAXWELL:

A. Just completely -- I mean, without a site?

Q. A 40-acre rectangle of landfill, I believe.

A. Well, I guess that's little hard to answer. It obviously is dependent on the regulations. I'll start off by saying that. We, when presented with that type of a problem, would default to the regulations. The most substantial groundwater monitoring networks that I've designed

in my career are related to solid waste landfills and CCR units. So, again, you know, those regulations would apply.

So, you know, very generally you would -- you would -- you know, the state requirements are a little bit different, but you want to, for the most part, begin -- I mean, the starting point would be if you got a rectangle, as you referenced, you want to do it in phases to be efficient ideally. You want to maybe start with the four corners to see what information might be available specific to your site.

Before you even did that, you would want to look at whatever information you can get from the literature in order to try to get a feel for what the groundwater units would be. So that would get me going in terms of just hypothetically how it would -- how I would go about designing a network.

Q. And with respect to groundwater flow, I presume you would want to install some upgradient wells or one at least; is that right?

A. In most cases -- well, there are provisions in the rules that allow for an intrawell type of an approach. That is an option under many

regulations. So in some instances identifying upgradient, it may be difficult.

Q. Right.

A. And so you've got that option in your pocket to use intrawell.

Q. Okay. If the groundwater flow allows for an upgradient well, is that something you would typically install?

A. If we could discern and we were confident that the -- we were -- we knew upgradient to a reasonable degree of certainty, you would design your network to try to identify some upgradient, some downgradient, because the idea is you want to try to identify a change between upgradient and downgradient.

Q. Right, right. Thank you. That's basically where I was headed with that.

So when you said some downgradient, what's -- I mean, I know it varies by site, but what's a number of wells that you would want to start with, a minimum number of downgradient wells?

MS. NIJMAN: Objection, vague.

HEARING OFFICER HALLORAN: He can answer if he's able. Overruled.

MR. MAXWELL: Highly dependent on the regulation that you're dealing with, the size of the site. It's just too hard to -- too hard to answer just as a generic question.

BY MR. RUSS:

Q. Have you ever implemented a groundwater monitoring network with just one downgradient well?

A. I don't recall ever having done that. It -- I mean, when you say a groundwater monitoring network, I'm thinking of a large network. We monitor groundwater as part of Brownfield's investigations, just as an example.

UST site investigations, as an example, it's certainly very possible that I have installed just one downgradient well in order to identify potential impacts associated with the UST, as an example.

Q. Right.

A. Again, it's just so site specific.

Q. And for the record, UST is an underground water storage tank?

A. Correct.

Q. And it's not very large?

A. Exactly. So one may be able to cover you

in that particular example.

Q. Okay. What about a 40-acre rectangle?

MS. NIJMAN: Object to --

BY MR. RUSS:

Q. How many wells --

HEARING OFFICER HALLORAN: I'm sorry. Counsel, we can't talk over one another.

Ms. Nijman has an objection, and what is your objection?

MS. NIJMAN: Object to vagueness of the hypothetical.

HEARING OFFICER HALLORAN: You can rephrase, Mr. Russ, please.

BY MR. RUSS:

Q. Would you recommend a monitoring well network for a 40-acre rectangle that only had one downgradient monitoring well?

MS. NIJMAN: Same objection.

HEARING OFFICER HALLORAN: He can answer if he's able.

MR. MAXWELL: I -- the question is have I ever -- would I recommend a one monitoring well downgradient for a 40-acre hypothetical site?

BY MR. RUSS:

Q. That's my question, yes.

MS. NIJMAN: Same objection.

HEARING OFFICER HALLORAN: Same ruling.

MR. MAXWELL: I don't know that I can answer that, sir. I -- it really -- it really depends on the site, the regulation you're under. Is it possible, maybe. I just -- I can't give you a yes, no.

BY MR. RUSS:

Q. You've mentioned the federal and CCR rules a number of times, right?

Are you familiar with the minimum requirements for the monitoring well networks under the federal CCR rule?

A. I believe that I am.

Q. How many downgradient wells do they require?

A. I believe that they require a minimum of four.

Q. Mr. Dorgan, same question, have you ever designed a monitoring well network or a monitoring well situation with just one downgradient well?

BY MR. DORGAN:

A. Possibly. Same circumstances, a small site, something like a LUST or a related spill area maybe.

Q. Okay. Have you ever designed a monitoring well network with more than one downgradient well?

A. Yes, I have.

Q. Okay. I'm gonna move on. I think we're good there. This is another question for both of you.

I'll start with you, Mr. Dorgan, cause both of your resumes say that you have experience with fate and transport modeling.

Can you explain what that is?

A. Fate and transport modeling is -- there's several different ways of doing it. It is where you look at a particular contaminant. You look at the hydrogeologic setting, and then you model the potential migration over time of that contaminant within that hydrogeologic setting.

Q. And so within the rubric of fate and transport modeling, have you done groundwater related fate and transport modeling?

A. Yes, I have.

Q. What are some of the software packages you've used in that work?

A. Probably -- well, there's two-dimensional model which are fairly routine. Once you start to get into more three-dimensional modeling, the one that's most frequently used is MODFLOW. There are others, but that's one that's used regularly.

Q. Okay. And, Mr. Maxwell, have you ever used MODFLOW?

BY MR. MAXWELL:

A. When you say used --

Q. Let me ask a background question.

Are you familiar with MODFLOW?

A. I'm familiar with it. I refer to the results from those types of models.

Q. Okay.

A. Honestly, at this point in my career I would have to say that I rely on some support staff to actually do the modeling itself.

HEARING OFFICER HALLORAN: You have to speak up, Mr. Maxwell, please. Thank you.

MR. MAXWELL: Sorry.

BY MR. RUSS:

Q. Understood.

Now, moving on to a different topic, just doing some background cleanup before I get into some other questions I have, but this has come up a number of times, the difference between dissolved in total or unfiltered and filtered. And I believe, sorry again, apologies for not remembering who said it.

Somebody said that they're basically the same at these sites for these constituents; is that right?

BY MR. DORGAN:

A. I believe that was my testimony at some point yesterday.

Q. Okay. And is that true for all of the constituents that we've been looking at --

A. Well --

Q. -- equally?

A. I don't think we said it was a 100 percent correlation. I think what the past testimony and our observation of the data is that there's very little variability between dissolved and total. So for all practical purposes, in some instances there's quite a bit of difference, and that's just not the case in most of the data that's been

collected for these four sites.

Q. Okay. And, Mr. Maxwell, do you agree, same opinion about the difference between filtered and unfiltered?

BY MR. MAXWELL:

A. Yes, I do. I do. And I would just add that I think all of these sites, I think the primary reason for that is the way we sample. The way we sample is with low flow methodology which tends to create minimal disturbance and sediment stir-up as the sample is removed resulting in the total concentrations being about the same as the dissolved.

Q. So the methods you use don't produce a lot of suspended solids, is that --

A. We don't do the monitoring, but the procedures that are implemented result in a sample that doesn't tend to create a lot of suspended sediments, at least that's the intent of the sample protocol.

Q. Okay. Thank you.

Now, yesterday and then again today Ms. Nijman was asking about mass analysis, do you remember that? I believe this was you, Mr. Dorgan.

BY MR. DORGAN:

A. Yes, I do.

Q. And you listed some of the information you need to perform a mass analysis, if I remember correctly?

A. I think I referenced to information that might be used for that, but I don't know that I provided a comprehensive list.

Q. One of the things you said was how much contact there is, and I was wondering what you meant by how much contact.

A. I think what I was referencing there was the period of time in which the mass has been in contact with the fluid, and I think we were specifically speaking to groundwater at that point in time. So the longer duration of the exposure, the more likelihood that more of the mass has been pulled out of that matrix.

Q. So the amount of time that there's been contact between the mass and the groundwater is what you're talking about?

A. Yes, I am.

Q. And would the amount of contact, you know, three-dimensionally also be a relevant factor?

A. Not necessarily. With a more homogeneous waste you'd have relatively similar starting concentrations, so the aerial element of it would be less of a variable than the time would be.

Q. So pivoting to you, Mr. Maxwell, sorry to do this, but you were talking about at the former slag ash area at Waukegan, 80 percent of the coal ash is the VADOSE zone and 20 percent -- or maybe it was you, Mr. Dorgan -- 20 percent is in the water table or saturated.

So that -- to the question of how much contact when you're doing a mass analysis, is that the kind of information, 80 percent, 20 percent, that you would use when you're conducting a mass analysis?

BY MR. MAXWELL:

A. I think as Mr. Dorgan said, it would be one consideration. Quantifying it we felt was useful which is why we went through the exercise, but it would be one aspect of an evaluation that will would be useful to us.

Q. Okay. Is starting concentration in the mass a relevant factor?

BY MR. DORGAN:

A. That's an interesting question because in the circumstance we're referring to, we're not sure we could know the starting concentration because the contact has been as long as it has. So where it started is difficult to know.

Q. Good point.

So in that situation, I guess, the current concentration is something you would want to know?

A. Current concentration is useful, yes.

Q. Did you perform a mass analysis at any of these four sites?

A. When you say mass analysis, what are you referring to?

Q. I don't know. It's what you said. So whatever you were talking about when you said mass analysis, I'm just wondering if you did that at these --

A. I was referring to the mass of the contaminant within the matrix itself and how that might change over time. I wasn't necessarily trying to quantify in the terms of an analysis. I was simply referencing that the longer that mass has been in contact with the groundwater, the more

past leaching has occurred and diminishing the original mass of the contaminant at whatever concentration that may have been.

Q. What do you mean by matrix?

A. In this particular case I'm referring to ash, but it could be other waste types that could have been deposited in a condition where it comes in contact with groundwater.

Q. Is it possible to calculate the change in mass over time?

A. That would be very difficult. It would require a lot of very specific information both about the current conditions and the past history. So I don't want to say it couldn't be done, but it would be extremely difficult.

Q. Okay. Now, shifting gears again, Ms. Nijman asked you about Slide 14 in your presentation and the Phase 2 ESA at -- oh, I didn't write down the name of the site, but it's Slide 14 in your presentation, if you could turn to that. Probably Joliet given the low number. Yeah.

Do you have it front of you?

A. Yes, we do.

Q. I guess this would be for Mr. Maxwell.

Ms. Nijman was asking you about wells M-3 -- MW-3 and MW-5, and you discussed the sampling of those wells. And it says here eight RCRA metals.

What are the eight RCRA metals?

BY MR. MAXWELL:

A. Let's see if I -- this is a little pop quiz. Arsenic is one of them, chromium, lead, cadmium, nickel, mercury. Without looking -- they're heavy metals. They're common heavy metals that -- they're the most commonly analyzed when you're looking at heavy metals.

Q. Right. Is boron one of the eight RCRA metals?

A. Boron is not.

Q. Is sulfate?

A. Sulfate isn't considered a metal.

Q. So here where you're talking about the eight RCRA metals at MW-3 and 5, this doesn't include boron and sulfate data, right?

A. I don't believe boron and sulfate data were within the scope of that -- of that Phase 2 ESA. Those -- the purpose of the Phase 2 ESA was more to assess impacts to human health in the environment as it relates to less common

constituents. Those boron and sulfate are more common wet chemistry type constituents.

Q. Okay. Now I'm gonna turn to your trend analysis which is discussed on Pages 42 to 44 of your report and Appendix C of your report, as you know. I'll give you second to just get those up in front of you. Some of these questions will be a little redundant, but bear with me. I want to make sure the record is clear.

On Page 3 of 3 for the Joliet summary trends, it's not paginated the way that your report is, so I don't know what -- it's Bates Page 81507, if that helps.

A. Got it.

Q. At the bottom of this -- well, first of all, right below the table is a summary. And this is something we talked about before during direct, so I'm not gonna ask this question actually.

Then below that first set of statistics, below the bold text there's three rows of text, and the first row says 47 total tests.

Do you see that?

A. Yes.

Q. Why did you compare the number of downward

trends to the number 47 in this table?

A. So 47 is the sum of 34 and 13 which is the downward -- the total number of downward and upward trends. So the idea was where there was a trend that was detected or identified, we wanted to look to see what percentage of those trends were upward, what percentage of those percentages were downward.

Q. Yeah. And I know we've already talked about this, but just for the record, why did you exclude the no trend tests from that total of 47?

A. No trend is a flat slope, a flat curve, and that to me just is not meaningful in the way of is it trending upward or is it trending downward. There's no trend. It's flat. So -- and as we had discussed, in the majority of the instances it's flat because the majority of the data is non-detect. So we believe that it was appropriate to treat that separate from the results that actually returned a trend.

Q. And in your deposition you said that no trend means that it's non-detect, right.

Do you remember that?

A. I don't believe that I stated it that way.

Q. Can you turn to your deposition at

Page 176? On Line 15 there's a question.

So is it fair to say a majority of the trend tests were not downward? Ms. Nijman, objection, misstates -- Mr. Maxwell, the majority of the trend tests were no trends. 64 percent of them were no trends, and I would point out that no trend actually indicates the constituent wasn't detected. So no trend means that essentially no constituent was detected, and so that's the majority of the trend test. In this instance, 85 of the 132 are no trend.

Did I read that correctly?

A. You did. And I would point out that I did use the word essentially. I didn't necessarily say one hundred percent.

Q. Right. And to be fair, later in your deposition you said in most instances it's flat because there were non-detects. That's what you said today.

Could you now turn to Page 81517 of your report? That's the Bates. Again, the pagination

gets confusing, so I'm gonna use the Bates page for this stuff.

A. Okay.

Q. I'm sorry. Bear with me for just a second.

Can you explain what this is showing?

A. The page that says trend test at the top?

Q. That's the one, yep.

A. Okay. So this is the output from the Sanitas statistical software that is a fairly concise summary of the trend test results that were performed. It lists the constituents and the wells along the left side, and then the data following the wells is the -- is the statistical output that we used in order to tally up the various results from the individual trend tests. So each row here equates to a row in the summary tables preceding this statistical output.

Q. Okay. Can you explain what the slope column is showing?

A. I'm sorry. Could you repeat that, sir?

Q. Can you explain the column that says slope at the top is showing?

A. So that's a calculation of the slope for

each individual constituent at each individual well, and the -- so in instances where there's no slope, that equates to no trend.

Q. So slope of zero is no trend; is that right?

A. Correct.

Q. Okay. Can you explain what the column that says at the top, percent NDs, is showing?

A. That is percent non-detects in the data. ND refers to non-detect.

Q. Okay. And in your deposition when you refer to situations where no constituent was detected, that's the same as a non-detect, right?

Just to clarify, in your deposition you said no constituent was detected. That phrase is the same as saying a non-detect; is that right?

A. Correct.

Q. And that's the same as an ND in this table?

A. ND indicates non-detect.

Q. Right.

A. Yes.

Q. Thank you.

Now, on 81517, the row for arsenic, comma,

total and MW-04, do you see that?

A. Yes.

Q. Does this table also have a row for dissolved arsenic in the same well?

A. Yes, it does.

Q. And I believe you said earlier that at these sites total and dissolved are basically the same?

MS. NIJMAN: Objection, that misstates --

HEARING OFFICER HALLORAN: Can you speak up, Ms. Nijman?

MS. NIJMAN: Objection, it misstates the testimony which related to TDS.

MR. RUSS: I don't believe it did refer to TDS. So earlier --

HEARING OFFICER HALLORAN: I'll allow him to answer the question, and if need be, you can remedy on redirect.

You may continue.

MR. MAXWELL: Would you repeat the question, sir?

BY MR. RUSS:

Q. Earlier in our cross you said that at these sites the dissolved and total concentrations

were basically the same; is that right?

A. For purposes of looking to add the analytical results for purposes of a trend test, we wanted to be thorough. Okay. So that's why we included both. We just -- we didn't want to be questioned about why certain data wasn't included. So for purposes of attempting to be thorough, we did the tests.

Q. But just to be clear, in the case of arsenic in Well MW-4, there are two results for arsenic in Well MW-4; is that right?

A. There are two --

Q. There are two rows with results in this table that would have been counted separately; is that right?

A. For purposes of tallying the trend tests.

Q. Yeah. Are there other constituents with both dissolved and total results in this table?

A. I believe that there are, yes.

Q. So for a number of well constituent pairs, there will be two results that you're tallying?

A. There'll be a total. There'll be a dissolved result. We tested for trend. Again, just attempting to be thorough here, it's

information -- I'll point out that I don't know that we -- I'm quite sure we've never said that the total and dissolves are identical. They are -- in most cases they're similar. They're not necessarily identical. You don't necessarily see that in nature. So because they're not identical, we thought there was value in testing both, again, just to be thorough.

Q. Okay. Now, if you turn back to Page 81507, so just 10 pages earlier, did you find a trend for dissolved selenium at MW-1 at Joliet 29?

A. That resulted in an upward trend.

Q. Okay. And was it statistically significant in the fourth column?

A. We indicate no.

Q. What's the difference between an up trend that is statistically significant and one that isn't?

A. So it -- it has to do with the -- basically the slope of the line or the steepness of the line. A line that's only slightly up or slightly down is going to dispute what I'll refer to as a regular trend.

A statistically significant trend is a trend that's even -- that rises to a level of statistical -- a statistical level of upward or downward. So it's generally a steeper trend upward or downward.

Q. And in your line of work I assume you use statistical significance in a lot of context. It's not just for trends; is that right?

A. Statistical evaluation of data is something that we do outside of the scope of trend testing.

Q. Yeah. I mean, you calculate a value with a certain degree of statistical confidence. I'll leave it there for now, but there was a trend for selenium in MW-1. It was not significant.

So now please turn to 81519, 12 pages forward. This is gonna the corresponding details in the -- so for selenium in MW-01, what is the slope for that row?

A. That slope is a positive number that's actually cut off.

Q. Because it's very small, right?

A. Cause it's very small. The three dots indicate that it's cut off. So the slope is a

positive number that resulted in us indicating a positive trend in the summary table.

Q. Right. With a shallow slope?

A. Correct. It wasn't statistically significant.

Q. Right. And then in that same well, and looking again at selenium in MW-01, what percent of the data was non-detect?

A. In that particular well, 37.5 percent of the data was non-detect.

Q. Okay. So like you were saying earlier with Ms. Nijman, you can have some non-detects and still have enough detected data to calculate a trend. I think that's what this is showing.

A. That's what this is showing. That 37.5 number, that suggests that over a third of the data is non-detect, but enough of the data was detected where we were able to -- and we had enough different numbers essentially to be able to differentiate a slope or, I'm sorry, a slight upward trend in this instance.

Q. Okay. Now, flipping just two pages back, 81517, arsenic total in MW-04, what's the slope for that one?

A. That's a zero slope.

Q. What percent of the data was non-detect in that case?

A. 45 percent of that data was non-detect.

Q. I'm sorry. I'm looking at arsenic total.

A. Oh, I'm sorry. I was looking at arsenic dissolved.

Q. Yeah.

A. Arsenic total, which well?

Q. MW-4?

A. So that slope is zero, and the percent NDs are zero.

Q. Okay. So you had a hundred percent of the data above the detection limit in this case, and the slope was zero?

A. That's right.

Q. Okay. As you were saying earlier, sometimes you have no trend because of non-detects, and sometimes you have no trend and it's not related to non-detects?

A. This is an instance where there was enough -- the number of upward and downward indications in the data were equal.

Q. Yeah.

A. The same number of upward as there were downward, that zeros out.

Q. Okay. So in this case arsenic total in MW-04, there are no non-detects. Do you consider that to be a relevant data point?

A. I think that to some degree all data points are relevant. This is a data point. We've evaluated the data. We've summed the total upward, downward and no trends. And, you know, we have come to the conclusion that the data -- the trend testing data demonstrates, especially in the case of Joliet, that the concentrations generally are downwards.

Are they downward everywhere, no, but the overall assessment of the data indicates that the groundwater conditions are improving.

Q. Yeah. I guess what I'm getting at is, you in your summary statistics omitted the no trend data. So you were comparing the downward and the upward, and you left the no trend data out. And I think your explanation in your deposition was that that's usually related to non-detects, and so we're not gonna look at that.

Here we have a data point that's not

related to non-detects, and I'm wondering if you still agree with keeping this out of your summary statistics.

A. Well, the point I would make is this is one data point. My testimony has been that -- was at the deposition and is now, that a substantial number of the non -- of the no trends are related to non-detects. You've picked one example that doesn't necessarily change the conclusions that the majority of the no trend data are related to the non-detect issue.

Q. Right. But I'm asking about the summary statistics where you calculate how many are going down out of the total number of relevant data points, and I'm wondering if you still agree with keeping a data point like this out of that summary calculation because this isn't related to the non-detects.

MS. NIJMAN: Asked and answered.

MR. RUSS: I don't think he did answer.

HEARING OFFICER HALLORAN: I disagree. I don't think he answered.

MR. MAXWELL: I don't think that -- I don't think that if we were to add the situations where

there was zero non-detects into the -- into the analysis of the summary, that it's going to change our conclusions.

BY MR. RUSS:

Q. Okay. Let's look at another example. Can you look at barium dissolved on the same page in Well MW--7?

A. Okay.

Q. What percentage of the -- what's the slope for that?

A. That slope is zero.

Q. And how many non-detects?

A. There's zero.

Q. Okay. And MW-4 boron total, same page, what slope?

A. I'm sorry. You said boron?

Q. Yeah, boron total in the MW-04.

A. Yeah, that's zero.

Q. And how many non-detects?

A. That's zero.

Q. Okay. That's just on one page. I found a few. Now let's look at a different situation. On the next page, 81518, chloride in Well MW-2. I'm sorry. Don't bother with that one. That's another

zero zero.

Lithium total in MW-3 on this page, do you see that row?

A. Yep.

Q. What's the slope for that?

A. Slope is zero.

Q. And what percentage of the data were non-detect?

A. Ten.

Q. Okay. So that's not zero, but you still had enough data to generate a slope estimate; is that right?

A. That's correct.

Q. Okay. On Page 81519, the next page, selenium dissolved in Well MW-3, what's the slope there?

A. That slope is zero.

Q. And what percentage of the data were non-detect?

A. 32 and a half.

Q. And again that's enough -- you still have enough data to calculate a slope, right?

A. 32 and a half is still a third of the data being non-detect which does bias the data, and so

there's enough non-detects here that it still is influencing the no trend result.

And I just want to point out that we're talking in the case of Joliet of 135 total tests performed. Okay. So we've talked about a handful and, however, that's a handful. And the majority of the no trends are at least related to the non -- to some of them being non-detect.

Q. Right. Well, in fact, I think you gave us the numbers in your testimony earlier today. There are -- let's see if I can remember. Let's see. That's Waukegan. Well, I'm probably not gonna be able to find it now, but at Joliet -- at each of the four sites you gave a number that were related to the non -- a number of no trends that related to non-detects and another number that were not related to non-detects; is that right?

And as you're saying, the majority were due to non-detects in your opinion?

A. I believe we just focused on the non-detects.

Q. Right. You might not have given a number, but you gave a number that were related to non-detects out of the total and so you could

subtract --

A. Yeah, of course.

Q. Okay. I don't have to belabor the point. I mean, I had a whole bunch of questions to go through all of the examples of the non-detects -- the no trends not being related to non-detects at Joliet, but I don't want to belabor it.

MS. NIJMAN: I'll object to the reference of a whole bunch of data.

HEARING OFFICER HALLORAN: Sustained.

BY MR. RUSS:

Q. Okay. Did you conduct -- so looking at your summary of trends tests in your report which would be at -- for Joliet 29 starts on Page 81505, the very first page of Appendix C.

Did you conduct any trend tests for MW-5 at Joliet 29?

A. While we didn't look at MW-5 at Joliet 29, I believe that the prior expert, Mr. Seymour, did look at MW-5. I know that he looked at additional monitoring wells in addition to the ones that we used. And as we explained in our prior testimony, the wells that we focused on were at the downgradient edge of the ponds which we felt were

most appropriate in terms of evaluating whether or not the -- in assessing the overall character of the groundwater.

Q. Okay. Did you do trend tests for MW-08 at Joliet 29?

A. Again, I believe that Mr. Seymour performed trend tests for that well. The reason that we didn't is because that well was not deemed to be at the downgradient edge of the ponds and, therefore, most appropriate to include within the scope of our evaluation.

Q. Okay. And I apologize for the tedious questions, but did you do trend tests for MW-09 at Joliet 29?

A. I would give the same answer. Again, given the location of MW-9, the fact that there are additional monitoring wells that are further downgradient and more appropriate for our evaluation, we focused on those wells that were most appropriate for our evaluation.

Q. Okay. Can you now turn to Exhibit -- I think we put them in front of you -- 1307. I believe that starts on Bates Page 118236, and this should be the fourth quarter 2021 Joliet 29

groundwater monitoring results for the CCA.

Does that look right?

A. Yes, that's correct.

Q. Can you turn to Page 118355 which is also called Figure 2? I'm sorry. Did I get this wrong? Yeah. I'm sorry. That's not the figure. 118355 is a chart of data, I believe.

MS. NIJMAN: Sorry, is this Exhibit 1307?

MR. RUSS: Yeah.

MS. NIJMAN: 118 --

MR. RUSS: 355, it should be near the end. It's one of the data trend charts over time.

MR. DORGAN: That doesn't line -- sorry, but that doesn't line up with the cited Bates number.

MR. RUSS: Shoot.

MR. DORGAN: Do you have a figure number?

MR. RUSS: Bear with me just a second. Let me grab my copy. I may have made a mistake with the numbering here.

HEARING OFFICER HALLORAN: Let's go off the record.

(WHEREUPON, a short recess was taken.)

HEARING OFFICER HALLORAN: We're back on the

record. Thank you.

BY MR. RUSS:

Q. In the back of this quarterly monitoring report, there should be some data plots of constituents over time.

Do you see those?

BY MR. DORGAN:

A. Yes, we do.

Q. Can you find the chart for dissolved boron versus time?

A. I think we have that.

Q. Okay. Just to clear up my own confusion, can you tell me what the Bates page is on that chart?

A. 18355.

Q. Okay. Great. That's what I said. We're good.

So what does this chart show?

A. This is a chart showing boron concentrations in the various monitoring wells at the station over time.

Q. Okay. As dissolved --

MS. NIJMAN: I'm sorry. Are we talking about Joliet?

MR. RUSS: Yeah.

MS. NIJMAN: This is Powerton.

MR. DORGAN: This is Powerton. I'm sorry. Oh.

MR. RUSS: Oh, yeah. That's interesting. All right. I'm so sorry. Scratch that. Forget about this for a minute. Yeah. That's a mistake in my notes.

BY MR. RUSS:

Q. Let's turn to a different exhibit. Let's turn to Exhibit Number 1314 which should be the quarterly -- the annual and quarterly groundwater monitoring report for Will County.

Do you have that?

BY MR. MAXWELL:

A. Yes, we have it.

Q. Okay. Can you turn to Page 118465? I believe I got it right this time. This should show dissolved boron at Will County.

A. Okay.

Q. All right. Great. Has dissolved boron in Well MW-2 at Will County ever exceeded the standard shown on this chart?

A. It looks like -- yes.

Q. Okay.

A. Certain concentrations of boron are higher than the standard of two for MW-2.

Q. Right. Was boron exceeding the standard in the most recent sample shown here?

A. Yes, it was.

Q. And, in fact, that looks like it's probably the highest it ever was up to that point in time over the period of data shown here; is that right?

A. That's what this graph indicates.

Q. Okay. Has dissolved boron in Well MW-3 at Will County ever exceeded the standard?

A. We're trying to decipher the color.

Q. Yeah. There's a lot of wells here. The dark green squares look like MW-3.

A. There's an awful lot of data on the chart.

Q. Might be easier to look below the standard and see whether MW-3 shows up there very often.

A. I'm having a difficult time deciphering the color. There's a dark square that shows up below the standard for a good period. I can't -- just based on the way the color is printed, I can't quite make out --

Q. Okay.

A. -- if that's MW-3 or not.

Q. Okay. Fair enough.

How about MW-04, can you distinguish that from the other data?

A. Yeah. That one's easier to distinguish.

Q. And is that ever below the standard at Will County?

MS. NIJMAN: Object to ever.

BY MR. RUSS:

Q. Do you see any values for MW -- for dissolved boron in MW-4 below the standard on this chart?

A. This chart does not indicate any concentrations that are below the standard.

Q. Okay. Now, did you include any of the wells we just talked about in your trend test at Will County?

A. I'd have to refer to my report.

Q. Sure. That would be on Page 81511.

A. So, again, those wells weren't included in our trends analysis because those wells are further upgradient at the station, and for purposes of the evaluation that we undertook for trend, the wells that were on the downgradient edge were the wells

that we focused on --

Q. Right.

A. -- because those were deemed most relevant and useful in terms of the trend analysis that was performed.

Q. Okay. Can you turn back to the same exhibit we were looking at before, 13 -- 1314, Will County? Figure 2, it's on Page 118383. I got that right.

Do you see that?

A. Figure 2?

Q. Yeah.

A. Yeah.

Q. Which of these wells are the downgradient ones we were just talking about?

A. So the groundwater flow that's depicted here is generally from the east to the west, and the wells that are downgradient are the wells along the west side of the ponds.

Q. Okay. So does that include some of these pink wells?

A. Those pink wells are non-CCA wells according to this figure. And it looks like our analysis -- our trend analysis does include MW-11,

MW-12. However, MW-13, 14 and 15 I believe are more recent wells that were installed after we conducted our trend analysis. So Wells 13, 14 and 15, those were not included because we weren't aware of them, and they weren't -- I don't believe that they were installed --

Q. Right.

A. -- at the time of our trend testing.

Q. That's my understanding, too.

I have a question about how you know that these are downgradient. The -- can you explain how you know from looking at a chart like this what the downgradient wells are?

A. You said a chart. What chart are you referring to?

Q. I'm sorry. An image like this, a potentiometric contour map, how do you know where the downgradient wells are when you look at something like this?

A. So the contour lines are in blue on this chart. The contour lines signify equal groundwater elevations.

Q. Yeah.

A. And then you can see on the figure that

the pinkish arrows or the reddish arrows are perpendicular to the contour lines. That signifies the groundwater flow direction.

Q. How do the contour lines relate to the little numbers in purple underneath each well label?

Do you see what I'm talking about?

A. The purple -- like, for example, MW-05, 582 --

Q. Yeah.

A. -- point 62?

Q. Yeah.

A. The 582.62 si the groundwater elevation that's been measured at that well.

Q. So the contour lines interpolating the data from the wells?

A. First off, just I want to point out, Weaver didn't prepare this.

Q. Sure. Understood. Understood.

A. So just to be clear.

Q. Yeah.

A. These contour lines -- the data that's shown there in purple, that's the basis -- those are the data points by which the contour surface is

generated.

Q. And so is it fair to say that the well -- it looks to me like the wells on the downgradient side have lower groundwater elevations; is that correct?

A. Yeah. Groundwater will flow from higher elevations to lower elevations, correct.

Q. Okay. So the -- when you're talking about the downgradient edge, you mean the wells with the lowest elevation?

A. I don't like to use the term lowest. That's too extreme. We've utilized the wells that are on the downgradient side of the ponds as stated previously.

Q. Okay. Now, I want to go back to the exhibit that was giving me a problem before, but I think I can -- I think this is gonna be okay. Exhibit 1303 for Joliet, can you turn to Page 118138?

Do you see that?

A. Is that Figure 2?

Q. Yes, Figure 2, same kind of map we were just looking at, but for Joliet 29.

A. Okay.

Q. Which of the wells here are the downgradient wells?

A. MW-7, MW-6, MW-4, MW-3, MW-2.

Q. Okay. Now, what about MW-5, what's the groundwater elevation in MW-5?

A. That's 505.46 according to this drawing.

Q. Okay. Do you see any wells with a groundwater elevation lower than that on this map?

A. Not on this map which of course represents one -- one point in time.

Q. Sure. For this point in time, MW-5 is downgradient, is it not?

A. I think -- when you say downgradient, I'm not quite sure what you're referencing.

Downgradient of what?

Q. Well, I mean, you were talking about how you selected wells on the downgradient edge. MW-5 has the lowest elevation of all of these wells. I'm wondering why you wouldn't have selected that. There aren't any wells downgradient of MW-5.

A. Not on this particular drawing, no. What we did was, though, we looked at an evaluation of the data as a whole and looked to identify those wells that were downgradient most consistently.

Q. Okay. So you didn't run any trend tests on MW-5? That would be 81505 in your report.

A. Again, MW-5 was looked at before by Mr. Seymour in terms of the trend tests. So, again, we didn't feel as though that one was as useful as the other monitoring wells. MW-5 is close to MW-6, and so we did capture MW-6 in the evaluation. And so that's what we included in our evaluation.

Q. Okay. Can you now turn to Exhibit 1310 which is the same kind of report, but for Waukegan? It should start on 118489.

MS. NIJMAN: So this is January 2022?

MR. RUSS: Yeah.

MS. NIJMAN: Is that the right one?

MR. RUSS: That's the right one.

BY MR. RUSS:

Q. Can you turn to Page 118493 which is also like the other ones in Figure 2?

BY MR. DORGAN:

A. I've opened to that page.

Q. Which wells are downgradient here?

A. This particular figure as represented by the data collected on this date would suggest for

historical downgradient Wells MW-01, 2, 3 and 4, would be downgradient, as would MW-7 which is -- on this particular date has a component of flow that's in that direction.

Q. Okay. And when you say in that direction, there's some groundwater that's flowing south at this point in time; is that right?

A. Yes. At the date that this data was collected, that was the case.

Q. Okay. MW-7, is that one that you did trend tests for? That would be on Page 81515.

A. We did not include MW-7.

Q. Okay. I'm gonna do the same thing with Powerton, so Exhibit 1307, January 14, 2022, fourth quarter 2021, CCA groundwater report for Powerton, starts on 118236.

Can you look at Page 118241, Figure 3?

A. Yes.

Q. Which wells are downgradient here?

A. So the wells in a downgradient position on this particular date as represented by this figure would include MW-02, 03, 04, 05 and 07.

Q. Okay. And can you turn to Page 81509 -- I'm sorry.

81508 of your report in this is where the Powerton stuff starts?

A. Yes.

Q. Did you include trend tests for MW-2?

I think you just said that was a downgradient well.

A. This particular date, it reflects a downgradient flow position, but it was not included in our trend testing.

Q. Okay. So the trend tests exclude some wells that are at least some of the time on the downgradient edge; is that right?

A. Trend testing that we did. Trend testing was performed by Mr. Seymour on all of the wells. We then concentrated on the predominant groundwater flow direction and the wells that are in that direction.

Q. Okay. Now, I want to just go back to the Waukegan exhibit one more time. This is a different kind of a question. This is Exhibit 1310, starts on 118489.

Can you turn to Page 118603? Should be dissolved boron over time at Waukegan.

A. I'm at that figure.

Q. Okay. Which of these wells have exceeded concentration of 10 milligrams per liter?

A. Well, that's a little difficult to interpret because the scatter on the graph and the fact that you had so many of the data points around the standard that's reflected on here.

There's certainly some that are demonstrated to be above it. Picking out each one would take some time.

Q. Yeah, right. I agree. That's why I'm asking about not the standard necessarily -- which I believe is 2 milligrams per liter; is that right?

A. That looks to be the case, yes.

Q. I'm wondering how many wells show concentrations that are greater than 10 milligrams per liter, so at least five times the standard.

A. Well, again, there's quite a bit of data here, but it looks like there's at least two and maybe a third that has had a couple -- at least a couple incidents where concentrations were detected above 10.

Q. Okay. And that would be MW-5, 6 and 7; is that right?

A. That looks to be the three, correct.

Q. And did you do trend tests on any of these wells, 5, 6 and 7, at Waukegan?

A. No, we did not. But again, as stated previously, it's been done by earlier experts in the matter.

Q. Okay. I'm gonna move on from that.

Now I want to ask you about some of the historic ash areas at Joliet, and so we're on the same page about what those are. I'm hoping you can turn to the 2019 Board opinion and order which I believe you have a copy of. And on Pages 26 to 28, the opinion describes the areas.

You've read this, correct?

A. Yes.

Is my mic still on.

Q. Yes.

Are you familiar with what the Board describes as the northeast area?

MS. NIJMAN: Which page are you on?

MR. RUSS: I'm on Page 26.

MR. MAXWELL: Yes, I see that referenced here on Page 26.

BY MR. RUSS:

Q. Do you know what the Board is talking

about when they describe the northeast area?

BY MR. MAXWELL:

A. I think I'm generally aware having read this -- these particular pages many times. There's some confusing references in terms of the language that's presented here. I think I'm generally aware as to which area they're referring to.

Q. Okay. And are you familiar with the southwest area that the Board mentions on Page 27?

A. Again, I would give the same answer that I think that when they say southwest area on Page 27 in that heading, I think I know generally where they're referring to.

Q. Okay. And not to belabor it -- I'm sorry. I think your answers are perfectly acceptable, but on Page 28 for the northwest area, would you give the same answer?

A. I would. We're generally familiar with that area. Although, later on in the language there's references to different phrasing in terms of historical ash areas, historical coal ash storage and fill areas. There's some confusing language to me that's difficult to decipher, but generally I'm aware of where those areas are.

Q. Okay. Great. Thanks.

This is -- you'll recognize these questions from your deposition, but for the northeast area of Joliet when you were developing your opinions, did you evaluate the depth of ash in that area?

A. The depth of the ash wasn't necessarily a consideration when you looked at our overall remedy. So are we generally aware of the -- of that area? Yes. Did we consider the depth? We did consider it in the overall evaluation of our remedy.

Q. How so?

A. Well, the -- I don't think -- I don't think that there was a reason to look at the -- to investigate the depth of the ash in the northwest -- in the northeast fill area.

Q. Okay. So you did not consider the depth of the ash then?

A. Would it be possible to refer to our deposition?

Q. Sure, of course. If you turn to Page 65 -- cause actually Mr. Dorgan answered the questions about Joliet, this set of questions. I

don't know why, but that's the way it is. And, actually, if you want to start with the original question, it starts on Page 64 at Line 23.

The question begins, okay. Let's start with northeast -- the northeast ash fill area, what you call the northeastern portion of the facility. Did you consider any information on the depth of the ash in that area?

And Mr. Dorgan said, I don't recall at this point what depth of information was available that we considered as part of our evaluation.

A. I'm sorry. What page are you on?

Q. I'm on Page -- it starts on Page 64, Line 23, and then it moves over to Page 65.

BY MR. DORGAN:

A. Okay. So since I answered this question in the deposition, let's see if I can field it for you now. So what's the question?

Q. Sure.

Did you consider the depth of ash when you were developing your opinions in the northeast

area?

A. Well, there's been testimony that there's ash present. We knew that from the inspections that Mr. Gnat has been performing. He's described ash being present in some of the erosion rails. We also looked at the absence of the seeps that have never been documented to be present along the northeast ash area.

So while we didn't have any specific information or knowledge that there had been a quantification of ash in that area, we certainly considered that it was there relative to the remedy that we had proposed.

Q. Okay. So I guess I'm just wondering, do you know how deep the ash is in that area?

MS. NIJMAN: Object, misstatements of the ash in that area, misstates testimony.

HEARING OFFICER HALLORAN: Can you rephrase, Mr. Russ?

BY MR. RUSS:

Q. Do you have any information about ash at any depth in that area?

BY MR. DORGAN:

A. I'm not aware of any specific information

that documents the depth of ash in that area.

Q. Okay. Did you evaluate whether there was any ash in contact with groundwater in that area?

A. Only to the extent that we considered whether or not there were any seeps which would be indicative of groundwater being in ash, but no, we did not evaluate ash depths with respect to the relationship with groundwater. We're not aware of that information being available.

Q. Okay. And did you calculate the square footage of that area in terms where the ash might be?

A. No, we did not.

Q. Okay. So since -- I mean, I'm sorry for the redundant questions, but since you don't know the thickness or the square area, it wasn't possible to calculate the volume of ash; is that right?

A. That's correct.

Q. Okay. And in your deposition you said, and I think you said basically the same thing today, you didn't feel it was particularly relevant; is that right?

A. That's right.

Q. Is that still your opinion?

A. It is.

Q. Okay. These questions are gonna get redundant. I'm sorry.

Turning to the southwest area at Joliet, did your team estimate the horizontal extent of ash in that area?

A. No, we did not.

Q. Did you estimate the volume of ash in that area?

A. No, we did not.

Q. Did you evaluate the extent to which that ash is in contact with groundwater?

A. No, we did not.

Q. For the northwest area, did you estimate the volume of ash in that area?

A. We did not estimate the volume, nor did we calculate the square footage.

Q. Okay. And did you estimate the extent of any contact between ash and groundwater in the northwest area?

A. We weren't aware of any contact of ash and groundwater in the northwest area.

Q. Okay. Now, on Page 69 of your deposition

on Lines 8 and 9, you were asked, did you consider whether ash on the southwest side was in contact with groundwater. You've already answered that question, but I'm gonna read your response from the transcript here.

> **I don't recall as I sit here today if we specifically considered ash being in contact with groundwater as we did not feel that that was particularly relevant to our ability to assess the remedy which we proposed.**

Did I read that right?

A. Yes, you did.

Q. And on the same page, Line 19, starting on -- there's a question on Line 15.

> **Did anyone on your team calculate the volume of ash in the are on the southwest side?**

Your answer was, as I sit here today I'm not aware that anybody calculated the volume of ash. And again I'd state that we didn't feel it was particularly relevant to our ability to assess an appropriate

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.

MS. NIJMAN: Right, but I'm not sure what we're referencing now going through pieces of the deposition. In response to what? What is this cross-examination of? You said he answered the question here, that he didn't find it relevant.

HEARING OFFICER HALLORAN: Mr. Russ.

MR. RUSS: There two components to the answer. One is whether they did the analysis, and one is why they didn't. And I'm getting to the second part which is why they didn't. And the way --

MS. NIJMAN: But you haven't asked that question.

MR. RUSS: Well, I have asked that question. I asked what you said in your deposition, is it still your opinion that you didn't think it was relevant.

MS. NIJMAN: Right. So then what are we crossing? What's the --

MR. RUSS: I have to establish that that was the reason in a number of different instances.

HEARING OFFICER HALLORAN: Overruled.

You may continue, Mr. Russ.

MR. RUSS: Thank you.

BY MR. RUSS:

Q. So on Page 70, Line 3, there was a

question that started on Page 69, Line 22.

Did you consider the horizontal extent of the ash on the southwest side?

Your response was, we certainly considered the extent as it was mapped on the drawings that we reviewed as part of our evaluation. However, again didn't feel that the aerial extent was particularly relevant to the remedy that we identified as being appropriate for the site.

Is that right?

BY MR. DORGAN:

A. That's how it reads.

Q. Is that still your opinion?

A. Yes, it is.

Q. Now, I don't have to go through the transcript. I just want -- I can ask in a general way if you'd prefer.

With the historic sites, you didn't evaluate the volume of ash in those historic areas; is that right?

A. We looked at the mapping that had been

done through the record about where these were located. We looked at what the Board had to say about the individual fill areas that were referenced. We considered the area certainly as it was mapped, but we're not aware that there was any specific information that had been generated about ash volumes, ash in contact with groundwater.

But even now we feel as though with the information that is available, we have the ability to move towards a remedy that's appropriate for the risks that exist at the site.

Q. Right. I understand. Just for completeness so it's clear on the record, I guess I should ask you about the Waukegan former slag area as you've described it.

That's one place where you actually do have information about the depth of ash and groundwater; is that right?

A. That's correct.

Q. Setting that unit aside, for the historic ash areas at Joliet northeast, northwest, southwest, you've already answered these questions.

Turning to Powerton, the Board opinion at Page 41, sorry, 40 to 41, this is where the Board

has a heading that says, Historical Coal Ash Sites. And the first three that they mention are actually basins that I think you guys would have included as impoundments; is that right?

A. I believe that's correct.

Q. And then after that, there's a heading that says, Coal Ash Fill Through the Site, on Page 41; is that right?

A. Yes, that's correct.

Q. Then on Page 42 there's a heading that says, Ash Cinders Stored on Land; is that right?

A. That's what it says, yes.

Q. In your PowerPoint slides you said there was only one area that the Board identified as a historic ash site at Powerton?

MS. NIJMAN: Objection, misstates the testimony in the slide.

BY MR. RUSS:

Q. Okay. Let's turn to that slide. It's Slide 34.

A. Yes.

Q. So is says historic fill area, and the slide says just one area mentioned by the Board?

MS. NIJMAN: Historic fill area, correct.

MR. RUSS: Well --

MS. NIJMAN: That wasn't your question. That was my objection. Thank you.

MR. RUSS: Can I continue?

BY MR. RUSS:

Q. So the area that you describe on this slide is the area where cinders were temporarily stored in the winter; is that right?

A. That's correct.

Q. Is that a fill area?

A. I'm not sure if that was characterized that way in the Board's order specifically, but it was one of the violations that was found to have occurred at the Powerton site, and it's why we referenced it here.

Q. Okay. And this slide doesn't mention the area described by the Board on Page 41 which is coal ash fill through the site; is that right?

A. That's correct.

Q. Did you evaluate that area described by the Board as coal ash fill through the site?

A. We certainly considered it. And part of the issue is it's referencing to very specific locations where ash had been detected, so it's not

referring to an area per se. So it wasn't something that we were trying to map or could map.

So we considered it in that there's documentation of ash at these locations, but, again, our focus had looked at the downgradient conditions and their off-site receptors and potential risks related to that. So this was considered, but we didn't specifically map it in our figure.

Q. Okay. To be clear for the record, Slide 34 where it says just one area mentioned by the Board is not accurate, right?

MS. NIJMAN: Objection, asked and answered.

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

MR. DORGAN: The Board mentioned three basins, and we included those and discussed those at length. The Board then discussed coal ash fill throughout the site referencing to specific borings where coal ash was encountered.

And then it references to ash cinders stored on land. That's what this is specifically highlighting because that was a location that was referenced and documented.

MR. RUSS: Okay.

(Technical difficulty.)

MR. DORGAN: I'll speak up.

HEARING OFFICER HALLORAN: Sure, thank you. The state apologizes.

BY MR. RUSS:

Q. I have to do this for the record. I apologize.

Did you evaluate the horizontal extent of the ash fill described on Page 41 under the heading, Coal Ash Fill Through the Site?

A. As I stated previously, this coal ash fill throughout the site is referring to specific borings. It's not referring to some map area or geographic -- geographically coded portion of the site.

So, yes, it was considered, but it's not included in a map because it wasn't a specific area.

Q. So at Waukegan there was the former slag area, and there's that nice grid, 40 borings laid out in a hundred-foot grid; is that right?

A. I don't recall the specific dimension of the grid, but it had a grid that was implemented.

Q. And you cited that in your report?

A. Yes, we did.

Q. How -- why did you find that useful?

A. At Waukegan, as I described in my testimony earlier today, we found conditions that were a bit different than what we were seeing at the other three stations. We had MW-5 upgradient of the west pond that was showing CCR constituents that were being detected, and we've got the further upgradient wells that are being impacted by some of the off-site properties.

And then in between those areas we had this pretty well-defined and documented -- the Board documented the presence of a slag fill area, and Midwest Generation elected to undertake some investigation of that area. Certainly as we did with all of the sites, we wanted to consider all the investigatory data that had been collected, and so we looked at that information. And we coupled the impacts that we're seeing in MW-5 with the potential leaching from, in particular, the VADOSE zone coal ash at that location, which is why we ended up with an additional remedy proposal for Waukegan as compared to the other stations.

Q. Yeah. The reason I brought it up is I'm wondering if something similar could have been done at Powerton.

Is there any reason you couldn't have done a sampling grid like that at Powerton to determine where the ash is in this area discussed by the Board?

A. We were tasked, again, through the Board order with assessing a remedy and the appropriate relief. We had a lot of historic information already. We didn't believe we were being tasked with going out and doing additional investigation.

So as I've mentioned any number of times today, there may be some additional investigation that occurs in these areas as a result of the upcoming state and federal coal ash fill regulations that are being promulgated. If that's the case, that'll certainly happen, but we relied on the information that we had at our disposal to assess remedy and relief.

Q. Okay. If you had a sampling grid like the one at Waukegan at Powerton, would that information be useful to you?

MS. NIJMAN: Object to vague as to what areas

we're talking about.

HEARING OFFICER HALLORAN: Sustained.

BY MR. RUSS:

Q. So on Page 41 of the Board order they talk about coal ash fill through the site. If you read through that paragraph, you starting on Line 1, 2, 3, 4, 5, 6, 7, you see where a sentence starts, another five borings taken in 2005 by KPRG.

Do you see that sentence?

A. I see that sentence.

Q. It goes on to say, during the geotechnical testing showed coal ash fill starting at around 2 feet below surface and going as deep as 14 feet mainly in areas around secondary basin, ash surge basin and ash bypass basin.

So -- and then if you scan down a couple lines, there's a sentence in the middle of the paragraph that starts, soil borings from December 2010 when MWG installed monitoring wells, particularly borings for Wells MW-9, 11 and 12, shows cinders in fill that extends from the surface to as much as 24.5 feet below the surface.

Do you see that?

A. I see that.

Q. So there are two areas, one around the secondary basin, ash surge basin and ash bypass basin, and another around MW-9, 11 and 12.

In those areas if you had a sampling grid like we have for Waukegan, would that information be useful to you?

A. Any information would be useful, but that information wasn't available to us. We had the data that came from these specific borings that were done that are referenced in the order. They're referenced in our report. They -- most of these data points were from around the ash basins which we've mapped and shown on our drawings and have considered in our remedy choices.

Q. Okay. So in the Waukegan boring grid, as Mr. Maxwell testified, he estimates that 80 percent of the ash is in the VADOSE zone and 20 percent is below the water table.

Do you have enough information at Powerton to make that kind of calculation from these borings?

A. You could perhaps do the same analysis in the individual borings, especially the monitoring wells, but that would not necessarily be

representative of a larger area. You'd be limited to just what's going on in the individual boring log.

Q. Right. And if you had a grid of 40 borings evenly spaced, would that more helpful in estimating that kind of thing?

A. If you had a grid with more spacing, you would certainly look at that in its totality to assess what's going on in that area.

Q. Okay. Thanks. Turning back to the tedious questions, I just have to get these clear in the record.

Did you evaluate the extent to which the fill we're talking about at Powerton, the coal ash fill through the site, is in contact with groundwater?

A. We did not do a specific analysis of the coal ash that's encountered in some of these borings around the site in terms of how much fill area was in contact with groundwater.

Q. Okay.

A. Cause that wasn't necessarily suggested by the data.

Q. Okay. And also, I'm assuming, because you

didn't feel like it was relevant to your remedy?

MS. NIJMAN: Objection, he answered that part of the question.

HEARING OFFICER HALLORAN: I agree. Sustained.

MR. RUSS: Okay.

BY MR. RUSS:

Q. Now turning to Will County, Page 56 of the Board order, there is a paragraph with a heading, Coal Ash Buried Around the Ash Ponds.

Do you see that?

A. Yes, I do.

Q. And you talked about this earlier today.

You're familiar with the area that the Board is describing here?

A. Yes, I am.

Q. Did your team ever investigate the horizontal extent of the ash fill around the ash bonds?

A. Our team evaluated the information that was already included in the record, so in terms of an evaluation took place but with the data that was already available.

Q. So you don't necessarily know the lateral extent how far it goes two-dimensionally, that area

described by the Board; is that right?

A. Not other than the data that has already been looked at in the wells and borings that are available.

Q. Okay. And did you try to estimate the volume of ash around these ash ponds?

A. We did not estimate independently the volume of ash around the ash ponds.

Q. Okay. And did you estimate the extent of contact between that ash fill and the groundwater at Will County?

A. No, we did not.

Q. Okay. Thank you. Those questions are done I'm sure everyone will be pleased to know.

Now I'm gonna ask some questions about the Waukegan soil investigation. You mentioned it on Page 41 of your report, I believe, if you want to turn to that.

MS. NIJMAN: Can we take a bathroom break?

MR. RUSS: I'd be happy to take one, if you'd like. You want to take a break?

HEARING OFFICER HALLORAN: Sure. I was thinking 5:20-ish again.

MR. RUSS: Sure.

HEARING OFFICER HALLORAN: Okay. Off the record. Thank you.

(WHEREUPON, a short recess was taken.)

HEARING OFFICER HALLORAN: We're back on the record, Mr. Russ.

MR. RUSS: Thank you.

BY MR. RUSS:

Q. Turning to your report on Page 41 which is Bates Page 81458, this -- the top should say 4.2.4 Waukegan.

Do you see that?

A. Yes, I do.

Q. And down at the bottom, the third paragraph starts with a discussion of the FS area.

Do you see that?

A. Yes, I do.

Q. And this goes on to describe the boring grid that we were just talking about a few minutes ago; is that right?

A. Yes, that's right.

Q. On the next page, Page 42, you describe the L-E-A-F, LEAF test, right?

A. That's correct.

Q. Can you describe what that is?

A. The Leaching Environmental Assessment Framework is another one of the leaching tests that's been discussed at various times in the record. Again, it's a means to -- similar to the synthetic precipitation leaching procedure which was mentioned earlier in the sentence, just another leaching methodology that follows a certain standard with respect to subjecting a sample to evaluation to see what leaches out of it.

Q. And you actually mention this more on Page 30. If you turn to Page 30 of your report, this is under the Powerton ASD, but you're talking about the LEAF test again in the second paragraph.

Do you see that?

A. Yes, I do.

Q. The fourth line from the bottom -- fifth line from the bottom, there's a sentence that starts, natural PH results are believed to be the most applicable to field conditions.

Do you see that?

A. Yes, I do.

Q. Can you explain how using a leach test at the natural PH is useful to you?

A. So this particular method looks at leaching potential at a range of different PH, and the natural PH is the PH of the pour water in the sample when it's collected. So that's representative of what the ash is encountering in the environment rather than the other PH ranges that the sample is subjected to which aren't present in the environment where the ash sample is collected from.

Q. How is it helpful to have the -- why is the PH significant to the result? I guess I should ask that.

A. Varying PHs can lead to varying degrees of leaching of different constituents, and different constituents can respond to different types of PH ranges whether acidic or corrosive.

Q. Okay. Here you say the natural PH represents the best approximation of field conditions, right?

A. That's what's stated in the report, yes.

Q. Is that your opinion still?

A. Yes, we believe that.

Q. Another leach test that has been mentioned and that you cite in your report is NLET test,

right?

A. That's correct.

Q. What does the N stand for?

A. Neutral.

Q. And is that in reference to PH?

A. That's correct.

Q. So that leach test uses a PH of seven; is that right?

A. I believe it's seven or around seven.

Q. Okay. And not the natural PH?

A. That's correct. The natural PH can be different than seven.

Q. Right.

A. Depends on the sample itself.

Q. Okay. Thank you.

So Page -- going back to Page 42 for Waukegan, which constituents had LEAF samplings that exceeded Class 1 standards here?

You talk about that in the only real full paragraph on Page 42.

A. I've had a chance to look at this, but can you repeat your question?

Q. Sure.

Which constituents had LEAF samples that

exceeded Class 1 standards?

A. I believe you're referring to boron which was detected in several of the samples, and I believe arsenic was also detected in one of the samples slightly above the Class 1 groundwater standard.

Q. Right. Okay. Thanks.

If you turn to Page 814, excuse me, 81487 of your report, that will be towards the back or somewhere in the middle. It's where the tables are. And this may be hard to read. I have a magnifying glass if it'll help you. It should say Table 4 historical leaching data.

Do you see that?

A. Yes, I do.

Q. And the box on the far right, the box of six columns or seven columns says at the top, KPRG. I believe it says, Bates soil investigation, November 2020; is that right?

A. I believe that's what it says.

Q. And is this the same data that we were just looking at your discussion of on Page 42?

Feel free to take a moment to flip back. I just want to make sure it's the same.

A. I believe it is based upon a review of some of the references both from Page 42 and then what's on the headings for the columns.

Q. Okay. Now, according to this table, how many of these soil probes were subjected to a LEAF test for boron?

A. It looks like three of them.

Q. Okay. Yep.

And how many exceeded the SRO?

A. All three exceeded the Tier 1 SRO.

Q. Right, okay. Thanks. And, you know, while we're here, for molybdenum, it's also the case that all three exceeded the SRO; is that right?

A. This shows that the three samples that were subjected to the LEAF analysis exceeds the Tier 1 SRO reference that they include on the table which is the soil migration for protection of groundwater standard.

Q. Okay. When you say they include on the table, did someone else prepare this table?

A. I believe this was -- I believe this is a table we created using their data.

Q. Okay. I think that's probably right just

because you have some KPRG data, and you have some other data here, too.

Given these results for the historic ash area or the historic fly -- it goes by different names, the historic -- the former slag and fly ash storage area is I think what the Board calls it.

Is it fair to assume that the ash in the bonds is also leaching boron, molybdenum and sometimes arsenic at levels above the SRO?

MS. NIJMAN: Objection, foundation.

HEARING OFFICER HALLORAN: Mr. Russ.

MR. RUSS: I don't -- I don't know. I mean, the results are what they are.

BY MR. RUSS:

Q. You have results for some coal ash for Waukegan here. Is it fair to assume that the same results would be obtained from the ash ponds?

MS. NIJMAN: Same --

MR. DORGAN: I'm not sure which ash samples you're referring to.

BY MR. RUSS:

Q. These soil investigation results I believe are soil borings from the former slag and fly ash area which we've talked about earlier today

contains --

A. Yes, but I thought your question had to do with ash in the ponds.

Q. My question is whether -- you have these results for the ash in the former slag area.

Is it safe to assume that you'd get the same results from the ash in the ponds at Waukegan?

MS. NIJMAN: Same objection to foundation.

HEARING OFFICER HALLORAN: Yeah, sustained.

BY MR. RUSS:

Q. Do you have any LEAF test data from the ash in the ponds at Waukegan?

A. I'm not sure if there is LEAF from the ash in the ponds, but I would not say you can draw the conclusion that pond data and the ash data from the slag area are going to be representative of the same thing. They're different materials, different sources generated at different times located in different areas.

So could there be similarities, I'd like to say they'd be the same. If one is indicative of the other, I wouldn't go there.

Q. You wouldn't want to take the leach test data from one area and apply it to another area, is

what I'm getting at.

MS. NIJMAN: Misstates testimony.

HEARING OFFICER HALLORAN: He can answer it. I think he already did, but you can answer if you're able.

MR. DORGAN: On this table there's LEAF data that was collected from the samples that were drilled in the former slag area or the fly ash area that you do reference. That's what we were just discussing were those results.

So if you're speaking to specific results from other LEAF samples from other ash materials from the site, I can't necessarily speak to that, but I would stipulate that they would not be necessarily the same.

BY MR. RUSS:

Q. Okay. Thank you.

I actually think -- I wasn't gonna ask about this, but it does appear to me that you have LEAF test data from the ponds in this table.

The two middle columns where it says, KPRG alternate source demonstration composite, appear to be east pond ash, west pond ash LEAF test results; is that right?

A. That's what it's referenced as in the header, yes.

Q. Okay. And indeed as you were saying, the results for boron are different.

They're below the SRO; isn't that right?

A. Boron was detected at concentrations at -- either at or below the referenced standard.

Q. Right. Okay. So like you were saying, different material, different history, different profile, you get different results?

MS. NIJMAN: Objection, misstates testimony.

HEARING OFFICER HALLORAN: I can't hear you, Ms. Nijman.

MS. NIJMAN: Misstates testimony.

HEARING OFFICER HALLORAN: Could you rephrase?

MR. RUSS: Sure.

HEARING OFFICER HALLORAN: Thanks.

BY MR. RUSS:

Q. Do these results corroborate what you were saying before, that when you sample different ash from different areas, you can get different results?

MS. NIJMAN: Again, misstates his testimony.

HEARING OFFICER HALLORAN: He can answer if

he's able. I think he somewhat answered.

MR. DORGAN: There are differences in the boron concentrations between the samples collected from the former slag area and the samples collected from -- as represented by the two ash samples that are referred here. They're not -- we're talking relative differences at this point between a concentration of two and a concentration of five, but I would -- I would agree that there are some differences, yes.

BY MR. RUSS:

Q. Okay. And just to be clear for the record, not to be rude or anything, but the boron result for Boring C705 is 13, right?

A. Yes, that's correct.

Q. Okay. Did you review any LEAF test data from the northeast area at Joliet?

A. I don't recall that there's LEAF test data from the northeast area of Joliet. If you'd like to point me to that --

Q. Well, I guess I can -- yeah, I can point you to just a couple pages before. 81483 I guess is where the historical leaching data for Joliet start. You can see where the different types of

tests were used.

Looking at this page and at the next page, do you see any LEAF test data at all for Joliet 29?

A. I'd need to relate back to what this summary table was. This was I believe based upon the title at the top of the columns for the sample locations, this is the CCB determination that was done in the northwest area which was discussed as having been performed for purposes of evaluating if that material could have been used to build a windscreen.

So this data is not related to the northeast area. And to answer your specific question, I do not see that there is LEAF data here, but for the CCB beneficial reuse purposes, they use the NLET method which is the data that's presented on this table.

Q. Right. Okay. Thanks. So my understanding of these tables, and correct me if I'm wrong, is that they compile all of the leaching data for the four sites; but if I'm wrong, that's fine.

The next -- the table continues on to the next page, and it talks about the ash slag removal.

And then it switches over to Powerton, and you'll see starting on Page 81485 that there are a lot of different areas of Powerton described in that table.

MS. NIJMAN: I'm sorry. Is there a question?

MR. RUSS: Yeah, there is.

BY MR. RUSS:

Q. The question is, do you -- am I wrong -- do you recall whether there's any leaching data that you didn't include in these tables or is this a summary of all the leaching data that you had available to you?

A. Best of my recollection, the data that we had available to us was represented --

Q. Okay.

A. -- or maybe data that's been collected since then which clearly wouldn't be in here, but . . .

Q. Okay. That's -- I'll move on. I think we have enough to go on.

There was -- now, at Joliet 29 there was some leach testing done at the northwest area; is that right? We talked about that earlier today.

A. I believe I just referenced it a moment

ago.

Q. Yeah. And can you explain how those data were used? We just talked about the removal of ash.

How were the leach data used to inform the removal of ash?

BY MR. MAXWELL:

A. So the purpose of that particular investigation was a CCB, a coal combustion byproduct, beneficial reuse investigation. And so the purpose of that particular investigation was to look at whether or not the material qualified for beneficial reuse under the Environmental Protection Act.

So the specific test that we used was -- or that was used was dictated by the regulations, and that was the test that was implemented, the NLET test.

Q. Right. Okay. Now, if you turn to your report at Page 81453, it looks like, if I'm reading this correctly, the top paragraph, particularly the second half of the top paragraph, talks about concentrations of NLET copper and lead below the Class 1 quality groundwater standards which

adequately delineated the limited extent of the soils exhibiting concentrations of NLET copper and lead above the Class 1 groundwater quality standards; is that right?

A. I think you've read the last part of that paragraph.

Q. Okay. And if you -- for more context on the prior page, Page 35, the bottom paragraph, the middle of that bottom paragraph there's a sentence that says, concentrations of copper and lead from GP 14A were higher than the Class 1 groundwater quality standards; is that right?

A. That was the information that was utilized to -- that informed the subsequent decision to further delineate the area in the vicinity of GP 14A as it related to the results from GP 14A for copper and lead.

Q. Yeah. And is it your understanding that the area where the test results exceeded the Class 1 groundwater quality standards was the area that was excavated?

A. That it exceeded the -- yes. The area that was excavated was delineated -- the delineation was utilized in order to map out the

area of soils that were -- that were -- that did not exhibit the NLET results below Class 1 groundwater standards.

Q. Okay. And turning to Page -- one of the slides in your slideshow talks about this. I believe it's -- yeah, Slide 12.

Do you see the area that we were just talking about where there was ash excavated?

A. So, yes, there's -- on Figure 5 from our report there is an area that's marked in green in the vicinity of GP 14A in the northwest fill area.

Q. Okay.

A. That area that's in green in the legend is indicated KPRG approximate removal area.

Q. Okay. And I believe you said in your report, 52 trucks loads and a little over a thousand tons of ash; is that right? Page 36.

A. Yes. Also, Slide 18 references 52 trucks loads.

Q. Oh, yeah. Okay. Thanks.

And just to be clear, so there's -- the northwest historical fill area as it's shown on this map is much bigger than the area that was excavated; is that right?

A. The majority of the northwest fill area exhibited concentrations using the NLET test that were below Class 1 standards. So that was the standard -- that was the regulatory standard.

So, correct, there was no need to do anything further for purposes of this investigation on the majority of the area. It was just this one particular location that warranted action in light --

Q. Right.

A. -- of the objectives of this study.

Q. Right. Okay. Just had to make that clear for the record. Thanks.

While we're on the topic of removal, has any other ash been removed from Joliet 29 that you're aware of?

A. Historically, there's ash that's been removed from the ponds when the ponds operated, so they were routinely emptied as warranted and as needed.

Q. Do you know where all that ash -- not to say a lot, you know -- where did that ash go?

Do you know?

A. My understanding is that the operational

procedures were to take that to the Lincoln Stone Quarry on the south side of the river after it was removed from the ash ponds.

Q. Similar to some of the other sites, I think in your report you talked about how a lot of these ash ponds are used for temporary storage of ash; is that right?

A. I don't know that I would use the term storage. In fact, I -- well, if you -- if by storage you mean temporary, with that clarification.

Q. Yeah. I just mean temporary because it was taken somewhere else. At Powerton, for example, some of those ash ponds were periodically cleaned out; is that right?

A. That's our understanding.

Q. Do you know where that ash was sent?

BY MR. DORGAN:

A. I don't know offhand.

BY MR. MAXWELL:

A. I don't either.

Q. Okay. That's fine. I'll move on.

So turning to Powerton, on Page 81485 of your report, that's gonna be a table with a little

tiny Bates number. I think it's Table 2, Historical Leaching Data for Powerton. I think it's gonna be hard to read this. Again, I have a magnifying glass if it will help.

What areas as shown in this table were tested with a LEAF test?

BY MR. DORGAN:

A. Yeah. It looks like, as summarized on this table, the very far right columns reference data that was collected as part of the alternate source demonstrations that KPRG performed.

Q. Okay. And then turning to Page 81447 of your report, which is the text --

A. 447?

Q. Yep. In the third paragraph, second sentence, it says, KPRG recommended that the ash surge basin and bypass basin be shifted from detection monitoring into assessment monitoring.

Did the groundwater -- so how did the groundwater monitoring program change in response to the -- how did the LEAF data influence the decision to change from detection monitoring to assessment monitoring?

MS. NIJMAN: Objection, foundation.

MR. RUSS: Just looking at the description they made in the report.

HEARING OFFICER HALLORAN: Try to rephrase. It was -- yeah. I think you can do it, Mr. Russ. Thank you.

MR. RUSS: You want me to rephrase?

HEARING OFFICER HALLORAN: Yeah, try.

BY MR. RUSS:

Q. So the first sentence of the third -- the second paragraph discusses the LEAF test results for the ASD; is that right?

A. There's discussion of the ASD and LEAF samples in the first couple sentences of that paragraph, yes.

Q. And this is what we were -- this is what we were looking at earlier where further down in the second paragraph you talk about how the natural PH results are believed to be the most applicable to field conditions, right?

Is that right?

A. That's what it states, yes.

Q. And then the third paragraph starts, KPRG concluded that the data relative to the bypass basin was not definitive, and potential

contribution of leachate from the bypass basin to the local downgradient groundwater impacts could not be ruled out.

My question is, where it says KPRG concluded that the data, are you talking about the LEAF test data in that section of your report?

A. We don't cite specifically to the data, but you had alternate source demonstrations happening for the two basins. The LEAF data was referenced for the ash surge basin. And in the case of the bypass basin, they felt there was less definition to a clear outcome of that analysis.

If I go back -- so I believe we are referencing to the LEAF data since the LEAF data is included on the table we were looking at previously for both the ash bypass basin and ash surge basin.

Q. Okay. Great. Thank you. So I guess just my -- I just want to make sure I'm reading this right.

The LEAF test data informed KPRG's recommendation that the ash surge basin and the bypass basin be shifted from detection monitoring to assessment monitoring?

MS. NIJMAN: Again, foundation as to what KPRG

concluded.

MR. RUSS: I'm just reading what they wrote in their report and trying to understand it.

HEARING OFFICER HALLORAN: Yeah, I'll allow it.

MR. DORGAN: So I think we stated in our report, and there's a footnote to that particular citation or there's a citation there to KPRG's report which shows at the bottom of this page and explains their thought process around the findings for the ash surge basin and the bypass basin.

And if you look at that, this is a reference to what's stated in KPRG's reports. We were just highlighting previous conclusions by the other consultant.

BY MR. RUSS:

Q. Okay. I'll stop there on that. Going back to 81485, the table of leach data from Powerton that we were looking at before, other than the ash bypass basin and the ash surge basin, do you see any other LEAF test data at Powerton in this table?

MS. NIJMAN: Asked and answered.

HEARING OFFICER HALLORAN: I thought I heard you object asked and answered?

MS. NIJMAN: Yes, sir.

HEARING OFFICER HALLORAN: I don't remember, but if he can answer, please do so.

MR. DORGAN: Other than the two basins referenced, the ash bypass basin and the ash surge basin, in two different efforts on the part of KPRG there's no other LEAF data represented on this table.

BY MR. RUSS:

Q. Okay. Do you -- can you explain what the other data -- the big block of data that says at the top, Andrews Environmental Engineering, do you remember what that's referring to?

A. I believe that was part of their -- what we refer to as the geotechnical investigation. I need to go back and just double-check that real quick, but we had highlighted that earlier in our testimony earlier with respect to Powerton.

Q. Okay. So in your testimony earlier -- maybe this will help. If we look at your slides, Page -- let's see. One of those site-wide maps of Powerton might help explain this, maybe Slide 35.

In the legend on Page 35 there's a description of the Andrews 2004 basin sampling test

pit location?

A. Yes, I see that.

Q. I -- oh, man. I don't -- now, I used to think I knew where this was on the map, but I don't see it now.

Do you recall where that is?

A. On our map we have it shown as being just to the east of the ash surge basin, and there's a callout of that --

Q. Oh, yeah.

A. -- Figure 6 of our report.

Q. Okay. Great. Figure 6 of your report, I'm gonna turn to that. Thank you. So what I want to clarify is whether the test pit there -- yes, this is perfect.

So is this what has elsewhere been described as the limestone runoff basin? Do you recall?

A. No. I don't believe that's the case.

Q. Let's look at the Board opinion, Page 40. There's a heading that says, Limestone Runoff Basin. It says, limestone runoff basin is located east of the ash surge basin. And then in the middle of the paragraph, right in the middle, there

is a sentence that starts, in 2004 Anders Engineering analyzed samples from the test pits in the nine locations in the basin. I believe they meant Andrews.

Does this refresh your memory about that area?

A. Yes. Thank you. Yes. I believe as you flip between these, that this area east of the ash surge basin, the callout on the test pits and the reference under the limestone runoff basin is referring to the same effort.

Q. Okay. Thank you.

I think you've already answered the question I was going to ask next, but aside from the limestone runoff basin and the ash bypass basin and the ash surge basin, there's one other area of leach test data in the that table on 81485. I'm wondering if you can explain what that is. It looks like it says -- correct me if I'm wrong.

You've got Andrews Environmental Engineering first. Then you come to the MWG bottom ash sampling from February 27, 2007?

A. We're referring to the Table 2?

Q. Yes. Yep.

Do you recall where that sample came from?

A. I would need to refresh from taking a quick look if that's discussed in our report, if I could.

Q. Sure. Yeah. So that would be -- well, I actually don't know exactly where in your report that would be, but I assume it would be near Page 30 cause that's where the rest of this is discussed. I might be wrong. You know what, we can move on. I'll try to find it myself, and we can come back to this tomorrow.

I know I'm gonna get an objection on this, but I want to get it clear for the record.

Other than the areas we just discussed shown on 81485, are you familiar -- are you aware of any other leach testing data at Powerton?

A. Not that I'm aware of, at least at the time our report was generated.

Q. Okay. Thank you.

Can you now turn to Page 814 Waukegan -- 818 -- no, I got this wrong. 81486 is what I think I meant to type as the next page, and it's where the Will County data starts. I believe these leaching data in the first set, MWG bottom ash

sampling December 2010, it says, Composite 3 south bottom ash.

My understanding is that that ash was taken from Pond 3 south. Do you recall if that's right?

BY MR. MAXWELL:

A. Yeah. That's what our table indicates here.

Q. Okay. Sorry to ask an obvious question like that. The next -- now I wanted to really ask about the next couple sets of data.

The CCB determination, I believe this is what we were talking about earlier, that area east of Ash Pond 1N; is that right?

A. I believe that's correct.

Q. So that's that set, and that goes all the way over towards the end. And then there are two remaining columns, the KPRG alternate source demonstration. And it looks like there's a row below that that describes where the samples were taken from, I think, AP 2S ash, AP 3S ash.

Is it your understanding that that means these are ash samplings from those two ponds, Ponds 2S and 3S?

A. Yeah. AP I do believe signifies Ash Pond 2S and 3S.

Q. Okay.

A. That was collected as part of the alternate source demonstration.

Q. Okay. And are you aware of any other leach testing data for Will County other than what's shown in this table?

A. Again, at the time that we performed or that we prepared our report, I don't believe that we knew of any additional leach testing.

And I would just like to point out, too, that leach testing is summarized here. We also have groundwater monitoring testing as well --

Q. Right.

A. -- that helped to inform our opinion as to remedies.

So I just want to put a reminder out there about that.

Q. Fair enough. Yeah. So that's all I'm gonna ask about leaching for a moment. I'm gonna switch gears entirely for my last 13 minutes here.

On Page 53 of your report you discuss the HELP model, H-E-L-P model, and you also included

HELP model files as Appendix E to your report; is that right?

(Reporter clarification.)

MR. DORGAN: Well, we do discuss the HELP modeling that was performed at the top of Page 53. And just scanning through here -- do you have a Bates number for the Appendix?

BY MR. RUSS:

Q. Oh, yeah. It's far into the depths of the report. Let's see.

A. I think I found it.

Q. Okay.

A. 82178.

Q. It's the last bunch of pages there. For the record, it starts on Page 82178. That's the title page anyway. And then 82179 is where the actual HELP model documentation starts; is that right?

A. Yes.

Q. Okay. So on Page 53 of your report starting on Line 3, you wrote, according to the model result, the cap has significantly reduced infiltration and thereby would be expected to mitigate potential leaching from ash materials to

groundwater; is that right?

A. That's what that states, yes.

Q. Okay. And then I think earlier today you said something slightly different which is that the cap would be expected to mitigate potential leaching from ash in the VADOSE zone; is that right?

A. That's right also.

Q. Okay. So would the cap mitigate potential leaching from ash below the water table?

A. Well, first of all, the first part of your question regarding the differences between the two representations are basically saying the same thing but in different ways.

Q. Okay.

A. So leaching to groundwater implies --

Q. Sure.

A. -- the ash above the groundwater to the groundwater.

And then the leaching from the VADOSE zone would be the unsaturated zone of ash above the groundwater to the groundwater. So I just want to clarify that's really just the same thing stated differently.

Q. Okay.

A. So then I believe the second part of your question had to do with groundwater, and so we were -- this HELP model only looked at the inhibition of infiltration as a result of the cap.

Q. Okay. So the HELP model doesn't estimate changes in leaching behavior, for example; is that right?

A. No, it doesn't. It simply models what the cap design you input how much infiltration and passage of water through that cap you're likely to see.

Q. Okay. So you can use the HELP model to calculate how much infiltration would change, but the HELP model doesn't give you a number for how much leaching would change; is that right?

A. Right. The HELP model simply looks at the infiltration through the cap.

Q. Okay. Are there other models that would be able to estimate changes in leaching behavior?

A. There would be models that you could attempt to use. The earlier study that we referenced was using a model to try to predict what might happen with respect to leaching, but we did

not do that as part of this analysis.

Q. Okay. And the earlier study, do you mean the EPRI document we were talking about?

A. That's correct.

Q. Okay. I have a couple questions about that, and I think that might be a good way to close out the last few minutes here. I believe the document you're referring to is Exhibit Number 1103 that starts on Bates Page 65921. Make sure I have my copy here. Here we go.

On Page 3-10 of this report, it talks about HELP results at the top, and then it talks about MODFLOW slash MT 3D results at the bottom; is that right?

A. That's what the heading of that paragraph is, yes.

Q. And MODFLOW is -- I believe MODFLOW is one of those groundwater fate transport models that you were talking about earlier today?

A. That's correct.

Q. So that's the kind of model that you could use to estimate changes in leaching behavior?

A. Theoretically, that could be applied given the circumstances and the type of outcomes or the

types of outputs you were looking for.

Q. Okay. Now, on Page Roman Numeral 6, Paragraph 2 of this report?

A. I'm sorry. I'm not with you.

Q. Oh, okay.

A. Where are you?

Q. There's a page -- one of the early pages, Roman Numeral 6?

A. Yes.

Q. In Paragraph 2, second sentence, the authors write, this site differed from the other two in that a portion of the ash was below the current water table, and the full extent of which was not known prior to closure of the site was not reflected in the closure model; is that right?

A. That's what that says.

Q. And so this is talking about one of the three impoundments that they modeled, right?

A. One of the three impoundments that were comprised of multiple ponds at each of the impoundments.

Q. Okay. I should say maybe then one of the three sites. Although, they say -- I mean, the first sentence in that paragraph says one of the

three impoundments, right?

A. Yes.

Q. So on Paragraph 2, Line 4, or, yeah, Line -- starts on Line 5. It says, in this particular case -- I'm sorry. That's not the sentence I meant to direct your attention to.

On Line 4, the sentence starts at the beginning of the line. It says, dewatering and closure were not effective at this site because leaching continued from the saturated ash; is that right?

A. That's what the statement says, yes.

Q. And then it goes on to say that in this particular case concentrations actually increased because the contact time of groundwater moving through the saturated ash increased when the hydraulic gradient of the pond was removed. A cap would have had little or no effect on this process.

Did I read that right?

A. You read that correctly, but this is the same topic that I testified to earlier when I mentioned that this study references dewatering.

Q. Yeah.

A. And that dewatering that they're referring

to is of ponds --

Q. Yep.

A. -- not of the groundwater.

This is talking about stopping the infiltration of water coming into the pond. So that's why I was drawing the distinction between the way in which this study was conducted and its findings versus the conditions that we were referring to at Waukegan.

Q. Right. I understand that. And my question -- I have a couple questions related to that, but not exactly the same thing.

Can you just for background describe what hydraulic gradient means? They refer to the hydraulic gradient being removed.

A. Well, again, I believe in this context, the hydraulic gradient they're referring to is the incoming water which is creating its own gradient, that water is infiltrating and finding a path to migrate through.

In other instances gradient is a reflection of the groundwater surface conditions and the difference over distance between data points expressing a groundwater surface which would

give you an understanding of what your groundwater gradient is.

Q. Okay. And the infiltration at Waukegan that you were talking about, is that also hydraulic gradient?

A. That would be a form of hydraulic gradient which would be the precipitation moving vertically through the unsaturated zone as it migrates towards the groundwater table.

Q. Okay. And so at this site described by EPRI when the hydraulic gradient was removed, it affected groundwater flow. A cap at Waukegan would also remove the hydraulic gradient of infiltration; is that right?

A. Can you restate that question?

Q. Sure.

A. I want to make sure I answer it properly.

Q. I'll ask the second part, keep it simple.

Would -- the cap that you're proposing at Waukegan would eliminate or virtually eliminate infiltration, right?

A. That's the -- that's the goal.

Q. And so that would also eliminate the hydraulic gradient associated with that

infiltration?

A. That would eliminate the gradient of surface water infiltrating to groundwater.

Q. Okay. And at the site EPRI described, when they removed the hydraulic gradient, the groundwater started moving more slowly.

Is that your understanding?

A. That's because they eliminated the incoming water flow to the ponds. That was part of the ash management system. So you had ponds that were receiving large quantities of ash and water that were then migrating in addition to the precipitation. So it wasn't simply surface precipitation infiltration. It was a combination of that with the incoming water from the sluicing operations.

(Reporter clarification.)

MR. RUSS: Okay. I think I'm done with that line of questioning. Probably a good time to stop.

HEARING OFFICER HALLORAN: Okay. Yeah. We can adjourn until tomorrow at 9:00 a.m., June 14, 2023.

Thank you.

(WHEREUPON, proceedings were adjourned until June 14, 2023, at 9:00 a.m.)

STATE OF ILLINOIS)
) SS:
COUNTY OF C O O K)

RAELENE STAMM being first duly sworn, on oath says that she is a court reporter doing business in the City of Chicago; and that she reported in shorthand the proceedings of said hearing, and that the foregoing is a true and correct transcript of her shorthand notes so taken as aforesaid, and contains the proceedings given at said hearing.

_____

Certified Shorthand Reporter

Q