ILLINOIS POLLUTION CONTROL BOARD

SIERRA CLUB, ENVIRONMENTAL LAW & POLICY CENTER, PRAIRIE RIVERS NETWORK AND CITIZENS AGAINST RUINING THE ENVIRONMENT,	)	No. PCB 13-15
Complainants,	)	
vs	)	
MIDWEST GENERATION, LLC,	)	
Respondent.	)	

REPORT OF THE PROCEEDINGS had at the hearing on a motion of the above-entitled cause before the Honorable BRADLEY HALLORAN, Hearing Officer of said Court, Room 9-040, The Thompson Center, Chicago, Illinois, on the 27th day of October, 2017, at the hour of 9:01 a.m.

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I N D E X

THE WITNESS: JAMES KUNKEL

E X H I B I T S

HEARING OFFICER HALLORAN: Good morning, everyone. My name is Brad Halloran. I'm a Hearing Officer with the Illinois Pollution Control Board. I'm also assigned to this matter captioned Sierra Club, Environmental Law & Policy Center, Prairie Rivers Network and Citizens Against Ruining the Environment, the complainants, versus Midwest Generation, LLC. It's docketed as PCB 13-15. It's a water enforcement. Today is October 27th, 2017, approximately 9:00 a.m.

This has been continued on record from yesterday October 26th, 2017. I think before we begin we had Dr. Kunkel on the stand. I think Mr. Russ has some housekeeping matters. Mr. Russ?

MR. RUSS: I do, but my co-counsel would like to clean up some housekeeping matters from a couple of days ago if that's okay.

HEARING OFFICER HALLORAN: Sure. Mr. Wannier?

MR. WANNIER: Thank you. Very briefly, your Honor. We have cleaned up versions of Complainants' Exhibit 271 and 278Q. We discussed this during the direct examination of

Mr. Gnat and we can provide those to all parties.

HEARING OFFICER HALLORAN: Do you remember what days those were?

MR. WANNIER: I'm sorry?

HEARING OFFICER HALLORAN: Do you remember what days of the week we talked about this?

MR. WANNIER: Yes, we talked about this on Wednesday and, as we discussed, this is simply without -- the same exhibit without the last page, the printing on the back of the last page.

MS. NIJMAN: So this is to replace what had been previously given?

MR. WANNIER: Yes.

MS. NIJMAN: So does the Hearing Officer have the bad version that he needs to then replace?

MR. WANNIER: I --

HEARING OFFICER HALLORAN: The bad version is upstairs on my desk. But I'll -- I made a note and --

MS. NIJMAN: Okay. For the record, Midwest Gen Bates 6670 through 6734, Complainants'

Exhibit 278Q, should be replaced with the new version received today October 27th, '17, and Midwest Gen Bates 43849 through 43857, Complainants' Exhibit 271, should be replaced by the version received today October 27th in the files?

HEARING OFFICER HALLORAN: Correct.

MR. WANNIER: Yeah. Sorry. Just so the record is perfectly clear. The Bates numbers referenced are the Bates numbers of the replacement exhibits. The original exhibits would have had one additional Bates number at the end of the -- the --

HEARING OFFICER HALLORAN: To finish it.

MR. WANNIER: Yes.

HEARING OFFICER HALLORAN: Thank you, counsel.

MR. RUSS: My turn? As far as yesterday's exhibit for the record, I have replaced the demonstrative exhibit that started -- it was roughly the last 37 pages in the binder of demonstrative exhibits. It's been replaced with a new 37-page packet that has page numbers. The old

version did not. This has a heading describing what the table is and the headings on the summary table on the very last page have been changed. The numbers have not been changed. Everything else is the same.

HEARING OFFICER HALLORAN: I'm fine with that. Ms. Nijman?

MS. NIJMAN: Yes, that's acceptable. Thank you very much.

HEARING OFFICER HALLORAN: Thank you.

MR. RUSS: Thank you.

HEARING OFFICER HALLORAN: Any other housekeeping matters?

MR. RUSS: (Negative nod.)

HEARING OFFICER HALLORAN: All right. Dr. Kunkel, new day, new oath. Please raise your right hand.

WHEREUPON:

JAMES KUNKEL

called as a witness herein, having been first duly sworn, deposeth and saith as follows:

HEARING OFFICER HALLORAN: Thank you. You may proceed Mr. Russ.

MR. RUSS: Thank you.

D I R E C T E X A M I N A T I O N

BY MR. RUSS

Q. Dr. Kunkel, when we left off yesterday, we were talking about the Waukegan site and I had taken one of your demonstrative exhibits and put it up on the screen and zoomed in.

And just to clarify where we were, can you give us your general conclusions regarding this site?

A. My general conclusions at Waukegan is that groundwater beneath the ponds and even outside the ponds based on the monitoring well data is still receiving contamination, still being contaminated.

Q. What is it being contaminated by?

A. It's being contaminated by coal ash because the indicator variables; boron, manganese and sulfate occur in high concentrations together.

Q. And yesterday we were talking about elevated boron and sulfate concentrations in various wells.

Regarding the elevated boron and sulfate concentrations that you noted in wells

11 through --

MS. NIJMAN: Objection. Leading.

MR. RUSS: This was all on the record, but I'm just trying to catch us up.

HEARING OFFICER HALLORAN: You may proceed, Mr. Russ.

MR. RUSS: Is that okay?

HEARING OFFICER HALLORAN: Yeah.

BY MR. RUSS:

Q. Regarding the elevated boron and sulfate in wells MW-11 through MW-14, what is your opinion about where that boron and sulfate is coming from?

A. That boron and sulfate is coming from oxidation of coal which is present in the borings done by ENSR adjacent to those well locations and those borings are in ENSR's environmental site assessment. It was done in, I believe, 1998.

Q. And what are your conclusions regarding the relationship between the Tannery site to the west of those wells and the groundwater quality in those wells?

A. Wells 10, 11, 12 and 14?

Q. Yes.

A. Those wells I suppose could be receiving some contaminants although I doubt if it's boron and sulfate from the Tannery site because the groundwater gradient is from the Tannery site towards this lake feature here that is the cooling water source for the power plant. So the groundwater flows generally going this direction in this part of the site.

Q. Did you plot the ground -- your interpretation of the groundwater flow in your report?

A. I did.

Q. Can we turn to Exhibit 401 in the binders.

And this would be the tables and figures are after the text of the report and this would be Figure 18. I don't have it on the screen, but it's in the binders.

Dr. Kunkel, can you explain what this map/chart is showing?

A. Certainly. Figure 18 is my interpretation of contours based on Midwest's water surface elevations which occurred on June --

in June 2011, during that time period, and what it shows is it shows that the ponds and a little bit of area upstream from the ponds happen to be right on a groundwater divide and you can see from the white arrows what the flow paths might be. Those flow paths are perpendicular to the potentiometric lines which are labeled as groundwater elevation lines in red.

So what it says is that flow from the Tannery site except for just a very small portion of the -- of the maybe south part, mid south part of the site, either flows northeast towards this area or flows back down southeast towards Lake Michigan.

Q. And can you identify the specific sources of coal ash that you believe to be contaminating the groundwater at this site?

A. I can. I believe those sources are in this area that's the former ash slag storage area as well as ash located as part of construction of the pond dikes.

Q. Okay. Regarding that former slag ash area, why do you believe that's a source of contamination?

A. Because we see coal ash in -- in -- in many of the borings and, pardon me, that's why. That's the source.

Q. How -- how does your analysis of the groundwater data influence that opinion?

A. The groundwater flow directions -- well, if we go back and look at the tables that I had in my demonstrative, we see that the concentrations of boron and MW-5 and also MW-7 are much, much higher than the concentrations of boron and sulfate in MW-6, 8 and 9, but these are still above -- all of these are above background and also for the most part above the Illinois state groundwater standards for both boron and sulfate. I'm talking in generalities. I don't have the numbers in front of me.

So I would conclude that these wells are receiving contaminants from this blue rectangle and these wells out here, 6, 8 and 9, are also receiving contaminants from vertical leachate of that -- of that former ash slag storage area.

Q. And which of these wells are down gradient of that blue rectangle?

A. The down gradient wells are wells, I guess, 7, 5 and 9 according to the contour map on Figure 18 -- 18, 19 and 20. They're similar.

Q. Okay. And regarding the ash that you mentioned -- I don't want to misstate your testimony.

Can you describe the other source of ash outside of the ponds that you were talking about?

A. Well, we know from the -- from the Valdes reports that ash was used for the dikes of the east and west ash ponds. It was also used to fill around the site.

Q. Okay.

A. So that's also a source.

Q. I think we'll come back to that in a minute.

When were these ash ponds relined in the last 15 years roughly?

A. Roughly 2003, 2004, 2005 with varying dates.

Q. What did you say about that in your expert report?

A. In my expert report, I said that it

was some misinformation that was provided to me. I said they were relined in 2002, but they weren't. That was -- the Hypalon was, I guess, removed and in 2000- either '03 or '05 or '03 or '04 depending on the -- on the references --

HEARING OFFICER HALLORAN: Could you keep your voice up, Dr. --

BY THE WITNESS:

A. HDPE was installed in these -- in these two ponds. So part of the contamination could also be existing contamination from liner leaks, past liner leaks as well.

BY MR. RUSS:

Q. Just to clarify, how many times do you believe those ponds were relined in the past 20 years?

A. Relined once.

Q. Right. Thank you. And turning to Exhibit 44, which I've already introduced. Have you seen this e-mail before?

A. Yes, I have.

MS. NIJMAN: Just a second. I'm sorry.

MR. RUSS: I'm sorry. My apologies.

MS. NIJMAN: Thanks.

BY MR. RUSS:

Q. What does the e-mail say about the relining date?

A. Well, this is an e-mail from -- from Maria Race to Lynn Dunaway and it says that Maria knew that the ponds were lined in 2001 with HDPE when she started working here, which means at Midwest, and then she said "We relined them in 2002, in the 2002 timeframe. I don't remember if we had a construction permit."

Q. Okay. That's all. We can put that down. Thank you. Did you evaluate the bottom elevations of these ash ponds?

A. I did.

Q. Why was that significant?

A. Well, again, because what I saw in the original Patrick report showed that the bottom elevation of -- of the ponds were lower than the water surface elevation of Lake Michigan.

Q. Can I pause for a second? I think we can turn to that. I think it's in the binder. That would be Exhibit 14 -- not in the binder. In the stack that I set aside yesterday. 14C. Turn

to Bates page 7165 also shown as Figure 4.

Is this what you're referring to, Dr. Kunkel?

A. Yes.

Q. Can you explain what this shows?

A. This shows a cross section through the ponds Section AA Prime, which is a cross section east and west across just north of the ends of the dikes here and it shows that the pond bottoms are well below the groundwater elevations which are highly dependent upon the lake level elevations by five or six or seven feet, maybe more.

Q. Have you seen more information about the pond bottom elevation since then?

A. I have.

Q. In your opinion, is this an accurate drawing?

A. It is not.

Q. Can we turn to Exhibit 100 and this one is also in the stack that I handed out yesterday.

MS. NIJMAN: One-hundred?

MR. RUSS: One-hundred.

BY MR. RUSS:

Q. I don't have a copy on paper, but I'm going to -- I believe at the end of that exhibit there is an engineering drawing that I'd like you to explain, the Valdes.

A. It's in the Valdes report?

Q. At the very end.

A. Oh, there it is, yes. Yes, there it is.

Q. This is what it looks like. At this resolution, it's totally illegible. Do you recall seeing this drawing at some point?

A. Yes, sure.

Q. And can you explain what this is?

A. This is a drawing that was approved for a construction.

MS. NIJMAN: I guess I'm just going to object to the extent that the same objection was made about my use of a map that was illegible.

MR. RUSS: Well --

MS. NIJMAN: I'm not sure we can do this.

MR. RUSS: I'm blowing it up on the screen.

HEARING OFFICER HALLORAN: Mr. Russ, Ms. Nijman is not finished yet.

MR. RUSS: I'm sorry.

MS. NIJMAN: I made the same argument and Ms. Dubin was not satisfied that she could see it on the screen and insisted upon having large, hardcopies of the map so that we could all read it together.

HEARING OFFICER HALLORAN: Mr. Russ?

MR. RUSS: We don't have a large, hardcopy of the map.

MS. BUGEL: We can get one.

MR. RUSS: We can get one today.

HEARING OFFICER HALLORAN: Okay. So my ruling is stayed until --

MR. RUSS: In the meantime, would it be okay to zoom in?

HEARING OFFICER HALLORAN: Yes.

MS. NIJMAN: I'm sorry. I was not allowed to continue testimony with regard to the map until we had it in front of us.

HEARING OFFICER HALLORAN: I don't recall that, is that -- is that true?

MR. RUSS: I don't recall. I'm

happy to -- whatever you'd like to do.

HEARING OFFICER HALLORAN: Okay. Ms. Bugel, when can we get a --

MS. BUGEL: I need to find out how quickly we can get large, hardcopies. I need to get in touch with someone back at our office.

HEARING OFFICER HALLORAN: All right. Let's not talk about this figure then.

MR. RUSS: Sorry?

HEARING OFFICER HALLORAN: We can't talk about this figure. Ms. Nijman objects. Apparently --

MR. RUSS: Can we talk about the portion --

HEARING OFFICER HALLORAN: You have -- you have to stop. It's early in the morning and it's starting already.

We have to stop based on Ms. Nijman's objection until we get a legible map.

MR. RUSS: Would it be okay to testify about a portion of the figure that is legible?

MS. NIJMAN: I think we should wait.

HEARING OFFICER HALLORAN: I think

we're going to wait.

MR. RUSS: That's fine.

HEARING OFFICER HALLORAN: I hate to piecemeal this. It would be kind of confusing.

BY MR. RUSS:

Q. Setting that aside. Do you recall, Dr. Kunkel, what is your current opinion about the elevation -- the bottom elevation of those ponds?

A. That they are above -- clearly above the water surface elevation of Lake Michigan and for the most part above groundwater elevations as well, at least based on the data we have which is a fairly short time series for groundwater elevations.

Q. Do you remember the bottom elevation of those ponds?

A. Well, only what I saw from that figure.

Q. Okay. Let's not talk about that.

A. That's the only thing I know.

Q. Okay. Let me see here. Can we turn to Exhibit 270P, which is in the stack I handed out yesterday.

MS. NIJMAN: Abel, what is the

number?

MR. RUSS: 270P.

MS. GALE: 270B?

MR. RUSS: P.

THE WITNESS: P as in --

MR. RUSS: 270P as in Paul. This starts at Bates page 62387. It goes through -- I'm sorry. MWG 13-15_62387 through MWG 13-15_62468.

BY MR. RUSS:

Q. Can you turn to Bates page 62393 and can you describe what this is for me?

A. This is a summary of groundwater elevations at the Waukegan station from wells MW-1 through MW-7 for the period 11/2014 through 5/2017.

Q. And looking at -- I'm sorry. Let me think about this.

Which of the monitoring wells at the site are immediate up gradient of the ash ponds?

A. Wells 5 -- well 5.

Q. And can you tell us what the range of groundwater elevations in MW-5 is?

A. Yeah, at MW-5 the groundwater elevation ranges from 582.5 -- 581.02 to 583.96. That's the range more or less unless I missed something. No. 584.15. Yeah, 584.15.

Q. Okay.

A. In that five foot, four foot range, three foot range.

Q. Can you explain why that elevation is significant?

A. That elevation is significant because it's very near the reported pond bottoms at the east and west ponds at Waukegan station.

MS. NIJMAN: Objection. No facts in evidence.

HEARING OFFICER HALLORAN: Mr. Russ?

MR. RUSS: They will be in evidence later.

HEARING OFFICER HALLORAN: You can cross, Ms. Nijman. You can continue.

BY MR. RUSS:

Q. In your expert opinion, is this the maximum groundwater elevation in that well?

A. It's a maximum elevation that is -- was recorded in that time period, but it doesn't

mean it's the maximum that would ever be there or that could be there or anything like that.

Q. In your expert opinion, how does the federal coal ash rule that we looked at apply to these bottom elevations -- groundwater elevations?

A. Well, none of these -- none of these groundwater elevations would -- would, in my opinion, meet the five foot coal ash rule.

Q. Okay. You mentioned ash in the berms of these ponds, why -- can we turn to Exhibit 14C.

HEARING OFFICER HALLORAN: I'm sorry?

MR. RUSS: 14C also in that stack.

BY MR. RUSS:

Q. Then turn to Bates page 7171.

MS. GALE: I'm sorry. Abel, you said 7171?

MR. RUSS: 7171.

BY MR. RUSS:

Q. Dr. Kunkel, can you explain what this shows?

A. This is the drillers log for well MW-3 which is this well right here on the -- on

the east side of the east coal ash pond. I can explain further.

Q. Yes.

A. And it is a well that -- or a bore hole that is 30 -- it is a well -- well hole that is 30 -- 30 feet deep and extends from the ground surface and the top 18.5 feet is fill material. So it was artificially placed and that 18.5 feet of fill material contains coal cinders and ash, cinders and ash, sand, fine sand, silty sand, coarse coal cinders and so it indicates there is at least 18.5 feet of fill material that has coal ash in it.

Q. To the best of your recollection, what did the boring logs for MW-1, 2 and 4 --

A. I believe they show something similar.

Q. And where do you believe the elevated boron and sulfate concentrations in MW-1, 2, 3 and 4 are coming from?

A. I think they're almost -- well, possibly two sources, but they could be coming from up gradient from -- from this area up here, but most likely because of the concentrations

they're coming from the coal ash that is in this fill material where -- where the wells are completed.

Q. Thank you. So you mentioned ash ponds and ash fill outside of the ash ponds as potential sources of the elevated boron and sulfate concentrations, can you rule either source out?

A. No.

Q. What is your opinion about the timing of this contamination?

A. I'm not sure I understand timing. I mean, I have data from 2010 to present and clearly there is contamination occurring then and now.

Q. Okay. Thank you. Did you also review data for other groundwater quality monitoring parameters?

A. Manganese and TDS.

Q. What did those data tell you about your conclusion?

A. That coal ash is the source of the groundwater contamination.

Q. If we turn to the very last page of the demonstratives, page 37.

With reference to that table, can you explain what you're talking about?

A. Yeah, this is the combined list of groundwater monitoring results which had concentrations greater than the Illinois Class 1 groundwater standard, groundwater quality standard.

MS. NIJMAN: I'm sorry. The results I'm seeing on this replaced table are different for Joliet 29 than the old one. You told me there were no other changes to this document.

MR. RUSS: I don't believe there are.

THE WITNESS: We had boron of two.

MR. RUSS: I have two copies here.

MS. NIJMAN: Exactly.

HEARING OFFICER HALLORAN: Let's go off the record and clear this up.

(Whereupon, a discussion was had off the record.)

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

THE WITNESS: This is Table 3, Summary Table 3.

BY MR. RUSS:

Q. And, Dr. Kunkel, can you explain what you were saying with reference to this table?

A. Yes, this is the combined list of groundwater monitoring results whose concentrations are greater than the Illinois Class 1 groundwater quality standard. In other words, it's the count of the number of times that the concentration of these constituents was higher in all the monitoring wells than the Class 1 -- Illinois Class 1 groundwater quality standard and in Waukegan for boron we had 110 times that the concentrations of boron were greater than two. For sulfate, we had 30 feet -- 35 times in those wells that the concentrations of sulfate were higher than the Class 1 groundwater quality standard, et cetera. Manganese was 55 times.

Q. Okay. Thank you. We're now going to turn to Will County, the last of our sites and getting closer to the end. Looking up at the screen and in your demonstrative packet after all of the Waukegan data there is a couple of maps of the site.

Dr. Kunkel, can you describe the

basic layout of the site as you understand it?

A. Certainly. Will County site hydrogeologically is a little bit different than the other sites which were basically alluvial systems, unconsolidated systems. This one has a -- Will County has a mantel of unconsolidated material, but the bottoms of the ponds and the monitoring wells are completed in dolomite, which is rather shallow right at this site. That's important for a couple of reasons.

First of all, on the west side of the site, we have the Des Plaines River again and on the east side you can't see it, but there is a major canal over here that carries barge traffic and those two water features essentially control the direction of groundwater flow across the whole site, okay, not necessarily in the pond area, but across the whole site.

Right now the figure you're seeing has the ten original monitoring wells that were constructed around the ponds at Will County and then there were two more monitoring wells 11 and 12 that were constructed later on and 11 is located between ponds 2S and 3S. I'm sorry. Is

that right? Yeah, there they are. 2S and 3S and pond 12 was located down in the southwest corner of ash pond 3S.

Q. Can you turn to exhibit now 36 in this stack that I handed out yesterday.

Can you describe what this is?

A. This is -- appears to be a document which was from Richard Frendt at Patrick Engineering to Maria, and I assume that's Maria Race, which is dated January 7th, 2011.

Q. Have you seen this e-mail before?

A. Yes.

Q. In the e-mail, it says at Will County, for example, there is strong hydraulic evidence to suggest that everything is down gradient, can you explain what that means?

A. It would be easier for me to explain the fact that there is nothing up gradient. There is no up gradient wells. I think that's what Mr. Frendt was trying to --

MS. NIJMAN: I'm going to object to the speculation and misstatement of evidence as this document was testified to by Ms. Race in a completely different manner.

HEARING OFFICER HALLORAN: You know, you have your cross coming up, Mr. Nijman. You can flesh out any problems then. All right. Thank you.

BY MR. RUSS:

Q. You can --

A. I can read from the document Richard Frendt says "To make things worse, the term up gradient isn't always clear." This is in reference to Will County. "At Will County, for example, there is a strong hydraulic evidence suggesting that everything is down gradient." It's exactly what -- what the issue is. The idea being is we don't have a well here that we can consider background at the time that this -- this e-mail was written.

Q. And it goes onto say the ponds may be draining in multiple directions, can you explain what that means?

A. Yeah, I don't necessarily agree completely with that. The -- because I don't think Frendt had the same data that I had because he refers here that the ponds are draining in multiple directions towards either the river or

the canal. Excuse me. And I found at least one monitoring point that ENSR had done in the site area when they did their phase two -- phase one and/or phase two environmental assessment report that said there's a groundwater divide right down the middle of the site and that everything to the east drains to the canal and everything to the west groundwater drains to the river and if you look in my report all water elevations in the canal are substantially lower than water levels in the river and I can't imagine that river water is actually draining all across the site and into the canal. It's pretty drastic elevation changes and the gradients would be superhigh --

Q. Can you --

A. -- and we just don't see that.

Q. I'm sorry, Doctor.

A. Yeah, we just don't see that because we have higher elevations of groundwater elevations on the west side of the pond -- on the east side of the pond than we do on the west side of the pond. So it isn't likely that water is actually draining from the river to the canal.

Q. So turning to Exhibit 101 in the

binder. This is your report. Page -- page 32 of your report.

MS. NIJMAN: Exhibit 401?

MR. RUSS: I'm sorry?

THE WITNESS: 401.

MR. RUSS: Yes, 401.

MS. NIJMAN: Page?

MR. RUSS: Page 32.

BY MR. RUSS:

Q. At the very bottom your report describes groundwater mounding at Will County, can you describe what that means?

A. As I said before, part of the problem when we're near the surface waterbodies, especially rivers, is that the water surface elevation in the rivers goes up and down as rain falls, snow melt occurs and what happens is when the water level in the river goes up it actually recharges back into the banks and changes the water surface elevation of the groundwater. And it could be substantial changes. It could be feet of changes. And then when the water level in the river goes back down, the water doesn't drain out of the banks or the -- or the area adjacent to the

river as quickly and it appears when that happens it's not equal drainage because of the anisotropy of the materials and it appears that there is mounding. So it's difficult for me to interpret whether that's due to leaky ponds or due to this fluctuation of river levels and changes in the groundwater flow direction either in or out of the river.

Q. You said anisotropy?

A. Anisotropy.

HEARING OFFICER HALLORAN: Can you spell it for --

BY THE WITNESS:

A. A-N-I-S-O-T-R-O-P-Y. If something is isotropic, that -- the definition of isotropic is that it has the same physical properties everywhere, no matter which direction you look the properties are the same and anisotropic means that they aren't the same. And most of the world is anisotropic. In other words, we wouldn't expect to see a hydraulic conductivity at one point in the site to be the same as another hydraulic conductivity somewhere else on the site.

BY MR. RUSS:

Q. Okay. Thank you. Did you review groundwater quality data for Will County?

A. Yes.

Q. What wells were those data collected from that you looked at?

A. For all -- all the wells. Wells 1 through 12.

Q. Okay. Thank you. Can we turn to the demonstrative section of the binder, the Will County section. It starts at the end of all of the Waukegan data with the maps we've been looking at. And I'm going to skip the first page of numbers which is an example as we discussed earlier.

HEARING OFFICER HALLORAN: Give me a chance, Mr. Russ.

MR. RUSS: Sure.

HEARING OFFICER HALLORAN: I'm there. Are you there, Ms. Nijman?

MS. NIJMAN: Yes, depending what page we're starting with.

MR. RUSS: We're starting on the second page of data. It has a solid blue band

near the bottom covering some of the numbers.
BY THE WITNESS:
A. The table?
BY MR. RUSS
Q. Yeah, it says Will County median boron and sulfate concentrations compared to background. Can you explain what this is showing?
A. Well, again, this is similar to the other tables where we show the, excuse me, the median concentrations of boron and sulfate for the whole time series of data that we have from 2010 through -- from December 2010 through the second quarter I guess it is from 2017 and those are compared to background concentrations of boron and sulfate and, in this case, bedrock because the monitoring wells are in dolomite. So I use the bedrock background concentrations that the Illinois EPA had listed in their technical support document Attachment A based on the whole state of Illinois.
It's a regional -- regional type background. We've already established that that background is probably fairly reasonable. It's very reasonable compared to the data that we saw

at the Powerton, for example, and this table shows that the concentrations of -- median concentrations of boron are always higher than background and in some cases ten times higher or more than ten times higher than background. For sulfate, the same. The median concentration is always higher than background and at least one case it's an order of magnitude ten times higher than background. It's also noteworthy that in all wells except MW-1 and MW-9 the boron concentrations are higher than two milligrams per liter which is the Illinois state groundwater standard for boron and for sulfate wells MW-4, MW-5, MW-7 and MW-8 have sulfate concentrations that are higher than the Illinois Class 1 groundwater standard.

Q. And --

A. Then there are wells 11 and 12 which are those later wells and they also have similar characteristics, especially for boron. Those are wells MW-11 and 12 where the boron concentrations are an order of magnitude -- nearly an order of magnitude -- in one case slightly less than an order of magnitude higher than background and

higher than the Illinois Class 1 groundwater quality standard and for sulfate the two wells have sulfate concentrations higher than background.

Q. Turning now to the charts on the next page, can you walk us through these charts well by well?

A. Sure. I can't see that screen very well. MW-1 -- MW-1 is the well in the, excuse me, in the northeast corner. It's the furthest north and possibly the furthest east, but it's at least the furthest north well and it shows the time series of boron concentrations on the left side of the -- of the sheet and sulfate concentrations on the right side of the sheet and it's, I guess, interesting to note that ash pond 1N and 1S were abandoned in place.

Q. Can you explain what that means?

A. That means that they were simply -- had some remedial work done inside the pond to drain water, rainwater that fell inside the pond, that would fall inside the pond, rainwater and snow melt and nothing else was done as far as we know according to the -- but well MW-1 it's

interesting because it shows that boron because there is still ash in the pond substantially decreased after those pond -- that pond was -- ash pond 1N was abandoned, but is still higher than background and that sulfate in that well has receded, gone down, reduced to a concentration that is right at background after those wells were abandoned because they no longer hold fluid over a long period of time. It drains out.

Q. The other wells however, MW-2, which is south of MW-1, and MW-3 which is south of MW-2 here on the east side of ash pond 1S -- yes, one south still shows very high concentrations of boron. MW-2 has been -- boron concentrations have been increasing over time as well as sulfate and both those have concentrations -- are higher than background and have gone up to higher than the Illinois Class 1 groundwater standard for both boron and sulfate in MW-2 and MW-3 is similar, increasing concentrations of boron and sulfate with time and boron clearly higher than the Illinois groundwater quality -- Class 1 groundwater quality standard and sulfate a borderline case. In the last few quarters, it's

again risen to --

HEARING OFFICER HALLORAN: Could you keep your voice up, Doctor.

THE WITNESS: Yeah.

BY THE WITNESS:

A. Concentration than the Illinois Class 1 groundwater standard. Turning to MW-4 which is south of MW-3 and on the southeast corner of ash pond one south and 5 and 6 these are the wells -- all these wells are on the east side of the ash ponds. The concentrations in 4, 5 and 6 for boron have increased over time and are well above background and also above the Illinois state groundwater quality standard for -- for boron.

For sulfate in these wells, it is somewhat of a mixed bag, but the concentrations are still well above background and either at or above the Illinois Class 1 groundwater quality standard. So -- so these wells on the east side are still receiving contamination from some source whether it's the leaky ponds or whether it's ash on the surface.

Wells -- now, we'll start with the wells on the west side of the pond. These are

between the ponds and the river. And MW-7, 7, 8 and 9 -- 7, 8 and 9 here on the west side of 1N, 2 -- 1S and 2S show concentrations of sulfate -- or of boron, pardon me, much higher than background and also higher than the Illinois groundwater quality standard, Class 1 groundwater quality standard except for MW-9, which is that the concentrations kind of hover around that Illinois state standard.

Sulfate concentrations are either well above background and either at or above for wells MW-7 and MW-8 for the Class 1 groundwater standards at MW- -- for 7 and 8 and at 9 --

THE COURT REPORTER: Wait. Class 1 groundwater at --

THE WITNESS: Seven and eight.

BY THE WITNESS:

A. At MW-9 the sulfate concentrations have decreased slightly from -- to below the Illinois state groundwater quality standard at well MW-9 and then there are the two -- MW-10, which is the well that is furthest down river and it, again, has -- well, high concentrations of

boron above both background and the Illinois Class 1 groundwater quality standard and sulfate concentrations which are above background and decreasing over time to below the Illinois groundwater quality standard for sulfate and then wells MW-11 -- do you want to change the slide?

BY MR. RUSS

Q. Sure.

A. MW-11 and 12. And MW-11, remember, is between pond two south and three south and MW-12 is south of MW-10 and south and west of ash pond 2S and those data indicate similar to MW-10 for both boron and sulfate and that boron concentrations are higher than background and the Illinois Class 1 groundwater quality standards and these are the late time data and sulfate again above background but less than the Illinois state groundwater quality standard.

So contamination is still occurring universally throughout these wells except for well MW-1 due to either leaky ponds, the fact that the poz-o-pac may be in wells 2S, 1S -- I'm sorry. 1N and 1S might still be transporting leachate downward and that's all I

have to say.

Q. Okay. I'll just check my outline. Did you evaluate the elevation of the ash ponds at Will County?

A. The pond bottoms?

Q. Yes.

A. Yes, both the top of the liner that was reported to me as well as the bottom, what would be the bottom of the liner.

Q. Can you turn to Exhibit 15C in the stack that I handed out yesterday. Bates page 7249. Can you explain what this is, Dr. Kunkel?

A. Yes, this is from Patrick's Engineering report on the hydrologic assessment for Will County station and this drawing is an east/west cross section as you can see in the little insert down in the lower left-hand side of the page across pond 1N, one north, and it clearly shows that the bottom of the pond is below the groundwater elevation at the time that this was measured or that this was taken and you can see that the monitoring wells also are in the dolomite limestone rather than in the overlying unconsolidated gravels.

Q. Why is this -- did you review this as you're developing your opinions?

A. Yes.

Q. Why is this significant?

A. Well, it's significant because if that pond were drained and -- it was lined and drained, lined with plastic we could have hydrostatic uplift as well as depending on what happens with the groundwater elevations, it could be fairly significant hydrostatic uplift loads on that liner, on the bottom liner and the side slopes.

Q. For the site, generally based on information you reviewed, what can you say about the bottoms of these ash ponds relative to groundwater elevations?

A. At Will County, the bottoms of the ash ponds are nearly always based on the period that I have from 2010 to 2017 below or underneath -- or beneath the groundwater elevations, groundwater levels.

Q. Thank you. Are you aware of any up gradient sources of elevated boron and sulfate?

A. No.

Q. Are you aware of any offsite sources that could be contributing to the elevated boron and sulfate?

A. No.

Q. In your opinion, is the groundwater at Will County contaminated by coal ash?

A. Yes, it is.

Q. What are the onsite sources of elevated boron and sulfate?

A. The onsite sources are coal ash either from leaky ponds or placed outside the ponds during construction of the dikes, of the fills -- fill above the bedrock.

Q. In that same exhibit we were just looking at Exhibit 15C, can you please turn to page -- Bates page 7252. Can you explain what this shows?

A. This is a drillers log for the boring for monitoring well MW-2 and if we can recall MW-2 -- let me just get oriented here. There's MW-2. So MW-2 is located just on the southeast side of ash pond 1N and that log shows coal ash, brown gravelly clay sand, gray silty clay and rubble in the fill above a unit of about

3.5 feet or so of black coal cinders, coal dust and clay fill, which is wet, above the limestone bedrock.

Q. And did you review this when you were preparing your opinions?

A. Yes.

Q. Can you explain why this is significant?

A. Well, it's significant because this has a major source of -- potential source of coal ash contamination to that bedrock aquifer that is being monitored by the monitoring wells.

Q. And can you give us your opinion about the rest of the site?

A. The rest of the site is similar and I guess the issue is that because bedrock was fairly near the surface when these ponds were constructed, there was fill placed above the bedrock in -- in many locations in order to form enough dikes. So that those ponds could be -- could be there, but the bottoms of the ponds typically sit either on or very close to the bedrock, the bottoms of the ponds.

Q. And given what you've just talked

about regarding the potential sources of coal ash contamination on site, can you rule either source out?

A. No.

Q. Can you give us your opinion about when this contamination occurred?

A. Well, there was contamination that occurred prior to intensive monitoring by Midwest Gen in 2010 and it's continued now through the monitoring period another seven years.

Q. And have you looked at other groundwater quality data for Will County aside from boron and sulfate?

A. I did. In my report, I looked at manganese.

Q. What did the manganese data show you?

A. Manganese showed that also there were concentrations in manganese in the groundwater which were higher than --

Q. Let me pause you for a second because it looks like you're looking at the demonstrative. We're looking at the last page of the demonstrative.

A. This is Summary Table 3, page 37 of 37. So at Will County they're -- manganese also was higher than the groundwater quality standard -- Illinois Class 1 groundwater quality standard and also higher than background for bedrock. And boron had 188 times that -- its concentration was higher than the Class 1 groundwater quality standard of two, manganese 120 times it was higher than the Illinois Class 1 groundwater quality standard and sulfate 119 times very consistent and representative of contamination from coal ash.

Q. Thank you. I have just one or two more questions and then I'll be done.

Did you produce any other reports for us other than the ones we've been looking at?

A. I did.

(Document marked as Complainants Exhibit No. 407 for identification.)

BY MR. RUSS:

Q. Can we turn to Exhibit 407 in the binder. I'm sorry. Yes, 407. Can you describe

what this is?

A. This is my rebuttal report to the expert report of John Seymour.

Q. When did you provide this?

A. This is dated December 8th, 2015.

MR. RUSS: I move to introduce Exhibit 408 into the record.

HEARING OFFICER HALLORAN: 407?

MR. RUSS: I'm sorry, yes, 407.

MS. NIJMAN: Are there going to be any questions concerning it?

HEARING OFFICER HALLORAN: Do you have any questions?

MR. RUSS: Can we go off the record for a second?

HEARING OFFICER HALLORAN: Yes.

(Whereupon, a break was taken after which the following proceedings were had.)

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

BY MR. RUSS:

Q. This report discusses the difference between --

MS. NIJMAN: Objection. Leading.

HEARING OFFICER HALLORAN: Sustained.

BY MR. RUSS:

Q. Can you explain what this report discusses?

A. Yeah, this report discusses my responses to the expert opinions of John Seymour related to my expert report on groundwater contamination, just the groundwater contamination report, and my expert report on remedy which we're not talking about I think in this hearing. And my -- the idea of this report, again, was to rebut John Seymour's interpretations which as a fellow engineer is always difficult to do, but much of his expert report I found to incorrectly interpret the available data and information that I had -- had seen and that was in my report of contamination and that the indicator pollutants that I use are clearly from coal ash.

That has been well-documented by EPRI, IEPA, US EPA and I think Seymour had said those are not indicator pollutants of coal ash contamination. And that the concentrations at the

four plant sites are much higher than background which we've established and that groundwater at the four sites is likely contaminated by coal ash from one or more sources, either from leaky ponds or from ash on the surface and then I go through and I talk about the individual sites; Joliet 29, Powerton, Waukegan and Will County and I think that John Seymour indicated that he felt the concentrations were not either temporally or spatially consistent and I'm not sure what I know he meant by that for sure, but I have rebutted that by saying, yes, they are temporally consistent.

We have a nice time series that show how they behave and spatially I think they're consistent too based on the well logs, where the wells are in relation to the ponds and the waterbodies around the ponds and the concentrations and that -- actions that Midwest might take at this point will not change the fact that the contamination is going to continue because they would have to do some kind of remedial action on the ash that is outside the ponds.

Q. Can you turn to page four of this report. There is a heading there that says the leachate test and it continues.

A. Mm-hmm.

Q. Can you explain very briefly what this section says?

A. Yeah, John -- John Seymour claimed that the groundwater contamination at the sites was not the result of ash stored in the ponds and what he did was used the ASTM test to say that while the ASTM 3987, the 1985 test which is what the state stipulates -- stipulated to be used --

Q. I'm sorry. Can I pause you for a second?

A. Sure.

Q. I want to make this clear for the record. Can you turn to Exhibit 409 --

A. Yeah.

Q. -- in the binder. Can you describe what this is?

MS. NIJMAN: Objection. This is the first page off the Internet of an entire document that is probably a 20-page document.

MR. RUSS: This is --

MS. NIJMAN: I can't cross-examine based on -- it's an abstract. It's the intro to the document. Where is the document?

MR. RUSS: Can I explain? This is the full website for this test and I'm not sure --

MS. NIJMAN: That is not accurate.

MR. RUSS: I'm not asking him to talk about the document. I'm asking him to talk about what is on the website.

MS. NIJMAN: Again, I object that I don't have the whole document. There is a PDF symbol on the top of the document it cost $55. This is just a little Internet summary. I don't know who wrote it. It's not -- it's not an authentic document. It's incomplete.

HEARING OFFICER HALLORAN: Well, you know, I think Dr. Kunkel could base any opinion off even inadmissible evidence and you can cross on it and, again, it goes to the weight, not the admissibility. So I would -- I would overrule and you may proceed, Mr. Russ.

MR. RUSS: Thank you.

BY MR. RUSS:

Q. Can you describe what this is,

Doctor?

A. Yes, this -- the idea of this Exhibit 409 is to show that ASTM 3987-85 which is I guess published by -- most recently by ASTM in 2004 it's a standard test method for shake extraction of solid waste with water and right below it in red it says superceded -- or in black it says superceded and then it says click for the active standard. So all I want to show is this test is now out of date and we need to use the 2012 version.

Q. Can you turn to Exhibit 410 in your binder?

A. Mm-hmm.

MS. NIJMAN: Same objection to this exhibit, Mr. Hearing Officer.

HEARING OFFICER HALLORAN: What exhibit are we on now?

MR. RUSS: Four-ten. The next one.

MS. NIJMAN: It's also a two-page Internet sheet.

HEARING OFFICER HALLORAN: Same ruling. You may proceed. Overruled.

BY MR. RUSS:

Q. Can you describe what this is, Doctor?

A. If you had clicked on for active standard back in --

MS. NIJMAN: Objection. Now, he is testifying as to the active standard which I don't have.

THE WITNESS: That's this, the active standard ASTM 3987-12. That's Exhibit 410.

MS. NIJMAN: Correct. But if the witness is going to testify about the active standard that we don't have, I am objecting.

MR. RUSS: Can I clarify?

HEARING OFFICER HALLORAN: Yes, you may.

BY MR. RUSS:

Q. Dr. Kunkel, when you said click, what were you referring to clicking on?

A. Clicking on this little red thing here on the Internet. It says "Click for active standard."

Q. On which exhibit?

A. On Exhibit 409. It would have taken

you to what is shown on 410. It says active standard.

MS. NIJMAN: Again, I --

BY THE WITNESS:

A. And you would have been able to download that.

HEARING OFFICER HALLORAN: Ms. Nijman?

MS. NIJMAN: Same objection. I have no way of doing that now. He can say I could have gotten it and I could have done it, but that's not my obligation as the respondent to do that.

HEARING OFFICER HALLORAN: Mr. Russ?

BY MR. RUSS:

Q. Are you -- when you say you clicked, where would it have taken you?

A. Well, it would have taken me to 410, but that's not the point. The point is what I list on page 4 of 14 in my report, which is Exhibit 407 page 4 is a summary of that active standard. Now, I reference that standard and I guess if the defendants want to see the document they can see it, but the point is that the procedure now, ASTM's procedure for the shake

test, has some caveats in it that weren't in previous -- the previous version and it's important because it says that the standard, the ASTM 3987, is intended as a rapid means of obtaining an extract of solid waste and that would include coal ash, municipal solid waste, hazardous waste. It's a very common test that's used. And the extract may be used to estimate the release of contaminants of solid waste under laboratory conditions described in the ASTM procedure.

This procedure is not intended to provide an extract that is representative of actual leachate, okay, produced from the solid waste in the field or produced extracts to be used as a sole basis for engineering design. And, thirdly, 4.3 on that bullet, third, this practice is not intended to simulate site specific leachate conditions and in my report we have been using as best we can site specific leachate for background and actual field data to look at concentrations in the groundwater and it has not been demonstrated by this test that you can simulate actual disposal of site leachate conditions.

MR. RUSS: Just to clarify, I don't

know if we had a ruling on the objection about the hyperlink. So --

HEARING OFFICER HALLORAN: Well, it hasn't been offered yet, but I think Dr. Kunkel can give his opinion on these two.

THE WITNESS: Yeah, I have. I just read my opinion that the test that's been used by Midwest to claim that they're not contaminating the groundwater and that the results of concentrations in the groundwater are not the result of ash stored in the lined ponds used the incorrect test. That it -- it's an indicator, but it in no way is intended to simulate site specific leachate.

(Documents marked as Complainants Exhibit No.'s 409-410 for identification.)

MR. RUSS: Thank you. I move to introduce Exhibit's 409 and 410.

HEARING OFFICER HALLORAN: Ms. Nijman?

MS. NIJMAN: Incomplete, a brief summary and I'm unable to assess the scope of the witness's testimony. Prejudicial.

HEARING OFFICER HALLORAN: Sustained on that. I'll take it as an offer of proof. I'll take Exhibit 409 and 410 as an offer of proof.

MR. RUSS: Can we have a moment?

HEARING OFFICER HALLORAN: Yes, you may. We're off the record.

(Whereupon, a break was taken after which the following proceedings were had.)

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

MR. RUSS: Can we clarify Dr. Kunkel's testimony will be part of the record?

HEARING OFFICER HALLORAN: Yes.

MR. RUSS: Okay. Thank you.

HEARING OFFICER HALLORAN: But the Exhibit's 409 and 410 is not admitted --

MR. RUSS: Okay.

HEARING OFFICER HALLORAN: -- are not admitted.

MR. RUSS: That's fine. I move to introduce Exhibit 407 to the record Dr. Kunkel's December 8th, 2015, expert report.

MS. NIJMAN: Again, to the extent

the board wants the expert reports in the record, I don't have an objection.

HEARING OFFICER HALLORAN: Thank you, Ms. Nijman. Complainants' Exhibit 407 is admitted.

(Document marked as Complainants Exhibit No. 408 for identification.)

BY MR. RUSS:

Q. Can we now turn to Exhibit 408. It's the next one in the binder.

Dr. Kunkel, can you explain what this is?

A. This is my rebuttal report to temporal ten -- temporal trend testing result notes by John Seymour dated March 16th, 2016.

Q. Can you explain what you were writing this report for?

A. Yes, this is -- was a supplemental report that came about during notes that were provided to us by Midwest when John Seymour performed his temporal ten -- trend testing result notes dated 29 February 2016 and were given as an exhibit of his deposition in this case.

Q. What were your conclusions related to those tests?

A. That I felt that the tests violated commonly, I guess, understood statistical rules that long-term trend tests are much more complicated than simple linear regression analyses and things like that. So my rebuttal indicated that changes in laboratories or laboratory analytical methods and procedures might be an issue if we're looking at statistical trend tests, variations due to seasonal and other cycles, and we know that there are seasonal cycles here in all four sites due to primarily weather conditions, rising and falling ground levels and then data that will be correlated, one data point with another.

In other words, the data we took in this quarter would be correlated with the data that we took in the next quarter, et cetera, et cetera. They would be dependent upon each other. So the simple test that Mr. Seymour used wouldn't be valid and I recommended additional tests or different tests, statistical tests which would be acceptable.

Q. What were those different statistical tests?

A. Well, first of all, they have to be non-parametric tests which means --

MS. NIJMAN: I'm just going to object. Where are the recommendations?

THE WITNESS: On discussion, on page two of three.

MR. RUSS: Yeah.

HEARING OFFICER HALLORAN: You may proceed.

BY THE WITNESS:

A. And the test I recommend is a non-parametric test and a non-parametric test, excuse me, are statistical tests which are independent of the underlying probability distribution which caused the data to occur in the first place and we typically in hydrology have no idea what that underlying probability distribution is.

The other problem is we don't know if it's from a normal -- if those samples were from a normal distribution or not and so typically hydrologic data are not normally

distributed, they're skewed and so we use non-parametric tests and the one I recommend is the Mann-Kendall Test and I reference Gilbert, Dick Gilbert, Richard Gilbert, who has a very good treatise in his textbook on Mann-Kendall test. There is also a whole myriad of USGS references on statistical testing that also recommends these kinds of non-parametric tests.

This -- the Mann-Mandell test was also used at Waukegan by URS to do trend analysis and I agreed with their analysis in Waukegan. So we would be right to use that test at the other sites as well.

HEARING OFFICER HALLORAN: Can you speak up?

BY THE WITNESS:

A. We would be right to use that test at the other sites as well.

HEARING OFFICER HALLORAN: Thank you.

BY MR. RUSS:

Q. The next paragraph talks about an additional criticism, can you explain what that says?

A. The linear regression?

Q. Yes.

A. I've already talked about that a little bit and I said the reason the linear regression probably shouldn't be used in this case is because of the problems associated with seasonal cycles, primarily at this site, possibly changes in detection limits, correlated data, this kind of -- those kinds of things.

Q. And I made a mistake. I actually was -- I was thinking about a different section of this.

Can you look at the last three or four lines of the second full paragraph on that page.

A. One of the most commonly used trend tests, Mann-Kendall?

Q. No, the sentence that begins "Even in the data."

A. Oh, I'm sorry. The second --

Q. Second full paragraph.

A. That starts with "For a linear regression technique"?

Q. That paragraph, but down near the

bottom of the sentence.

A. What I wrote is I said even if the data, and I still believe this, were suitable for a linear regression analysis, a T-test must be utilized to test the true slope that the regression line is not different from zero. In other words, we have to actually do a test on the regression slope and test whether it's different from zero or not different from zero if we accept the no hypothesis or not.

And so since Seymour, Mr. Seymour, didn't do that my opinion was that comparing the calculated standard error to the calculated slope is not a valid basis for concluding that there is no temporal trend.

MR. RUSS: I move to introduce Exhibit 5- -- 407 into the record.

HEARING OFFICER HALLORAN: 408?

MR. RUSS: Yes, I'm sorry. 408.

HEARING OFFICER HALLORAN: Ms. Nijman?

MS. NIJMAN: Same limitation. It's not usually permissible, but I understand in this proceeding the board appreciates it. So, no

objection.

HEARING OFFICER HALLORAN: Thank you. The record will so note. Complainants' Exhibit 408 is admitted.

MR. RUSS: Now, I just have one more exhibit to talk about. This is the one we were talking about earlier. It's going to take me a minute to figure out what the exhibit number is, but I'm going to hand out these large format engineering drawings.

MS. NIJMAN: It's 100, Abel.

MR. RUSS: It's Exhibit 100. Thank you.

MS. NIJMAN: You're welcome. Thank you very much.

BY MR. RUSS:

Q. Doctor, do you remember seeing this drawing?

A. Yes.

Q. Can you explain what it is?

A. This is the drawing that was in the Valdes Engineering report submitted to Midwest and it's an approved construction drawing for Waukegan ash ponds.

Q. And does this show the bottom elevation of the ash ponds?

A. It does.

Q. Where does it show that?

A. It shows the bottom finish grade at elevation 5.0 and it's, I guess, right below the center or right in between the two cross sections on the west pond and between the two cross sections on the north pond. It says bottom finish grade elevation 5.0.

Q. And what is that five feet relative to?

A. According to the notes that are over on the right-hand side, it says "Notes one. The elevations shown here refer to" -- I can't read the exact -- refer something data to convert to mean sea level at 580. I think it's 534. Yeah, 580.34 something.

Q. That's what I --

A. 580.5 is close enough for us for now.

Q. So where does that put the bottom of the pond?

A. The bottom of the pond would be

580.5 plus five would be 585.5 feet above mean sea level.

Q. And you were talking earlier about as-built drawings --

A. Yes.

Q. -- yesterday?

A. Yes.

Q. You explained what they were.

A. Yes.

Q. Is this an as-built drawing?

A. No, it's not. It clearly says approved for construction, but it doesn't say that the ponds were actually built according to this plan.

MR. RUSS: I would like to introduce this as an exhibit. We don't have an exhibit number. Can I make it Exhibit 100.5, half exhibit number right after the exhibit that has the original version of this.

(Document marked as Complainants Exhibit No. 100.5 for identification.)

MS. NIJMAN: No objection.

HEARING OFFICER HALLORAN: Okay.

Thank you. Yeah, it's admitted or I'll mark it as Complainants' Exhibit -- what is it -- 100.5.

MR. RUSS: One last thing I'd like to clear up. Going back to Exhibit -- I'm sorry. It was that EPRI website Exhibit 403.

HEARING OFFICER HALLORAN: Yes.

MR. RUSS: I believe you struck his testimony related to this.

MS. BUGEL: That was a motion to strike.

MR. RUSS: Motion to strike his testimony.

MS. NIJMAN: My understanding, Mr. Hearing Officer, is that my notes reflect that you allowed it as an offer of proof only. Same decision as you did with the other website abstracts.

HEARING OFFICER HALLORAN: No, I accepted his testimony, but I took -- yeah, but I -- it looks like I was inconsistent on this one, correct. It looks like I took his testimony regarding this as an offer of proof.

MS. NIJMAN: Correct, I think that's consistent with what you just did with the other

ones.

HEARING OFFICER HALLORAN: Well, no, I let his testimony into the record. The documents themselves, the exhibits, I took as an offer of proof.

MS. BUGEL: Hearing Officer, if I may jump in, our concern is that the expert's testimony is admissible because the expert may rely on things that aren't in evidence. So we just wanted to make sure our argument that his testimony is admissible is on the record so we preserve our rights and should there be post-hearing motions we simply want to make it clear that his testimony is admissible because experts can rely on things that aren't in evidence.

HEARING OFFICER HALLORAN: Thank you, Ms. Bugel, and that's what I ruled in Exhibit 407 -- excuse me -- 409 and 410 and I'd like to be consistent because I think that's the correct ruling. So I will change my ruling on Complainants' Exhibit 403 and allow the testimony in -- into evidence and not as an offer of proof, but the document itself is taken as an offer of

proof.

MR. RUSS: Thank you. And I have no further questions.

HEARING OFFICER HALLORAN: Okay. Give me a minute, please.

Ms. Nijman, is this a good time to take a break to collect -- well, collect everybody's thoughts --

MS. NIJMAN: It is.

HEARING OFFICER HALLORAN: -- before cross? Ten -- excuse me. Fifteen, 20 minutes we'll be back. Thank you. We're off the record.

(Whereupon, a break was taken after which the following proceedings were had.)

HEARING OFFICER HALLORAN: We're back on the record. It is approximately 10:55. Ms. Nijman from Midwest is starting her cross of Dr. Kunkel. Ms. Nijman?

MS. NIJMAN: Thank you, Mr. Hearing Officer.

C R O S S E X A M I N A T I O N

BY MS. NIJMAN

Q. Dr. Kunkel, before we really begin,

I just want to clarify some of the things you talked about this morning so that I can be clear in my mind as we go forward. Okay?

A. Yes.

Q. When you were testifying this morning about the Waukegan site, you identified an ash slag storage area, do you recall that?

A. Yes.

Q. Midwest Gen didn't place ash in that area, correct?

A. I don't know.

Q. Well, you identified that area based on the ENSR report from 1998, correct?

A. Correct.

Q. Okay. So that was before Midwest Gen purchased the stations, correct?

A. That ash-like storage area was identified as part of a report by ENSR done for Commonwealth Edison, that is correct.

Q. And that was before Midwest Generation was there?

A. I don't know when Midwest came there exactly.

Q. You also talked about -- for several

of the sites this morning, you talked about logs that you looked at in berms, do you recall that, berms around the ponds?

A. We didn't have logs in berms. We had logs next to berms.

Q. Or right at the berms I think you said was --

A. The toe of the berm, yes.

THE COURT REPORTER: Wait.

BY MS. NIJMAN:

Q. We need to speak one at a time. And the berms are structural, correct?

A. Yes.

Q. You also mentioned as to Waukegan when the ponds were relined Mr. Russ was talking about the confusion that you had initially in your report about the 2002 date, you had thought that maybe they were relined in 2002 and then again in 2003 and 2004, originally that was your opinion in your first report, correct?

A. Correct.

Q. And you realized that that was wrong, correct?

A. Correct.

Q. And, in fact, I identified that error for you during your deposition, correct?
A. Yes.
Q. Also, on Waukegan, you mentioned two possible sources of coal ash constituents in the groundwater and you did not mention the ponds, correct?
A. That was an oversight. The ponds are also a potential source of groundwater contamination.
Q. So you're adding that now?
A. Yes.
Q. And Will County when you spoke about Complainants' Exhibit 36 the data tables from Mr. Frendt and e-mail from Mr. Frendt at Patrick to Maria Race, do you remember that document?
A. Yes.
Q. Those -- that e-mail was from 2011 you identified, correct?
A. I don't remember. I believe so.
Q. And that was based on one set of data only, correct?
A. I'm not sure. Patrick collected several quarters of data in 2011. It could have

been one, it could have been two.

Q. But it was a very preliminary --

A. Yes --

Q. -- discussion?

A. -- it was preliminary.

Q. You mentioned several times, quote, high levels of boron or high levels of sulfate.

You're defining high as anything above background, is that correct?

A. I have two -- two criteria; background and the Illinois Class 1 groundwater quality standards.

Q. I understand. Could you -- the question I have, though, is is high for you anything above background?

A. It could be either. For me, if there is contamination, it's above background. Background defines contamination for me.

Q. Correct. But you use the word high, is high above background?

A. It's above background, but it could also be above the Illinois pollution groundwater quality standards.

Q. I understand, sir, but I just want

an answer to when you use the word high it's above background, correct?

A. Yes.

Q. Thank you. You also mentioned at Will County if the ponds were lined and drained there could be hydrostatic uplift, do you recall that?

A. Yes.

Q. You have no knowledge of them ever being drained, correct?

A. Certainly. 1N and 1S are currently drained.

Q. So because the water is out of them, you're suggesting there could be hydrostatic uplift?

A. On the liners, yes.

Q. You're aware that there is still poz-o-pac beneath those?

A. Absolutely.

Q. And you're aware that there is a warning sand layer on top of the liner?

A. Yes.

Q. And wouldn't that sand layer prevent the uplift?

A. No, not necessarily. It depends on how high the water levels get as to the uplift pressures.

Q. And you're aware there is at least one foot of water still remaining with the ash in those ponds, correct?

A. I'm not aware of that, no.

Q. You're not aware of that?

A. I'm not aware of that, no.

Q. When you were talking this morning about the ASTM standards 3987, do you recall that?

A. Mm-hmm.

Q. And they're marked as Exhibit 409 and 410. You base your opinions as to the test 3987 on those two abstracts, correct?

A. And my experience using those tests in the past.

Q. Your testimony this morning was specific as to words. You read into the testimony words from the abstract, correct? You can look at 409 and 410 if you like, but my question is simply you were relying only on those abstracts for the forming of your opinions about the test data?

A. No, that's not my only -- I have

seen the documents.

Q. You have the actual tests?

A. Yes, they don't belong to me. They belong to the consulting firm for whom I work.

Q. When was the last time you reviewed them?

A. I left in 2013. So it's been four years.

Q. So when you were talking this morning, though, you were reading from Exhibit 410, you were reading from use limitations, remember?

A. Yes.

Q. And you then compared that to the abstract in Exhibit 409?

A. Yes.

Q. And you said that the use limitations did not exist in Exhibit 409, the earlier abstract, correct?

A. That's correct, but that wasn't the point of the whole exercise.

Q. I understand.

A. Okay.

Q. Let's keep going here on this train

because I'm trying to clarify this for you.

You based that opinion of those standards and uses on the abstracts that are in front of you, correct?

MR. RUSS: Object. Asked and answered.

HEARING OFFICER HALLORAN: Overruled.

BY THE WITNESS:

A. My opinion is based on --

BY MS. NIJMAN:

Q. Just as to the standards and the uses testimony from this morning, that's all I'm asking about.

A. The standards and uses testimony are while the words came out of the abstract, it's certainly something that I agree with and have used tests in the past to show that, in fact, the ASTM test is not applicable to the cases we have here.

Q. I understand.

A. Okay.

Q. And the reason you're saying that is because you were looking at these abstracts which

is all we have in front of us right now, all you do have in front of you --

MR. RUSS: Object. Not a question.

HEARING OFFICER HALLORAN: I'm sorry?

MR. RUSS: There is no question there.

MS. NIJMAN: I'm working on it.

HEARING OFFICER HALLORAN: Ms. Nijman is just trying to qualify, I guess, clarify the question for Dr. Kunkel. You may proceed.

BY MS. NIJMAN:

Q. I'm trying to simply clarify that the standard and use limitation from the 2012 document you said didn't appear in the prior 2004 version, correct?

A. I don't believe it did.

Q. Okay. Well, you, in fact, said it didn't, correct?

A. I don't remember. I think so, yeah.

Q. That's different testimony. Did the standard and use limitations appear in 2004?

A. To the best of my knowledge, it didn't.

Q. And that's based on the abstracts you showed today?

A. No, that's based on my experience with those two documents in the past.

Q. Okay. You gave some testimony about -- about your rebuttal report, Exhibit 407, and actually -- I'm sorry. Exhibit 408, the rebuttal to the temporal testing.

Now, you understand that Exhibit -- excuse me -- that the temporal testing notes that were done by Mr. Seymour were in response to your rebuttal report of December 8th, 2015, do you recall that?

A. That's not my understanding of the notes that Mr. Seymour wrote.

Q. Okay. Well, take a look at your exhibit -- I think what has been marked as Exhibit 407 in your binder.

A. Yeah.

Q. At page 10. And do you see in the middle of the page numbers one, two, three and four?

A. Oh, 407, but that's not --

Q. Exhibit 407.

A. All right.

Q. This is your report. Your report of December 8th of 2015. It's up on the screen as well if you're having trouble.

A. I thought we were talking about Exhibit 4- --

Q. We'll get there.

A. Okay.

Q. I just need to give you a little background.

A. Okay.

Q. Okay. See those four bullets. Those are from your report and you discussed how you believed concentrations were either increasing or decreasing at various wells, do you see that?

A. Yes.

Q. And we talked about that in your deposition, I believe?

A. Yes.

Q. And you based those estimates on an eyeball, right, I think is what you told me?

A. Yes.

Q. Okay. You didn't do a Mann-Kendall test?

A. No.

Q. You didn't do a linear regression or standard test? It was on your eyeball?

A. Yes.

Q. In fact, the demonstratives that you provided us with yesterday and today all those pretty graphs on the demonstratives where you told us whether things were increasing or decreasing --

A. Yes.

Q. -- those were also based on an eyeball, correct?

A. Yes.

Q. No Mann-Kendall?

A. No.

Q. No statistical linear analysis?

A. No.

Q. Okay. So all of the discussions that you were -- or concerns that you had about Mr. Seymour actually doing a linear analysis would apply doubly given that you just eyeballed, correct?

A. I don't understand the question.

Q. You would agree, wouldn't you, that the linear analysis done by Mr. Seymour is better

than an eyeball, correct?

A. I guess I have to qualify that by saying better, but it may lead to acceptance of the no hypothesis and it might be an erroneous conclusion.

Q. Similar to your eyeball estimate?

A. Not different from my eyeball estimate.

Q. Okay. The other thing I wanted to ask about your demonstratives before we go on is you assisted in preparing them, I presume, the demonstrative exhibits?

A. I prepared them myself.

Q. Okay. And also the table of data that was provided this morning again and the charts, summary charts at the end of the demonstratives you prepared all those?

A. No.

Q. You did not prepare those?

A. I did not prepare them.

Q. You assisted in preparing them?

A. I reviewed the final document, yeah.

Q. So you reviewed and relied on them for your opinions?

A. This morning, yes.
Q. Your opinions from this morning?
A. Yes.
Q. But you've reviewed and relied on them before today?
A. Not exactly in that form, but, yes, I have. Those are the data from Midwest Gen.
Q. Okay.
A. And I've relied on that data consistently for all my analyses and opinions.
Q. Okay. And so the data in this table marked as pages 1 through 37 is the data that informs the rest of your opinions, correct?
A. Yes.
Q. Now, I can get started. Now, your CV says you've been working on your own since about 2013, correct?
A. Yes.
Q. And as I understand it, you work out of your home?
A. Yes.
Q. And you work -- you have no associates working with you?
A. No.

Q. Now, in the past, you have worked for several different larger consulting firms, correct?

A. Yes.

Q. And when you're at those larger environmental consulting firms, when you prepare a report let's say for a client, there is a quality assurance process, correct?

A. Yes.

Q. And, in fact, that process requires that another engineer or a senior person in that office reviews the work before it goes out the door, correct?

A. Yes.

Q. And when you're on your own, you don't have that review process, correct?

A. Correct.

Q. Much of your professional experience is in the mining industry, correct?

A. Yes.

Q. And you spent, in fact, I think you told me in the deposition we -- we had together that you spent about 60 to 70 percent of your career working on hard rock mining cases, correct?

A. Yes.

Q. And yesterday you talked about some coal ash -- some recent coal ash experience.

Isn't it true that the last time you actually designed a coal ash pond was in the late 1970's?

A. Yes.

Q. And you are not a professional engineer in the State of Illinois, correct?

A. Correct.

Q. And you have never taken a property through the Illinois Site Remediation Program?

A. No.

Q. And you have a limited understanding of what a groundwater management zone does in Illinois?

A. Limited, yes.

Q. You're not familiar with how it works in Illinois, correct?

A. No.

Q. And the concept of a CCA is also, in Illinois, not familiar to you, correct?

A. Correct.

Q. What does CCA stand for? You can

say you don't know if you don't know.

A. I can't remember exactly. I've certainly read it several times.

Q. As to your recent experience in coal ash ponds in your CV, one of the matters that you talked about is the Little Blue Run facility in Pennsylvania, do you recall that?

A. West Virginia, Pennsylvania, yes.

Q. And that case involved a completely unlined pond, correct?

A. Correct.

Q. And, in fact, it was an unlined pond for fly ash, correct?

A. Correct.

Q. In fact, it was probably the largest fly ash pond in the United States unlined, correct?

A. Correct.

Q. And so there was no liner system for you to assess in that case, correct?

A. Correct.

Q. Now, the other coal ash case that you had experience with is in Montana you mentioned?

A. Yes.

Q. That's the, quote, Montana Environmental Information Center, Sierra Club and National Wildlife Federation versus the Montana Department of Environmental Quality and Talen T-A-L-E-N, Montana, that's the case?

A. Yes.

Q. And Sierra Club is also a plaintiff in that case?

A. Yes.

Q. Now, Talen Montana is a utility company?

A. It's a utility.

Q. And yesterday you said you reviewed the as-built documents in the Colstrip case, the Montana case -- let me back up.

You called the Montana case also the Colstrip case, correct?

A. Correct.

Q. So yesterday you said you reviewed as-built drawings in that case?

A. Yes.

Q. And that that was very important to review the as-builts, correct?

A. Yes.

Q. They're the final construction drawings of a project?

A. Yes.

Q. And they would show how a project was actually built is what you said?

A. Yes.

Q. Now, there are times that the as-built drawings would then differ from the design or not for construction drawings, correct?

A. Correct.

Q. And things in construction get changed, correct?

A. Correct.

Q. And you said anyone reviewing drawings should review the as-builts to get an accurate picture of what a project looks like, correct?

A. Of what was constructed actually was constructed for the project, yes.

Q. Now, in the Montana case, you gave many of the same opinions there that you gave in this case, correct?

A. Correct.

Q. And you opined that their ash ponds likely leaked just like in this case?

A. Correct.

Q. And you said there could be liner construction defects there just like in this case, correct?

A. Yes.

Q. And you said there could be tears and liner failures that couldn't be seen just like in this case, correct?

A. Yes.

Q. And you were deposed in that case, do you recall that?

A. Yes.

Q. And do you recall the deposition was on -- you may not recall the specific date. It was on September 21st of 2015.

A. Yes.

Q. So that deposition was after your report was filed in this case, correct?

A. Yes.

Q. Your report -- your first report in this case was July of '15, you were deposed in the Talen case, in the Montana case, in September of

2015?

A. Correct.

Q. Now, you've opined in the Montana case that hydrostatic uplift would occur at the Talen Energy ponds, do you recall that --

A. Yes.

Q. -- testimony? And you've also opined in this case that hydrostatic uplift would occur, is that correct?

A. Could occur, yes.

Q. Could occur. You don't know?

A. It's very complex. I'd have to have more information on the specific pond.

Q. Okay. So it's very pond-specific as --

A. Yes.

Q. -- to whether hydrostatic -- I'm sorry. You have to wait.

It's very pond specific as to whether hydrostatic uplift could occur, correct?

A. Yes.

Q. And when you were deposed -- when I deposed you, you said -- actually, this is in your report. Your July '15 report says it and we

talked about it at the deposition. Let's go backwards.

In your July 2015 report, you said that the reason you think hydrostatic uplift could occur for Midwest Generation ponds is because of your personal experience at the Colstrip case?

A. That's one reason plus education and experience with other ponds.

Q. Well, let's look at your report. Your report is at Exhibit -- the July 1st, 2015, report. This is Exhibit 401 and if you turn to page ten of the report and the last full paragraph. I may have pulled out the wrong report, but let's look -- we talked about it again at your deposition.

Do you recall you were deposed -- I deposed you in March of 2016, right?

A. Yes.

Q. And, of course, like any deposition you swore to tell the truth at that deposition? Yes?

A. Yes.

Q. And in your deposition, I asked you

for your basis for your statement that there was a plastic liner failure at the Talen facility?

A. Yes.

Q. And you referred me to the expert report in that case, correct?

A. I'm not -- I don't understand the question. Are we talking about hydrostatic uplift failure?

Q. Yes.

A. Okay. There was a hydrostatic uplift failure.

Q. At Talen?

A. At Talen. And it was in my Talen report which you have and in my deposition, Talen deposition, that you also have.

Q. Okay. Good. We have the -- as you mentioned, we have the Talen report and the Talen deposition.

Now, ultimately when you were deposed in the Talen case, there wasn't actually any evidence of hydrostatic uplift, correct?

A. Wrong. Incorrect. It was well-documented that that pond failed due to hydrostatic uplift by Talen and then that pond was

taken out of service.

Q. Okay. I'm going to refer you to Complainants' Bates 53578, which is your deposition in the Colstrip case.

HEARING OFFICER HALLORAN: Thank you. What exhibit is this or no exhibit?

MS. NIJMAN: Yeah.

HEARING OFFICER HALLORAN: Thank you.

MS. NIJMAN: As cross.

BY MS. NIJMAN:

Q. So at page 29 of the deposition pages. We also have it up on the screen for you. So starting at line 18 it says -- and that would be by the attorney in that case.

Q. I'm sorry. I may have misunderstood a minute ago. I thought -- did you tell me that you reviewed documents showing hydrostatic uplift at one of the impoundments near the plant site?

Answer -- and that would be by you, Dr. Kunkel.

A. Yes. Yes.

Q. Which document is that?

A. I'll have to go through and see. It may be in one of the plant site reports since I concentrated primarily on just the three ponds for their construction, but there were a lot of other information in those reports I reviewed -- three site reports.

Q. Was this location where you think you saw hydrostatic uplift at the plant site, was that one of the three ponds you analyzed?

A. I don't believe so, no.

Q. Was it a clay lined pond?

A. I don't know.

Q. Did it have a synthetic liner?

A. I don't think so.

Q. So it had some sort of an earthen liner?

A. I'm not sure. It was prior to any lining probably of any of the ponds at the plant site, but since the water table tends to be high at the plant site after synthetic liners are placed, it's important to recognize high water tables don't agree well with plastic liners.

Q. Specifically -- and specifically if you can't find the document right now, what do you remember this document saying about hydrostatic uplift causing problems at the plant site impoundment?

A. I don't know that it ever said it caused plant problems. What it did is it said something to the effect of groundwater table is above the pond level and that is a hydrostatic uplift condition. So there was no mention by Talen that it actually caused liner failure or how long it lasted or anything like that, it was a single observation.

Q. So the document you saw simply said the groundwater table was higher than the surface of the pond?

A. Yes.

So, you see, the Colstrip situation you remember that incorrectly?

A. No, I haven't. I think somewhere in my report and in this document we talk about that specific pond and the attorney asked me "But that pond was taken out of service after the liner failed" and I said "Yes." It's somewhere in here.

I would have to go through it and find it.

Q. Well, what we have in front of us is the report that you filed for Colstrip and we have the deposition and in the deposition you said you found no document other than the fact that the groundwater elevation was higher there.

A. That isn't what I remember of the documents. I remember that there was a failure and that pond was taken out of service and that is part of the transcript with Holland & Hart somewhere in here.

Q. I look forward to hearing from that, about that from you because it's not in the transcript, sir. What's in the transcript is what I read to you. So it appears your memory may be confused on that point.

MR. RUSS: Object.

HEARING OFFICER HALLORAN: Sustained.

BY MS. NIJMAN:

Q. You testified that hydrostatic uplift would occur if a pond is empty or there is not enough weight on it, correct?

A. Correct.

Q. And, in fact, the existence of a heavy liner like poz-o-pac could prevent hydrostatic uplift, correct?

A. Possibly, yes.

Q. In the Colstrip case, they didn't have any poz-o-pac, correct?

A. They did not.

Q. Now, yesterday you testified about the only pond at Powerton that does not have poz-o-pac and that was the ash settling secondary basin, do you remember that testimony?

A. Yes.

Q. You looked at drawings to say that there could be hydrostatic uplift there?

A. Yes.

Q. Now, that basin, that's a finishing pond, correct?

A. Yes.

Q. And that means it would take just a de minimis amount of ash, correct?

A. I don't know how they use the finishing pond.

Q. You don't?

A. No.

Q. You testified yesterday we were talking about Exhibit 33, which was a secondary ash basin permit application.

Can you take a look at Exhibit 33 in front of you and specifically you looked at the drawings on Bates page 9728.

HEARING OFFICER HALLORAN: I'm sorry, Ms. Nijman. What was that, Exhibit 33?

MS. NIJMAN: Exhibit 33. Bates page 9728.

HEARING OFFICER HALLORAN: Thank you.

BY MS. NIJMAN:

Q. You recognize --

A. Yes.

Q. -- that document? Yes. You talked about it yesterday, do you remember?

A. Yes.

Q. Now, that's a not for construction drawing, correct?

A. It says not for construction, yes. Right at the bottom.

Q. And, again, we discussed the fact that you need to look at as-builts, right, you'd

prefer to look at an as-built?

A. Yes.

Q. Okay. So when you looked at this document, you talked about the elevations and concluded that there could be hydrostatic uplift, but you didn't know for sure, is that correct?

A. Yes.

Q. And you have not reviewed the as-built drawings for the secondary ash settling basin, is that correct?

A. No.

MR. RUSS: Object.

HEARING OFFICER HALLORAN: Yes, Mr. Russ?

MR. RUSS: I don't believe you've established that this is not an as-built drawing.

MS. NIJMAN: He just said it wasn't. It's a not for construction drawing.

HEARING OFFICER HALLORAN: That's what I remember.

MR. RUSS: But that's not not as-built if you understand what I'm saying.

MS. NIJMAN: No.

MR. RUSS: Not for construction does

not mean that --

MS. NIJMAN: Is there an objection?

HEARING OFFICER HALLORAN: Mr. Russ, you have redirect. You can rehabilitate if necessary. Continue, please.

THE COURT REPORTER: What was the answer on that?

BY MS. NIJMAN:

Q. Have you reviewed the as-built drawings for the secondary ash station?

A. No.

Q. So I'm going to show you Midwest Gen Bates 34158, which is a construction package for the secondary ash settling basin liner replacement and it goes through -- I can't read the last page -- Midwest Gen Bates 34267.

So I've prepared both packages so you can see the entire package, but I also have large copies of the drawings because I'm not going to reference any part of the package other than the drawings, but this is to give you context.

MS. GALE: Mr. Hearing Officer, these are the drawings on the back of that.

HEARING OFFICER HALLORAN: Oh, thank

you.

BY MS. NIJMAN:

Q. So these are drawings. So, first, take a look at -- we're just going to refer to the drawings at the back and so start -- so the first drawing you have is Bates number 34261 and it's called title sheet.

A. Yes.

Q. Can you open that one, please?

A. Okay.

Q. So on the title sheet, this shows that there is a list of six drawings in this package, correct?

A. Correct.

Q. And you see those funny little bubbles on this?

A. The clouds, yes.

Q. Yeah. Okay. If you would read under the first cloud, what does that say?

A. Liner subgrade preparation.

Q. I'm sorry?

A. Under the first liner subgrade preparation?

Q. In the first cloud.

A. In the first cloud?
Q. Yes.
A. Underdrain subgrade elevations.
Q. And then under the second -- inside the second cloud, what is in there?
A. Liner subgrade cross sections.
Q. Okay. And then if you turn to the right, it defines what the little cloud means, what does that say?
A. Those are changes that were made to the drawings.
Q. So as you were saying before you can have a construction or a design drawing, but then it gets changed when the pond is actually built, correct?
A. Correct.
Q. So these are the construction drawings, correct?
A. They say they were issued for construction and issued for bid, yes.
Q. Where do they say that?
A. Down here in the title block and they give the dates.
Q. Issued for construction, correct,

that's what you're referring to?

A. Yes.

Q. Now, one of those change sheets was the underdrain subgrade elevations and the second -- correct?

A. Yes.

Q. And the second change you mentioned was the liner subgrade cross sections?

A. Correct.

Q. And those then were changes from the drawings you looked at in Exhibit 33, correct?

A. I don't -- I'm not sure.

Q. Well, let's keep going. So if you turn to the underdrain subgrade elevation drawing, that's at Bates 34263.

A. Okay.

Q. Now, if you look at the drawing in the legend, there is a little symbol for riprap up on the top right, do you see that, riprap?

A. Yes.

Q. And if you look at the drawing, there is riprap placed all around the sides of the basin, correct?

A. Yes.

Q. And riprap is used to drain water, correct, one of its purposes?

A. Typically not. It's used for erosion protection.

Q. Okay. Well, take a look in the bottom right corner of this drawing. There is an excavated sump hole, correct?

A. Yes.

Q. And a sump is for collecting water, correct?

A. Correct.

Q. So now if you go to the drawing that's Bates labeled 34265, the liner subgrade cross sections, this depicts the cross sections of the -- of an underdrain system, correct?

A. Yes, it appears to be correct.

Q. So this is the second -- I'm looking at the title.

Secondary ash settling basin liner replacement liner subgrade cross sections, do you see that?

A. Yes.

Q. Okay. And looking at the top cross section first, the east to west or the west to

east. So first you see the riprap, correct?

A. Yes.

Q. And then you see on the outside at the base of the pond there are one -- there is one-inch diameter open graded stone, correct?

A. Correct.

Q. And looking at the cross section there are six four-inch diameter collection pipe laterals, correct?

A. Yes.

Q. And above the riprap and the one-inch diameter stone there is a layer of sand, correct?

A. Correct.

Q. And above the sand is the geomembrane, correct?

A. Correct.

Q. And then if you look at the south to north cross section, the second one, that shows the same layer, correct?

A. Correct.

Q. So according to this construction drawing, the secondary ash settling basin subgrade is riprap on all sides, correct?

A. Correct.
Q. One-inch diameter open graded stone, correct?
A. Correct.
Q. Six four-inch diameter pipes with open graded stone?
A. Correct.
Q. A layer of sand?
A. Correct.
Q. Covered that by a geomembrane?
A. Yes.
Q. So that is showing, is it not, an engineered underdrain system beneath the HDPE liner at the secondary ash basin?
A. It is.
Q. Now, thinking about how this basin is oriented, the Illinois River is to the north, correct?
A. Correct.
Q. And so that would make sense that the six four-inch pipes are oriented to drain to the north, correct?
A. Correct.
Q. And the purpose of the underdrain

system to quickly move water away from the HDPE liner?

A. Groundwater, yes.

Q. So that protects the liner, correct?

A. Correct.

Q. And so this -- isn't it true that this system is specifically designed to prevent the uplift you were talking about?

A. It is.

Q. Now, I think we discussed a few minutes ago that -- well, all three ponds at Joliet have poz-o-pac beneath them, correct?

A. I believe that's correct, yes.

Q. And it's about 12 inches of poz-o-pac, do you recall?

A. If I remember correctly, when they were lined with HDPE part of the poz-o-pac was removed.

Q. Correct. And then 12 inches remained?

A. Remained, that's correct.

Q. Let's take a look at the demonstratives that we had sent for the Joliet site.

MS. NIJMAN: We provided these. They were previously produced, but we have another copy.

MS. GALE: Here you go, Mr. Hearing Officer.

HEARING OFFICER HALLORAN: Thank you.

BY MS. NIJMAN:

Q. So looking at the close up, the third page or the second page, I believe.

MR. RUSS: Can I object?

HEARING OFFICER HALLORAN: Sure.

MR. RUSS: I don't believe Dr. Kunkel has had a chance to look at these until right now.

HEARING OFFICER HALLORAN: Ms. Nijman?

MS. NIJMAN: That's fine. I'm just going to ask him questions about it.

HEARING OFFICER HALLORAN: Do you want to take a moment, Dr. Kunkel --

THE WITNESS: Yeah, please.

HEARING OFFICER HALLORAN: -- and review these?

MR. RUSS: I have an objection while Dr. Kunkel is reviewing these. There is a photograph on the demonstrative on the screen that implies that the core sample is taken from Joliet and I don't believe that it is. It hasn't been established that it was.

MS. NIJMAN: It's not the implication. It's simply showing what poz-o-pac looks like.

MR. RUSS: I just think the exhibit clearly implies that that's related to that site and I don't think it is.

MS. NIJMAN: I won't --

HEARING OFFICER HALLORAN: Excuse me. On your redirect, you can qualify, clarify, make clearer your point. Thank you.

BY MS. NIJMAN:

Q. Have you had a chance to look at the Joliet drawings?

A. Yes.

Q. Okay. So if you look at the second slide -- look at the second slide. So you see in the cross section this is for Joliet ponds one and two, do you see there is 12 inches of poz-o-pac?

A. Yes.
Q. There is a bottom geotextile cushion?
A. Yes.
Q. Then there is an HPD liner of 60 mil thick, correct?
A. Yes.
Q. And then there is another top cushion of geotextile cushion, correct?
A. Yes.
Q. Then there is 12 inches of sand, correct?
A. Yes.
Q. And then there is a warning layer of six inches of crushed limestone, correct?
A. Yes.
Q. And to your understanding, is that your -- is that your understanding of how these ponds were relined?
A. Yes.
Q. Now, you see at the bottom there is a line for the average groundwater and obviously the average groundwater elevation differed from pond one to pond two and I will also inform you to

make sure that the record is clear that the elevations if you take them all the way out to 2017 as you did this morning varied slightly.

So I will posit to you and we'll use it going forward as a hypothetical, I'll posit to you that the average groundwater elevation from 2010 through 2017 for pond one is 505.77, which is actually lower than what is stated here and for pond two 505.05 -- 65. It is 505.65. My correction. So slightly higher, but not substantially different. So in looking at this drawing, the average groundwater elevation is well below the pond liner, correct?

A. I don't know because I don't know what the elevation of the pond liner is.

Q. Well, you testified to that this morning?

A. Can you refresh my memory of what it is, the pond liner?

Q. I can.

MR. RUSS: I have to object again. We weren't talking about Joliet 29 this morning.

HEARING OFFICER HALLORAN: Ms. Nijman?

MS. NIJMAN: Then that's my mistake. Then it was yesterday. Thank you.

BY MS. NIJMAN:

Q. So from yesterday, thank you, Mr. Russ, the bottom elevation of pond one is 516 feet?

A. I don't remember that I ever testified to any of those numbers. They may have been in my report, but I don't remember testifying to any of those numbers.

Q. Okay. Do you disagree that the bottom elevation is at 516 feet?

A. No.

Q. Okay. So given that the bottom elevation is at 516 feet and the average groundwater elevation is about 506 feet, it's well below, correct, at Joliet?

A. The average is well below, yes.

Q. Yes. And that's an average from 2010 through 2017, correct?

A. I have never had those data for -- for the Joliet -- oh, this is the groundwater, not the --

Q. The groundwater data, yes.

A. The trouble with the groundwater data, Mr. Hearing Officer, is that they were taken quarterly. So there are a lot of days in in between those quarterly samples when the river could have risen, the groundwater could have risen, but we have no data for those time periods.

Q. So even though we have been sampling for elevations for over seven years, you're suggesting something could have happened between all those samples?

A. I am.

Q. Now, let's go to the drawing for the Powerton -- the other Powerton basins that you didn't talk about yesterday or this morning, I don't remember which, so the fourth -- fifth slide -- so this is the ash bypass basin, metal cleaning basin and ash surge basin, which are all constructed similarly.

Do you have that in front of you?

A. Yes, I do.

Q. And those ponds basins all have poz-o-pac on the bottom, correct?

A. Correct.

Q. And they all have sand and a warning layer on top of the liner, correct?

A. Correct.

Q. And there is a geotextile cushion below the HDPE and a top geotextile cushion above the HDPE, correct?

A. Correct.

Q. So I'm looking up the bottom elevations for you. The ash bypass basin bottom elevation is 452 feet.

MR. RUSS: Objection. That's not shown on this diagram. I'm not sure where those numbers are coming from.

HEARING OFFICER HALLORAN: Ms. Nijman?

MS. NIJMAN: At this -- I'm obtaining those numbers because the witness testified that he didn't remember the numbers that he testified to this morning for Joliet. So I was trying to help him.

MR. RUSS: I understand, but I don't know where you're getting your numbers.

BY MS. NIJMAN:

Q. Okay. I'm going to ask you to

assume for the purpose of this question that the bottom elevation of the ash surge basin is 452 feet. Okay?

A. Yes.

Q. And I'm going to ask you to also look at the average groundwater elevations on this drawing.

MR. RUSS: I also want to object to the drawing because it doesn't provide any frame of reference to the groundwater elevations and the pond bottom elevations. Although there is a visual implication of a distance between them this doesn't state the elevation of the pond.

HEARING OFFICER HALLORAN: Again, you have redirect and you can flesh it out then, Mr. Russ. Thank you.

BY MS. NIJMAN:

Q. You see the scale in feet on the left-hand side on this drawing?

A. Horizontal scale, yes.

Q. So that gives you distance, correct?

A. Not vertical distance, just horizontal distance.

Q. Understood. And look to the right,

do you see four -- two blue lines on the right side of the drawing?

A. I do.

Q. And those are indicating the groundwater elevations?

A. Yes, I see that.

Q. So the pond bottom at 452 feet is well above the groundwater average elevation, correct, at the ash bypass basin, metal cleaning basin and ash surge basin --

HEARING OFFICER HALLORAN: You have to speak up, Ms. Nijman.

THE COURT REPORTER: Ash bi- --

MS. NIJMAN: Ash bypass basin, metal cleaning basin and ash surge basin.

MR. RUSS: Before you answer, I object. Compound. Vague.

HEARING OFFICER HALLORAN: If he can answer and is able, you may proceed.

BY THE WITNESS:

A. I guess my problem, Mr. Hearing Officer, is I'm not sure what average groundwater elevation has to do with the bottom of the ponds. I certainly as an engineer wouldn't be interested

in the average.
BY MS. NIJMAN:
Q. Well, you, in fact, looked at -- you testified this morning as to the elevation of the groundwater, correct?
A. Not this morning. Yesterday.
Q. Okay.
A. And I'm not sure we talked about specific numbers.
Q. Well, you looked at charts and you summarized what the elevation data was and you gave highs and lows and said it's somewhere in there. So we took that average.
MR. RUSS: Object. Misstates.
BY THE WITNESS:
A. I'm not sure I understand what the average really represents. If you're trying to say that average -- that the distance between the average water -- groundwater surface elevation and the bottom of the ponds --
BY MS. NIJMAN:
Q. Yes.
A. -- meets the EPA coal regs, that's not what the coal regs say in my opinion.

Q. I didn't ask you that.

A. I understand that.

Q. I'm -- I understand you -- I not asking you to compare this information to the CCR requirements. I am asking you to look at whether the average groundwater elevation based on this drawing is below the bottom of the pond at 452 feet?

A. It is, but what I showed in my report is that the groundwater elevations could be a lot higher at times between when those quarterly groundwater data were taken and that's my whole issue is that the groundwater could go up and down drastically in response to the Illinois River. So this average is an average of quarterly data which may not be representative of a true average of the groundwater at the site. That's my big issue.

Q. Okay. So, again, even though there is elevation data for over seven years on a quarterly basis, you're afraid that somewhere in between something else might have happened?

A. And it should have happened based on the Illinois River data that I have, its elevation.

Q. Let me go back to Joliet for a second on that point.

Isn't it true that right near the Joliet station on the Des Plaines -- Des Plaines River is a lock system?

A. Yes.

Q. And the lock system is controlled by the Corps of Engineers?

A. Yes.

Q. And, in fact, that greatly controls the elevation of the Des Plaines River, correct?

A. Not necessarily greatly. When there are very high flows.

Q. You have no evidence that there has been a higher flow of -- or a higher elevation at the Des Plaines River at the Joliet site, correct?

A. Higher than --

Q. Higher than what was listed in the elevations of average groundwater elevations.

A. I do indirectly. I don't have water level measurements, but I have discharge measurements at the USGS gauging station.

Q. No. You told me you had no USGS --

A. No, I said --

Q. -- information for Joliet.

A. -- I didn't have any USGS river stage data, but I do have flow data and when the flow goes from a few thousand CFS to 10,000 CFS I would assume the water level in the stream rises as well in order to pass that flow.

Q. And where is this flow data?

A. This is upstream above the lock.

Q. Above the lock?

A. Upstream from the lock. So the indirect evidence is that when the -- when the discharges in the river go up, at that point they also go up downstream. The Corps doesn't let the water just -- try to store all that water. It would be impossible to store it behind the lock.

Q. This is -- okay. I'm trying to understand your opinions because --

A. Yeah.

Q. -- I'm trying to understand how you know what -- without data, what those levels are, what those river levels are?

A. I don't know exactly what the river levels are, but in my report I alluded to the fact that there is a gauging station upstream and that

I was going to use and I did use in my report stream flow as a proxy for water level.

In other words, if the stream flow increased, the water level had to increase. I don't know by how much, but it had to. This is simple conservation of mass in the Des Plaines River.

Q. So you're making an assumption as to the levels -- the height levels, the elevations of the Des Plaines Rivers?

A. No, I'm not making an assumption of the high levels. All I'm making -- all I'm saying is that if the flow discharge increases, the water level elevation has to increase. And I don't know by how much because I don't have a rating curve at that point. All I know it has to go up, it has to go higher. That coupled with the information that -- that Rich Gnat gave where we had erosional features along the bank of the Des Plaines River said the water level in the Des Plaines got at least that high and we have actual data points along that --

Q. Okay. Can --

A. -- point.

MR. RUSS: Object. Interrupting the witness.

BY MS. NIJMAN:

Q. I'd like to refocus because now you're on a whole different topic. So --

MR. RUSS: My objection still stands. He was completing his answer.

HEARING OFFICER HALLORAN: Overruled.

BY MS. NIJMAN:

Q. So let me ask again because your -- your answer had a big if in it. You used the word if. If this happens, if the river level goes up, so you don't know, correct?

A. No, that's not correct. If the discharge increases --

Q. If.

A. -- the water level has to go up. When the discharge increases, the water level has to go up. When the discharge increases.

Q. So you are basing your opinion at Joliet as to the river levels on the USGS discharge data?

A. I'm not -- I'm not saying that I

know what the river levels are. All I know is that when the discharge increases in the stream -- in any stream, the water level goes up unless there is, you know, within reason.

Q. All I'm trying to get -- clarify is that you don't know, correct?

MR. RUSS: Objection. Asked and answered.

HEARING OFFICER HALLORAN: I agree. Sustained. I've heard it six times.

MS. NIJMAN: Okay. Good.

HEARING OFFICER HALLORAN: Thanks.

BY MS. NIJMAN:

Q. Now, as to Waukegan in your July 2015 report you initially opined that there was likely hydrostatic uplift at Waukegan, correct?

A. That was based on erroneous bottom elevations of the pond provided by Patrick.

Q. Okay. So your July '15 report was wrong in that regard?

A. No, based on the data I had, there would have been hydrostatic uplift, but I had incorrect bottom -- pond bottom elevations.

Q. I understand. I'm just trying to

say --

A. It wasn't --

Q. Let me finish. The board is going to look at your reports and is going to need to understand that there are errors in it. So I would like to just clarify that that, in fact, is an error in your initial report that --

A. I don't consider it to be an error. I consider it to be data given to me at the time that was incorrect and I used it, you know, in an engineering sense assuming that it was correct because it was provided by Midwest and I wouldn't think that Midwest would give me incorrect information.

Q. Well, you have all the information available to you and you relied on a certain report for your opinion about Waukegan and you determined that there was likely hydrostatic uplift, but you have now corrected that opinion, is that a fair statement?

A. Yes.

Q. Thank you. I have a couple of follow-up questions on that Montana Colstrip case we were talking about.

You also opined in that case that there were liner tears from dredging, correct?

A. I don't remember. These were fly ash ponds that were never dredged that I was looking at.

Q. Okay. Take a look at the deposition from that Colstrip case. On page 34, if you look -- are you there?

A. I don't have it. Thirty-three pages is all I have.

Q. It's these pages --

A. I see. I'm sorry.

Q. -- the way it's copied.

A. Okay.

Q. So on page 34 lines starting at line 4 it says -- this is the attorney, the Talen attorney asking you

Q. The next thing under this bullet point you mentioned is liner damage during ash dredging, what do you mean by that?

A. Well, typically the pond ash bottoms in particular fill up and they are dredged and then the bottom ash is disposed somewhere. It

isn't clear from the reports that I saw exactly where, but I would assume that Talen does not dredge hydraulically, that they actually bring equipment into the pond, into the ash -- bottom ash ponds and scoop out the ash. In my experience on other projects, that leads to liner damage.

Do you see that?

A. I see that.

Q. So does that refresh your recollection that --

A. It does, but I didn't look at any of the bottom ash ponds. So this was a little aside, I guess, with the attorney.

Q. Well, he was reading from your report, the next thing under this bullet of your report.

A. These were general comments in my report that said that dredging can cause liner tears.

Q. Okay. That's all I was asking.

A. It really had nothing to do with the three ponds that I was looking at, which were the fly ash ponds. I mean, specifically. It was a general --

Q. All I asked was your opinion in that case was that dredging causes --

A. Yes.

Q. -- liner damage?

A. Yes, it does.

Q. Now, you recall it.

A. Yes, I do.

Q. Okay. And you said that was based on your assumption, you used the word assumption here "I assume that"?

A. But that's because it's standard practice.

Q. Okay. So let me -- let me continue reading from this deposition a little bit. If you look -- I'm going to start at the bottom of page 34, line 23.

Q. Did you review any documents that discuss ash dredging at those two ponds?

A. No.

Q. Did you review any documents that talk about dredging in any of the ponds?

A. No.

Q. If dredging does occur, is it fair to say you likewise didn't review any

documents that talked about how Talen goes about that dredging?

A. That's correct.

Q. Or about how Montana Power or PPL before Talen went about that dredging if it occurred?

A. That's correct.

Q. You don't know whether equipment was ever on these locations?

A. No.

Q. That's an assumption --

A. Not for sure, yeah.

Q. That's an assumption you're making?

A. That's an assumption on my part.

So you are just assuming that dredging causes damage in the Talen case?

A. I think that it's well-known in the industry that dredging has a high potential -- if it's mechanical dredging with heavy equipment, that has a potential for causing liner tears.

Q. So that's an assumption you make in your opinions?

A. That would be the conservative assumption to make, yes.

Q. Look at this deposition one more time on page 38 on line three.

Q. And that's a fundamental basis for your opinions, isn't it, that you are assuming these things happen all the time and just weren't documented?

A. Possibly, yes. Uh-huh.

Do you see that?

A. Yes.

Q. And so that's what you're saying here as well --

A. Yes.

Q. -- that you're assuming these things happened?

A. Yes.

Q. Now, you've made an assumption in this case, the Midwest Gen case, that heavy equipment was used in the Midwest Gen ponds, correct?

A. Yes.

Q. And you recall that Lafarge is the contractor who performs that ash removal?

A. At least some -- some of the ponds, yes.

Q. Now, you have no basis to assume that Lafarge used poor practices, do you?

HEARING OFFICER HALLORAN: Can you speak up, please?

MS. NIJMAN: I'm sorry. I'm turned this way.

BY MS. NIJMAN:

Q. You have no basis to assume that Lafarge uses poor practices in dredging, do you?

A. Only based on the testimony by -- by Rebecca Maddox.

Q. What was that?

A. Well, she sat in this chair and said that she thought that the dredging caused liner tears that she witnessed. I believe that's correct.

Q. Do you mean the liner -- the single liner tear --

A. Yes.

Q. -- correct? The one that was up at the top of the ramp, that liner tear?

A. Yes.

Q. So that's your basis to assume that Lafarge is using poor practices?

A. You know, I don't know whether it's poor practices, careless operator error, things like that. But I think that any time you have heavy equipment in a pond we wouldn't allow equipment to go into our ponds to do anything. It's just not good engineering process to have any kind of equipment around plastic. It's just not good practice in my opinion.

Q. So you're making an assumption in this case that Lafarge is using poor practices?

MR. RUSS: Object. Misstates.

HEARING OFFICER HALLORAN: Could you rephrase that?

BY MS. NIJMAN:

Q. Isn't it true that you have assumed, in this case, that Lafarge is using poor dredging practices?

MR. RUSS: Object. Asked and answered.

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

BY THE WITNESS:

A. My experience with contractors is they all make mistakes.

BY MS. NIJMAN:

Q. Okay.

A. Whether that's poor practice or just a mistake, the operator has a bad day, but it happens.

Q. I appreciate that answer. I want to show you when you were deposed, when I deposed you, I want to remind you what you said to me then

A. You know, I think if one reads through the documents that were provided that removal -- or the dredging of the ash with a backhoe is very dangerous and if the equipment is running around on the bottom of the ponds, that's not an acceptable way to dredge ash.

Q. Right. And I'm asking what's the basis for saying that that happened at Powerton?

A. I assume that your two contractors either -- that serve all four power plants -- I mean, two -- one serves two and the other serves two.

Q. So you're assuming that that's what Lafarge --

A. Yes.

Q. -- did, that Lafarge uses poor --

A. Yes.

Q. -- practices?

A. Yes.

MR. RUSS: Objection. Improper impeachment. Different question, different site.

HEARING OFFICER HALLORAN: What site are we on now? That was Powerton, I think, or was that the four sites?

MS. NIJMAN: The reference he made was to use of Lafarge and all -- or its other contractor in all four sites and that's why I raised it.

HEARING OFFICER HALLORAN: You know, again, that's why we have redirect in this and you can flesh that out and make clear in the record your objection. Overruled.

BY MS. NIJMAN:

Q. I want to clarify something about the reports that you've issued in this case.

You've identified this morning and yesterday three different reports, correct?

A. Yes.

Q. Now, since your deposition in March of 2016, you were provided with some additional groundwater data, some monitoring data, taking us through second quarter of 2017, correct?

A. Yes.

Q. And you used that additional monitoring data to update the opinions that you've been given today and yesterday?

A. My testimony, yes.

Q. Mm-hmm. And you provided your testimony with knowledge of that additional data, correct?

A. Yes.

Q. But other than the additional groundwater data, your opinions are set out in the series of reports you issued, correct?

A. Correct.

Q. And in your deposition of March of 2016, you told me that the reports contained your opinions for the case?

A. Yes.

Q. And your reports rely on several US EPA documents, right?

A. Yes.

Q. Including the US EPA CCR rules?

A. Yes.

Q. Now, the reason I'm confused about your reports is I actually have a lot of other reports from you. So let's do this chronologically.

You identified the report, your first report, and that's Exhibit 401, that's dated July of 2015, correct?

MR. RUSS: Objection. Misstates testimony.

HEARING OFFICER HALLORAN: I'm sorry. Ms. Russ -- Mr. Russ. Sorry.

MR. RUSS: That's okay.

BY MS. NIJMAN:

Q. I'm sorry. I shouldn't have called it your first report. You did an initial report that's not part of this case. Your first report for the Midwest Gen facilities that is part of this case is Exhibit 401, correct?

A. Correct.

Q. Okay. Then you prepared a rebuttal report that you identified as Exhibit 407 in this case, right, and that's in your binder?

A. Mm-hmm, yes.

Q. Then you also submitted a supplemental rebuttal report dated March of 2016, do you recall that?

A. Yes.

Q. You didn't identify that in your direct testimony, why is that?

A. I wasn't asked about it.

Q. Okay. And do you recall why you submitted this supplemental report to me? Let me say it this way.

Specifically, the supplemental report refers to a couple of citations to support your opinions, is that right?

A. Citations? I'm not sure. References in the report?

Q. Yes.

A. There's a page and a half of references. I'm not sure.

Q. I'm sorry. If you look at the things that are red lined in this document, and

this is the way that it was provided to me, you'll see that there are a number of little red line additions that added some references to support your opinions, do you see that?

A. No.

Q. Okay. Look at page eight.

A. Yes.

Q. Do you see that the added -- there are some Bates numbers added, do you see that?

A. Yes.

Q. So those are additional supports for your opinion?

A. Yes.

Q. On page nine, you added some additional citations for your opinions?

A. Bates numbers, yes.

Q. Other than those changes, does this appear to be the same as your December 8th, 2015, report?

A. It does, yes.

Q. Now, I also received an e-mail dated -- so on the same date as this supplemental report of March 9th you sent an e-mail to your counsel, this is Comp 51722 Bates number, do you

recognize that e-mail?

A. Yes.

Q. So you say there "Attached Bates 49254. Did not show uneven subgrade and was eliminated from the supplemental report," correct?

A. Correct.

Q. So you took that citation out of the supplemental report?

A. Apparently, yes.

Q. Okay. So then you identified another rebuttal report that you talked about already in Exhibit 408 in your binder, right?

A. Yes.

Q. Okay. And then we had the deposition based on those various reports. Now, do you recall in the deposition on March 17th, 2016, that we went through a lot of the citations in your July '15 report that were the basis of your opinions, we talked through a whole bunch of them, do you remember that?

A. Yes.

Q. And we kept finding that the documents you cited in your July '15 report did not support your statements and opinions, do you

recall that?

A. Yes.

Q. And, in fact, you cited to photographs that you said supported your statements and then we looked at the photographs and it had nothing to do with your statement, correct?

A. I don't remember. I think that's correct, yes.

Q. And you cited to documents and when we went to those documents, they didn't support your opinions, correct?

A. Not quite true. Those were documents that -- the original document had a set of Bates numbers and I didn't have the appendices so I asked for a new document and that document had different Bates numbers and so those Bates numbers from the original document that didn't have the appendices was left in the report. Well, actually, yes, the citation in the report is correct. It's just the Bates numbers in my citations at the end of my July 1st, 2015, report -- the Bates numbers are incorrect. The document is correct and I can cite an example if

you like.

Q. Well, no. I'm not quite sure what any of that means what you just said. I got a little confused. I asked the question you cited to documents in your report and when we went to those documents they didn't support your opinions, correct?

A. No, the documents do support my opinions and if you're specifically referring to the ENSR documents, it was the Bates numbers that you utilized for the report. I used the title of the document and the full document which had all the appendices. Those Bates numbers were added later and they were the incorrect Bates numbers. So you're correct in that respect.

Q. Okay. I am correct?

A. Yes.

Q. Okay.

A. The Bates numbers were incorrect, but the document was correct that I used.

Q. Okay. I'm still not getting an answer. You're talking about one specific situation?

A. But that was the majority of the

problems that you had with my report, with the Bates numbers in my report is that the Bates numbers that were at the end of the references in my report were the incorrect Bates numbers.

Q. It wasn't just the end of the references, though, it was throughout your report, correct?

A. Those were very minor, a couple of photographs that they were incorrect Bates numbers and I apologize for that.

Q. Well, the problem is in looking at -- isn't it correct in looking at your July 2015 report and comparing it to the Bates numbers that are listed there, we cannot state that any of those Bates numbers support the opinion, is that correct?

A. My opinion is my opinion.

Q. I'm asking about the support for your opinions is not documented in your report, correct --

MR. RUSS: I object.

BY MS. NIJMAN:

Q. -- not documented correctly in your report?

HEARING OFFICER HALLORAN: There's an objection.

MR. RUSS: It misstates. It's also vague. It doesn't help -- we don't know which citation you're talking about. You're making a broad generalization about all of his references.

MS. NIJMAN: Well, the problem is -- if you recall this from the -- let me --

HEARING OFFICER HALLORAN: Overruled.

MS. NIJMAN: Thank you.

BY MS. NIJMAN:

Q. During the deposition, you recall that we walked through many different errors --

MR. RUSS: Object to the --

BY MS. NIJMAN:

Q. -- do you recall that?

A. I don't know that there were that many.

HEARING OFFICER HALLORAN: Excuse me. There is an objection out there. Mr. Russ?

MR. RUSS: Object to many. Vague.

HEARING OFFICER HALLORAN: Overruled. Dr. Kunkel was answering.

BY THE WITNESS:

A. Yeah. I don't -- I don't think there were many. I don't understand what many is. There were several perhaps. They certainly don't detract from my opinions in the report or the accuracy of the report in my opinion.

BY MS. NIJMAN:

Q. But, again, our problem has been we don't have support for any of your opinions.

MR. RUSS: Object. That's not a question.

HEARING OFFICER HALLORAN: Sustained.

BY MS. NIJMAN:

Q. Now, I think it's fair to say that your July 2015 report does not contain accurate citations to support for your opinions --

MR. RUSS: Object --

BY MS. NIJMAN:

Q. -- correct?

MR. RUSS: -- again.

HEARING OFFICER HALLORAN: Mr. Russ?

MR. RUSS: That misstates prior testimony. She is making a generalization about

the whole report. That's clearly not what he was testifying to.

HEARING OFFICER HALLORAN: Yeah, it's a little vague and a generalization and I think Dr. Kunkel answered the best he could.

BY MS. NIJMAN:

Q. Do you recall saying to me at the deposition "I don't know what happened here. I just don't make mistakes like this," do you recall saying this to me? Because we had gone through a lot of mistakes.

A. I remember saying that, yes, I do clearly.

Q. Because you were getting frustrated about the mistakes, correct?

A. They were not my mistakes. That's why I was getting frustrated.

Q. Well, I don't know whose mistakes they were, but we were both frustrated about the number of mistakes, correct?

A. Correct. No one more than I.

Q. Yeah. Well, again, the problem being it made it very difficult to understand your opinions.

Now, after the opinion, you provided me with corrections, right?

A. I believe so, yes.

Q. So, first, you sent me some of the corrections to the citations in your reference section, that's what you were just talking about with the ENSR reports?

A. Exactly, yes.

Q. So let me show you that. So this is an e-mail dated March 21st, 2016, Comp No. 53522 and you'll see that there is two e-mails. They're both dated March 21st, 2016, they're both from you to your counsel, they -- oh, shoot. Hold on. I have given out -- I think you may have a different Bates -- what's the Bates on the document you have?

A. 53523 and 53525.

Q. And so that's my question to you, is there appears to be two of the same document --

A. Yes.

Q. -- and yet they were e-mailed separately, can you tell me are they the same?

A. They are the same.

Q. So 53525 and 53523 are identical?

A. As far as I can tell, yes.

Q. So this was the first effort after the deposition of you correcting some of the citations in your report, correct?

A. Correct.

Q. So then you were asked to follow-up on some additional items I asked you for during your deposition, right?

A. Yes.

Q. Showing you Comp 53528. This is an e-mail from Lindsay Dubin, one of the attorneys for the complainants, to you dated Monday, March 28th, 2016, titled Follow-Up Items From Jim Kunkel Depo and there is a list of 14 different items that I had asked you to follow-up from your deposition, do you recall that?

A. Yes.

Q. And these are -- these are the examples of information that was missing from your July 2015 report, correct?

A. I don't know that it was missing.

Q. Well, let's look at them then. Number one says contamination report page four. Correct citation. So you had an incorrect

citation in your report and that needed to be fixed? Number two. Contamination report page nine, check the cited Bates range for correct citation for HDPE being placed on poz-o-pac and attached to concrete discharge. We can read through all of these if you like, but they are all -- based on your report, they were issues that we had raised in your deposition that were missing, correct or incorrect, or they were wrong?

A. No. You know, I don't -- I don't necessarily agree with that generalization. The citations to me are my references in the back of the report and except for what you gave me here on -- on Bates 53523 and 525 the real problem had to do with Bates numbers, not with the citation -- the reference that I used. I don't use Bates numbers, I use references and the Bates numbers were added by another person and they got them incorrect, but the references are correct and they're the basis for my opinion.

Q. I understand, but you're -- again, the question I'm asking you is we looked at your 2015 report together.

In that report, you would make a

sentence, like a sentence on number two, contamination report page nine, you would then in your report that you signed, it would then reference a specific document as support for your statement, correct?

A. Document, yes.

Q. Okay. And then when we would go to look at that document it wasn't the document you thought it was, correct?

A. No, that's not correct. It was the document I thought it was. The problem was that it had different Bates numbers than the document I used, but it was still -- the title of the document was still the same if I remember correctly for the majority of these.

Q. But that was the problem with your report, right, is that you didn't give titles to documents, you just gave a number. So --

MR. RUSS: Object. Object.

HEARING OFFICER HALLORAN: Mr. Russ?

MR. RUSS: It misstates his testimony and it mischaracterizes the report. There may have been instances, but the implication is that his whole report cites to Bates page

ranges and that's not the case.

HEARING OFFICER HALLORAN:

Sustained.

BY MS. NIJMAN:

Q. Let's look at your report Exhibit 401.

HEARING OFFICER HALLORAN: I'm thinking about five minutes we'll take a lunch.

MS. NIJMAN: Okay.

BY MS. NIJMAN:

Q. I'm sorry. Page nine of your report and I'm just reading from this e-mail that asks you to follow-up on contamination report page nine. Okay?

A. Yes.

Q. So in the middle of this paragraph on coal ash management, you have the sentence "When all three Joliet 29 ash ponds were relined with HDPE, the plastic was placed on top of the existing poz-o-pac liner after its partial removal. Plastic was placed directly on the side slope poz-o-pac and attached to the ash pond concrete discharge structures" and you see then there is a parenthesis and a Bates number of a

document, do you see that?

A. Yes.

Q. And when in the deposition we went to that document, that had nothing to do with poz-o-pac lining, correct?

A. You know, I don't know, but the statement, the sentence, is correct as far as I know. That's what I understood.

Q. Correct. And you referenced, though, something -- I know it's what you understood, but your support wasn't there. You made an assumption about that, correct?

MR. RUSS: Object. That's not what he said.

HEARING OFFICER HALLORAN: I can't remember what he said. He may answer if he's able.

THE WITNESS: I can't answer.

HEARING OFFICER HALLORAN: Okay. Thank you, sir.

MS. NIJMAN: This might be a good time to just break.

HEARING OFFICER HALLORAN: Okay. Let's come back about 1:30. We're off the record.

Thank you.

(Whereupon, a break was taken after which the following proceedings were had.)

HEARING OFFICER HALLORAN: All right. We're back on the record, back from lunch. It's approximately 1:30. Dr. Kunkel is still up on cross of Ms. Nijman.

MS. NIJMAN: Thank you.

BY MS. NIJMAN:

Q. Let me show you this is Citizens Group's response to Midwest Gen's Third Request to Produce Documents.

Dr. Kunkel, have you ever seen this document before?

A. I'm not sure.

HEARING OFFICER HALLORAN: Do you know what date this was filed? Nevermind, Ms. Nijman. Sorry.

MS. NIJMAN: For the record, May 23rd, 2016.

HEARING OFFICER HALLORAN: Sorry.

MS. NIJMAN: No problem.

BY MS. NIJMAN:

Q. Well, in -- before lunch, we had shown you a document asking for certain types of information to back up your July 2015 report and your rebuttal report and this document was provided to us in partial response, do you recall assisting your attorneys in preparing -- or the attorneys for the complainants in preparing responses to the requests that we saw in the e-mail right before lunch?

A. Yes.

Q. If you would turn to page six of this document.

In the request number two, your report had included a table of leachate concentrations, that was table two from your report identified, and you relied on that report for your opinion of the constituents on coal ash, do you recall that?

A. Yes, I do.

Q. Okay. And you had a citation to a Kosson, K-O-S-S-O-N, 2009, do you recall that?

A. Yes.

Q. And when we looked at the Kosson

report in your deposition, we saw it didn't actually have the information that you said?

A. Yes.

Q. So in this exhibit, this response to number two, you're providing me with the correct document, correct, or your counsel is providing me or the complainants?

A. The spreadsheets, is that what you're talking about? Yes.

Q. Okay. I'm looking at request number three. You had stated in your report that the surrounding land use of the Waukegan station was undeveloped land to the north and we discussed in our -- in the deposition that was not accurate and I asked you what document you would rely upon so you now provided a document you relied upon, correct?

A. Correct.

Q. Now, it's true to the north of the Waukegan station for Midwest Gen is the Johns Manville plant and super fund site, correct?

A. Yes, I believe so.

Q. As to request number four in your rebuttal report of December 8th, 2015, you had

stated that Mr. Seymour claims that groundwater contamination is from up gradient, offsite sources entering the site and you gave me a citation to Mr. Seymour's report and when we looked at Mr. Seymour's report we couldn't find that and so you provided me with this response to number four, correct?

A. Yes.

Q. And if we look at the first bullet in the response, it says -- this is where you're quoting from Mr. Seymour's report. You say -- you're quoting the statement "Thus, it is my opinion that the recent groundwater impacts are not a result of the ash currently stored in the ponds at the site, but instead are more likely than not a result of historic uses at the sites and the surrounding industrial companies and conditions."

So Mr. Seymour never stated, in fact, that all constituents were coming from offsite, did he?

MR. RUSS: Object. That's not what the request states either.

HEARING OFFICER HALLORAN: Okay. On

redirect, you can bring that up. Just take a note. You may answer if you're able.

BY THE WITNESS:

A. I'm not sure what the intent of John Seymour's bullet one quote is whether he meant to imply that nothing was coming on from up gradient. It doesn't -- it doesn't strike me that way.

BY MS. NIJMAN:

Q. Right. Because he says historical uses at the sites, right?

A. And surrounding industrial companies and conditions. Whatever that means. I'm not sure what that means.

Q. Okay. So it doesn't really -- that doesn't support your statement of -- of --

A. It might. It might.

Q. Okay. Again, I'm just looking for the support for the statement in your report and this is what was provided to me.

A. I don't think I quoted John Seymour. I think that my interpretation of what he was saying is that contaminants were coming from off -- offsite.

Q. Right. And when I asked you the

basis for that interpretation --

A. This is it.

Q. This is it. Okay.

A. Yes.

Q. So after all this, I then received another correction to your reports. Do you recognize this document?

A. No.

Q. Well, you signed it, Mr. Kunkel.

MR. RUSS: Objection. I don't see a signature.

THE WITNESS: At the end.

MR. RUSS: I'm sorry.

BY MS. NIJMAN:

Q. It's a sworn certification signed by James R. Kunkel, is that you?

A. Yes, I remember seeing this document and signing it, yes.

Q. And do you see the attachment?

A. Yes.

Q. These appear to be the answers to all the follow-up questions I had from the deposition requesting support for your opinions --

A. Okay.

Q. -- is that correct?

A. Yes.

Q. So as I tried to understand and go through all this in order to determine if a statement made in your reports is supported, I have to look at all the various documents that we've just gone through this morning, correct?

A. Yes.

Q. And we would also have to review your deposition because of the number of things we went through in the deposition as to citations, correct?

A. Yes.

Q. So looking at this sworn certification in your response to number two, I asked you for support for your assertion that, quote, plastic was placed directly on the side slope poz-o-pac and attached to the ash pond concrete discharge structures, do you recall saying that in -- in your report?

A. Yes.

Q. Okay. And so you provided me here with a document to support that statement, correct?

A. I'm not sure what document you're referring to.

Q. Well, it says it will -- it has a Bates on number two. There is now a document giving me an answer as to what the basis was for your statement.

A. 28034?

Q. Correct. Midwest Gen 28034.

A. Okay. I guess I apologize. Your reference to citation is much different than mine in the scientific sense.

Q. I understand.

A. And I get confused for sure.

Q. Now, you -- let's look at your report, your July 2015 report, if we look at page nine of the report.

HEARING OFFICER HALLORAN: I should know this by heart, but what report?

MS. GALE: 401.

MS. NIJMAN: 401.

HEARING OFFICER HALLORAN: Thank you.

BY MS. NIJMAN:

Q. In the middle of the paragraph, coal

ash management.

A. Yes.

Q. There is a sentence that starts "When all three Joliet 29 ash ponds were relined with HDPE, the plastic was placed on top of the existing poz-o-pac liner after its partial removal" and then it goes on "Plastic was placed directly on the side slope poz-o-pac and attached to the ash pond concrete discharge structures" and then you and I talked about this earlier this morning, right?

A. Yes.

Q. Now, in your sworn certification, the response to the support for this statement was now document 28034. So looking at 28034 I believe this is actually an exhibit in the case now, but I could not connect it up.

So if you look at Bates 28034, that's the back page.

A. Yes.

Q. Now, you were here when Mr. Lux was testifying, correct?

A. Yes.

Q. And you heard Mr. Lux talk about

this photo and tell you this is geotextile, correct?

A. That was his opinion, yes. He was there.

Q. So this doesn't show plastic on the poz-o-pac, does it?

A. But that's a fine, fine point because the plastic goes right over the top of the geotextile. Come on. That's not a -- it's close enough.

Q. Well, your statement in your report is plastic was placed directly on the poz-o-pac using the word directly which concerned you because of potential harm to the liner. So I ask you again this is not plastic on the poz-o-pac, is it?

A. And I don't know that by looking at the photo except that Christopher Lux testified to it, but this is what I'll say. I was led to understand from the documents I reviewed and from the drawings that plastic went on the poz-o-pac, the fact that there is a geotextile under it and the poz-o-pac is rough does not take responsibility away from the engineer to make sure

that that poz-o-pac is not poking through into the liner.

Q. And you have no documents to support your statement that the poz-o-pac was rough?

A. I have 50 years of engineering experience with liners.

Q. Sir, that's not what I asked you. You have no documents to support that the poz-o-pac was rough, do you?

A. Only photographs.

Q. Okay. And we'll get to that. You have no -- isn't it true that the poz-o-pac was certified smooth by the installers of the liners?

A. I don't understand smooth.

Q. Okay.

A. To amend that, I don't see smooth in this photograph.

Q. I'm not asking about the photograph. I'm asking about you are aware that when the liners at Joliet were installed, there were professional, third-party consultants who certified -- a professional engineer in the State of Illinois who certified that the poz-o-pac was smooth and acceptable for the liner, are you aware

of that?

A. No, I'm not aware of that.

Q. So showing you a packet of documents.

HEARING OFFICER HALLORAN: I'm sorry. Showing --

MS. NIJMAN: A packet of documents entitled construction documentation transmittal ash impoundment one and two liner replacement.

HEARING OFFICER HALLORAN: Thank you.

BY MS. NIJMAN:

Q. This is Exhibit 1 -- this is -- I see, the prior one. So the Bates numbers on this document are 49362, Midwest Gen 49362 to --

HEARING OFFICER HALLORAN: Is this an exhibit already, Ms. Nijman?

MS. GALE: No.

MS. NIJMAN: Not yet. I don't believe so.

HEARING OFFICER HALLORAN: I don't have a copy, but I'll just wing it for now if you don't have an extra one.

MS. NIJMAN: I don't right now, but

I will give this to you in just one moment.

HEARING OFFICER HALLORAN: Thank you.

BY MS. NIJMAN:

Q. If you would turn to page 49459. Have you seen this construction packet before?

A. No.

Q. No one has provided it to you before for your review?

A. Not that I'm aware of.

Q. So you've made opinions about these ponds at Joliet without ever having seen the construction affirmation documents?

A. That's pretty much correct because what I utilized was something different, the drawings in the back which don't exactly show the same thing as what these show.

Q. I'm a little dumbfounded that some materials like this were not part of your review. Did you turn to the page that I --

A. Yes.

Q. -- referenced you?

A. Yes.

Q. And that is the certification,

correct, showing that the liners -- or the poz-o-pac was acceptable for the HDPE liner installation?

A. It's a -- it's a visually inspected subgrade surface that is certified for installation of geosynthetic materials.

Q. And, Dr. Kunkel, you --

A. I'm not sure what that means.

Q. You're not sure what the certification of the subgrade is?

A. Yes, that's correct. It doesn't say anything about smooth. It doesn't say -- it just says that it's certified that it's acceptable for -- for installation of geosynthetic materials. That's what it says and that's fine. I'll have to trust the engineer who did it.

Q. Right. Because you weren't there?

A. I wasn't there, correct.

Q. And these are professional installers, correct?

A. I assume so, yes. Mm-hmm.

MR. RUSS: I'm sorry. Can you restate the page?

MS. NIJMAN: 49459.

MR. RUSS: Thank you.

MS. NIJMAN: Sure.

BY MS. NIJMAN:

Q. Now, you state in your reports that you were concerned -- you said it just now. You were concerned about the geotextile and that the -- I'm sorry. This is from your supplemental report in March of 2016.

MR. RUSS: Is that an exhibit?

MS. NIJMAN: Yes, it's your exhibit.

MR. RUSS: Do you remember -- 408, I think.

MS. NIJMAN: Yes, supplemental report is March 9th. It's the one I just provided to you, the March 9th supplemental.

MR. RUSS: Oh, I'm sorry. That's not one we did.

MS. NIJMAN: Correct. It's not an exhibit.

MR. RUSS: Okay.

MS. NIJMAN: It's the additional citations.

MR. RUSS: Right. Thanks.

BY MS. NIJMAN:

Q. Now, you state on page eight that you're still concerned about the HDPE because the geotextile might not be enough to protect the HDPE, is that correct?

A. Yeah, if there are rocks or if there is roughness from the poz-o-pac and if I remember correctly some of the poz-o-pac was removed with a jackhammer type instrument or equipment and that leaves a fairly rough surface.

Q. But, again, that was certified acceptable in some fashion so you don't really know what --

A. I --

Q. -- if it was rough, do you?

A. I don't know that and I don't even know that it was poz-o-pac. I think it just says the surface. I didn't know whether -- I can't tell from this whether it's a soil surface or poz-o-pac or what it is.

Q. Well, we can walk through the field notes of all those documents and you'll see exactly what was done and the review of the poz-o-pac, would you like to do that?

A. No, I don't think that's necessary. You know, if you want to impune my opinions, that's fine and I'm willing to accept that, but I didn't see any construction documents. What I saw were pre-construction drawings and the details on those drawings didn't show exactly what the subbase was. In fact, it didn't even show poz-o-pac I think on some of the construction drawings.

Q. Mm-hmm.

A. That was part of my problem. So I was opining in my report --

Q. Based on the limited amount of information?

A. Based on what I knew that that's what happened or that's what I was instructed and I apologize if -- if I didn't know that. I -- I did the best I could with what I had.

Q. Thank you. If you turn to page 18 of the supplemental report -- excuse me. Eight of 14 of the supplemental report of March 9th. In the second full paragraph, are you there, sir?

A. Yes.

Q. You discuss -- we're still talking

about this geotextile and you discuss an article by Schroeder and others?

A. Yes.

Q. Now, that's also referred to as the HELP, H-E-L-P, article, is that --

A. Hydrologic Evaluation of Landfill Performance. It's called HELP, yes.

Q. And you use that as a basis for your concern about the installation, but if I understand you correctly now that you have the construction documents you no longer hold this opinion about the installation concern?

A. Well, only -- only because an engineer is certified, but I'm still -- I'm still not sure that the engineer was certifying soil or poz-o-pac.

Q. Well, again, we can go through all the field notes and you can see exactly what they did because that's what their job is. Okay.

A. Okay. But if you can explain to me what you're after here. If it's poz-o-pac, then it's poz-o-pac. That's fine.

Q. Yeah. Right now I want to get at this Schroeder article because you used the

Schroeder article to -- tell me if I am misunderstanding it -- to support your claim that liners leak, right?

A. That's one. All liners leak. There's no doubt about that.

Q. And this is the article that supports that statement, is that correct?

A. No. No. That all liners leak? No. Schroeder is a -- that's a design manual for use of the HELP model which is a very conservative EPA model that I've used plus numerical models as well, this is an analytical model, to assess the amount of leachate that will go through a liner placed in a landfill or a pond, coal ash pond.

Q. Right. And Schroeder wrote that article in 1994, correct?

A. Yes.

Q. Now, Schroeder also didn't consider leak detection test in his article or his analysis, did he?

A. That's not the purpose of his report.

Q. I understand. I'm just saying it's not part of his analysis.

A. I don't know what you mean by his analysis. His analysis had nothing to do with leak detection systems or anything. His is a design -- design guidelines.

Q. Well, let's try it this way. Isn't it true that by conducting leak detection surveys after installation, leaks would be detected before the ponds are put in use, any leaks from the installation process would be detected?

A. Yeah, only to the extent that that represents a liner, which is unloaded, in other words, it has no water in the pond or ash or anything like that, that would be true, that you would then attest the integrity of the seams, defects in construction. That's what leak detection does, yes.

Q. But the leak detection surveys take place after the warning layer is placed, the sand layer, I'm sorry, correct?

A. But that's a minimal amount of impact on the liner and if nobody is out driving around on it, which they shouldn't be, then you would expect that the leak detection test which I think in all the cases here show that the seams

were in pretty good shape, there were a few little spots that were repaired and I agree with all that.

Q. Okay.

A. The leak detection test should always be done. There's no doubt about it. It doesn't mean the liner won't leak tomorrow or the next day or once water is in the pond or ash.

Q. But we have -- we don't know that? I mean --

A. We pretty much know that from our experience with -- with HDPE liners. They all leak eventually.

Q. Eventually. Okay.

A. Yeah.

Q. So aren't they warranted for 50 years?

A. I have no idea. I don't believe that any liner manufacturer warrants the placement of the liner for 50 years. The material itself, yes. HDPE, 50 years. The seams, that's a construction issue.

Q. But you agree then that the leak detection surveys are the most accurate way to

address any potential problems with the liner, the line --

A. Immediately after construction. Absolutely. Absolutely.

THE COURT REPORTER: I didn't get the end of your question.

HEARING OFFICER HALLORAN: Yeah, we have to slow down. Thanks.

BY MS. NIJMAN:

Q. A liner installation.

A. Immediately after construction leak detection surveys should be done to assess the integrity of the installation to make sure there are no installation defects that are obvious.

Q. And as you said, that was done here?

A. Yes.

Q. Okay. Looking back at your certification for a moment. So I asked you on number seven to provide me with -- are you here? Are you back on the certification?

A. This?

MR. RUSS: This one.

BY THE WITNESS:

A. I've got it.

BY MS. NIJMAN:

Q. So on number seven, I asked you to provide me with the citation to a document supporting the statement that, quote, written documentation available from MWG on Will County ash pond reconstruction, retirement and maintenance in 2012 and 2013 indicates that the ash ponds leaked until 2013 and likely continued to leak due to poor liner construction and maintenance, close quote, and that is from page 30 of your 2015 report, right? Do you remember I asked you --

A. Yes.

Q. -- your support for that statement?

A. Yes.

Q. So this sworn certification from you cites me to -- sends me a document. So I look at the document, do you recognize this document Midwest Gen Bates 48612?

A. Yes.

Q. And this is a memo actually that Ms. Maddox talked about when she was here, correct?

A. Yes.

Q. And this is dated 2008, correct?
A. Yes, September --
Q. And --
A. -- 3rd.
Q. -- it has nothing to do with 2012 or 2013, does it?
A. It predates 2012 and 2013, yes.
Q. And as you see from her questions and you heard from her testimony, there is no statement in this document that leaks occurred or that there was poor ash pond construction, retirement and maintenance as you state, correct?
A. I need to reread the document. The answer to your question is correct.
Q. Thank you. Now, your initial report of July '15 you also said that the Powerton site was impacted by mercury as one of the constituents of concern, do you recall that?
A. Yes.
Q. And we discussed in your deposition that that was an error, correct?
A. Yeah, I took that from the notice of violation or one of the documents that was submitted to the state.

Q. And I see from the various tables that you've provided, you no longer believe mercury is an issue, correct?

A. I don't, no.

Q. Now, believe it or not there were some things we did agree to during your deposition.

A. Refresh my memory, please.

Q. All right. Here we go. You would agree that the chemical composition of coal ash is determined by the chemistry of the source coal and the combustion process?

A. Yes.

Q. That's what you said at your deposition?

A. Yes.

Q. And you would agree that the source coal for the four Midwest Gen stations has remained the same over its operation period?

A. It has with the exception that I did hear testimony here that there may have been some Illinois coal mixed in with the coal from one of the plants and I can't remember which one and I can't remember whether it was Chris Lux or --

anyway. Basically, you're burning --

Q. Same coal?

A. -- Powder River Basin coal from Wyoming.

Q. And you agree that the combustion processes have remained the same at the four stations?

A. I don't know that for sure, but I assume they have, yes.

Q. And you would agree that extensive testing has shown that coal ash rarely, if ever, exceeds hazardous waste criteria?

A. Yeah, based on the famous -- not famous. Based on the ASTM test for hazardous waste, that's true.

Q. And you would agree that when it's available, you want to use data specific to your own site?

A. Yes.

Q. And you would agree that -- and I think you've said this to your -- to Mr. Russ.

In giving your opinions in this case, you could not determine when groundwater impact might have occurred at the stations?

MR. RUSS: Misstates. Objection.
BY THE WITNESS:
A. I don't understand the question.
HEARING OFFICER HALLORAN:
Overruled.
BY THE WITNESS:
A. I don't understand what you mean by
when.
BY MS. NIJMAN:
Q. Well, you've been asked several
times I think and I thought you made it quite
clear that you could not determine when impact to
groundwater occurred --
MR. RUSS: Object.
BY MS. NIJMAN:
Q. -- at the stations?
HEARING OFFICER HALLORAN: Yes,
Mr. Russ?
MR. RUSS: Completely misstates what
happened.
HEARING OFFICER HALLORAN: Well, you
know, I can't remember and, again, that's why we
have redirect. So if Dr. Kunkel can answer, go
ahead, sir.

BY MS. NIJMAN:

Q. So let me ask it a different way. Okay. Isn't it true that you cannot determine when groundwater contamination might have occurred at the stations?

A. In general, that's true. First occurred or --

Q. Correct.

A. First occurred? You mean when groundwater contamination first occurred at the stations?

Q. Or --

A. It's occurring now. We can document that.

Q. I understand. Let's say prior to 2010 when monitoring started, you cannot determine when groundwater impact may have occurred?

A. I cannot.

MR. RUSS: I object again. There is a disconnect between what counsel is asking and what he is saying and --

HEARING OFFICER HALLORAN: Okay.

MR. RUSS: The form of the question.

HEARING OFFICER HALLORAN:

Overruled. We can clear that up on redirect next year.

BY MS. NIJMAN:

Q. You would also agree there are no potable wells near any of the stations?

A. According to the Patrick reports that I saw, I think Patrick was charged with doing the potable well surveys within a certain radius of the sites and I believe that's correct that there were no -- there are none.

Q. In fact, you confirmed that for me during your deposition as well?

A. I did, yes.

Q. And you would agree that the facilities do not have the possibility to impact offsite drinking water, correct?

A. I'm not sure I can answer that positively. It depends on what the source of drinking water is. Groundwater?

Q. Would you like to look at your deposition again because that's the exact question I asked you and you answered yes?

A. Yes.

Q. Okay. So let's look at your

deposition then. You would like to see it?

A. No.

Q. So you agree that the facilities do not have the possibility to impact offsite drinking water, correct?

A. If we're talking about wells, that's correct. Yeah, groundwater.

Q. Yesterday you stated that you chose boron, manganese and sulfate as your indicators of coal ash, correct?

A. Yes.

Q. And you said several times yesterday I believe that you would want to see those three indicators together, correct?

A. If those -- if those three occur in high concentrations together, it's well-established by EPA, EPRI, the State of Illinois that those three occurring in high concentrations together are the result of coal ash contamination.

Q. I very much appreciate your answer, but I asked you actually a very -- and you answered it, but you could have answered it with a yes. So if we could try to move this along.

A. The answer is yes.

Q. Thank you. You also said yesterday that manganese was still one of your indicator parameters, correct?

A. Correct.

Q. And you said that's because US EPA has determined it's an indicator, correct?

A. IEPA.

Q. No.

A. US EPA as well.

Q. I think you said several. You said IEPA, US EPA, EPRI, right?

A. There is lots of possible indicators and I think IEPA was the one that wanted the mercury included.

Q. I'm sorry. We're talking about manganese.

A. Manganese, yes.

Q. And yesterday I believe you said it was -- so let me back up.

So now you're saying US EPA doesn't want manganese?

A. No, I'm not saying they don't want it. I'm just saying that wasn't I think a high

priority on their list of constituents. Neither was it on the EPRI list.

Q. Okay. I guess that's a little bit different than what you said yesterday. Now --

MR. RUSS: Objection.

HEARING OFFICER HALLORAN: Sustained.

BY MS. NIJMAN:

Q. -- you provided some testimony yesterday about the US EPA's CCR rule, do you remember that?

A. Yes.

Q. Let's go to the CCR rule since you quote from it. It's tab 406 in the binder. If you could turn to page 21405.

A. Okay.

Q. 21404. I'm sorry.

A. Okay.

Q. And in the third column on the right-hand side about halfway down the page it states "Aluminum, copper, iron, manganese and sulfate have been removed because they lack maximum contaminant levels and were not shown to be constituents of concern based on either the

risk assessment conducted for this rule or the damage cases," do you see that?

A. Yes.

Q. So are you aware that the US EPA actually has removed manganese as an indicator parameter for coal ash?

MR. RUSS: Object. This does not talk about indicator parameters here.

BY MS. NIJMAN:

Q. Are you aware that US --

HEARING OFFICER HALLORAN: Overruled.

BY THE WITNESS:

A. I'm aware now, yes.

BY MS. NIJMAN:

Q. You weren't aware until now?

A. Well, it's still -- now, I included manganese I think it was clear in my report because IEPA for these four sites was interested in manganese. As part of the rulemaking for Illinois, they recommended boron, manganese and sulfate.

Q. So if you would turn to your rebuttal report dated December 8th, which is

Exhibit 407. And on page two of that report this is in your binder I believe Exhibit 407. I'm sorry. Your binder.

A. Well, this is the rebuttal -- this is the rebuttal report as well.

Q. Okay. You can use that one, too.

A. Yeah.

Q. Page two of the rebuttal report, the supplemental report it says it as well, first line says "I chose the correct indicator parameters which are those accepted by other experts and regulators, Kosson and others 2009, EPRI 2012, IEPA 2013, US EPA 2015" and then if you go to your references how you define US EPA 2015, that's the CCR rule, correct?

A. Let me look. And IEPA is the technical support document.

Q. Yes, I understand, but I'm asking you about US EPA. You cite to US EPA as support.

A. But that's for all three. I have other references for those three constituents.

Q. Okay.

A. One of which is IEPA.

Q. I understand that. I'm asking you

about the CCR rule. The CCR rule --

A. Well, I didn't use the CCR rule for manganese.

Q. Okay.

A. Boron and sulfate is what I used it for.

Q. I see. So that was a little confusing from your report.

A. The references are there. IEPA 2013 was for manganese.

Q. I see. So each of these citations was for a different indicator, is that what you're saying?

A. Not necessarily. Not necessarily. There's duplicates. IEPA also has boron and sulfate. EPA just has boron -- IEPA has boron, manganese, sulfate and EPA has boron and sulfate. I just lumped them all together --

Q. I see.

A. -- which is acceptable in my opinion.

Q. Are you aware that in the CCR rule US EPA determined that manganese was not shown to be of concern based on the risk assessment they

conducted for the rule?

A. That's what it says, yes.

Q. Were you aware of that prior to now?

A. I don't think it disqualifies manganese.

Q. Sir, I didn't ask you that.

MR. RUSS: I object. I think he can answer however he wants.

HEARING OFFICER HALLORAN: It's a yes or no.

BY MS. NIJMAN:

Q. I need an answer to the question and it's a yes or no question, please. Were you aware?

A. Yes, I was aware.

Q. You're familiar with the term redox conditions, correct?

A. Yes.

Q. What does that mean?

A. That is oxidation reduction conditions, which -- yeah.

Q. And isn't it true that manganese is sensitive to redox conditions in groundwater?

A. It is.

Q. And as a result manganese would generally be a poor indicator of coal ash leachate?

A. It depends on the pH of the groundwater.

Q. When we were talking about the CCR rule, there was something I forgot to ask you.

You're aware that a petition for reconsideration was filed concerning the CCR rule?

A. I don't know what that is. No, I'm not aware.

Q. And you weren't involved in the drafting of the CCR rules, were you?

A. No.

Q. You've also mentioned that you cannot distinguish between whether a potential source for groundwater impact at the stations is the pond or the ash areas?

A. Correct.

Q. And, in fact, I think in the deposition you told me it would be impossible to distinguish between the potential sources, do you recall that?

A. That's a fair statement, yes.

Q. Now, we talked about the fact that there are berms around the ponds, correct?

A. Yes.

Q. And that there is structural ash in those berms?

A. I believe that's correct, yes.

Q. You're familiar with the term hydraulic head?

A. Yes.

Q. Are you aware that US EPA in its CCR rule determined not to include old ash landfills in the CCR rules?

A. I'm not sure I understand that.

Q. Well, the CCR rules do not apply to ash landfill areas, correct?

A. Yes.

MR. RUSS: Object.

HEARING OFFICER HALLORAN: I'm sorry. Hold on. Mr. Russ has an objection.

MR. RUSS: The question contained an inaccuracy.

HEARING OFFICER HALLORAN: Is that true, Ms. Nijman? Can you rephrase and see what happens?

MS. NIJMAN: Let's just turn to the exhibit because that will clarify it for Mr. Russ.

MR. RUSS: You said all landfills.

MS. NIJMAN: I said old ash landfills.

MR. RUSS: You did. And then your second question you said landfills.

MS. NIJMAN: Ash landfills.

MR. RUSS: That's not accurate.

HEARING OFFICER HALLORAN: I'm having a hard time hearing you, Ms. Nijman, as well.

MS. NIJMAN: I'm sorry.

HEARING OFFICER HALLORAN: I understand the logistics.

MS. NIJMAN: Yeah, it's difficult. I'm trying.

BY MS. NIJMAN:

Q. At tab 406 again of your binder if you would turn to page 21342. Again, in the third column on the right-hand side there is a sentence that begins "Similarly, the requirements of this rule do not apply to inactive CCR landfills -- which are CCR landfills that do not accept waste

after the effective date of the regulations. The agency is not aware of any damage cases associated with inactive CCR landfills and as noted the risks of release from such units are significantly lower than CCR surface impoundments or active CCR landfills. In the absence of this type of evidence and consistent with the proposal, the agency has decided not to cover these units in the final rule."

You were familiar with that provision?

A. Yeah, I don't consider the ash disposal areas at the four sites as landfills. They weren't designed as landfills. They were simply coal ash mixed with soils that were used as construction material or ash simply dumped on the surface and then later removed, but maybe the removal wasn't complete. So I don't consider it to be a designed landfill in the engineering sense.

Q. Do you believe that US EPA in this statement when they refer to inactive CCR landfills, do you believe they're talking about designed landfills?

A. I do. Yes, I do. I mean --
Q. What is your basis for that?
A. A landfill --
Q. Sir, what is your basis for that?
A. As an engineer, a landfill to me is very specific. It's some place that is intentionally used for final disposal and it's an engineered facility. In other words, some engineer went out and some contractor actually built the facility and said "We will put ash here."
Q. And are you aware of whether that's how US EPA is defining it in the CCR rules?
A. No, I have no idea.
Q. You're not aware. Thank you.
A. All engineers --
THE COURT REPORTER: Hold on. I'm two questions --
HEARING OFFICER HALLORAN: Okay. Okay. He's two questions --
THE COURT REPORTER: Are you aware of how US EPA --
BY MS. NIJMAN:
Q. Defines an inactive landfill.

Answer was "I have no idea."

A. I don't think I know how EPA defines it. I know how I define it --

Q. Thank you.

A. -- and most other engineers.

Q. Now, would you turn to page 213 -- sorry. We'll have to come back to it because I can't find the second page I wanted to show you. So it was on the page we were already on, page 21342. In the second column, the middle column there is a discussion on inactive CCR surface impoundments and I'd like to draw your attention to the statement "As discussed in the proposal, the risks associated with inactive CCR surface impoundments do not differ significantly from the risks associated with active CCR surface impoundments. Much of the risk from these units is driven by the hydraulic head imposed by impounded units," would you agree with that statement?

A. May I read it?

Q. Of course.

A. I don't know exactly where it is on this page here.

Q. I'm sorry.

HEARING OFFICER HALLORAN: Three quarters of the way down.

BY MS. NIJMAN:

Q. Starting here.

A. Yes, I agree with that statement.

Q. And then if you go further down starting at the new paragraph. "The sole exception is for inactive CCR impoundments that have completed dewatering and capping operations," do you see that?

A. Yes.

Q. Okay. "EPA considers these units to be analogous to inactive CCR landfills, which are not subject to the final rule."

Do you know why US EPA would determine that a dewatered impoundment would not have a risk of -- as they've stated here the risks associated with active impoundments?

A. Well, it's not only dewatered. It's capped. So it's essentially a closed facility I guess under EPA's definitions.

Q. And it's -- sorry.

A. I'm sorry. So all they're saying is

that there are additional time restrictions and things likes that, but, again, when they talk about CCR landfills I'm sure EPA means an engineered landfill just like a CCR impoundment.

Q. You're making that assumption?

A. Yes, I am. And I think it is a correct assumption.

Q. Now, yesterday when you were talking about the CCR rules I think you said, correct me if I'm wrong because I'm just going by my notes, you said that the damage cases, you know, in the statement we talked about before it said US EPA is not aware -- decided not to cover inactive landfills because they are not aware of any damage cases associated with inactive CCR landfills and you said damage cases meant situations where someone has claimed money damage?

A. I don't believe I said that. I think that was said by counsel.

Q. Okay. Because that's not how the CCR rules defines damage, correct?

A. No.

Q. How does it define damage?

A. I don't know exactly, but I know

it's not just monetary damages or claims.

Q. Now, the CCR rule wasn't adopted until 2015, right?

A. Correct.

Q. And nowhere in the CCR rules does it say they were adopting an industry standard for pond liners, correct?

A. You'll have to explain industry standard to me.

Q. Well, yesterday there was some testimony between you and Mr. Russ about the fact that the CCR rule could have been adopting an industry standard for ponds and I'm asking you where in the rule does it say that?

A. It probably doesn't say it anywhere in the rule, but try to permit a pond.

Q. Let me ask you the next question because that was the one question I asked you. Taking these one at a time.

So yesterday when you answered that question, you said "Well, some states have standards, some don't," right?

A. Correct.

Q. Okay. Illinois did not have

regulatory standards for ash ponds prior to the CCR rules, correct?

A. I don't know that for sure.

Q. Okay. In fact, you're aware that Illinois EPA specifically approved the liner systems that were installed by Midwest Gen, correct?

A. I don't know that either, but --

Q. Well, you've seen the EPA issued construction permits for the liners, correct?

A. I don't believe so, no.

Q. I'm afraid you've not seen all the documents relevant to this case, sir.

A. There is over 60,000 pages and I haven't seen all 60,000 for sure.

Q. Okay. Well, each of the permits -- excuse me -- each of the ponds when it was relined need to have a construction permit, correct?

A. I -- a construction permit, but -- yeah, from IEPA.

Q. And that permit outlined how the pond was to be rebuilt?

A. You know, I don't know.

Q. You don't know.

A. You're asking me questions I have no idea --

Q. Okay.

A. -- what IEPA requires.

Q. Fair enough. So you've never seen any of the permits relating to the relining?

A. No.

Q. Okay. Sir, I'm back on the CCR rules for one more moment. Referencing you to page 21469.

A. Yes.

Q. At the bottom of the page in the middle column begins a definition of a CCR landfill and recall we were just talking about inactive CCR landfills. This definition does not include an engineered landfill, correct?

A. That is what I read.

Q. Let me read it.

A. Read it, please.

Q. "CCR landfill or landfill means an area of land or an excavation that receives CCR and which is not a surface impoundment and underground injection well, salt dome formation, salt bed formation, an underground or surface coal

mine or a cave. For the purposes of this subpart, a CCR landfill also includes sand and gravel pits and quarries that receive CCR, CCR piles and any practice that does not meet the definition of a beneficial use of CCR."

So reading that definition, sir, your assessment that it had to be an engineered landfill isn't correct, isn't that true?

A. To some extent however --

Q. Sir --

A. -- the ash that is at the sites is mixed and used as fill and construction materials and that's --

Q. Structural fill?

A. Structural fill, yeah. Well, I don't know structural fill, just fill.

Q. And you don't think that's included in this definition?

A. No, because this talks about piles, quarries like you have at Joliet.

Q. An area of land or excavation that receives CCR?

A. Right. Well, those didn't -- weren't an area of excavation that received CCR.

Q. Do you know that, sir?
A. CCR -- yes, CCR is in the fill material so it wasn't an area that was receiving CCR as a method of disposal of a CCR. It was simply mixed in with fill material.
Q. So the only areas of old ash that you are concerned about at the stations is the areas that are mixed in with fill material?
MR. RUSS: Objection. Objection.
HEARING OFFICER HALLORAN: Your objection, Mr. Russ?
MR. RUSS: That's misstating his testimony in a large way. I don't know how else --
HEARING OFFICER HALLORAN: Can you rephrase, please?
MS. NIJMAN: I wasn't attempting to restate testimony. I was asking a question.
BY MS. NIJMAN:
Q. The question is if you believe that the old ash areas or old ash at the facilities is mixed with fill, are those the areas you're concerned about that somehow don't -- aren't covered by the CCR rule? I'm very confused about

your definitions.

A. Well --

MR. RUSS: I'll object to the question. It's compound and unclear. Vague.

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

BY THE WITNESS:

A. Well, I've testified by referring to the drillers log that there's ash outside the ponds. That ash is clearly not in any kind of a pile or a disposal area, an excavation, it's just there because it was mixed in with -- to use as fill around the ponds or under the ponds or --

Q. Berms.

A. Berms, things like that and I don't think -- my reading of this that is not covered by the CCR rule.

Q. What about the Joliet areas that you testified about?

A. That could clearly be under the rule considered to be an old ash disposal area. However, it doesn't mean it's not causing contamination to groundwater.

Q. So that would be covered under this

definition?

MR. RUSS: I'm going to object to asking for legal conclusion from --

HEARING OFFICER HALLORAN: That's permitted. Overruled.

MS. NIJMAN: Thank you.

BY MS. NIJMAN:

Q. Let's look at Complainants' Exhibit 260 and try to pull it out. It should be somewhere in front of you. 260.0.

MR. RUSS: O.

BY MS. NIJMAN:

Q. Group O of complainants. This is second quarter 2017 Powerton groundwater monitoring report.

A. Yeah, it's here somewhere in this stack.

Q. It was there before.

HEARING OFFICER HALLORAN: What page are we on?

THE WITNESS: There it is.

MS. NIJMAN: I haven't gotten that far.

HEARING OFFICER HALLORAN: I'm

sorry. First time I'm ahead of you.

THE WITNESS: I found it. Well, there is a clip here. It came off. Yes, I have it.

BY MS. NIJMAN:

Q. Great. Looking at page Midwest Gen Bates 62535.

A. Yes.

Q. And for the record we are looking at the quarterly groundwater monitoring report Powerton Generating Station July 5th, 2017, Complainants' Exhibit 260.O.

MR. RUSS: What page are we looking at?

MS. NIJMAN: It's 6 -- 62540, the drawing. Contour map 62540.

BY MS. NIJMAN:

Q. Now, this is the contour map for the gravelly sand unit, correct?

A. Yes.

Q. And it shows the former ash basin area, do you see that?

A. Yes.

Q. And that's drawn both below and

above the rail line there, do you see that?

A. Yes.

Q. And your map I think you had it as one large area, correct, the maps that you showed in your demonstratives?

A. I think it was one of these drawings --

Q. Okay.

A. -- by KPRG.

Q. Okay.

A. It was that drawing. Well, similar to that. It was -- yeah, that but with different contours.

Q. Now, I believe you testified, and again I'm going by memory so tell me if I'm incorrect, that monitoring wells -- well, do you recall yesterday testifying about the monitoring wells that are around this former ash basin?

A. Yes, I do.

Q. Okay. And MW-2, 3, 4 and 5 would all be down gradient of that former ash basin?

A. Yes, under normal conditions they would be.

Q. And that's because if you look at

the contour lines the lines are going towards those wells, correct?

A. I'm not sure which unit. I guess those are completed in the gravelly sand unit.

Q. That's right.

A. Okay. Yes.

Q. Okay. And MW-1 I guess you'd say is, what, side gradient?

A. Yeah, cross gradient.

Q. Okay. So let's go to the tables in the report at MW 62545.

Now, this table shows the last eight quarters of groundwater sampling, correct?

A. Yes.

Q. From 5/11/2015 to 5/3/2017.

A. Yes.

Q. And starting with monitoring well one on page Bates 42545 let's look at boron, one of your -- one of the indicator parameters that you've testified about.

Now, looking at the last eight quarters at no time are the boron levels above the Class 1 standard of two, correct?

A. Correct.

Q. And, in fact, the last three quarters, November 2016, February 2017 and May 2017, were all even below the background levels that you applied, correct?

A. Correct.

Q. Let's look at manganese on this same page. The manganese Class 1 standard in Illinois is 0.15. For the past eight quarters from May 2015 through May 2017, manganese in MW-1 is below the Class 1 standard of 0.15, correct?

A. Correct.

Q. And, in fact, all but two of the samples are actually non-detect, correct?

A. Correct.

Q. Let's look at sulfate. Again, the last eight quarters. Sulfate in MW-1 is below the Class 1 standard of 400 milligrams per liter, correct?

A. Correct.

Q. Let's look at MW-2 next page. This is on Bates page Midwest Gen 62546. Again, looking at boron, for the past eight quarters concentration of boron in MW-2 is below the Class 1 standard, correct?

A. Correct.

Q. In fact, two of the last four results are below your background that you have applied, correct?

A. Correct.

Q. Let's look to manganese. Class 1 standard for manganese being 0.15, for the past eight quarters manganese in MW-2 is below the Class 1 standard, correct?

A. Correct.

Q. In fact, all but two of the samples are non-detect?

A. Correct.

Q. Look at sulfate. Concentration of sulfate in MW-2 is below the Class 1 standard consistently, correct?

A. Correct.

Q. Let's go to MW-3. Next page. Bates 62547. For the past eight quarters from May 2015 through '17, boron in MW-3 is all below the Class 1 standard, correct?

A. Correct.

Q. Manganese past eight quarters concentration of manganese in MW-3 is below the

Class 1 standard, correct?

A. Correct.

Q. In fact, all but two of the samples are non-detect, correct?

A. Correct.

Q. Sulfate. For the past eight quarters, concentration of sulfate in MW-3 is below the Class 1 standard, correct?

A. Correct.

Q. Let's go to next page MW-4. This is now Midwest Gen Bates 62548 for monitoring well sample MW-04. If we look at boron, past eight quarters concentration of boron is all below the Class 1 standard, correct?

A. Yes.

Q. Look at the line for manganese, past eight quarters concentration of manganese in MW-4 is below the Class 1 standard, correct?

A. Yes.

Q. Three of the quarters are non-detect, correct?

A. Correct.

Q. For sulfate, past eight quarters concentration of sulfate at MW-4 is below the

Class 1 standard, correct?

A. Correct.

Q. One more. MW-5. This is Bates page 62549. Looking at boron past eight quarters concentration of boron in MW-5 is all below the Class 1 standard, correct?

A. Correct.

Q. Looking at the line for manganese. For the past eight quarters, concentration of manganese are all below the Class 1 standard, correct?

A. Correct.

Q. And same for sulfate, all below the Class 1 standard, correct?

A. Correct.

Q. So in the review of the past eight quarters of groundwater monitoring results for the wells that we've identified as down gradient of the former ash basin, none of those wells have concentrations above the Class 1 standards, correct?

A. Correct.

Q. Okay.

MS. NIJMAN: I don't know what

you're thinking as far as timing of an afternoon break.

HEARING OFFICER HALLORAN: 3:00-ish.

MS. NIJMAN: Okay.

BY MS. NIJMAN:

Q. Now, you opined -- I honestly don't remember if it was this morning or yesterday, but in your testimony at some point you stated that you did not believe that the Tannery or the General Boiler property, and correct me if I'm wrong, are contributing to contamination -- groundwater contamination at the sites, correct? Was that your testimony?

A. Yes.

Q. Okay.

A. Well, not exactly. I think I did testify that I felt that there was -- were contaminants coming onto the property from the General Boiler state and the Tannery site, but they weren't necessarily related to coal ash contamination.

Q. Because you are referring to the arsenic plume?

A. Or TDS in general, possibly other

constituents which I didn't look at in detail.

Q. Okay. Now, do you recall when I deposed you you told me that you had no information about any old ash on the Tannery property --

A. That's correct.

Q. -- do you recall that? You mentioned that there is a historic ash area.

MS. NIJMAN: Can we get the map of Waukegan with the historic areas on it.

BY MS. NIJMAN:

Q. You did tell me that there was an old ash area to the north of the Tannery property, right?

A. No, I wouldn't have been interested in anything north of the Tannery property because that doesn't impact.

Q. I understand. But -- you didn't think it was impacting, but you said it existed?

A. I don't remember that I said that. I don't think I ever --

Q. I'm going to show you a deposition transcript. I don't think I made this up.

MR. RUSS: Is it the same -- I'm

sorry. This is the Colstrip deposition. Thank you.

MS. NIJMAN: You're welcome.

BY MS. NIJMAN:

Q. Looking at page 146 of your deposition transcript. So starting at line 7 I asked you

Q. And given that the prior owner of the Tannery was a coal company, isn't it likely that there is historic ash on that property?

A. On the Tannery site?

Q. Uh-huh.

A. There could be, but we don't -- I don't have any information that indicates there was ash on the Tannery site. I have information there was ash north of the Tannery site and maybe north of the General Water site. I think you meant General Boiler site. Because I don't think I had well logs at the Tannery site, but it's inconsequential to my conclusions.

A. Correct.

Q. So does that refresh your

recollection that you mentioned an ash area to the north of the Tannery site?

A. Yes.

Q. I'd like to show you a document that's been produced in this case. I don't know if you've seen it or not. Midwest Gen 51281.

HEARING OFFICER HALLORAN: 51261?

MS. NIJMAN: Yes. Sorry. My own typo.

BY MS. NIJMAN:

Q. Do you recall seeing this document at all?

A. I have seen it, yes.

Q. Okay. Now, for the record, this is dated September 4th, 2012, on Midwest Gen Bates 51261 through 51296 and it is a supplemental response letter to the violation notice issued by Illinois EPA for the Waukegan Generating Station, would you agree with that?

A. Yes.

Q. Now, if you look at 51281.

A. Yes.

Q. In the second full paragraph starting "In 1998 and 1999, further environmental

analysis were performed on portions of this property and it was confirmed that the northern section contained arsenic above the remediation benchmarks in a fly ash fill area because, quote, the remedial objectives and/or remedial action for the fly ash area had yet to be developed, close quote, the cleanup possibilities for this area could not be determined."

Were you aware there was a fly ash fill area on that property?

A. On the --

Q. On the Tannery property.

A. No.

Q. Okay. Now, you would also agree that there is at least some component of groundwater from the General Boiler property that flows onto the Midwest Gen property, correct?

A. Correct.

Q. And, in fact, monitoring from the General Boiler property shows exceedances of manganese, correct?

A. Correct.

Q. So, in fact, manganese from the General Boiler property is impacting the Midwest

Gen property, correct?

A. Yes.

Q. Are you familiar with the term ELUC, E-L-U-C?

A. I am.

Q. What does that mean?

A. Environmental land use whatever the C stands for.

Q. Control.

A. Control. I'm sorry. You're right.

Q. It's all right. Have you ever worked on putting an ELUC in place in Illinois?

A. No.

Q. Now, are you aware that the owner of the Tannery property has established an ELUC on the Midwest Gen property?

A. Yes, I am.

Q. And, in fact, you've identified the ELUC wells in several of your maps, correct?

A. Correct.

Q. Now, what is -- is it fair to say that the purpose of an ELUC is to ensure there is no access to groundwater, correct?

A. Yes.

Q. And you're aware that you -- well, you may not be aware.

In Illinois, are you aware that ELUC's get established based on either evidence of an actual impact to property or based on a model that shows where contamination might occur?

A. I believe you. I don't know how they're established.

MS. NIJMAN: Let's -- can we show the Waukegan map with the ELUC, the ELUC from the Tannery property.

BY MS. NIJMAN:

Q. Okay. So please correct me if I'm wrong, the Tannery property reaches from I believe the north end of the Midwest Gen property to the west of the Midwest Gen property, Tannery property goes all the way down to the south of the Midwest Gen property, correct?

A. Yes, I believe so.

Q. So it's completely to the west. And then this open space here is what we have been calling the General Boiler property, correct?

A. Correct.

Q. This is the area of the ELUC that

the Tannery property obtained over the Midwest Gen site as the area for the ELUC, correct?

A. Yes.

Q. And so that would be the area that they either had evidence of impact or a model showing evidence that impact would occur, correct?

A. Yes.

Q. Would you look at your supplemental report dated December 8th. Tell me which one you just pulled out.

Did you pull out the second supplemental report --

A. Yes.

Q. -- the March 9th one?

A. March 9th.

Q. Okay. Let me find the right page. On page three of that report, there is a statement the last full paragraph on the page.

A. Yes.

Q. We're talking about Waukegan here and the Tannery property and you say "This is highly unlikely for three reasons. First reason is the groundwater flow away from the Tannery site, not towards the coal ash ponds."

HEARING OFFICER HALLORAN: Can you speak up a little, please. Thank you, Ms. Nijman.

MS. NIJMAN: Sorry. I keep turning the wrong way from you.

BY MS. NIJMAN:

Q. I'm interested in number two which says "The concentrations of boron in the MW-10 through MW-14 (MW-13 is inactive) ELUC monitoring wells are the direct result of these wells having their screens completed in coal ash," do you see that statement?

A. Yes.

Q. So you're discussing the ELUC wells having screens completed in coal ash, correct?

A. That's what the report says, yes.

Q. But, in fact, you have never seen boring logs for those monitoring wells, have you?

A. I've seen boring logs next to those monitoring wells.

Q. Which boring logs, which wells are you talking about?

A. I'm talking about the ENSR wells B1, whatever they are, B4, B --

Q. Well, those are on the Tannery

property, correct?

A. Those are right next to the ELUC wells. I could point them out to you.

Q. Okay. Which map would you like to use?

MR. RUSS: I don't know.

BY MS. NIJMAN:

Q. One of your reports?

A. Yes.

MR. RUSS: I can help you try to find it, but we have to start with your report.

THE WITNESS: Yeah, that's what I'm after.

MR. RUSS: So in your first report.

HEARING OFFICER HALLORAN: Let's go off the record for a little bit.

(Whereupon, a break was taken after which the following proceedings were had.)

HEARING OFFICER HALLORAN: Let's take a break now for about 15 minutes.

(Whereupon, a break was taken after which the following proceedings were had.)

HEARING OFFICER HALLORAN: We're back on the record. Mr. Russ, you wanted some housekeeping matters attended to?

MR. RUSS: Yes. Thank you. Just to -- earlier in the proceeding, I can't remember exactly when, Monday we had quarterly groundwater monitoring results for the first quarter of 2012 from Powerton and we had originally tried to introduce a version that had not been amended and we said we would replace it with the amended version.

MR. BUGEL: We're not replacing it. We're adding.

MR. RUSS: Adding.

MR. BUGEL: Yes.

MR. RUSS: I'm sorry. This is a -- this would be Exhibit 24.5E. These aren't all marked.

MS. NIJMAN: They're all --

MR. RUSS: It's the one that -- the exhibit that it amended was 24E and so the amended version is going to be 24.5E.

MR. BUGEL: Yes.

MR. RUSS: Okay. I'll show you

copies.

MS. NIJMAN: Sorry. Do you have a copy? Sorry. You're just marking it.

MR. RUSS: Yes.

MS. NIJMAN: Got it.

MR. RUSS: I move to introduce Exhibit 24.5E.

(Document marked as Complainants Exhibit No. 24.5E for identification.)

HEARING OFFICER HALLORAN: Any objection?

MS. NIJMAN: No objection.

HEARING OFFICER HALLORAN: Okay. Complainants' Exhibit 24.5E is admitted.

MR. RUSS: And the other thing is I neglected to move to admit the demonstrative exhibits from Dr. Kunkel's direct. So I move to admit demonstrative exhibits at the back of the binder.

HEARING OFFICER HALLORAN: Ms. Nijman? I know there is at least one in here.

MS. NIJMAN: No objection, your Honor.

HEARING OFFICER HALLORAN: Okay. Thank you. Mr. Russ's motion to enter the demonstrative in the back of this binder --

MR. RUSS: Do you want to give it an exhibit number?

HEARING OFFICER HALLORAN: Yes, let's do that.

MR. RUSS: It would be -- going with the numbering in the binder, I believe it would be Exhibit 411.

HEARING OFFICER HALLORAN: All right. I'm marking it as Complainants' Exhibit, demonstrative exhibit, Exhibit 411 and that's admitted.

MR. RUSS: Thank you. That's all I have.

HEARING OFFICER HALLORAN: Can you give me a second, please. Okay. I'm ready.

BY MS. NIJMAN:

Q. Dr. Kunkel, during the break, I referenced for you Figure 16 of your July 2015 report, do you have that in front of you?

A. Yes.

Q. And Figure 16 you were saying you

could see the wells that explain your statement in your report of December 8th, 2015?

A. No, not exactly.

Q. Okay. What -- what did you need to see to --

A. What I'm referring to is companion bore holes that are right next to those wells in the ENSR environmental site assessment report in Waukegan.

Q. So you're saying that there are companion bore holes next to the ELUC wells?

A. Yes, or where the ELUC wells are. They're called MW-11 and MW-12 and the -- in the ENSR and I assume those are the same MW wells.

Q. Okay. And any others?

A. Well, those aren't the bore holes. Those are just the wells that I show here 11, 12, 13 doesn't exist anymore, 14 unfortunately isn't shown, but there is a B14 which is right near MW-14. It's called B14 and these are bore holes and why that ELUC well isn't shown I don't know, but the bore hole is right where the --

Q. Okay. I'm getting very confused. Tell me what bore holes you rely on to state that

there is ash in MW-11.

A. B1. ENSR --

Q. What hole --

A. -- bore hole B1.

Q. Thank you. What bore hole do you rely on to state there is ash in MW-10?

A. I'm going to rely on B14. It isn't really ash. It's coal, but it weathers the same as ash and because it's wet at the time they did the bore hole the oxidation of the coal gives off the same constituents as ash. It's just a bigger particle. Think of it as a very large ash particle instead of a smaller ash particle.

Q. Are you saying it wouldn't behave differently?

A. It probably won't behave differently. It will weather -- the surface of the coal will weather and give off boron, manganese, sulfate.

Q. So, I'm sorry. Tell me again for MW-10 the --

A. B14.

Q. B14. And how close is that to MW-10?

A. To MW-10. It's either near 10 or near 14, but they're pretty close together, within, you know, 20 or 30 feet it would appear. I can't tell. I have to scale it.

Q. So you're saying B14 is within 20 to 30 feet of --

A. Well, I don't know. I'm just saying B14 is near MW-11 and 12. That's the best I can say. Okay. B1 is near -- is plotted right next -- or right near MW-11 and, again, this is the result of a plot on a map and so we know it's close.

Q. But you don't know how close?

A. Of course I don't know how close.

Q. Well, isn't there a standard where --

A. No.

Q. Excuse me, sir. I'm asking a question.

HEARING OFFICER HALLORAN: Sir, Dr. Kunkel.

BY MS. NIJMAN:

Q. Sir, let me ask the question and then you can decide how you'd like to answer it.

Doesn't a well need to be within a certain distance of another well before you can assume that it contains the same material?

A. No, and these are not wells -- one is a well, one is a boring, is a bore hole.

Q. Understood.

A. Yeah.

Q. Don't they still need to be within a certain distance before you can assume they are the same material?

A. No.

Q. You're aware of that in the State of Illinois, aren't you?

A. I'm not aware of that in the State of Illinois --

Q. Thank you.

A. -- but in my professional practice indicates that if you have a boring close to a well, then it probably represents what is at the well is equally --

Q. And you believe -- sorry.

A. -- or close. Yes, I do believe that.

Q. I'm waiting to ask a question. You

believe that you can judge how close it is?

A. I can't judge how close it is by their plots.

Q. Okay. And what is the bore hole that is next to MW-15?

A. Oh, MW-15. There is not one near MW-15, but we have other borings down in that area or other wells.

Q. Like what?

A. MW-12 is the next one.

Q. What is near MW-15 that shows you there is ash there?

A. We don't have one at MW-15, okay, but we do at 12, MW-12.

Q. What is near MW-12?

A. B15. The answer is boring 15.

Q. So I need to ask you. You're looking at Figure 5 of the ENSR Phase Two --

A. Yes.

Q. -- Environmental Assessment Comp Exhibit 19D, 19D. And if you look at the table on the right, there is a note here that says "Note. All dimensions and locations are approximate," do you see that?

A. Correct.

Q. I'd like to go back to your statement in your report on page three of your report that said "Concentrations of boron in MW-10 through 14 ELUC wells are the direct result of these wells having their screens completed in the coal ash."

So my initial question to you was you do not have boring logs for those wells, do you?

A. No, I don't, but I have --

Q. Sir, please. I'm sorry. It's late in the day. We just need the yes. You do not have boring logs for those wells, correct?

A. Correct.

Q. Thank you. I'm going to switch gears a little bit and go to your demonstrative exhibits.

Specifically, the table you've been referring to at the back, the very end of your demonstratives, do you have it in front of you?

A. Yes.

Q. Now, as I understand this when you

have totaled these numbers up you've included any monitoring well result from up gradient monitoring wells, correct? In other words, you haven't distinguished whether they're up gradient or down gradient, it's just all the wells, correct?

A. Correct.

Q. And you said these tables are based on the data that precedes it, correct?

A. Correct.

Q. The data includes exceedances or above the Class 1 standards since we're not using the nasty E word. If you look on page 12, for instance, do you see -- sorry. I'll wait for you to get there.

A. I'm there.

Q. You say that there's a series on line 590 at Powerton, there's a series of constituents listed for nitrogen and nitrate, do you see that?

A. Yes.

Q. And how are those related to coal ash?

A. How are they related to coal ash?

Q. Those aren't one of the parameters

the Federal Register, for instance, the CCR rules, requires monitoring for coal ash, correct?

A. Correct.

Q. And there were a couple others that surprised me. There are references here to vanadium?

A. Yes.

Q. Vanadium is not required to be monitored under these coal ash rules, the federal coal ash rules either, correct?

A. That's correct.

Q. So there is constituents in here that aren't at all consistent with coal ash, are they?

A. I think vanadium is a possible contaminant to coal ash. It's just not required by EPA to be monitored because it's usually in very low concentrations.

Q. What about the nitrogen?

A. Nitrate -- I don't -- nitrogen -- it's nitrate nitrogen, not nitrogen nitrate. It's nitrate nitrogen which is the reduced form of nitrogen, NO2.

Q. Okay.

A. It's nitrogen nitrate, but that's what it means. It's the NO2 form, not the NO3 form as far as I can tell.

Q. These are your tables, correct?

A. These are tables that were block copied from the data, correct. I think we brought copies. I didn't prepare these tables.

Q. You said you relied on them and they informed your decisions?

A. I reviewed them and I relied on them as they tabulated the numbers, the total value -- the total number of values that were greater than the Illinois Class 1 water quality standard.

Q. Mm-hmm. And you've included nitrogen nitrate?

A. Somebody else did the analysis and put them in the database.

Q. So you would agree that that nitrogen nitrate is likely not a coal related --

A. No, I don't agree with that. I think it probably is something that would come from coal ash.

Q. So, in your opinion, everything on page 1 through 37 would come from coal ash?

A. It could.
Q. It could?
A. I don't know why it would be listed on this table if it wasn't something that someone had measured.
Q. Well, for instance --
A. Was it measured by -- by Midwest?
Q. I don't know where this table comes from, sir.
A. I don't know either.
Q. You don't either, you said?
A. I didn't prepare it, no. I didn't prepare the table.
Q. You testified you relied on the table.
A. I testified that I reviewed the table and then I am relying on the values on table -- Summary Table 3 for boron, manganese and sulfate. It's the only three values that I've relied on.
Q. Okay. So none of the rest of this you've relied on?
A. No.
Q. And you've already testified I

believe that Summary Tables 3, 2 and 1 are based on pages 1 through 37?

A. That's my understanding, yes.

Q. And so you counted up the violation, the situations or the instances above Class 1 standards. So Table 3, the final table, does not account for any wells that are within the groundwater management zone, is that correct?

A. The groundwater management zone at which site?

Q. At -- three of the facilities have groundwater management zones, correct?

A. Correct.

Q. Do you know which facilities they are?

A. Yeah, I think they're Joliet, Waukegan and Powerton, I believe, right?

Q. It's Joliet, Will County and Powerton have groundwater management zones.

A. Sorry.

Q. That's fine. And are those groundwater management zones you're aware -- I believe you've been informed that groundwater management zones, meaning the Class 1 standards,

do not apply.

So I'm questioning does Summary Table 3 contain totals for all of the wells that are within the groundwater management zone?

A. Yes.

Q. Even though the standard does not apply to those wells?

A. Yes.

Q. Okay. Now, it's true, is it not, then that the number of results greater than the Illinois Class 1 standard listed on these tables is simply based on the number of times Midwest Gen sampled, correct?

A. It's only from the Midwest Gen quarterly -- quarterly data, yes.

Q. But you counted up each time Midwest Generation sampled and determined any constituent above Class 1 standards and put them in this table, correct?

A. Can I point you to a page in the document here? I'll show you how we did it.

Q. Sure.

A. If you go to page 1 of 37.

Q. Mm-hmm.

A. These are the results and there are one, two, three, four, five, six, seven columns and the columns we're interested in are the one marked value in milligrams per liter and standard, okay, and all -- all we did was we used an Excel spreadsheet and we counted the number of times that the standard in milligrams per liter was greater than the value and that was a one, counted as a one and we went right down the list and picked out all the values for all the constituents which you can do in Excel, you just do that search and -- and the Excel program counted those and put them in this table.

Q. But here is the problem I'm having. The number of exceedances is a function then of the sampling frequency, correct?

A. Yeah, obviously.

Q. In other words, if I had gone out there and sampled every day, you would have found 12 millionths alleged results above the Illinois Class 1 standard?

A. But I don't understand what that has to do with anything.

Q. I'm just saying that you're

essentially punishing Midwest Gen by this table by just counting the number of times that they --

MR. RUSS: I'm going to object.

HEARING OFFICER HALLORAN: Sustained. Withdraw the question. Please rephrase that.

BY MS. NIJMAN:

Q. You are showing in this table solely based on the number of times sampled that there are, quote, results greater than Class 1, correct, based on the sampling frequency, correct?

A. Yes.

Q. So if Midwest Gen had only sampled annually --

A. Yes.

Q. -- we'd have a much lower number, correct?

A. Yes.

Q. Now, if this table then is counting the data points that are above the Class 1 standard, what I'm going to try to do is put a little perspective on that number.

So this is measured as I understand it from fourth quarter 2010 through

second quarter 2017, correct?

A. Correct.

Q. That's 27 rounds of sampling?

A. Not at every well. I mean --

Q. There is a couple that are different. We'll get into that.

A. Okay.

Q. But it's 27 rounds.

A. It's 27, yes, sampling times.

Q. Mm-hmm. So at Joliet 29 there are 11 wells --

A. Mm-hmm.

Q. -- times 27 rounds --

A. Mm-hmm.

Q. -- that's 297 data points?

A. Correct.

Q. At Powerton, we have 15 wells that were taken 27 times and one well taken 19 rounds, that's what you were saying, there are some wells that are different, does that sound correct at Powerton?

A. Yes.

Q. Okay. So that gives us 424 data points. At Waukegan, we have five wells that were

sampled 27 times and we have two wells that were sampled 19 times. So that gives us 173 data points, does that sound right?

A. Yes.

Q. Then at Will County we have 10 wells sampled 27 rounds, that's 270 data points. So ultimately we have 1,164 data points, does that sound right?

A. At all four sites?

Q. Yes, all together. Because that's what you've done here. You've combined them all?

A. Yes.

Q. Okay. Now, we have 13 parameters on your list here, right?

A. Yes.

Q. Okay. So if I take that number times 13, I come up with 15,132 data points total. Okay? You can check my math. 15,132 data points. So this table shows a total of 1,808 data points that have a result above the Class 1 standard out of 15,132 data points. That's about 11 percent if I'm doing the math correctly in my head.

A. Yes.

Q. And, to confirm, the CCR data is not

in these tables, correct?

A. I don't believe so, no.

Q. Would you like to stop? Are you okay?

A. No, I'm just --

Q. You looked like you might have had the same headache --

A. I have no idea where you're going with this. So I'm a little glazed over.

HEARING OFFICER HALLORAN: We just have about 20, 25 more minutes --

THE WITNESS: I'm fine. Believe me I'm fine.

HEARING OFFICER HALLORAN: -- then I'm going to call it a day.

THE WITNESS: I just don't -- so I understand what's going on.

BY MS. NIJMAN:

Q. I'd like to refer in your demonstratives to the tables that you have -- the graphs that you put together for Joliet and the rest of this document is not numbered so I can't give you a page number. Somewhere around the fifth or sixth page in.

A. I can find my well number in Joliet.
Q. So you presented these graphs yesterday about Joliet 29 and you went through each graph and you said whether there was an increasing trend or a decreasing trend, correct?
A. Just an eyeball, yes.
Q. Right. We --
A. We went over that.
Q. Right. Exactly. And those were your visuals, your eyeball, and that you didn't do a statistical analysis, correct?
A. Correct.
Q. Now, on your graphs that you presented, you compared constituents to background, correct?
A. Correct.
Q. And so even though -- and the other thing I'm curious about with these graphs is that the scale seems to change from graph to graph, correct?
A. Correct.
Q. So that was so you could show it all on one page, correct?
A. No, that was so I could show a

realistic range of concentrations at the given well. Because if I plotted them all at the same scale, say all the sulfates were 1 to 15,000 because I had one well that had 15,000, then all of these would plot as a straight line and it wouldn't be as meaningful I didn't think anyway to the board as what I had done here. So, yes, each plot has its own --

Q. Scale.

A. -- ordinate. Abscissas are the same. Ordinates are different.

Q. Right. So you have to be very careful when you look at the graphs to make sure you're looking at the right scale?

A. It's incumbent upon the reader to understand what the concentration scale is. Some of them go from 0 to 0.4. Some of them go from 0 to 40.

Q. Right. So, in fact, on some of these graphs, you don't even -- you can't even plot the Class 1 standard because it's way off the scale, correct?

A. Well, I can plot it.

Q. Well, but it's way off the graph as

you have presented it?

A. It is in some cases, yes.

Q. Okay. So I went through your documents and I did that. I tried to even out the scale. So here is your first well for boron at Joliet 29 and here is the photograph you provided. Here is the Class 1 standard. You also told me it was decreasing. Let's look at the next one.

MR. RUSS: I have to object to that. I don't know what's going on.

HEARING OFFICER HALLORAN: I'm sorry?

MR. RUSS: I don't know what she did to his charts. I don't understand. We can't verify that that's accurate.

HEARING OFFICER HALLORAN: Ms. Nijman?

MS. NIJMAN: As a demonstrative, I've taken Mr. Kunkel's papers and placed the Class 1 standard on them. That's all. It's his -- that's why I put it here. I based it on exactly what he did.

MR. RUSS: I can withdraw my objection, but can you just explain a little bit

more? I don't totally understand.

MS. NIJMAN: I guess I'm not really -- is there an objection?

HEARING OFFICER HALLORAN: Yes, there is.

MS. NIJMAN: Okay. So am I speaking then to the witness or you?

HEARING OFFICER HALLORAN: To me, the record, the board, the witness maybe and Mr. Abel --

MS. NIJMAN: And the objection is?

HEARING OFFICER HALLORAN: I mean, Mr. Russ. I'm sorry.

MS. NIJMAN: And the objection is?

HEARING OFFICER HALLORAN: He -- he mentioned he didn't know what it was. I guess, you know, foundation, I don't know, authenticity. Just explain what the heck you did.

MS. NIJMAN: Okay. And I'm trying to do that.

BY MS. NIJMAN:

Q. So let's go back to the first ones. That's the graph that is presented in your demonstratives, correct, Mr. Kunkel?

A. Yes.

Q. So here it is. Is that it in your demonstratives? It's identical. See, identical.

A. No, I don't doubt because you had the spreadsheets.

Q. Yeah.

A. Absolutely.

Q. So what I've done is simply increase it on the same level and I can provide you a copy to see closer.

MR. RUSS: Can I look at the screen?

HEARING OFFICER HALLORAN: Yes, you may stand up, Mr. Russ, and look at the screen.

MS. GALE: Abel, I have a copy, too, if you'd like. Mr. Hearing Officer, would you like one?

HEARING OFFICER HALLORAN: Sure. Thank you.

MR. RUSS: I'm sorry. I just have to look. I want to make sure these are the same. Okay. I get it. I get it. Thank you for explaining.

MS. NIJMAN: You're welcome.

MR. RUSS: Withdraw my objection.

HEARING OFFICER HALLORAN: Thank you, Mr. Russ. You may proceed.

BY MS. NIJMAN:

Q. So turning to the next slide, still for boron, you told me it was decreasing, you compared it to background, you compared it to the Class 1 standard, it's way up here, it's off the scale.

Turning to the next one for boron MW-3 you told me there was a slight increase. Again, looking at the Class 1 standard way up off the scale.

Looking at MW-4, you told me there it was going to be a slight decrease.

MR. RUSS: I have another objection. Sorry to do this. She is narrating. It's not a question.

HEARING OFFICER HALLORAN: Yeah, let's make it in the form of questions, Ms. Nijman.

MS. NIJMAN: Sure.

HEARING OFFICER HALLORAN: Thank you.

MS. NIJMAN: I was trying to move it

faster at the late hour, but I'm happy to do it one at a time.

BY MS. NIJMAN:

Q. Let's go to MW-4. So, Dr. Kunkel, you see that this is your graph as you proposed it, correct?

A. Yes.

Q. And you see that as we discussed the Class 1 standard for boron is way up here at the top of the graph, correct?

A. Correct.

Q. So none of these standards for Joliet are above the Class 1 standard, correct?

A. Correct.

Q. Let's go to the next one. MW-5 you said yesterday not increasing or decreasing. You have your background down here I think at 0.18. None of these are above the Class 1 standard, correct? Next one.

THE COURT REPORTER: Was there an answer? Was there an answer?

BY THE WITNESS:

A. Correct. Yeah, I don't particularly -- do I have to answer correct and

yes? I mean, I agree.

HEARING OFFICER HALLORAN: You have to say yes or correct just for the transcript.

THE WITNESS: Okay. I do.

BY MS. NIJMAN:

Q. I tried, Dr. Kunkel. I tried to do them all at once.

A. Well, we went through these yesterday and I think you agree with what I'm saying there and I did explicitly say that --

Q. I'm sorry. There is not a --

A. At Joliet --

Q. -- question pending.

HEARING OFFICER HALLORAN: I'm sorry. One person at a time.

MS. NIJMAN: There is not a question pending.

HEARING OFFICER HALLORAN: Doctor, wait until a question is pending.

BY MS. NIJMAN:

Q. MW-6 you told me generally decreasing and the standard -- everything is below the Class 1 standard, correct?

A. Correct.

Q. MW-7, same, everything is below the Class 1 standard, correct?

A. Right.

Q. This one I think you skipped yesterday. It looks -- well, how would you describe this? Flat?

A. I didn't mean to skip MW-8, but I think we went through that on one of the tables where we looked at boron and sulfate and they were either below or right at the --

Q. Background?

A. -- background, yes.

Q. The background you've applied?

A. Yes.

Q. But way below the Class 1 standard?

A. Clearly.

Q. MW-9 same, correct --

A. Correct.

Q. -- below the Class 1? Number 10, same, correct? Yes?

A. These are just for boron, correct?

Q. Yes, right now --

A. Okay.

Q. -- we're just on boron. MW-11 you

said not increasing or decreasing. A historic flip this one right at the standard, all below the standard in the last few quarters, correct?

A. Correct.

Q. This one was not described because you had periodic data, is that --

A. Well, MW-1 is the same for boron as it is for sulfate in terms of the detection limit or the detects or the sampling samples --

Q. Right.

A. -- number of samples. It should be the same.

Q. You didn't give a description as to increasing, decreasing, flat?

A. I couldn't, no.

Q. That's what I meant.

A. Yes.

Q. Thank you. All above -- all below the Class 1 standard, correct --

A. Correct.

Q. -- for sulfate now we're looking at? MW-2, same, looking at the standard for sulfate at 400 we're seeing everything way below Class 1 standard, correct?

A. Correct.
Q. MW-3 you told me it was decreasing. Everything is way below Class 1 standard, correct?
MR. RUSS: Can I just object to way? The word way. Vague.
HEARING OFFICER HALLORAN: Sustained.
BY MS. NIJMAN:
Q. MW-4 you told me it was decreasing. Actually, I shouldn't say you told me. You testified. You were telling your counsel.
A. I did.
Q. You said it was decreasing and again below the sulfate standard of 400, correct?
A. Correct.
Q. MW-5 you said was not increasing or decreasing based on your eyeball view of it, but again below the sulfate level Class 1 standard for Illinois, correct?
A. Correct.
Q. MW-6 for sulfate, not increasing or decreasing below the Class 1 standard, correct?
A. Correct.
Q. MW-7 not increasing or decreasing,

but, again, below 400 the Class 1 standard, correct?

A. Correct.

Q. MW-8 you said it's basically at background below Class 1 standard for sulfate with a couple blips, but you said at background?

A. Correct.

Q. MW-9 I think was so low so the standard of 400 for sulfate you start your graph at 0 to 2000 so I can't even see 400. It's way down here. And you didn't describe for MW-9 sulfate. So --

MR. RUSS: Can I object to that, too? I think he did describe it. He might not have said the words you have been using on the other wells.

HEARING OFFICER HALLORAN: If he can answer, he is able because I don't remember. I'd be lying if I said I did.

BY THE WITNESS:

A. You know, I don't remember whether I described it or not, but clearly many of the data points are either at or above the Illinois Class 1 groundwater standard of 400 milligrams per liter

of sulfate.

BY MS. NIJMAN:

Q. At one well MW-9?

A. One well.

Q. Did you ever see it anywhere else at Joliet?

A. Well, there is a possibility that -- that 10 and 11 tend to be fairly high as well.

Q. Let's look at MW-10 for sulfate. Again, you told me it was decreasing and sulfate standard is 400 milligrams per liter and we're below the Class 1 standard, correct?

A. Correct.

Q. And 11 you mentioned -- let's go to 11. You told me -- you testified it was not increasing or decreasing. Your background level is down here at 50, the Class 1 standard at 400 and they're all below the Class 1 standard, correct?

A. Correct.

Q. So when I total these up for boron, you got 11 total graphs, six of the 11 are decreasing, three of the 11 you said flat and only one you said was increasing, correct?

A. For boron.

Q. And for sulfate you said there is one at background, one not described, four that are flat, three that are decreasing, does that sound right?

A. Yes.

MS. NIJMAN: Mr. Hearing Officer, without getting into a whole new area --

HEARING OFFICER HALLORAN: I think it's a good time to get off the record for a second. We can talk. Thanks.

(Whereupon, a break was taken after which the following proceedings were had.)

HEARING OFFICER HALLORAN: We're back on the record. So it's approximately 3:55 on October 27th, 2017. This hearing will be continued. We haven't set a date yet. It will be hopefully sometime in January 2018. I have a conflict until then. We've decided to have a status conference on this matter November 14th at 11:30 a.m. We're on -- I'm thinking the first day of hearing October 23rd will be available online November 1st. Did I forget anything? That's it.

This is sad to see you one last day before the new year, but, anyway, thank you so much. It's been fun, it's been professional, it's been civil and it's been a long week and thank you so much.

MR. BUGEL: Thank you.

MS. GALE: Thank you, sir.

MS. NIJMAN: Thank you for your attention.

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

I, Steven Brickey, Certified Shorthand Reporter, do hereby certify that I reported in shorthand the proceedings had at the trial aforesaid, and that the foregoing is a true, complete and correct transcript of the proceedings of said trial as appears from my stenographic notes so taken and transcribed under my personal direction.

Witness my official signature in and for Cook County, Illinois, on this _____ day of _____, A.D., 2017.

_____
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