BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

In the Matter of:	)	
	)	
SIERRA CLUB, ENVIRONMENTAL LAW AND POLICY CENTER, PRAIRIE RIVERS NETWORK, and CITIZENS AGAINST RUINING THE ENVIRONMENT	)	
	)	**PCB 2013-015**
Complainants,	)	**(Enforcement – Water)**
	)	
v.	)	
	)	
MIDWEST GENERATION, LLC,	)	
	)	
Respondent.	)	

NOTICE OF FILING

TO: Don Brown, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, IL 60601

Attached Service List

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board Respondent, Midwest Generation, LLC's Post-Hearing Brief Including Appendix A: Statement of Facts, a copy of which is hereby served upon you.

MIDWEST GENERATION, LLC

By: /s/ Jennifer T. Nijman

Dated: July 20, 2018

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CERTIFICATE OF SERVICE

The undersigned, an attorney, certifies that a true copy of the foregoing Notice of Filing, Certificate of Service and Respondent, Midwest Generation, LLC's Post-Hearing Brief Including Appendix A: Statement of Facts was filed on July 20, 2018 with the following:

Don Brown, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
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and that true copies were emailed on July 20, 2018 to the parties listed on the foregoing Service List.

/s/ Jennifer T. Nijman

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RESPONDENT MIDWEST GENERATION, LLC'S POST-HEARING BRIEF

Despite a record of more than 260 exhibits and ten days of Hearing testimony, Complainants failed to prove that MWG caused or allowed water pollution or open dumping from four stations operated by MWG. It is undisputed that MWG tested coal ash from its impoundments and from historic fill at its stations, and the results are all below applicable standards. It is undisputed that MWG's coal ash is taken off site and beneficially reused. The ash is not waste, and ash historically used as structural fill is not discarded material. And it is undisputed that there is no risk or harm to public health or the environment. Since it began operating its stations, MWG has voluntarily taken extensive precautions to maintain and upgrade its stations to protect the groundwater, precluding a finding against MWG in this case under Illinois law.

The Board should enter an order finding that MWG has not violated the Illinois Environmental Protection Act as claimed, and, in any case the Board should end this matter by finding that all necessary actions have been taken at the MWG stations.

I. SUMMARY OF THE CASE

This matter relates to coal ash and the coal ash impoundments (aka "ponds") at four MWG Stations: the Joliet 29 Electric Generating Station located in Joliet, IL ("Joliet 29" or "Joliet 29 Station"), the Powerton Electric Generating Station, located in Pekin, IL ("Powerton" or "Powerton Station"), the Waukegan Electric Generating Station, located in Waukegan, IL

("Waukegan" or "Waukegan Station"), and the Will County Electric Generating Station, located in Romeoville, IL ("Will County" or "Will County and collectively the "Stations"). Each of the Stations has operated as a coal-fired electric generating station for at least 50 years, if not longer. Since before MWG began operating the Stations in 1999, the coal ash ponds have been used only for temporary storage of ash until the ash is removed from the ponds for beneficial reuse. The active ash ponds have been lined since 1977-78, either with a poz-o-pac liner, which is a type of concrete, or a Hypalon liner, a synthetic material, or both. Notably, for the coal ash to be used beneficially, MWG routinely analyzes the bottom ash from its ponds to confirm the ash does not leach metals above the Illinois Class I groundwater standards located in 35 Ill. Adm. Code 620.410 ("Class I groundwater standards").

Upon taking over the Stations, MWG understood that there were certain areas of ash historically place at the Stations, and that no additional remediation was required at any of the areas of historically placed ash. In fact, samples taken in several of the historically placed ash areas revealed that the ash in those areas met the standards for beneficial reuse of coal combustion byproduct and supported the conclusion that the historic ash areas did not require any corrective actions.

In 2003 and 2004, MWG relined the two ash ponds at the Waukegan Station. At that time, there were no Federal or State requirements for ash ponds to be lined, there were no ash pond liner standards, and there were no requirements to evaluate the liner conditions. Soon after the Waukegan relining, MWG evaluated all its active ash ponds throughout its fleet as a part of an overall evaluation of the Stations. MWG's evaluation of the ash pond liners was systematic, scientific and conservative, looking at the historic drawings and documents for the ash ponds to attempt to determine the liner conditions and prepare a prioritization timeline for the relining the ash ponds. MWG considered of the best type of new liner for the ponds, and MWG decided upon a state of the art high density polyethylene ("HDPE") liner.

Following the evaluation of the ash ponds, MWG began executing the relining program. Replacing the liner of an ash pond is no small feat because the Stations rely upon the ponds to collect the ash produced during operation of the Stations. Thus, MWG had to obtain necessary permits and approvals, coordinate the relining to an outage at the Station, and coordinate multiple consultants and contractors to assist in executing the large construction project. MWG diligently began to execute its program to replace the liners at the Stations through the mid to late 2000s.

Contrary to initial assumptions made about the conditions of the old poz-o-pac liners, when relining the ponds, MWG found that the poz-o-pac liners underlying the ponds were in excellent condition. Nevertheless, MWG followed through with the relining program to upgrade the liners.

In 2010, after MWG had relined five ash ponds and was preparing to reline three more, the U.S. Environmental Protection Agency ("USEPA") announced that it intended to promulgate regulations related to coal ash and coal ash storage. Due to concerns that the new regulations might have aspects that conflicted with MWG's relining program, MWG paused the relining projects until the USEPA finalized the proposed coal ash regulations. At the same time, MWG voluntarily agreed to Illinois EPA's request to perform a hydrogeological assessment around the ash ponds at each of its Stations. The hydrogeological assessments included confirming that there were no potable wells downgradient of the ash ponds and installing groundwater monitoring wells around the ash ponds to sample the groundwater near and downgradient from the ash ponds.

MWG's groundwater monitoring, which began in 2010, found constituents in the groundwater beneath the old industrial Stations. Based upon the results of the hydrogeological assessments, and while asserting that the groundwater sample results did not show contamination emanating from the ash ponds, MWG agreed with Illinois EPA to complete Compliance Commitment Agreements ("CCAs") for each MWG Station. MWG conducted extensive work at all its Stations to implement corrective actions to resolve Illinois EPA's concerns. The corrective actions included relining the remaining ash ponds that had yet to be relined, establishing groundwater management zones ("GMZs") and establishing environmental land use controls ("ELUCs").

Despite all of MWG's actions over the years, and despite MWG's cooperation with Illinois EPA and compliance with the CCAs, Complainants filed this action on the eve of finalizing the CCAs. Complainants allege that MWG "caused or allowed" water pollution and "caused or allowed" open dumping, allegedly resulting in groundwater contamination. These allegations were initially based on unsubstantiated claims that MWG's ash impoundments at the Stations may have leaked. Complainants later added allegations that certain historically placed ash in fill areas also may have leached contaminants. Complainants do not, and cannot, identify when constituents reached groundwater, or whether the ponds or the historic fill areas at the Stations are an actual source. Complainants also ignore MWG's long history of extensive and preventative work at the Stations.

"Cause or allow" is the key language that informs this case. Water pollution and open dumping claims under Illinois law are not based on strict liability. *People of the State of Illinois v. William Charles*, PCB 10-108, March 17, 2011 at 8, *citing People v. A.J. Davinory Contractors*, 249 Ill. App. 3d 788, 793 (5th Cir. 1993). Unlike claims under CERCLA, simply being an owner or operator of a facility is not enough to find liability in this case. Complainants need to make the case that MWG "caused or allowed" groundwater contamination and open dumping at each of its Stations. The law is clear that a party does not cause or allow contamination if it took extensive precautions, as MWG did here.

As established during the Hearing, MWG has not caused or allowed contaminants from the ash ponds or from historic ash areas to enter the groundwater such that it has "rendered the waters harmful, detrimental or injurious to public health, safety or the environment or in violation of cited regulations."[1] Even before MWG began operating the Stations, all of the active ash ponds had liners, which were routinely inspected and maintained. Since MWG began operating the Stations in 1999, MWG has taken extensive precautions to maintain the ash ponds, including daily inspections, careful dredging practices, and a systematic program to reline the ash ponds as part of a maintenance program. When MWG voluntarily performed a groundwater investigation and learned of groundwater impacts alleged to be from its ponds, MWG took extensive response measures at each of the Stations even though MWG did not believe its ponds or any other areas it controlled were a source. MWG knew that it had tested coal ash from its ponds *and* from historic areas, and the testing showed that MWG's coal ash does not contain or leach metals that would cause the metals in the groundwater to be above the Class I groundwater standards. Additionally, no one has identified a source for the constituents in the groundwater.[2] Without a source, there is no way to establish that MWG caused or allowed water pollution. At each of the Stations, the constituents allegedly above the Class 1 groundwater standards are random and inconsistent, which caused MWG's expert to conclude that the ash ponds and the historic coal ash areas at the Stations are not a source. Regardless, MWG's expert analyzed the constituent levels in the groundwater and concluded that the levels pose no risk to human health or the environment, which has never been disputed.

[1] "Water pollution" is defined as the alteration or discharge to waters as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare…". 415 ILCS 3/3.545

[2] At Waukegan, MWG has identified contamination plumes migrating from offsite, neighboring properties to the Waukegan Station.

Similarly, MWG did not cause or allow open dumping. Coal ash in the NPDES permitted ponds is not waste, but instead is beneficially reused. The ponds are not a disposal site because the ponds were historically lined, MWG *re*lined them, and there is no credible evidence that they are leaking. There is no open dumping as to the historic ash fill areas because MWG did not place any ash in those areas, and the fill was structural and when tested met the standards for beneficial reuse under Illinois law.

The Board should use its authority under *People of the State of Illinois v. CSX Transportation, Inc.*[3] to end this case now because there is no other reasonable action left to be taken at any of the Stations. All of MWG's actions over the years, including its pond relining program, testing of coal ash in ponds and fill areas, implementation of ELUCs and GMZs, cooperation with Illinois EPA, and continued monitoring, show that MWG has properly addressed conditions at the Stations to Illinois EPA's satisfaction. It is undisputed that there is no risk from the Stations. In fact, Joliet 29 has no coal ash constituents in groundwater that are above Class 1 standards and Joliet 29 has since converted to natural gas. MWG is complying with requirements of the Federal Coal Combustion Residual ("CCR") Rules at all the Stations. Even if the Board were to find a violation of the Illinois Environmental Protection Act, which it should not, no penalty or other response is warranted, and no further proceedings are warranted.

II. FACTS ESTABLISHED AT THE HEARING

In order to establish that MWG did not cause or allow groundwater contamination or open dumping as alleged, MWG presented detailed evidence during the Hearing to describe the conditions at each of the Stations and the extensive care and precautions it took over the years in its operations and in response to groundwater conditions. Appendix A to this MWG's Post-Hearing Brief is a detailed Statement of Facts ("SOF") established at the Hearing with citations to relevant exhibits and testimony. Key facts are restated and/or cited below, starting with each Station individually and then describing facts common to all the Stations.

MWG began operating the four Stations that are the subject of this matter in 1999. Appendix A, MWG SOF 1. Before 1999, each of the Stations was operated as a coal-fired power stations for many years by entities unrelated to MWG. SOF 19. A detailed timeline of events for each Station is at MWG Exhibits 663-666.

[3] *People of the State of Illinois v. CSX Transportation, Inc.*, PCB 07-16 (July 12, 2007)

A. Coal Ash and Its Properties

The Powerton Station, Waukegan Station and Will County Station burn subbituminous coal sourced from Wyoming to generate electricity. SOF 33. Until it ceased burning coal for the generation of electricity in 2016, Joliet 29 Station also burned the same type of coal. SOF 34. A coal powered electric generating station generates two types of coal ash from the burning of the coal, fly ash and bottom ash. SOF 35-36. Fly ash consists of lightweight particles and is collected via dry system using electrostatic precipitators at all of the Stations. SOF 37-39. Bottom ash consists of heavier particles that fall to the bottom of the furnace and is mixed with water and conveyed out of the plant via a pipe to a settling basin. SOF 40. Neither fly ash nor bottom ash are hazardous, but can be beneficially reused, and in fact there is a market for the reuse of coal ash. SOF 42-44. MWG transports the fly ash and bottom ash from the Stations offsite for beneficial reuse, including reuse as cement replacement, geotechnical stabilization, mine stabilization, structural fill, and roofing shingles. SOF 44-55, 320. The MWG bottom ash at the Powerton, Waukegan and Will County Stations first settles in permitted impoundments (aka ponds) before being removed for beneficial reuse. SOF 40, 166-168, 288-289, 375, 388. Before Joliet 29 converted to gas, most of its ash was transported directly off site, and only a small percentage of bottom ash from its process settled in the permitted ash ponds. SOF 90-93.

Generally, constituents that may be found in bottom ash are boron and sulfate, and may also include calcium, chloride, fluoride and total dissolved solids ("TDS").[4] The coal ash constituents depend upon the type of coal burned and the method by which the coal is burned. The MWG Stations burn the same type of coal and each Station burns that coal similarly, thus the resulting coal ash at each Station has essentially the same constituents. SOF 46.

Between 2004 and 2010 and as part of its process to assess coal ash for beneficial reuse, MWG analyzed coal ash from five of its ash ponds using the neutral leachable procedure ("NLET") also known as ASTM D3987-85. SOF 47. MWG analyzed the bottom ash using the ASTM D3987-85 method because it is the sampling method specified in the Illinois Environmental Protection Act ("Act") to determine whether coal ash qualifies as coal combustion by-product ("CCB") and can be used for beneficial re-use under 415 ILCS 5/3.135.[5] SOF 48-52. The results of the ASTM

[4] The Federal CCR Rules identify boron, calcium, chloride, fluoride, pH, sulfate and TDS as the constituents for detection monitoring. 40 CFR 257, Appen. III.

[5] Under 415 ILCS 5/3.135, coal ash may be classified as coal combustion by-product and may be beneficially used for certain ways including structural fill, foundation backfill, antiskid material, athletic tracks, or foot paths.

D3987-85 analysis showed that the concentrations of the metals that could leach from the coal ash in MWG's ponds were below the established regulatory standards. SOF 58.

Table 1 below (also presented in Attachment 1 to the SOF) provides a summary of MWG's bottom ash pond sampling results:

Table 1: Analysis of Bottom Ash from MWG Ponds

Generating Station:	Powerton		Waukegan		Will County
Sample Date:	May 2004	March 2007	July 2004	July 2004	December 2010
Sample ID:	Bottom Ash	Bottom Ash	Bottom Ash-1	Bottom Ash-2	3 South Bottom Ash
Methods 6010B/6020/7041A/7470A/7841 (mg/L)					
Antimony	<0.003	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	<0.050	<0.050	<0.050	<0.050
Barium	0.39	0.27	0.19	0.12	<0.50
Beryllium	<0.004	<0.0040	<0.004	<0.004	<0.0040
Boron	0.087	<0.10	1.1	2	1.3
Cadmium	<0.002	<0.0050	<0.005	<0.005	<0.0050
Chromium	<0.010	<0.025	<0.050	<0.050	<0.025
Cobalt	<0.005	<0.025	<0.050	<0.050	<0.025
Copper	<0.010	<0.025	<0.050	<0.050	<0.025
Iron	<0.050	<0.10	<0.10	<0.10	<0.10
Lead	<0.005	<0.0075	<0.0075	<0.0075	<0.0075
Manganese	<0.010	<0.025	<0.050	<0.050	<0.025
Mercury	<0.0002	<0.0020	<0.0020	<0.0020	<0.0020
Nickel	<0.010	<0.025	<0.050	<0.050	<0.050
Selenium	<0.010	<0.050	Not Analyzed	Not Analyzed	<0.050
Silver	<0.005	<0.025	<0.050	<0.050	<0.025
Thallium	<0.002	<0.0020	<0.0020	<0.0020	<0.0020
Zinc	0.044	<0.10	<0.10	<0.10	<0.10
Method 9056 (mg/L)					
Sulfate	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	49
SM 2540C (mg/L)					
Total Dissolved Solid	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	200
Sources:	MWG13-15_11356	MWG13-15_10951	MWG13-15_12814	MWG13-15_12815	MWG13-15_14712-13

Source: MWG Ex 901, p. 8. (SOF Attachment 1)

Between 2004 and 2015, MWG performed an investigation and tested historic ash in fill materials at the Joliet 29, Powerton and Will County Stations also using the NLET method to similarly confirm that the historic ash met the criteria for beneficial reuse under 415 ILCS 5/3.135. SOF 59. The results of the NLET tests showed that the historic ash meets the CCB criteria and can be used for beneficial reuse. SOF 60.

Table 2 below (also presented in Attachment 1 to the SOF) provides a summary of MWG's historic ash area sampling results:

Table 2: Potential Leaching Characteristics of Historical Ash in Fill Materials

Generating station:	Joliet #29	Powerton	Will County
Sample Date:	July 2005 KPRG	May 2004 Andrews Engineering	June/August 2015 KPRG
Sample location:	15 soil borings from former ash placement area	8 ash samples from test pits in the Limestone Runoff Basin	20 soil borings at the Will County site
Findings:	-high degree of statistical certainty that the criteria established in 415 ILCS 5/3.135 (formerly 415 ILCS 5/3.94) a-5(B) are met and that the material may be considered CCB for engineering/ beneficial reuse	Metals were less than the IEPA Class I groundwater standards except selenium and chromium (2 wells); no impacts of selenium or chromium above groundwater standards	High degree of statistical certainty that the criteria established in 415 ILCS 5/3.135 (formerly 415 ILCS 5/3.94) a-5(B) are met and that the material may be considered CCB for engineering/ beneficial reuse
Sources:	MWG13-15_19486-668	MWG13-15_11302-492	MWG13-15_49565-649

Source: MWG Ex 901, p. 9 (SOF Attachment 1)

The Federal CCR Rules specifically state that historic ash landfilled areas are not a concern. In the preamble to the CCR Rulemaking, the USEPA specifically stated the requirements in the CCR 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."40 F.R. 21342 *emphasis added*. As MWG's expert, John Seymour ("Seymour") explained, the reason the risks are significantly lower than CCR impoundments is primarily due to the weight and pressure of water. 2/1/18 Tr. p. 225:9-13 (Testimony of Seymour). Both impoundments and active CCR landfills have a lot of water as part of the collection of the ash pond and due to the height and weight of the water there is pressure, also known as a "head" that does not exist at an inactive landfill. 2/1/18 Tr. p. 225:13-226-1 (Testimony of Seymour). The historic areas of ash at the MWG Stations are the exact type of inactive landfills that are not included in the Federal CCR rules. 2/1/18 Tr. p. 227:8-24 (Testimony of Seymour). During the Hearing Complainants' expert, James Kunkel ("Kunkel") tried to argue, without any basis and contrary to the specific language of the CCR rule, that this discussion in the CCR rules related only to *engineered* landfills 10/27/17 Tr. p. 193:2-14, 196:2-7. The language of the CCR rule itself, and USEPA's definition of a CCR inactive landfill as confirmed by Seymour, show that Kunkel was simply wrong. 2/1/18 Tr. p. 227:8-15.

B. The MWG Stations

The MWG Stations have many similarities related to the operations of the ash ponds and the resulting coal ash. Nevertheless, because each Station is different as it relates to its location, the location of the ash ponds, certain differences in liners, and their hydrogeology, including the constituents found in the groundwater underlying the Stations, each Station must be analyzed separately.

1. Joliet 29 Station

Joliet 29 is unique both in its operations and the fact that groundwater beneath the Station meets Illinois standards. Joliet 29 converted to natural gas in 2016 and no longer burns coal to generate electricity. When it burned coal, most of the ash was transported directly off-site, meaning the Jolie 29 ponds were only used intermittently. Two of its three impoundments are now empty of all ash with the third soon to be emptied. The most important fact about Joliet 29 is that groundwater sampled since 2010 shows no coal ash constituents above Class 1 standards.

a. Background of Joliet 29

The Joliet 29 Station, located in an industrial area, was built in 1964-1965 and has been a power plant throughout that period. SOF 64, 68-70. There are no potable wells downgradient of the Joliet 29 ash ponds, other than two MWG wells used only for the Station's purpose and protected by a confining layer separating the upper aquifer from the lower aquifer. SOF 76. Complainants' expert agreed that there is no impact to potable wells at any of the four MWG Stations, including Joliet 29. 10/27/17 Tr. p. 181:4-182:7 (Testimony of Kunkel). The groundwater at the Joliet 29 Station generally flows in a southerly direction towards the Des Plaines River. SOF 77. Property investigations conducted before MWG began operations concluded that there was "no requirement under Illinois environmental law to further investigate or remediate this property". SOF 84.

b. Joliet 29 Coal Ash Ponds and Handling

When Joliet 29 was operating, it used three ash ponds -- Ash Pond 1, Ash Pond 2, and Ash Pond 3 -- all of which were permitted under the Station's NDPES permit. SOF 86, 90-91. Unlike other ash ponds in Illinois, and unusual for power-plants, the three ash ponds were not simply earthen ponds. Rather, each of the Joliet #29 ash ponds was lined in 1978 with poz-o-pac, a dense aggregate liner similar to concrete. SOF 23, 88-89.

At the time MWG began operating the Joliet 29 Station, and continuing until 2016, the vast majority of the bottom ash at Joliet 29 was conveyed across the Des Plaines River to a permitted landfill. SOF 92. On the rare occasions when the enclosed pipe system was offline, a small fraction of the bottom ash was pumped to either Ash Pond 1 or Ash Pond 2. SOF 93-94 Water from Ash Ponds 1 or 2 flowed into Ash Pond 3, which was used exclusively as a finishing pond and received a *de minimis* amount of ash. SOF 109-110. Table 3 (also presented in Attachment 1 to the SOF) provides summary of the facts concerning the Joliet 29 ponds.

Table 3: Joliet #29 – Impoundments

Station	Ash pond	Date Constructed/Liners	Date Relined With HDPE	Scheduled Ash Removal
Joliet #29 1964-65 Facility Operation Converted to gas in 2016	Ash Pond 1 Before 2015, used intermittently when the conveyer was not operating	1978 • Bituminous seal coat • Poz-o-Pac —12 inches thick • Compacted granular material—12 inches thick	2008 12" Poz-o-pac; geotextile; HDPE; geotextile; sand; warning layer	**No ash as of 2015** Previously emptied every 2-4 years*
	Ash Pond 2 Used intermittently used when the conveyer is not operating	1978 • Bituminous seal coat • Poz-o-Pac —12 inches thick • Compacted granular material—12 inches thick	2008 12" Poz-o-pac; geotextile; HDPE; geotextile; sand; warning layer	**No new ash**; to be emptied of ash in 2018. Previously emptied every 2-4 years
	Ash Pond 3 **Finishing pond**	1978 • Bituminous seal coat • Poz-o-Pac —12 inches thick • Compacted granular material—12 inches thick	2013 12" Poz-o-pac; geotextile; HDPE; geotextile; sand; warning layer	**No ash** Emptied for relining

Source: MWG Ex. 901, p. 16 (SOF Attachment 1)

The frequency of dredging as described on Table 3 is an important fact because Complainants' expert asserts, without support, that dredging might cause the ponds to leak. 10/26/17 Afternoon Tr. p. 35:3-6; 1/29/18 Tr. p. 104:11-13. In reality, the ponds were not frequently dredged and as described below, the dredging procedures are designed the to protect the liners.

Even though Ash Ponds 1 or 2 were rarely used, they would eventually fill, and when that occurred, MWG would remove the bottom ash and take the ash off site. SOF 103. Ash Pond 3 had never been dredged since it was placed into service in 1978. SOF 112. It was a finishing pond and no ash accumulated in the pond. SOF 109-110. This was confirmed in 2015 when the Station sampled the influent water into Ash Pond 3 to determine the total suspended solids in the water entering the pond. The results showed that there were 20 mg/l of total suspended solids in the water entering Ash Pond 3, which is a very small number and meant the influent looked like clear water.

SOF 117-118. Interestingly, Complainants' expert, Kunkel, admitted he had no knowledge of how a finishing pond operates. 10/27/17 Tr. p. 99:16-24; 1/29/18 Tr. p. 51:19-52:3.

c. Joliet 29 Relining

As part of MWG's relining program of its ash ponds, MWG relined the Joliet 29 Ash Ponds with a new liner system including an HDPE liner. Thus, in 2007, MWG submitted to Illinois EPA a construction permit application for relining the Joliet 29 Ash Ponds 1 and 2, and Illinois EPA granted the permit about a month later. SOF 434-435. When MWG emptied both ponds for relining, MWG found that the original 1978 poz-o-pac liners were in good condition. SOF 437. MWG relined Ash Ponds 1 and 2 with the liner system (described in Section II.D below), in 2008. SOF 438-445. In 2013, the Illinois EPA issued a construction permit for MWG to replace the liner in Ash Pond 3. SOF 566. When MWG drained the water from Ash Pond 3 for the first time since MWG began operating the Station, MWG found no material in the pond and an intact poz-o-pac liner. SOF 567-568. For all three ponds, the consultant prepared a final Construction Documentation Transmittal with all the certifications and as-built drawings. SOF 445-446, 575-576, See Sec. II.D below.

A pictorial view of the Joliet 29 liner systems, as installed, is included in MWG Ex. 901 at pp. 17-18 and included as Attachment 1 to the SOF, Appendix A.

On March 18, 2016, Joliet 29 Station ceased burning coal for the generation of electricity and began generating electricity with natural gas on May 26, 2016. SOF 65-66. Consequently, when the Joliet 29 Station converted to gas 2016, it no longer generated coal ash. SOF 67. MWG removed all of the bottom ash in Ash Pond 1 by October 12, 2015 and the remaining ash in Ash Pond 2 will be removed and hauled to a permitted landfill. SOF 115-116.

d. Other Ash Areas at Joliet 29 Station

There are three areas at the Joliet 29 Station that contain historic coal ash. One of the locations is on the northeast area of the Joliet 29 Station, the second is on the southwest area of the Joliet 29 Station, and the third is northwest of the coal pile. SOF 119, 141.

The northeast area of Joliet 29 is a part of the Joliet 29 NPDES stormwater permit, and pursuant to that permit MWG has consistently ensured that the area is inspected and properly covered. SOF 125-126. MWG's consultant, KPRG & Associates ("KPRG"), conducts a walk-over inspection of the area on an annual basis to identify any erosional features. SOF 127-128. Within a few weeks of each inspection, MWG repairs any issues. SOF 129. In the most recent inspections

from 2013 through 2016, KPRG observed no evidence of erosion and thus no repairs were necessary. SOF 131. Although Complainants' expert, Kunkel, suggested that water from the Des Plaines River might be causing some of the erosion, (10/26/17 Afternoon Tr. p. 76:19-21), KPRG specifically rejected that interpretation. SOF 133-134. At the Hearing, Richard Gnat from KPRG clarified that none of the erosional features he observed in the northeast area were due to high water levels from the river. SOF 134-135.

The area on the southwest side of the Station is protected by an ELUC established by the owners of the former Caterpillar site, adjacent to the Joliet 29 Station to the west. SOF 136-137. Certain metals in the groundwater from the Caterpillar site have migrated onto the Joliet 29 Station and the ELUC, covering the western side of the MWG station, restricts the use of the groundwater or any soils. SOF 138-140.

As noted in Table 2, above, KPRG conducted a determination of coal combustion byproduct material in an area on the northwest side of the Joliet 29 Station. SOF 141-142. MWG requested the evaluation to determine whether the ash in that area could be beneficially used as a wind break along the existing coal storage piles. SOF 142-143. KPRG concluded with a high degree of statistical certainty that the ash in the northwest area met the criteria established in the Act and could be beneficially used. SOF 144-148.

e. Joliet 29 Station Groundwater

There are no concentrations of constituents related to coal ash above the groundwater standards at the Joliet 29 Station. Both parties agree that boron is a key indicator of coal ash. MWG Ex. 901, p. 8; Comp. Ex. 401, p. 2. Yet, since MWG began sampling groundwater in 2010, boron has only been detected above the Class I groundwater standards at Joliet 29 in one of the eleven wells in 2011 and never since. SOF 523. In fact, both MWG's expert and Complainants' expert agreed that the for the last 24 quarters of sampling, there are no sample results with boron above the Class I standard. SOF 524. Complainants' expert further agreed that the boron levels, which are below Class I standards, were also decreasing or flat in nine of the eleven wells. SOF 525.

Both experts also agreed that sulfate is an indicator of coal ash. MWG Ex. 901, p. 8 (Seymour Presentation); 10/26/17 Afternoon Tr. p. 34:5-7. At Joliet 29, ten of the eleven groundwater wells show sulfate below the Class I standard. See Attachment No. 2 to Appendix A; SOF 526. Moreover, Complainants' expert found that the sulfate levels were either decreasing or flat, and he did not describe any as increasing. SOF 527.

MWG Exhibit 908 presents a pictorial summary of the boron and sulfate concentrations at Joliet 29, the comparison to Class I standards, and Kunkel's "eyeball" opinion of the generally decreasing trends. Exhibit 908 is attached to the SOF Appendix A as Attachment No. 2.

There are no other coal ash related constituents above the Class I standard in the Joliet 29 groundwater wells and the constituents are not even consistently present in the groundwater wells around the ponds. SOF 528. The only constituent above the groundwater standards is chloride, which neither party asserts is a coal ash indicator. Rather, undisputed testimony during the Hearing revealed that the source of chloride in groundwater is likely road salt from Channahon Road adjacent to the north. SOF 529-530.

2. Powerton Station

The Powerton Station is located in an industrial and agriculture area and began operations in the late 1920s. SOF 152-155. It is undisputed that there are no potable wells located downgradient of the Powerton ash ponds. SOF 161.

Investigations conducted before MWG began operating the Station found "no evidence of landfilling", "no constituents of concern detected at concentrations above the IEPA cleanup objectives in the groundwater samples collected," and concluded that "There is no requirement under Illinois environmental law to further investigate or remediate this property." SOF 162-165.

a. <u>The Active Powerton Ash Basins</u>

The Powerton Station has multiple ponds for its operation, not all of which are used for ash. The Powerton ash ponds are regulated under the Station's NPDES Permit. SOF 166. Similar to the ponds at Joliet 29, unlike other ash ponds in Illinois, the active ash ponds at Powerton were lined when they were first constructed in 1978 and have been lined ever since. SOF 169, 181, 188, 201. Table 4 (also presented in Attachment 1 to the SOF) provides summary of the facts regarding the Powerton ash ponds.

Table 4: Powerton - Impoundments

Station	Ash Pond	Date Constructed/Liners	Date Relined With HDPE	Scheduled Ash Removal
Powerton	**Ash Surge Basin**	1978 • Bituminous seal coat • Poz-o-Pac—12 inches thick on the bottom • Hypalon® liner on the sides • Compacted granular material	2013 12" Poz-o-pac; geotextile; HDPE; geotextile; sand; warning layer	NONE since 2013 relining 6-8 years – as needed*
	Ash Bypass Basin Used only when emptying Ash Surge Basin	1978 12" poz-o-pac liner and Hypalon® sides	2010 12" Poz-o-pac; geotextile; HDPE; geotextile; sand; warning layer	6-8 years
	Metal Cleaning Basin	1978 • Bituminous seal coat • Poz-o-Pac—12 inches thick • Hypalon® liner along the sloped sides • Compacted granular material—12 inches thick	2010 12" Poz-o-pac; geotextile; HDPE; geotextile; sand; warning layer	Temporary laydown area Ash removed annually, if needed
	Secondary Ash Basin/ Service Water Basin **Finishing Pond**	1978 Hypalon	2013 Prepared subgrade; geo-textile; under-drain system; geotextile; sand cushion; geo-textile; HDPE	De minimis ash/ Only emptied for relining

Source: MWG Ex. 901, p. 28 (SOF Attachment 1)

The primary ash basin at Powerton for the collection of ash is the Ash Surge Basin, and the back-up basin is the Ash Bypass Basin, only used when MWG is emptying the Ash Surge Basin. SOF 168, 173, 179-180. Both basins were built in 1978 with at least 12-inches of poz-o-pac liner on the bottom and Hypalon liner on the sides. SOF 169-170, 181-182. Hypalon is a geosynthetic rubber liner that is still a commonly used water barrier. SOF 24. MWG removes the bottom ash from the Ash Surge Basin infrequently – approximately every six to eight years, and likely less often as presently the Station operates less. SOF 174. Because the Ash Bypass Basin is only used when MWG is emptying the Ash Surge Basin, it is emptied every six to eight years, as soon as the Ash Surge Basin is placed back into service. SOF 185. The Metal Cleaning Basin is not a part of the ash sluice system and instead is used during outages in the facility at the Station as a temporary lay-down area for ash cleaned out of the boiler tubes. SOF 200. The Metal Cleaning Basin was also constructed in 1978 with a 12-inch poz-o-pac liner on the bottom and a Hypalon liner on the sides. SOF 201. In 2013 and 2010 respectively, MWG relined all three ash ponds with an HDPE liner system, discussed further below.

The Secondary Ash Basin at Powerton is used as a finishing pond for the water from the Ash Surge Basin and had never been dredged. SOF 189, 192-194, 198. At least since before 1999, the Secondary Ash Settling Basin had a Hypalon liner, and was relined in 2013 with an HDPE

liner. SOF 188, 195. When the Station emptied the Secondary Ash Basin in 2013 for the relining project, there was "less than a foot of material and it really wasn't ash." SOF 197. As explained by MWG's expert, much of the material in the basin was from dust deposits from the atmosphere and not ash. 2/1/18 Tr. p. 263:4-19. Complainants' expert Kunkel did not know how a finishing pond is used. 10/27/17 Tr. p. 99:16-24; 1/29/18 Tr. p. 51:19-52:3.

Upon removing the water from the Secondary Ash Basin in 2013 for the relining project, MWG observed that the original Hypalon liner in the pond was in good condition. SOF 604. In order to address the high groundwater levels in the area, MWG installed an underdrain system in the Secondary Ash Basin. SOF 606. The purpose of the underdrain system, composed of stone, drain tiles, and riprap on the sides, is to move any water that may seep near the pond, away from the pond liner. SOF 607-609. Following installation of the underdrain system, MWG installed a 12-inch cushion layer of sand, a geotextile cushion layer, and finally the HDPE liner. SOF 610-611. MWG did not install a cushion or warning layer on top of the HDPE in the Secondary Ash Basin because the basin would not be cleaned out, so no cushion or warning layer was required. SOF 614 Upon conclusion of the relining project, MWG placed the Secondary Ash Basin back in service, and there have not been any issues related to the river water impacting or moving the liner. SOF 616-617.[6]

Even though Complainants' expert did not know how MWG used the Secondary Ash Basin (as a finishing pond) or that it contained no ash (10/27/17 Afternoon Tr. p. 99:16-24), Complainants' expert, Kunkel, testified at great lengths at the Hearing about his concern that groundwater beneath the Secondary Ash Settling Basin would damage the liner due to "hydrostatic uplift." 10/26/17 Afternoon Tr. p. 118:11-122:10. He later admitted, however, that he was completely unaware that MWG had installed a drainage system beneath the Secondary Ash Basin, and he agreed that the drainage system was constructed to protect the liner by quickly moving water away from the HDPE liner. 10/27/17 Tr. p. 108:24-109:5. He also agreed that the underdrain system is specifically designed to prevent the uplift on the HDPE liner. 10/27/17 Tr. p. 109:6-9; SOF 609. In fact, he then admitted that he had never seen the "as built" construction packages for the Secondary Ash Settling Basin, or for any of the other ash ponds, despite testifying as to the

[6] A pictorial view of the Secondary Ash Basin liner system, including the underdrain system, as installed, is included in MWG Ex. 901 at pp. 32 and attached to the SOF, Appendix A.

importance of reviewing as-built construction documents to assess the ponds. 10/27/17 Tr. pp. 90:15-20, 102:9-11, 169:1-18.

b. Additional Powerton Relining Projects

In 2010, as part of MWG's relining program, MWG relined the Metal Cleaning Basin and the Ash Bypass Basin. MWG submitted construction permit applications to the Illinois EPA for relining both ponds, and Illinois EPA subsequently issued permits for each. SOF 534, 535, 544, 547. Before Illinois EPA approved the permit application for the Ash Bypass Basin, Illinois EPA requested confirmation that the cushion and warning layer would provide adequate protection of the HDPE liner from the mechanical equipment. SOF 545. Illinois EPA was concerned about whether the equipment in the ash ponds during the dredging process may damage the HDPE liner. SOF 545. In response, MWG's consultant provided specific documentation and calculations showing that the liners would be protected by the warning layer and the cushion layer. SOF 546. The documentation and calculations satisfied Illinois EPA's concerns, and Illinois EPA issued the permit. SOF 547. Complainants' expert, Kunkel, appears to have ignored the calculations and Illinois EPA's consideration of this exact issue, and continued to opine during the Hearing, based only on his general beliefs and assumptions, that the mechanical equipment in ponds could result in liner tears. 10/27/18 Tr. p. 130:19-131:4. Kunkel admitted that he had never reviewed the construction permits for the liners at any of the MWG ponds and failed to consider these related calculations concerning the liner protections as well. 10/27/17 Tr. p. 198:9-11.

Once Illinois EPA issued construction permits, MWG began the relining projects in the summer of 2010. SOF 536, 548. As with Joliet 29, MWG found that the poz-o-pac liners beneath the Ash Bypass Basin and the Metal Cleaning Basin were in excellent condition. SOF 536, 548. In particular, in the Ash Bypass Basin there were no cracks, the surface was very smooth and in good condition. SOF 549. Additionally, MWG found that the Hypalon liner on the sides was in good condition below the water line. SOF 537, 550. The liner system installed in both the Metal Cleaning Basin and the Ash Bypass Basin was the same as was installed at Powerton's other ponds, and the consultant prepared a final Construction Documentation Transmittal with all the certifications and as-built drawings. MWG SOF 538-543, 551-558, See Sec. II.D below.

In 2013, MWG relined the Ash Surge Basin after receiving Illinois EPA approval of the construction permit. SOF 578-579. When the ash in the Ash Surge Basin was removed, MWG observed that the poz-o-pac on the bottom was in excellent condition and the Hypalon liner on the

sides of the pond was in good condition, particularly below the water line. SOF 580-583. Because the poz-o-pac was in such good condition, MWG modified the bid specifications to not remove any poz-o-pac and instead lay down the liner over the poz-o-pac. SOF 584-585. The liner system installed in the Ash Surge Basin is similar as the liner systems installed in MWG other ponds. SOF 586-595, *See* Sec. II.D below. At the end of the relining project, MWG's contractor prepared a final Construction Documentation with all the certification and as-built drawings. SOF 596-597.

A pictorial summary of the relining projects at Powerton is provided in Attachment 1 to the SOF, Appendix A (MWG Ex 901, pp 29-32).

c. Other Powerton Basins

The Powerton Station has other basins that are unrelated to the current coal ash management at the Station and not a source of coal ash constituents. SOF 231. The East Yard Run-off Basin is used simply for stormwater runoff from the east half of the property at the Station. SOF 232-233.The Limestone Runoff Basin, located directly east of the Ash Surge Basin, is lined on the bottom with a poz-o-pac liner and before 2013, it also had a Hypalon liner on the sides. SOF 235-236. The Limestone Runoff Basin has been used twice to temporarily store coal ash when equipment changes occurred at the Station and there was an immediate need for a lined storage space. SOF 237-238. The last time was in 2013, when the Station was relining the Ash Surge Basin and the Secondary Ash Basin, and since that time the basin has been empty and not used. SOF 243.

There is also an inactive ash basin area on the north side of the Powerton Station called the Former Ash Basin. SOF 244. Since MWG began operations at the Station, ash has not been placed in the Former Ash Basin. SOF 245. The Former Ash Basin is a part of the Station's NPDES permit as an emergency overflow for the Ash Surge Basin. SOF 246. In extreme cases, water from the Ash Surge Basin may flow to the Former Ash Basin area, which has only happened twice since 2008. SOF 247. Groundwater samples taken downgradient of the Former Ash Basin show that this large area of historic ash is not leaching coal ash constituents to the groundwater. SOF 248-251. Complainants' expert, Kunkel, agreed that results from the wells downgradient of the Former Ash Basin all had concentrations of boron, sulfate, and manganese below the Class I groundwater standard and even below Kunkel's calculation of a background concentration. 10/27/17 Tr. pp. 206:12-210:22. MWG's expert Seymour made the same observation and uses this fact to support

his opinion that the historic ash areas are not leaching coal ash constituents so as to cause water pollution. 2/1/18 Tr. p. 277:1-13; 2/2/18 Tr. p. 70:17-71:22.

3. Waukegan Station

The Waukegan Station was built in about 1923 and has been a power plant ever since. SOF 256. MWG began operating the Waukegan Station in 1999. SOF 253. Before MWG began operations, MWG learned from prior investigations that "There is no requirement under Illinois environmental law to further investigate or remediate this property." SOF 272.

The area around the Waukegan Station has historically been dominated by industries since at least the 1930s, including the Johns Manville Company, an active Superfund (CERCLA) Site, to the north, the Griess-Pfleger Tannery and the General Boiler Site to the west, and the North Shore Sanitary District to the south. SOF 258-260. Additionally, there is a former manufactured gas plant further southwest of the property and the Johnson Marine Plant, another active Superfund Site, further south. SOF 259. As described below, coal-related contaminants have migrated to the Waukegan Station from the two western, upgradient properties – Griess-Pfleger and General Boiler.

a. Offsite Sources of Impact to Groundwater at Waukegan

The properties directly west of the Waukegan Station are the Griess-Pfleger Tannery Site and the General Boiler Property. SOF 263. Both properties have contamination in soils and groundwater based upon the historic uses of the properties, and both are being remediated in the Illinois EPA Site Remediation Program. SOF 263-281.

Environmental investigations conducted at the General Boiler Property in the late 1990's showed that the property contained arsenic above remediation benchmarks and that the property included a fly ash fill area. 264-265. While Complainants' expert, Kunkel, dismissed the Boiler Property as a source, he later admitted that he was unaware of the fly ash fill area. 1/29/18 Tr. p. 46:14-23.

The Griess-Pfleger Tannery site ("Tannery Site") was a leather tannery built in 1917 and operating for 56 years, from 1918 through 1973. SOF 266. The Griess-Pfleger Tannery used the chromium chemical tanning process to remove hair from animal hides, which involved numerous chemicals including borax (a source of boron). SOF 267. Soil and groundwater contamination at the Tannery Site is being remediated in the Illinois EPA Sites Remediation Program. SOF 263. The Tannery Site investigation revealed some coal and angular slag in the soils. SOF 268. A

groundwater investigation found that a plume of arsenic, iron and manganese exceeding the Illinois Class I groundwater standards has migrated onto the Waukegan Station. SOF 269-271. The groundwater investigation also showed other contaminants in the groundwater above the Class I standard including chromium, cadmium, mercury, lead, and total dissolved solids. SOF 270. In response to the contamination, the Tannery Site owner conducted corrective measures and instituted an ELUC on at the Tannery Site and on the Waukegan Station, to prevent any use of the groundwater ("Tannery ELUC"). SOF 273-275. Illinois EPA did not require the Tannery Site owner to treat the groundwater. SOF 273. Complainant's expert was not aware that in Illinois ELUC's based on a model that shows where contamination might occur. 10/27/17 Tr. p. 217:3-8.

MWG retained a consultant to review the Tannery Site's estimated plume size and predicted concentrations of contaminants migrating to the Waukegan Station. SOF 278. MWG's consultant concluded that the arsenic, iron, manganese, and TDS concentrations in the monitoring wells on the Waukegan Station were higher than the predicted concentrations, and there continues to be contamination migrating onto the Waukegan Station property from the Tannery Site. Comp. SOF 278-281. In particular, the concentration of arsenic in the groundwater on the Waukegan Station property downgradient of the Tannery Site is not decreasing and the levels of manganese continue to be above the Class I groundwater standard. SOF 280-281.

Based upon this information, MWG's expert, Seymour, concluded that the constituents in the groundwater at the General Boiler Site and the Tannery Site continue to flow onto the Waukegan Station property. 2/2/18 Tr. p. 102:12-21, MWG Ex. 901, p. 56-57. Seymour stated that it was clear that there are significant upgradient sources of the constituents in the groundwater, and the whole area was impacted by the old abandoned facilities. 2/2/18 Tr. p. 102:22-103:12; MWG Ex. 901, p. 56-57.

b. Waukegan Ash Ponds

The Waukegan Station has two ash ponds, East Pond and West Pond, located on the southern side of the Station and operated as part of the Station's NPDES permitted system. SOF 282, 288. The East Pond and West Pond are "U-shaped" and were constructed in 1977 with a Hypalon liner. SOF 284, 287. The East Pond and West Pond alternate receiving bottom ash, thus only one pond (East Pond or West Pond) is in service at a time. SOF 293-294. Additionally, typically the bottom ash settles out on the influent side of the "U" of the pond, and the other side of the "U" only has water and a little bit of bottom ash." SOF 295-296.

Table 5 (also presented in Attachment 1 to the SOF) presents a summary of the Waukegan impoundments.

Table 5: Waukegan - Impoundments

Station	Ash Pond	Date Constructed -Liners	Date Relined With HDPE	Scheduled Ash Removal
Waukegan	East Ash Pond	1977 Hypalon®	2003 Prepared subgrade; HDPE; sand cushion; warning layer	3-4 yrs (prev. 2 yrs)* Bottom area only; inlet side
	West Ash Pond	1977 Hypalon®	2004 Prepared subgrade; HDPE; sand cushion; warning layer	3-4 yrs (prev. 2 yrs)

Source: MWG Ex. 901, p. 46 (SOF Attachment 1)

Historically, each pond at Waukegan was dredged approximately every other year. SOF 303. However, the capacity factor for the Waukegan Station is down, and thus less bottom ash is generated causing a longer timeframe, approximately three to four years, between dredging. SOF 304.

As part of its preventative actions at its Stations, MWG relined the East Ash Pond in 2003 with a 60 mil HDPE liner and relined the West Ash Pond a year later in 2004. SOF 285-286, 299. Following installation of the HDPE liner, MWG installed 12-inches of sand as a cushion layer and then 6-inches of limestone as a warning layer. SOF 302. Additionally, 20-foot tall warning posts were also installed in the ponds to help the dredging contractor to identify where the pond slopes begin. SOF 315.

A pictorial view of the Waukegan liner systems, as installed, is included Attachment 1 to the SOF, Appendix A (MWG Ex. 901 at p. 47).

In 2005, MWG retained a contractor to conduct a third-party review and inspection of the liners in the both ash ponds to ensure the liners were functioning properly. SOF 333-334. One of the contractors was a design engineer for HDPE liners who had expertise in the specifications and installations of geomembrane liners. SOF 335-336. The liner expert concluded that there was no evidence of displacement due to gas and/or water below the liner, the subgrade slope was stable

and intact, and the liner system was installed correctly and in accordance with the specifications and industry standards. SOF 337-347.

MWG also retains a contractor to annually inspect the eastern berm on the East Ash Pond to confirm the berm is sound. SOF 330. The inspections of the berm are a regular part of ensuring the safety of the ponds at Waukegan. SOF 331. Upon receipt of the berm inspection report, the Waukegan Station timely addresses any issues identified by the contractor. SOF 332.

4. Will County Station

The Will County Station was built in 1955 and has been a power plant throughout that period. SOF 356. The Station lies between the Chicago Sanitary Ship Canal and the Des Plaines River, and is surrounded by industry. SOF 358-359. There are no potable wells downgradient of the ash ponds, and the only potable wells located nearby are two MWG wells only used for the Station's purpose that are separated by a confining layer. SOF 361-362. The groundwater flow under the ash ponds at Will County is to the west, towards the Des Plaines River. SOF 363. Investigations of Will County Station before MWG began operations found "no evidence of landfilling" and concluded that "There is no requirement under Illinois environmental law to further investigate or remediate this property." SOF 369-370.

a. Will County Ash Ponds

There are four ash ponds at the Will County station, Ponds 1N, 1S, 2S and Pond 3S, and all are permitted under the Station's NPDES permit. SOF 372-375. Only Ponds 2S and 3S are currently used as part of the Station operations and they are used interchangeably. SOF 388-390.While one pond is in service, the other is designated for cleaning, which occurs every one to two years. SOF 390-391.

Table 6 (also presented in Attachment 1 to the SOF) presents a summary of the facts concerning the Will County impoundments.

Table 6: Will County - Impoundments

Station	Ash Pond	Date Constructed – Liners	Date Relined With HDPE	Scheduled Ash Removal
Will County Only Unit 4 operating Scheduled to close May 2020	Pond 1N and Pond 1S	1977 Poz-o-pac – 36 inches	Removed from service with dewatering systems	NONE 1' remaining water
	Pond 2S	1977 • Bituminous seal coat • Poz-o-pac—36 inches thick	2013 Poz-o-pac; geotextile; HDPE; geo-textile; geocell; sand cushion; warning layer	1-2 yrs*
	Pond 3S	1977 • Bituminous seal coat • Poz-o-pac—36 inches thick	2009 Poz-o-pac; geotextile; HDPE; geo-textile; sand cushion; warning layer	1-2 yrs

Source: MWG Ex. 901, p. 60 (SOF Attachment 1)

Each pond was originally constructed in 1977 with a liner of at least six 6-inch layers (a/k/a lifts). SOF 373, 379. According to the original drawings, the bottom two layers are 6-inches of poz-o-pac, the middle two layers are rimmed with two layers of 6-inch poz-o-pac and 12 inches of fill in the middle, and the top two layers are each 6-inches poz-o-pac. SOF 380. This construction is confirmed by two cores MWG drilled into the base of the ash ponds in 2013. SOF 381-385. The corings found that the area that rims about three-feet in from the edge of the ash ponds was more than 36-inches of poz-o-pac, and the interior of the ash pond had a bottom layer of at least 12-inches of poz-o-pac, 12-inches of sandy-clay fill with gravel, and a top layer of 12-inches of poz-o-pac. SOF 382-383.

MWG had the core samples of the poz-o-pac tested for permeability and density. The analysis found that the poz-o-pac core had a density similar to concrete and a permeability of 3.12 x 10-5, which is a low permeability. SOF 387. The poz-o-pac core had no evidence of discoloration through the length of the core, establishing there were no fractures or cracks through the poz-o-pac. SOF 386. Complainants' expert Kunkel, who had never seen the core sample results, (1/29/18 Tr. p. 73:2-5), incorrectly and without evidence opined that cracks likely existed in MWG's poz-o-pac liners. 1/29/18 Tr. p. 87:1-5. In truth, the actual analysis of the poz-o-pac showed it was in good condition. SOF 386-387. This is supported by witnesses, including third-party consultants,

at each Station who observed the intact poz-o-pac liners during the relining projects. SOFs 436, 437, 453-455, 548-549, 568, 583.

Ash Ponds 1N and 1S were finishing ponds and collected the bottom ash fines from Units 1 and 2 at the Will County Station. SOF 398-400. In 2010, MWG shut down Units 1 and 2 and ceased using Ash Ponds 1N and 1S to collect bottom ash. SOF 404. When Units 1 and 2 were operating, the bulk of the bottom ash from the units was placed on a retention pad (a concrete pad next to the ponds), not in a pond, and that ash was removed from the pad on a weekly basis for beneficial reuse. SOF 402. Ash ponds 1N or 1S still have the same poz-o-pac liner thickness as when originally installed. SOF 403. Because Ash Ponds 1N and 1S were taken out of service, MWG did not reline either pond with HDPE. SOF 403. In 2013, MWG implemented a dewatering system in Ponds 1N and 1S that is designed to maintain a low level of water in the ponds. SOF 405. Complainants' expert, Kunkel, was not even aware of this fact and had not accounted for the added weight of any water when opining as to potential uplift at these ponds. 10/27/17 Tr. p. 77:4-9.

b. Will County Relining Projects

As part of the MWG relining program, MWG relined Pond 3S and later Pond 2S. SOF 449, 618. In 2008, MWG submitted, and Illinois EPA approved, an application for a construction permit to reline both ponds with an HDPE liner. SOF 447-450. The first pond to be relined was Pond 3S. SOF 449. When the ash was removed from Pond 3S, Will County's Chemistry Systems Specialist, Mr. Veenbaas, walked into the ash pond and observed that the poz-o-pac was very clean, clear and solid concrete, without any cracks. "It was in beautiful shape." SOF 453-454. Mr. Veenbaas was surprised by the condition of the poz-o-pac because it had been installed in the mid-1970's and yet "it was actually pretty pristine." SOF 455. As part of the plan to reline Pond 3S, MWG removed the top 12-inches of the poz-o-pac, but the poz-o-pac was in such good condition that MWG left the remaining 12" in place. SOF 456-457.

Pond 2S was relined in 2013 under an updated construction permit with an HDPE liner. SOF 618-619. When the ash was removed, and just like all the other poz-o-pac liners, the poz-o-pac liner in Pond 2S was in very good condition and MWG elected to leave much of it in place. SOF 621-622. Due to the smaller size of the pond, MWG also installed a geocell on the side slopes in Pond 2S. SOF 626-628. The purpose of the geocell was for additional protection of the liner

during operation and cleanup in the pond. SOF 628. MWG installed both liner systems as described in Section II.D. below.

A pictorial view of the Will County liner systems, as installed, is included in Attachment 1 to SOF, Appendix A (MWG Ex. 901 at p. 61).

C. MWG Ash Pond Inspection and Dredging Practices

As part of MWG standard procedures, MWG regularly inspects the ash ponds and its liners, as well as dredges the ash ponds using procedures that protect the liners. For MWG, the liners in the ash ponds are "a high priority." SOF 306. For that reason, MWG conducts inspections every day, often more than one time per day. SOF 108, 213-214, 321, 406. Additionally, when ash is removed from the impoundments at the MWG Stations, MWG takes specific care and has specific procedures to prevent the pond liners from being damaged. SOF 105-107, 219-230, 303-320, 392-397. Detailed descriptions of the inspection procedures and dredging procedures are below in Section III.A.3.a.iii.

D. MWG's Evaluation and Relining of the Station Impoundments

MWG began an extensive project to assess the condition of its impoundments in early to mid-2000s. SOF 408. MWG hired outside consultants who performed a geotechnical analysis of the soil surrounding the ponds, researched historical drawings of the ponds, and prepared risk assessments using very conservative assumptions. SOF 410-416. No Federal or State regulatory agency asked MWG to evaluate the ash ponds, there was no legal requirement for MWG to conduct the pond liner evaluation, and there were no Illinois or Federal regulations related to the storage or use of the coal ash at the time. SOF 409. Instead, the evaluation was a part of MWG's preventative operation and review of the Stations. SOF 408.

MWG's initial evaluation was set out in a 2005 Technical Memorandum, which described a ranking system MWG's consultant developed to prioritize relining the impoundments. SOF 417-418. Over the next few years, MWG conducted additional evaluations and investigations to update the memorandum as it was a "living document". SOF 421-424. MWG intentionally built flexibility into the sequence of the pond relinings, particularly after new information was revealed, including that the 1970s poz-o-pac liners in the ponds were in excellent condition. SOF 424.

In addition to proposing a schedule for the pond relinings, MWG's consultant proposed three types of replacement liners -- compacted clay, asphalt or concrete. SOF 425-426. Yet, MWG went a step further and elected to use HDPE because it was the least permeable and would be even

more protective. SOF 427. As MWG's expert, Seymour stated, the HDPE liner, used for hazardous waste landfills, is a "robust pond lining" and "about one of the best you can get." 2/1/18 Tr. pp. 256:8-23, 243:22-24. Notably, the HDPE liners were more expensive than the consultant's recommended liners. SOF 428.

In 2007, MWG began to execute its plan for the relining. SOF 432. MWG prepared permit applications describing the relining projects in detail and obtained Illinois EPA construction permits. Although Complainants' expert expressed many opinions about the conditions of the liners, he admitted that he never even reviewed the Illinois EPA construction permits. 10/27/17 Tr. p. 197:24-199:7. In fact, when discussing the Illinois EPA construction permits Kunkel stated: "…I have no idea … what IEPA requires." 10/27/17 Tr. p. 199:1-4.

Because MWG expected ash to be removed from most of its impoundments, MWG ensured that the liner systems were specifically designed for the removal of the ash. SOF 432. Generally, the liner systems consist of six layers of materials (from bottom to top): the original poz-o-pac, a geotextile cushion, the HDPE liner, a geotextile cushion, a 12-inch thick sand cushion layer, and a 6-inch limestone warning layer. SOF 438, 461-462, 538, 551, 569, 586, 630. Each layer has a purpose. The purpose of a geotextile in the liner system is as a cushion for the geomembrane to prevent puncture damage on the geomembrane. SOF 29. Similarly, the purpose of the sand cushion layer is to avoid punctures on the geomembrane when equipment is on the liner. SOF 29. The purpose of the limestone warning layer, which is white and contrasts with the dark color of coal ash, is to act as a warning to the operators when the operators are removing the ash so that they do not reach the liner. SOF 30-32. Not only is the limestone layer a warning layer due to its color, but it is a strong binding layer and provides a hard-working surface for the equipment when the ponds are dredged. 2/1/18 Tr. p. 290:23-291:4. MWG retained the poz-o-pac as part of the liner system because it served as an additional barrier and provided additional support for the overall life of the liner. 2/1/18 Tr. p. 242:13-22. Finally, as part of the measures to protect the liner from damage, MWG installed marker posts along the edge of the base of the ponds to mark the sides for the operators when the ponds are being dredged. SOF 315, 439, 468, 469, 543, 556, 595. MWG's expert, Seymour, reviewed the design of the MWG ash pond liner systems, and concluded, based upon the various layers including a cushion and warning layer, that the system was robust and designed to handle the removal of ash. 2/1/18 Tr. pp. 243:16-244:9, 262:3-16.

The installation of the HDPE liners was systematic and conducted by certified installers to ensure that all layers of the system were placed properly. Before the HDPE installer began installing the HDPE in the ponds, the installer visually inspected the subgrade and certified that the subgrade surface was acceptable for installation of the HDPE. SOF 440, 451, 458-460, 539, 552, 570, 587, 611, 623. After installation of the HDPE, the installation company certified that the liners in each pond were installed properly and in accordance with the project specifications. SOF 441, 540, 553, 571, 588, 624, 625. Finally, before a pond was placed back in service MWG had an electronic leak location survey of the pond taken to identify any potential leaks in the installation of the HDPE liner. SOF 442, 463, 554, 541, 572, 589, 591, 612, 629. Often no leaks were detected, but if they were, the leak was repaired. SOF 443-444, 467, 542, 555, 573, 590, 592, 613, 629. As MWG's expert Seymour stated, the leak location survey is important because it is an additional level of quality assurance/quality control ("QA/QC"), and it confirms that there is no damage to the liner when the cushion and warning layers were lain. 2/1/18 Tr. p. 254:11-20.

At the completion of the relining projects, the contractor submitted to MWG "Construction Documentation Transmittal" for the impoundments which contained the construction record documents related to the replacement of the liners in the ponds. SOF 445, 557, 575, 596, 615, 631. The Construction Documentation was the QA/QC and contained all the certifications for the installation of the HDPE liner, as well as the as-built drawings and information for the pond liners. SOF 446, 558, 576, 597, 615, 631. As Seymour stated, these documents show that the liners were built as designed and showed that the installation followed the industry standard. 2/1/18 Tr. p. 246:3-247:22. Complainants' expert, Kunkel, speculated that the subgrades likely were too rough and the liners likely leaked when installed. 10/27/17 Tr. p. 162:11-163:17. Yet, Kunkel admitted that he never saw the construction documents. 10/27/17 Tr. p. 165:5-17, 169:1-18. In fact, he admitted that he had not reviewed as-built construction documents for any of the relined impoundments at the MWG Stations stating: "…but I didn't see any construction documents. What I saw were pre-construction drawings...." 10/27/17 Tr. p. 169:3-9. When asked about the subgrade certifications and liner certifications during the Hearing, Kunkel conceded he would have to defer to those professional statements that the subgrade was satisfactory for the HDPE liner. 10/27/17 Tr. p. 165:24-165:21.

F. Illinois EPA's Involvement with MWG's Ash Ponds

In January 2009, Illinois EPA contacted MWG expressing interest in conducting a survey of all Illinois impoundments to assess potential risks related to dams around impoundments. SOF 474. Illinois EPA requested information concerning potable wells nearby, whether the wells were downgradient of the stations, and the constituents in the coal ash. SOF 476. MWG agreed to give Illinois EPA the requested information and on July 15, 2009, MWG submitted to Illinois EPA MWG's results of a Hydrogeologic Assessment. SOF 477-479. The Hydrogeologic Assessment identified the ash ponds at each of the Stations, described the type of liners in the ash ponds, and described the geology beneath the Stations. SOF 480. In the Hydrogeologic Assessment, MWG explained that that all the ponds were lined with impermeable materials, including HDPE and poz-o-pac, to prevent any release to the environment. SOF 481. Further, MWG explained that the original poz-o-pac liners observed during relinings were in good condition, and they expected that to be the case at all the impoundments. SOF 482-483. MWG confirmed that there were no potable wells downgradient of the ash impoundments. SOF 484-485. MWG concluded that there was no reasonable basis to conclude that the MWG's operations of the ash ponds were causing a release to the groundwater or a risk of impairing potable water sources. SOF 486.

1. 2010 Groundwater Monitoring

After MWG submitted the first Hydrogeologic Assessment, Illinois EPA requested that Illinois electric coal generators, including MWG, voluntarily install wells directly upgradient and downgradient of their ash ponds. SOF 489. MWG expressed concern over whether installing the monitoring wells would provide any conclusions about the ash ponds because the MWG Stations are in old industrial areas and two of the Stations already had ELUCs due to off-site historic contamination. SOF 490-492. Despite its reservations, MWG again cooperated and voluntarily agreed to Illinois EPA's request. SOF 493. In 2010, MWG submitted to Illinois EPA Hydrogeologic Assessment Plans for sampling groundwater at the four Stations based upon MWG's consultation with Illinois EPA. SOF 494-495. On September 24, 2010, Illinois EPA approved MWG's Hydrogeologic Assessment Plans. SOF 496.

Following approval of the Hydrogeologic Assessment Plans, MWG began installing the monitoring wells. SOF 497. After only one round of sampling, MWG submitted to Illinois EPA a Hydrogeologic Assessment Report for each of the four Stations. SOF 498-499. As the reports had only one round of sampling, the reports gave a very general description of the evaluation of the

groundwater conditions and noted that no determination could be made as whether an individual pond was contributing constituents to the groundwater. SOF 500-501. MWG agreed to continue groundwater monitoring on a quarterly basis. SOF 502.

Based on the groundwater monitoring results, Illinois EPA issued Violation Notices ("VNs") to MWG alleging violations of the groundwater quality standards purportedly caused by the ash ponds. SOF 559. After a significant exchange of information and numerous discussions, Illinois EPA and MWG agreed to Compliance Commitment Agreements ("CCAs") to resolve the VNs for each MWG Station. SOF 560-562. Although Complainants' expert Kunkel opined that the CCAs were not sufficient (Comp. Ex. 401, pp. 2, 35), he admitted that he was not familiar with CCAs and did not know what "CCA" even referenced. 10/27/17 Tr. p. 87:18-88:3. The CCAs contained the following provisions:

- MWG agreed to continue to maintain and operate the ash ponds in a manner that protects the integrity of the liners.[7]
- MWG agreed to continue to use the ash ponds as MWG always had, by continuing to have the ash removed.
- MWG agreed to reline its remaining active ash ponds in a similar manner as its already relined ash ponds. (Because there were no Federal CCR or Illinois specific CCR rules, MWG and Illinois EPA referred to the permits and construction documents for the previously relined ponds and concluded that MWG should continue using HDPE liners.)
- In the Powerton and Waukegan CCAs, MWG agreed to install additional monitoring wells. 1/30/18 Tr. pp. 93:9-23, 165:8-10. Additionally, in all of the CCAs, MWG agreed to continue groundwater monitoring on a quarterly basis.

SOF 563-564, 634-635

2. Groundwater Management Zones

MWG also agreed to establish a GMZ pursuant to 35 Ill. Adm. Code 620.250 at the Powerton, Will County and Joliet 29 Stations. SOF 636. A GMZ is an institutional tool as part of a corrective action that designates an area of groundwater in which the Class I groundwater standards are not applicable to the groundwater. 35 Ill. Adm. Code 640.450(a); SOF 637. For a GMZ to be established, it must be reviewed and approved by the Illinois EPA. SOF 638-645. The GMZ area at each of the MWG Stations covers large parts of the three Stations, including the ash ponds, the groundwater monitoring wells and the surrounding areas. SOF 639. Once the GMZs

[7] As described in Section III.A.3.a.iii, MWG had already been inspecting the liners on a daily basis and MWG was already following procedures to maintain the integrity of the liners.

were established in 2013, the Class I groundwater standards were no longer applicable to the groundwater in the GMZ areas at Joliet 29, Powerton, and Will County. 35 Ill. Adm. Code 640.450(a); SOF 637. Notably, since the GMZs were established, MWG has not heard from Illinois EPA related to any concerns with the GMZs or groundwater. SOF 639.

3. Environmental Land Use Controls

MWG also established ELUCs as corrective actions pursuant to 35 Ill. Adm. Code 742.1010 at Powerton, Will County, and Waukegan. SOF 646. An ELUC is another institutional control tool in which a designated parcel of land has certain use restrictions, such as not allowing the placement of any potable water wells within the area SOF 647. Once the ELUC is agreed upon with the Illinois EPA, it is registered on the deed of the property. SOF 647. The areas for the ELUCs at Powerton and Will County are identical to the GMZs established at each of the Stations. SOF 648-649. Because the Waukegan Station already had an ELUC on part of its property due to the Griess-Pfleger Tannery plume, the area of the ELUC at Waukegan was placed directly adjacent to the Tannery ELUC, such that the two ELUCs could work in concert. SOF 651-652. The area of the more recent ELUC extended from the Griess-Pfleger Tannery ELUC and over the ash ponds and the surrounding areas. SOF 652. Illinois EPA approved the ELUCs at the Stations in 2013. SOF 650, 653, 656.

Following completion of the activities agreed to in the CCAs, MWG certified that all of the corrective measures were completed on time. SOF 657-661. From 2013 to the present, MWG has monitored groundwater at its Stations on a quarterly basis and has provided results of the monitoring to Illinois EPA without any additional comment or concern by Illinois EPA. SOF 635.

G. Groundwater Conditions Do Not Pose a Risk

MWG's expert, Seymour, established in his expert report and testimony that the groundwater conditions at the Stations do not pose a risk to public health or water receptors in the neighboring surface waters.[8] In addition to considering the GMZs and ELUCs at the Stations, and reviewing information on the lack of potable wells, Seymour analyzed nearby waterways as potential receptors. MWG Ex. 903, Appendix B, MWG Ex. 907. Seymour's conclusions are

[8] The GMZ and ELUC areas at the Stations, as established through the Illinois EPA-approved CCAs, prevent access to any potentially impacted groundwater located at or beneath the Stations. SOF 636-656.

summarized in MWG Exhibit 901 at page 10 (also presented in Attachment 1 to the SOF, at page 10). Complainants have put forth no evidence or expert opinion to dispute this analysis.

In his analysis, Seymour assessed the potential for human health and ecological risks for an assumed exposure to the constituents of interest in the groundwater associated with each Station. *Id* at p. 44. First, Seymour reviewed whether there were any potable water wells downgradient of the ash ponds and confirmed there were none. SOF 76, 161, 262, 361. Complainants' expert, Kunkel, agreed that the facilities do not have the possibility to impact offsite drinking water. 10/27/18 Tr. p. 182:3-7. Next, for each of the Stations, Seymour evaluated the groundwater concentrations for each of the constituents of interest at the Stations and compared those results to the Illinois Water Quality Standards or the Water Quality Criteria for surface waters. MWG Ex. 901, p. 10, MWG Ex. 903, App. B, p. 2, MWG Ex. 907. Seymour chose these values because they are considered to be protective of human health and the environment for the values incorporate toxicological data, and the state determined acceptable risk level. MWG Ex. 903, App. B, p. 2. The evaluation was conservative because it assumed a complete exposure pathway, instead of including an evaluation of the effects of attenuation or dilution mechanisms, both of which would better reflect the actual hydrogeological environment. *Id*. Based upon this analysis, Seymour concluded that there was "no risk to the surface water environment at each site based on regulatory risk standards and standards of practice for risk assessment" 2/1/18 Tr. p. 279:18-281:3; 2/2/18 Tr. pp. 43:18-15, 78:24-79:9, 105:7-17, 124:17-20; MWG Ex. 901, p. 10. MWG Ex. 903, App. B; MWG 907; SOF 22. In other words, "surface water receptors were not going to exposed to anything unacceptable." 2/1/18 Tr. p. 280:1-2.

III. THE FACTS AS APPLIED TO ILLINOIS LAW

After five years of litigation, Complainants have still failed to prove that MWG caused or allowed either groundwater contamination or open dumping at each of the Stations. The complexity of this case, combined with the vast amount of evidence presented, requires a systematic approach to the application of fact to law. First, MWG establishes that MWG did not cause or allow groundwater contamination in violation of Section 12(a) of the Act. 415 ILCS 5/12(a). The discussion addresses "cause" and "allow" for each Station, including both the ponds and historic ash areas at each Station. Joliet 29 is specially identified because there are no coal ash constituents above standards in the groundwater at Joliet 29. MWG also describes the extensive

precautions it took and continues to take to establish that it does not "allow" water pollution under Illinois law.

Second, MWG conducts a similar analysis to establish that MWG did not "cause" and did not "allow" open dumping at Powerton, Waukegan, or Will County (open dumping was not alleged against Joliet 29) in violation of Section 21(a) of the Act. 415 ILCS 5/21(a). The ash placed in the ponds is not waste or refuse, but instead is removed and reused for beneficial reuse. Additionally, the ponds are not disposal sites because Complainants did not prove that the ponds are leaking any constituents into the environment. The ash placed outside of the ponds is not a waste but used as structural fill, and regardless, MWG's analysis shows that the ash outside of the ponds is not a source. Third, because Complainants rely almost exclusively on Kunkel's testimony and opinion, MWG details the myriad of errors and the minimal weight that must be given to Kunkel's opinions.

Finally, MWG sets out the factors the Board should consider in preparing an order for this case, including that MWG has complied with Illinois EPA's requests at each of its Stations, that there is no risk to human health or the environment, that the MWG Stations have significant social and economic value, that MWG has conducted all technically reasonable corrective actions at the Stations despite no specific finding of the source of the constituents in the groundwater at any of the Stations, and that there is simply no further work to be done at any MWG Station.

A. MWG DID NOT CAUSE OR ALLOW GROUNDWATER CONTAMINATION

To find a violation of Section 12(a) of the Act, the Board must find that a respondent caused or allowed a discharge of a contaminant into the environment so as to cause or tend to cause water pollution or so as to violate regulations or standards. 415 ILCS 5/12(a), *People of the State of Illinois v. State Oil Co.*, PCB 97-103, April 4, 2002, 2002 WL 560904 at slip op 10. "Water Pollution" is defined as:

> Such alteration of the physical, thermal, chemical, biological or radioactive properties of any waters of the State, or such discharge of any contaminant into any waters of the State, as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, fish, or other aquatic life. 415 ILCS 5/3.545

The Act is not a strict liability statute, instead the Court must find that a person has the capability of control over the source of the pollution or failed to take extensive precautions to prevent a release. *People of the State of Illinois v. William Charles*, PCB 10-108, 2011 Ill. ENV LEXIS 86, March 17, 2011 at 25-27, *citing People v. A.J. Davinory Contractors*, 249 Ill. App. 3d 788, 793

(5th Cir. 1993), *Perkinson v. Pollution Control Bd.,* 187 Ill. App. 3d 689, 693 (3rd Dist. 1989), *and Phillips Petro. Co. v. Pollution Control Bd*., 72 Ill. App. 3d 217 (2nd Dist. 1979). Simply being the owner of property is not enough. There are two factors available for a complainant to show a respondent is in violation of Section 12(a) of the Act, either the person "caused" a discharge of a contaminant or they "allowed" a discharge of contamination. Complainants cannot establish that MWG falls within either factor.

In this case, Joliet 29 must be separately analyzed because groundwater has no coal ash constituents above Class I groundwater standards, constituents that exist are generally decreasing, and there are no violations of 12(a) as to Joliet 29. At all four Stations, there is no credible evidence that the lined impoundments (lined since the late 1970s and relined by MWG) at the Stations are a cause of groundwater impact. Ash from the ponds was tested and not leaching, and the ponds are lined. Similarly, the historic fill areas at the Stations were sampled and show that they are not a cause of the constituents in the groundwater. MWG's extensive precautions over the years establish that MWG did not allow groundwater impact from either the ponds or fill areas. Moreover, MWG instituted GMZs at Joliet 29, Powerton and Will County Stations, meaning that groundwater standards do not apply to those Stations. MWG presented undisputed evidence that the Stations are not creating a risk, so there is no harm, nuisance or hazard.

1. **Joliet 29 Should be Summarily Resolved Because there are No Concentrations of Constituents Above the Class I Standards**

As established in Section II.B.1.e above, there are no concentrations of constituents related to coal ash above the Class I groundwater standards in the groundwater at Joliet 29. MWG Exhibit 908 presents a pictorial summary of the boron and sulfate concentrations at Joliet 29, the comparison to Class I groundwater standards, and Kunkel's "eyeball" opinion of the generally decreasing trends. MWG Exhibit 908 is attached to the SOF Attachment A as Attachment No. 2. [9] If the ash ponds, or the fill, were a source of the constituents in the groundwater, then coal ash

[9] Complainants' Expert, Kunkel, also claimed that there was contamination from coal ash at Joliet 29 because the levels of boron and sulfate were above *median* of the community statewide *background* levels in Illinois EPA's Technical Document. Comp. Ex. 405. In Illinois EPA's Technical Document, the range of born concentrations in the community background levels was actually from 0.04 mg/l to 0.7 mg/l. Comp. Ex. 405, Fig. 4. After reviewing the range of boron, Kunkel agreed that the median boron concentration in the Joliet 29 groundwater was within the range of background concentrations of boron in the groundwater. Comp. Ex. 411, p. 7; 10/27/18 Tr. p. 38:8-11. Further, as explained by MWG's consultant Mr. Gnat, the community statewide background levels relied upon by Kunkel do not have data from Cook County, Will County or DuPage County – the most heavily industrialized areas in Illinois and where Joliet 29, Powerton, Waukegan, and Will County are located. 2/1/18 Tr. p. 104:19-11. Thus, the data set relied upon by Kunkel is not representative of background in industrial areas that the MWG Stations are located.

constituents would be present above the Class I groundwater standards in all (or at least many) of the wells, and that is simply not the case.[10]

In fact, the only constituent above the groundwater standards is chloride. Undisputed testimony during the Hearing revealed that the source of chloride in groundwater at Joliet 29 is road salt. Channahon Road (Route 6), a four-lane highway, runs adjacent and upgradient to the ash ponds, and another four-lane highway interests Channahon Road near the northwest corner of Ash Pond 1. SOF 70-71. Road salt, which has chloride as one of its elements, is commonly spread on the roads in the Chicagoland area in the winter. SOF 72. As explained by MWG's consultant at KPRG, the chloride levels at Joliet 29 appear on a seasonal basis, consistent with the time periods when road salt is applied, suggesting that the chloride is due to the spreading of road salt. SOF 529-530. MWG's expert confirmed KPRG's observations, stating that Channahon Road, a heavy trafficked road directly next to the Ash Ponds, is salted and the salt runoff water flows into the ditch that parallels the site and migrates to the grounder resulting in chloride detections. SOF 530. Complainants did not dispute this evidence.

Complainant's expert Kunkel opined that groundwater at Joliet 29 could be impacted by areas around the ponds that he contends contain ash. Comp. Ex. 401, p. 11. However, Kunkel was relying on borings *from a different site* for his conclusion that ash exists in fill around the ponds. SOF 81-82. In fact, borings taken from areas around the ash ponds at the Joliet 29 Station do not contain coal ash. SOF 83. As explained by MWG's Director of Federal Environmental Programs, Ms. Race, boring logs for Joliet 29 from a 1998 report did not show any coal ash in the borings. SOF 83.[11] As there is no coal ash in the ground around the ash ponds, coupled with the absence of constituents related to coal ash in the groundwater above the groundwater standards, any claim that the groundwater is impacted by coal ash in the ground must fail.

There is also no evidence to suggest that historic fill areas at Joliet 29 are causing or allowing any groundwater pollution. First, there are no monitoring wells located near or around the historic ash areas, thus there is no evidence of constituents in the groundwater from those areas. MWG Ex. 667, pp. 3, 7. Second, MWG performed testing of coal ash from one of the historic fill areas at Joliet 29, and has coal ash testing from other historic ash areas at the other Stations. *See*

[10] This is equally true for the Powerton Station, Waukegan Station, and the Will County Station.

[11] The boring logs for the monitoring wells installed during the 1999 Phase II investigation were mixed with the boring logs from an entirely different generating station and the Joliet 29 boring logs were admitted separately as SOF 81-83.

Table 2, in Sec. II.A.. MWG's expert, Seymour, evaluated the leaching data from coal ash outside of the ponds. 2/2/18 Tr. p. 20:22-22:20. The leaching data found nothing in the historic ash was above the Class I groundwater standards. MWG Ex. 901, p. 9. He also assessed monitoring wells downgradient of the known historic ash area at the Powerton Former Ash Basin and found no impact from historic ash. Thus, Seymour concluded that the known historic ash at the Stations does not leach metals at concentrations that would cause groundwater contamination, and the historic ash areas at Joliet 29 are not impacting the groundwater. MWG Ex. 901, p. 23; 2/2/18 Tr. p. 20:22-22:20.

Complainants' expert Kunkel speculated at the Hearing, even while acknowledging he had no evidence to support his conclusion, that water from the Des Plaines River could rise and flow into the banks at Joliet 29, against the normal groundwater flow, recharging the groundwater system. 10/26/17 Afternoon Tr. p. 79:21-80:4. Based upon that speculation, he claimed that water might flow from the northeast ash area towards the ponds, even though he again agreed that he had no direct evidence to support this hypothesis. 10/26/17 Afternoon Tr. p. 77:10-21; 10/27/18 Tr. p. 115:1-6; 120:9-121:22. Despite 7 years of groundwater elevation data that does not support his hypothesis, Kunkel insisted on arguing that groundwater elevations might have risen, without anyone noticing, between the 27 Quarters of monitoring. 10/26/17 Afternoon Tr. p. 77:10-21; 10/27/18 Tr. p. 115:1-6; 120:9-121:22. His opinion has no basis in fact. MWG's groundwater consultant from KPRG, Mr. Gnat, who has reviewed the groundwater sampling results since 2010, testified that there is no evidence that groundwater flows from the northeast area towards the Joliet 29 groundwater monitoring wells. 2/1/18 Tr. p. 124:18-22.[12] MWG's expert Seymour also stated that in the hydraulics of groundwater, the groundwater would flow to the river, and based upon the contours, the groundwater at the Joliet 29 Station would *not* flow from the northeast area towards the ponds at Joliet 29. 2/2/18 Tr. p. 23:6-24:7. Kunkel simply has no support for his speculation on the groundwater flows at Joliet 29.

In any case, the groundwater results at the Joliet 29 Station are consistently below the Class I groundwater standards. *See* Sec. II.B.1.e above. Thus, even if Complainants' expert were correct and there is flow from the historic ash area that lies to the northeast, the groundwater results show

[12] Further, as explained in Sec. III.A.1., Kunkel also suggested that water from the Des Plaines River is flooding the Northeast Area citing to the KPRG Erosion Inspection Reports (10/26/17 Afternoon Tr. p. 76:19-21). Yet, KPRG specifically rejected that interpretation stating that none of the erosional features were due to high water levels from the river. SOF 133-135.

that there is no contamination resulting from that historic ash area either. If there were, it would have been detected in the quarterly groundwater sampling. Neither USEPA nor the Illinois EPA have asked MWG to investigate any the of the historic ash areas. SOF 22. MWG's conclusions about the lack of impact from historic ash areas are further supported by the Federal CCR rules, which found no risk from historic landfilled areas and concluded that historic areas of ash do not require further investigation or remediation. SOF 123-124.

Ultimately, at the Joliet 29 Station, the groundwater results show that the groundwater is not impacted by constituents related to coal ash, and MWG cannot be found in violation of Sections 12(a) or 12(d) or the Act, nor any of the Board regulations.[13]

2. MWG did not "Cause" Water Pollution

The first element to determine a violation under Section 12(a) of the Act is whether a person caused water pollution. 415 ILCS 5/12(a). To "cause" something means "to bring about or effect." Black's Law Dictionary, 8th Edition, 2004. The term "cause" cannot be applied retroactively to actions that occurred prior to the effective date of the Act because it deals with a certain course of conduct. *Illinois EPA v. Rawe*, PCB AC92-5, 1992 WL 315780 (Oct. 16, 1992), slip op at 4 (Board held son who inherited property could not have "caused" the burial of cars placed as erosion controls by his father). Additionally, finding that the Act does not define "cause," the court in *People v. McFalls*, 313 Ill.App.3d 223 (3rd Dist., 2000), used a dictionary definition stating that "[t]he verb "cause ordinarily means 'to serve as cause or occasion of [or to] bring into existence…" *Id* at 227.

a. The Lined Ash Ponds Did Not and Are Not Causing Groundwater Pollution

Complainants have not established that the lined impoundments at the Stations are causing water pollution. Unlike ash ponds at other electric generating facilities, MWG's ash ponds have always had a liner. SOF 20, 89. When MWG took over the Stations in 1999, the Joliet 29 Station, the Powerton Station, and the Will County Stations had poz-o-pac liners, and the Waukegan Station had a geosynthetic liner. SOF 88, 169, 181, 188, 201, 284, 373. MWG first relined the geosynthetic liners at the Waukegan Stations in 2003 and 2004. SOF 285-286. Following that relining project, MWG began a fleet-wide evaluation and relining program, which found that the

[13] Complainants did not allege that Joliet 29 caused open dumping in violation of Section 21(a) of the Act. 415 ILCS 5/21(a).

original poz-o-pac liners were in excellent condition. SOF 21, 436, 437, 454-457, 536, 548, 549, 583, 621. The poz-o-pac was smooth and did not have any cracks. SOF 454, 549. This was confirmed by MWG's core samples and analysis of the Will County poz-o-pac which showed no discoloration through the core, suggesting no fractures or cracks in the poz-o-pac. SOF 386. Additionally, for the ponds that had geosynthetic liners on the sides, MWG found the geosynthetic liners to be in good condition below the water-line. SOF 537, 550, 581, 604. The liners only showed repairs to tears on the top of the liners. SOF 550, 582. There is no evidence to suggest that before the relining, the ponds were leaching constituents into the groundwater.

MWG's relining project made it even more improbable that the impoundments could leach coal ash constituents into the groundwater. MWG began relining the active ponds with the state-of-the-art HDPE before any regulatory requirements or order by a regulatory agency. SOF 299-300, 408-409. As MWG expert stated, HDPE liners are very effective to prevent any potential impact to groundwater. 2/1/18 Tr. p. 256:3-8. HDPE liners are used for hazardous waste landfills because HDPE liners are so resistant to chemicals and have a very low permeability. 2/1/18 Tr. p. 256:8-23. Finally, undisputed testimony at the Hearing showed that MWG timely repaired any damage to a liner, MWG never told anyone to not repair a liner, and no one ever decided to not repair a liner. SOF No. 107, 108, 216, 218, 326-329. Based upon MWG's expert Seymour's review of test data of ash in the ponds, each Station's data and information, and final Construction Documentation of the relined ponds, Seymour concluded the impoundments were not leaking. 2/2/17 Tr. p. 66:11-16; 2/2/18 Tr. pp. 90:2-6, 117:13-17.

In fact, Illinois EPA came to the same conclusion as to the Waukegan ponds. In 2013, Illinois EPA stated at the public hearing for the Waukegan NDPES permit that *it did not believe that the active ash ponds at Waukegan were the source of constituents in the groundwater*. SOF 348-351 (*emphasis added*). Illinois EPA repeated its conclusions in 2015 in an internal email regarding the Waukegan stating that the additional monitoring required by the CCAs indicated that the active ash ponds were not the likely source of constituents in the groundwater. SOF 352. Complainants' expert Kunkel's bald assertions that the relined ponds may leak, when he had never reviewed the as built drawings for the liner systems, are simply not credible. 10/27/17 Tr. p. 165:5-17, 169:3-9; 1/29/18 Tr. p. 62:13-16. Without any evidence of leaking, MWG's impoundments cannot have caused groundwater pollution.

i. There is No Plume from the Ponds, which Further Supports that the Ponds Are Not Leaking

To support his analysis of the impoundments, MWG's expert, Seymour, also assessed the site-specific groundwater conditions at each of the Stations. As Seymour explained at the Hearing, he evaluated whether there was a plume at any of the Stations that would suggest that the ponds were a source. 2/2/18 Tr. p. 73:18-21. Typically, there would be a higher concentration of constituents in groundwater at the location of a suspected source and the concentration would decrease the further away from the suspected source. 2/2/18 Tr. p. 73:18-74:3. Thus, if there were a source area, the data would be higher near the suspected source (spatial). 2/2/18 Tr. p. 74:14-75:3. Seymour found no spatial trends to suggest a plume or source at any of the Stations. MWG Ex. 903, pp. 15, 18, 21, 23. The trends of the constituents related to coal ash were erratic and did not show a consistent source. 2/2/18 Tr. pp. 75:8-76:15, 93:22-94:14; MWG Ex. 901, p. 41, 53, 69. For instance at Powerton, the peak concentrations of the constituents are different for each constituent and are not consistent. 2/2/18 Tr. p. 76:3-15; MWG Ex. 901, p. 41. In other words, if there was a specific source, one or two wells would consistently be the peak. Seymour found the same inconsistency in the monitoring wells at the Waukegan Station and the Will County Station. 2/2/18 Tr. p. 93:22-94:14; MWG Ex. 901, p. 53, 69.

MWG's expert also conducted a temporal trend analysis for the groundwater at each Station to evaluate whether the constituent levels were changing over time. Ex 901 pp 24 (Joliet),42 (Powerton),54 (Waukegan), 70 (Will County); MWG Ex. 906. Seymour used a linear regression analysis, which is a mathematical analysis used in a spreadsheet including quality assurance and quality control measures. 2/2/18 Tr. p. 26:3-27:21. It is an objective method that shows whether a slope is positive or negative indicating whether a concentration is increasing or decreasing. 2/2/18 Tr. p. 26:3-27:21. The trend analysis did not compare the constituents in groundwater to the Class I standard, but simply assessed the trend of constituents over time – increasing or decreasing. 2/2/18 Tr. p. 29:17-22. For Joliet 29, after evaluating the data, Seymour concluded that overall, the concentrations are slightly decreasing. 2/2/18 Tr. p. 29:5-16, 44:9-15; MWG Ex. 901, p. 25. Regarding Powerton, Waukegan, and Will County, the trend analysis showed there the trends are neither increasing nor decreasing but are remaining the same. 2/2/18 Tr. pp. 77:3-15, 96:9-19, 123:4-124:6; MWG Ex. 901, pp. 42-43, 54-55, 70-71. In other words, the constituents in the groundwater are not getting worse. 2/2/18 Tr. p. 124:7-11. Complainants' expert, Kunkel, criticized Seymour's temporal trend methodology (Comp. Ex. 408, p. 2), and yet

during the Hearing he also estimated the trends in the concentrations but based only on his "eyeballing" of the data. 10/27/17 Tr. p. 83:20-84:16. Kunkel's criticism of Seymour is misdirected given Kunkel did no actual analysis himself.

ii. There is No Risk of Hydrostatic Uplift Such That the Pond Liners Would be Damaged

Complainants' expert attempted to argue that the MWG impoundments might have leaked as a result of potential damage to the liners from "hydrostatic uplift." Again, Kunkel's opinion has no basis. Theoretically, hydrostatic uplift, from groundwater pressing up on a pond liner, could damage a liner and potentially release coal ash leachate. Kunkel made the broad statement that uplift might damage all the pond liners (Comp. Ex. 401, p. 2), but admitted at the Hearing that each pond would have to be assessed individually in order to determine if hydrostatic uplift might occur. 10/27/17 Tr. p. 93:7-21; 1/29/18 Tr. p. 41:5-10. At the Hearing, Kunkel then proceeded to discuss in detail only one pond (the Powerton Secondary Ash Basin) to support his opinion, yet was completely unaware of the drainage system MWG installed beneath the Secondary Ash Basin. Kunkel admitted that he had never reviewed the actual construction records for that pond. 10/27/17 Tr. pp. 165:5-17, 169:1-18

As explained by MWG's expert, Seymour, there is no risk of hydrostatic uplift at any of the ash ponds at the Stations. To reach this opinion, Seymour conducted a two-step analysis. First, he compared the pond bottom elevations to the groundwater levels to see if the groundwater could even come close to the pond bottoms. 2/1/18 Tr. p. 291:19-292:14. Second, if groundwater levels had the potential to be close to pond bottom elevations, Seymour considered the weight of the materials in the pond that would push down on the liner from above. 2/1/18 Tr. p. 293:24-294:5. The materials, which are the poz-o-pac, the sand, the limestone, and the water in the pond, counterbalance any potential uplift force that might occur from groundwater. 2/1/18 Tr. p. 294:7-11. In particular, MWG's expert Seymour stated that even if the ponds were empty of water and ash, the weight of the one-and-a-half-foot layer of gravel and sand is an important factor for preventing uplift. 2/2/18 Tr. p. 57:15-58:13.

For each Station, Seymour conducted this two-step analysis to confirm that no ponds were at risk of damage from hydrostatic uplift. At Joliet 29, Seymour found that the groundwater levels, including the maximum levels, are significantly lower than the pond liner system, and "that hydrostatic uplift [would] just not happen because the water level doesn't go up high enough to

contact and push up the liner." 2/1/18 Tr. p. 292:5-14, 293:8-16; MWG Ex. 901, p. 17. Seymour came to the same conclusion for the Metal Cleaning Basin and Ash Surge Basin at Powerton, and the two Waukegan basins. 2/2/18 Tr. p. 56:2-22, 56:23-57:10, 84:16-85:20.

Even though MWG's expert concluded that the distance between the groundwater and the bottom of a pond liner for many of the ponds was too far to cause any hydrostatic uplift of a liner, he still evaluated the weight of the materials in the liner as it relates to hydrostatic uplift. At Joliet 29, Seymour concluded that even if the water were to rise unusually high, there was no likelihood of hydrostatic uplift at the ponds at Joliet 29 due to the weight of the water in the ponds as well as the liner materials. 2/1/18 Tr. pp. 294:12-23, 295:4-7. Similarly, Seymour concluded that the weight of the water and the liner materials in the Powerton Ash Surge Basin, Bypass Basin, and Metal Cleaning Basin, and at the two Waukegan impoundments, would not allow any hydrostatic uplift to occur. 2/2/18 Tr. p. 56:2-22, 56:23-57:10, 85:21-86:16.

Because the groundwater levels are closer to the bottom elevations of the Powerton Secondary Ash Basin and the Will County ash ponds, MWG's expert closely evaluated those liner systems for the possibility of hydrostatic uplift. 2/2/18 Tr. pp. 58:14-59:7, 112:13-113:5. For the Secondary Ash Basin, the only pond Kunkel testified about in detail, Seymour reviewed the final Construction Documentation for the pond and immediately noted the robust underdrain system beneath the pond liner. 2/2/18 Tr. p. 59:20-60:7. Due to the potential elevation of groundwater, MWG designed an under-drain system that would drain the water away from the liner. 2/2/18 Tr. p. 59:20-60:7. Seymour concluded that the water stored in the Secondary Ash Basin was an additional factor to counteract any hydrostatic uplift. 2/2/18 Tr. p. 60:4-15. Even if the pond were to be emptied, Seymour concluded that hydrostatic uplift was a non-issue based on the weight of the liner system and the underdrain. 2/2/18 Tr. p. 60:1-15. When presented with the final as-built drawings for the Secondary Ash Basin during the Hearing, Complainants' expert Kunkel admitted that he had never seen them, and conceded that the pond was specifically designed to prevent hydrostatic uplift. 10/27/18 Tr. p. 103:2-109:9.

At Will County, MWG's expert Seymour considered the weight of the material in the ponds, including the poz-o-pac, and found that it would counterbalance any potential uplift. 2/1/18 Tr. pp. 293:24-294:11; 2/2/18 Tr. p. 113:2-11. Even without considering the 24 inches of poz-o-pac in Will County Ponds 2S and 3S, Seymour calculated the downward force of the one-and-half-

foot cushion layer and the water in the ponds and concluded that hydrostatic uplift was not a concern on either pond. 2/2/18 Tr. p. 113:20-115:14.

Again, without basis, Complainants' expert Kunkel next opined that there might be issues with shifting of the pond liners and the soils under the liners if groundwater were to rise. He had no specific example or evidence, only that it might occur under the ash ponds. 10/26/17 Afternoon Tr. p. 116:9-22 MWG's expert analyzed the issue by reviewing the pond construction documentation (which Kunkel failed to do) and Seymour explained there is no risk of potential issues with liner stability related to the foundation of the pond. 2/2/18 Tr. p. 63:7-11. Seymour noted that the ash ponds have "competent soil subgrade," thus even if water were to rise through the bottom of the foundation, there is no risk of any actual shifting of the subgrade. 2/2/18 Tr. p. 63:12-64:65:2. Seymour concluded that there were no issues related to stability due to water on the liner at any of the ponds. 2/2/18 Tr. p. 65:4-8.

There is no basis to conclude that the MWG impoundments are a cause of impact to groundwater. The ash ponds have always been lined, and the original liners were found to be in excellent condition, with no indications of leaks. MWG relined the active basins with an engineered liner system, including an HDPE liner, which is a robust liner that prevents any leaking. There is no plume of constituents at any of the MWG Stations, rather the groundwater results are random and do not show a source. Additionally, a detailed review of the construction of the ash ponds shows that there is no actual risk of hydrostatic uplift from groundwater. For most of the ponds, the groundwater is too far away to reach the pond bottoms, and for all the ponds, the weight of the materials making up the pond liner systems and the materials stored in the ponds would prevent any potential uplift.[14]

b. MWG did not Cause Groundwater Impact from the Historic Ash Areas

There is no dispute that MWG did not place any of the historic coal ash outside of the ponds. SOF 1, 20, 40. To have caused water pollution, under the definition, there must be some positive action, which is not the case here. All of the ash in these areas were placed long before MWG took ownership of the Stations. SOF 119, 245. As MWG has not placed any coal ash outside of the ponds, MWG did not "cause" a discharge from the historic ash areas coal ash.

[14] As discussed above, the Secondary Ash Basin at Powerton has an underdrain system specifically designed to move groundwater away from the base of the basin.

Moreover, MWG's expert concluded that the historic ash is not contributing to the groundwater constituents at the four sites based on leaching analysis for actual ash fill at the sites. MWG Ex. 903, pp. 45-46. See Table 2, Sec. II.A. above. Based upon his analysis of samples taken of historic ash at the Powerton, Joliet 29 and Will County Stations, the leachate from historical ash in fill materials is not adversely impacting the groundwater. MWG 903, pp. 46-48. The leaching data found nothing in the historic ash was above the groundwater Class I quality criteria. MWG Ex. 901, p. 9; 2/1/18 Tr. p. 276:3-18. MWG's expert Seymour concluded that "*there is no evidence that historical ash in fill materials outside of the ash ponds is a source of groundwater impacts based on leaching analyses of the existing weathered ash in fill materials and observed groundwater concentrations*." MWG 903, p. 52. The fact that there is no groundwater plume at any of the Stations (*See* Sec. III.A.2.a.i. above), supports Seymour's conclusions that the historic ash areas are not a source. MWG 903, pp. 15, 18, 21, 23; 2/1/18 Tr. p. 276:3-18.

Complainants cannot establish that the known historic ash areas are a source of groundwater impact because, with one exception, there are no groundwater wells near those areas. MWG 667, pp. 3, 11, 19, 27. The only location at any of the Stations where there are monitoring wells around an old ash area is the Powerton Former Ash Basin, and those wells show no coal ash constituents in groundwater above Class I groundwater standards. The Former Ash Basin is an area known to contain ash from historic use, and is no longer a part of the Station's regular operations. SOF 244; 2/2/18 Tr. p. 70:17-71:13. At the Hearing on cross-examination, Complainants' expert Kunkel agreed that monitoring wells MW-2 through MW-5 at Powerton are located downgradient and monitoring well MW-1 is side-gradient to the Former Ash Basin. MWG Ex. 667, p. 11, 10/27/17 Tr. p. 205:20-206:6. Kunkel also agreed that the most recent eight quarters of groundwater monitoring results for the wells downgradient of the Former Ash Basin all had concentrations of boron, sulfate, and manganese below the Class I groundwater standard and even below his background concentration. 10/27/17 Tr. p. 210:16-22. MWG's expert Seymour made the same observation and came to the same conclusion. 2/1/18 Tr. p. 277:1-13. 2/2/18 Tr. p. 70:17-71:13.

Seymour also pointed to the 2015 CCR regulation, in which USEPA clearly stated that, "*The agency is not aware of any damage cases associated with the inactive CCR landfills and, as noted, the risks of release from such units are significantly lower than CCR surface impoundments or active CCR landfills.*" 2/1/18 Tr. p. 225:2-6; 80 F.R. 21342; Comp. Ex. 406. Complainants'

expert Kunkel tried to argue, without any basis and contrary to the specific language of the CCR rule, that this phrase related to engineered (i.e. lined) landfills 10/27/17 Tr. p. 193:2-14, 196:2-7. The language in the CCR rule itself defining inactive CCR landfills, as confirmed by Seymour, shows Kunkel is again mistaken. 2/1/18 Tr. p. 227:8-15.

Based upon all of the data, MWG's expert concluded that the known historic ash at the Stations does not leach metals at concentrations that would cause water pollution, and the historic ash areas at the Stations are not a source of impact to the groundwater. MWG Ex. 901, p. 23; 2/2/18 Tr. p. 20:22-22:20, 70:17-73:5.

3. MWG did not "Allow" Groundwater Pollution

The second evaluation under Section 12(a) of the Act is whether MWG "allowed" a discharge from the Station impoundments or historic ash areas. An owner that takes extensive precautions cannot have "allowed" a discharge of a contamination. It is well established that MWG took extensive precautions at each of its Stations. Moreover, a party cannot "allow" a discharge if there is no identified source. As "allowing" discharge requires control over the source, if there is no identified source there can be no finding of "allowing" contamination under Section 12(a) of the Act. 415 ILCS 5/12(a). Complainants' expert Kunkel repeatedly stated during the Hearing that he could not identify a specific source at any of the Stations. 10/26/17 Afternoon Tr. p. 76:5-10, 83:10-24, 84:21-85:4, 129:20-130:1; 10/27/18 Tr. p. 45:8-13, 189:15-24; 1/29/18 Tr. p. 73:6-17.

a. An Owner that Takes Extensive Precautions Does Not "Allow" Water Pollution

The analysis applied by courts in Illinois for determining whether an alleged polluter has violated the Act is whether "the owner of the source of pollution causes or allows the pollution…unless the facts establish the owner either lacked the capability to control the source…or had undertaken extensive precautions." *Perkinson v. Pollution Control Board*, 187 Ill. App. 3d 689, 694 (3rd Cir., 1989) (emphasis added). The court elaborated by stating that the case was "controlled by the long line of precedent in Illinois which holds that the owner of the source of the pollution causes or allows the pollution within the meaning of the statute and is responsible for that pollution unless the facts establish the owner either lacked the capability to control the source, as in *Phillips Petroleum* or had undertaken extensive precautions to prevent vandalism or other intervening causes, as in *Union Petroleum*." Id at 694-695. This holding has been repeatedly cited by the Board. *See People of the State of Illinois v. State Oil Co.* PCB 97-103, April 4, 2002,

at 10, *City of Chicago Dept. of Environment v. Speedy Gonzalez Landscaping, 1601-1759 East 130th Street, L.L.C., and Jose R. Gonzalez*, AC 06-39, AC 06-40, AC 06-41, AC 07, 25, March 19, 2009, at 23-24, *Illinois EPA v. Dan Cadwallader*, May 20, 2004, AC 03-13 at 5. In *Union Petroleum Corp. v. United States*, 651 F.2d 734 (Ct. Cl. 1981), after vandals had opened tank cars releasing oil into a creek, Union Petroleum immediately took appropriate actions to contain and remediate the spill and they had taken reasonable precautions against vandalism. Therefore, the court held that they had taken reasonable care and were not liable for the cost of cleanup. *Id*.

The Board has also held that one can "allow" a discharge by having poor practices, even if the discharge was not caused by the operator. *IEPA v. Bath, Inc. et al*., PCB 71-52, 71-224, *slip op.* at 2-436 (Sept. 16, 1971). By that logic, the *contra* is true as well – good practices, such as taking extensive measures and precautions, means *not* allowing a discharge. If the Board were to find otherwise the Board is in effect finding that the Act is a strict liability statute – for there is nothing more that MWG could have done in relation to coal ash before or after it had knowledge of the constituents in the groundwater.

i. MWG Took Extensive Precautions at its Stations and Did Not Allow Water Pollution from the Ash Ponds

To establish that MWG "allowed" a discharge from ash ponds, the Board must find that MWG has not taken extensive measures and precautions to prevent any potential release. See *Perkinson* at 694. As established at the Hearing (and detailed below), since MWG took over operations at the Stations, MWG has taken extensive measures and precautions at the Stations even before MWG had any knowledge that there were any constituents in the groundwater. There is no dispute that the active ash ponds at the Stations had preventative liner systems in place since 1977. Notably, there were no State or Federal regulations requiring that the ponds be lined. The liners varied in type and thickness, yet the testimony was consistent that when the ponds were emptied during the relinings, the original liners were in excellent condition. No one observed any cracks in the poz-o-pac or tears in the Hypalon liners below the water line.

Soon after taking over the Stations, MWG relined the Waukegan ponds and then continued a relining program for the ponds at the other Stations. MWG has always inspected the liners every day, often multiple times per day, to ensure that the liners integrity is maintained. The ponds are not permanent disposal sites, instead ash in the ponds has always been removed for beneficial re-use, and MWG has procedures in place to ensure that the liners are not damaged. MWG instituted

a systematic pond evaluation and program to reline the ponds and even eliminate ponds that were not required for Station operations. 2/2/18 Tr. p. 47:10-48:6. As MWG's expert, Seymour, repeatedly stated during the Hearing, MWG was consistently responsible and proactive in managing and maintaining its ponds. 2/1/18 Tr. p. 244:22-245:11, 265:14-22; 2/2/18 Tr. p. 47:10-48:6

ii. The Relining Program is an Extensive Measure

Soon after taking over operations at the Stations, MWG instituted a fleet-wide program to evaluate and reline the ash ponds. SOF 408. Importantly, MWG was not compelled to do the evaluation or construction by any State or Federal Regulations or any enforcement action. SOF 409. Instead, it was a part of MWG's operations of the Stations and was an extensive precaution taken to prevent potential contamination from the ash ponds. SOF 408.

Relining a pond at a power station is a huge endeavor, requiring the coordination of many pieces and players. SOF 410-411. MWG approached the evaluation of its impoundments strategically and scientifically such that the capital and timing requirements could be accounted for and the relining program could be effectively executed. SOF 412. MWG's expert, Seymour, evaluated the relining program and concluded it was very responsible and proactive, particularly since there was no requirement to conduct the evaluation or the relining. 2/1/18 Tr. p. 244:22-245:11.

After the extensive evaluation, MWG relined the ponds with state-of-the-art HDPE liners, a robust, long-lasting liner, and the same liner used for hazardous waste landfills. 2/1/18 Tr. pp. 243:23-244:21, 256:8-14. As MWG's expert stated, it was unusual for MWG to have chosen an HDPE liner at the time because it was not required. 2/1/18 Tr. p. 244:10-21. After relining Waukegan ponds, MWG turned to the ponds at Joliet 29 in 2008 and upon completion, MWG moved onto the relining process at Will County, starting with Pond 3S. *See* Sec. II.B.4.b. MWG also relined the Metal Cleaning Basin and the Bypass Basin at the Powerton Station, even though there was a risk that the new liners would not satisfy newly proposed Federal regulations. *See* Sec. II.B.2.b.

When circumstances at a landfill wholly unrelated to MWG caused the Federal and State regulators to investigate all coal electricity companies and their ash ponds, MWG voluntarily agreed to further asses its ponds and to install groundwater monitoring wells. *See* Sec. II.F. Once MWG had results revealing various constituents in the groundwater, MWG completed its relining

program at the remaining ash ponds and established GMZs and institutional controls at the Stations. *See* Sec. II.F.[15]

MWG's expert Seymour evaluated the relining procedures for all of the ponds and concluded that the relining procedures met the industry standard of practice. 2/1/18 Tr. p. 244:4-6. Seymour noted that MWG used electric leak location surveys which gave the installers an opportunity to conduct a final test to detect any small holes before the pond is placed into service. 2/1/18 Tr. p. 258:1-20. Thus, if an electric leak location survey is conducted and finds no leaks, then that is actual confirmation of the good condition of the liner, regardless of theoretical estimation of holes in a liner in an academic paper. 2/1/18 Tr. p. 258:1-259-5.

Seymour, an engineer who has designed and constructed liners for coal ash impoundments, stressed the importance of reviewing the Construction Documentation for the pond relinings. 2/1/18 Tr. p. 247:13-22. After reviewing the relining projects at the Stations, Seymour concluded that MWG did everything that they could have done to reduce the risk for leakage. 2/1/18 Tr. p. 265:14-22. While Complainants' expert Kunkel opined that the relined ponds "may" have leaked, he had no proof, he had not even reviewed the final liner construction documentation, and he had never seen the various installer certifications for the liners. 10/27/18 Tr. p. 165:5-166:21, 169:3-9; 1/29/18 Tr. p. 62:13-16. His opinion has little, if any, weight.

iii. MWG's Practices at the Stations Are Extensive Preventative Measures

MWG's practices at all the Stations are also extensive measures that prevent pollution. Since taking over operations at the Stations, MWG has conducted inspections of all the ponds and their liners. SOF 108, 213-218, 321-329, 406-407. The MWG operators inspect the ponds as part of their regular rounds, and if they observe any issues at any of the ponds, the operators notify the proper person at each Station. *Id.* The inspections occurred long before there was any regulatory requirement and continue now more often than required under the new CCR regulations. SOF 108, 213, 321, 406. Each of the MWG personnel that testified stated that they would always repair damage to liners. SOF 218, 326-329. Additionally, at Waukegan, MWG annually inspects the eastern berm of the ash ponds to ensure its stability and had the Waukegan liners thoroughly

[15] At Will County, Joliet 29 and Powerton, MWG established, with the review and approval of the Illinois EPA, GMZs over the areas of the ash ponds. At Waukegan, Will County, and Powerton, MWG also established ELUCs which permanently prevent any person from accessing the groundwater. Conducting corrective actions and establishing institutional controls are the standard regulatory measures taken in Illinois to address any constituents in the groundwater. 35 Ill. Adm. Code 620.450(a); 35 Ill. Adm. Code 742.100-742.1210.

reviewed by a third-party expert liner installer to ensure it had been installed correctly. SOF 330-347. Complainants did not present any evidence that MWG could have inspected the impoundments in any other way.

If an operator were to see an issue with the pond liner, the operator would contact a supervisor and notify them. SOF 108, 215, 322, 407. Upon notification, the proper MWG person ensures that the water level is below the issue or tear and makes arrangements for a repair, including retaining a contractor to repair the liner and issuing a purchase order. SOF 140 108, 216, 323, 325, 407. Typically, the repair contractor would conduct the repair within one or two weeks. SOF 216, 327. Tears in the pond liners are rare, and typically occurred at the very top of the basins, above the water line. SOF 217, 324, 325. Moreover, the MWG personnel who testified stated that they had never been told not to fix a tear nor decided not to fix a tear. SOF 218, 328. Despite hearing specific testimony that tears were rare, were above the water line or when a pond was not in service, and were repaired as soon as discovered, Complainants' expert stuck to his assumption that liner tears occurred in the pond liners due to equipment in the ponds. Yet the only tears Kunkel could identify as a basis for his opinion were tears located on the sides and at the ramp, above the water line. 10/27/18 Tr. p. 132:12-24; 1/29/18 Tr. p. 110:10-18.

When ash is removed from the impoundments at the MWG Stations, MWG takes specific care to prevent the pond liners from being damaged. 106-107, 305-306, 315. Not only do the ponds have markers to notify the machine operators, but MWG ensures that before each dredging all operators in the ponds know to avoid the liners. SOF 106-107, 219-221, 308-309, 395. Trained personnel from MWG or third-party contractors operate the machinery to remove the ash. All of the operators in the pond are "careful," "very methodical", and "deliberate." SOF 224, 311, 313, 396. The equipment the operators use in the basin are end loaders with buckets and rubber tires. SOF 223, 310, 393. The trucks do not even drive into the Powerton Ash Bypass Basin or the Metal Cleaning Basin, or into the Will County basins, because they are not big enough, but instead stay on the top of the road or on the ramp. SOF 222, 394. The machine operators leave ash material on the slopes of the liners and on the bottom above the warning layer to avoid any damage to the liner. SOF 314, 317, 397. Additionally, at Waukegan, because most of the bottom ash collects on one side of the pond, the contractor only dredges half of the pond, and at times even less. SOF 316. Once MWG has completed removing the ash from a basin, MWG inspects the basin to verify that

the ash was removed safely and only after the inspection is the basin placed back in service. SOF 226, 318-319.

Complainants' expert Kunkel opined that generally, dredging practices cause leaks. 10/26/17 Afternoon Tr. p. 35:3-6.[16] Kunkel had no bases to support his opinion as to MWG Stations and procedures. MWG's expert, Seymour, evaluated the dredging practices at the Stations, spoke to the operators, and concluded that the Stations followed good practices that prevented the chance of tears in the liners. 2/1/18 Tr. p. 261:24-262:2; MWG Ex 903, pp. 38-39. Seymour found that MWG used the proper equipment in the ponds and operators in the ponds were methodical and slow and knew to stay away from the sides of the ponds. 2/1/18 Tr. p. 260:22-262:2. MWG's expert Seymour also found that the risk to the liners was minimal because many of the ponds were rarely dredged, thus there is less chance for any potential damage to the liners. 2/1/18 Tr. p. 295: 8-22, MWG Ex. 901, pp. 16, 28, 46, 60. Seymour concluded that MWG was responsible in their operations and dredging processes to remove the ash. 2/2/18 Tr. p. 79:14-80:3. While Complainants' expert Kunkel opined that dredging "may" cause damage to the liners, he had no proof, and had not spoken to the operators about the procedures. 1/29/18 Tr. p. 53:2-19, 104:19-22. Again, his opinion is of little weight.

b. Without a Defined Source, MWG did not "Allow" Contamination

Because the source of coal ash constituents in groundwater cannot be identified, the Board cannot find that MWG "allowed" water pollution. Complainants' expert repeatedly stated that he had no way to determine the specific source of the groundwater impact and that it could be any or all of the ponds and ash areas, at the same time or individually 1/29/18 Tr. p. 73:6-17. His only opinion is that it must have come from the Stations – and he could not identify where or when. 10/26/17 Afternoon Tr. p. 84:22-85:12; 10/27/18 Tr. p. 45:8-47:10, 180:2-18. MWG's expert opined that sampling of ash and other analysis show that neither the ponds nor the historic ash areas appear to be the source. MWG cannot have "allowed" contamination if no one has been able to identify the source. Again, the Act is not strict liability – merely owning or operating (or controlling) a piece of property is not enough. When the source area is unknown, what did MWG "allow" that caused water pollution?

[16] In fact, Kunkel admitted to making the very same opinion in another case in which he was retained by the Sierra Club to assess ash ponds. 10/27/17 Tr. p. 127:1-128:19

The Board may not find a violation if the Board must infer whether an alleged release was the source of and caused the violation. *Harold Craig and Robert Craig v. The Pollution Control Board*, 59 Ill.App.3d 65 (4th Dist. 1978). In *Craig*, the Illinois EPA brought an enforcement action against the Craigs for a release of manure from a storage pit into a ditch. Illinois EPA alleged that the release killed a substantial number of fish further downgradient in the ditch. *Id* at 66. It was undisputed that manure stored in the storage pit on the Craig farm flowed into the ditch. *Id* at 66. It was also undisputed that dead fish were found downstream of the release and from collected samples. *Id* at 66-67. At the hearing, the State's fishery biologist testified that he could not form an opinion as to whether the manure from the Craig farm had caused the fish kill or whether it was caused by municipal sewage. *Id* at 67. The Craigs' expert witness testified that the fecal bacteria in the water showed a majority of the bacteria at the point the manure entered the water was from animal waste, but a majority of the fecal bacteria further downstream near the location of the dead fish was from human waste. *Id* at 68. Thus, the Craig's expert was also unable to form an opinion as to the cause of the fish kill from the information presented. *Id* at 68. The Board initially found a violation of the Act. Reversing the Board's decision, the Appellate Court found that the Board's conclusion was not supported by direct evidence or expert opinion. *Id* at 68. The Appellate Court concluded that the Board reached its conclusion by improperly inferring that the release caused the violation and the Board's inferences were not supported by the expert testimony. *Id* at 69.

In *Lonza, Inc. v. Illinois Pollution Control Board*, 21 Ill. App.3d 468 (3rd Dist. 1974), the Court vacated a Board opinion finding a violation of the Act because none of the witnesses could identify the actual source of the odors near two chemical plants accused of air pollution. *Id.* Illinois EPA had alleged that two chemical companies, Lonza, Inc. and Ashland Chemical Company, were causing air pollution and odor contaminants in violation of the Act. At the Board hearing, Illinois EPA presented eight witnesses all of whom stated they could not identify the specific source of the odors in the vicinity of the chemical plants. *Lonza*, 21 Ill. App.3d at 473-474. Additionally, Illinois EPA presented two Agency witnesses, neither of which could specify the source of the pollution. *Id* at 474. While the Board found a violation of the Act as against Lonza, Inc., the Appellate Court vacated the Board's order, instead finding that there is no violation where the evidence is insufficient to specify the source. *Id* at 475.[17] Here, the undisputed evidence is that a

[17] The other company, Ashland Chemical Company, sought review of the Board Order under a separate action. *Lonza*, 21 Ill. App.3d at 469. A search of Westlaw did not reveal the Ashland Chemical separate appeal.

source cannot be specifically identified. Complainants' expert states the source could be the ponds, but might not be, or it could be the historic ash areas, but might not be. MWG's expert is able, based on actual data, to establish that neither the ponds nor the historic ash areas are a source. MWG cannot have "allowed" water pollution with no known source.

i. Complainants Cannot Identify a Source at the Stations

Throughout 10 days of Hearing, the evidence Complainants presented of a "source" was Kunkel stating that "coal ash deposited outside the ponds…could be a large contributor, and be a potential source of the groundwater contamination, as well as the leaky liners, leaky ponds." 10/26/17 Afternoon Tr. p. 39:4-8. Complainants could not point to one source or another and could not rule either source out. 10/26/17 Afternoon Tr. p. 84:21-4, 109:19-24; 10/27/17 Tr. p. 26:4-9, 45:8-13. In fact, Complainants' expert Kunkel agreed that "it would be impossible to distinguish between the potential sources," stating "that's a fair statement, yes." 10/27/17 Tr. p. 189:15-24. For Complainants to meet their burden of proof, Complainants must identify the source for the constituents in the groundwater – and they have failed to do so. The Board cannot infer a source and cannot find that MWG caused or "allowed" water pollution in violation of Sections 12(a) or 12(d) when the party bringing the claim cannot establish the alleged source of the water pollution, particularly when MWG has specifically shown through various analytical methods that its material is not a source.

ii. The Ash Ponds are Not a Source

As described above in Section II.A., the actual data in this case shows that the ash ponds at the Stations are not an identified source. MWG tested the ash in its ponds and found that constituents in the ash are all below Class I levels and would not result in groundwater contamination. MWG's expert Seymour concluded that the analytical results for bottom ash neutral leaching samples show that the leachate in ponds does not have the potential to cause groundwater impacts above Class I groundwater standards. See Table 1, Sec. II.A. above. 2/1/18 Tr. p. 273:11-274:18. The ponds have been lined since 1977/1978 and MWG relined them in the 2000s. MWG routinely inspects the ponds, its dredging procedures are careful, and the ponds are designed to have ash removed from them. *See* Sec. III.A.3.a.iii above. MWG's expert, Seymour, conducted a spatial analysis showing no plumes from the ponds. *See* Sec. III.A.2.a.i above. All this evidence led him to conclude the ponds are not a source.

As if that were not enough, MWG's expert further supported his conclusion with one additional analysis. Seymour reviewed the set of constituents detected in the MWG ponds (even though lower than Class I), and compared them with the constituents that have been detected in groundwater. MWG Ex. 901, p. 12, 36; MWG Ex. 903, p. 42. If the constituents were not the same in the ponds and the groundwater, the data would further support his opinion that the ponds are not impacting the groundwater. MWG Ex. 901, p. 12, MWG Ex. 903, pp. 42-43. Seymour then presented the constituents that were the same, or different, as a percentage as a simple way to show how many constituents matched or did not. 2/1/18 Tr. p. 282:16-24. Comparing data from groundwater to a potential source is a standard methodology, and at every site where there is some potential impact to the groundwater, the results are compared to some source of data. 2/1/18 Tr. p. 282:9-283:3, 2/2/18 Tr. p. 14:6-13. In fact, Complainants' expert Kunkel also conducted a matching analysis in his review of the groundwater data at the Stations, comparing groundwater results to the leachate characteristics of coal ash. 10/26/17 Afternoon Tr. p. 34:12-18; Comp. Ex. 401, pp. 2, 12, 18, 25, 32, 35.

Seymour's evaluation showed that there were mismatches between the constituents from ash stored in the MWG ash basins compared to constituents found in the groundwater analyzed near the ash ponds. MWG Ex. 901, at p. 8, 12, MWG Ex. 904. In his analysis, Seymour found that "the groundwater constituents at the site[s] are inconsistent with the ash data constituents," thus supporting his finding the ponds are not a source. MWG Ex. 901, pp. 21-22, 36-37, 50-51, 64-65; 2/2/18 Tr. pp. 20:9-17, 69:9-70:2, 92:16-93:2, 118:18-119:18. In an effort to confuse or discredit Seymour's comparison analysis, Complainants argued that the detection limit in the leachate test of a single constituent - arsenic - was too high to be captured by Seymour's comparison to groundwater. 2/2/18 Tr. p. 247-252. Of course, Complainants did not point out that other constituents Seymour compared in the leachate test have detection limits *at or below* the detection limits in the groundwater, including cadmium, chromium, copper, and selenium. MWG Ex. 260O, p. MWG13-15_62572; MWG Ex. 903, Table 5-1. As Seymour explained repeatedly, the leachate test is designed to run below the drinking water standard in Illinois and the groundwater protective standards are designed to evaluate whether a constituent is above a standard. 2/2/18 Tr. p. 249:4-8, 252:2-7. Complainants' focus on only one constituent fails to see the forest for the trees – the cumulative analysis of all the constituents in the leachate and the groundwater supports the conclusion, based upon all the factors, that the ash ponds are not leaching into the groundwater.

In fact, Seymour's conclusions about the ponds are supported by Illinois EPA who came to the same conclusion at Waukegan. Illinois EPA specifically and publicly stated that it did not believe the Waukegan ash ponds were contributing to groundwater impact. *See also* Sec. III.A.2.a above. Seymour agreed and concluded that the abandoned facilities upgradient from the Waukegan Station are a significant source of contamination in the groundwater at the Station. 2/2/18 Tr. p. 103:6-104:4, MWG Ex. 901, pp. 56-57. *See also* Sec. III.A.2.a.i. above.

To be conservative, Seymour made a separate and additional comparison using published data from the Electric Power Research Institute ("EPRI") that provides an even longer list of the constituents found in coal ash. As a result, Seymour developed two sets of coal ash constituents to compare to the groundwater – the first comparison used the constituents from MWG's site-specific sampling (Table 1, Sec. II.A.), and the second comparison used an even larger number of coal ash constituents based on the published EPRI data. MWG Ex. 903, pp. 40-41. Complainants made a similar effort to discredit Seymour's analysis, focusing only on the groundwater detection limits cited by EPRI for antimony. Complainants tried to suggest that the detection limits issue for antimony discredits the entire analysis. 2/1/18 Tr. p. 259-264. Complainants, of course, chose antimony because it is one of the few constituents cited by EPRI with a higher detection level. In truth, the concentrations of the coal ash indicators in the EPRI data set are primarily above the groundwater detection limits and thus would be identified in Seymour's EPRI constituent comparison analysis. *See* Ex. 903, Table 5-3 and Ex. 268P, MWG13-15_ 45338.

In any case, Seymour's the comparison analysis was only one piece of a large body of evidence Seymour relied on to support his overall conclusion that the ponds are not contributing to water pollution.

iii. <u>The Historic Ash Areas are Not a Source</u>

As established in Sections III.A.2.a.i, III.A.2.b., and III.A.3.b.i of this Post-Hearing Brief, Complaints have not met their burden of establishing that the historic ash areas are a source of water pollution. Rather, MWG's expert confirmed based on specific testing of historic ash from the MWG Station that there is no evidence that historic coal ash is a source of groundwater impacts at any of the Stations. MWG Ex. 903, p. 52.[18] This was further supported by groundwater results

[18] Even though no one has identified the ponds or historic ash as a source for the constituents in the groundwater, the hearing confirmed that the chloride constituents in the groundwater are likely due to the application of road salt at the Stations and at the nearby roads. As explained above in Sec. III.A.1, Mr. Gnat had observed the chloride concentrations at Joliet 29 rise and fall on a seasonal basis consistent with the application of road salt. Similarly,

from wells downgradient of the Former Ash Basin at the Powerton Station showing no coal ash constituents. Based on the evidence as presented at the Hearing, MWG has established that neither the ponds nor the historic ash areas can be shown to be a source. *See* Sections III.A.2.a.i, III.A.2.b., and III.A.3.b. MWG cannot have "allowed" water pollution when there is no specified source.

4. <u>The Constituents Are Not Creating a Risk or Nuisance</u>

The constituents found in the groundwater above Class I standards at Powerton, Waukegan and Will County are not enough to establish water pollution. Complainants have the burden of establishing that any groundwater constituents create a nuisance or render the waters harmful, detrimental or injurious. Complainants' expert agreed that there are no potable wells of concern near the Stations. 10/27/18 Tr. p. 182:3-7. In addition, the undisputed risk analysis conducted by MWG's expert Seymour shows that the groundwater conditions at the Stations do not pose a risk to area receptors – the nearby surface waters. MWG Ex. 903, pp. 44-45, and Appendix B. As there is no risk to the surface waters, the groundwater conditions have not created a nuisance or rendered the waters harmful.

The definition of water pollution is an alteration of the properties of any waters of the State, "as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety and welfare…or other legitimate use, or to livestock, wild animals, bird, fish, or other aquatic life." 415 ILCS 5/3.545. Thus, to find water pollution it is not sufficient to show the mere presence of a source of water pollutants on the land; instead it must be shown that the source was likely to create a nuisance or to render the waters harmful, detrimental or injurious. *Jerry Russell Bliss, Inc. v. Illinois EPA*, 138 Ill.App.3d 699, 704 (5th Dist. 1985).

The Board relied upon *Bliss* in denying a partial motion for summary judgment in *Environmental Site Developers, Inc. v. White & Brewer Trucking*, PCB 96-180, Nov. 20, 1997, 1997 WL 735012. In *Environmental Site Developers Inc. ("ESDI")*, the Board found that exceedances of the groundwater quality standards for manganese, sulfate, boron and total dissolved solids were insufficient to find a violation of Section 12(a) of the Act. *Id* at 6. Relying

both Mr. Kelly and Mr. Veenbaas testified that MWG applied a significant amount of salt for safety throughout the Powerton, Waukegan and Will County during the winter. 1/31/18 Tr. pp. 140:11-18, 240:16-241:12; 256:24-257:11. In fact, Illinois EPA concluded that the chlorides found in the East Yard Runoff Basin at Powerton was not due to coal ash, but from "deicing agents" applied at the Station. 1/31/18 Tr. p. 139:9-24; MWG Ex. 711. Seymour concluded that the chloride results across the properties are due to the road salt percolating into the groundwater and impacting the groundwater quality for chloride. 2/2/18 Tr. p. 78:12-23. As the chlorides are from the road salt and not from coal ash, MWG did not cause groundwater pollution from the coal ash.

upon *Bliss*, the Board held that groundwater exceedances alone did not establish that concentrations of a chemical in the groundwater at the site created a "nuisance or render[ed] the waters harmful, detrimental or injurious." *Id* at 6. Instead, it was an issue of fact as to whether the groundwater had been rendered the waters harmful, detrimental or injurious. *Id* at 7. Similarly, in *People v. Hendricks*, PCB 97-31, June 17, 1998, 1998 WL 343516, the Board declined to find water pollution in violation of Section 12(a) of the Act when water used to fight a tire fire flowed into a creek, holding that the record was devoid of any evidence establishing the effects of the fire runoff on the waters of the State. *Id* at 7. Citing to *Bliss*, the Board held that without the evidence of contamination the Board could not find that the runoff rendered the waters harmful, detrimental, or injurious. *Id*.

Here, even assuming *arguendo* that the ash ponds or the historic ash areas are actually a source of the groundwater conditions, there is no dispute that the waters have not been rendered harmful detrimental or injurious. As shown in the Seymour Report, at each of the Stations there is no risk to the surface waters and the levels are below the water quality standards or water quality criteria that are considered to be protective of human health and the environment. MWG Ex. 903, App. B, 907. As Complainants have not put forth any contrary evidence, Seymour's opinions regarding the lack of risk to human health and the environment are undisputed. Thus, without rendering the waters harmful or detrimental or injurious to public health or to aquatic life, there is no water pollution as defined in Section 3.545 of the Act. 415 ILCS 5/3.545.

Similarly, MWG has not created a water pollution hazard pursuant to 12(d) of the Act.[19] 415 ILCS 5/12(d). To establish a water pollution hazard, Complainants must show a potential danger *of a serious nature* (*See Tri-County Landfill v. IEPA*, 41 Ill. App. 3d 249, 258 (2nd Dist. 1976) (*emphasis added*), such that the particular quantity and concentration of the contaminant in question is likely to create a nuisance or render the waters harmful, detrimental, or injurious. *Jerry Russell Bliss, Inc. v. IEPA*. As established above, there is no risk to receptors near the Stations, including surrounding waters. Further, the leaching analysis of the ash from the ash ponds and the ash outside the ash ponds shows that the constituents of concern in the ash are so low that the ash can be used for beneficial use under the Act. See Tables 1 and 2 in Section II.A. above. As the concentrations are within the levels established by the State for reuse, the constituents would not

[19] Section 12(d) further requires a party "deposit contaminants on the land". Here, the impoundments are lined, permitted waste treatment units and not "land" and MWG did not deposit ash in the historic ash areas.

create a nuisance or render the waters harmful. Without a showing that the waters were rendered harmful or injurious, or that a nuisance will be created, MWG has not created a water pollution hazard in violation of Section 12(d) of the Act.

5. MWG is Not in Violation of the Groundwater Standards or Regulations

Complainants cannot establish water pollution based on a violation of regulations or standards where MWG has implemented GMZs. When MWG established the GMZs at Joliet 29, Powerton, and Will County, the Class I groundwater standards were no longer applicable, thus MWG is not in violation of the Board's Regulations. 35 Ill. Adm. Code 620.250, 620.450. [20] Section 620.450(a) of the Board Regulations states while the GMZ is in effect the standards specified in Sections 620.410, 620.420, 620.430, and 620.440 are not applicable and instead the standard is the concentration in the groundwater. 35 Ill. Adm. Code 620.450(a)(3), (4). In fact, the section that establishes the applicable groundwater standards states: "Except due to natural causes or as provided in Section 620.450 [GMZs]." 35 Ill. Adm. Code 620.410. Thus, upon the establishment of the GMZ, MWG was not in violation of 35 Ill. Adm. Code 620.405 at Joliet 29, Powerton, and Will County.

Section 620.301(a) of the Board regulations states that no person may allow a release such that treatment is necessary to continue an existing use or assure a potential use or an existing use or potential use is precluded. 35 Ill. Adm. Code 620.301(a). Complainants did not put forth any evidence that there is an existing use or potential use of the groundwater at the Stations. No one testified that any of the groundwater at the Stations is used or may be used. As noted above, and agreed by Complainants' expert, there are no potable wells of concern near the Stations. Additionally, per Illinois EPA's review and approval, MWG established ELUCs to preclude use of the groundwater. Notably, Illinois EPA did not allege that by establishing the ELUCs precluding the use of the groundwater MWG precluded any potential future use of the groundwater.

B. MWG HAS NOT CAUSED OR ALLOWED OPEN DUMPING

In addition to claims of water pollution under 12(a) of the Act, the complaint in this case alleges that MWG "caused and allowed" open dumping at Powerton, Waukegan and Will

[20] As set forth above, for the time period before the GMZs, and at Waukegan Station, MWG did not cause or allow water pollution.

County.[21] 415 ILCS 5/21(a). As an initial matter, Complainants cannot establish open dumping because the coal ash at the Stations is not waste – it is beneficially reused and/or fill material. Further, and as set out above, MWG did not "cause or allow" open dumping in any of its ash ponds or in the historic areas.

1. MWG's Coal Ash is not Waste

A fundamental element of "open dumping" is that there is "waste." The coal ash placed in MWG's permitted ash ponds was removed and beneficially reused, and the ash used to build the portions of the Stations and the berms for the ash ponds are part of the structural fill for the Stations. There is no evidence that the ash was "discarded" and thus it is not a "waste" as that term is defined in the Act.

Section 21(a) states that no person shall cause or allow the open dumping of any waste. 415 ILCS 5/21(a). "Waste" is defined as "any garbage,…or other *discarded* material…resulting from industrial, commercial, mining and agricultural operations…" 415 ILCS 5/3.535. The burden is upon the Complainants to prove that the coal ash is a "waste" as that term is defined in the Act. *City of Chicago v. Speedy Gonzalez Landscaping, Inc.* PCB AC07-25, 2009 WL 788636, March 19, 2009 *slip op.* at 27. (Board found Complainants had not satisfied their burden of proof that a tanker was "waste"). In evaluating the definition of "discarded," the Illinois Supreme Court has found that discarded materials do not include "materials that would otherwise be disposed of or discarded but instead are returned to the economic mainstream in the form of raw materials and products. *Alternate Fuels, Inc. v. Illinois EPA*, 215 Ill.2d 219, 240 (2004).[22]

Here, Complainants make no attempt to establish the coal ash located in the ash ponds or the historic ash areas at the Stations is "waste" as that term is defined in the Act. As established by the record, the coal ash in the ponds is routinely removed for beneficial reuse. *See* Sec. II.A.. Additionally, the coal ash in various parts of the Stations was used at least 30 years ago or more as fill to support construction. *See* Sec. II.B. Kunkel also agreed that ash in the berms was structural. 10/27/17 Tr. p. 190:4-6. Complainants have not presented any evidence that the ash in the berms or fill areas was abandoned or cast aside. Additionally, both State and Federal rules

[21] Complainants have not claimed "open dumping" at the Joliet 29 Station, thus there is no need to address open dumping at Joliet 29.

[22] An important distinction between this matter and more recent cases evaluating "discarded material" is that the coal ash here was used as fill material when the stations were built approximately 40 to 100 years ago. *Compare People ex rel. Madigan v. Lincoln, Ltd.,* 383 Ill. App. 3d 198, 890 N.E.2d 975 (1st Dist. 2008) (Court held that the clean construction debris which was planned to be used as fill in 2002 to build a ski slope was "discarded material").

continue to allow coal ash to be used as structural fill. *See* 415 ILCS 5/3.135 and 40 CFR 257.53.[23] Because Complainants have not established that the coal ash in in the ponds or in various parts of the Stations is a waste, MWG could not have caused or allowed open dumping of a waste in violation of Section 21(a) of the Act. 415 ILCS 5/21(a).

2. MWG did not Cause or Allow Open Dumping of Coal Ash

The analysis for open dumping is the same as that for water pollution. There are two elements for open dumping, whether a person "caused" a waste to be dumped or "allowed" a waste to be dumped. Complainants have established neither here. As set forth in Sections III.A.2.a.i and III.A.3.b. of this Response, there is no identified source, and MWG did not cause or allow open dumping of the ash in the ash ponds or the historic ash at the Stations.

a. MWG did not Cause or Allow Open Dumping into the Lined Ash Ponds

MWG cannot have caused or allowed open dumping when it placed coal ash into permitted lined ash ponds. Under the definition of open dumping, the material must be consolidated at a "disposal site." 415 ILCS 5/3.305. A "disposal site" is not defined in the Act, but a "Waste Disposal Site" is defined as a site in which solid waste is disposed. 415 ILCS 5/3.540. "Disposal" under the Act is a discharge, leaking or placing of waste into or on any land such that the waste "may enter the environment…or discharged into any waters, including groundwaters." 415 ILCS 5/3.185. In this case, the Board previously determined that the ponds could potentially be a disposal site "if the waste deposition is conducted in a manner that allows waste material to enter the environment, including groundwater." *Sierra Club et.al. v. Midwest Generation, LLC.*, PCB13-15, Oct. 13, 2013, *slip op.* at p. 26. Thus, to establish open dumping, materials must be placed on the land and must enter the environment. 415 ILCS 5/3.305.

As set forth repeatedly throughout this brief, the coal ash in the ponds is not placed on the "land" and has not entered the environment. The ash ponds have been lined for over 40 years. Moreover, the ash ponds have always been and continue to be permitted and regulated by the Illinois EPA under the Station's NPDES permit. Soon after MWG took over operations of the Stations, MWG implemented a systematic and scientific program to upgrade the ash pond liners.

[23] USEPA has re-stated that the State environmental agencies are responsible for regulating beneficial use. Nevertheless, beneficial use of coal combustion residuals is currently excluded from federal regulation under USEPA's May 2000 regulatory determination that the Bevill amendment applies to such uses. *See* *https://www.epa.gov/coalash/coal-ash-reuse*.

See Sec. II.D. MWG upgraded the ponds with a superior liner, the same used for a hazardous waste landfill, and used the proper QA/QC procedures to ensure that the liners were unmarred when placed back into service. MWG's expert clearly stated that based upon his analysis of the groundwater and the ash ponds at the Stations, the ponds are not leaking. See Sec. III.A.1 and III.A.2. This is compared to Complainants' expert, who stated that the liners might leak, but had not reviewed final Construction Documentation, had not spoken to operators conducting dredging, and had no factual basis for his opinion. *See* Sections II.D. and III.A.3.a.iii above. MWG took extensive precautions as it relates to the ponds, including daily inspections and safe dredging procedures, which further prelude a finding of cause and allow. *See* Section III.A.3.a.iii above

b. MWG Did Not Cause or Allow Open Dumping in the Historic Ash Areas

The term "cause" cannot be applied retroactively to actions that occurred prior to the effective date of the Act because it deals with a certain course of conduct. *Illinois EPA v. Rawe*, PCB AC92-5, 1992 WL 315780 (Oct. 16, 1992), *slip op* at 4 (Board held son who inherited property could not have "caused" the burial of cars placed as erosion controls by his father). As MWG has not placed any coal ash outside of the ponds, MWG could not have "caused" open dumping of the coal ash found outside the ponds.

Similarly, as discussed in Sections III.A.2.a.i. and III.A.3.b.i., MWG could not have "allowed" open dumping because the historic coal ash is not a source and MWG took precautions by testing the ash to ensure it met standards for CCB. *See* Table 2, Sec. II.A.

C. <u>COMPLAINANTS' EXPERT OPINION SHOULD BE GIVEN LITTLE WEIGHT</u>

While MWG's case is based on its many skilled Station operators, third-party consultants and an expert, Complainants' case rests solely on the general opinion of their expert Kunkel. Kunkel's opinions have no evidentiary basis and should be given little, if any, weight.

MWG's evidence presented in this case is based on the knowledge and testimony of MWG employees who have years of experience complying with Illinois and Federal laws relating to coal facilities (Maria Race), and who have actual experience in working with ash ponds, liners, and the relining program at the Stations (Mr. Lux, Mr. Veenbaas, Mr. Kelly and Ms. Maddox). SOFs 3-5, 7. Additionally, MWG relied on third-party expertise for assistance with: (1) properly and carefully emptying its ponds and reusing the ash (LaFarge and Beemsterboer); (2) an extensive pond assessment and relining program (NRT); and (3) ongoing ash analysis for CCB, groundwater

assessment and monitoring, and compliance at all its Stations (KPRG). SOF 44, 57-60, 106-107, 219-224, 308-313, 395-396, 408-431. Richard Gnat, from KPRG, testified during the Hearing and described the groundwater and CCB sampling KPRG performs. He explained his evaluation of the groundwater hydrology since virtually the beginning of the groundwater monitoring. SOF 5, 507-508. Mr. Gnat specifically stated that MWG is very proactive when it comes to environmental compliance. 2/1/18 Tr. p. 179:11-15. To confirm the actions of all these professionals, MWG also retained and relied upon an outside expert (Seymour) with specific, recent experience designing coal ash impoundments and evaluating groundwater. SOF 8-11. Complainants relied upon Kunkel who gave general opinions without evidentiary basis.

It is well established that, "An expert's opinions are subject to the fundamental requirement that they have some evidentiary basis." *City of Chi. v. Concordia Evangelical Lutheran Church*, 2016 IL App (1st) 151864, ¶ 73, 410 Ill. Dec. 30, 45, 69 N.E.3d 255, 270 *citing Davis v. Kraff*, 405 Ill. App. 3d 20, 34, 937 N.E.2d 306, 344 Ill. Dec. 600 (2010). The opinion of an expert is of value only when it is based upon and in harmony with facts which are capable of verification by the court; *and where a factual basis is lacking, the opinion is entitled to little weight*. *St. Paul Fire & Marine Insurance Co. v. Michelin Tire Corp.*, 12 Ill. App. 3d 165, 179, 298 N.E.2d 289 (1973) (*emphasis added*). During the testimony at Hearing and a review of Kunkel's reports and opinions, it became clear that Kunkel's opinions have no harmony with the verified facts and are entitled to little weight.

From the very start when he was retained by Complainants for this matter, written correspondence reveals that Kunkel's "ultimate charge was to write a report to EIP/ELPC which states that contamination at the four power plant sites is due to the leaking ash ponds." Comp. Ex. 402, MWG Ex. 418, 1/29/18 Tr. p. 39:18-40:4. Kunkel was specifically told the conclusion he was supposed to reach. While having years of experience in the mining industry, the last time Kunkel had designed a coal ash pond was in the late 1970's. 10/27/17 Tr. p. 87:4-7; Comp. Ex. 400. Additionally, Kunkel has never designed a coal ash liner that was similar to the MWG liners - plastic or HDPE. 1/29/18 Tr. p. 58:13-17.

At the Hearing, it became clear that Kunkel's testimony, reports and supplemental charts and information were riddled with errors and did not support his conclusions or opinions. Kunkel admitted that his July 2015 Expert Report (Comp. Ex. 401) contained citations that did not support the statements or opinions. 10/27/17 Tr. p. 140:22-141:2. After walking through three subsequent

documents, each document listing various corrections to his report, Kunkel finally admitted that in order for the Board to fully understand the bases for his opinions, one would have to read all the reports, read the three separate corrections documents prepared to remedy his reports, and read his deposition. MWG Ex. 401, 412, 415, 416, 10/27/17 Tr. p. 159:3-13.

Even with all the corrections, when Kunkel was confronted with his additional opinions that were unsupported by facts, Kunkel remained unconcerned. For example, Kunkel relied upon two photos to support a statement that an HDPE liner was placed directly on the poz-o-pac. 10/27/17 Tr. p. 139:21-140:9, 141:3-9, MWG Ex. 413, 414; Comp. 110. Kunkel believed this was important because he alleged that the photos showed that the pond liners could be damaged by being in "direct" contact with the poz-o-pac. 10/27/17 Tr. p. 161:3-34; Comp. 110. Yet, when confronted with fact that the photos Kunkel relied on actually shows a geotextile cushion layer placed between the poz-o-pac and the HDPE liner, Kunkel acknowledged his error and dismissed it as "it's close enough." 10/27/17 Tr. p. 162:3-10, Comp. Ex. 110. Kunkel also acknowledged that his reference to a 2008 email (Comp. Ex. 306) did not actually support his opinion that the Will County ash ponds may have leaked until 2013. 10/27/17 Tr. p. 175:2-176:14. Kunkel further agreed he was wrong when he opined that the groundwater at Powerton was impacted by mercury. 10/27/17 Tr. p. 176:15-177:5. During the hearing, Kunkel realized that his report was incorrect to claim that certain groundwater wells at Waukegan were screened in coal ash, when he was looking at the boring logs from different soil borings. 10/27/17 Tr. p. 229:2-15. Kunkel admitted that his conclusions in his report regarding hydrostatic uplift at Waukegan was incorrect. 10/27/18 Tr. p. 125:14-126:21; 1/29/18 Tr. p. 43:17-19. Finally, during the Hearing, MWG showed that the final demonstrative exhibits Kunkel relied on for his testimony contained many errors, and as a result the summary tables at the end of Complainants Ex. 411, which Kunkel relied upon for his opinions, have no basis and no value. 10/27/17 Tr. p. 233:8-20; 1/29/18 Tr. p. 25:1-7. Kunkel did not even know where the table of data in the demonstrative, Comp. Ex. 411, came from, even though he stated he reviewed the table and relied upon it. 10/27/17 Tr. p. 233:8-20. When faced with the many errors in the table of data, he later denied relying on all of it. 1/29/18 Tr. p. 74:19-75:7.

It was also disclosed at Hearing that Kunkel gave his opinions about MWG's impoundments without having reviewed key documents – including the construction permits and the "as-built" construction documents showing how the ponds were relined. Kunkel first agreed that it is important to review as-built drawings because they are the drawings that give the accurate

picture of what was actually constructed at a project. 10/27/17 Tr. p. 90:2-20. Kunkel then admitted that he had not seen the final construction reports and drawings for the relining projects at the Stations stating "…but I didn't see any construction documents. What I saw were pre-construction drawings…" and "Based on what I knew that that's what happened or what I was instructed and *…I did the best I could with what I had."* 10/27/17 Tr. p. 169:1-18 (*emphasis added*). In particular, Kunkel opined that the Powerton Secondary Ash Basin could have hydrostatic uplift from groundwater, but based that opinion on a "Not for Construction" drawing. 10/27/17 Tr. p. 100:1-101:11; Comp. Ex. 33. When presented with the as-built drawing for the Secondary Ash Basin, Kunkel agreed that final drawings showed a modification, and that MWG installed an underdrain system under the Secondary Ash Basin specifically designed to prevent any uplift on the liner. 10/27/18 Tr. p. 103:3-109:9, MWG Ex. 710, MWG13-15_34261-34265. Kunkel's opinion had no basis in fact.

It was also clear at Hearing that Kunkel had serious gaps in his knowledge. Kunkel did not know that Illinois EPA approved the liner systems installed at the Stations and had not seen any of the construction permits issued by the Agency. 10/27/17 Tr. p. 197:24-199:7. In fact, Kunkel stated: "…I have no idea … what IEPA requires." 10/27/17 Tr. p. 199:1-4. Kunkel did not know when MWG began operating at the Stations (10/27/17 Tr. p. 72:22-23) and he did not know that the Secondary Ash Basin at Powerton and Ash Pond 3 at Joliet 29 were only finishing ponds and tests confirmed that they contained no ash. 10/27/17 Tr. p. 99:16-24; 1/29/18 Tr. p. 51:19-52:3. Kunkel did not know the type of equipment used for ash removal from the ash ponds. 1/30/18 Tr. p. 50:21-24. Kunkel admitted to having little understanding of how GMZs work under Illinois regulations, and was unfamiliar with CCAs in Illinois. 10/27/17 Tr. p. 87:14-23. Kunkel also did not know that Illinois did not have regulatory standards for ash ponds prior to the Federal CCR rules. 10/27/17 Tr. p. 197:24-198:3. Kunkel testified about standards set in the Federal CCR rules, yet disregarded USEPA's analysis in the CCR rules stating inactive landfills were not of concern. See Sec. II.A.

It was clear at the Hearing that Kunkel was either not given or did not review all of the relevant information to prepare a valid scientific opinion to a reasonable degree of scientific certainty. Based upon the multitude of errors in Kunkel's report and the acknowledged dearth of information he knew or reviewed, Kunkel's conclusions and opinions related to the ash ponds and the groundwater are suspect, at best and should be given little weight.

D. THE BOARD MUST CONSIDER THE SECTION 33 FACTORS WHEN CONSIDERING "CAUSE AND ALLOW"

Even assuming the Board finds that Complainants have made a *prima facie* case, the Board's order must consider MWG's defenses and assess whether MWG acted reasonably in determining whether MWG caused or allowed water pollution or open dumping. 415 ILCS 5/33(c). A review of the Section 33(c) factors clearly shows that since taking over the Stations MWG acted reasonably, thus the Board should not find a violation.

Section 33(c) of the Act requires the Board to consider five factors when making its orders. Section 33(c) of the Act states:

> (c) In making its orders and determinations, the Board shall take into consideration all the facts and circumstances bearing upon the reasonableness of the emissions, discharges or deposits involved including, but not limited to:
>
> (i) the character and degree of injury to, or interference with the protection of the health, general welfare and physical property of the people;
>
> (ii) the social and economic value of the pollution source;
>
> (iii) the suitability or unsuitability of the pollution source to the area in which it is located, including the question of priority of location in the area involved;
>
> (iv) the technical practicability and economic reasonableness of reducing or eliminating the emissions, discharges or deposits resulting from such pollution source; and
>
> (v) any subsequent compliance.
>
> 415 ILCS 5/33(c)

The Illinois Supreme Court has stated that when preparing an order "The Board must take into consideration the factors referred to in section 33(c) and must indicate that it has done so in its written opinion by stating the facts and reasons leading to its decision. *Incinerator, Inc. v. Pollution Control Board*, 59 Ill.2d 290, 296 (1974). The Illinois Supreme Court did not limit its holding to orders concerning penalties. In fact, the Supreme Court noted that the purpose of Section 33(c) is as an additional protection against arbitrariness by the Board and to provide guidelines for the Board in reaching its decisions. *Id, citing Waukegan v. Pollution Control Bd*., 57 Ill. 2d 170, 182, 311 N.E.2d 146, 152 (1974). The First District Appellate Court explained in *Envtl. Prot. Agency v. Fitz-Mar, Inc* that Section 33(c)'s "specificity arises from the composition of the Board itself; its members are 'technically qualified' individuals only and not required to have any legal training", thus the guidance provided by section 33(c) is intended to prevent arbitrary Board decisions. *Envtl. Prot. Agency v. Fitz-Mar, Inc*., 178 Ill. App. 3d 555, 563, 127 Ill. Dec. 652, 657, 533 N.E.2d 524, 529 (1st Dist. 1988).

Once the complainant establishes a *prima facie* violation of the Act, the burden shifts to the respondent to introduce evidence demonstrating the mitigating factors under Section 33(c) of the Act. *Western Springs v. Pollution Control Board*, 107 Ill. App. 3d 864, 8 (1st Dist. 1982); *Tri-County Landfill Co. v. Illinois Pollution Control Board*, 41 Ill. App.3d 249 (2nd Dist. 1976); *Kochanski v. Hinsdale Golf Club*, PCB 88-16, 1989 Ill. ENV LEXIS 237, *slip op.* at 20 (July 13, 1989). As the Board stated in *Kochanski*, Section 33(c) "operates as an opportunity for the respondent to establish a defense to the complainant's allegations." *Kochanski* at 21.

Courts and the Board use the Section 33(c) factors to determine whether emissions or releases were reasonable. In *Incinerator, Inc. v. Pollution Control Board*, the Illinois EPA brought an enforcement action against Incinerator, Inc. alleging violations of Section 9(a) of the Act. *Incinerator, Inc. v. Pollution Control Board*, 59 Ill.2d at 296. The Illinois Supreme Court upheld the Board's finding of a violation based, in part, upon the Board's evaluation of the Section 33(c) factors which concluded that the emissions were not reasonable. *Id* at 299. Similarly, in *Wells Mfg. Co. v. Pollution Control Board*, the Illinois Supreme Court upheld the reversal of the Board's finding of violation holding that the emissions were reasonable under the evaluation of the Section 33(c) factors. *Wells Mfg. Co. v. Pollution Control Board*, 73 Ill.2d 226, 238 (1978). In that case, evaluating each of the Section 33(c) factors, the Illinois Supreme Court found that the fact that the respondent employed 500 people, was an important supplier of auto and agricultural parts, and had been operating at its location since 1947 when the surrounding area was a sparsely inhabited swamp, were significant factors in supporting the conclusion that the emissions were not unreasonable such that the company would be in violation of the Act. *Id* at 235-236. In *Tri-County Landfill Company v. Illinois Pollution Control Board*, 41 Ill.App.3d 249 (2nd Dist. 1976), the Court upheld the Board's finding that the landfill caused a water pollution hazard in violation of Section 12(d). In particular, the Court reviewed the record and concluded that there was sufficient evidence to support the Board's ruling on each of the Section 33(c) factors. *Id* at 258-259. [24]

In this matter, the analysis of whether MWG caused or allowed water pollution or open dumping boils down to whether MWG acted reasonably. MWG presented extensive and detailed

[24] In *Environmental Site Developers, Inc. v. White & Brewer Trucking, Inc*., a subsequent Board case interpreting *Tri-County*, the Board stated that *Tri-County* involved a claim of violation of Section 12(d), as water pollution may be found where a nuisance is created, and thus involve an analysis of the reasonableness of the pollution under the Section 33(c) factors is material. *Environmental Site Developers, Inc. v. White & Brewer Trucking, Inc.*, PCB 96-180, 1997 Ill. ENV.LEXIS 649, *slip op.* at 28 (Nov. 20, 1997).

evidence relevant to each of the factors in 33(c) to establish that MWG acted reasonably and not in violation of the Act.

The first factor in Section 33(c) is character and degree of injury to, or interference with the protection of the health, general welfare and physical property of the people. 415 ILCS 5/31(c)(i). As established at the Hearing, there are no potable wells near or downgradient of the ash ponds or ash areas. Moreover, there is no physical property of anyone that is being impacted by the constituents in the groundwater at the Stations. The ELUCs established at Waukegan, Will County, and Powerton prevent any person from accessing the groundwater. Notably, Joliet 29 does not have constituents above the groundwater Class I standards, such that there would not be any harm to any person or their property. MWG's expert Seymour conducted a risk analysis, which was unrebutted by Complainants, and concluded that the constituent levels in the groundwater were not a risk to potential receptors, including nearby surface waters. See Sec. II.G. Thus, the degree of injury for the constituents in the groundwater is minor.

The second factor is the social and economic value of the pollution source. 415 ILCS 5/33(c)(ii). MWG's Director of Federal Environmental Programs, Ms. Race, testified that the MWG Stations are part of the "PJM" capacity market. 1/29/18 Tr. p. 166:11-19. As explained by Ms. Race, PJM ensures that there is enough capacity available when a lot of energy is required, such as the temperatures are very hot or very cold. 1/29/18 Tr. p. 168:5-13. One of the purposes of the PJM is to ensure that the energy available will meet the demand such that there are not blackouts, "so people aren't in the cold and have no electricity." 1/29/18 Tr. p. 168:13-16. Thus, the MWG Stations are critical for the times when there are peak needs for energy and the Stations are obligated, as part of the capacity market, to meet those needs. 1/29/18 Tr. p. 168:20-169:5. Ms. Race testified that Joliet 29, Will County and Waukegan each employ approximately 60 to 80 people, and Powerton employs approximately 100. 1/29/18 Tr. p. 170:21-171:9. Because the Stations are a critical part of the PJM capacity market to ensure that there is sufficient energy at all times, and MWG employs close to 400 people, the Stations have social and economic value.

The third factor under Section 33(c) is the suitability or unsuitability of the pollution source to the area in which it is located, including the question of priority of location in the area involved. 415 ILCS 5/33(c)(iii). MWG presented undisputed evidence at the Hearing that all of the Stations are in industrial areas, surrounded by other industries and commercial properties. SOF 68-70, 155, 258-260, 358-359. Each of the Stations has been at their current location for at least 50 years and

as much as 100 years. Joliet 29 and Will County are the "younger" Stations as each were built in 1964 and 1955 respectively. Powerton and Waukegan were both built in the 1920s and are also surrounded by industrial properties. Moreover, Waukegan is surrounded by properties that have historic contamination from its prior uses, including the superfund sites such as the John Manville Site to the north, and the General Boiler and Griess-Pfleger Tannery sites to the west. Based upon the age of the stations and that they are all in industrial areas, the Stations are suitable for the areas in which they are located.

The fourth factor in Section 33(c) is the technical practicability and economic reasonableness of reducing or eliminating the emissions, discharges or deposits resulting from such pollution source. As described above, it has not been established that the ash ponds or the historic ash areas are actually discharging any constituents into the groundwater. Thus, as no one can identify a source, it would not be technically practicable to reduce or eliminate the discharge. Moreover, MWG has already conducted all of the measures that could be taken with relation to the ash ponds and ash areas, including instituting corrective actions by relining the ponds, establishing GMZs, and establishing institutional controls that prevent any access to the groundwater. Illinois EPA has not requested any additional work at the Stations. Thus, MWG has taken all technically practicable and economically reasonable methods by which to reduce any unknown discharges.

The fifth and final factor under Section 33(c) is any subsequent compliance. It was clear during the hearing that MWG has conducted all the compliance requested by the Illinois EPA and resolved the violations pursuant to the CCAs. Even before Illinois EPA requested that MWG conduct corrective actions at the Stations, MWG had already begun a maintenance program to improve the ash ponds liners, even though MWG had no actual knowledge of any alleged discharge from the ash ponds. MWG has done everything it could to bring the Stations into compliance despite disputing that the Stations were actually a source of any constituents into the groundwater. Based on the Section 33(c) factors, there is no basis for finding MWG in violation of the Act.

E. THE BOARD CAN, AND SHOULD, END THIS CASE

Even if the Board finds that Complainants have carried their burden, and that MWG is somehow technically liable under the Act, no monetary penalty nor any other response is warranted because the MWG Stations are already in compliance with all regulatory requirements and MWG has established institutional controls to prevent any risk to human health or the environment. The

Hearing Officer bifurcated this case into a liability phase and a damages phase. *See* Hearing Officer Order, PCB13-15, Feb. 9, 2017. The Hearing on the liability phase is now complete. Based on the evidence presented, there is no need for and no basis for any further hearing on damages. MWG has established that there is no risk (See Sec. II.G.) and that fact is undisputed. MWG has established that it completed the remedial action work requested and approved by Illinois EPA in the CCAs, including implementing ELUCs and GMZs, and MWG has established that it completed extensive work at the Stations such as relinings, inspections, and closures. The Board can, and should, end this case now.

The Board has previously found that when a party was liable but had already taken all the necessary actions in response to a release, no penalty or other remediation was necessary. In *People of the State of Illinois v. CSX Transportation, Inc.*, PCB 07-16 (July 12, 2007), the State and the Respondent filed cross-motions for summary judgement on the issue as to whether Respondent's release of 500 gallons of diesel fuel was a violation of Sections 12(a), 12(d), and 21(a) of the Act. 415 ILCS 12(a) (d), 21(a). The facts related to the complaint were not at issue, rather the parties disagreed on whether it was a violation of the Act, and also disagreed on the facts related to the factors in Section 42(h) of the Act as to whether a penalty was warranted.

The Board found that Respondent had violated the Act by spilling 500 gallons of diesel fuel. *People of the State of Illinois v. CSX Transportation, Inc.*, PCB 07-16, p. 16 (July 12, 2007). The Board then turned to whether a penalty was warranted. Despite neither party briefing the Section 33 or 42 factors, the Board, on its own authority, decided that a civil penalty "was not appropriate in this case." *Id* at 18. After evaluating the facts in the record, the Board stated, "Based on CSX's prompt action after an accidental spill to clean up the site of the spill, the Board finds that no civil penalty is necessary to deter future violations of the Act." *Id* at 19. The People filed a motion for reconsideration of the Board's order claiming that the Board erred in its application of the law because the Board made its decision to not assign a penalty *sua sponte*, without a request or notice to either party to evaluate the Section 33 and 42 factors. The Board rejected the People's motion and upheld its decision.[25]

[25] Under information and belief, the People appealed this decision to the Fifth Circuit Appellate Court, which upheld the Board's decision. The Fifth Circuit's decision was filed under Supreme Court rule 23 and is not available on legal search engines.

Similarly, in *Union v. Caterpillar*, PCB 94-240 (Aug. 1, 1996), the Board found that Caterpillar violated the Act by allowing a release of TCE from historic uses at its facility. Caterpillar had entered its property into the Illinois Pre-Notice Program (the predecessor to the Illinois Sites Remediation Program) and was remediating the property under the supervision of the Illinois EPA. *Id* at 1. Complainants alleged that the remediation violated RCRA and the Act. *Id.* Following a four-day hearing, the Board found that Caterpillar violated the Act, however, the Board also found that no monetary civil penalty nor any other remedy was warranted. *Id* at 30. The Board found that Caterpillar was in compliance with all RCRA requirements and obtained a GMZ approval from the Illinois EPA "in order to fully remediate the groundwater." *Id*. The Board stated, "Given the clear evidence that respondent had self-reported its contamination within days of its discovery and has done everything the Agency has requested it to do to remediate the site, we find that the substantial monetary penalty requested by complainants is wholly unjustified." *Id*. Further, the Board stated "Where, as here, cooperation is shown, compliance has been achieved, and the imposition of a civil penalty would in no way aid enforcement or advance compliance, as fine is not appropriate." *Id.* The Board added that "we do not believe that it is sound public policy to attach a substantial monetary penalty to a voluntary cleanup, especially when the evidence shows that the contamination was historical in nature, occurring before RCRA became effective." *Id* at 31. Further, relying upon Caterpillar's application of GMZ on its property to remediate the groundwater, the Board found and concluded that "the existence of the GMZ demonstrates that respondent is actively remediating the groundwater in order to achieve the Part 620 standards. Therefore, *no remedy that the Board can fashion will aid in enforcement or bring about compliance with the Act or corresponding regulations, when respondent is currently taking all available steps pursuant to appropriate Agency oversight to remedy the groundwater problem on its site."* *Id* at 36 (emphasis added).

Here, MWG has gone above and beyond any regulatory requirements for managing the ash ponds. Long before there were regulations, the ash ponds were lined, and the liners were later found upon inspection to be in excellent condition. When MWG took over the Stations, MWG executed a systematic plan to reline its active ash ponds, even though there were no State or Federal regulatory standards or requirements to do such a thing. When asked by the Illinois EPA to conduct groundwater monitoring around its ash ponds – despite having serious reservations that the monitoring would reveal any useful information – MWG agreed. Throughout this time, Illinois

EPA reviewed and approved all of MWG's actions, including the relining projects, the groundwater monitoring networks, the GMZs and the ELUCS. As MWG's expert Seymour explained, in Illinois, a party does not need to chase the minutia at a site. 2/2/18 Tr. p. 46:14-22. Instead, Illinois allows a party to manage the risks by establishing a GMZ or an ELUC, and manage and confine the use of the site to eliminate the risk to public health or the environment. 2/2/18 Tr. p. 46:23-47:9; 2/2/18 Tr. p. 127:8-19. MWG has taken all of those steps here.

Moreover, MWG has carefully followed and complied with USEPA's new CCR Rules, adopted in December of 2014. 40 CFR 257.1-257.107; MWG Exs. 663, p. 5; 664, p. 7; 665, p. 10; 666, p. 6. MWG has closed several of its impoundments, and at all of the Stations MWG personnel are conducting the weekly inspections required under the CCR rules. 1/31/18 Tr. p. 148:19-6; 1/31/18 Tr. 237:23-238:12. This is in addition to the inspections conducted by the operator inspections conducted during every shift. 1/31/18 Tr. p. 147:19-148:6; 1/31/18 Tr. 238:18-22.

Despite doing all that work and taking all due care at its Stations, even though there is no risk to human health or the environment, MWG has spent approximately 5 years defending itself in this action. As the Board found in *CSX* and in *Caterpillar*, the Board should also find here that MWG has taken "all available steps pursuant to Agency oversight to remedy the groundwater problem on its site," and hold that no penalty nor further relief is warranted.[26]

IV. CONCLUSION

The evidence shows that despite the differences between the four MWG Stations, the complexity of the coal ash operations, and the hydrogeology at each of the Stations, there is no doubt that since it began operating, MWG has taken extensive precautions and measures to maintain and upgrade its Stations to protect the groundwater in compliance with the Illinois Environmental Protection Act and its underlying regulations. It is undisputed that the constituents in the groundwater causes no risk or harm to public health or the environment, and MWG has

[26] The Board may not grant injunctive relief. As a creature of statute, the Board may only operate within the bounds of its powers set out by the Illinois General Assembly. *Granite City Div. of Nat. Steel Co. v. IPCB*, 155 Ill.2d 149, 171, 613 N.E.2d 719, 729 (1993). Under Section 33(b) of the Act, the Board may only direct a party to cease and desist from violations of the Act and/or impose civil penalties pursuant to Section 42 of the Act, revoke a permit, or require a posting of a bond. 415 ILCS 33(b). The Board does not, and the Board has acknowledged that it does not, have the authority to award injunctive relief. *Dayton Hudson Corporation v. Cardinal Industries, Inc*., 97-134, 1997 Ill.ENV.LEXIS 488, p. 18, August 21, 1997, *Michael Pawlowski and Diane K. Pawlowski v. David Johansen et al*, PCB 00-157, 2000 Ill.ENV.LEXIS 258, p. 2, May 4, 2000, *Clean the Uniform Company-Highland v. Aramark Uniform & Career Apparel, Inc.*, PCB 03-21, 2002 Ill.ENV.LEXIS, p. 1, Nov. 7, 2002 slip op. at 1 & 3. Thus, even if the Board were to Complainants crested their burden, and found that additional work beyond all the work already conducted by MWG was required, the Board does not have the authority to make such an order.

already completed the necessary actions at the Stations - through investigations, inspections, GMZs, ELUCs, Station closures and pond closures – and no further action is warranted.

The Board should enter an order finding that MWG has not violated the Illinois Environmental Protection Act as claimed, and, in any case the Board should end this matter by finding that all necessary actions have been taken at the stations.

Respectfully submitted,
Midwest Generation, LLC

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APPENDIX A

RESPONDENT MIDWEST GENERATION, LLC'S STATEMENT OF FACTS

I. GENERAL FACTS

1. In 1999, Midwest Generation LLC ("MWG") began operating Joliet 29 Station, the Powerton Station, the Waukegan Station, and the Will County Station that are the subject of this matter (collectively "the Stations"). Joint Agreed Stipulation filed on Oct. 2, 2017 ("JAS"), Nos. 2, 3, 17, 18, 32, 33, 40, 41. [1]

A. MWG's Testifying Witnesses

2. Maria Race began working for MWG in 2001 as the manager of general environmental compliance including NPDES permitting, compliance, landfill management, and toxic release inventory for the MWG Stations. 1/29/18 Tr. p. 159:17-160:18 (Testimony of Race). Ms. Race later became the Asset Manager and eventually the Director of Federal Environmental Programs. 10/23/17 Tr. p. 30:1-6, 31:24-32:2 (Testimony of Race)

3. Christopher Lux is the Engineering Manager at the Waukegan Station and began working at the Waukegan Station in approximately 1992 and continued to work at the Station when MWG took over in 1999 and when NRG purchased MWG in 2014. 10/24/17 Tr. p. 33:11-34:12 (Testimony of Lux).

4. Rebecca Maddox was the Environmental Specialist at the Will County Station from approximately 2008 until April 2015. 10/24/17 Tr. pp. 175:13-19, 178:14-16, 247:3-8 (Testimony of Maddox).

5. Richard Gnat is a Principal at KPRG & Associates ("KPRG"), a company that specializes in soil and groundwater impact issues. 2/1/18 Tr. p. 82:24-83:17 (Testimony of Gnat). Mr. Gnat has conducted multiple projects at the four Stations that are the subject of this matter and has visited all of the Stations multiple times. 2/1/18 Tr. p. 84:3-24 (Testimony of Gnat).

6. Mark Kelly is the Chemical Specialist at the Powerton Station. Mr. Kelly began working at the Powerton Station in approximately January 1992. Mr. Kelly is responsible for the boiler water chemistry, wastewater, drinking water, circulating water for the condensers, and water related to the coal ash. 1/31/18 Tr. p. 66:20-67:2, 68:13-69:5 (Testimony of Kelly).

7. Fredrick Veenbaas is the Senior Compliance Specialist at the Waukegan Station and he began working at the Waukegan Station in 2012. Before 2012, Mr. Veenbaas was the Chemistry Systems Specialist at the Will County Station beginning in 1999. 1/31/18 Tr. pp. 221:18-222:17 (Testimony of Veenbaas).

8. John Seymour ("Seymour") is a Senior Principal at Geosyntec Consultants and practices in geotechnical engineering and remediation practices. Seymour was retained by MWG

[1] The **Bolded** statements are facts on which the Complainants and MWG specifically agree based on the Joint Statement of Facts or testimony of Complainants' expert. In addition, many of the statements herein are undisputed.

to provide his expert opinion on the conditions at the four Stations. 2/1/18 Tr. p. 213:18-214:13 (Testimony of Seymour), MWG Ex. 900 (Seymour CV).

9. Seymour has forty years of experience in geotechnical engineering and remediation practices and over 14 years of experience specifically with coal combustion residuals (CCRs"). MWG Exs. 900, (Seymour CV); MWG Ex. 901, p. 2-3 (Seymour Presentation, included as Attachment 1 to this SOF).[2]

10. Seymour's experience with CCRs includes leading the design of a CCR surface impoundment closure in Illinois, preparing a closure plan for a CCR impoundment, investigating CCR landfill areas in Ohio, West Virginia, and Michigan, and assessing groundwater compliance under the CCR rules for eight CCR units in Ohio and Kentucky. MWG Exs. 900 (Seymour CV); 2/1/18 Tr. p. 217:5-12 (Testimony of Seymour).

11. Seymour's experience with evaluating groundwater quality includes a powerplant in Michigan, a CERCLA site as part of the CERCLA remedial investigation, a hazardous waste treatment facility as a part of the RCRA corrective action, a CERCLA site in Iowa as part of a TCE remediation, a superfund site in Michigan, and a number of manufactured gas plant sites in Wisconsin. MWG Ex. 900 (Seymour CV); 2/2/18 Tr. p. 130:24-132:15-23 (Testimony of Seymour).

B. MWG's Business Operations

12. MWG operates the four Stations, Joliet 29, Powerton, Waukegan, and Will County, as part of the PJM capacity market, which is a market for selling energy. 1/29/18 Tr. p. 166:14-19 (Testimony of Race).

13. The purpose of PJM is to ensure that there is a certain amount of capacity available during times when it is very hot or very cold and the energy demand is high, and to ensure there are no blackouts, so "people aren't in the cold and have no electricity. 1/29/18 Tr. p. 168:5-16 (Testimony of Race).

14. The four MWG electrical generating stations are used to fill the needs during peak needs for energy. 1/29/18 Tr. p. 168:17-169:1 (Testimony of Race).

15. Approximately 60 to 80 employees work at the Joliet 29 Station. 1/29/18 Tr. p. 170:21-24. (Testimony of Race).

16. Approximately 100 employees work at the Powerton Station. 1/29/18 Tr. p. 171:4-6. (Testimony of Race).

17. Approximately 60 employees work at the Waukegan Station. 1/29/18 Tr. p. 171:7-9. (Testimony of Race).

[2] MWG Exhibit 901 (Seymour Presentation), cited throughout this SOF and MWG's Post-Hearing Brief, is attached to this SOF as Attachment 1 for ease of reference.

18. Approximately 60 to 80 employees work at the Will County Station. 1/29/18 Tr. p. 171:1-3. (Testimony of Race).

C. Common Factors at MWG's Stations

19. Prior owners have operated the Stations as coal burning plants since at least 1965; and some back to the 1920s-1950s. MWG Ex. 901, pp. 6, 14, 26, 44, 58 (Seymour Presentation, SOF Attachment 1); MWG Exs. 663 at p. 1 (Joliet 29 Timeline of Events), Ex. 664 at p. 1 (Powerton Timeline of Events), Ex. 665 at p. 1 (Waukegan Timeline of Events), and Ex. 666 at p. 1 (Will County Timeline of Events).

20. Since approximately 1978, active coal ash impoundments[3] at Joliet 29, Powerton, Waukegan and Will County were lined with a poz-o-pac liner, and/or a Hypalon liner; and relined by MWG with a high-density polyethylene ("HDPE") liners. MWG Ex. 901, pp. 6, 16, 28, 60 (Seymour Presentation, SOF Attachment 1); MWG Ex. 500 (Pond Characterizations for MWG Stations).

21. From approximately 2000-2013, MWG investigated the impoundments, assessed potential risks, and conducted a Station-wide pond relining project. MWG Ex. 901, p. 6 (Seymour Presentation, SOF Attachment 1).

22. At all of the Stations, there is no risk to potential receptors. MWG Ex. 901, pp. 6, 10 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Appen. B (Seymour Expert Report); MWG Ex. 907 (Seymour Update to Appendix B of Expert Report - Updated Risk Analysis).

D. Types of Liners in Ash Ponds

23. Poz-o-pac, a very dense material, is an aggregate liner similar to concrete. 10/26/17 Morning Tr. p. 66:11-13 (Testimony of Gnat); 1/31/18 Tr. p. 77:5-14 (Testimony of Kelly); MWG Ex. 621, p. MWG13-15_295 (2009 Hydrogeological Assessment of MWG Electric Generating Stations); 2/1/18 Tr. p. 241:17-22 (Testimony of Seymour); Comp. Ex. 286 (Poz-o-pac sample result).

24. Hypalon is a type of geosynthetic rubber lining material that is still a commonly used water barrier. 2/2/18 Tr. p. 83:10-18 (Testimony of Seymour); 1/29/18 Tr. p. 219:13-14 (Testimony of Race); 1/31/18 Tr. p. 77:18-21 (Testimony of Kelly).

25. **An HDPE liner is a high-density polyethylene liner.** JAS No. 1.

26. A HDPE liner is a "robust pond lining", "about one of the best you can get", is the least permeable type of liner, resistant to chemicals, and is the same liner used for hazardous waste

[3] The ash impoundments at the Stations can also be called: "ash pond", "pond", or "basin". 1/29/18 Tr. p. 192:18-24, 223:22-224:3(Testimony of Race), 1/31/18 Tr. p. 70:10-17 (Testimony of Kelly); 1/31/18 Tr. pp. 225:14-17, 246:17-247:3 (Testimony of Veenbaas).

landfills. 1/29/18 Tr. p. 224:21-226:3 (Testimony of Race); 2/1/18 Tr. pp. 243:22-24, 256:8-14 (Testimony of Seymour).

27. HDPE liners are very effective to prevent any potential impact to groundwater. 2/1/18 Tr. p. 256:3-8 (Testimony of Seymour).

28. HDPE liners are one of the liners allowed under RCRA hazardous waste regulations used for hazardous waste landfills; HDPE liners are resistant to chemicals and have a very low permeability. 2/1/18 Tr. p. 243:23-244:21, 256:8-23 (Testimony of Seymour).

29. The active ponds also have geotextile in the liner system and a 12-foot sand cushion layer the purpose of which for both materials is to avoid punctures on the HDPE when equipment is in the ponds. MWG Ex. 901, pp. 16-18, 28-31, 46-47, 60-61 (Seymour Presentation, SOF Attachment 1); MWG Exs. 274, 505-507, 510, 610, 629, 703, and 706 (Construction Documentation for the MWG Ash Ponds); 2/1/18 Tr. 290:12-23 (Testimony of Seymour).

30. On top of the sand cushion layer, MWG laid down a 6-inch limestone warning layer. MWG Ex. 901, pp. 16-18, 28-31, 46-47, 60-61 (Seymour Presentation, SOF Attachment 1); MWG Exs. 274, 505-507, 510, 610, 629, 703, and 706 (Construction Documentation for the MWG Ash Ponds).

31. Limestone is white, which contrasts with the dark color of coal ash and makes it easy to see the difference between the white of the limestone and the ash. 1/31/18 Tr. p. 92:3-10 (Testimony of Kelly); 1/31/18 Tr. p. 252:3-8 (Testimony of Veenbaas).

32. The purpose of the limestone warning layer is to act as a warning to the operators when the operators are removing the ash and warn the operators before they hit the bottom of the pond. 1/31/18 Tr. p. 91:19-92:2, 109:23-110:3 (Testimony of Kelly).

E. MWG Coal Ash and Its Properties

33. **The Powerton Station, Waukegan Station and Will County Station burn subbituminous coal sourced from Powder River Basin in Wyoming.** JAS 51; 10/23/17 Tr. p. 62:10-14 (Testimony of Race); 10/27/18 Tr. p. 177:17-178:4 (Testimony of Kunkel).

34. **Until it ceased burning coal for the generation of electricity, Joliet 29 Station burned subbituminous coal sourced from the Powder River Basin in Wyoming.** JAS No. 52; 10/23/17 Tr. p. 62:10-14 (Testimony of Race); 10/27/18 Tr. p. 177:17-178:4 (Testimony of Kunkel).

35. **There are different types of coal ash, including but not limited to fly ash and bottom ash.** JAS No. 53.

36. A coal powered electric generating station generates generally two types of coal ash from the burning of the coal: bottom ash and fly ash. 1/31/18 Tr., p. 69:9-11 (Testimony of Race); 1/31/18 Tr., p. 224:19-20, 245:1 (Testimony of Veenbaas).

37. Fly ash are lightweight particles from a coal fired power plant. 10/24/17 Tr. p. 17:18-4 and 1/31/18 Tr. pp. 69:12-15 (Testimony of Mr. Race).

38. At Powerton, Waukegan, and Will County, the fly ash is collected via dry system using electrostatic precipitators and transported off-site for beneficial reuse, mine reclamation or stabilization. 1/29/18 Tr. p. 174:1-176:14, 177:2-178:5 (Testimony of Race); 1/31/18 Tr. pp. 69:20-24 (Testimony of Kelly); 1/31/18 Tr. p. 224:21-225:11; 245:4-10 (Testimony of Veenbaas); MWG Ex. 600 (LaFarge Ash Movements by Movements by Station).

39. At Joliet 29, the fly ash was collected via dry system using electrostatic precipitators and transported off-site for beneficial reuse. 1/31/18 Tr. pp. 69:20-24 (Testimony of Kelly); 1/29/18 Tr. p. 174:1-176:21 (Testimony of Race);1/31/18 Tr. pp. 245:4-10, 224:21-225:11 (Testimony of Veenbaas); MWG Ex. 600 (LaFarge Ash Movements by Movements by Station).

40. Bottom ash consists of heavier particles that fall to the bottom of the furnace and is generally mixed with water and conveyed out of the plant at the Station, via a pipe to a settling basin or pond. 1/29/18 Tr. p. 192:18-24 (Testimony of Race); 1/31/18 Tr. p. 70:10-17 (Testimony of Kelly); 1/31/18 Tr. pp. 225:14-17, 246:17-247:3 (Testimony of Veenbaas).

41. Bottom is ash brown, very granular and soil-like and has no smell. 1/31/18 Tr. p. 227:22-228:11 (Testimony of Veenbaas); MWG Ex. 712 (Sample Jar of MWG Bottom Ash).

42. Fly ash and bottom ash are not hazardous. 10/27/18 Tr. p. 178:10-15 (Testimony of Kunkel); 1/29/18 Tr. p. 208:11-17 (Testimony of Race); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

43. Coal ash can be beneficially reused, and there is a market for the reuse of coal ash. 1/29/18 Tr. p. 208:11-17 (Testimony of Race); MWG Ex. 600 (LaFarge Ash Movements by Movements by Station).

44. The MWG fly ash and bottom ash are beneficially reused in different manners, including cement replacement, geotechnical stabilization, mine stabilization, structural fill, and roofing shingles. MWG Ex. 600 (LaFarge Ash Movements by Movements by Station); /29/18 Tr. p. 174:1-176:14, 177:2-178:5 (Testimony of Race); 1/31/18 Tr. p. 70:6-7, 71:9-11 (Testimony of Kelly); 1/31/18 Tr. p. 225:2-4, 245:7-8 (Testimony of Veenbaas); 2/1/18 Tr. p. 219:1-3 (Testimony of Seymour).

45. The bottom ash collected at the MWG Stations is hauled away for beneficial use; when Joliet 29 was operating as a coal-fired powerplant, its bottom ash was conveyed to a permitted landfill. 1/29/18 Tr. p. 192:18-19 (Testimony of Race); 1/31/18 Tr. p. 235:15-19 (Testimony of Veenbaas).

46. **The four MWG Stations burned the same coal and burned that coal in a similar manner; the resulting coal ash from each Station had similar constituents.** 10/27/18 Tr. p. 177:9-13 (Testimony of Kunkel); 2/1/18 Tr. p. 266:19-24 (Testimony of Seymour); MWG Ex. 903, p. 41 (Expert Report of Seymour).

47. Between 2004 and 2010, MWG analyzed the coal ash from its three of its ash ponds at different MWG Stations using the neutral leachable procedure ("NLET") also known as ASTM D3987-85 for metals. MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1); MWG Exs. 512 (Bottom Ash Analytical Report 2010), 635 (2004 Limestone Basin and Bottom Ash Sampling), 700 (2007 Analytical Report of Bottom Ash), 806 (2004 Bottom Ash Sampling Results), 808 (ASTM D3987-85 – Standard Test Method for Shake Extraction of Solid Waste with Water); 2/1/18 Tr. p. 160:7-15 (Testimony of Gnat).

48. The purpose of the NLET analysis is to confirm that the historical ash met the coal combustion by-product ("CCB") criteria under 415 ILCS 5/3.135. MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1); 2/1/18 Tr. p. 160:7-15 (Testimony of Gnat).

49. Coal ash may be classified as CCB and may be beneficially used, including as structural fill, foundation backfill, antiskid material, athletic tracks, or foot paths. 415 ILCS 5/3.135; MWG Ex. 293; 10/26/17 Morning Tr. p. 38:4-39:19 (Testimony of Gnat).

50. The CCB criteria requires that the material has no metals above the Illinois Class I groundwater standards and thus can safely be used for various reason including structural fill, pavement and shingles. 415 ILCS 5/3.135; 2/1/18 Tr. p. 159:3-9, 160:7-15, (Testimony of Gnat); 2/1/18 Tr. p. 217:21-218:3 (Testimony of Seymour).

51. Illinois law requires that the ASTM D3987-85 test method be used to determine whether coal ash can be used for beneficial reuse and classified as CCB. 2/1/18 Tr. p. 170:9-14 (Testimony of Gnat); 10/26/17 Morning Tr. p. 39:1-12 (Testimony of Gnat).

52. ASTM D3987-85 was originally written in 1985 and was reapproved in 2004 without any changes. 2/1/18 Tr. p. 171:2-8 (Testimony of Gnat); MWG Ex. 808 (ASTM D3987-85 – Standard Test Method for Shake Extraction of Solid Waste with Water).

53. In 2012, the ASTM D3987-85 was slightly modified and renumbered to ASTM D3987-12; from 1985 through 2011 there were no changes to the method. 2/1/18 Tr. p. 171:9-20. (Testimony of Gnat).

54. The only difference between the ASTM D3987-85 and ASTM D3987-12 is that the 2012 procedure modified the temperature window in which the analysis needs to be conducted in the lab. 2/1/18 Tr. p. 173:7-15 (Testimony of Gnat).

55. The MWG ash samples taken from the MWG ash ponds analyzed after 2012 were analyzed with ASTM D3987-85, and were also analyzed within the ASTM D3987-12 temperature range, so the ash sample results met the requirements of the 2012 ASTM standard. 2/1/18 Tr. p. 173:19-174:9 (Testimony of Gnat), Comp. Ex. 284 (Will County CCB Determination).

56. The results of the analysis of the ash samples taken after 2012 and analyzed with ASTM D3987-85 conformed with appropriate test methods. 2/1/18 Tr. p. 173:19-174:9 (Testimony of Gnat).

57. The results of the ASTM D3987-85 analysis of the MWG ash taken from the MWG ash ponds showed that the site-specific indicators of the MWG ash pond coal ash were barium,

boron, sulfate and total dissolved solids ("TDS"). MWG Exs. 512 at MWG13-15_14712-13 (Bottom Ash Analytical Report 2010), 635 at MWG13-15_11356 (2004 Limestone Basin and Bottom Ash Sampling), 700 at MWG13-15_10951 (2007 Analytical Report of Bottom Ash), 806 at MWG13-15_12814-15 (2004 Bottom Ash Sampling Results), and MWG Ex. 901 at p. 8 (Seymour Presentation, SOF Attachment 1).

58. The results of the ASTM D3987-85 analysis of the MWG ash taken from the MWG ash ponds showed that the concentrations of barium, boron, sulfate and TDS were below the established regulatory standards. MWG Exs. 512 at MWG13-15_14712-13 (Bottom Ash Analytical Report 2010), 635 at MWG13-15_11356 (2004 Limestone Basin and Bottom Ash Sampling), 700 at MWG13-15_10951 (2007 Analytical Report of Bottom Ash), 806 at MWG13-15_12814-15 (2004 Bottom Ash Sampling Results), and MWG Ex. 901 at p. 8 (Seymour Presentation, SOF Attachment 1).

59. Between 2004 and 2015, MWG performed investigations of historic ash in fill materials at the Joliet 29, Powerton and Will County Stations also using the NLET method to confirm that the historic ash met the CCB criteria under 415 ILCS 5/3.135. MWG Ex. 901, p. 9 (Seymour Presentation, SOF Attachment 1); Comp. Ex. 284 (Will County CCB Determination) and 293 (Revised Joliet 29 CCB Report); MWG Ex. 635 (2004 Limestone Basin and Bottom Ash Sampling); 2/1/18 Tr. p. 275:5-276:18 (Testimony of Gnat).

60. The results of all the NLET tests of historic ash in fill areas at the Stations showed that the historic ash also met the CCB criteria and could be used for beneficial reuse. 10/26/17 Morning Tr. p. 40:20-41:12 (Testimony of Gnat); 2/1/18 Tr. p. 168:6-24 (Testimony of Gnat); Comp. Ex. 284 (Will County CCB Determination) and 293 (Revised Joliet 29 CCB Report); MWG Exs. 635 (2004 Limestone Basin and Bottom Ash Sampling); MWG Ex. 901 at p. 9 (Seymour Presentation, SOF Attachment 1); Ex. 903, p. 46 (Seymour Expert Report); 2/1/18 275:5-276:24 (Testimony of Seymour).

II. MIDWEST GENERATION STATIONS

A. Joliet 29 Station

61. **MWG operates the Joliet 29 Electric Generating Station ("Joliet 29") located in Joliet, Will County, Illinois.** JAS No. 2.

62. **MWG has operated the Joliet 29 Station since 1999.** JAS No. 2.

63. A timeline of events for the Joliet 29 Station can be found at MWG Ex. 663.

64. The Joliet 29 Station was built in 1964-1965 and has been a power plant since 1964. MWG Ex. 663 (Joliet 29 Timeline of Events); MWG Ex. 901, p. 14 (Seymour Presentation, SOF Attachment 1); 1/29/18 Tr. p. 182:9-17 (Testimony of Race).

65. **On March 18, 2016, Joliet 29 Station ceased burning coal for the generation of electricity.** JAS No. 13.

66. **On May 26, 2016, the Joliet 29 Station began generating electricity with natural gas.** JAS No. 14.

67. When the Joliet 29 Station converted to gas 2016, it no longer generated coal ash. 1/29/18 Tr. p. 186:12-15 (Testimony of Race).

68. The Station is in an industrial area. 1/29/18 Tr. p. 179:19-22 (Testimony of Race).

69. The former Caterpillar, Inc. manufacturing facility is adjacent to the west of the Joliet 29 Station. 1/29/18 Tr. p. 179:19-22 (Testimony of Race); MWG 667 p. 2 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County)

70. Channahon Road borders the Joliet 29 Station to the north, beyond which are commercial and industrial facilities. MWG 667 p. 2; 1/29/18 Tr. p. 179:23-180:6 (Testimony of Race); 10/26/17 Morning Tr. p. 36:19-37:1 (Testimony of Gnat).

71. Channahon Road (Route 6) is a four-lane highway that runs adjacent and upgradient to the Joliet 29 ash ponds; another four-lane highway interests Channahon Road near the northwest corner of Ash Pond 1. 10/26/17 Morning Tr. p. 36:19-37:8 (Testimony of Gnat).

72. Road salt, which has chloride as one of its elements, is commonly spread on the roads in the Chicagoland area in the winter. 10/26/17 Morning Tr. p. 37:9-13. (Testimony of Gnat).

73. The Station is bordered to the South by the Des Plaines River. MWG 667 p. 2 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County).

74. The geology at Joliet 29 includes 5 to 30 feet of fine sandy loam underlain by Silurian dolomite to approximately 176 feet below ground and the Maquoketa shale from about 176 to 241 feet below ground surface. MWG Ex. 621, MWG13-15_297, 1/29/18 Tr. p. 253:2-6 (Testimony of Race).

75. The Maquoketa shale is a confining layer separating the upper aquifer from the lower aquifer, which means the Maquoketa shale does not allow any upper aquifer water to travel to the lower aquifer. MWG Ex. 621 p. MWG13-15_297 (2009 Hydrogeological Assessment of MWG Electric Generating Stations), 1/29/18 Tr. p. 253:7-19 (Testimony of Race).

76. There are no potable wells downgradient of the Joliet 29 ash ponds. 10/27/17 Tr. p. 181:4-182:7 (Testimony of Kunkel); 1/29/18 Tr. p. 254:5-11 (Testimony of Race); 2/1/18 Tr. p. 278:13-23 (Testimony of Seymour); 2/2/18 Tr. pp. 43:16-23 (Testimony of Seymour); MWG Ex. 901, p. 14.

77. The groundwater flow at the Joliet 29 Station flows in a southerly direction towards the Des Plaines River. 2/1/18 Tr. pp. 97:13-98:7, p. 109:19-110:1 (Testimony of Gnat); MWG Ex. 901, p. 20 (Seymour Presentation, SOF Attachment 1).

1.Joliet 29 Station at Time MWG Began Operations

78. In 1999, the prior owner of the Joliet 29 Station conducted Phase I and Phase II environmental site assessments of the Station. Comp. Ex. 20 (Joliet 29 1998 ENSR Phase II) and 21D (Joliet 29 1998 ENSR Phase I); 10/23/17 Tr. p. 114:1-117:6, 224:1-228:23 (Testimony of Race).[4]

79. MWG received copies of the Joliet Phase I and Phase II reports, and MWG Director of Federal Environmental Programs Ms. Race, reviewed the reports in about 2003, after she began working at MWG. 10/23/17 Tr. 225:22-23 (Testimony of Race); 1/29/18 Tr. 159:20-23 (Testimony of Race).

80. The Joliet 29 Phase I and II reports both explicitly state that the data and reports were prepared solely for the benefit of the prior owner and that while the information may be shared with third parties, the third party relies upon that information at their own discretion. Comp. Ex. 20 at pp. MWG13-15_23308-09 (Joliet 29 1998 ENSR Phase II), and Comp. Ex. 21 at MWG13-15_25145 (Joliet 29 1998 ENSR Phase I) 1/29/18 Tr. p. 203:6-205:3 (Testimony of Race).

81. The boring logs for the monitoring wells installed during the 1999 Phase II investigation were not included in the Phase II report located in Comp. Ex. 20D (Joliet 29 1998 ENSR Phase II); 10/23/17 Tr. pp. 227:4-228:12 (Testimony of Race).

82. Instead, the boring logs in the 1999 Phase II in Comp. Ex. 20D were for borings taken from the Joliet 9 Power Station, an entirely different generating station not at issue; the Joliet 29 boring logs were admitted separately as MWG Ex. 604. 10/23/17 Tr. pp. 227:19-228:2 (Testimony of Race); 1/29/18 Tr. p. 199:10-201:2 (Testimony of Race).

83. The boring logs for Joliet 29 from the Phase II did not show any coal ash in the borings. MWG Ex. 604 (Joliet 29 ENSR 1998 Boring Logs); 1/29/18 Tr. p. 201:17-18 (Testimony of Race).

84. Importantly, before MWG took over the property, the consultant performing the Phase I and Phase II environmental assessments, ("ENSR") told the prior owner that there was "no requirement under Illinois environmental law to further investigate or remediate this property". Comp. Ex. 20D, at MWG13-15_23324 (Joliet 29 1998 ENSR Phase II).

85. MWG considered that conclusion relevant in its work with respect to the Stations and their ash ponds. Comp. Ex. 20D, at MWG13-15_23324 (Joliet 29 1998 ENSR Phase II), 10/23/17 Tr. pp. 230:23-231:12 (Testimony of Race).

2. Joliet 29 Coal Ash Ponds and Handling

86. Joliet 29 has three ash ponds: Ash Pond 1, Ash Pond 2 and Ash Pond 3. MWG Ex. 901, p. 15 (Seymour Presentation, SOF Attachment 1); MWG Ex. 667, p. 4 (Midwest Generation

[4] Pursuant to Hearing Officer Order of January 11, 2018, the admissible portions of the Phase I and Phase II reports are limited to specific questions raised during the Hearing.

Maps: Joliet 29, Powerton, Waukegan, and Will County); MWG Ex. 500 (Pond Characterizations for MWG Stations).

87. A list and description of the Joliet 29 Active Ash Basins is at p. 16 of the Seymour Presentation which is included as Attachment 1 to this SOF. MWG Ex. 901, p. 16 (Seymour Presentation, SOF Attachment 1).

88. **Ponds 1, 2, and 3 were lined in 1978 with Poz-o-Pac.** JAS No. 5.

89. It was unusual for a power plant to have installed a waste water treatment system that included liners under the ash ponds. 1/29/18 Tr. p. 188:13-19 (Testimony of Race); 2/1/18 Tr. p. 229:5-13, 240:16-245:1 (Testimony of Seymour).

90. The three Joliet 29 ash ponds are a part of the Station's wastewater treatment system. MWG Ex. 603 (Joliet 29 NPDES Permit); 1/29/18 Tr. p. 195:8-197:16 (Testimony of Race).

91. The ponds are permitted under Joliet 29's NPDES permit, No. IL0064254, issued by Illinois EPA, and MWG operated the ash ponds pursuant to the limits, terms, and conditions of the permit as part of the wastewater treatment program. MWG Ex. 603 (Joliet 29 NPDES Permit), 1/29/18 Tr. 195:15-16 (Testimony of Race).

92. At the time MWG began operating Joliet 29 Station in 1999, and continuing until 2016, the vast majority of the bottom ash was conveyed automatically by an enclosed pipe system across the Des Plaines River to a permitted landfill. 1/29/18 Tr. p. 192:16-194:4 (Testimony of Race).

93. On the rare occasions when the enclosed pipe system was offline, a small fraction of the Joliet 29 bottom ash was pumped to either Ash Pond 1 or Ash Pond 2. 1/29/18 Tr. p. 194:5-9 (Testimony of Race), Ex. 667, p. 4 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County).

94. **Only one pond (Joliet 29 Pond 1 *or* Pond 2) was in service at a time.** JAS No. 8.

95. In 2007, MWG relined Joliet 29 Pond 1 with a 60 mil HDPE liner. JAS No. 6.

96. In 2008, MWG relined Joliet 29 Pond 2 with a 60 mil HDPE liner. JAS No. 7.

97. The liner systems installed in Joliet 29 Ash Ponds 1, 2 and 3 consist of 12 inches of poz-o-pac, geotextile, HDPE, geotextile, 12-24 inches of sand and a limestone warning layer. MWG Ex. 901, pp. 16-18 (Seymour Presentation, SOF Attachment 1); MWG Ex. 610 (Construction Documentation for the Joliet Ash Ponds 1 and 2); MWG Ex. 629 (Construction Documentation for the Joliet Ash Pond 3).

98. The pond bottom elevation of Joliet 29 Ash Pond 1 and Ash Pond 2 is 516 feet. MWG Ex. 901, p. 17 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-1, 5-2 (Seymour Expert Report); 2/1/18 Tr. p. 291:19-293:23 (Testimony of Seymour).

99. The average groundwater elevation of the groundwater under Joliet 29 Ash Pond 1 is 506 feet. MWG Ex. 901, p. 17 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-1 (Seymour Expert Report); 2/1/18 Tr. p. 291:19-293:23 (Testimony of Seymour).

100. The average groundwater elevation of the groundwater under Joliet 29 Ash Pond 2 is 505.5 feet. MWG Ex. 901, p. 17 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-2 (Seymour Expert Report); 2/1/18 Tr. p. 291:19-293:23 (Testimony of Seymour).

101. **Joliet 29 Ponds 1 or 2 were dredged approximately every one to two years.** JAS No. 9.

102. Because Joliet 29 ash ponds were emptied in succession, one at a time, each pond was emptied every 2-4 years. MWG Ex. 901, p. 16 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, p. 30 (Seymour Expert Report); MWG Ex. 500 (Pond Characterizations for MWG Stations).

103. The ash removed from Joliet 29 Ponds 1 or 2 was taken to a permitted landfill. MWG Ex. 901, p. 15-16 (Seymour Presentation, SOF Attachment 1); 1/29/18 Tr. p. 194:10-19 (Testimony of Race).

104. **Coal ash was removed from the ponds at Joliet 29 Electric Generating Station by Beemsterboer.** JAS No. 16.

105. When Ash Pond 1 or 2 needed to be emptied, the Joliet 29 ash removal project manager held a kick-off meeting to discuss the protocols for proper removal of ash including identification of the warning posts, the warning layer and a description of the liner. MWG Ex. 903, p. 39 (Seymour Expert Report).

106. The Joliet 29 removal project manager inspected work throughout the ash removal process to confirm the work was acceptable. MWG Ex. 903, p. 39 (Seymour Expert Report).

107. If there were an incident during the relining, the Joliet 29 removal project manager would stop work, remove ash from the vicinity of the damaged location and ensure that a repair was conducted. MWG Ex. 903, p. 39 (Seymour Expert Report).

108. The Joliet 29 Station operators inspected the pond liners during daily inspections and if any unusual condition were observed, the supervisor was notified, and the repairs were implemented. MWG Ex. 903, p. 38 (Seymour Expert Report).

109. **Joliet 29 Ash Pond 3 was used as a finishing pond.** JAS No. 10.

110. Joliet 29 Ash Pond 3 received a *de minimis* amount of ash. 1/29/18 Tr. p. 188:22-191:21 (Testimony of Race), MWG Ex. 602 (Total Suspended Solids Results of the Joliet 29 Ash Pond 3 Influent).

111. **In 2013, MWG relined Joliet 29 Pond 3 with a 60 mil HDPE liner.** JAS No. 11.

112. From the time Joliet 29 Ash Pond 3 was placed into service in 1978 until it was relined in 2013, the pond had never needed to be emptied because no ash accumulated in the pond. MWG Ex. 901, p. 15-16 (Seymour Presentation, SOF Attachment 1); 1/29/18 Tr. p. 192:3-12 (Testimony of Race).

113. The pond bottom elevation of the Ash Pond 3 is 517.5 feet. MWG Ex. 901, p. 18 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-3 (Seymour Expert Report); 2/1/18 Tr. p. 292:5-23.

114. The average groundwater elevation of the groundwater under Ash Pond 3 is 505.5 feet. MWG Ex. 901, p. 18 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-3 (Seymour Expert Report); 2/1/18 Tr. p. 292:5-23.

115. **By October 12, 2015, MWG removed all coal ash from Pond 1 and removed Pond 1 for service for coal ash.** JAS No. 12, 1/29/18 Tr. p. 198:13-16 (Testimony of Race).

116. The remaining ash in Joliet 29 Ash Pond 2 is scheduled to be removed and hauled to a permitted landfill. 1/29/18 T. p. 198:19-199:1 (Testimony of Race).

117. In 2015, MWG sampled the influent water into Joliet 29 Ash Pond 3 to determine the total suspended solids in the water entering the pond. 1/29/18 T. p. 190:18-191:11 (Testimony of Race); MWG Ex. 602 (Total Suspended Solids Results of the Joliet 29 Ash Pond 3 Influent).

118. The analysis showed that there were 20 mg/l of total suspended solids in the water entering Joliet 29 Ash Pond 3, which is a very small number and means the influent looked like clear water. 1/29/18 Tr. p. 191:12-21 (Testimony of Race); MWG Ex. 602 Total Suspended Solids Results of the Joliet 29 Ash Pond 3 Influent).

3.Other Ash Areas at Joliet 29 Station

119. Before MWG began operating at the Joliet 29 Station, ENSR, on behalf of the prior owner, identified two areas where ash had been placed as fill in the past ("historic ash areas") in the Phase II report. MWG Ex. 901, p. 23 (Seymour Presentation, SOF Attachment 1); Comp. Ex. 20D (Joliet 29 1998 ENSR Phase II).

120. One of the locations is on the northeast area of the Joliet 29 Station and the second is on the southwest area of the Joliet 29 Station. MWG Ex. 901, p. 23 (Seymour Presentation, SOF Attachment 1); MWG Ex. 667, p. 7 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County).

121. When MWG began operating Joliet 29, MWG considered the identified areas of historic ash and concluded, based upon the Phase II report and other advice, that no further investigation or remediation was required in the historic ash areas. 1/29/18 Tr. p. 206:20-207:13 (Testimony of Race).

122. Neither U.S. Environmental Protection Agency ("USEPA") nor the Illinois EPA have asked MWG to investigate either the of the historic ash areas at Joliet 29. 1/29/18 Tr. p. 185:20-24 (Testimony of Race).

123. In 2015, USEPA issued the Federal Coal Combustion Residual ("CCR") regulations, which also concluded that investigation and remediation of historic areas of ash does not require further investigation or remediation. 1/29/18 Tr. p. 207:14-22 (Testimony of Race).

124. The CCR regulations state that the USEPA was not aware of any damage cases associated with inactive CCR landfills and are at low risk of release. 80 F.R. 21342. 2/1/18 Tr. p. 224:12-225:6 (Testimony of Seymour).

125. The northeast area at Joliet 29 is a part of the Joliet 29 NPDES stormwater permit, and pursuant to that permit MWG ensures that the area is covered. 1/29/18 Tr. 183:17-21 (Testimony of Race).

126. MWG has consistently complied with the Joliet 29 stormwater permit requirements, conducted inspections of the area to ensure that there were soils and seeding grasses growing in the area. 1/29/18 Tr. p. 185:17-19 (Testimony of Race); 1/30/18 Tr. p. 258:11-20 (Testimony of Race).

127. MWG's consultant, KPRG & Associates ("KPRG"), conducts a walk-over inspection of the Joliet 29 northeast area on an annual basis to identify any erosional features that may have been exposed. Comp. Exs. 248-251 (2009-2012 Joliet 29 Northeast Area Inspections); MWG Ex. 803-805 (2012-2014 Joliet 29 Northeast Area Repair Documentations); 2/1/18 Tr. p. 112:20-113-3 (Testimony of Gnat).

128. In 2009, 2010, 2011 and 2012, KPRG observed some areas of erosion at portions of the Joliet 29 northeast area during its inspections. Comp. Ex. 248-251 (2012-2014 Joliet 29 Northeast Area Repair Documentations).

129. Within a few weeks of each inspection of the Joliet 29 northeast area, MWG had the areas repaired by a landscaping company. 10/26/17 Morning Tr. pp. 21:5-21, 23:16-10, 24:5-10, 26:2-9, 28:11-15 (Testimony of Gnat); MWG Exs. 800-803 (2010-2012 Joliet 29 Northeast Area Repair Documentation); 2/1/18 Tr. p. 115:11-20 (Testimony of Gnat).

130. At each inspection of the Joliet 29 northeast area, KPRG also looked at the repairs installed the year before and confirmed that. MWG's repairs were "done correctly and [were] holding up well." 2/1/18 Tr. p. 118:5-16 (Testimony of Gnat); 10/26/17 Morning Tr. p. 25:6-14, 27:2-14 (Testimony of Gnat); Comp Ex. 250-251 (2011-2012 Joliet 29 Northeast Area Inspection).

131. In the later inspections in 2013 through 2016 of the Joliet 29 northeast area, KPRG observed that there was no evidence of erosion and no repairs were necessary. 10/26/17 Morning Tr. 30:13-32:20 (Testimony of Gnat); 2/1/18 Tr. p. 119:19-120:1, 121:8-18, p. 122:6-21 (Testimony of Gnat); MWG Ex. 804-805 (2013-2014 Joliet 29 Northeast Area Repair Documentation).

132. KPRG noted that all of the prior repairs at the Joliet 29 northeast area continued to be in good condition and did not need to be redressed. 2/1/18 Tr. p. 120:9-12, 121:8-18 (Testimony of Gnat); MWG Ex. 804-805 (2013-2014 Joliet 29 Northeast Area Repair Documentation).

133. The cause of the erosion in the Joliet 29 northeast area is surface water runoff from rain and snow melt. 2/1/18 Tr. p. 123:6-15 (Testimony of Gnat).

134. The erosion in the Joliet 29 northeast area is not from river water flooding over the northeast area. 2/1/18 Tr. p. 123:16-21 (Testimony of Gnat).

135. The KPRG reports regarding the inspections and repairs to the Joliet 29 northeast area do not state nor support a conclusion that the erosion was caused by flooding from the Des Plaines River. 2/1/18 Tr. p. 124:3-11 (Testimony of Gnat).

136. The property adjacent to the west of Joliet 29 was formerly owned and operated by Caterpillar, Inc. ("Caterpillar"); the property is contaminated with metals in the groundwater. MWG Ex. 611 (CenterPoint Caterpillar Request to place ELUC at the southwest area at Joliet 29 Station); 1/30/18 Tr. p. 7:4-10, p. 9:5-18 (Testimony of Race).

137. The Caterpillar property was in the Illinois Site Remediation Program with the intention of getting a "No Further Remediation" letter due to the historic contamination. 1/30/18 Tr. p. 6:22-7:3 (Testimony of Race).

138. Contamination in the groundwater from the Caterpillar property, including metals, has migrated onto the Joliet 29 Station, and the current owners of the Caterpillar property requested that MWG allow an Environmental Land Use Control ("ELUC") to be established on that area to prevent any contact with metals in the groundwater. MWG Ex. 611 CenterPoint Caterpillar Request to place ELUC at the southwest area at Joliet 29 Station; 1/30/18 Tr. p. 7:4-10, 9:5-18 (Testimony of Race).

139. MWG agreed to the establishment of the ELUC, and on August 5, 2010, the ELUC was recorded on the MWG property with the Will County Recorder. MWG Ex. 612 (Joliet 29 Recorded ELUC – Aug. 5, 2010); 1/30/18 Tr. p. 7:24-8:2, 10:8-19 (Testimony of Race); MWG Ex. 901, p. 23 (Seymour Presentation, SOF Attachment 1).

140. The ELUC covers the western side of the Joliet 29 station, and under the terms of the ELUC MWG is restricted from using the groundwater and any soils that may be removed from the ELUC area. MWG Ex. 612, p. 2 Joliet 29 Recorded ELUC – Aug. 5, 2010); MWG Ex. 667, p. 6 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); 1/30/18 Tr. p. 11:16-12:21 (Testimony of Race); MWG Ex. 901, p. 23 (Seymour Presentation, SOF Attachment 1).

141. In 2005, MWG asked its consultant, KPRG, to determine whether fill material located on the north west side of the Joliet 29 Station met the requirements of CCB. Comp. Ex. 293 (Revised Joliet 29 CCB Report).

142. MWG requested the CCB evaluation at Joliet 29 to determine whether the ash in that area could be beneficially used. 1/29/18 Tr. p. 209:21-210:3 (Testimony of Race).

143. One of the potential beneficial uses of the coal ash at Joliet 29 was as a wind break along the existing coal storage piles. 10/25/17 Tr. p. 106:9-14 (Testimony of Gnat).

144. KPRG analyzed the Joliet 29 coal ash samples using test method ASTM D3987-85. 10/26/17 Morning Tr. p. 38:12-24 (Testimony of Gnat); Comp. Ex. 293, MWG13-15_19577 (Revised Joliet 29 CCB Report).

145. The samples and evaluation concluded with a high degree of statistical certainty that the ash in the Joliet 29 northwest area met the criteria established in the Illinois Environmental Protection Act and could be beneficially used. 10/26/17 Morning Tr. p. 39:20-40:7 (Testimony of Gnat); 1/29/18 Tr. p. 210:11-211:15 (Testimony of Race); 2/1/18 Tr. p. 275:5-276:18 (Testimony of Seymour); MWG Ex. 901, p. 9 (Seymour Presentation, SOF Attachment 1).

146. The levels of boron, manganese and barium in the Joliet 29 coal ash area were below the Illinois Class I groundwater standard. 1/29/18 Tr. p. 211:16-212:6 (Testimony of Race); MWG Ex. 293, p. MWG13-15_19588 (Revised Joliet 29 CCB Report); 2/1/18 Tr. p. 275:5-276:18 (Testimony of Seymour); MWG Ex. 901, p. 9 (Seymour Presentation, SOF Attachment 1).

147. KPRG concluded that the material sampled in the northwest area of Joliet 29 leached less metals than the criteria established under the Illinois Environmental Protection Act. 10/26/17 Tr. p. 40:8-12 (Testimony of Gnat).

148. The KPRG report for Joliet 29 included all the quality control data, which was expected because the report complied with the very high standards on how a report was to be prepared established by MWG. 1/29/18 Tr. p. 212:21-213:3 (Testimony of Race).

B. Powerton Station

149. **MWG operates the Powerton Electric Generating Station ("Powerton") located in Pekin, Tazewell County, Illinois.** JAS No. 17.

150. **MWG has operated the Powerton Station since 1999.** JAS No. 18.

151. A timeline of events for the Powerton Station can be found at MWG Ex. 664.

152. The Powerton Station began operations as a coal-fired power-plant with four coal-burning units in the late 1920s. MWG Ex. 901, p. 26 (Seymour Presentation, SOF Attachment 1); MWG Ex. 664, p. 1 (Powerton Timeline of Events); 1/30/18 Tr. p. 51:21-22 (Testimony of Race).

153. In the early 1970's Units 5 and 6, came on line and the original four units were retired. MWG Ex. 664, p. 1 (Powerton Timeline of Events); 1/30/18 Tr. p. 51:23-52:3 (Testimony of Race).

154. Units 5 and 6 are currently operating. 1/30/18 Tr. p. 52:14-15 (Testimony of Race).

155. The Powerton Station is in an industrial and agricultural area and is bordered to the north by the Illinois River. MWG Ex. 901, p. 27 (Seymour Presentation, SOF Attachment 1); 1/31/18 Tr. p. 68:5-8 (Testimony of Kelly); MWG Ex. 667, p. 10 (Powerton Timeline of Events).

156. The geology below the Powerton Station includes sands and gravels of the Henry Formation. MWG Ex. 621, MWG13-15_297 (2009 Hydrogeological Assessment of MWG Electric Generating Stations).

157. There are two groundwater flow units at the Powerton Station that are distinct and hydraulically connected. MWG Ex. 901, pp. 34 (Seymour Presentation, SOF Attachment 1); 2/2/18 Tr. p. 67:14-68:21 (Testimony of Seymour); MWG Ex. 260O, MWG13-15_62539-62540 (2Q2017 Powerton Quarterly Monitoring Report); 2/1/18 Tr. p. 129:14-18 (Testimony of Gnat).

158. The first groundwater unit is a silty-clay unit, that is not a continuous unit, and the groundwater flows from east to west. MWG Ex. 901, pp. 34 (Seymour Presentation, SOF Attachment 1); 2/2/18 Tr. p. 68:2-7 (Testimony of Seymour); 2/1/18 Tr. p. 129:18-21 (Testimony of Gnat); Ex. 260O, MWG13-15_62539; MWG Ex. 901, p. 34 (Seymour Presentation, SOF Attachment 1).

159. The second unit is a sandy gravel unit, which is larger and generally flows in a northerly direction towards the Illinois River. MWG Ex. 901, pp. 35 (Seymour Presentation, SOF Attachment 1); 2/2/18 Tr. p. 68:8-21 (Testimony of Seymour); Comp. Ex. 260O, MWG13-15_62540 (2Q2017 Powerton Quarterly Monitoring Report); 2/1/18 Tr. pp. 132:19-133:9 (Testimony of Gnat); MWG Ex. 901, p. 35 (Seymour Presentation, SOF Attachment 1).

160. In winter, MWG applies a significant amount of salt for safety throughout the Powerton Station. 1/31/18 Tr. p. 140:11-18 (Testimony of Kelly).

161. **There are no potable wells downgradient of the Powerton ash ponds**. 10/27/17 Tr. p. 181:4-182:7 (Testimony of Kunkel); 1/30/18 Tr. p. 79:11-20 (Testimony of Race); 2/1/18 Tr. p. 278:13-23 (Testimony of Seymour); 2/2/18 Tr. p. 79:10-13 (Testimony of Seymour); MWG Ex. 621, MWG13-15_299.

1.Powerton Station at Time MWG Began Operations

162. Before MWG began operating the Powerton Station in 1999, the prior owner conducted due diligence, including a Phase I and Phase II environmental site assessments of the Powerton Station. MWG Ex. 632 (Powerton ENSR Phase I 1998) and Comp. Ex. 17D (Powerton ENSR Phase II 1998); 10/23/18 Tr. p. 22-132:5 (Testimony of Race); 1/30/18 Tr. p. 52:19-54:23 (Testimony of Race).[5]

163. When the prior owner's consultant was conducting the Phase I at the Powerton Station in 1999, they observed that there was "no evidence of landfilling." 1/30/18 Tr. p. 53:21-23 (Testimony of Race) MWG Ex. 632, p. MWG13-15_8516 (Powerton ENSR Phase I 1998).

164. The Phase II for the Powerton Station concludes "There is no requirement under Illinois environmental law to further investigate or remediate this property." Comp. Ex. 17D,

[5] Pursuant to Hearing Officer Order of January 11, 2018, the admissible portions of the Phase I and Phase II reports are limited to specific questions raised during the Hearing.

MWG13-15_3277 (Powerton ENSR Phase I 1998); 10/23/17 Tr. p. 229:18-11 (Testimony of Race).

165. As MWG Director of Federal Environmental Programs Ms. Race testified, this was a portion of the Powerton Phase II that was relevant to the work she was doing with respect to the Stations and the ash ponds. 10/23/17 Tr. p. 230:7-12 (Testimony of Race).

2.Powerton Ash Basins

166. The Powerton Station is regulated by NPDES Permit No. IL0002232, and the ash ponds are operated pursuant to the limits, terms, and conditions in the NPDES permit. MWG Ex. 634 (Powerton NPDES Permit); 1/30/18 Tr. p. 65:13-66:24 (Testimony of Seymour).

167. A list and description of the Powerton active ash basins -- the Ash Surge Basin, the Bypass Basin, the Secondary Ash Basin, and the Metal Cleaning Basin -- is at p. 28 of the Seymour Presentation which is included as Attachment 1 to this SOF. MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1).

168. The primary ash basin at Powerton for the collection of ash is the Ash Surge Basin. 1/31/18 Tr. p. 75:20-23 (Testimony of Kelly); Ex. 667, p. 12 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); MWG Ex. 901, p. 27-28 (Seymour Presentation, SOF Attachment 1).

169. **The Powerton Ash Surge Basin was built in 1978 with a poz-o-pac liner on the bottom and Hypalon liner on the sides.** JAS No. 20, 1/30/18 Tr. p. 58:8-11; MWG Ex. 901, p. 27-28.

170. The poz-o-pac liner under the Powerton Ash Surge Basin is at least 12 inches thick. 1/31/18 Tr. p. 77:15-17 (Testimony of Kelly); MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1); MWG Ex. 500 (Pond Characterizations for MWG Stations).

171. The pond bottom elevation of the Powerton Ash Surge Basin is 452 feet. MWG Ex. 901, p. 30 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-4 (Seymour Expert Report); 2/2/18 Tr. p. 56:2-57:14 (Testimony of Seymour).

172. The average groundwater elevation of the groundwater under the Powerton Ash Surge Basin is 447 feet. MWG Ex. 901, p. 30 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-4 (Seymour Expert Report); 2/2/18 Tr. p. 56:2-57:14 (Testimony of Seymour).

173. The purpose of the Powerton Ash Surge Basin is to settle out the bottom ash and hold the ash that is processed in the facility. 1/30/18 Tr. p. 58:13-18 (Testimony of Race), 1/31/18 Tr. p. 75:16-19 (Testimony of Kelly).

174. MWG removes the bottom ash when the Powerton Ash Surge Basin is full of ash, which is generally every six to eight years, but could be less often as the Station operates less. 1/30/18 Tr. p. 58:22-59:6 (Testimony of Race); 1/31/18 Tr. p. 78:2-3 (Testimony of Kelly); MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1).

175. **In 2013, MWG relined the Powerton Ash Surge Basin with a 60 mil HDPE liner.** JAS No. 21.

176. The liner system installed in the Powerton Ash Surge Basin is: 12-inches poz-o-pac, geotextile, HDPE, geotextile, 12-inches sand and 6-inches limestone warning layer. MWG Ex. 901, pp. 30 (Seymour Presentation, SOF Attachment 1); MWG Ex. 703 (Construction Documentation for the Ash Surge Basin).

177. The most recent time that the Powerton Ash Surge Basin was emptied was in 2013 before MWG relined the basin. 1/31/18 Tr. pp. 81:8-10, 92:11-13 (Testimony of Kelly).

178. No vehicles have been in the Powerton Ash Surge Basin since 2013. 1/31/18 Tr. p. 92:11-17 (Testimony of Kelly).

179. **The Powerton Bypass Basin receives ash when Powerton is emptying the Ash Surge Basin.** JAS No. 30.

180. The Powerton Bypass Basin is not used often. 1/30/18 Tr. p. 59:17-21 (Testimony of Race).

181. **The Powerton Bypass Basin had a poz-o-pac liner on the bottom and Hypalon liner on the sides.** JAS No. 28.

182. The Powerton Bypass Basin was lined with a 12-inch-thick poz-o-pac liner MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1); 1/31/18 Tr. p. 99:3-6 (Testimony of Kelly); (MWG Ex. 500) (Pond Characterizations for MWG Stations).

183. The pond bottom elevation of the Powerton Bypass Basin is 459 feet. MWG Ex. 901, p. 31 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, p. 5-7 (Seymour Expert Report); 2/2/18 Tr. p. 56:2-57:14 (Testimony of Seymour).

184. The average groundwater elevation of the groundwater under the Powerton Bypass Basin is 450.5 feet. MWG Ex. 901, p. 31 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, p. 5-7 (Seymour Expert Report); 2/2/18 Tr. p. 56:2-57:14 (Testimony of Seymour).

185. Because the Powerton Bypass Basin is only used when MWG is emptying the Ash Surge Basin, it is emptied every six to eight years. 1/31/18 Tr. p. 99:7-16 (Testimony of Kelly); MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1).

186. **In 2010, MWG relined the Powerton Bypass Basin with a 60 mil HDPE liner.** JAS No. 29.

187. The liner system installed in the Powerton Bypass Basin is: 12-inches poz-o-pac, geotextile, HDPE, geotextile, 12-inches sand and 6-inches limestone warning layer. MWG Ex. 901, pp. 28, 31 (Seymour Presentation, SOF Attachment 1); MWG Ex. 706 (Construction Documentation for the Bypass Basin).

188. **Since before 1999, the Powerton Secondary Ash Settling Basin had a Hypalon liner.** JAS No. 22; MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1).

189. **The Powerton Secondary Ash Settling Basin is used as a finishing pond.** JAS No. 23; 1/31/18 Tr. p. 126:21-127:3 (Testimony of Kelly).

190. The pond bottom elevation of the Powerton Secondary Ash Basin is 440 feet. MWG Ex. 901, p. 32 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-5 (Seymour Expert Report); 2/2/18 Tr. p. 59:4-7 (Testimony of Seymour).

191. The average groundwater elevation of the groundwater under the Powerton Secondary Ash Basin is 441.5 feet. MWG Ex. 901, p. 32 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-5 (Seymour Expert Report); 2/2/18 Tr. p. 59:4-7 (Testimony of Seymour).

192. The Powerton Secondary Ash Settling Basin receives *de minimis* ash from the ash surge basin. 1/31/18 Tr. p. 127:4-6 (Testimony of Kelly); MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1).

193. The Powerton Secondary Ash Basin had never been emptied before it was cleaned out in preparation for the relining project in 2013. 1/31/18 Tr. p. 127:17-128:2 (Testimony of Kelly); 1/30/18 Tr. p. 60:15-19 (Testimony of Race).

194. There Powerton Secondary Ash Basin had never been dredged because there had never been a need for it, and there was no indication that any material needed to be cleaned out. 1/31/18 Tr. p. 128:8-15 (Testimony of Kelly).

195. **In 2013, MWG relined the Powerton Secondary Ash Settling Basin with a 60 mil HDPE liner.** JAS No. 24.

196. The liner system installed in the Powerton Secondary Ash Basin is: a prepared sub-grade and underdrain system, geotextile, and HDPE. MWG Ex. 901, pp. 32 (Seymour Presentation, SOF Attachment 1); MWG Ex. 710 **(**Construction Documentation of the Secondary Ash Basin Liner Replacement).

197. When the Station emptied the Powerton Secondary Ash Basin in 2013 there was "less than a foot of material and it really wasn't ash." 1/31/18 Tr. p. 127:17-128:2 (Testimony of Kelly).

198. The Powerton Secondary Ash Basin performs the same function as the Joliet 29 Ash Pond 3 and does not accumulate ash. 1/30/18 Tr. p. 102:2-12 (Testimony of Race).

199. The Powerton Secondary Ash Basin is not subject to the CCR rules for the same reasons as the Joliet 29 Ash Pond 3, as it was a finishing pond and did not accumulate ash. 1/30/18 Tr. p. 102:2-12 (Testimony of Race).

200. The Powerton Metal Cleaning Basin is not a part of the ash sluice system and instead is used during outages in the facility at the Station as a temporary lay-down area for ash cleaned out of the boiler tubes. 1/31/18 Tr. p. 115:3-14 (Testimony of Kelly).

201. **The Powerton Metal Cleaning Basin was constructed in 1978 with a 12-inch poz-o-pac liner on the bottom and a Hypalon liner on the sides.** JAS No. 25; MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1); 1/31/18 Tr. p. 16-22 (Testimony of Kelly).

202. The pond bottom elevation of the Powerton Metal Cleaning Basin is 457.5 feet. MWG Ex. 901, p. 29 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-6 (Seymour Expert Report); 2/2/18 Tr. p. 56:2-57:14 (Testimony of Seymour).

203. The average groundwater elevation of the groundwater under the Powerton Metal Cleaning Basin is 445 feet. MWG Ex. 901, p. 29 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-6 (Seymour Expert Report); 2/2/18 Tr. p. 56:2-57:14 (Testimony of Seymour).

204. **The ash in the Powerton Metal Cleaning Basin is dredged approximately on an annual basis.** JAS No. 27; 1/31/18 Tr. p. 117:6-7 (Testimony of Kelly); MWG Ex. 901, p. 28 (Seymour Presentation, SOF Attachment 1).

205. **In 2010, MWG relined the Powerton Metal Cleaning Basin with a 60 mil HDPE liner.** JAS No. 26; MWG Ex. 901, pp. 28-29 (Seymour Presentation, SOF Attachment 1).

206. The liner system installed in the Powerton Metal Cleaning Basin is: 12-inchs poz-o-pac, geotextile, HDPE, geotextile, 12-inches sand and 6-inches limestone warning layer. MWG Ex. 901, pp. 29 (Seymour Presentation, SOF Attachment 1); MWG Ex. 706 (Construction Documentation for the Metal Cleaning Basin).

a. Powerton Bottom Ash Analysis

207. In May 2004, MWG analyzed the bottom ash at the Powerton Station for its leachability using the ASTM D3987-85 method as required under the Illinois EPA Act. 1/30/18 Tr. p. 74:7-76:14 (Testimony of Race); MWG Ex. 635 (2004 Limestone Basin and Bottom Ash Sampling).

208. The results of the bottom ash sampling showed that the levels of the metals in the coal ash were primarily non-detect, and only barium, boron and zinc were detected. 1/30/18 Tr. p. 74:11-19 (Testimony of Race); MWG Ex. 635, p. MWG 13-15_11344 (2004 Limestone Basin and Bottom Ash Sampling); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

209. The concentrations of boron, barium, and zinc in the bottom ash were below the Illinois Class I groundwater standards. 1/30/18 Tr. p. 74:11-19 (Testimony of Race), MWG Ex. 635, p. MWG 13-15_11344 (2004 Limestone Basin and Bottom Ash Sampling); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

210. In March 2007, MWG analyzed the bottom ash at the Powerton Station for its leachability using the ASTM D3987-85 method as required under the Illinois EPA Act. 1/31/18 Tr. p. 72:18-74:11 (Testimony of Kelly); MWG Ex. 700 (2007 Analytical Report of Bottom Ash).

211. The results of the bottom ash showed that the levels of the metals in the coal ash were primarily non-detect, and only barium was detected. 1/31/18 Tr. p. 74:1-11 (Testimony of Kelly); MWG Ex. 635, p. MWG 13-15_10951 (2004 Limestone Basin and Bottom Ash Sampling); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

212. The concentration of barium in the bottom ash was below the Illinois Class I groundwater standards. MWG Ex. 635, p. MWG 13-15_10951 (2004 Limestone Basin and Bottom Ash Sampling); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

b. Inspections of Ash Ponds at Powerton

213. Even before MWG began operating the Powerton Station, Station operators inspected the ash ponds at least three times per days a part of the rounds made during each shift. 1/31/18 Tr. p. 145:2-23 (Testimony of Kelly).

214. That practice of regular inspections continued when MWG took over operations at Powerton in 1999. 1/31/18 Tr. p. 145:18-146:3 (Testimony of Kelly).

215. If an operator were to see an issue with the pond liner, the operator would contact a supervisor or directly contact Powerton Chemical Specialist, Mr. Kelly, the Station Chemical Specialist, and notify him of the issue. 1/31/18 Tr. p. 146:4-11 (Testimony of Kelly).

216. Upon notification, Powerton Chemical Specialist Mr. Kelly would make arrangements for a repair to the pond liner, contacts the contractor who conducts the repair, and it typically takes one to two weeks to conduct a repair. 1/31/18 Tr. p. 146:4-145:5 (Testimony of Kelly).

217. Tears in the pond liners in the basins did not occur often and typically occurred at the very top of the basins, above the water line. 1/31/18 Tr. p. 146:12-21 (Testimony of Kelly).

218. Powerton Chemical Specialist, Mr. Kelly, has never been told not to fix a tear, nor has he ever decided not to fix a tear. 1/31/18 Tr. p. 147:6-12 (Testimony of Kelly).

c. Powerton Ash Removal Process from Active Ash Basins

219. When the Powerton Ash Surge Basin, Bypass Basin, or the Metal Cleaning Basin are dredged, trained MWG operators operate the machinery inside the basin to remove the ash. 1/31/18 Tr. pp. 78:4-10, 99:17-20, 116:15-22 (Testimony of Kelly).

220. Before the dredging begins, the Powerton Station has a meeting to discuss the project and lay out the safety objectives, including be aware of the liner to avoid any damage to the liner. 1/31/18 Tr. p. 99:23-100:2, 116:15-22 (Testimony of Kelly).

221. Following the meeting, the Powerton Station dewaters the basin, and then the operators enter the basin to move the material and stock pile it to let more water to fall out of the material such that the material is as dry as possible before transport. 1/31/18 Tr. pp. 78:24-79:5, 100:3-6, 116:22-117:2 (Testimony of Kelly).

222. The trucks do not drive into the Powerton Bypass Basin or the Metal Cleaning Basin because they are not big enough, but instead stay on the top of the road or on the ramp. 1/31/18 Tr. pp. 100:12-17 (Testimony of Kelly).

223. The equipment the operators use in the Powerton Ash Surge Basin are end loaders with buckets and rubber tires. 1/31/18 Tr. pp. 79:6-12, 100:7-11, 116:22-117:5 (Testimony of Kelly).

224. Powerton Chemical Specialist, Mr. Kelly, described the operators as "careful," "very methodical and very particular about what they're doing, yes" 1/31/18 Tr. pp. 79:13-21, 117:8-15 (Testimony of Kelly).

225. When MWG is dredging a pond, the pond is not in service, which means there is no water in the basin. 1/31/18 Tr. p. 80:13-21 (Testimony of Kelly).

226. Once MWG has completed removing the ash from a basin, MWG inspects the basin to verify that the ash was removed safely. 1/31/18 Tr. p. 81:2-7, 100:18-101:1 (Testimony of Kelly)

227. Once the inspection is completed, MWG puts the basin back in service. 1/31/18 Tr. p. 81:2-7, 100:18-101:1 (Testimony of Kelly).

228. When the ash is removed from the basins, the Powerton ash is beneficially used for mine reclamation at the Buckheart Mine. 1/31/18 Tr. p. 71:7-11, 101:2-5, 116:10-15 (Testimony of Kelly).

229. If there is an incident related to the liner during a Powerton basin clean out, the operators stop their work and either call their supervisor or call, Powerton Chemical Specialist, Mr. Kelly, to inspect the damage, see the work required to conduct a repair, and schedule a repair. 1/31/18 Tr. pp. 80:1-8, 101:6-10 (Testimony of Kelly).

230. After the inspection of the tear, Powerton Chemical Specialist, Mr. Kelly contacts Clean Air and Water, the company that installed the liners, to conduct the repair, and typically it takes about a week to two weeks to complete the repair. 1/31/18 Tr. pp. 80:9-12, 80:22-81:1, 101:11-13 (Testimony of Kelly).

d. Other Powerton Basins

231. The Powerton Station has other basins that are unrelated to the current coal ash management at the Station. 1/31/18 Tr. p. 138:5-11 (Testimony of Kelly), MWG Ex. 667 p. 12 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County).

232. The Powerton East Yard Run-off Basin, located southwest of the Ash Surge Basin, is not a part of the ash sluicing flow system, is not used for ash storage, nor does it receive ash.

1/31/18 Tr. p. 138:5-11 (Testimony of Kelly); MWG Ex. 667 p. 12 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County).

233. The Powerton East Yard Run-off Basin is used for stormwater runoff from the east half of the property at the Station. 1/31/18 Tr. p. 138:12-14 (Testimony of Kelly).

234. In 2015, Illinois EPA concluded that the chlorides found in the East Yard Runoff Basin at Powerton was not due to coal ash, but from "deicing agents" applied at the Station. 1/31/18 Tr. p. 139:9-24 (Testimony of Kelly); MWG Ex. 711 (Modification of the Powerton CCA regarding the East Yard Run-off Basin).

235. **The Limestone Basin at the Powerton Electric Generating Station is lined on the bottom with a poz-o-pac liner.** MWG Ex. 667, p. 15, JAS No. 31.

236. Before 2013, the Powerton Limestone Basin had a Hypalon liner on the sides. 1/31/18 Tr. p. 144:12-145:1 (Testimony of Kelly).

237. The Powerton Limestone Runoff Basin is a historic basin that has not been used as part of the Station operations since 1989. 1/31/18 Tr. p. 144:2-6 (Testimony of Kelly).

238. The Powerton Limestone Basin been used to temporarily store coal ash when equipment changes occurred at the Station. 1/30/18 Tr. p. 70:2-7 (Testimony of Race); 1/31/18 Tr. p. 144:13-24 (Testimony of Kelly).

239. In 2004, there was coal ash in the Powerton Limestone Basin from when equipment was taken out of service. 1/30/18 Tr. p. 70:2-71:4 (Testimony of Race); MWG Ex. 635 (2004 Limestone Basin and Bottom Ash Sampling).

240. MWG analyzed the material in the Powerton Limestone Basin in 2004 for its leachability using the ASTM D3987-85 method as required under the Illinois EPA Act. 1/30/18 Tr. p. 70:2-71:4 (Testimony of Race).

241. The results of the ash sampling in the Powerton Limestone Basin showed that the levels of the metals in the coal ash were primarily non-detect, except for chromium and selenium which were below groundwater standards. 1/30/18 Tr. p. 71:14-22 (Testimony of Race), MWG Ex. 635, MWG 13-15_11341 (2004 Limestone Basin and Bottom Ash Sampling); MWG Ex. 901, p. 9 (Seymour Presentation, SOF Attachment 1); 2/1/18 Tr. p. 275:5-276:18 (Testimony of Seymour).

242. In particular, the levels for boron, barium, sulfate and manganese in the coal ash were below the Illinois Class I groundwater standards. 1/30/18 Tr. p. 71:14-22 (Testimony of Race); MWG Ex. 635, p. MWG 13-15_11341 (2004 Limestone Basin and Bottom Ash Sampling); MWG Ex. 901, p. 9 (Seymour Presentation, SOF Attachment 1); 2/1/18 Tr. p. 276:3-18 (Testimony of Seymour).

243. Since 2013, the Limestone Runoff Basin has been empty. 1/31/18 Tr. p. 144:7-145:1. (Testimony of Kelly).

244. There is an inactive ash area on the north side of the Powerton Station called the Former Ash Basin. 1/31/18 Tr. p. 141:19-23 (Testimony of Kelly); MWG Ex. 667, p. 15 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); MWG Ex. 901, p. 38 (Seymour Presentation, SOF Attachment 1).

245. Since MWG began operations at the Powerton Station in 1999, ash was not routed to the Former Ash Basin. 1/31/18 Tr. p. 142:10-13 (Testimony of Kelly).

246. The Powerton Former Ash Basin area is a part of the Station's NPDES permit as an emergency overflow for the Ash Surge Basin. 1/30/18 Tr. p. 61:14-17 (Testimony of Race); 1/31/18 Tr. p. 142:14-18 (Testimony of Kelly).

247. In extreme cases, water from the Powerton Ash Surge Basin may flow to the Former Ash Basin, which has only happened twice since 2008. 1/31/18 Tr. p. 143:19-144:2 (Testimony of Kelly).

248. **Monitoring wells MW-2 through MW-5 at Powerton are located downgradient and monitoring well MW-1 is side-gradient to the Former Ash Basin. MWG Ex. 667, p. 11** (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); MWG Ex. 901, pp. 33, 38 (Seymour Presentation, SOF Attachment 1); 10/27/17 Tr. p. 205:20-206:9 (Testimony of Kunkel).

249. The Second Quarter 2017 ("2Q2017") sampling results for the Powerton Station has the results for the most recent eight quarters, from May 2015 through May 2017. Comp. Ex. 260O (2Q2017 Powerton Quarterly Monitoring Report); 10/27/17 Tr. p. 204:9-210:22 (Testimony of Kunkel).

250. **Complainants' expert, Dr. James Kunkel ("Kunkel"), agreed that groundwater monitoring results for the wells downgradient of the Powerton Former Ash Basin all had concentrations of boron, sulfate, and manganese below the Class I groundwater standard.** 10/27/17 Tr. p. 210:16-22 (Testimony of Kunkel).

251. Seymour made the same observation, stating that the downgradient wells all had concentrations less than the Illinois Class I groundwater standard. 2/1/18 Tr. p. 277:1-13, 2/2/18 Tr. p. 70:17-71:22 (Testimony of Seymour).

C. Waukegan Station

252. **MWG owns and operates the Waukegan Electric Generating Station ("Waukegan") located in Waukegan, Lake County, Illinois.** JAS No. 32.

253. **MWG has owned and operated the Waukegan Station since 1999.** JAS No. 33.

254. A timeline of events for the Waukegan Station can be found at MWG Ex. 665.

255. The groundwater at the Waukegan Station generally flows to the east, southeast, but there is some divergence of the groundwater flow that goes towards the north, northwest towards the intake channel of Lake Michigan. MWG Ex. 901, p. 49 (Seymour Presentation, SOF

Attachment 1); MWG Ex. 813 (Waukegan 2017 Groundwater Flow Map); 2/1/18 Tr. p. 154:22-155:9 (Testimony of Gnat).

256. Historical information shows that the Waukegan Station was built in about 1923 and has been a power plant ever since. MWG Ex. 665, p. 1 (Waukegan Power Station Timeline of Events); MWG Ex. 901, p. 44 (Seymour Presentation, SOF Attachment 1); 1/30/18 Tr. p. 121:11-15 (Testimony of Race).

257. Currently, there are two coal-fired electricity generating units operating at Waukegan which began operating in 1958 and 1962. MWG Ex. 665, p. 1 (Waukegan Timeline of Events); 1/30/18 Tr. p. 121:16-122:8 (Testimony of Race).

258. The area around the Waukegan Station has historically been dominated by industries since at least the 1930s, including the Johns Manville Company, an active Superfund Site, to the north, the Griess-Pfleger Tannery and the General Boiler Site to the west, and the North Shore Sanitary District to the south. 1/31/18 Tr. p. 223:10-21 (Testimony of Kelly); MWG Ex. 667, p. 25 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County).

259. There is a former North Shore Gas North Plant, manufactured gas plant further southwest of the property and the Johnson Marine Plant, another active Superfund Site further south. 1/31/18 Tr. p. 223:10-21 (Testimony of Veenbaas); 2/1/18 Tr. p. 162:13-163:8 (Testimony of Gnat); MWG Ex. 667, p. 27 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County) and MWG Ex. 807 (Waukegan Aerial Map of Historic Areas).

260. There have been active cleanup operations and an arsenic plume at the Johns Manville Superfund Site. 1/30/17 Tr. p. 123:17-24-124:2 (Testimony of Race).

261. In winter, salt is placed on the roads for safety at the Waukegan Stations. 1/31/18 Tr. p. 240:16-241:12 (Testimony of Veenbaas).

262. **There are no potable wells downgradient of the Waukegan ash ponds**. 10/27/17 Tr. p. 181:4-182:7 (Testimony of Kunkel); 1/30/18 Tr. p. 157:5-19 (Testimony of Race); 2/1/18 Tr. p. 278:13-23 (Testimony of Seymour); 2/2/18 Tr. p. 105:18-21 (Testimony of Seymour).

1.Griess-Pfleger Tannery Site and General Boiler Property

263. The properties directly west of the Waukegan Station are the Griess-Pfleger Tannery Site and the General Boiler Property and are in the Illinois EPA Sites Remediation Program. MWG Ex. 667, p. 25 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); MWG Ex. 901, p. 56-57 (Seymour Presentation, SOF Attachment 1); MWG Ex. 807 (Waukegan Aerial Map of Historic Areas); 1/30/18 Tr. p. 124:16-125:3 (Testimony of Race)

264. The General Boiler Property has a number of contaminants due to historical use, and the site is involved in the Illinois EPA Site Remediation Program. 1/30/18 Tr. p. 124:22-125:3 (Testimony of Race).

265. An investigation of the General Boiler Property showed that the property contained arsenic above remediation benchmarks and contains a fly ash fill area. MWG Ex. 623, p. MWG13-15_472 (Powerton Supplemental Response to Illinois EPA VN).

266. The former Griess-Pfleger Tannery was built in 1917 and operated as a leather tanning facility from 1918 through 1973. MWG Ex. 643, p. MWG13-15_47089 (Remedial Investigation Report – Phase I for the Former Griess-Pfleger Tannery Site).

267. The chemical tanning process at the former Griess-Pfleger Tannery used the chromium tanning process, which consisted of nine steps and involved numerous chemicals including borax. MWG Ex. 643, p. MWG13-15_47089 (Remedial Investigation Report – Phase I for the Former Griess-Pfleger Tannery Site); 1/30/18 Tr. p. 130:2-17 (Testimony of Race).

268. Soil borings from the Griess-Pfleger Tannery site investigation showed that there was some coal and angular slag in the soil borings. MWG Ex. 643, p. MWG13-15_47180-47181 (Remedial Investigation Report – Phase I for the Former Griess-Pfleger Tannery Site); 1/30/18 Tr. p. 131:6-134:2 (Testimony of Race).

269. A groundwater investigation of the Griess-Pfleger Tannery site showed that groundwater containing arsenic exceeding the Illinois Class I standard was migrating onto the Waukegan Station. MWG Ex. 644, p. MWG13-15_46627 (Phase II Remedial Investigation Report for the Former Griess-Pfleger Tannery Site); 1/30/18 Tr. pp. 135:23-136:18, 138:3-139:3 (Testimony of Race).

270. The groundwater investigation at the Griess-Pfleger Tannery site showed other contaminants in the groundwater were also above the Class I standard, including chromium, cadmium, mercury, lead, manganese, iron and total dissolved solids. MWG Ex. 644, p. MWG13-15_46629-46630 (Phase II Remedial Investigation Report for the Former Griess-Pfleger Tannery Site); 1/30/18 Tr. p. 136:19-138:1 (Testimony of Race).

271. A 1998 environmental site assessment of the Waukegan Station identified a plume of arsenic from the Griess-Pfleger Tannery site onto the Waukegan Station. Ex. 19D, p MWG13-15_45800 (Waukegan 1998 ENSR Phase II); 1/301/8 Tr. p. 155:10-21 (Testimony of Race).[6]

272. Upon purchase of the Waukegan Station, MWG was informed that "There is no requirement under Illinois environmental law to further investigate or remediate this property." Comp.'s Ex. 19D, p. MWG13-15_45801 (Waukegan 1998 ENSR Phase II).

273. In response to the arsenic contamination, the owner of the Griess-Pfleger Tannery site removed impacted soil and instituted use restrictions on the Griess-Pfleger Tannery site, and on the MWG property, to prevent any use of the groundwater, but was not required to treat the groundwater. MWG Ex. 645, p. MWG13-15_46255-46256 (Remediation Objectives Report for the Former Griess-Pfleger Tannery Site); 1/30/18 Tr. p. 141:23-142:12 (Testimony of Race).

[6] Pursuant to Hearing Officer Order of January 11, 2018, the admissible portions of the Phase I and Phase II reports are limited to specific questions raised during the Hearing.

274. **In 2003, the Griess-Pfleger property owner established an Environmental Land Use Control ("ELUC") on the western side of the Waukegan Station property.** JAS No. 38.MWG Exs. 646 (ELUC established on a portion of the Waukegan Station); 667, p. 22 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); 1/30/18 Tr. p. 142:23-144:4 (Testimony of Race).

275. **The ELUC was established to protect against "exposure to contaminated soil or groundwater or both, that may be present on the property as a result of past industrial activities on adjacent property known as the Griess-Pfleger Tannery Site."** ***Environmental Land Use Control,*** **filed with Lake County, IL Recorder, June 6, 2003.** JAS No. 39.

276. The Griess-Pfleger Tannery ELUC covers a portion of a grassy area that lies to the west of the Waukegan ponds; no agency has requested further investigation of the grassy area. 1/30/18 Tr. pp. 159:22-160:10, 160:15-21 (Testimony of Race).

277. The owner of the Griess-Pfleger Tannery site continues to sample the groundwater on the tannery property and on the Waukegan Station on a semiannual basis in groundwater wells installed within the area of the ELUC ("ELUC wells"). 1/30/18 Tr. p. 146:9-23 (Testimony of Race); Comp. Ex. 39F, 40F, 42F, 42.5F (Tannery ELUC Annual Groundwater Results).

278. MWG reviewed the groundwater results from the ELUC wells and concluded that the arsenic, iron, manganese, and TDS concentrations in the ELUC wells on the Waukegan Station were higher than the concentrations predicted in the modeling to establish the ELUC. Comp. Ex. 41F, p. MWG13-15_46117-46118 (Review of Tannery ELUC Groundwater Data); 1/30/18 Tr. p. 148:13-149:23 (Testimony of Race).

279. The 2016 groundwater results from the ELUC wells show that there continues to be contamination from the tannery site migrating onto the Waukegan Station. MWG Ex. 901, p. 56-57 (Seymour Presentation, SOF Attachment 1); Comp. Ex. 42.5F (2016 Tannery ELUC Annual Groundwater Results).

280. In 2016, the concentration of arsenic in the ELUC wells on the Waukegan Station property, downgradient of the tannery property, remained above the Illinois Class I standard and was not decreasing. Comp. Ex. 42.5F, p. MWG13-15_61554, 61562 (2016 Tannery ELUC Annual Groundwater Results); 1/30/18 Tr. p. 151:15-24, 152:18-153:1 (Testimony of Race).

281. In 2016, the levels of manganese in the ELUC wells continue to be above the Class I groundwater standard. Comp. 42.5F, p. MWG13-15_61562 (2016 Tannery ELUC Annual Groundwater Results); 1/30/18 Tr. p. 153:8-154:4 (Testimony of Race).

2. Waukegan Ash Ponds

282. There are two ash ponds at the Waukegan Station located on the southern side of the Station – the East Pond and the West Pond. MWG Ex. 901, p. 45, 46 (Seymour Presentation, SOF Attachment 1); MWGW Ex. 667, p. 20 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County).

283. A list and description of the Waukegan ash ponds is at p. 46 of the Seymour Presentation which is included as Attachment 1 to this SOF. MWG Ex. 901, p. 26 (Seymour Presentation, SOF Attachment 1).

284. **The East Pond and West Pond at Waukegan were originally constructed in 1977 with Hypalon liners.** JAS No. 34; MWG Ex. 901, p. 45, 46.

285. **In 2003, MWG relined the Waukegan East Pond with a 60 mil HDPE liner.** JAS No. 35; MWG Ex. 901, p. 46 (Seymour Presentation, SOF Attachment 1).

286. **In 2004, MWG relined the Waukegan West Pond with a 60 mil HDPE liner.** JAS No. 36; MWG Ex. 901, p. 46 (Seymour Presentation, SOF Attachment 1).

287. The Waukegan East Pond and West Pond are "U-shaped". 1/31/18 Tr. p. 225:22-226:4 (Testimony of Veenbaas); MWG Ex. 901, p. 45 (Seymour Presentation, SOF Attachment 1).

288. The Waukegan Station is regulated by NPDES Permit No. IL0002259, and the ash ponds are permitted pursuant to that permit. MWG Ex. 642 (Waukegan NPDES Permit); 1/30/18 Tr. p. 120:4-18 (Testimony of Race).

289. Since MWG's purchase, only bottom ash is placed into the Waukegan East Ash Pond or West Ash Pond. 10/24/17 Tr. pp. 39:3-5, 47:4-7 (Testimony of Lux); 1/31/18 Tr. p. 245:11-14 (Testimony of Veenbaas).

290. The pond bottom elevation of the Waukegan East Ash Pond and West Ash Pond is 585.5 feet. MWG Ex. 901, p. 47 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-8, 5-9 (Seymour Expert Report); 2/2/18 Tr. p. 84:16-85:7 (Testimony of Seymour).

291. The average groundwater elevation of the groundwater under the Waukegan East Ash Pond is 582 feet. MWG Ex. 901, p. 47 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-8 (Seymour Expert Report); 2/2/18 Tr. p. 84:16-85:7 (Testimony of Seymour).

292. The average groundwater elevation of the groundwater under the Waukegan West Ash Pond is 583 feet. MWG Ex. 901, p. 4 (Seymour Presentation, SOF Attachment 1); MWG Ex. 903, Fig. 5-9 (Seymour Expert Report); 2/2/18 Tr. p. 84:16-85:7 (Testimony of Seymour).

293. **Only one pond at Waukegan (East Pond *or* West Pond) is in service at a time.** JAS No. 37.

294. The Waukegan East Pond and West Pond alternate receiving bottom ash. 10/24/17 Tr. p. 162:3-6 (Testimony of Lux); 1/30/18 Tr. p. 118:13-18 (Testimony of Race); 1/31/18 Tr. p. 230 (Testimony of Veenbaas).

295. Generally, most of the bottom ash from the Waukegan Station settles out on the influent side of the "U" of the pond. 10/24/17 Tr. p. 163:15-24 (Testimony of Lux); 1/31/18 Tr. p. 235:4-10 (Testimony of Veenbaas); 2/2/18 Tr. p. 82:15-83:4 (Testimony of Seymour).

296. The other side of the "U" of the Waukegan ponds, the effluent side, generally has water and only a little bit of bottom ash." 10/24/17 Tr. p. 163:15-24 (Testimony of Lux); 1/31/18 Tr. p. 235:4-10 (Testimony of Veenbaas).

297. In July 2004, MWG analyzed the bottom ash at the Waukegan Station for its leachability using the ASTM D3987-85 method as required under the Illinois EPA Act. 2/1/18 Tr. p. 158:9-160:6 (Testimony of Gnat); MWG Ex. 806 (2004 Bottom Ash Sampling Results).

298. The results of the bottom ash sampling showed that the levels of the metals in the coal ash were primarily non-detect, and only barium and boron were detected below groundwater standards. MWG Ex. 806, MWG 13-15_12812, 12815 (2004 Bottom Ash Sampling Results); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

3.Relining of the Waukegan Ash Ponds

299. Before 2003, the Waukegan Station decided that the ash pond liners at the Stations should be relined as part of maintenance at the Station. 1/30/18 Tr. p. 110:22-111:1, 117:6-12 (Testimony of Race); 10/24/17 Tr. p. 167:15-22 (Testimony of Race).

300. There was no regulatory requirement to reline the ash ponds. 1/30/18 Tr. p. 117:3-5 (Testimony of Race).

301. Illinois EPA considered the Waukegan liner replacement as maintenance rather than new construction requiring a permit. 1/30/18 Tr. p. 114:20-7 (Testimony of Race).

302. After the HDPE liner was laid, MWG installed 12-inches of sand and then 6-inches of limestone on the top of the liner. MWG Ex. 901, p. 46-47 (Seymour Presentation, SOF Attachment 1); 10/24/17 Tr. p. 139:4-13 (Testimony of Lux); MWG Ex. 500 (Pond Characterizations for MWG Stations).

4.Dredging at the Waukegan Ash Ponds

303. Historically, each pond at the Waukegan Station was dredged approximately every other year. MWG Ex. 901, p. 46 (Seymour Presentation, SOF Attachment 1); 10/24/17 Tr. p. 162:10-16 (Testimony of Lux); 1/30/18 Tr. p. 118:19-22 (Testimony of Race).

304. Recently the capacity factor for the Waukegan Station is down, and thus less bottom ash is generated causing a longer timeframe, approximately three to four years, between dredging. MWG Ex. 901, p. 46 (Seymour Presentation, SOF Attachment 1); 10/24/17 Tr. p. 162:17-163:4 (Testimony of Lux), 1/30/18 Tr. p. 118:22-24 (Testimony of Race); 1/31/18 Tr. p. 230:15-231:4 (Testimony of Ms. Veenbaas).

305. When the Waukegan ponds are dredged, MWG takes actions to prevent the liner from being damaged during dredging. 10/24/17 Tr. p. 130:16-20 (Testimony of Lux).

306. Waukegan, Engineering Manager, Mr. Lux testified that the liners in the Waukegan ponds are "a high priority." 10/24/18 Tr. p. 128:13-14 (Testimony of Lux).

307. The first step in dredging a Waukegan pond is to dewater the pond scheduled to be dredged, such that only ash remains in that pond. 10/24/17 Tr. p. 159:8-18 (Testimony of Lux).

308. MWG has a pre-job brief with the company that conducts the dredging at Waukegan, LaFarge North America ("LaFarge"), to remind LaFarge to avoid the liner in the ash pond. 10/24/17 Tr. p. 130:23-131:3 (Testimony of Lux).

309. The dredging contractor is instructed to move methodically and carefully while operating the equipment in the pond to ensure that the liner in the ash pond is not teared. 10/24/17 Tr. p. 166:20-167:2 (Testimony of Lux).

310. At Waukegan, LaFarge uses front end loaders with rubber tires to remove the ash and lift the ash into trucks, which also have rubber tires. 1/31/18 Tr. p. 235:12-19 (Testimony of Veenbaas).

311. Waukegan Senior Compliance Specialist, Mr. Veenbaas testified that LaFarge was careful, methodical, and deliberate when operating its machinery in the Waukegan Ponds. 1/31/18 Tr. p. 237:1-7 (Testimony of Veenbaas).

312. Waukegan Station personnel are periodically at the ash pond being emptied during the dredging, so that if there were a tear or damage to the liner, the Station would be quickly notified to conduct the repair. 10/24/17 Tr. p. 160:5-17 (Testimony of Lux).

313. The LaFarge equipment operators do not drive quickly while maneuvering the equipment in the Waukegan ponds. 10/24/17 Tr. p. 165:21-166:2 (Testimony of Lux).

314. When dredging a pond at Waukegan, LaFarge typically leaves ash material on the slopes of the pond liner, and ash material on the bottom above the warning layer, to avoid damage to the pond liner. 10/24/17 Tr. p. 131:3-16 (Testimony of Lux); 1/31/18 Tr. p. 236:16-20 (Testimony of Veenbaas).

315. The Waukegan ash ponds also have 20-foot tall warning posts at the edge of the bottom of the pond, to help identify the bottom of the slope of the pond, which help the equipment operators stay away from the liner. 10/24/17 Tr. p. 131:23-132:11 (Testimony of Lux); 1/31/18 Tr. p. 236:11-15 (Testimony of Veenbaas).

316. Because most of the bottom ash collects on one side of the Waukegan Ash Pond in service, LaFarge is only dredging half of the pond, and at times even less. 10/24/17 Tr. p. 164:2-8 (Testimony of Lux); 1/31/18 Tr. p. 235:11-19 (Testimony of Veenbaas).

317. Both Waukegan, Engineering Manager Mr. Lux and Senior Compliance Specialist, Mr. Veenbaas, testified that they had never seen the limestone layer on the bottom of the Waukegan ash ponds, and had never seen the protective layer impacted or damaged during dredging. 10/24/17 Tr. p. 131:17-20 (Testimony of Lux); 1/31/18 Tr. pp. 235:20-23, 237:11-17 (Testimony of Veenbaas).

318. When the dredging of an ash pond is complete, one of the project managers at the Waukegan Station conducts a walkthrough of the ash pond to ensure that LaFarge did not damage

the pond liner, nor any damage to the protective layer on the bottom of the pond, or the ramp into the ash pond. 10/24/17 Tr. p. 167:3-14 (Testimony of Lux).

319. Upon confirmation that there is no damage to the ash pond liner or the ash pond, the project manager at Waukegan releases the pond for operations to put the pond back in service. 10/24/17 Tr. p. 167:11-14 (Testimony of Lux).

320. LaFarge takes the Waukegan ash off site for beneficial use. 1/31/18 Tr. p. 234:18-19 (Testimony of Veenbaas).

5.Inspections of the Waukegan Ash Ponds

321. The Waukegan ponds are inspected at least once per day and often multiple times per day as part of the operators' rounds. 10/24/17 Tr. p. 126:20-127:6 (Testimony of Lux); 1/31/18 Tr. p. 237:20-23 (Testimony of Veenbaas).

322. If damage to a Waukegan pond liner is observed during one of the inspections, then the operator notifies the supervisor who notifies, Waukegan Engineering Manager, Mr. Lux to begin the repair process. 10/24/17 Tr. p. 128:2-9 (Testimony of Lux); 1/31/18 Tr. p. 228:23-239:5 (Testimony of Veenbaas).

323. Upon notification, Waukegan, Engineering Manager, Mr. Lux ensures that the water level is below the damage and retains a contractor to repair the damage including issuing a purchase order. 10/24/17 Tr. pp. 128:13-21, 143:11-144:1 (Testimony of Lux); 1/31/18 Tr. p. 239:6-8 (Testimony of Veenbaas).

324. There have been about five or six tears in the Waukegan ponds since 2003. 10/24/17 Tr. p. 145:5-8 (Testimony of Lux).

325. All of the tears in the Waukegan ponds were above the line of the water in the pond. 10/24/17 Tr. pp. 144:2-7, 145:12-17 (Testimony of Lux).

326. All of the tears in the Waukegan ponds were all repaired. 10/24/17 Tr. pp. 144:2-7, 145:9-17 (Testimony of Lux).

327. Typically, the repair contractor conducts the repair within one or two weeks. 1/31/18 Tr. p. 239:9-11 (Testimony of Veenbaas).

328. Waukegan Engineering Manager, Mr. Lux, Lux has never been told not to fix a tear in the Waukegan ponds, nor has he ever decided not to fix a tear. 10/24/17 Tr. p. 169:21-170:2 (Testimony of Lux).

329. MWG fixes all leaks and tears in the ash ponds, as quickly as possible. 1/31/18 Tr. p. 240:5-15 (Testimony of Veenbaas).

a. Berm Inspections

330. MWG has retained a contractor to annually inspect the eastern berm on the Waukegan East Ash Pond to assess the condition of the berm. 10/24/17 Tr. p. 140:1-4 (Testimony of Lux); Comp. Ex. 100 (2015 Waukegan Ash Pond Berm Inspection).

331. The inspections of the East Ash Pond berm are a regular part of ensuring the safety of the ponds at Waukegan. 10/24/17 Tr. p. 142:17-20 (Testimony of Lux).

332. Upon receipt of the East Ash Pond berm inspection report, if there are any issues noted, Waukegan Station conducts a repair. 10/24/17 Tr. p. 142:21-143:10 (Testimony of Lux).

b. 2005 Inspection of the Waukegan Ash Pond Liners

333. In 2005, MWG retained a consultant, KPRG, to conduct a third-party review and inspection of the liners in the West and East ash ponds at the Waukegan Station. 10/25/18 Tr. p. 193:10-15 (Testimony of Gnat); 10/26/18 Morning Tr. p. 52:9-20 (Testimony of Gnat); Comp. Ex. 274 (2005 Inspection of Waukegan Ash Pond Liners).

334. The purpose of the inspection was to provide observations, recommendations, or confirmation that the liner systems were installed correctly, met specifications and in good condition working. 10/25/18 Tr. p. 193:10-15 (Testimony of Gnat); 10/26/18 Morning Tr. p. 52:9-20 (Testimony of Gnat); Comp. Ex. 274 (2005 Inspection of Waukegan Ash Pond Liners).

335. A design engineer for HDPE liners, who also worked for a liner installation company, assisted in the inspection of the liners at Waukegan. 10/25/17 Tr. p. 194:16-20 (Testimony of Gnat); 10/26/18 Morning Tr. p. 52:5-8 (Testimony of Gnat).

336. The design engineer used for the Waukegan inspection had expertise in the specifications and installations of geomembrane liners. 10/25/17 Tr. p. 194:16-20 (Testimony of Gnat); 10/26/18 Morning Tr. p. 52:5-8 (Testimony of Gnat).

337. KPRG and the HDPE design engineer concluded that, with the exception of one area, the Waukegan pond liners did not appear to have suffered any tears and/or cracking or any separation or damage. They reported that there was “no evidence of displacement due to gas and/or water below the liner” and that “The liner appears to have been installed correctly and in accordance with the specifications and current industry standards.” 10/26/18 Morning Tr. p. 53:1-12 (Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12832 (2005 Inspection of Waukegan Ash Pond Liners).

338. The one exception in the Waukegan liner inspection report was a previously identified tear on the south side of the east ash pond; MWG was aware of the damage and had already scheduled a repair crew to conduct the repair. 10/26/17 Morning Tr. p. 53:13-24 (Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12832 (2005 Inspection of Waukegan Ash Pond Liners).

339. Mr. Gnat, KPRG, testified that he understood the tear identified in the report for Waukegan liner inspection was repaired. 10/26/17 Morning Tr. p. 54:1-3 (Testimony of Gnat).

340. KPRG and the HDPE design engineer observed that the "60 mil HDPE liner has been installed in accordance with the plans and specifications. The liner resin and roll properties met those listed in the specification and met typical industry standards (Section 02700 Geomembrane). The trial weld, destructive test, and non-destructive test reports available met the project specifications and typical industry standards. The HDPE panel layout also met the project specifications and typical industry standards." 10/26/17 Morning Tr. p. 54:4-24 (Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12831 (2005 Inspection of Waukegan Ash Pond Liners).

341. KPRG and the HDPE design engineer concluded that the liner system in the Waukegan ponds was installed correctly and in accordance with the specifications and industry standards. 10/26/17 Morning Tr. pp. 55:8-13, 56:9-12, 58:12-17, 61:10-15 (Testimony of Gnat).

342. KPRG and the HDPE design engineer observed that wrinkles on the sides of the Waukegan pond liners were only an aesthetic issue. 10/26/17 Morning Tr. p. 55:14-56:12 (Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12831 (2005 Inspection of Waukegan Ash Pond Liners).

343. The wrinkles on the sides of the Waukegan pond liners were due to the deployment of excess liner material to compensate for thermal contraction in the liner when the temperature changes, and that liners without such excess material may result in tension and potentially cause stress cracks at seams. 10/26/17 Morning Tr. p. 55:14-56:12 (Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12831 (2005 Inspection of Waukegan Ash Pond Liners).

344. The wrinkles in the Waukegan pond liners did not affect the operation or performance of the liner, and the Waukegan pond liners were installed correctly and in accordance with the specifications and industry standards. 10/26/17 Morning Tr. p. 56:9-21 (Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12831 (2005 Inspection of Waukegan Ash Pond Liners).

345. KPRG and the HDPE design engineer observed other minor issues that did not impact the functioning of the pond liners, including extending the vertical battens on the East Pond, aesthetic settling at the top slope of the West pond, and a wedge weld pressure seam in the West Pond but not on the main portion of the liner. 10/26/17 Morning Tr. pp. 57:14-58:8, 58:18-59:8, 61:19-62:12(Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12832 (2005 Inspection of Waukegan Ash Pond Liners).

346. Mr. Gnat, of KPRG, understood that the issues noted during the Waukegan pond liner inspection were repaired, though they did not impact the functioning of the liners. 10/26/17 Morning Tr. p. 57:14-58:8, 62:13-19 (Testimony of Gnat).

347. KPRG and the design engineer observed that the subgrade slopes under the Waukegan ponds were stable and intact. 10/26/17 Morning Tr. p. 60:3-22 (Testimony of Gnat); Comp. Ex. 274, p. MWG13-15_12832 (2005 Inspection of Waukegan Ash Pond Liners).

6.Waukegan NPDES Permit Hearing

348. On July 31, 2013, Illinois EPA held a public hearing for the MWG Waukegan Station NPDES Permit renewal. MWG Ex. 648 (Waukegan NPDES Permit Public Hearing July 31, 2013).

349. MWG Director of Federal Environmental Programs Ms. Race and Waukegan Senior Compliance Specialist, Mr. Veenbaas, were present for the entire public hearing. 1/30/18 Tr. p. 166:12-167:1 (Testimony of Race); 1/31/18 Tr. p. 241:20-242:10 (Testimony of Veenbaas).

350. Illinois EPA representatives were present at the public hearing on July 31, 2013, including Mr. Lynn Dunaway, an Illinois EPA groundwater expert, and Darin LeCrone, the head of the permit writers at Illinois EPA. 1/30/18 Tr. p. 166:6-11, 167:2-7 (Testimony of Race); 1/31/18 Tr. p. 242:11-23 (Testimony of Veenbaas).

351. At the NPDES public, hearing Mr. Dunaway stated that Illinois EPA did not believe the active ash ponds at Waukegan were the source of contamination, and there appeared to be another source. MWG Ex. 648, p. MWG13-15_29975-29976 (Waukegan NPDES Permit Public Hearing July 31, 2013); 1/30/18 Tr. p. 168:10-169:13 (Testimony of Race); 1/31/18 Tr. p. 242:24-243:9 (Testimony of Veenbaas).

352. In a January 6, 2015 email, Mr. Dunaway at Illinois EPA again stated that the additional monitoring required by the CCA's indicated that the active ash ponds at Waukegan, for which the VN was issued, were not the likely source of contaminants in the groundwater. MWG Ex. 649 (IEPA Email between J.Rabins and L.Dunaway Jan. 6, 2015); 1/30/18 Tr. p. 174:20-24 (Testimony of Race).

D. Will County Station

353. **MWG owns and operates the Will County Electric Generating Station ("Will County") located in Romeoville, Will County, Illinois.** JAS No. 40.

354. **MWG has owned and operated the Will County Station since 1999.** JAS No. 41.

355. A timeline of events for the Will County Station can be found at MWG Ex. 665.

356. The Will County Station began operations as a coal-fired power-plant with four coal-burning units in 1955. MWG Ex. 901, p. 58 (Seymour Presentation, SOF Attachment 1); 1/30/18 Tr. p. 189:21-190:3 (Testimony of Race); MWG Ex. 666, p. 1, 4, 6 (Will County Timeline of Events).

357. **Will County has one active electric generating unit, Unit 4.** JAS No. 42.

358. The Will County Station is bounded to the north by Romeo Road, to the east by the Chicago Sanitary & Ship Canal, the south the Material Services Corp., and to the west by the Des Plaines River. 1/30/18 Tr. p. 185:2-10 (Testimony of Race); MWG Ex. 652, p. MWG13-15_29515 (Will County ENSR Phase I 1998). [7]

359. There was also a former 55-gallon drum recycling facility to the west of the Will County Station, which caused groundwater and soil contamination, including volatile organic

[7] Pursuant to Hearing Officer Order of January 11, 2018, the admissible portions of the Phase I and Phase II reports are limited to specific questions raised during the Hearing.

compounds, metals, various polyaromatic hydrocarbons and PCBs. 2/1/18 Tr. p. 178:11-179:5 (Testimony of Gnat).

360. The geology at Will County includes Silurian Dolomite, also known as bedrock, from the ground surface to approximately 55 feet, with shale approximately 55 to 100 feet below ground surface and limestone approximately 100 to 145 feet. MWG Ex. 621, p. MWG13-15_296 (2009 Hydrogeological Assessment of MWG Electric Generating Stations); 1/30/18 Tr. p. 211:13-212:1 (Testimony of Race).

361. **There are no potable wells located downgradient of the Will County ash ponds.** 10/27/17 Tr. p. 181:4-13. (Testimony of Kunkel); MWG Ex. 621, MWG13-15_298; 1/30/18 Tr. p. 212:11-213:7; 2/2/18 Tr. p. 124:21-125:3 (Testimony of Seymour).

362. The only potable wells located at the Will County Station are two MWG wells only used for the Station's purpose that are approximately 1,500 feet below ground surface downgradient of the ash ponds, and below the Maquoketa shale confining layer. MWG Ex. 621, p. MWG13-15_298 (2009 Hydrogeological Assessment of MWG Electric Generating Stations); 1/30/18 Tr. p. 212:2-23 (Testimony of Race).

363. The groundwater flow under the ash ponds at Will County is to the west, towards the Des Plaines River. MWG Ex. 901, p. 63 (Seymour Presentation, SOF Attachment 1); 2/1/18 Tr. p. 164:18-22 (Testimony of Gnat).

364. In winters, salt is applied to area roads for safety throughout the Will County Station. 1/31/18 Tr. p. 256:24-257:11 (Testimony of Veenbaas).

365. In 2015, MWG asked its consultant, KPRG, to determine whether fill material located at the Will County Station met the requirements of CCB. Comp. Ex. 284 (Will County CCB Determination); 10/25/17 Tr. p. 217:8-218:16 (Testimony of Gnat); 10/27/17 Morning Tr. p. 63:12-64:11 (Testimony of Gnat); MWG Ex. 901, p. 59 (Seymour Presentation, SOF Attachment 1).

366. KPRG analyzed the coal ash samples at Will County using test method ASTM D3987-85. 10/25/17 Tr. p. 220:3-15 (Testimony of Gnat); Comp. Ex. 284, p. MWG13-15_49666 (Will County CCB Determination).

367. The samples and evaluation concluded with a high degree of statistical certainty that the ash in fill at Will County met the criteria established in the Illinois Environmental Protect Act and could be beneficially used. 10/26/17 Morning Tr. p. 64:15-23 (Testimony of Gnat); MWG Ex. 284, p. MWG13-15_49568 (Will County CCB Determination); 2/1/18 Tr. p. 275:5-276:18 (Testimony of Seymour); MWG Ex. 901, p. 9 (Seymour Presentation, SOF Attachment 1).

1.Will County Station at Time MWG Took Ownership

368. Before MWG began operating the Will County Station in 1999, the prior owner conducted due diligence, including a Phase I and Phase II environmental site assessments of the

Will County Station. Comp. Ex. 18D (Will County 1998 ENSR Phase II); MWG Ex. 652 (Will County 1998 ENSR Phase I). 10/23/17 Tr. p. 110:21-111:20 (Testimony of Race). [8]

369. When the prior owner's consultant was conducting the Phase I at Will County in 1999, they observed that there was "no evidence of landfilling" at the Will County Station 1/30/18 Tr. p. 185:11-17 (Testimony of Race); MWG Ex. 652, p. MWG13-15_29515 (Will County 1998 ENSR Phase I).

370. The Phase II investigation of the Will County Station concludes that, "There is no requirement under Illinois environmental law to further investigate or remediate this property." 10/23/17 Tr. p. 230:17-231:3 (Testimony of Race); Comp. Ex. 18D, p. MWG13-15_5723 (Will County 1998 ENSR Phase II).

371. When MWG purchased the Will County Station, the prior owner retained a tract in the middle of the Will County Station. 1/30/18 Tr. p. 187:23-188:15 (Testimony of Race); MWG Ex. 653 (Will County Alta Survey); MWG Ex. 667, p. 26 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); MWG Ex. 901, p. 59 (Seymour Presentation, SOF Attachment 1).

2. Will County Ash Ponds

372. There are four ash ponds at the Will County Station: Ponds 1N, 1S, 2S, and 3S. 1/30/18 Tr. p. 191:3-19 (Testimony of Race); MWG Ex. 667, p. 28 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); MWG Ex. 901, p. 59-60 (Seymour Presentation, SOF Attachment 1); MWG Ex. 500 (Pond Characterizations for MWG Stations).

373. **Pond 1N, 1S, 2S and Pond 3S were each originally constructed in 1977 with a poz-o-pac liner**. JAS No. 44; MWG Ex. 901, p. 60.; 1/31/18 Tr. p. 247:18-20 (Testimony of Veenbaas).

374. A list and description of the Will County Ash Basins is at p. 60 of the Seymour Presentation which is included as Attachment 1 to this SOF. MWG Ex. 901, p. 60 (Seymour Presentation, SOF Attachment 1).

375. The Will County Station is regulated by NPDES Permit No. IL0064254, and the ponds are operated pursuant to the limits, terms, and conditions in that NPDES permit. 1/30/18 Tr. p. 201:20-202:20 (Testimony of Race); MWG Ex. 655 (Will County NPDES Permit).

376. In December 2010, MWG analyzed the bottom ash from ponds at the Will County Station for its leachability using the ASTM D3987-85 method as required under the Illinois EPA Act. 10/24/17 Tr. p. 312:6-314:7 (Testimony of Maddox); MWG Ex. 512, p. MWG13-15_14730-14731.

377. The results of the bottom ash sampling showed that the levels of the metals in the coal ash were primarily non-detect, and only boron was detected below groundwater standards.

[8] Pursuant to Hearing Officer Order of January 11, 2018, the admissible portions of the Phase I and Phase II reports are limited to specific questions raised during the Hearing.

MWG Ex. 512, p. MWG 13-15_14707 (Bottom Ash Analytical Report 2010); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

378. The concentration of boron in the bottom ash was below the Illinois Class I groundwater standards. MWG Ex. 512, p. MWG 13-15_14707 (Bottom Ash Analytical Report 2010); MWG Ex. 901, p. 8 (Seymour Presentation, SOF Attachment 1).

a. Poz-o-pac Liners at Will County

379. When the four ash ponds at Will County were constructed, they were constructed with at least six 6-inch layers (a/k/a lifts). MWG Ex. 901, p. 60 (Seymour Presentation, SOF Attachment 1); MWG Ex. 500, p. MWG13-15_5 (Pond Characterizations for MWG Stations); 1/30/18 Tr. p. 193:14-23 (Testimony of Race).

380. According to the original drawings of the Will County ash ponds the six 6-inch layers of the liners in the ash ponds were constructed as follows: the bottom two layers were each 6-inches of poz-o-pac; the middle two layers were rimmed with two layers of 6-inch poz-o-pac, and 12 inches of fill in the middle; and the top two layers were each 6-inches of poz-o-pac. 1/30/18 Tr. p. 196:21-197:7 (Testimony of Race); MWG Ex. 654, p. MWG13-15_37214-37215 (Will County Ponds 1S, 2S and 3S 1977 drawings); MWG Ex. 901, p. 60 (Seymour Presentation, SOF Attachment 1); 2/2/18 Tr. p. 111:20-112:12 (Testimony of Seymour).

381. In 2013, MWG drilled two cores into the base of Pond 2S at Will County to assess the construction and condition of the poz-o-pac. MWG Ex. 510, p. MWG13-15_34271, 34428 (Construction Documentation of the Will County Pond 2S).

382. The core sample taken from the rim, about three-feet from the edge of Pond 2S, was a total of 36-inches (six 6-inch layers) of solid poz-o-pac. MWG Ex. 510, p. MWG13-15_34271, 34428 (Construction Documentation of the Will County Pond 2S).

383. The core sample taken in the middle of Pond 2S had layers of 12-inches of poz-o-pac (two 6-inch layers), 12-inches of sandy-clay fill with gravel, and a top layer of 12-inches of poz-o-pac (two 6-inch layers). MWG Ex. 510, MWG13-15_34271, 34428 (Construction Documentation of the Will County Pond 2S).

384. When MWG drilled into the bottom of the poz-o-pac in Pond 2S at Will County in both cores, after drilling the furthest depth the drill could go, the drill did not reach the bottom of the third layer of poz-o-pac in either core. 1/30/18 Tr. p. 200:2-22 (Testimony of Race); MWG Ex. 510, p. MWG13-15_34271, 34428 (Construction Documentation of the Will County Pond 2S); 10/26/17 Morning Tr. p. 68:17-18 (Testimony of Gnat).

385. The coring indicated that the poz-o-pac liners in the ash ponds at Will County are deeper than 36-inches. 1/30/18 Tr. p. 200:23-201:1 (Testimony of Race); 1/31/18 Tr. p. 26:4-11(Testimony of Race); MWG Ex. 510, p. MWG13-15_34271 (Construction Documentation of the Will County Pond 2S).

386. The poz-o-pac core from Pond 2S at Will County was tested and showed no evidence of discoloration through the length of the core, suggesting there were no fractures or

cracks through the poz-o-pac. Comp. Ex. 286 (Poz-o-Pac Sample Core Sample Analysis); 10/26/17 Morning Tr. p. 69:17-71:2 (Testimony of Gnat).

387. The poz-o-pac core had a permeability of 3.12 x 10-5, which is a relatively low permeability, and has the density similar to concrete. Comp. Ex. 286 (Poz-o-Pac Sample Core Sample Analysis); 10/26/17 Morning Tr. p. 71:15-72:5 (Testimony of Gnat); 2/1/8 Tr. p. 241:17-22 (Testimony of Seymour).

b. Will County Pond 2S and Pond 3S

388. **There are two active ash ponds at the Will County Station: Pond 2 South ("2S") and Pond 3 South ("3S").** JAS 43.

389. **Only one pond (2S or 3S) at Will County is in service at a time.** JAS No. 46.

390. The ponds at Will County are used interchangeably, so that while one is in service, the other is designated for cleaning. Ex. 901, p. 60 (Seymour Presentation, SOF Attachment 1); 1/31/18 Tr. p. 247:9-11, 252:21-253:2 (Testimony of Veenbaas).

391. **Pond 2S or Pond 3S at Will County are dredged approximately on an annual basis.** JAS No. 47.

392. The bottom ash at Will County is transported off-site by a third-party contractor (LaFarge) for beneficial use. 1/31/18 Tr. p. 249:23-250:6 (Testimony of Veenbaas).

393. When LaFarge is removing ash from the Will County ash ponds, LaFarge uses front-end loaders that have rubber tires to remove the ash. 1/31/18 Tr. p. 249:13-22 (Testimony of Veenbaas).

394. When LaFarge is removing ash from the Will County ash ponds, the LaFarge front-end loaders fill the trucks that are on the ramp with bottom ash. 1/31/18 Tr. p. 250:7-12 (Testimony of Veenbaas).

395. When LaFarge removes the ash from one of the Will County ash ponds, LaFarge understands that the sides should not be touched. 1/31/18 Tr. p. 250:21-24 (Testimony of Veenbaas).

396. When LaFarge is removing the bottom ash, they work deliberately and slowly remove the ash, starting on the east side of the pond to the west. 10/24/17 Tr. p. 311:20-312:2 (Testimony of Maddox); 1/31/18 Tr. p. 251:15-22 (Testimony of Veenbaas)

397. When the ash from a Will County ash pond is removed, the ash is left on the side slopes and on the bottom. 10/24/18 Tr. p. 224:3-9 (Testimony of Maddox).

c. Will County Pond 1N and Pond 1S

398. **There are two inactive ponds at the Will County Station: Ponds 1 North (1N) and 1 South (1S).** JAS No. 48.

399. **Ponds 1N and 1S at the Will County Electric Generating Station have Poz-o-Pac liners.** JAS No. 49.

400. Ash Ponds 1N and 1S were finishing ponds and collected the bottom ash fines from Units 1 and 2 at the Will County Station. 1/31/18 Tr. p. 253:6-254:8 (Testimony of Veenbaas).

401. The bulk of the bottom ash from Units 1 and 2 at Will County landed on the retention pad, which was a concrete pad. 1/31/18 Tr. p. 253:12-21 (Testimony of Veenbaas).

402. The Will County bottom ash that landed on the retention pad was removed on a weekly basis for beneficial reuse. 10/24/17 Tr. p. 206:23-207:4 (Testimony of Maddox); 1/31/18 Tr. p. 253:12-15 (Testimony of Veenbaas).

403. Will County Ash Ponds 1N and 1S have the same poz-o-pac liner thickness as when originally installed, and were not relined with HDPE because they were no longer in service. 1/30/18 Tr. p. 201:2-10, 280:12-20 (Testimony of Race).

404. **Ponds 1N and 1S were removed from service in 2010 and neither receive any ash or process water.** JAS No. 50; 10/24/18 Tr. p. 276:15-21 (Testimony of Maddox); 1/30/18 Tr. p. 254:18-255:3 (Testimony of Race).

405. In 2013, MWG implemented a dewatering system in Ponds 1N and 1S that is designed maintain a depth of approximately less than one foot of water in the ponds. MWG Ex. 656 (Will County CCA).

406. The operators at Will County inspect Ash Ponds 1N, 1S, 2S, and 3S ash ponds as part of their regular shifts, which occurred three times per day. 10/24/18 Tr. p. 222:18-223:8 (Testimony of Maddox); 1/31/18 Tr. p. 257:15-258:4 (Testimony of Veenbaas).

407. If an operator saw an issue at the Will County Ash Ponds 1N, 1S, 2S and 3S, the operator would tell the shift supervisor who would communicate to the proper person to address the problem. 1/31/18 Tr. p. 258:5-9 (Testimony of Veenbaas).

III. MWG'S EVALUATION OF THE STATION IMPOUNDMENTS, RELINING, GROUNDWATER MONITORING AND CCAS

A. MWG's Evaluation of the Station Impoundments

408. In about 2005, MWG began an assessment of the ash pond liners at the MWG Stations for preventative maintenance of the pond liners. 1/29/18 Tr. p. 214:4-10, 216:1-3 (Testimony of Race).

409. No Federal or State regulatory agency had asked MWG to evaluate the ash ponds, there was no legal requirement for MWG to conduct the ash pond liner evaluation, and there were no Illinois or Federal regulations related to the storage or use of the coal ash. 1/29/18 Tr. p. 218:3-16 (Testimony of Race).

410. Relining a pond at an operating power station is a huge level of effort. 1/29/18 Tr. p. 231:1. (Testimony of Race).

411. To reline a pond at an operating power station, a station must:

- hire a consultant to assist with the selection and engineering of the liner that is appropriate for the use of the ash pond. 1/29/18 Tr. p. 231:1-5 (Testimony of Race).
- involve the station engineering staff to determine whether there needs to be any changes in the equipment going to or out of the ash ponds. 1/29/18 Tr. p. 231:5-8. (Testimony of Race).
- time the relining during an outage so that the ash pond can be taken out of service. 1/29/18 Tr. p. 231:8-10 (Testimony of Race).
- to reline a pond at an operating power station, the station must establish a potential backup impoundment for use in case the station must operate, because the ash pond cannot be put into service without a liner. 1/29/18 Tr. p. 231:10-14 (Testimony of Race).
- plan the relining to avoid winter because the soils under the liner cannot be frozen, and installation of liner can only be performed within a certain temperature range. 1/29/18 Tr. p. 231:17-232:17 (Testimony of Race); 1/31/18 Tr. p. 113:7-14 (Testimony of Kelly); MWG Ex. 608, p. MWG13-15_18177 (Application for Construction Permit for Joliet 29 Ponds 1 & 2 Liner Replacement).

412. MWG came up with a scientific way to evaluate the station impoundments and liners throughout the fleet of power stations to determine the order of relining any of the impoundments. 1/29/18 Tr. p. 218:20-219:2 (Testimony of Race).

413. One of the first evaluations as part of the assessment of the ash pond liners was a geotechnical analysis of soils surrounding the ponds, to assess which ponds should be lined first. Comp. Ex. 201-202 (2005 Geotechnical Analysis of MWG Stations and correction of Joliet 29 Map); 1/29/18 Tr. p. 214:13-18 (Testimony of Race).

414. MWG's third party consultant, NRT, conducted the evaluation of the impoundments based upon a Pond Characterization Document (MWG Ex. 500), the current liner material, the original liner construction dates and presumed liner conditions. Comp. Ex. 34 (2005 Technical Memorandum Regarding Impoundment Rankings).

415. NRT's evaluation contained the best information on the ash ponds that NRT could come up with based upon the information available in 2005. 10/23/17 Tr. p. 168:10-12, 16-24; 10/24/17 Tr. p. 11:4-12:13 (Testimony of Race).

416. NRT made a conservative assumption that the poz-o-pac liners were in poor condition based only on the age of the liners. 10/24/17 Tr. p. 12:22-13:3 (Testimony of Race).

417. The NRT evaluation culminated in its Technical Memorandum No. 1 from Dec. 1, 2005 ("2005 Technical Memo"), which described the ranking system to prioritize the impoundments and basins at MWG. Comp. Ex. 34 2005 (Technical Memorandum Regarding Impoundment Rankings).

418. The 2005 Technical Memo considered the type of liner to be used for the bottom ash settling basins. MWG Comp. Ex. 34, p. MWG13-15_23612 (2005 Technical Memorandum Regarding Impoundment Rankings).

419. The 2005 Technical Memo looked to the Illinois regulations for sewage and livestock impoundments for guidance on the type liners to recommend. MWG Comp. Ex. 34, p. MWG13-15_23612 (2005 Technical Memorandum Regarding Impoundment Rankings); 1/29/18 Tr. p. 219:22-220:14 (Testimony of Race).

420. In the 2005 Technical Memo, NRT considered a 2-foot thick clay liner or a geosynthetic material; because NRT considered coal ash waters to contain low concentrations of constituents, NRT recommended concrete or asphalt. MWG Comp. Ex. 34, p. MWG13-15_23612 (2005 Technical Memorandum Regarding Impoundment Rankings); 1/29/18 Tr. p. 219:22-220:14 (Testimony of Race).

421. On October 13, 2006, NRT prepared an updated technical memorandum proposing a priority list for the ash pond liner upgrade and the liner system options and costs ("Oct. 2006 Technical Memo"). MWG Ex. 605 (October 2006 Technical Memo Regarding Liner Upgrade and Cost).

422. Following the October 2006 Technical Memo, there was a third version of the same memo with updated and additional information on November 22, 2016 ("November 2006 Technical Memo"). 1/29/18 Tr. p. 221:18-222:6 (Testimony of Race), MWG Ex. 606 (Nov. 2006 Technical Memo Regarding Liner Upgrade and Cost).

423. The three technical memorandums were "living documents", were meant to be looked at over a period of time and would continue to be updated and perhaps changed based upon developments at the Stations. 1/29/18 Tr. p. 222:4-11, p. 223:22-224:3 (Testimony of Race); 1/30/18 Tr. p. 278:19-280:3 (Testimony of Race).

424. NRT built flexibility into the sequence of the pond relinings, particularly after new information from the process including that the poz-o-pac was in good condition. 1/30/18 Tr. p. 279:19-280:3 (Testimony of Race).

425. The November 2006 Technical Memo included a potential schedule for the sequence of replacing the impoundment liners and the potential cost, which ranged from $500,000 to $2.5 million per pond. MWG Ex. 606, p. MWG13-15_23637 (Nov. 2006 Technical Memo Regarding Liner Upgrade and Cost).

426. In the November 2006 Technical Memo, the liner NRT recommended was either compacted clay, asphalt or concrete. MWG Ex. 606, MWG13-15_23638 (Nov. 2006 Technical Memo Regarding Liner Upgrade and Cost).

427. MWG elected to use HDPE for the new pond liners because it understood HDPE was the most conservative option, it was the least permeable, and would be more protective. 1/29/18 Tr. p. 225:1-226:3 (Testimony of Race).

428. The HDPE liners are a more expensive liner that NRT's liner recommendations. 1/29/18 Tr. 226:4-6 (Testimony of Race).

429. MWG Director of Federal Environmental Programs, Ms. Race, also created an internal document for the pond relining with her notes on the relining project. MWG Ex. 607 (Nov. 2006 Technical Memo Regarding Liner Upgrade and Cost); 1/29/18 Tr. p. 227:1-10 (Testimony of Race).

430. Regarding Joliet 29 Pond 3, in the chart regarding the relining information, Director of Federal Environmental Programs, Ms. Race questioned why NRT assumed that the liner was in poor condition, because MWG knew Pond 3 was a polishing pond and no solids actually entered the impoundment. 1/29/18 Tr. p. 228:6-18 (Testimony of Race).

431. MWG Director of Federal Environmental Programs, Ms. Race also questioned the basis for NRT's assumption that the liner condition of all the ash ponds was poor. 1/29/18 Tr. p. 228:19-23 (Testimony of Race).

B. Relining Projects

432. Following receipt of NRT's technical memorandum and recommendations, MWG began to execute its plan for the pond relining, which were designed for the removal of ash. 1/29/18 Tr. 228:13-24, 230:6-10 (Testimony of Race); 2/1/18 Tr. p. 262:3-16 (Testimony of Seymour).

1. Joliet 29 Relining

433. Under the proposed schedule prepared by MWG through its fleet-wide evaluation, the first ash ponds for relining were Ash Ponds 1 and 2 at Joliet 29. MWG Ex. 607 (MWG Initial Schedule of Pond Relining Schedule for all Ash Ponds).

434. On June 21, 2007, MWG submitted to Illinois EPA a construction permit application for relining Joliet 29 Ash Ponds 1 and 2. MWG Ex. 608 (Application for Construction Permit for Joliet 29 Ponds 1 & 2 Liner Replacement); 1/29/18 Tr. p. 230:19-21 (Testimony of Race).

435. In July 2007, Illinois EPA issued the construction permit for the liner replacement for Joliet 29 Ash Ponds 1 and 2. MWG Ex. 609 (Illinois EPA Construction Permit for the Joliet 29 Ponds 1 & 2).

436. Once MWG emptied the ponds for relining, MWG found that NRT's assumptions on the condition of the poz-o-pac was incorrect. 10/24/17 Tr. p. 13:10-14 (Testimony of Race).

437. MWG found that the poz-o-pac in Joliet 29 Ash Ponds 1 and 2, and then subsequently the ash ponds at the other MWG Stations, was in good condition. 10/24/17 Tr. p. 13:16-19 (Testimony of Race); 1/29/18 Tr. p. 236:1-4 (Testimony of Race).

438. The liner systems installed in Joliet 29 Ash Ponds 1 and 2 consisted of six layers of materials (from bottom to top): the original poz-o-pac, a geotextile cushion, the HDPE liner, a geotextile cushion, a 12-inch thick sand cushion layer, and a 6-inch limestone warning layer. MWG Ex. 610, p. MWG13-15_49507 (Joliet #29 Ponds 1 and 2 Construction Documentation), MWG Ex. 901, p. 17 (Seymour Presentation, SOF Attachment 1).

439. MWG installed marker posts along the edge of the base of Joliet 29 Ash Ponds 1 and 2 to mark the sides for the operators when the ponds are being dredged. MWG Ex. 610, MWG13-15_49507 (Joliet #29 Ponds 1 and 2 Construction Documentation).

440. Before the HDPE installer began installing the HDPE in Ash Ponds 1 and 2 at Joliet 29, the installer visually inspected the subgrade of each pond and certified that the subgrade in each pond was acceptable for installation of the HDPE. MWG Ex. 610, p. MWG13-15_49458-59 (Construction Documentation of the Joliet 29 Ponds 1 & 2 Liner Replacement); 1/29/18 Tr. p. 237:5-19 (Testimony of Race).

441. After installation of the HDPE in Ash Ponds 1 and 2 at Joliet 29, the installation company certified that the liners in each pond were installed properly and in accordance with the project specifications. MWG Ex. 610, p. MWG13-15_49461-62 (Construction Documentation of the Joliet 29 Ponds 1 & 2 Liner Replacement); 1/29/18 Tr. p. 237:20-238:8 (Testimony of Race).

442. Before each ash pond was placed back in service at Joliet 29, MWG had an electronic leak location survey of the ash pond liners taken to identify any potential leaks in the HDPE liner. MWG Ex. 610, p. MWG13-15_49471-75 (Construction Documentation of the Joliet 29 Ponds 1 & 2 Liner Replacement); 1/29/18 Tr. p. 238:13-18 (Testimony of Race).

443. No leaks were found in Ash Pond 1 at Joliet 29. MWG Ex. 610, p. MWG13-15_49471-73 (Construction Documentation of the Joliet 29 Ponds 1 & 2 Liner Replacement); 1/29/18 Tr. p. 238:19-239:3 (Testimony of Race)

444. One leak was detected in Ash Pond 2 at Joliet 29, which was repaired. MWG Ex. 610, p. MWG13-15_49474-75, 49493 (Construction Documentation of the Joliet 29 Ponds 1 & 2 Liner Replacement); 1/29/18 Tr. p. 238:19-240:12 (Testimony of Race).

445. At the completion of the relining in 2008, MWG's consultant submitted to MWG "Construction Documentation Transmittal" on December 23, 2008, which was the construction record documents related to the replacement of the liners in Joliet 29 Ash Ponds 1 and 2. MWG Ex. 610 (Construction Documentation of the Joliet 29 Ponds 1 & 2 Liner Replacement).

446. The Joliet 29 Construction Documentation contained all the certifications for the installation of the HDPE liner and the as-built drawings and information for the pond liners in Ash Ponds 1 and 2. MWG Ex. 610, p. MWG13-15_49362 (Construction Documentation of the Joliet 29 Ponds 1 & 2 Liner Replacement); 1/30/18 Tr. p. 41:18-42:6 (Testimony of Race).

2.Will County Relining

447. On July 22, 2008, MWG submitted an application for a construction permit to reline Ash Ponds 2S and 3S at Will County with an HDPE liner. 10/24/17 Tr. p. 282:5-11 (Testimony of

Maddox); 1/30/18 Tr. p. 208:8-209:2 (Testimony of Race); MWG Ex. 501 (Application for Construction Permit for Will County South Ash Ponds 2 and 3 liner replacement).

448. On September 29, 2008, Illinois EPA issued the construction permit and NPDES stormwater permit to reline Ponds 2S and 3S at Will County. 10/24/18 Tr. pp. 284:12-14, 285:13-16 (Testimony of Maddox); MWG Ex. 502 (Illinois EPA Construction Permit for the Will County Pond 2S and 3S).

449. The first liner to be replaced was Will County Pond 3S. 1/30/18 Tr. p. 206:14-18 (Testimony of Race); MWG Ex. 666, p. 3 (Will County Timeline of Events).

450. Will County Pond 3S was relined with an HDPE liner. 10/24/17 Tr. p. 191:14-24 (Testimony of Maddox); 1/31/18 Tr. p. 247:21-248:1 (Testimony of Veenbaas); MWG Ex. 505 (Pond drawings for the relining of Pond 3S, Will County).

451. As part of the request for proposal ("RFP") process, MWG established the geomembrane installer was responsible to ensure that equipment used for the installation and quality assurance test did not damage the geomembrane. 10/24/17 Tr. p. 293:6-22 (Testimony of Maddox); MWG Ex. 506, p. MWG13-15_29250 (Will County No 2 & 3 Ash Pond Liner Specification).

452. As part of the RFP process, MWG established that "no vehicles were allowed on the deployed geomembrane under any circumstances," and MWG's Station Environmental Specialist at the Will County Station did not recall any vehicles on the geomembrane at Will County. 10/24/17 Tr. p. 293:23-294:7 (Testimony of Maddox); MWG Ex. 506, p. MWG13-15_29250 (Will County No 2 & 3 Ash Pond Liner Specification).

453. In 2009, when all of the ash and water was removed from Will County Pond 3S, the Will County Chemistry Systems Specialist, Mr. Veenbaas, walked into the ash pond and observed the condition of the poz-o-pac. 1/31/18 Tr. p. 248:7-24 (Testimony of Veenbaas).

454. The Will County Chemistry Systems Specialist, Mr. Veenbaas, saw that the poz-o-pac in Pond 3S was very clear and concrete, without any cracks, and that it was "It was in beautiful shape." 1/31/18 Tr. p. 248:7-24 (Testimony of Veenbaas).

455. Will County Chemistry Systems Specialist, Mr. Veenbaas, was surprised by the condition of the poz-o-pac because it had been installed in the mid-'70's and yet the poz-o-pac in Will County Pond 3S "it was actually pretty pristine." 1/31/18 Tr. p. 249:1-3 (Testimony of Veenbaas).

456. As part of the plan to reline Will County Pond 3S, MWG removed the top 12-inches of the poz-o-pac. 1/30/18 Tr. p. 209:22-210:1 (Testimony of Race); MWG Ex. 501, p. MWG13-15_29024 (Application for Construction Permit for Will County South Ash Ponds 2 and 3 liner replacement).

457. When MWG was removing the poz-o-pac in Pond 3S at Will County, MWG personnel reported that the poz-o-pac was in good condition and Will County Station personnel questioned whether to remove the poz-o-pac. 1/30/18 Tr. p. 210:8-17 (Testimony of Race).

458. As required by the RFP, and as part of the installation of the new liner, the MWG contractor inspected the subgrade of Pond 3S before deploying the geomembrane to verify that there were no potentially harmful foreign objects present, such as sharp rocks and other deleterious debris. 10/24/17 Tr. p. 294:8-17 (Testimony of Maddox); MWG Ex. 506, p. MWG13-15_29249 (Will County No 2 & 3 Ash Pond Liner Specification).

459. The purpose of the inspection of the subsurface of the Pond 3S was to ensure that there was a smooth surface for the geomembrane to be applied. 10/24/17 Tr. p. 294:18-24 (Testimony of Maddox).

460. When the MWG contractor inspected the subgrade, the MWG contractor certified that the subgrade was in good condition for liner placement. 10/24/17 Tr. p. 297:3-8 (Testimony of Maddox); MWG Ex. 507, p. MWG13-15_8240 (Will County Pond 3S Field Summaries and Field Directives).

461. After the HDPE was installed in Pond 3S, MWG installed a sand cushion layer and a limestone warning layer. 1/31/18 Tr. p. 251:23-252:6 (Testimony of Veenbaas); MWG Ex. 505, MWG13-15_29104 (Pond drawings for the relining of Pond 3S, Will County).

462. The new liner system installed in Pond 3S consisted of six layers of materials (from bottom to top): 12-24 inches of the original poz-o-pac, a geotextile cushion, the HDPE liner, a geotextile cushion, a 12-inch thick sand cushion layer, and a 6-inch limestone warning layer. MWG Ex. 901, p. 61 (Seymour Presentation, SOF Attachment 1); MWG Ex. 505 (Pond drawings for the relining of Pond 3S, Will County); MWG Ex. 506 (Will County No 2 & 3 Ash Pond Liner Specification); MWG Ex. 507 (Will County Pond 3S Field Summaries and Field Directives); MWG Ex. 508 (Leak Location Report for Pond 3S at Will County).

463. As part of the installation, MWG conducted a leak location survey on the HDPE liner in Pond 3S. 10/24/18 Tr. p. 297:16-18 (Testimony of Maddox); MWG Ex. 507, p. MWG13-15_8250 (Will County Pond 3S Field Summaries and Field Directives); MWG Ex. 508 (Leak Location Report for Pond 3S at Will County).

464. When the leak location survey was being conducted, the MWG contractor saw runoff water that appeared to have been pushed into the areas under the liner when the warning layer was placed. 10/24/17 Tr. p. 297:19-298:11 (Testimony of Maddox); MWG Ex. 507, p. MWG13-15_8250 (Will County Pond 3S Field Summaries and Field Directives).

465. Most of the runoff water under the Will County Pond 3S liner dissipated within two weeks of liner placement. MWG Ex. 507, MWG13-15_8250 and 8254 (Will County Pond 3S Field Summaries and Field Directives); 10/24/17 Tr. p. 297:19-298:11 (Testimony of Maddox).

466. MWG's contractor pumped the remaining runoff water out and patched the Will County 3S liner following completion of pumping the water. MWG Ex. 507, p. MWG13-15_8254 (Will County Pond 3S Field Summaries and Field Directives).

467. The leak location survey of the Pond 3S at Will County found no leaks in the geomembrane. 10/24/17 Tr. p. 300:7-19 (Testimony of Maddox); MWG Ex. 508 (Leak Location Report for Pond 3S at Will County).

468. As part of the relining project, MWG installed poles in Will County Pond 3S to identify the incline of the bank of the pond from the horizontal section of the pond. 1/31/18 Tr. p. 251:1-11 (Testimony of Veenbaas).

469. The poles would prevent persons excavating Will County Pond 3S from going near the base of the sides of the pond. 1/31/18 Tr. p. 251:1-11 (Testimony of Veenbaas).

470. After Will County Pond 3S was relined, and during dredging, MWG's Station Chemistry Systems Specialist did not see the white limestone warning layer, only ash left on the bottom. 1/31/18 Tr. p. 252:9-16 (Testimony of Veenbaas).

C. Hydrogeologic Assessment of Areas Around Station Ash Ponds

471. In December 2008, TVA had a large impoundment dam failure at Kingston Mine in Tennessee which released a large quantity of fly ash over a large area. 1/29/18 Tr. p. 240:13-23 (Testimony of Race).

472. Unlike the MWG ponds, the TVA impoundments were very large, were essentially dammed landfills, and were a final resting place for the ash. 1/29/18 Tr. p. 242:1-22 (Testimony of Race).

473. Because of TVA, USEPA became interested in whether or not there were other dammed impoundments across the nation that could fail. 1/29/18 Tr. p. 243:24-244:3 (Testimony of Race).

474. Illinois EPA began contacting energy companies in Illinois to conduct a survey of all the impoundments in Illinois to determine whether there were dams at ash impoundments and if there were any risks related to the dams. 1/29/18 Tr. p. 244:4-13 (Testimony of Race).

475. Beginning in early 2009, MWG and Illinois EPA had numerous discussions on the information Illinois EPA needed and would be most useful to Illinois EPA to help the Illinois EPA assess the potential risks of impoundments. 1/29/18 Tr. p. 244:16-23 (Testimony of Race).

476. Illinois EPA requested information on whether there were any potable wells nearby, whether the wells were downgradient of the Stations, and the constituents in the ash. 1/29/18 Tr. p. 244:24-245:5 (Testimony of Race).

477. MWG did not necessarily agree with Illinois EPA's information request and objected to Illinois EPA's authority to request the information. 1/29/18 Tr. p. 245:12-18 (Testimony of Race); MWG Ex. 621, MWG13-15_293 (2009 Hydrogeological Assessment of MWG Electric Generating Stations).

478. MWG voluntarily agreed to give Illinois EPA the requested information, starting with the potable well information. 1/29/18 Tr. p. 245:12-15 (Testimony of Race).

1.2009 Hydrogeologic Assessment

479. On July 15, 2009, MWG submitted to Illinois EPA MWG's results of its first Hydrogeological Assessment ("2009 Hydrogeologic Assessment"). MWG Ex. 621 (2009 Hydrogeological Assessment of MWG Electric Generating Stations).

480. The 2009 Hydrogeological Assessment identified the ash ponds at each of the MWG Stations, described the type of liners in the ash ponds, and the geology beneath the stations. MWG Ex. 621 (2009 Hydrogeological Assessment of MWG Electric Generating Stations).

481. The 2009 Hydrogeological Assessment included that all the ponds were lined with impermeable materials, including HDPE and poz-o-pac, to prevent any potential release to the environment. 1/29/18 Tr. p. 255:10-14 (Testimony of Race); MWG Ex. 621, MWG13-15_299 (2009 Hydrogeological Assessment of MWG Electric Generating Stations).

482. MWG did not believe that there was any migration of constituents to the groundwater from the MWG ash ponds, in part because when they had begun relining ash ponds the original poz-o-pac liner was in good condition; that was expected to be the case everywhere. 1/30/18 Tr. p. 78:19-79:7 (Testimony of Race).

483. MWG did not believe there was any migration to groundwater from the Waukegan ash ponds because the ash ponds had been relined relatively recently and were in good condition. 1/30/18 Tr. p. 156:13-24 (Testimony of Race).

484. MWG confirmed that there were no potable wells downgradient of the MWG ash ponds. 1/29/18 Tr. p. 255:15-19 (Testimony of Race); 1/30/18 Tr. pp. 80:16-24, 157:7-22, 212:2-23 (Testimony of Race); MWG Ex. 621, p. MWG13-15_298-299 (2009 Hydrogeological Assessment of MWG Electric Generating Stations).

485. **Complainants' expert, Kunkel, agreed that the facilities do not have the possibility to impact offsite drinking water.** 10/27/18 Tr. p. 182:3-7 (Testimony of Kunkel).

486. MWG's Hydrogeological Assessment concluded that there was no reasonable basis to conclude that the MWG's operations of the ash ponds was causing a release to the groundwater or a risk of impairing potable water sources. MWG Ex. 621, p. MWG13-15_299-300 (2009 Hydrogeological Assessment of MWG Electric Generating Stations); 1/30/18 Tr. p. 212:24-213:7 (Testimony of Race).

487. On June 21, 2010, U.S.EPA formally proposed regulations of coal combustion residuals ("CCR"). MWG Exs. 663, p. 3 (Joliet 29 Timeline of Events); 664, p. 5 (Powerton Timeline of Events); 665, p. 8 (Waukegan Timeline of Events); 666, p. 4 (Will County Timeline of Events y).

488. When the CCR proposed rules came out, MWG paused its relining program due to concern about putting in a liner system that might conflict with specifics of the new federal rules. 1/30/18 Tr. pp. 207:16-208:4, 279:9-18 (Testimony of Race); 10/25/17 Tr. p. 23:9-15 (Testimony of Maddox).

2.2010 Hydrogeologic Assessments

489. Following MWG's submission of the 2009 Hydrogeologic Assessment, Illinois EPA requested MWG install groundwater monitoring wells directly upgradient and downgradient of the of the MWG ash ponds at Joliet #29, Powerton, Waukegan, and Will County. 1/29/18 Tr. p. 245:6-9 (Testimony of Race).

490. MWG expressed concern that installing the monitoring wells requested by Illinois EPA would not provide useful information about whether or not the MWG ash ponds were leaking. 1/29/18 Tr. p. 245:16-18 (Testimony of Race).

491. The MWG Stations are in old industrial areas, some surrounded by Superfund sites, and two of the MWG Stations already had environmental land use controls due to historic off-site contamination. 1/29/18 Tr. p. 246:20-24 (Testimony of Race).

492. MWG predicted that there likely was some historic contamination that would be detected in the groundwater, and the results would not establish anything about the ash ponds. 1/29/18 Tr. p. 246:1-7 (Testimony of Race).

493. Despite its reservations, MWG voluntarily agreed to Illinois EPA's request install groundwater monitoring wells around the ash ponds at the MWG Stations to sample the groundwater near and downgradient from the ash ponds. 1/29/18 Tr. p. 246:8-10 (Testimony of Race); 1/30/18 Tr. p. 157:23-158:3, 213:10-14 (Testimony of Race).

494. In 2010, MWG submitted to Illinois EPA Hydrogeologic Assessment Plans to conduct groundwater monitoring near the ash ponds at the four MWG Stations. MWG Exs. 613-616 (Hydrogeologic Assessment Plans for Joliet #29, Powerton, Waukegan, and Will County); 1/29/18 Tr. p. 248:16-21 (Testimony of Race).

495. Pursuant the Hydrogeologic Assessment Plans, MWG agreed to evaluate any potential migration and characterize the subsurface hydrogeology. 1/29/18 1/29/18 Tr. p. 249:3-11 (Testimony of Race); MWG Exs. 613-616 (Hydrogeologic Assessment Plans for Joliet #29, Powerton, Waukegan, and Will County).

496. On September 24, 2010, Illinois EPA approved MWG's Hydrogeologic Assessment Plans. MWG Exs. 617-620 (Illinois EPA's Approval of the Hydrogeologic Assessment Plans for Joliet #29, Powerton, Waukegan, and Will County).

497. Following approval of the Hydrogeologic Assessment Plans, MWG installed the monitoring wells and began sampling. 1/30/18 Tr. p. 13:4-8 (Testimony of Race); MWG Ex. 901, p. 19, 33, 48, 62.

498. After only one round of sampling, MWG submitted to Illinois EPA a Hydrogeologic Assessment Report for each of the four stations ("2010 Hydrogeologic Assessments"). Comp Exs. 12C-15C (Hydrogeologic Assessment Reports for Joliet #29, Powerton, Waukegan, and Will County); 1/30/18 Tr. p. 161:22-162:3 (Testimony of Race).

499. The Hydrogeologic Assessment Reports described the installation of the monitoring wells, the site lithology, topographic and water elevation surveys, and identification of potable wells. Comp Exs. 12C-15C, pp. MWG13-15_6968-6971, 7085-7088, 7152-7155, 7235-7237 (Hydrogeologic Assessment Reports for Joliet #29, Powerton, Waukegan, and Will County).

500. The Hydrogeologic Assessment Reports also gave a preliminary evaluation of ash-related constituents in groundwater. Comp Exs. 12C-15C, pp. MWG13-15_6972, 7089, 7156, 7238 (Hydrogeologic Assessment Reports for Joliet #29, Powerton, Waukegan, and Will County).

501. The reports noted that no determination could be made as whether an individual pond was contributing constituents to the groundwater. Comp Exs. 12C-15C, pp. MWG13-15_6972, 7089, 7156, 7238 (Hydrogeologic Assessment Reports for Joliet #29, Powerton, Waukegan, and Will County).

502. MWG agreed to continue groundwater monitoring on a quarterly basis. Comp Exs. 12C-15C, pp. MWG13-15_6974, 7091, 7158, 7240 (Hydrogeologic Assessment Reports for Joliet #29, Powerton, Waukegan, and Will County).

3.Groundwater Sampling at the MWG Stations

503. MWG retained Patrick Engineering, a consulting firm, to conduct the groundwater sampling at the four MWG Stations beginning in the fourth quarter of 2010. 2/1/18 Tr. p. 85:19-86:3 (Testimony of Gnat); 1/30/18 Tr. p. 17:8-18 (Testimony of Race).

504. On May 11, 2012, Patrick Engineering submitted the first quarter 2012 results to the Illinois EPA. 1/30/18 Tr. p. 18:7-21 (Testimony of Race).

505. An MWG intern found transcription errors in the table of groundwater sample results for the four Stations. 1/30/18 Tr. p. 18:17-21 (Testimony of Race).

506. MWG submitted amended reports with the correct groundwater values on July 30, 2012. Comp. Ex. 24.5 (1Q2012 Powerton Amended Groundwater Monitoring Results).

507. In early 2012, MWG retained KPRG to continue the groundwater monitoring at the MWG Stations. 2/1/18 Tr. p 85:9-18 (Testimony of Gnat).

508. KPRG developed summary data tables to organize the groundwater monitoring results at each of the Stations (See MWG Exhibits 809-812; Joliet 29 (MWG Ex. 809), Powerton (MWG Ex. 810), Waukegan (MWG Ex. 811), and Will County (MWG Ex 812). 2/1/18 Tr. p. 88:23-89:7, 110:21-11:1, 135:23-136:2, 147:18-148:3, 165:3-166:4 (Testimony of Gnat).

509. The data in the summary data tables (MWG Exhibits 809 through 812) is downloaded directly from the analytical company in Excel spreadsheets. 2/1/18 Tr. p. 89:8-12 (Testimony of Gnat).

510. At the four MWG Stations there are “CCA Wells,” which are the network of wells that was agreed to be sampled on a quarterly basis within the context of the Compliance

Commitment Agreement between MWG and Illinois EPA. 2/1/18 Tr. p. 89:19-90:2 (Testimony of Gnat).

511. At all four of the MWG Stations there are "CCR Wells", which are wells that are sampled pursuant to the new USEPA CCR rules. 2/1/18 Tr. p. 90:2-7 (Testimony of Gnat).

512. Some of the wells at the four MWG Stations may be both CCR wells and CCA wells. 2/1/18 Tr. p. 90:2-7 (Testimony of Gnat).

513. Often the CCR wells and the CCA wells are collected on the same day. 10/26/17 Morning Tr. p. 11:5-9 (Testimony of Gnat).

514. **The CCA wells are sampled for dissolved metals.** (10/26/17 Afternoon Tr. p. 7:1-8 (Testimony of Gnat); 2/1/18 Tr. p. 91:3-5 (Testimony of Gnat); 10/26/18 Afternoon Tr. p. 71:4-6 (Testimony of Kunkel).

515. The CCR wells are sampled for total metals. (10/26/17 Afternoon Tr. p. 7:12-15 (Testimony of Gnat); 2/1/18 Tr. p. 91:6-8 (Testimony of Gnat).

516. **Complainants' expert, Kunkel agreed that "the total recoverable and dissolved are the same for all practical purposes."** 10/26/18 Afternoon Tr. p. 71:10-14 (Testimony of Kunkel).

517. The CCA well sample results are more representative than the CCR Data for comparison to the Class 1 Standards, 35 ILCS 620.410. 10/26/17 Morning Tr. p. 14:24-15:3 (Testimony of Gnat).

518. At the Waukegan Station, results from the monitoring of additional wells are included in the summary data table: wells installed as part of the ELUC agreement between MWG and the Griess-Pfleger Tannery property to the west ("ELUC Wells"); and monitoring wells (MW) 8 and 9. 2/1/18 Tr. p. 90:8-16, 147:6-17,148:22-149:10 (Testimony of Gnat).

519. At the Waukegan Station, pursuant to Illinois EPA's construction permit, beginning in first quarter of 2017, the CCA Wells and the CCR Wells are analyzed for total metals and are not field filtered; this is reflected in the Waukegan summary data table. 2/1/18 Tr. p. 146:11-147:5 (Testimony of Gnat).

520. In the data summary tables (MWG Exhibits 809 through 812), the difference in analysis between CCA Wells and CCR Wells is shown in a note in the tables that states that the sample was not field filtered. 2/1/18 Tr. p. 91:22-92:19 (Testimony of Gnat); MWG Exs. 809-812 (Tables of Groundwater Analytical Results for MWG Stations: Joliet #29, Powerton, Waukegan, and Will County).

521. In the data summaries in MWG Ex. 809 through 812, if a well is both a CCA wells and a CCR well, the data in the summary data tables (MWG Exhibits 809 through 810) are only the CCA Well data. 2/1/18 Tr. p. 92:20-93:15 (Testimony of Gnat); MWG Exs. 809-812 (Tables of Groundwater Analytical Results for MWG Stations: Joliet #29, Powerton, Waukegan, and Will County).

522. The one place to look for all the relevant groundwater data at the four MWG Stations is in the data summary tables (MWG Exhibit 809 through 812) because the tables contain all the wells and all the relevant sampling data for the wells. 2/1/18 Tr. pp. 94:4-96:3, 96:4-15, 166:11-17 (Testimony of Gnat); MWG Exs. 809-812 (Tables of Groundwater Analytical Results for MWG Stations: Joliet #29, Powerton, Waukegan, and Will County).

4. Joliet 29 Groundwater Results

523. **Since the groundwater sampling has begun at Joliet 29, boron has only been detected above the groundwater Class I standards at Joliet 29 in one of the eleven wells in 2011 and never since.** MWG Ex. 908, MWG Ex. 809; 10/27/17 Tr. p. 246:4-250:20 (Testimony of Kunkel); 2/2/18 Tr. p. 40:13-18 (Testimony of Seymour). [9]

524. **Both experts agreed that the for the last 24 recent quarters, there are no sample results with boron above the Class I standard at Joliet 29.** 2/2/18 Tr. p. 40:13-18 (Testimony of Seymour); 10/27/17 Tr. p. 246:4-250:20 (Testimony of Kunkel).

525. **Complainants' expert Kunkel opined that the boron levels in the groundwater at Joliet 29 were decreasing or flat in nine of the eleven wells.** MWG Ex. 908; 10/27/17 Tr. p. 246:4-250:20 (Testimony of Kunkel).

526. **Complainants' expert Kunkel stated that ten of the eleven groundwater monitoring wells at Joliet 29 show sulfate below the Class I standard.** MWG Ex. 908, MWG Ex. 809; 10/27/17 Tr. p. 250:21-253:20 (Testimony of Kunkel).

527. **Complainants' expert, Kunkel, stated that the sulfate levels were either decreasing or flat, and he did not describe any as increasing.** MWG Ex. 908, 10/27/17 Tr. p. 254:2-6 (Testimony of Kunkel).

528. The other constituents associated with coal ash, including but not limited to manganese, arsenic, and barium, are not above the Class I standard in the groundwater wells at Joliet 29 and are not consistently present in the groundwater wells around the ponds. MWG Ex. 809 (Table of Groundwater Analytical Results for MWG Joliet 29, 4/Q2010-2Q2017).

529. The chloride levels at Joliet 29 are observed on a seasonal basis, consistent with the time periods when road salt is applied in winter. 10/26/17 Morning Tr. p. 37:14-24 (Testimony of Gnat); 2/1/18 Tr. p. 112:1-9 (Testimony of Gnat).

530. The seasonal levels of chloride suggest that the chloride was due to the spreading of road salt. 10/26/17 Morning Tr. p. 37:14-24 (Testimony of Gnat); 2/1/18 Tr. p. 112:1-9 (Testimony of Gnat); 2/1/18 Tr. p. 37:22-38:15 (Testimony of Seymour).

[9] MWG Exhibit 908 (Joliet 29 Update of Kunkel Slides), cited in this SOF and MWG's Post-Hearing Brief, is attached to this SOF as Attachment 2 for ease of reference.

D. Powerton Relining Projects

531. In 2010, MWG continued to execute its preventative maintenance plan to reline the ash ponds at the Powerton Station. 1/31/18 Tr. p. 113:17-23 (Testimony of Kelly); MWG Ex. 606 (Nov. 2006 Technical Memo Regarding Liner Upgrade and Cost); MWG Ex. 607 (MWG Initial Schedule of Pond Relining Schedule for all Ash Ponds).

532. Because MWG had already approved relining the Powerton Metal Cleaning Basin and Bypass Basin, MWG took the opportunity to continue the work. 1/31/18 Tr. p. 217:23-218:6 (Testimony of Kelly).

533. When the opportunity to conduct preventative maintenance was presented, MWG took it. 1/31/18 Tr. p. 218:7-13 (Testimony of Kelly).

1.Powerton Metal Cleaning Basin

534. On July 27, 2009, MWG submitted to Illinois EPA a construction permit application for relining the Powerton Metal Cleaning Basin with an HDPE liner. 1/31/18 Tr. p. 118:10-18 (Testimony of Kelly); MWG Ex. 707 (Application for Construction Permit for Metal Cleaning Basin Liner Replacement).

535. On November 13, 2009, Illinois EPA issued the construction permit for relining the Powerton Metal Cleaning Basin. MWG Ex. 708 (Illinois EPA Construction Permit for the Metal Cleaning Basin Liner).

536. When MWG removed the water and ash from the Powerton Metal Cleaning Basin in 2010, MWG found that the poz-o-pac was in excellent condition. 1/31/18 Tr. p. 121:20-21 (Testimony of Kelly).

537. MWG found that the Hypalon liner on the sides of the Powerton Metal Cleaning Basin was in good condition below the water line, and there were few repairs to the Hypalon liner around the top of the pond. 1/31/18 Tr. p. 121:20-122:1 (Testimony of Kelly).

538. The liner system installed in the Powerton Metal Cleaning Basin consisted of six layers of materials (from bottom to top): the original 12-inch poz-o-pac, a geotextile cushion, the HDPE liner, a geotextile cushion, a 12-inch thick sand cushion layer, and a 6-inch limestone warning layer. MWG Ex. 706, p. MWG13-15_ p. 49226 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); MWG Ex. 901, p. 29 (Seymour Presentation, SOF Attachment 1); 1/31/18 Tr. p. 125:20:5 (Testimony of Kelly).

539. Before the HDPE installer began installing the HDPE in the Powerton Metal Cleaning Basin, the installer visually inspected the subgrade and certified that the subgrade surface in Metal Cleaning Basin was acceptable for installation of the HDPE. MWG Ex. 706, p. MWG13-15_49200 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 122:19-123:6 (Testimony of Kelly).

540. After installation of the HDPE, the installation company certified that the liner in the Powerton Metal Cleaning Basin was installed properly and in accordance with the project

specifications. MWG Ex. 706, p. MWG13-15_49202 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 123:7-17 (Testimony of Kelly).

541. Before the Powerton Metal Cleaning Basin was placed back in service, MWG had an electronic leak location survey of the Metal Cleaning Basin taken to identify any potential leaks in the HDPE liner. MWG Ex. 706, p. MWG13-15_49216 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 123:18-123:3 (Testimony of Kelly).

542. One leak was found in the Powerton Metal Cleaning Basin liner as installed, which was repaired. MWG Ex. 706, p. MWG13-15_49216 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 107:15-17, 124:4-6 (Testimony of Kelly).

543. MWG installed marker posts along the edge of the base of the Powerton Bypass Basin to mark the sides and warn operators when the ponds are being dredged. MWG Ex. 706, MWG13-15_49224, 49229 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 126:9-14 (Testimony of Kelly).

2.Powerton Bypass Basin

544. In 2010, MWG submitted a construction permit application for relining the Powerton Bypass Basin with an HDPE liner. 1/31/18 Tr. p. 102:1-12 (Testimony of Kelly); MWG Exs. 704 (Application for Construction Permit for Bypass Basin Liner Replacement).

545. Before Illinois approved the application to reline the Powerton Bypass Basin, Illinois EPA requested confirmation that the cushion and warning layer would provide adequate protection of the liner from the mechanical equipment when it drove in the ash ponds. MWG Ex. 633 (2010 Documentation and Calculation of Geomembrane Protection Measures).

546. MWG's consultant provided specifications and calculations regarding the material used for the warning layer and calculations supporting the consultant's conclusion that the liners would be adequately protected. 1/31/18 Tr. p. 64:2-65:1 (Testimony of Kelly); MWG Ex. 633, MWG13-15_49293 (2010 Documentation and Calculation of Geomembrane Protection Measures).

547. Following the submission of the additional specifications and calculations, Illinois EPA issued the permit to construct the HDPE liner on the Powerton Bypass Basin on September 15, 2010. MWG Ex. 633 (2010 Documentation and Calculation of Geomembrane Protection Measures); MWG Ex. 704 (Application for Construction Permit for Bypass Basin Liner Replacement); MWG Ex. 705 (Illinois EPA Construction Permit for the Bypass Basin Liner).

548. When MWG removed the water and ash from the Powerton Bypass Basin in 2010, MWG found that the poz-o-pac that lined the Bypass Basin was in excellent condition. 1/31/18 Tr. p. 104:17-105:1, 113:4-14, 121:20-21 (Testimony of Kelly).

549. In the Powerton Bypass Basin, there were no cracks in the poz-o-pac and the surface was very smooth and in good condition. 1/31/18 Tr. p. 105:2-6 (Testimony of Kelly).

550. MWG found that the Hypalon liner on the sides of the Powerton Bypass Basin was in good condition below the water line, and there were few repairs to the Hypalon liner around the top of the pond. 1/31/18 Tr. p. 105:7-15 (Testimony of Kelly).

551. The liner system installed in the Powerton Bypass Basin consisted of six layers of materials (from bottom to top): the original 12-inch poz-o-pac, a geotextile cushion, the HDPE liner, a geotextile cushion, a 12-inch thick sand cushion layer, and a 6-inch limestone warning layer. MWG Ex. 706, p. MWG13-15_ p. 49230 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); MWG Ex. 901, p. 31 (Seymour Presentation, SOF Attachment 1); 1/31/18 Tr. p. 108:6-22 (Testimony of Kelly).

552. Before the HDPE installer began installing the HDPE in the Powerton Bypass Basin, the installer visually inspected the subgrade and certified that the subgrade surface in the Bypass Basin was acceptable for installation of the HDPE. MWG Ex. 706, p. MWG13-15_49200 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 106:2-17 (Testimony of Kelly).

553. After installation of the HDPE, the installation company certified that the liners in the Powerton Bypass Basin were installed properly and in accordance with the project specifications. MWG Ex. 706, p. MWG13-15_49202 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 106:18-107:4 (Testimony of Kelly).

554. Before the Powerton Bypass Basin was placed back in service, MWG had an electronic leak location survey of Bypass Basin taken to identify any potential leaks in the HDPE liner. MWG Ex. 706, p. MWG13-15_49209 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 107:5-14, (Testimony of Kelly).

555. One leak was found in the liner of the Powerton Bypass Basin as installed, which was repaired. MWG Ex. 706, p. MWG13-15_49209 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 107:15-17 (Testimony of Kelly).

556. MWG installed marker posts along the edge of the base of the Powerton Bypass Basin to mark the sides to warn the operators when the ponds are being dredged. MWG Ex. 706, MWG13-15_49224, 49229 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 109:4-9 (Testimony of Kelly).

557. At the completion of the relining, MWG's consultant submitted to MWG "Construction Documentation Transmittal" on June 27, 2011 which was the construction record documents related to the replacement of the liners in the Powerton Bypass Basin and the Metal Cleaning Basin. MWG Ex. 706 Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement.

558. The Construction Documentation for the Powerton Bypass Basin and Metal Cleaning Basin was the QA/QC documents and contained the complete documentation. MWG Ex. 706 (Construction Documentation of the Metal Cleaning Basin and Bypass Basin Liner Replacement); 1/31/18 Tr. p. 86:2-7 (Testimony of Kelly).

E. Compliance Commitment Agreements

559. On June 11, 2012, Illinois EPA issued Violation Notices ("VNs") to MWG alleging violations of the groundwater quality standards from the ash ponds. Comps Ex. 1A-4A (Violation Notices).

560. MWG disagreed that the groundwater sample results showed contamination from the current operations of the ponds. Comp. Ex. 8B-11B; MWG Ex. 622-625 (MWG's Responses and Supplemental Responses to the Violation Notices).

561. There were a number of reasons why MWG did not think that the current pond operations were the source of the constituents in the groundwater. 1/30/18 Tr. p. 28:18 (Testimony of Race).

- the Stations are surrounded by other operations and are in old industrial areas. 1/30/18 Tr. p. 28:19-21 (Testimony of Race).
- there were already ELUCs established on two of the four MWG Stations because of contaminant plumes from off-site. 1/30/18 Tr. 28:21-29:1 (Testimony of Race).
- At Waukegan, there is the plume in groundwater migrating from the tannery site to the west which historically used borax, and there are Superfund sites to the adjacent to the north of the property and also to the south. 1/30/18 Tr. p. 29:1-5 (Testimony of Race).
- the ash ponds at the MWG stations are lined. 1/29/18 Tr. p. 188:4-19 (Testimony of Race); 1/30/18 Tr. p. 29:11-16 (Testimony of Race).
- At Waukegan, MWG had just relined the ponds and they were in good condition. 1/30/18 Tr. p. 29:21--30:4 (Testimony of Race).
- When MWG relined the next five ash ponds at Joliet 29, Will County and Powerton MWG found that the underlying poz-o-pac was in excellent condition. 1/30/18 Tr. p. 29:16-20 (Testimony of Race).

562. In 2012, Illinois EPA and MWG agreed to Compliance Commitment Agreements ("CCAs") for each MWG Station. MWG Exs. 626, 636, 647, 656 (CCAs for Joliet 29, Powerton, Waukegan, and Will County).

563. Under the CCAs, MWG agreed to maintain and operate the ash ponds in a manner that protects the integrity of the liners. MWG Ex. 626, p. MWG13-15_573 (Joliet 29 CCA); MWG Ex. 636, MWG13-15_554 (Powerton CCA) MWG Ex. 647, MWG13-15_567 (Waukegan CCA); MWG Ex. 656, MWG13-15_561 (Will County CCA).

- MWG agreed to follow procedures to ensure that operating the ash removal equipment did not damage the liners. 1/30/18 Tr. pp. 35:12-15, 92:23-93:8, 165:1-

6 (Testimony of Race); MWG Ex. 626 (Joliet 29 CCA); MWG Ex. 636 (Powerton CCA) MWG Ex. 647 (Waukegan CCA); MWG Ex. 656 (Will County CCA).

- MWG agreed to continue to use the ash ponds as MWG always had, continue to have the ash removed, and not use as permanent disposal sites. 1/30/18 Tr. pp. 35:16-21, 165:1-6 (Testimony of Race); MWG Ex. 626 (Joliet 29 CCA); MWG Ex. 636 (Powerton CCA) MWG Ex. 647 (Waukegan CCA); MWG Ex. 656 (Will County CCA).
- When the ash is removed from the ash ponds, MWG agreed to conduct visual inspections of the liners to identify any potential breaches in the pond liners. 1/30/18 Tr. p. 35:16-21 (Testimony of Race); MWG Ex. 626 (Joliet 29 CCA); MWG Ex. 636 (Powerton CCA); MWG Ex. 647 (Waukegan CCA); MWG Ex. 656 (Will County CCA).
- MWG agreed to reline its remaining active ash ponds in a similar manner as its already relined ash ponds. MWG Ex. 626 (Joliet 29 CCA); MWG Ex. 636 (Powerton CCA); MWG Ex. 656 (Will County CCA).

1.Relining Projects Under the CCAs

564. In 2012, there were no Federal CCR or Illinois specific CCR rules, so MWG and Illinois EPA referred to the original construction documents for the previously MWG relined ponds and concluded that HDPE would be the approved liner. 1/30/18 Tr. p. 31:13-22 (Testimony of Race).

a. Joliet 29 Ash Pond 3

565. Under the CCA signed for the Joliet 29 Station, MWG agreed to reline Ash Pond 3 at Joliet 29. MWG Ex. 626 (Joliet 29 CCA).

566. On February 25, 2013, the Illinois EPA issued a construction permit for MWG to replace the liner in Joliet 29 Ash Pond 3. 1/30/8 Tr. p. 39:7-8 (Testimony of Race); MWG Ex. 628 (Illinois EPA Construction Permit for the Joliet 29 Pond 3).

567. MWG emptied Joliet 29 Ash Pond 3 for the first time since MWG began operating the Station. 1/30/18 Tr. p. 39:24-40:19 (Testimony of Race).

568. When MWG emptied Joliet 29 Ash Pond 3, MWG found no ash material in the pond and found that the underlying poz-o-pac was intact. 1/30/18 Tr. p. 39:19-23 (Testimony of Race).

569. The new liner system installed in Joliet 29 Ash Pond 3 consisted of six layers of materials (from bottom to top): the original poz-o-pac, a geotextile cushion, the HDPE liner, a geotextile cushion, a 24-inch thick sand cushion layer, and a 12-inch limestone warning layer. MWG Ex. 629, p. MWG13-15_33997 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement); MWG Ex. 901, p. 18 (Seymour Presentation, SOF Attachment 1).

570. Before the HDPE installer began installing the HDPE liner in Joliet 29 Ash Pond 3, the installer visually inspected the subgrade and certified that the subgrade was that the surface was acceptable for installation of the HDPE. MWG Ex. 629, p. MWG13-15_33945 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement); 1/30/18 Tr. p. 42:11-20 (Testimony of Race).

571. After installation of the HDPE liner in Joliet 29 Ash Pond 3, the installation company certified that the liner was installed properly and in accordance with the project specifications. MWG Ex. 629, p. MWG13-15_33947 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement); 1/30/18 Tr. p. 42:21-43:8 (Testimony of Race).

572. Before Joliet 29 Ash Pond 3 was placed back in service, MWG had an electronic leak location survey of the ponds taken to identify any potential leaks in the HDPE liner. MWG Ex. 629, p. MWG13-15_33987 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement)7; 1/30/18 Tr. p. 43:9-23 (Testimony of Race).

573. No leaks were found in Joliet 29 Ash Pond 3. MWG Ex. 629, p. MWG13-15_33987 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement); 1/30/18 Tr. p. 43:21-23 (Testimony of Race).

574. The relining of Joliet 29 Ash Pond 3 was completed in late 2013, and the pond was returned to service. MWG Ex. 629, MWG13-15_33867 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement); 1/30/18 Tr. p. 44:12-14 (Testimony of Race).

575. At the completion of the relining of Joliet 29 Ash Pond 3, MWG's consultant submitted to MWG "Construction Documentation Transmittal" on July 16, 2014 which was the construction record documents related to the replacement of the liner in Ash Pond 3. MWG Ex. 629 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement).

576. The Construction Documentation contained all the certifications for the installation of the HDPE liner and the as-built drawings and information for the Joliet 29 Ash Pond 3 liner. MWG Ex. 629 (Construction Documentation of the Joliet 29 Pond 3 Liner Replacement); 1/30/18 Tr. p. 41:16-42:6 (Testimony of Race).

b. Powerton Pond Re-Lining

577. Under the CCA signed for the Powerton Station, MWG agreed to reline the Ash Surge Basin and the Secondary Basin. MWG Ex. 636 (Powerton CCA).

578. On January 17, 2013, MWG submitted an application for a construction permit to install a new HDPE liner in the Powerton Ash Surge Basin. 1/31/18 Tr. p. 82:9-18 (Testimony of Kelly), MWG Ex. 701 (Application for Construction Permit for Ash Surge Basin Liner Replacement).

579. On February 25, 2013 granted the construction permit to install the new liner in the Powerton Ash Surge Basin. 1/31/18 Tr. p. 83:15-23 (Testimony of Kelly); MWG Ex. 702 (Illinois EPA Construction Permit for the Ash Surge Basin Liner).

580. The first step to reline the Ash Surge Basin was to have a meeting on how the project was going to go ahead. 1/31/18 Tr. p. 84:6-9 (Testimony of Kelly).

581. When MWG removed water and ash from the Powerton Ash Surge Basin, Powerton Chemical Specialist, Mr. Kelly observed that the Hypalon liner in the Ash Surge Basin was in good condition. 1/31/18 Tr. pp. 84:8-85:12 (Testimony of Kelly).

582. During the relining, MWG noticed some rips and tears around the top of the Powerton Ash Surge Basin that had been repaired in the past, but the Hypalon liner on the sides of the basin below the water line was in good shape. 1/31/18 Tr. p. 85:6-12 (Testimony of Kelly).

583. The Powerton Station Chemical Specialist also observed that the poz-o-pac on the bottom of the Powerton Ash Surge Basin was in excellent condition. 1/31/18 Tr. p. 84:18-20 (Testimony of Kelly).

584. MWG's liner contractor decided not to remove the poz-o-pac at the Powerton Ash Surge Basin because it was in such good-shape and would be so difficult to remove. 1/31/18 Tr. p. 84:18-24 (Testimony of Kelly).

585. MWG modified the bid specifications for the Powerton Ash Surge Basin to lay down the HDPE liner over the poz-o-pac in the Ash Surge Basin. 1/31/18 Tr. p. 84:18-85:1 (Testimony of Kelly).

586. The liner system installed in the Powerton Ash Surge Basin consists of six layers of materials (from bottom to top): the original 12-inch-thick poz-o-pac, a geotextile cushion, the HDPE liner, another geotextile cushion, a 12-inch thick sand cushion layer, and a 6-inch limestone warning layer. MWG Ex. 901, p. 30 (Seymour Presentation, SOF Attachment 1); MWG Ex. 703, p. MWG13-15_34156 (Construction Documentation of the Ash Surge Basin Liner Replacement); 1/31/16 Tr. p. 90:11-91:18 (Testimony of Kelly).

587. Before the HDPE installer began installing the HDPE liner in the Powerton Ash Surge Basin, the installer visually inspected the subgrade and certified that the subgrade was acceptable for installation of the HDPE. MWG Ex. 703, p. MWG13-15_34095 (Construction Documentation of the Ash Surge Basin Liner Replacement); 1/31/18 Tr. p. 86:15-87:17 (Testimony of Kelly).

588. After installation of the HDPE liner in the Powerton Ash Surge Basin, the installation company certified that the HDPE liner was installed in the Ash Surge Basin properly and in accordance with the project specifications. MWG Ex. 703, p. MWG13-15_34097 (Construction Documentation of the Ash Surge Basin Liner Replacement); 1/31/18 Tr. p. 88:3-16 (Testimony of Kelly).

589. Following installation of the HDPE liner but before the sand and warning layers were installed, a contractor conducted a liner integrity survey using an electronic leak location survey on the Powerton Ash Surge Basin. MWG Ex. 703, p. MWG13-15_34140-34143 (Construction Documentation of the Ash Surge Basin Liner Replacement); 1/31/18 Tr. p. 88:22-15 (Testimony of Kelly).

590. The leak location contractor for the Powerton Ash Surge Basin identified two leaks, marked the leaks for repair, and the leaks were repaired. MWG Ex. 703, p. MWG13-15_34141 (Construction Documentation of the Ash Surge Basin Liner Replacement); 1/31/18 Tr. p. 89:16-18 (Testimony of Kelly).

591. After the sand cushion layer and warning layer were installed, MWG had a second liner integrity survey conducted at the Powerton Ash Surge Basin. MWG Ex. 703, p. MWG13-15_34144-34149 (Construction Documentation of the Ash Surge Basin Liner Replacement); 1/31/18 Tr. p. 89:23-90:3 (Testimony of Kelly).

592. The electronic survey did not find any leaks in the HDPE liner in the Powerton Ash Surge Basin; a visual inspection observed three leaks which were repaired. MWG Ex. 703, p. MWG13-15_34145 (Construction Documentation of the Ash Surge Basin Liner Replacement); 1/31/18 Tr. p. 90:4-10 (Testimony of Kelly).

593. At the completion of the relining but before the Powerton Ash Surge Basin was placed back into service, MWG's consultant took a panoramic photo of the entire Ash Surge Basin. MWG Ex. 703, MWG13-15_34046 (Construction Documentation of the Ash Surge Basin Liner Replacement); MWG Ex. 664-A.

594. In the panoramic photo of the Powerton Ash Surge Basin, the white HDPE liner is visible on the slopes, as well as the crushed limestone layer in the middle of the basin. 1/31/18 Tr. p. 94:18-95:3 (Testimony of Kelly); Ex. 664-A (Panoramic View of the Ash Surge Basin at Powerton).

595. The photo shows the warning poles installed in the Powerton Ash Surge Basin to let the operators know the location of the slope in the ponds, so that the operators avoid the sides of the ponds and avoid any potential tears. 1/31/18 Tr. p. 95:10-96:1 (Testimony of Kelly); Ex. 664-A (Panoramic View of the Ash Surge Basin at Powerton).

596. At the end of the relining project of the Powerton Ash Surge Basin, MWG's consultant submitted to MWG "Construction Documentation Transmittal" on July 18, 2014 which was the quality assurance/quality control ("QA/QC") documents related to the replacement of the liners. 1/31/18 Tr. p. 85:22-86:7 (Testimony of Kelly); MWG Ex. 703(Construction Documentation of the Ash Surge Basin Liner Replacement).

597. The Powerton Ash Surge Basin Construction Documentation contained the complete certifications for the installation of the HDPE liner and the as-built drawings and information for the pond liners. 1/31/18 Tr. p. 86:2-4 (Testimony of Kelly); MWG Ex. 703 (Construction Documentation of the Ash Surge Basin Liner Replacement).

598. As part of the Powerton CCA, MWG agreed to reline the Secondary Ash Basin at the Powerton Station. MWG Ex. 636 (Powerton CCA).

599. MWG had originally submitted the application to reline the Powerton Secondary Ash Basin on December 18, 2009, as part of MWG's relining program. Comp Ex. 33, MWG Ex. 605, p. MWG13-15_23625 (Oct. 2006 Technical Memo Regarding Liner Upgrade and Cost); MWG Ex. 607 (MWG Initial Schedule of Pond Relining Schedule for all Ash Ponds).

600. On April 2, 2010, the Illinois EPA issued the permit to reline the Secondary Ash Basin. MWG Ex. 709 (Illinois EPA Construction Permit for the Secondary Ash Basin).

601. In 2010, MWG paused the relining program at the MWG Stations, including the relining project of the Powerton Secondary Ash Basin, due to the Federal CCR Rules. 1/30/18 Tr. p. 279:9-18 (Testimony of Race).

602. The permit to reline the Secondary Ash Basin issued in 2010 expired on January 31, 2015. MWG Ex. 709 (Illinois EPA Construction Permit for the Secondary Ash Basin).

603. In the spring of 2013, MWG began the process of relining the Powerton Secondary Ash Basin. 1/31/18 p. 129:16-18 (Testimony of Kelly).

604. When MWG removed the water and ash from the Powerton Secondary Ash Basin, MWG observed that the Hypalon liner in the pond was in good condition. 1/31/18 Tr. p. 130:16-131:3 (Testimony of Kelly).

605. After the Hypalon liner was removed from the Powerton Secondary Ash Basin, the Illinois River crested to an all-time high and caused water to seep into an area of the Secondary Ash Basin. 1/31/18 Tr. p. 131:14-132:6 (Testimony of Kelly).

606. MWG installed an underdrain system in the Powerton Secondary Ash Basin, under the new HDPE liner. MWG Ex. 710, MWG13-15_34265 (Construction Documentation of the Secondary Ash Basin Liner Replacement); 1/31/18 Tr. p. 132:11-12 (Testimony of Kelly).

607. The purpose of the underdrain system at the Powerton Secondary Ash Basin, composed of stone, drain tiles, and riprap on the sides, is to keep water away from the pond liner. 1/31/18 Tr. p. 133:2-10 (Testimony of Kelly); MWG Ex. 710, MWG13-15_34265 (Construction Documentation of the Secondary Ash Basin Liner Replacement).

608. Water beneath the Powerton Secondary Ash Basin would be routed to a sump under the Basin, and from that sump, MWG could pump the water out. 1/31/18 Tr. p. 8-10 (Testimony of Kelly), MWG Ex. 710, MWG13-15_34263 (Construction Documentation of the Secondary Ash Basin Liner Replacement).

609. **Complainants' expert, Kunkel, agreed that final drawings showed that MWG installed an underdrain system under the Secondary Ash Basin, which was specifically designed to prevent any uplift on the HDPE liner in the Secondary Ash Basin.** 10/27/18 Tr. p. 103:3-109:9 (Testimony of Kunkel), MWG Ex. 710, MWG13-15_34261-34265.

610. Following installation of the underdrain system in the Powerton Secondary Ash Basin, MWG installed a 12-inch cushion layer of sand, a geotextile cushion layer, and finally the HDPE liner. 1/31/18 Tr. p. 135:2-6 (Testimony of Kelly), MWG Ex. 710, MWG13-15_34265 (Construction Documentation of the Secondary Ash Basin Liner Replacement); MWG Ex. 901, p. 32 (Seymour Presentation, SOF Attachment 1).

611. Before the HDPE installer began installing the HDPE liner in the Powerton Secondary Ash Basin, the installer visually inspected the subgrade and certified that the subgrade

in the Secondary Ash Basin was acceptable for installation of the HDPE. MWG Ex. 710, p. MWG13-15_34228 (Construction Documentation of the Secondary Ash Basin Liner Replacement); 1/31/18 Tr. p. 136:1-6 (Testimony of Kelly).

612. Following installation of the HDPE liner in the Powerton Secondary Ash Basin, a contractor conducted a liner integrity survey using an electronic leak location survey. MWG Ex. 710, p. MWG13-15_34258-34259 (Construction Documentation of the Secondary Ash Basin Liner Replacement); 1/31/18 Tr. p. 136:7-12 (Testimony of Kelly).

613. The electronic survey did not find any leaks in the HDPE liner in the Powerton Secondary Ash Basin. MWG Ex. 710, p. MWG13-15_34258-34259 (Construction Documentation of the Secondary Ash Basin Liner Replacement); 1/31/18 Tr. p. 136:13-15 (Testimony of Kelly).

614. MWG did not install a cushion or warning layer on top of the HDPE in the Powerton Secondary Ash Basin because the basin had never been emptied in 35 years and would not need to be dredged. 1/31/18 Tr. p. 135:10-18 (Testimony of Kelly).

615. At the end of the relining project for the Powerton Secondary Ash Basin, MWG's consultant submitted to MWG "Construction Documentation Transmittal" on July 18, 2014 which was the documentation showing to MWG that the HDPE liner was installed properly. 1/31/18 Tr. p. 136:16-21 (Testimony of Kelly); MWG Ex. 710 (Construction Documentation of the Secondary Ash Basin Liner Replacement).

616. After completion of the relining, MWG put the Powerton Secondary Ash Basin back into service, and it has not been emptied since 2013. 1/31/18 Tr. p. 136:22-137:2 (Testimony of Kelly).

617. Since 2013, there have not been any issues related to the river water impacting or moving the liner. 1/31/18 Tr. p. 137:3-7 (Testimony of Kelly).

c. Will County Ponds

618. As part of the CCA agreement, MWG relined Pond 2S at Will County. 1/30/18 Tr. p. 215:23-24 (Testimony of Race); MWG Ex. 656 (Will County CCA).

619. Illinois EPA issued a new construction permit for Will County Pond 2S relining on Feb. 25, 2013. 10/24/17 p. 289:24-290:8 (Testimony of Maddox); 1/30/18 Tr. p. 219:12-23 (Testimony of Race); MWG Ex. 657 (Illinois EPA Construction Permit for the Will County Pond 2S).

620. During the Pond 2S relining project, MWG retained a contractor to conduct construction quality assurance during subgrade preparation, geocell installation and placement of the cushion/warning layers, and to conduct full-time construction quality assurance oversight during liner installation and leak location survey. 10/24/18 Tr. p. 301:24-302:10 (Testimony of Maddox); MWG Ex. 509 (2013 Meeting Minutes re Will County Pond #2S Liner Replacement Project).

621. The poz-o-pac liner in Ash Pond 2S at Will County was in very good condition at the time Ash Pond 2S was being relined. 10/24/17 Tr. p. 304:7-10 (Testimony of Maddox).

622. As part of the relining project of Will County Pond 2S, MWG's contractor removed the top layer of poz-o-pac; due to the good condition of the poz-o-pac, removing the poz-o-pac was very difficult. 10/24/17 Tr. p. 304:2-14 (Testimony of Maddox); MWG Ex. 510, MWG13-15_34274 (Construction Documentation of the Will County Pond 2S); MWG Ex. 901 p. 61 (Seymour Presentation).

623. Before the HDPE installer began installing the HDPE liner at Will County Pond 2S, the installer visually inspected the subgrade and certified that the subgrade was acceptable for installation of the HDPE liner. MWG Ex. 510, MWG13-15_34391 (Construction Documentation of the Will County Pond 2S).

624. Following certification that the subgrade at Will County Pond 2S was acceptable, the MWG contractor installed geotextile, which is a black material, and over the geotextile, a geomembrane which is the white material. 10/24/17 Tr. p. 304:23-305:8 (Testimony of Maddox); MWG Ex. 510, MWG13-15_34285 (Construction Documentation of the Will County Pond 2S).

625. Upon installation of the HDPE liner, the geomembrane installer certified that the HDPE geomembrane and geotextiles installed in Will County Ash Pond 2 were installed in accordance with the project specifications and manufactures recommendations. MWG Ex. 510, MWG13-15_34393 (Construction Documentation of the Will County Pond 2S).

626. **Will County Pond 2S has a concrete geocell on the sides of the basin.** JAS No. 46.

627. A geocell is concrete placed in a honeycomb structure. 10/24/17 Tr. p. 204:9-18 (Testimony of Maddox).

628. The purpose of the geocell was for additional protection of the liner during operation and cleanup. 10/24/17 Tr. p. 204:23-205:2 (Testimony of Maddox); 1/30/18 Tr. p. 247:23-248:5 (Testimony of Race).

629. Following installation of the HDPE liner, a contractor conducted a liner integrity survey using an electronic leak location survey on Will County Pond 2S and no leaks were found. MWG Ex. 510, p. MWG13-15_34422 (Construction Documentation of the Will County Pond 2S).

630. The final layers of the liner system in Will County Ash Pond 2S consists of six layers of materials (from bottom to top): 12-24-inches of poz-o-pac, a geotextile cushion, the HDPE liner, another geotextile cushion, a 12-inch thick sand cushion layer, and a 6-inch limestone warning layer on the bottom and a geocell layer on the sides. MWG Ex. 901, p. 61 (Seymour Presentation, SOF Attachment 1); MWG Ex. 510, MWG13-15_34432 (Construction Documentation of the Will County Pond 2S).

631. At the end of the relining project for Will County Ash Pond 2S, MWG's consultant submitted to MWG "Construction Documentation Transmittal" on July 18, 2014 which was a final

construction project report for Ash Pond 2S. 10/24/17 Tr. p. 303:4-13 (Testimony of Maddox); MWG Ex. 510 (Construction Documentation of the Will County Pond 2S).

632. As part of the CCA agreement, MWG dewatered ponds 1N and 1S at Will County. 10/24/17 Tr. p. 276:19-277:13 (Testimony of Maddox).

633. Both Will County ponds 1N and 1S were engineered to keep the water level in the ponds below 12 inches by sloping the pond to direct the water out to the wastewater treatment. 10/24/17 Tr. p. 279:2-7 (Testimony of Maddox); 1/30/18 Tr. p. 220:12-19 (Testimony of Race); MWG Ex. 511 (Map of Will County Ponds 1N and 1S); MWG Ex. 656 (Will County CCA).

2.Additional Groundwater Monitoring Wells and Future Groundwater Monitoring

634. In the Powerton and Waukegan CCAs, MWG agreed to install additional monitoring wells. 1/30/18 Tr. pp. 93:9-23, 165:8-10 (Testimony of Race).

635. In all of the CCAs, MWG agreed to continue groundwater monitoring on a quarterly basis. MWG Exs. 626, p. MWG13-15_573 (Joliet 29 CCA); MWG Ex. 636, MWG13-15_554 (Powerton CCA); MWG Ex. 647, MWG13-15_567 (Waukegan CCA); MWG Ex. 656, MWG13-15_561 (Will County); 1/30/18 Tr. pp. 35:22-36:7, 165:14-16 (Testimony of Race).

3.Groundwater Management Zones and ELUCs

636. In the CCAs, MWG agreed to establish a groundwater management zone ("GMZ") pursuant to 35 Ill. Adm. Code 620.250 at the Powerton, Will County and Joliet 29 Stations. Comp. Exs. 242, 254, 276P (MWG Applications for the GMZ at Joliet 29, Powerton, and Will County); MWG Exs. 626, 636, 656 (CCAs for Joliet 29, Powerton, and Will County); MWG Ex. 627, 638, 658 (Illinois Approval of GMZs at Joliet 29, Powerton and Will County); 1/30/18 Tr. p. 216:5-7 (Testimony of Race).

637. Upon establishment of the GMZs at the Stations, otherwise applicable groundwater standards are not applicable to the groundwater within the GMZ area at the Stations. 1/30/18 Tr. p. 36:16-18 (Testimony of Race); 2/1/18 Tr. p. 107:9-17, 166:24-167:6 (Testimony of Gnat).

638. On January 18, 2013, MWG submitted its applications for the GMZ for the Joliet 29, Powerton, and Will County Stations. 1/30/18 Tr. p. 37:22-38:15 (Testimony of Race); Comp. Exs. 242, 253, and 276 (Applications for GMZs for Joliet 29, Powerton, and Will County).

639. The GMZ area at each of the Stations covers large parts of the three Stations, including the ash ponds, the groundwater monitoring wells, and the surrounding areas, and upon establishment, MWG has not heard from Illinois EPA related to any concerns with the GMZs or groundwater. MWG Ex. 901, p. 23, 39, 67 (Seymour Presentation, SOF Attachment 1); MWG Ex. 667, pp. 4, 13, 29 (Midwest Generation Maps: Joliet 29, Powerton, Waukegan, and Will County); Comp. Ex. 242 (Application for GMZ at Joliet 29); Comp. Ex. 254 (Application for GMZ at Powerton); Comp. Ex. 276 (Application for GMZ at Will County); 2/1/18 Tr. pp. 112:16-19, 140:2-5, 167:7-11 (Testimony of Gnat).

640. **At Joliet 29, MWG applied for a Groundwater Management Zone ("GMZ") for the area including the ash ponds.** JAS No. 55; Comp. Ex. 242.

641. **Illinois EPA approved the Joliet 29 GMZ on August 8, 2013.** JAS No. 56; MWG Ex. 627.

642. **At Powerton, MWG applied for a GMZ that covers the eastern part of the Station including the ash ponds.** JAS No. 58; Comp. Ex. 254.

643. **Illinois EPA approved the Powerton GMZ on October 3, 2013.** JAS No. 59; MWG Ex. 638.

644. **At Will County, MWG applied for a GMZ that covers the middle part of the Station including the ash ponds.** JAS No. 66; Comp. Ex. 276.

645. **Illinois EPA approved the Will County GMZ on July 2, 2013.** JAS No. 67; MWG Ex. 658.

646. MWG also established Environmental Land Use Controls ("ELUCs") as corrective actions pursuant to 35 Ill. Adm. Code 742.1010 at Powerton, Will County, and Waukegan. Comp. Ex. 253, 263 and MWG Ex. 659 (Applications for ELUC for Powerton, Waukegan and Will County; MWG Exs. 639, 650, 660 (Illinois EPA's approval of ELUCs at Powerton, Waukegan and Will County); 1/30/18 Tr. p. 216:8-10 (Testimony of Race).

647. An ELUC is an institutional control tool in which a designated parcel of land has certain use restrictions, such as not allowing the installation of any groundwater or water wells within the defined ELUC area to prevent any human receptor, and once it is agreed upon the ELUC is registered on the deed of the property. 2/1/18 Tr. p. 108:2-14, 167:16-21 (Testimony of Gnat).

648. **At Powerton, MWG applied for an ELUC that covers the eastern part of the Station including the ash ponds.** JAS No. 60; Comp. Ex. 253.

649. The area for the ELUC at Powerton is identical to the area of the GMZ established at Powerton. MWG Ex. 901, p. 39-40, 68 (Seymour Presentation, SOF Attachment 1); Comp. Ex. 253 (Application for ELUC at Powerton); Comp. Ex. 254 (Application for GMZ at Powerton).

650. **Illinois EPA approved the Powerton ELUC on August 26, 2013.** JAS No. 61; MWG Ex. 639.

651. **At Waukegan, MWG applied for an ELUC that covers the remaining Waukegan Station property that was not already included in the existing Former Tannery Site ELUC, including the ash ponds.** JAS No. 63; Comp. Ex. 263, MWG Ex. 667, pp. 21-22.

652. The area of the Waukegan CCA ELUC extends from the Griess-Pfleger Tannery ELUC and over the ash ponds and the surrounding areas. Comp. Ex. 263 (Application for ELUC at Waukegan); MWG Ex. 901, p. 52 (Seymour Presentation, SOF Attachment 1); 1/30/18 Tr. p. 165:17-166:2 (Testimony of Race).

653. **Illinois EPA approved the Waukegan ELUC on August 26, 2013.** JAS No. 64; MWG Ex. 650.

654. **At Will County, MWG applied for an ELUC that covers the middle part of the Station including the ash ponds.** JAS No. 68; MWG Ex. 659.

655. The area for the ELUC at Will County is identical to the GMZ established. Comp. MWG Ex. 901, p. 67-68 (Seymour Presentation, SOF Attachment 1); Comp. Ex. 276 (Application for GMZ at Will County); MWG Ex. 659 (MWG Proposed ELUC for the Will County Station).

656. **Illinois EPA approved the Will County ELUC on September 26, 2013.** JAS No. 69; MWG Ex. 660; 1/30/18 Tr. p. 224:4-11.

4.CCA Certifications

657. **On October 9, 2013, MWG submitted to Illinois EPA its certification that all of the Joliet 29 CCA measures were successfully completed.** JAS No. 57; MWG Ex. 630 (CCA Compliance Certification Joliet 29).

658. **On October 17, 2013, MWG submitted to Illinois EPA its certification that all of the Powerton CCA measures were successfully completed.** JAS No. 62; MWG Ex. 637 (CCA Compliance Certification Powerton).

659. **On October 22, 2013, MWG submitted to Illinois EPA its certification that all of the Waukegan CCA measures were successfully completed.** JAS No. 65; MWG Ex. 651 (CCA Compliance Certification Waukegan).

660. **On October 17, 2013, MWG submitted to Illinois EPA its certification that all of the Will County CCA measures were successfully completed.** JAS No. 70; MWG Ex. 661(CCA Compliance Certification Will County).

661. In its Compliance Statements, MWG certified that all of the alleged violations in the Violation Notice were addressed and that all CCA measures were completed on time. MWG Exs. 630, 637, 651, and 661 (CCA Compliance Statements for Joliet 29, Powerton, Waukegan, and Will County); 1/30/18 Tr. pp. 45:2-12, 96:21-97:6, 179:17-180:14, 226:13-18 (Testimony of Race).

IV. CCR COMPLIANCE

662. In December 2014, U.S.EPA adopted new Coal Combustion Residual ("CCR") Rules. MWG Exs. 663, p. 5 (Joliet 29 Timeline of Events); 664, p. 7 (Powerton Timeline of Events); 665, p. 10 (Waukegan Timeline of Events); 666, p. 6 (Will County Timeline of Events); Comp. Ex. 406 (Federal CCR Rules).

663. Upon their adoption, MWG assessed how the new CCR Rules would affect its ash ponds. 1/30/18 Tr. p. 46:8-13; 101:13-102:4 (Testimony of Race).

664. At the Joliet 29, Powerton, Will County, and Waukegan Stations, MWG personnel are conducting the weekly inspections required under the CCR rules. 1/30/18 Tr. p. 47:23-48:9, 227:11-16 (Testimony of Race); 1/31/18 Tr. p. 148:19-6 (Testimony of Kelly); 1/31/18 Tr. 237:23-238:12 (Testimony of Veenbaas).

665. The CCR inspections are in addition to the inspections conducted by the operator inspections conducted during every shift. 1/31/18 Tr. p. 147:19-148:6 (Testimony of Kelly); 1/31/18 Tr. 238:18-22 (Testimony of Veenbaas).

666. Once the inspection is completed, MWG creates a record of the inspection, and stores the record in the Station library. 1/31/18 Tr. p. 148:7-14 (Testimony of Kelly).

667. If the inspector finds a tear or damage to the liner, then the same procedure for repairing the tear as described above. 1/31/18 Tr. p. 148:15-19 (Testimony of Kelly).

668. MWG has retained KPRG to conduct the groundwater sampling required under the Federal CCR Rules. 10/26/17 Morning Tr. p. 10:13-21 (Testimony of Gnat)

669. The CCR groundwater samples are taken from similar groundwater wells as the CCA data at Joliet 29, Powerton, Waukegan, and Will County. 10/26/17 Morning Tr. p. 11:5-19 (Testimony of Gnat).

670. MWG is complying with requirements of CCR rules at its Stations. 1/30/18 Tr. p. 48:5-12, 102:13-104:13, 181:2-13, 227:11-16 (Testimony of Race.

***SIERRA CLUB, ET AL. V. MIDWEST GENERATION, LLC* PCB 13-15**

RESPONDENT MIDWEST GENERATION, LLC'S
POST HEARING BRIEF

ATTACHMENT 1

EXHIBIT 901
SEYMOUR PRESENTATION

Sierra Club Environmental, et al. v. Midwest Generation, LLC.

Respondent Expert John Seymour

John Seymour

Geosyntec consultants

engineers | scientists | innovators

- Geosyntec Consultants, Chicago, IL
- M.S. Civil (Geotechnical) Engineering
- B.S. Civil (Soils and Construction) Engineering
- Professional Engineer licensed in four states
- 40 years of experience
- 14+ years experience with CCRs
- Experience at dozens of CCR Ponds and Landfills
  - Siting
  - Site Investigations
  - Design
  - Construction
  - Closure
  - Remediation
- Qualified Professional Engineer under the CCR Rule

Resume 2018 Updates

- **CCR Surface Impoundment Closure Plan, Illinois:**
  Engineer and project manager to develop closure plan of CCR pond complex for submittal to Illinois EPA
- **CCR Surface Impoundment Closure Design, Illinois:**
  Engineer and leader for design of CCR pond complex including new closure concept
- **Groundwater monitoring system CCR Assessment, Ohio and Kentucky:**
  Assessing eight CCR units for compliance with US EPA CCR rule (40 CFR 257)
- **CCR sites, Ohio, West Virginia, Michigan:**
  Project manager to investigate various CCR landfilled areas
- **Site Remediation Program, Illinois:**
  Project manager for investigation of brownfield property under Illinois' SRP
- **Landfill site, Illinois:**
  Project manager to prepare application for groundwater management zone

Overview

- Common Factors
- Assessed site conditions for each facility
  - Site history and surroundings; ponds and how ash was handled
  - Groundwater elevations -> groundwater flow
  - Groundwater conditions and other ash data
  - Updated with additional data to 2017
- Compared bottom ash to groundwater conditions for each facility
- Risk Analysis

Overview

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Common Factors

- Old sites = from 1920s/"youngest" is 1965
- 1978 Poz-o-Pac or other liners
- MWG's actions 1999-2013
  - Pond relining project
  - CCAs (GMZs, ELUCs)
- Wyoming Coal
- On Site Data/MWG coal ash constituents
  - Samples of bottom ash from ponds
  - Samples of historic ash areas
- No risk to potential receptors

Common Factors – MWG Actions 1999-2013

- Pond Relinings
  - Reviewed construction documents
    - Subgrade
    - Liner installation/60 M HDPE
    - Leak detection
  - Contractor dredging procedures
- 2013 CCAs
  - GMZs
  - ELUCs

Analyses of Bottom Ash From MWG Ponds

Generating Station:	Powerton		Waukegan		Will County
Sample Date:	May 2004	March 2007	July 2004	July 2004	December 2010
Sample ID:	Bottom Ash	Bottom Ash	Bottom Ash-1	Bottom Ash-2	3 South Bottom Ash
Methods 6010B/6020/7041A/7470A/7841 (mg/L)					
Antimony	<0.003	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	<0.050	<0.050	<0.050	<0.050
Barium	0.39	0.27	0.19	0.12	<0.50
Beryllium	<0.004	<0.0040	<0.004	<0.004	<0.0040
Boron	0.087	<0.10	1.1	2	1.3
Cadmium	<0.002	<0.0050	<0.005	<0.005	<0.0050
Chromium	<0.010	<0.025	<0.050	<0.050	<0.025
Cobalt	<0.005	<0.025	<0.050	<0.050	<0.025
Copper	<0.010	<0.025	<0.050	<0.050	<0.025
Iron	<0.050	<0.10	<0.10	<0.10	<0.10
Lead	<0.005	<0.0075	<0.0075	<0.0075	<0.0075
Manganese	<0.010	<0.025	<0.050	<0.050	<0.025
Mercury	<0.0002	<0.0020	<0.0020	<0.0020	<0.0020
Nickel	<0.010	<0.025	<0.050	<0.050	<0.050
Selenium	<0.010	<0.050	Not Analyzed	Not Analyzed	<0.050
Silver	<0.005	<0.025	<0.050	<0.050	<0.025
Thallium	<0.002	<0.0020	<0.0020	<0.0020	<0.0020
Zinc	0.044	<0.10	<0.10	<0.10	<0.10
Method 9056 (mg/L)					
Sulfate	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	49
SM 2540C (mg/L)					
Total Dissolved Solid	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	200
Sources:	MWG13-15_11356	MWG13-15_10951	MWG13-15_12814	MWG13-15_12815	MWG13-15_14712-13

Potential Leaching Characteristics of Historical Ash in Fill Materials

Generating station: Sample Date:	Joliet #29 July 2005 KPRG	Powerton May 2004 Andrews Engineering	Will County June/August 2015 KPRG
Sample location:	15 soil borings from former ash placement area	8 ash samples from test pits in the Limestone Runoff Basin	20 soil borings at the Will County site
Findings:	-high degree of statistical certainty that the criteria established in 415 ILCS 5/3.135 (formerly 415 ILCS 5/3.94) a-5(B) are met and that the material may be considered CCB for engineering/ beneficial reuse	Metals were less than the IEPA Class I groundwater standards except selenium and chromium (2 wells); no impacts of selenium or chromium above groundwater standards	High degree of statistical certainty that the criteria established in 415 ILCS 5/3.135 (formerly 415 ILCS 5/3.94) a-5(B) are met and that the material may be considered CCB for engineering/ beneficial reuse
Sources:	MWG13-15_19486-668	MWG13-15_11302-492	MWG13-15_49565-649

No Risk to Potential Receptors

- No potable water receptors
- The potential surface water risks were evaluated using a screening level approach that compared concentrations in groundwater to Illinois Water Quality Standards (WQS) or Water Quality Criteria (WQC).
- “An assessment of human and ecological receptors in surface water indicates that there is no risk to the surface water environment at each site based on regulatory risk standards and standards of practice for risk assessments.”

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Overview

- Common Factors
- Assessed site conditions for each facility
  - Site history and surroundings; ponds and how ash was handled
  - Groundwater elevations -> groundwater flow
  - Groundwater conditions and other ash data
  - Updated with additional data to 2017
- **Compared bottom ash to groundwater conditions for each facility**
- Risk Analysis

Comparison With Groundwater Conditions

- Conducted a comparison of the occurrence of groundwater constituents detected in 2014 [and updated to 2017] compared to sets of indicators of leachate from ash stored in ponds and from EPRI research.
- The profiles of the constituents in the groundwater do not match the profiles of leachate constituent indicators in the ponds at the plant sites.
- Groundwater impacts are not the result of ash stored in the ponds at sites

Overview

- Common Factors
- Assessed site conditions for each facility
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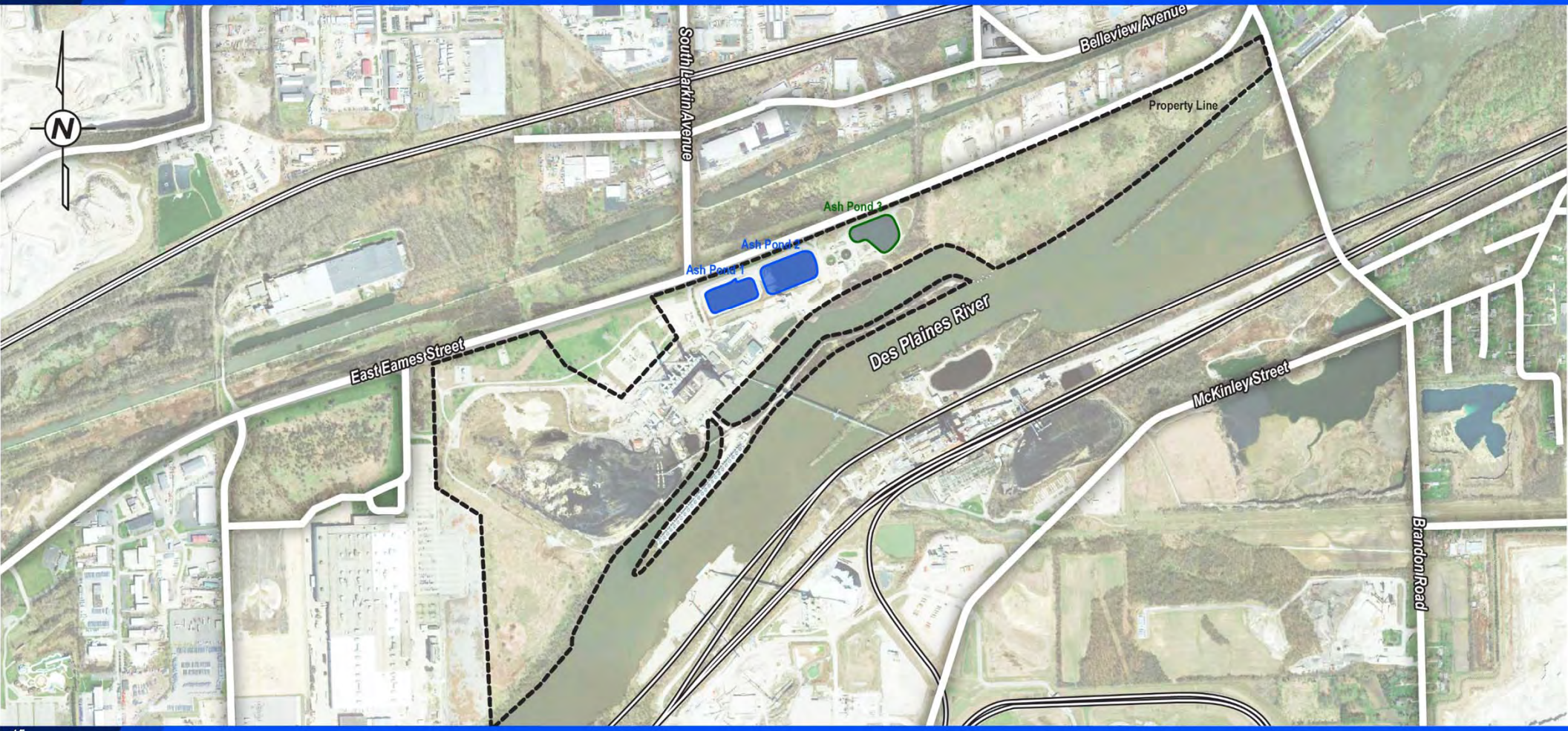
  - Groundwater conditions and other ash data
  - Updated with additional data to 2017
- Compared bottom ash to groundwater conditions for each facility
- Risk Analysis

Joliet #29 – Site History and Surroundings

- Operating for 30 years before MWG (1965)
- 2016 converted to natural gas – no ash
- When operating, most ash went off site - did not go to ponds
- **Review of Impoundments** (pre-2016)
  - Ponds 1 and 2 were used consecutively; Pond 3 was “finishing” – de minimis ash
  - Ponds lined and relined
- Historic ash / samples
- Administrative Controls/ GMZ and ELUC
- No potable water wells/no risk to receptors

Joliet #29

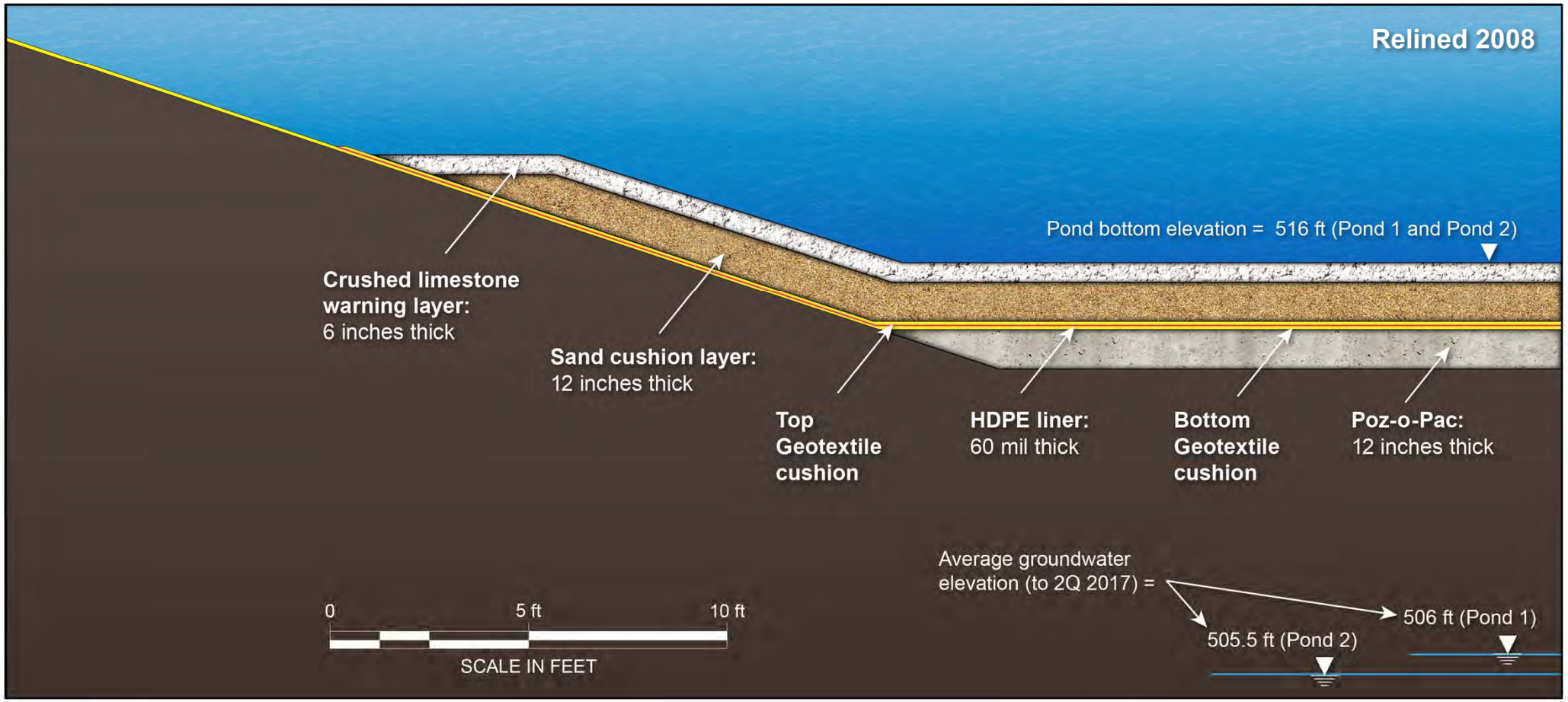

N
South Larkin Avenue
Belleview Avenue
Property Line
Ash Pond 3
Ash Pond 2
Ash Pond 1
Des Plaines River
East Eames Street
McKinley Street
Brandon Road

Joliet #29 – Impoundments

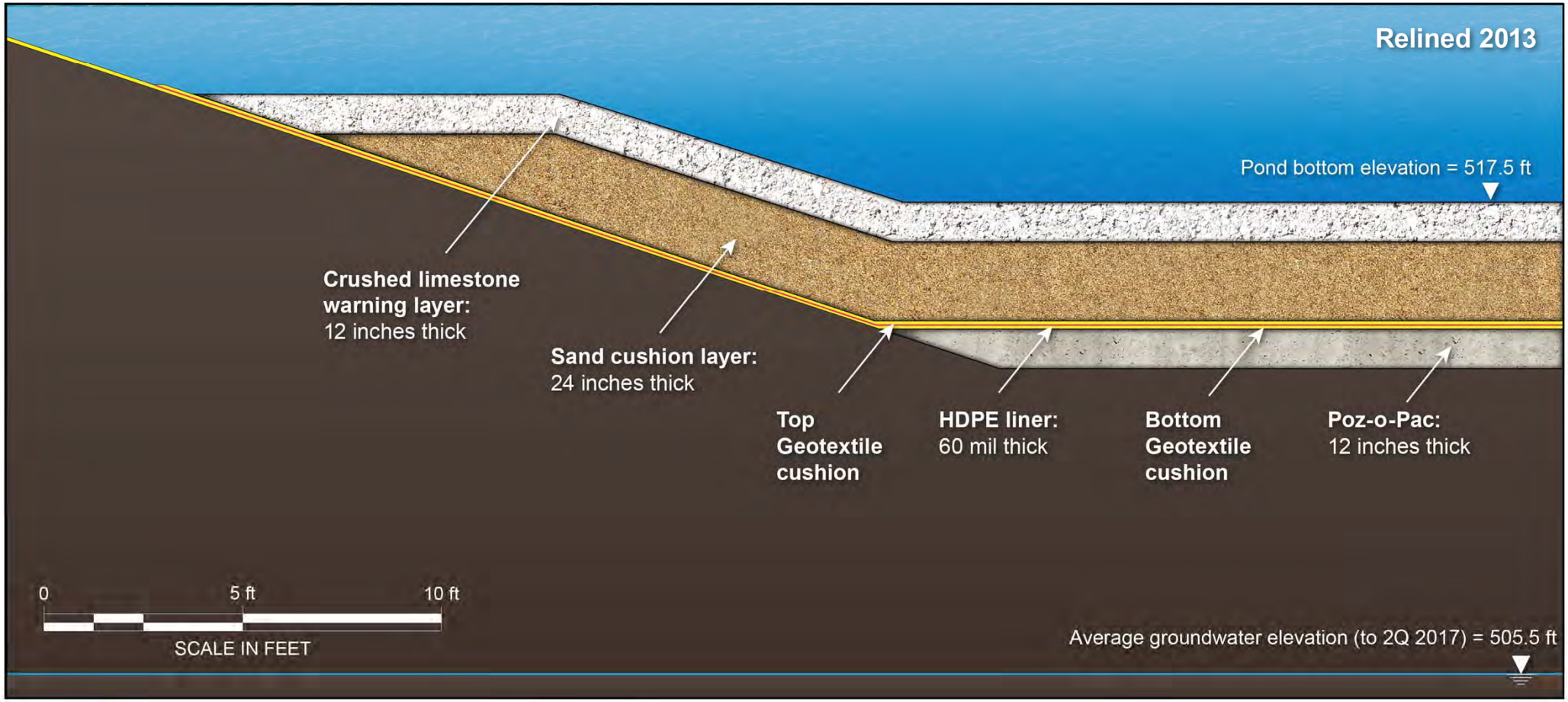
Station	Ash pond	Date Constructed/Liners	Date Relined With HDPE	Scheduled Ash Removal
Joliet #29 1964-65 Facility Operation Converted to gas in 2016	Ash Pond 1 Before 2015, used intermittently when the conveyer was not operating	1978 • Bituminous seal coat • Poz-o-Pac—12 inches thick • Compacted granular material—12 inches thick	2008 12” Poz-o-Pac; geotextile; HDPE; geotextile; sand; warning layer	No ash as of 2015 Previously emptied every 2-4 years*
	Ash Pond 2 Used intermittently used when the conveyer is not operating	1978 • Bituminous seal coat • Poz-o-Pac—12 inches thick • Compacted granular material—12 inches thick	2008 12” Poz-o-Pac; geotextile; HDPE; geotextile; sand; warning layer	No new ash; to be emptied of ash in 2018. Previously emptied every 2-4 years
	Ash Pond 3 Finishing pond	1978 • Bituminous seal coat • Poz-o-Pac —12 inches thick • Compacted granular material—12 inches thick	2013 12” Poz-o-Pac; geotextile; HDPE; geotextile; sand; warning layer	No ash Emptied for relining

*Per DiCola testimony/ponds emptied in succession

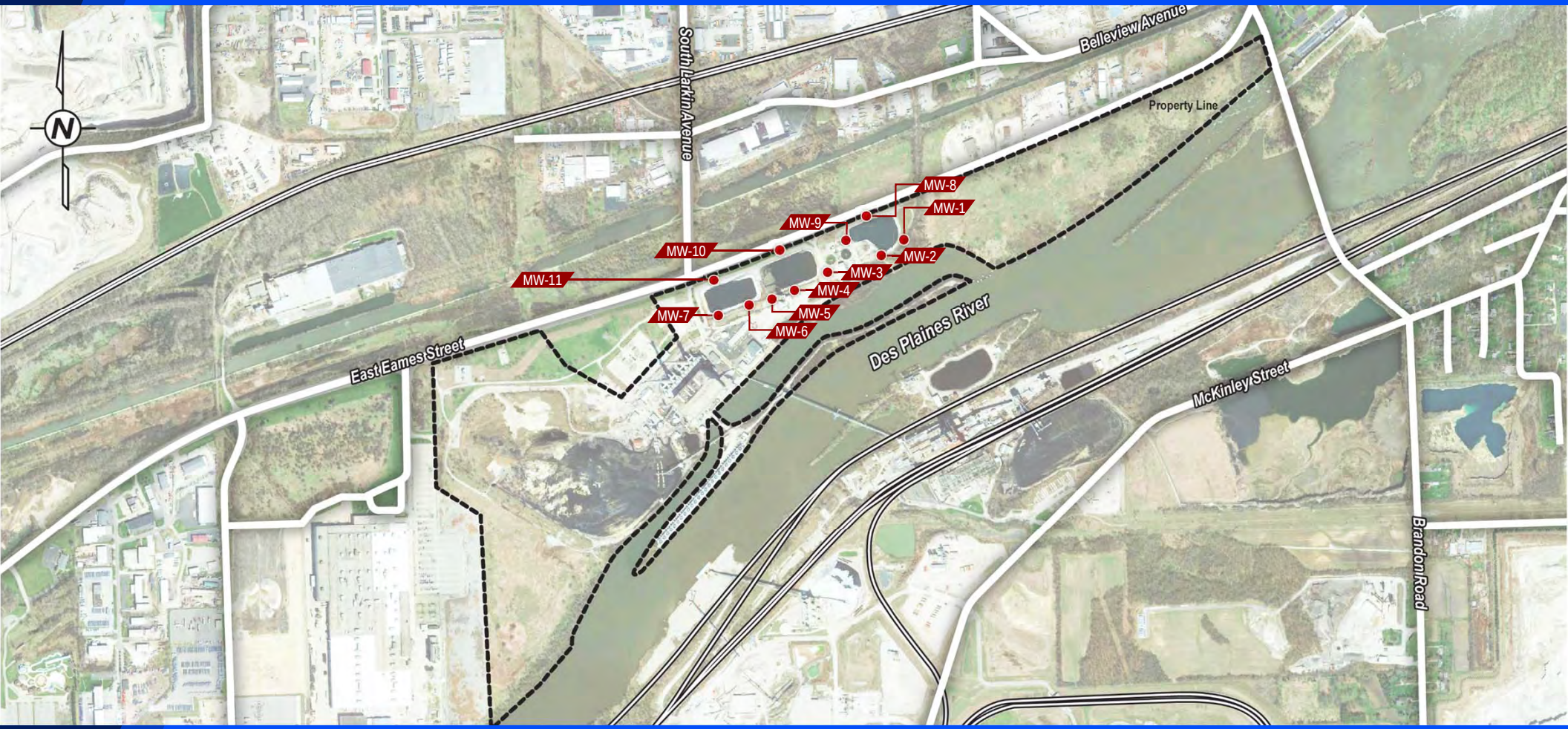
Joliet #29 – Ash Ponds 1 and 2

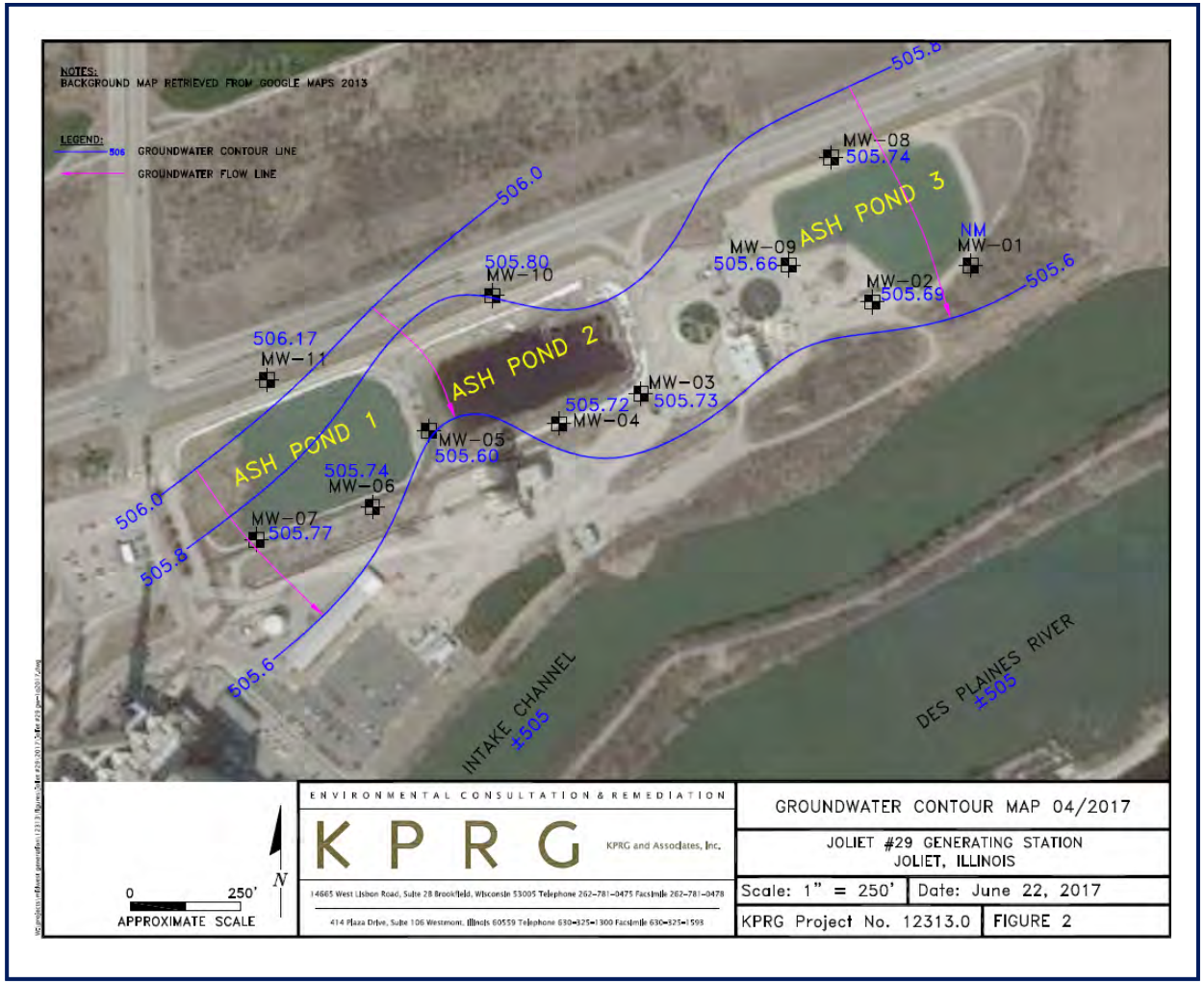


Joliet #29 – Ash Pond 3



Joliet #29




NOTES:
BACKGROUND MAP RETRIEVED FROM GOOGLE MAPS 2013
LEGEND:
506 GROUNDWATER CONTOUR LINE
GROUNDWATER FLOW LINE
506.0
505.80
MW-10
506.17
MW-11
ASH POND 1
ASH POND 2
ASH POND 3
505.74
MW-06
MW-07
505.77
506.0
505.8
505.6
MW-05
505.60
505.72
MW-04
MW-03
505.73
MW-09
505.66
MW-08
505.74
MW-02
505.69
NM
MW-01
505.6
505.6
INTAKE CHANNEL
±505
DES PLAINES RIVER
±505
0
250'
APPROXIMATE SCALE
N
ENVIRONMENTAL CONSULTATION & REMEDIATION
KPRG
KPRG and Associates, Inc.
14665 West Lisbon Road, Suite 28 Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478
414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593
GROUNDWATER CONTOUR MAP 04/2017
JOLIET #29 GENERATING STATION
JOLIET, ILLINOIS
Scale: 1" = 250'
Date: June 22, 2017
KPRG Project No. 12313.0
FIGURE 2

Joliet #29 – Updated Table 5-5

Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (MWG site specific analyses)

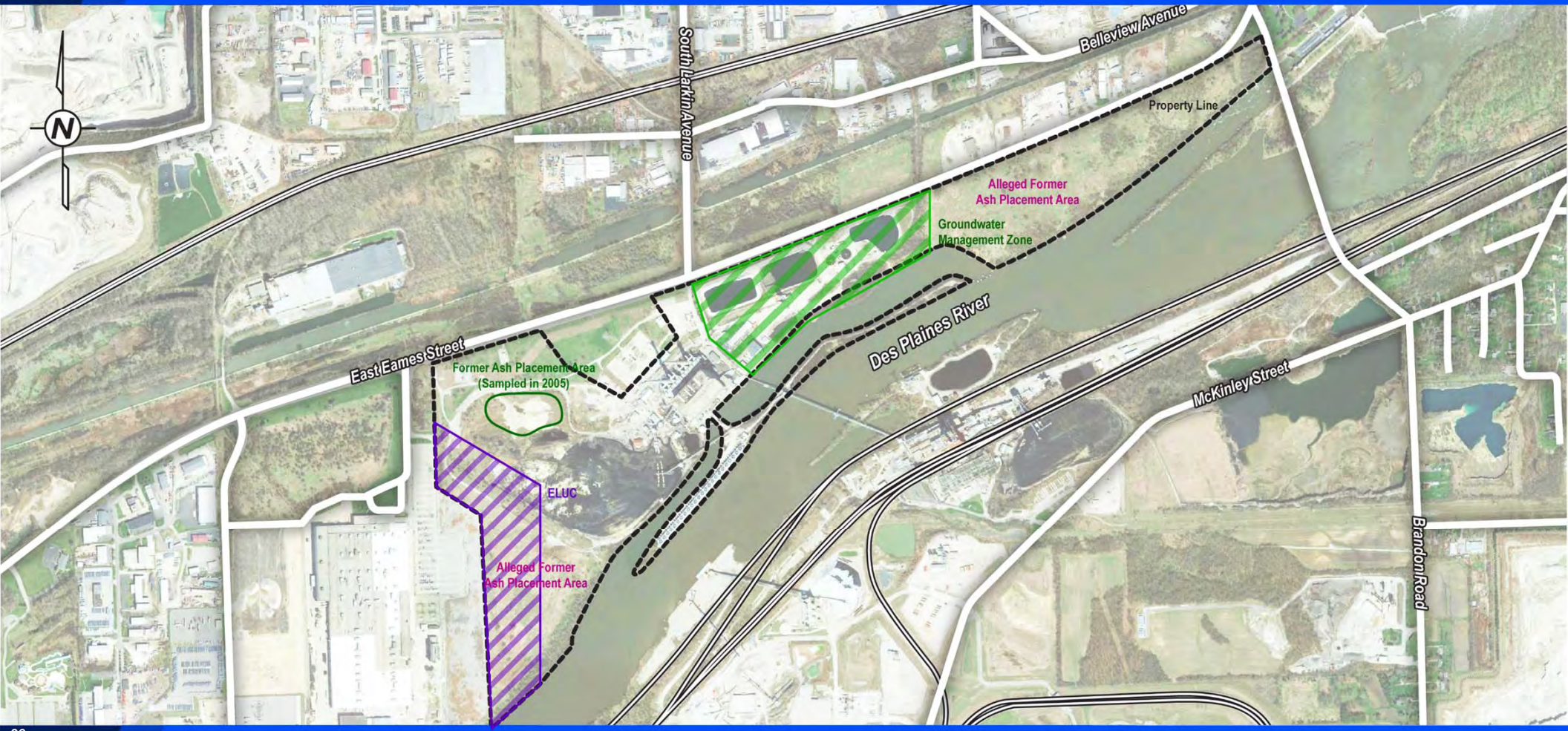
Constituent	Constituent is an Indicator of Leachate from Ash Currently Stored in Impoundments [1]	Constituents Detected During Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2]										
		Joliet No. 29 Generating Station										
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11
Arsenic				x	x		x	x		x		x
Barium	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x	x
Boron	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x	X
Cobalt					x					x		
Iron				x			x			x		
Manganese		x					x	x	x	x		
Mercury										x		
Nickel		x	x	x	x	x	x	x	x	x		x
Selenium		x		x		x	x					x
Sulfate	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x	x
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [3]		3	1	4	3	2	5	3	2	6	0	3
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [4]		50%	25%	57%	50%	40%	63%	50%	40%	67%	0%	50%

Joliet #29 – Updated Table 5-4

Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (EPRI, 2006)

Constituent	Constituent is an Indicator of Leachate from Ash in Impoundments [1]	Constituents Detected during Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2] — Joliet No. 29 Generating Station										
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11
Antimony	Yes (Table 5-2)											
Arsenic	Yes (Table 5-2)			x	x		x	x		x		x
Barium	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	X	x
Boron	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	X	x
Cadmium	Yes (Table 5-2)											
Chromium	Yes (Table 5-2)											
Cobalt	Yes (Table 5-2)				x					x		
Copper	Yes (Table 5-2)											
Iron				x			x			x		
Lead	Yes (Table 5-2)											
Manganese	Yes (Table 5-2)	x					x	x	x	x		
Mercury	Yes (Table 5-2)									x		
Nickel	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x		x
Selenium	Yes (Table 5-2)	x		x		x	x					x
Sulfate	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	X	x
Zinc	Yes (Table 5-2)											
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [3]		9	11	10	9	10	9	9	10	8	12	9
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [4]		56%	69%	63%	56%	63%	56%	56%	63%	50%	75%	56%

Joliet #29


N
South Larkin Avenue
Belleview Avenue
Property Line
Alleged Former
Ash Placement Area
Groundwater
Management Zone
Des Plaines River
East Eames Street
Former Ash Placement Area
(Sampled in 2005)
ELUC
Alleged Former
Ash Placement Area
McKinley Street
Brandon Road

Joliet #29

Updated Groundwater Constituent Temporal Trend Testing Results

Monitoring Well	Barium		Boron		Manganese		Sulfate	
	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)
MW-01	Decreasing	-0.005	Decreasing	-0.020	No conclusion	--	Decreasing	-13
MW-02	Decreasing	-0.0035	Decreasing	-0.046	Decreasing	-0.00023	Decreasing	-15
MW-03	Increasing	0.0011	Increasing	0.023	Decreasing	-0.0057	Decreasing	-9.7
MW-04	No conclusion	--	No conclusion	--	Decreasing	-0.018	Decreasing	-15
MW-05	No conclusion	--	Increasing	0.031	No conclusion	--	Increasing	8.7
MW-06	Increasing	0.0045	Decreasing	-0.022	Decreasing	-0.0074	No conclusion	--
MW-07	No conclusion	--	Decreasing	-0.034	Decreasing	-0.012	Decreasing	-8.1
MW-08	No conclusion	--	No conclusion	--	No conclusion	--	No conclusion	--
MW-09	Decreasing	-0.0025	No conclusion	--	Increasing	0.23	Increasing	680
MW-10	No conclusion	--	Decreasing	-0.022	Decreasing	-0.0042	Decreasing	-10
MW-11	No conclusion	--	No conclusion	--	No conclusion	--	No conclusion	--

Joliet #29

Updated Temporal Trend Testing of Groundwater Concentrations for Site-Specific Indicators of Ash in Ponds

Trend	Barium	Boron	Manganese	Sulfate
Increasing	2 wells	2 wells	1 well	2 wells
Decreasing	3 wells	5 wells	6 wells	6 wells
No conclusion	6 wells	4 wells	4 wells	3 wells

- Overall, it appears that groundwater concentrations are slightly decreasing because:
  - The indicators are increasing at 1 to 2 wells out of 11 wells
  - The indicators are decreasing at 3 to 6 wells out of 11 wells
  - No conclusions could be made at 3 to 6 wells out of 11 wells

Powerton – Site History and Surroundings

- Operating since 1920s
- Review of Impoundments/Ponds
  - Ponds lined and relined
  - Secondary Basin underdrain system
- Pond ash sample results (2004 and 2007)
- Historic areas and samples (2004)
- Administrative controls/GMZ and ELUC
- No potable water wells/no risk to receptors

Powerton

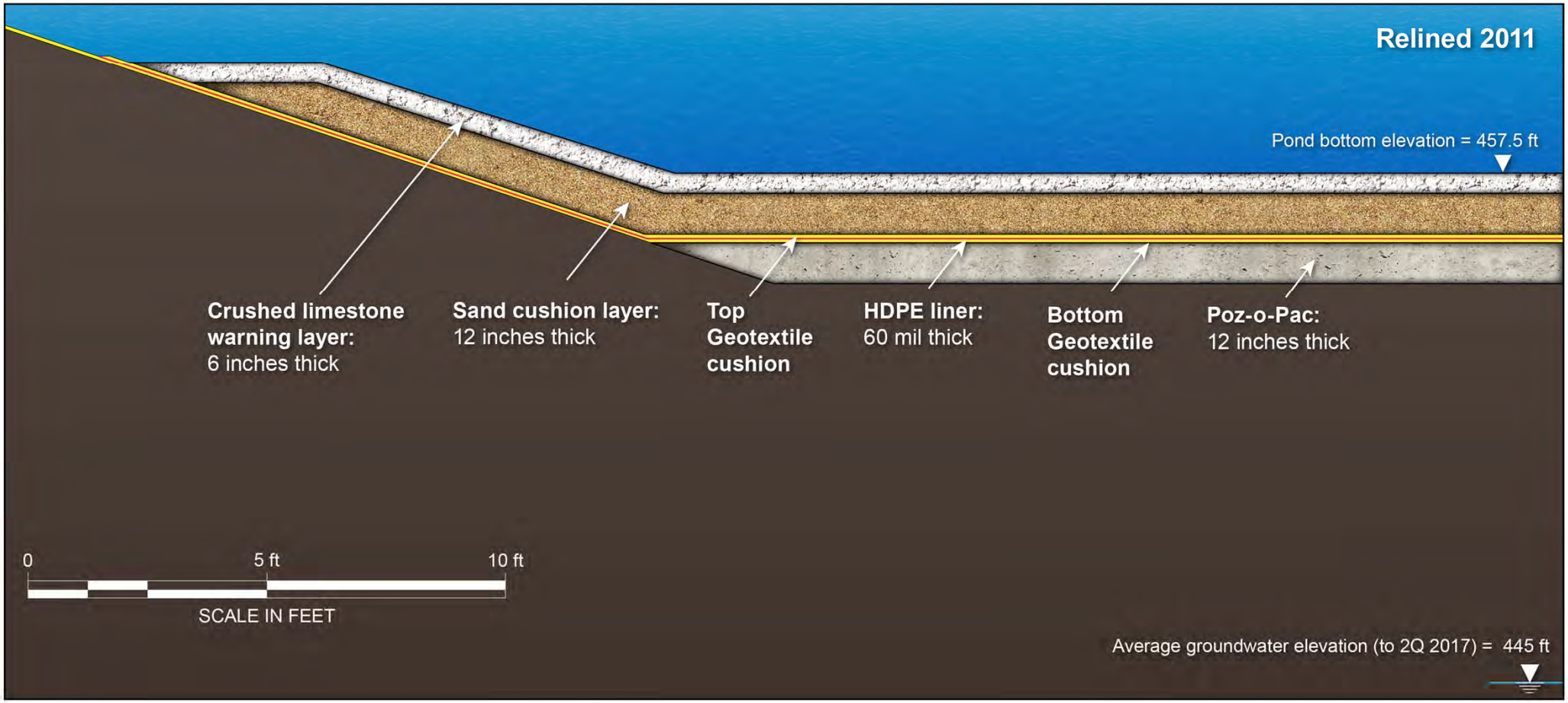

Property Line
Illinois River
Koch Street
Riverway Drive
Powerton Fish
and Wildlife Area
Secondary
Basin
CCR
(Sampled in 2007)
Ash
Surge
Basin
Metal
Cleaning
Basin
Limestone Runoff Basin
(Sampled in 2007)
Ash
Bypass
Basin
Insull Street
Midland Street
Hanna Drive
South 2nd Street
Not Owned
by MWG
East Manito Road

Powerton – Impoundments

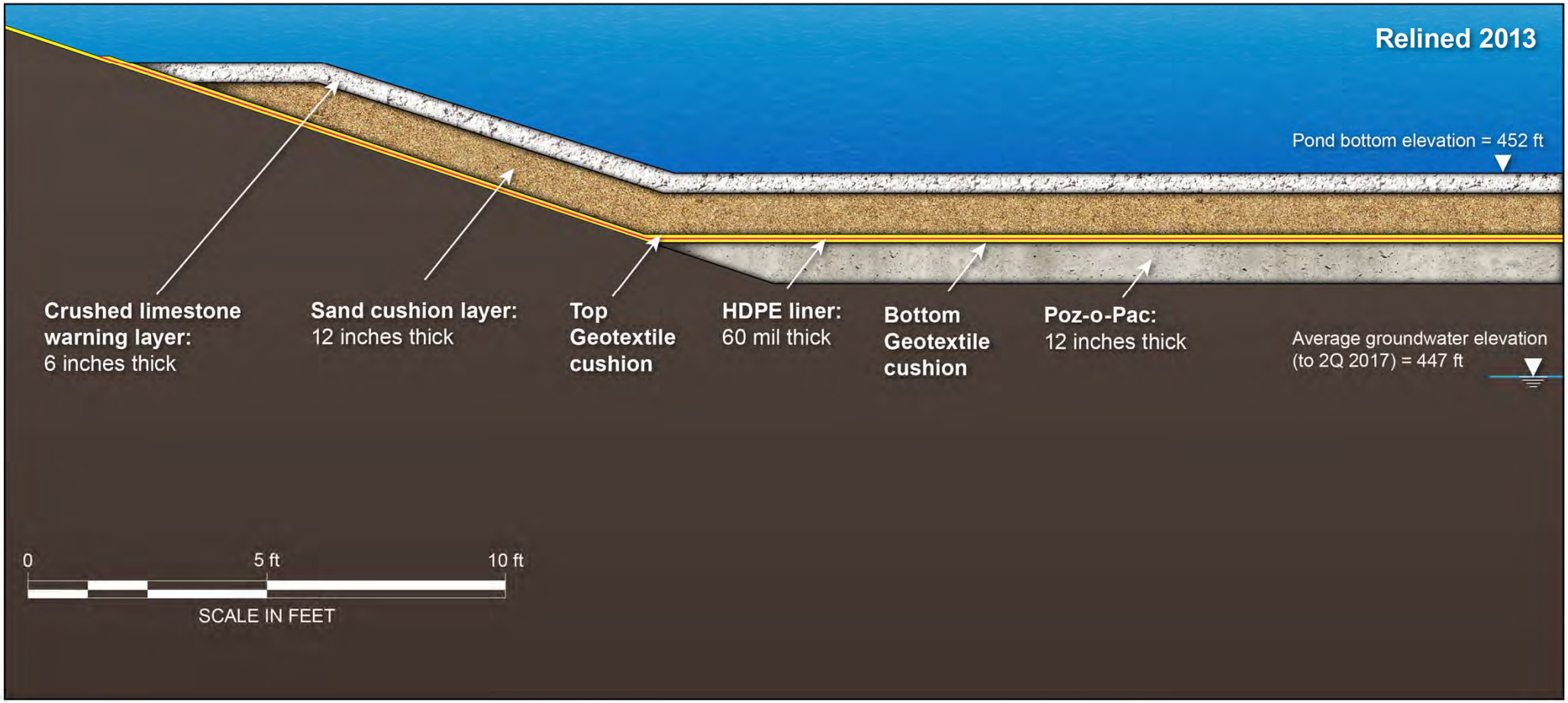
Station	Ash Pond	Date Constructed/Liners	Date Relined With HDPE	Scheduled Ash Removal
Powerton	Ash Surge Basin	1978 • Bituminous seal coat • Poz-o-Pac—12 inches thick on the bottom • Hypalon® liner on the sides • Compacted granular material	2013 12” Poz-o-Pac; geotextile; HDPE; geotextile; sand; warning layer	NONE since 2013 relining 6-8 years – as needed*
	Ash Bypass Basin Used only when emptying Ash Surge Basin	1978 12” Poz-o-Pac liner and Hypalon® sides	2010 Prepared subgrade; geotextile; HDPE; geotextile; sand; warning layer	6-8 years
	Metal Cleaning Basin	1978 • Bituminous seal coat • Poz-o-Pac—12 inches thick • Hypalon® liner along the sloped sides • Compacted granular material—12 inches thick	2010 12” Poz-o-Pac; geotextile; HDPE; geotextile; sand; warning layer	Temporary laydown area Ash removed annually, if needed
	Secondary Ash Basin/ Service Water Basin Finishing Pond	1978 Hypalon	2013 Prepared subgrade; geo-textile; under-drain system; geotextile; sand cushion; geo-textile; HDPE	De minimis ash/ Only emptied for relining

*Kelly Testimony

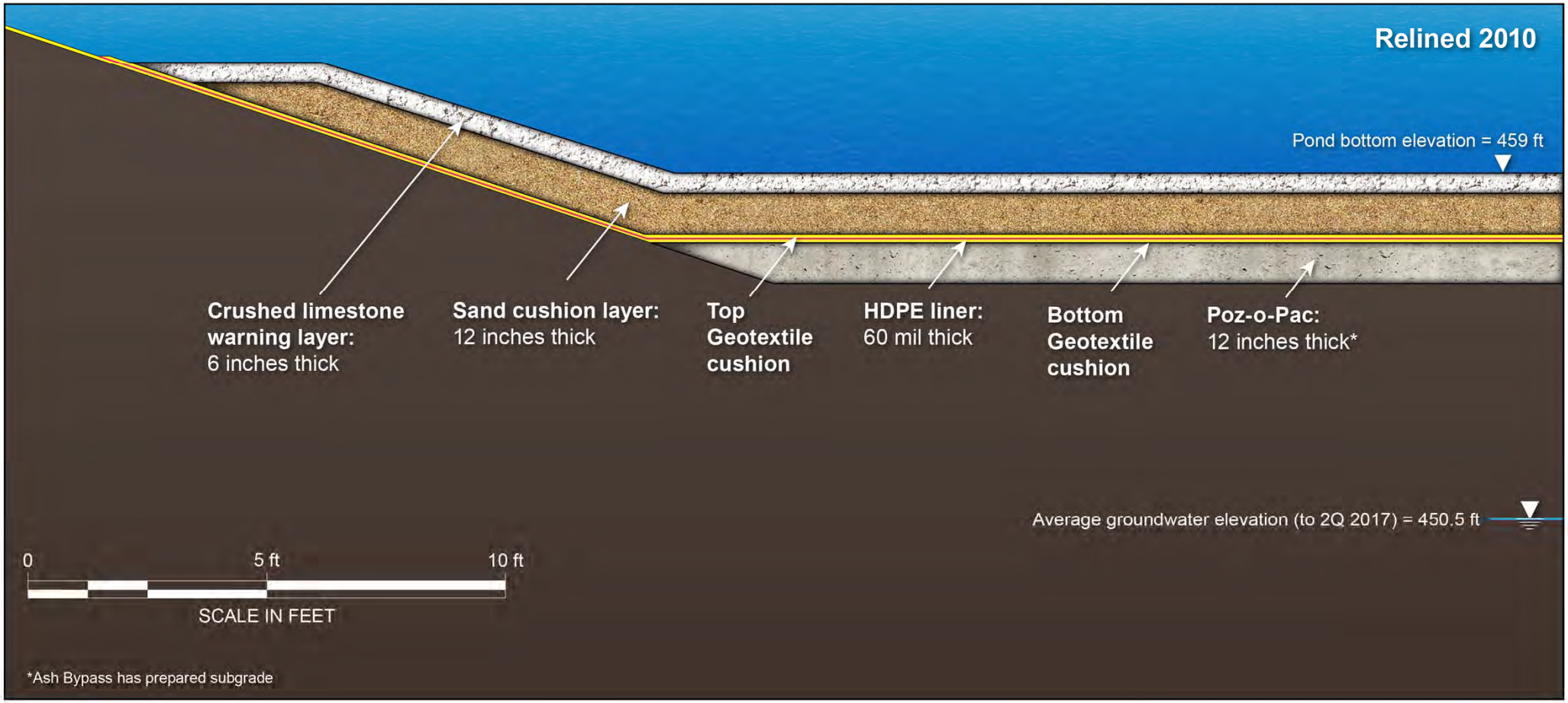
Powerton – Metal Cleaning Basin



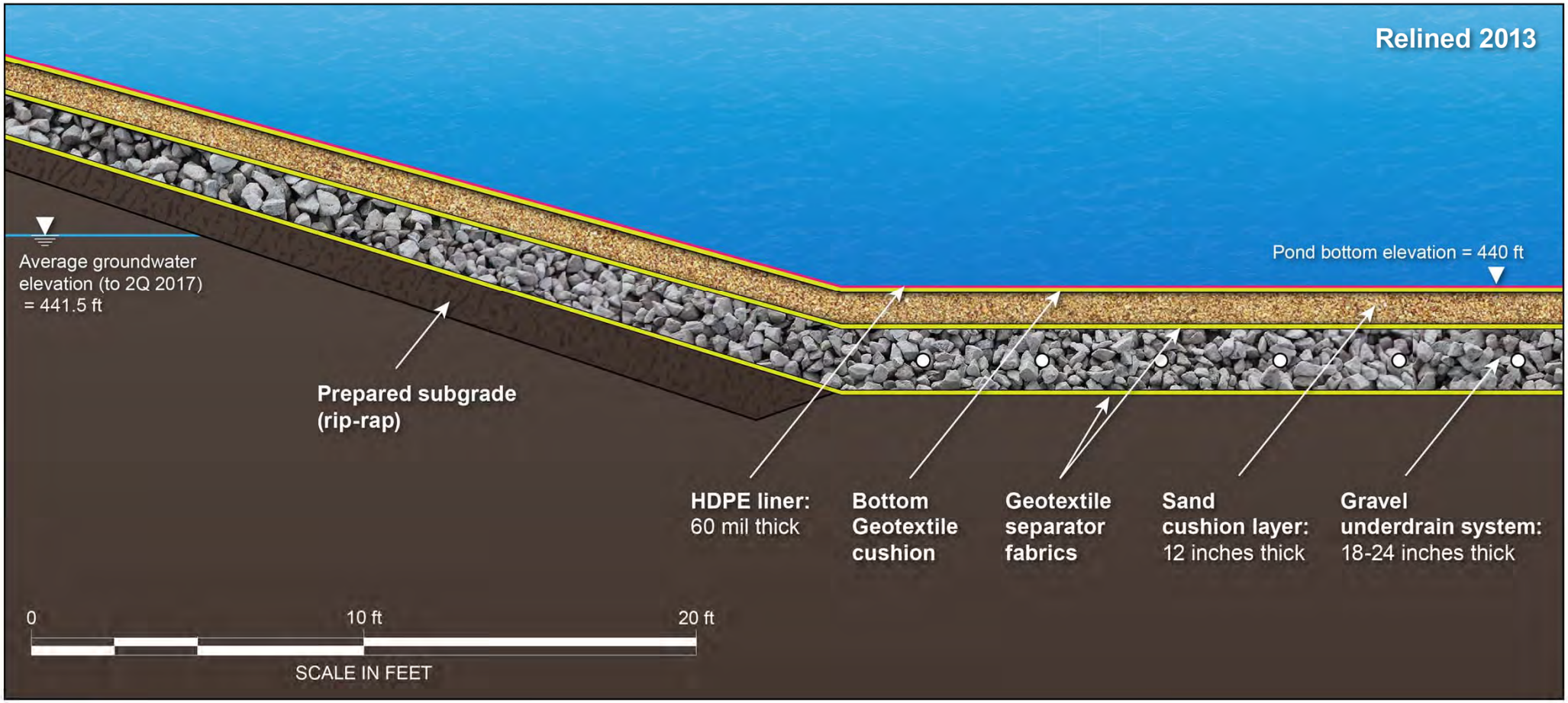
Powerton – Ash Surge Basin



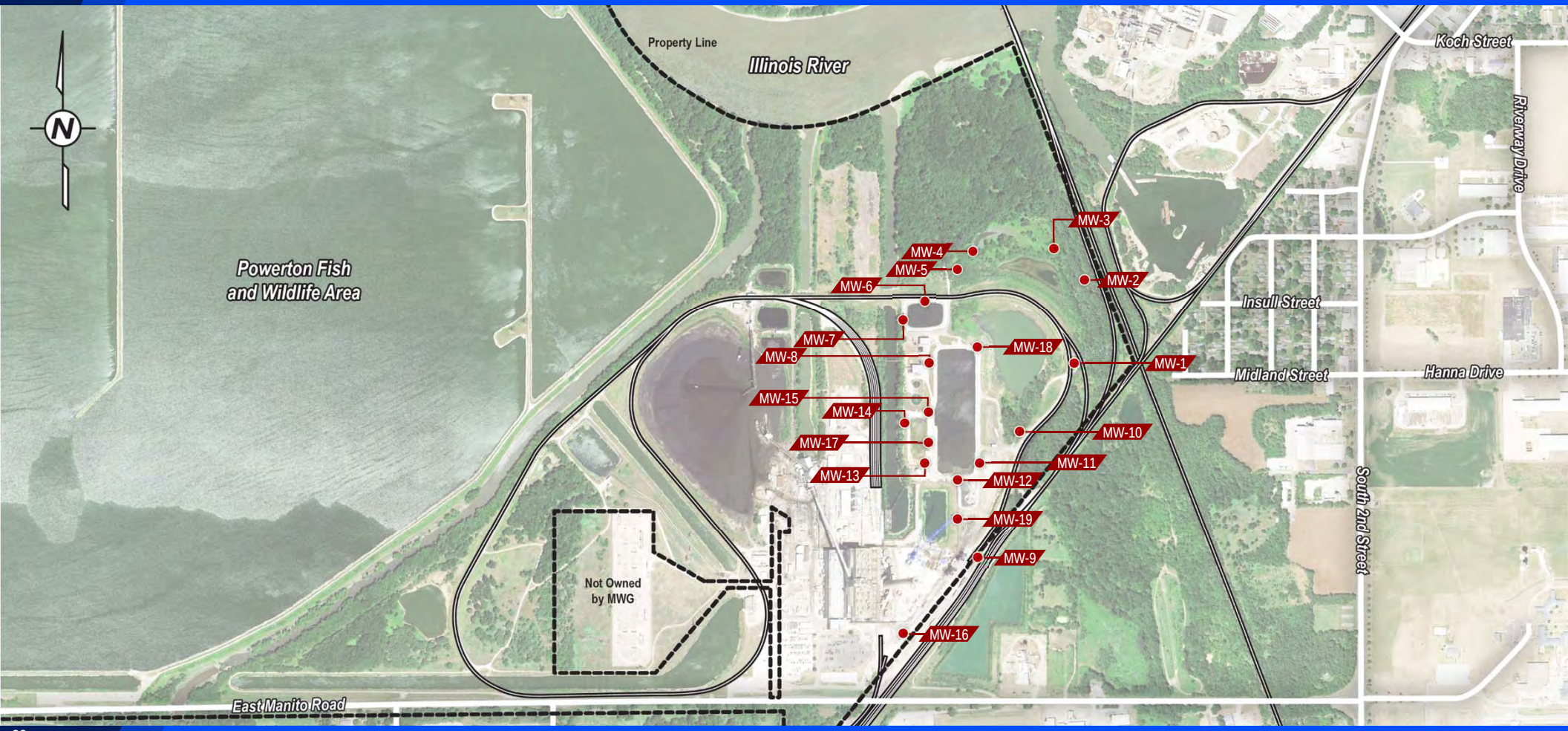
Powerton – Ash Bypass Basin



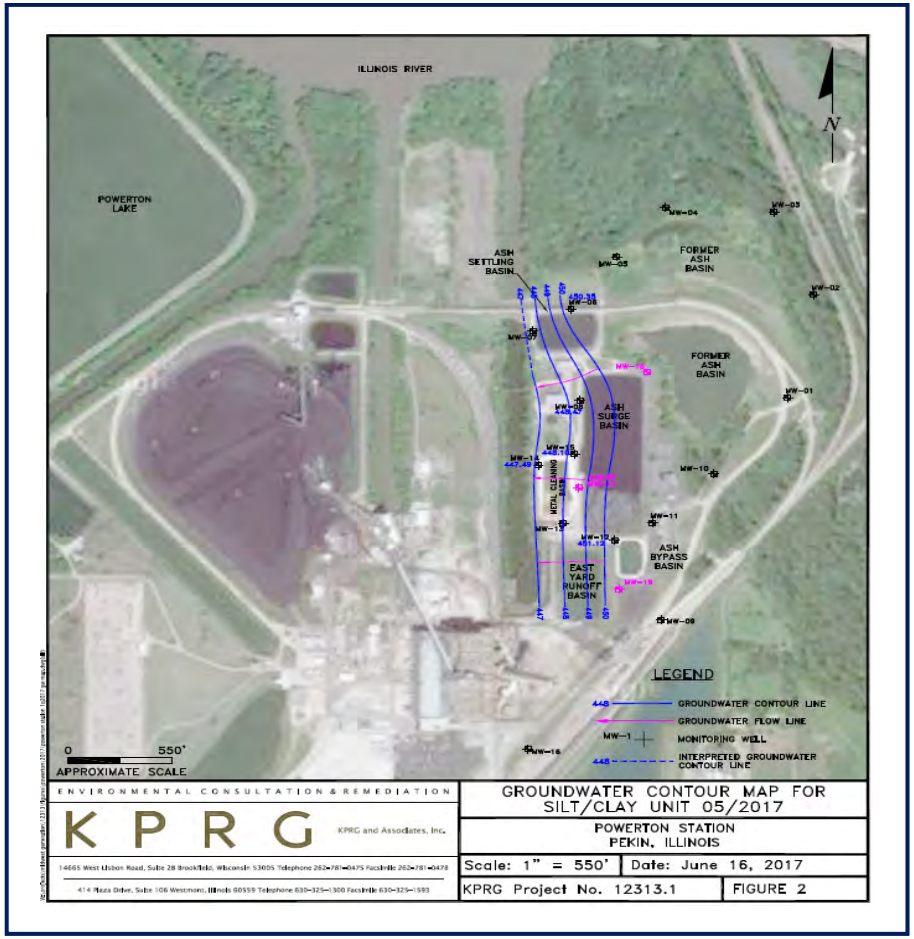
Powerton – Secondary Basin



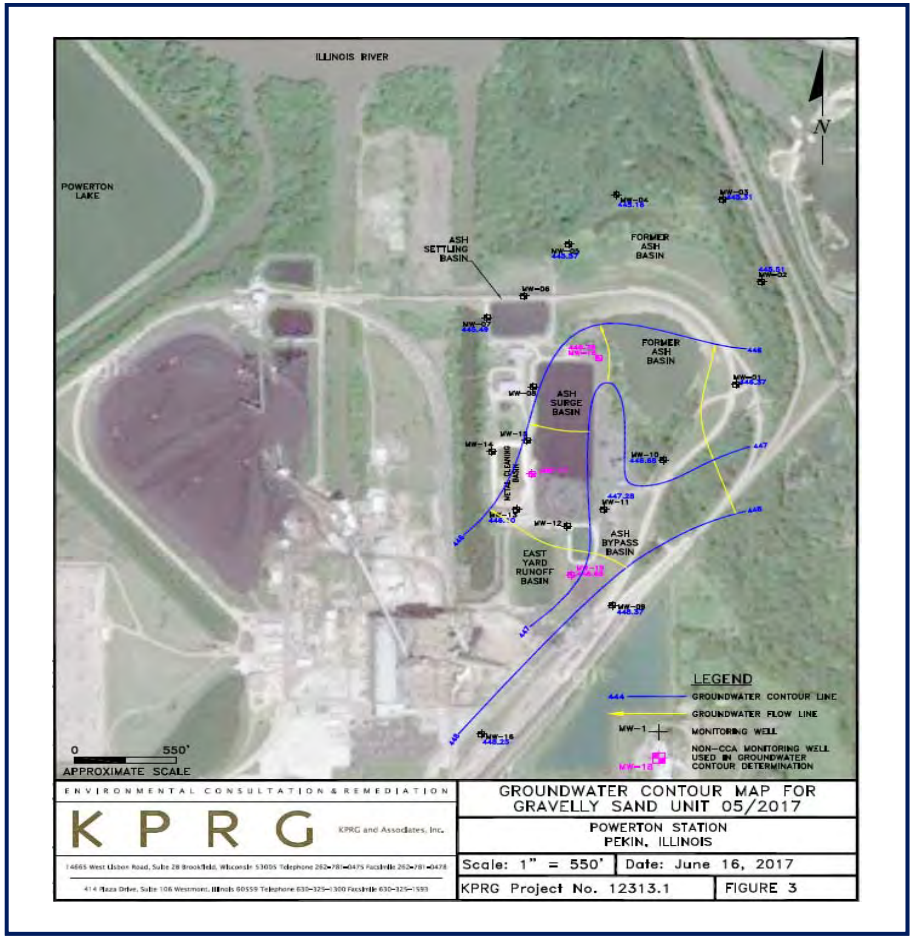
Powerton


Property Line
Illinois River
Powerton Fish and Wildlife Area
Not Owned by MWG
East Manito Road
Koch Street
Riverway Drive
Insull Street
Midland Street
Hanna Drive
South 2nd Street
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19

Shallow Silty Clay Unit GQ Flow – 2Q 2017



Deeper Gravelly Sand Unit – 2Q 2017



Powerton – Updated Table 5-5

Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (MWG site specific analyses)

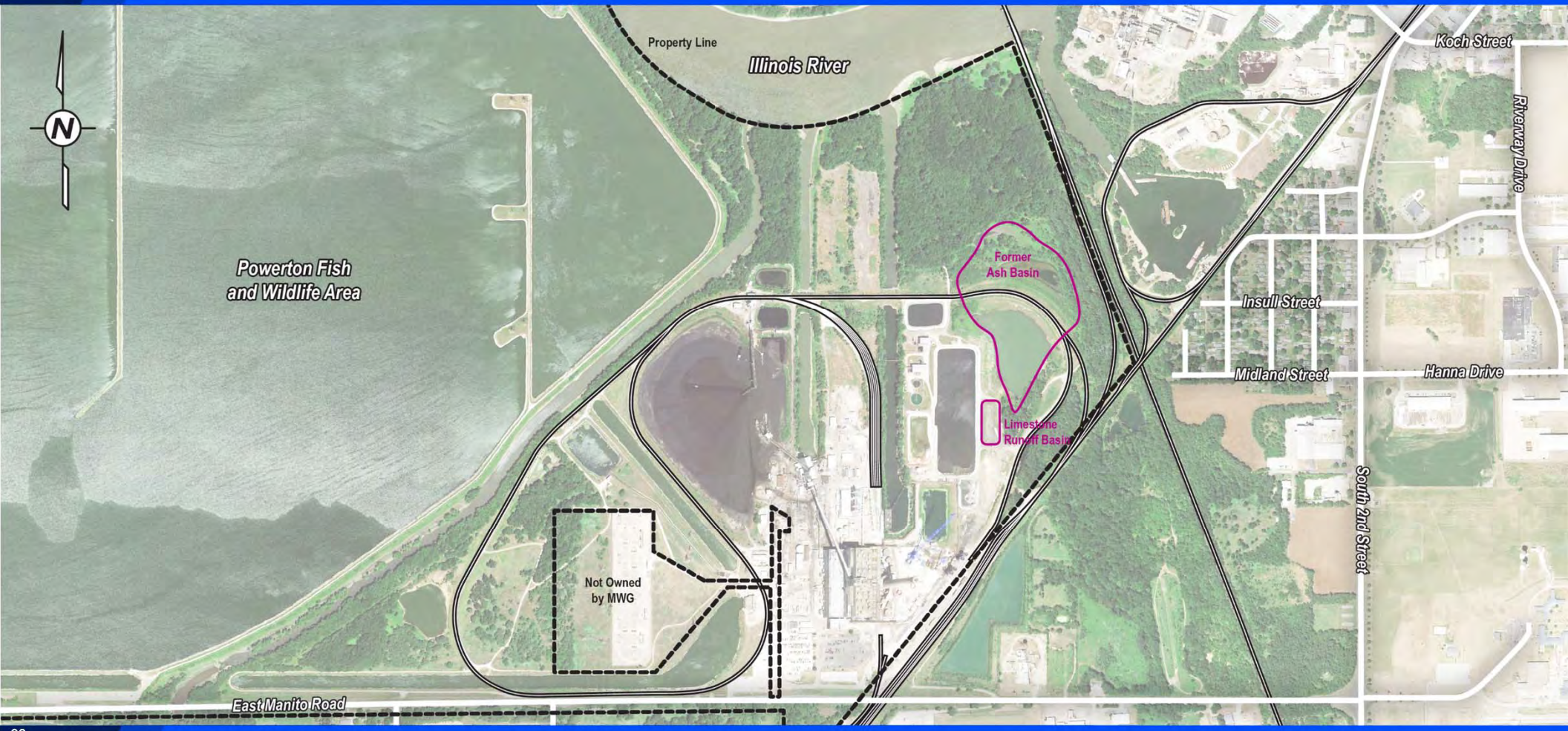
Constituent	Constituent is an Indicator of Leachate from Ash Currently Stored in Impoundments [1]	Constituents Detected during Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2]															
		Powerton Generating Station															
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16
Arsenic			x				x	x	x			x	x	x	x	x	
Barium	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Boron	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cadmium															x		
Cobalt								x			x	x			x		
Copper					x						x						
Iron							x	x	x		x	x	x	x	x	x	
Lead											x						
Manganese		x			x	x	x	x	x	x	x	x	x	x	x	x	x
Nickel						x		x	x		x	x	x		x	x	
Selenium				x	x					x	x			x	x	x	
Sulfate	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [3]		1	1	1	3	2	3	5	4	2	7	5	4	4	8	5	1
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [4]		25%	25%	25%	50%	40%	50%	63%	57%	40%	70%	63%	57%	57%	73%	63%	25%

Powerton – Updated Table 5-4

Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (EPRI, 2006)

Constituent	Constituent is an Indicator of Leachate from Ash in Impoundments [1]	Constituents Detected During Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2] — Powerton Generating Station															
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16
Antimony	Yes (Table 5-2)																
Arsenic	Yes (Table 5-2)		x				x	x	x			x	x	x	x	x	
Barium	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Boron	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cadmium	Yes (Table 5-2)														x		
Chromium	Yes (Table 5-2)																
Cobalt	Yes (Table 5-2)							x			x	x			x		
Copper	Yes (Table 5-2)				x						x						
Iron							x	x	x		x	x	x	x	x	x	
Lead	Yes (Table 5-2)										x						
Manganese	Yes (Table 5-2)	x			x	x	x	x	x	x	x	x	x	x	x	x	x
Mercury	Yes (Table 5-2)																
Nickel	Yes (Table 5-2)					x		x	x		x	x	x		x	x	
Selenium	Yes (Table 5-2)			x	x					x	x			x	x	x	
Sulfate	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Zinc	Yes (Table 5-2)																
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [3]		11	11	11	9	10	11	9	10	10	7	9	10	10	8	9	11
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [4]		69%	69%	69%	56%	63%	69%	56%	63%	63%	44%	56%	63%	63%	50%	56%	69%

Powerton


N
Property Line
Illinois River
Powerton Fish
and Wildlife Area
Former
Ash Basin
Limestone
Runoff Basin
Not Owned
by MWG
East Manito Road
Koch Street
Riverway Drive
Insull Street
Midland Street
Hanna Drive
South 2nd Street

Powerton

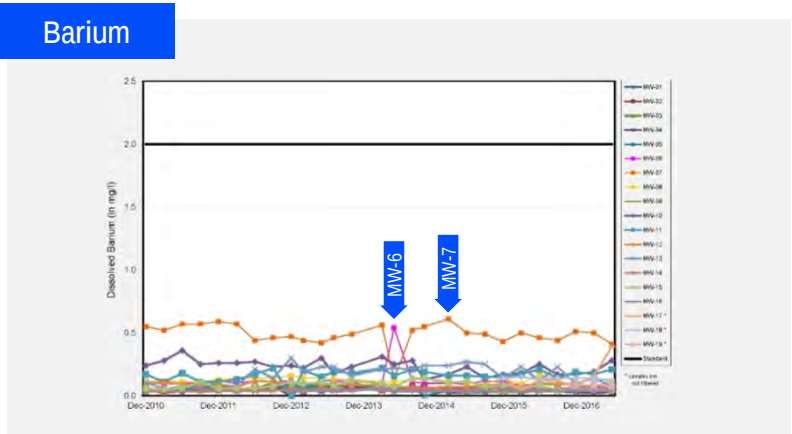

Property Line
Illinois River
Groundwater Management Zone
Powerton Fish and Wildlife Area
Not Owned by MWG
East Manito Road
Koch Street
Riverway Drive
Insull Street
Midland Street
Hanna Drive
South 2nd Street

Powerton

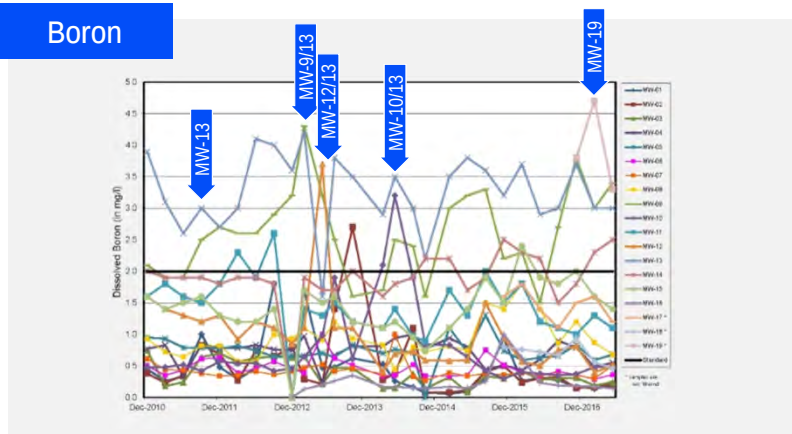

Property Line
Illinois River
ELUC
Koch Street
Riverway Drive
Powerton Fish
and Wildlife Area
Insull Street
Midland Street
Hanna Drive
South 2nd Street
Not Owned
by MWG
East Manito Road

Powerton

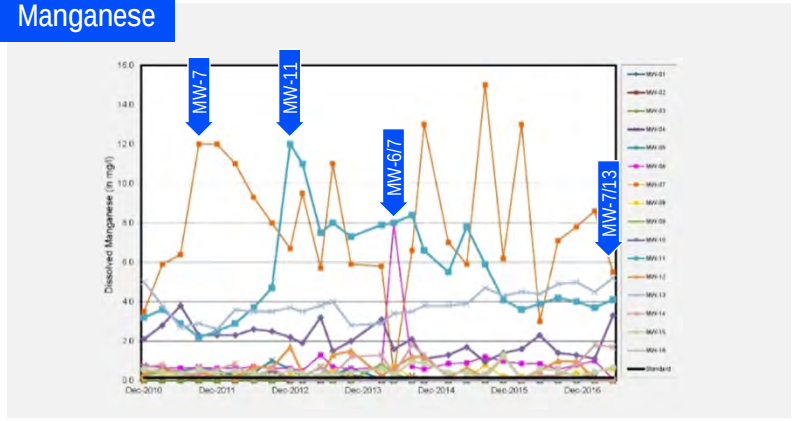
Barium



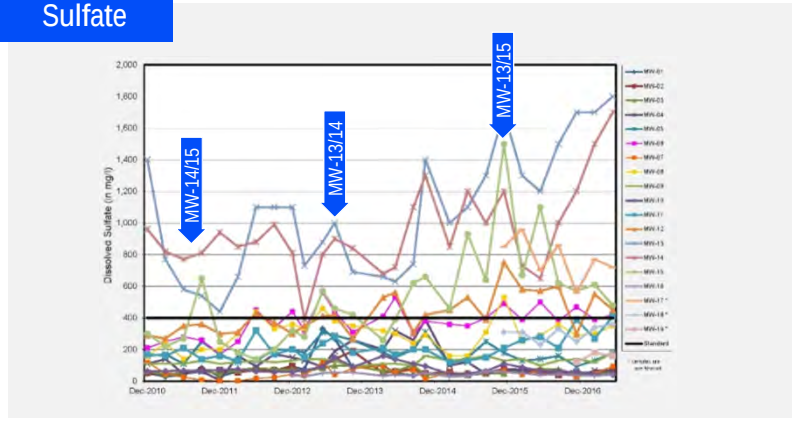
Boron



Manganese



Sulfate



Powerton

Updated Groundwater Constituent Temporal Trend Testing Results

Monitoring Well	Barium		Boron		Manganese		Sulfate	
	Trend Direction [(a)]	Slope (mg/L/yr)	Trend Direction [(a)]	Slope (mg/L/yr)	Trend Direction [(a)]	Slope (mg/L/yr)	Trend Direction [(a)]	Slope (mg/L/yr)
MW-01	No conclusion	--	Decreasing	-0.086	No conclusion	--	No conclusion	--
MW-02	No conclusion	--	Decreasing	-0.065	No conclusion	--	No conclusion	--
MW-03	No conclusion	--	Decreasing	-0.057	No conclusion	--	No conclusion	--
MW-04	Decreasing	-0.0049	No conclusion	--	Decreasing	-0.079	No conclusion	--
MW-05	Decreasing	-0.0018	No conclusion	--	Decreasing	-0.11	No conclusion	--
MW-06	No conclusion	--	Decreasing	-0.024	No conclusion	--	Increasing	29
MW-07	Decreasing	-0.011	No conclusion	--	No conclusion	--	Increasing	3.5
MW-08	Decreasing	-0.004	Increasing	0.062	Increasing	0.026	Increasing	12
MW-09	Decreasing	-0.0012	Increasing	0.076	Decreasing	-0.039	Increasing	4.2
MW-10	Decreasing	-0.015	No conclusion	--	Decreasing	-0.18	No conclusion	--
MW-11	Increasing	0.006	Decreasing	-0.094	No conclusion	--	Increasing	19
MW-12	Decreasing	0.00	Decreasing	-0.15	No conclusion	--	Increasing	40
MW-13	Increasing	0.012	No conclusion	--	Increasing	0.23	Increasing	140
MW-14	Increasing	0.004	Increasing	0.056	Increasing	0.073	Increasing	66
MW-15	No conclusion	--	Increasing	0.056	No conclusion	--	Increasing	92
MW-16	Decreasing	-0.340	No conclusion	--	Decreasing	-0.0013	No conclusion	--

Updated Temporal Trend Testing of Groundwater Concentrations for Site-Specific Indicators of Ash in Ponds

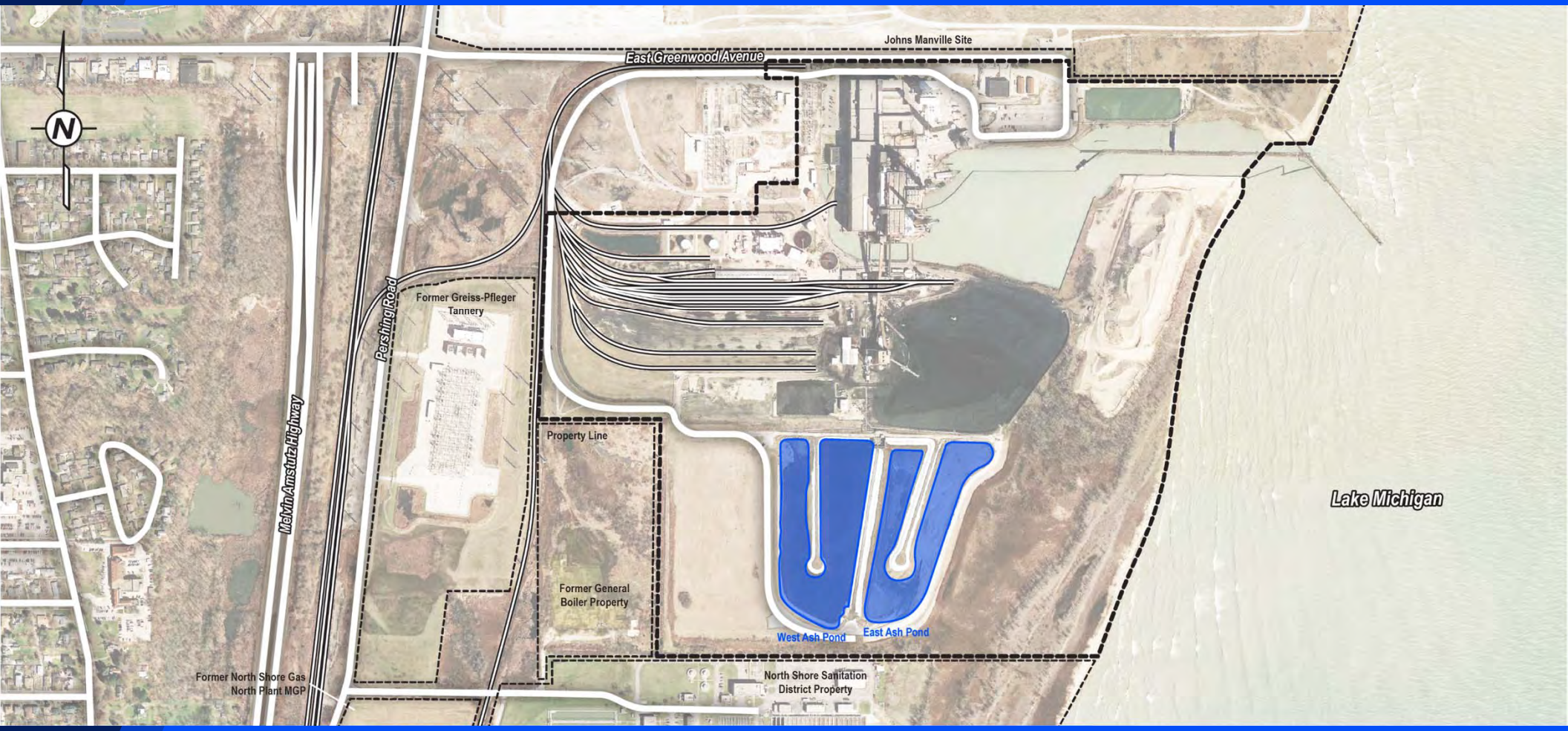
Trend	Barium	Boron	Manganese	Sulfate
Increasing	2 wells	4 wells	3 wells	9 wells
Decreasing	8 wells	6 wells	5 wells	No wells
No conclusion	5 wells	6 wells	8 wells	7 wells

- Overall, it appears that groundwater concentrations are neither increasing nor decreasing because:
  - The indicators are increasing at 3 to 9 wells out of 16 wells
  - Three indicators show decreasing trends at 5 to 8 wells out of 16 wells
  - No conclusions could be made at 5 to 7 wells out of 16 wells

Waukegan – Site History and Surroundings

- Operating for 75 years before MWG (1923)
- Review of Impoundments/Ponds
  - Ponds lined with Hypalon® in 1977
  - Relined by MWG (2003-2004)
- Pond ash sample results (2004 both ponds)
- Historic areas
- Off site impacts
- Administrative controls/ELUCs
- No potable water wells/no risk to receptors

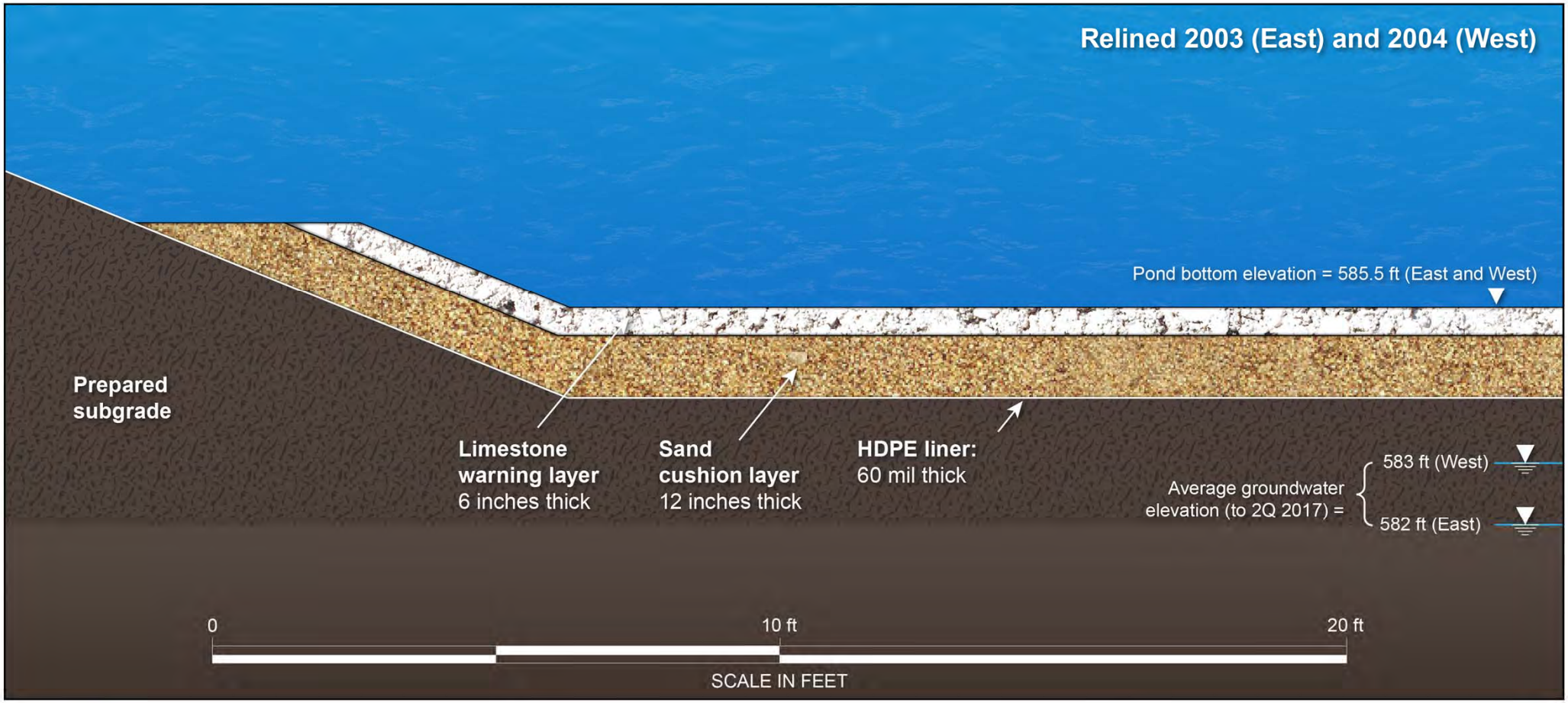
Waukegan


Johns Manville Site
East Greenwood Avenue
Former Greiss-Pfleger Tannery
Pershing Road
Melvin Amstutz Highway
Property Line
Former General Boiler Property
West Ash Pond
East Ash Pond
Lake Michigan
Former North Shore Gas North Plant MGP
North Shore Sanitation District Property

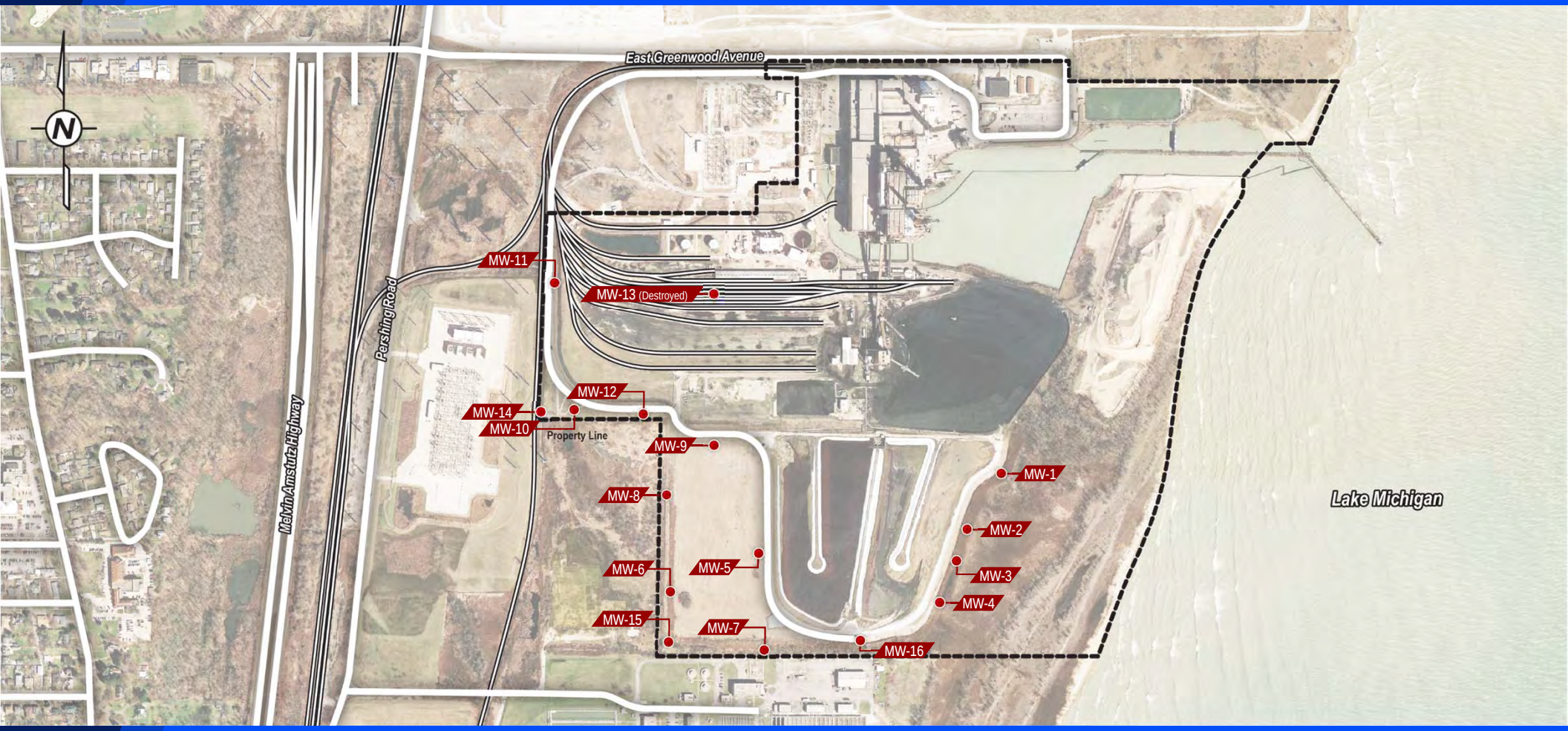
Waukegan – Impoundments

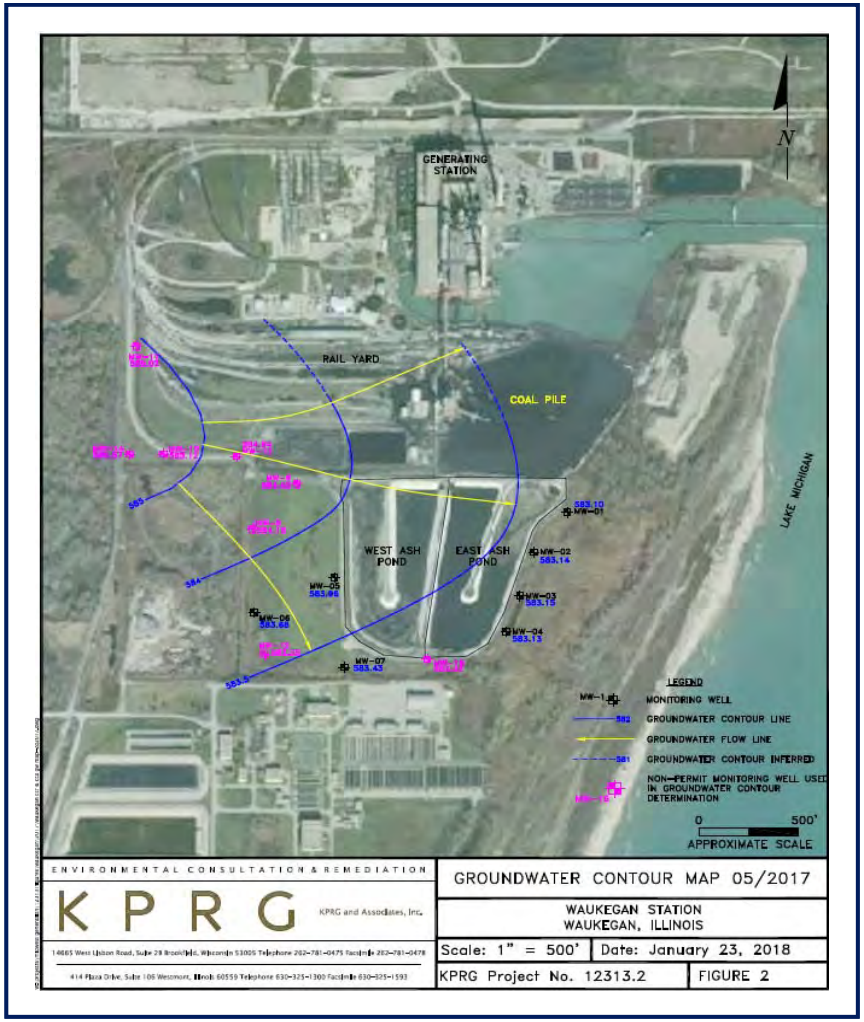
Station	Ash Pond	Date Constructed -Liners	Date Relined With HDPE	Scheduled Ash Removal
Waukegan	East Ash Pond	1977 Hypalon®	2003 Prepared subgrade; HDPE; sand cushion; warning layer	3-4 yrs (prev. 2 yrs)* Bottom area only; inlet side
	West Ash Pond	1977 Hypalon®	2004 Prepared subgrade; HDPE; sand cushion; warning layer	3-4 yrs (prev. 2 yrs)

Waukegan – East and West Ash Ponds



Waukegan


East Greenwood Avenue
Pershing Road
Melvin Amstutz Highway
MW-11
MW-13 (Destroyed)
MW-12
MW-14
MW-10
Property Line
MW-9
MW-8
MW-6
MW-5
MW-15
MW-7
MW-16
MW-1
MW-2
MW-3
MW-4
Lake Michigan


N
GENERATING STATION
RAIL YARD
COAL PILE
LAKE MICHIGAN
WEST ASH POND
EAST ASH POND
MW-01
583.10
MW-02
583.14
MW-03
583.19
MW-04
583.13
MW-05
583.96
MW-06
583.68
MW-07
583.43
LEGEND
MONITORING WELL
GROUNDWATER CONTOUR LINE
GROUNDWATER FLOW LINE
GROUNDWATER CONTOUR INFERRED
NON-PERMIT MONITORING WELL USED IN GROUNDWATER CONTOUR DETERMINATION
0
500'
APPROXIMATE SCALE
ENVIRONMENTAL CONSULTATION & REMEDIATION
KPRG
KPRG and Associates, Inc.
GROUNDWATER CONTOUR MAP 05/2017
WAUKEGAN STATION
WAUKEGAN, ILLINOIS
Scale: 1" = 500'
Date: January 23, 2018
KPRG Project No. 12313.2
FIGURE 2

Waukegan – Updated Table 5-5

Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (MWG site specific analyses)

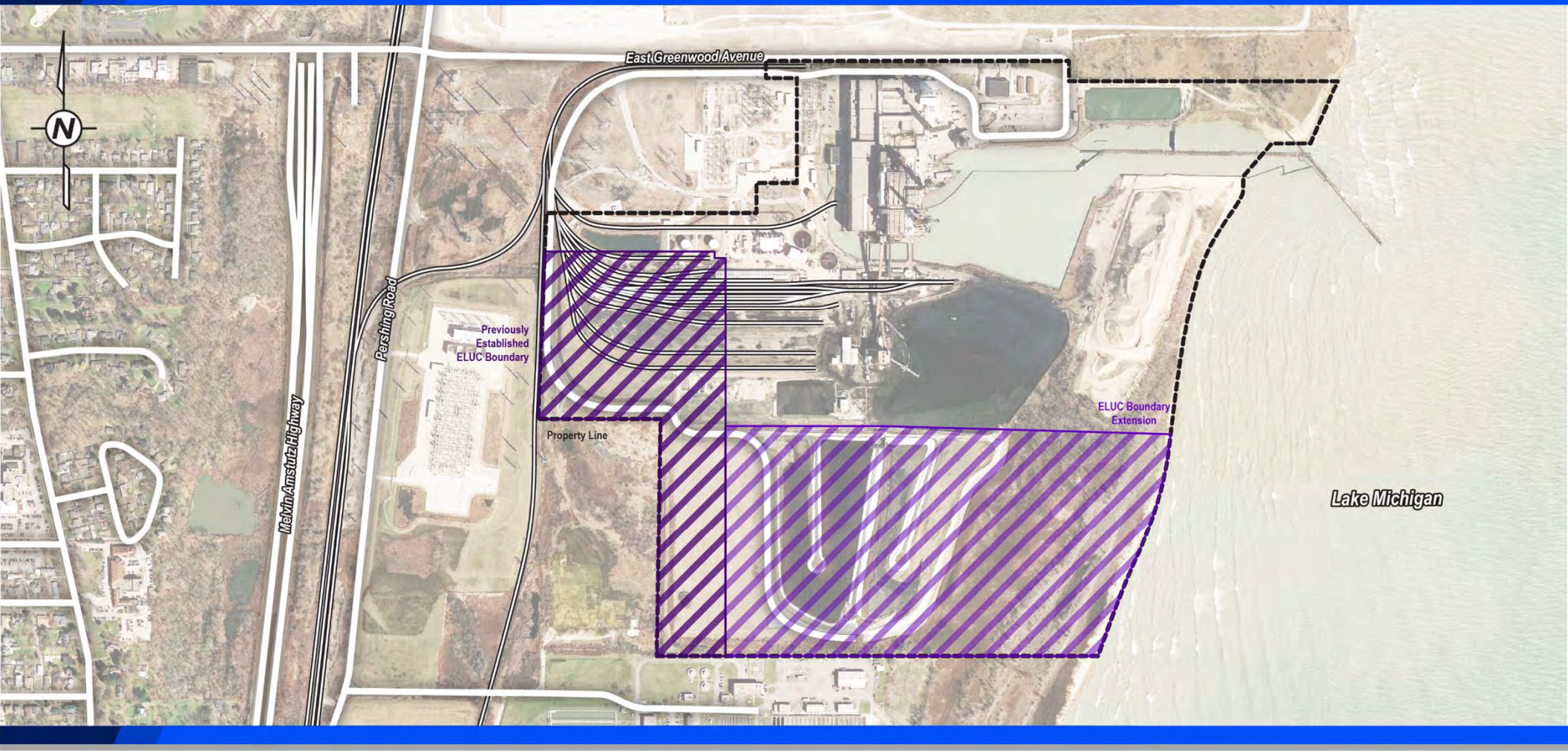
Constituent	Constituent is an Indicator of Leachate from Ash Currently Stored in Impoundments [1]	Constituents Detected During Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2]						
		Waukegan Generating Station						
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-07
Arsenic		x	x	x	x	x	x	x
Barium	Yes (Table 5-1)	x	x	x	x	x	x	x
Boron	Yes (Table 5-1)	x	x	x	x	x	x	x
Copper								x
Iron					x	x	x	x
Lead								x
Manganese			x	x	x	x	x	x
Nickel						x		
Selenium		x	x	x	x	x	x	
Sulfate	Yes (Table 5-1)	x	x	x	x	x	x	x
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [3]		2	3	3	4	5	4	5
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [4]		40%	50%	50%	57%	63%	57%	63%

Waukegan – Updated Table 5-4

Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (EPRI, 2006)

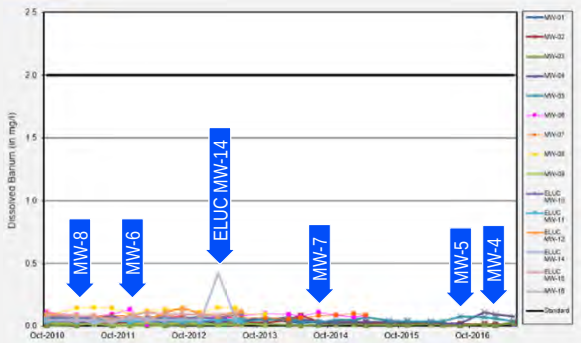
Constituent	Constituent is an Indicator of Leachate from Ash in Impoundments [1]	Constituents Detected during Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2] — Waukegan Generating Station						
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Antimony	Yes (Table 5-2)							
Arsenic	Yes (Table 5-2)	x	x	x	x	x	x	x
Barium	Yes (Table 5-2)	x	x	x	x	x	x	x
Boron	Yes (Table 5-2)	x	x	x	x	x	x	x
Cadmium	Yes (Table 5-2)							
Chromium	Yes (Table 5-2)							
Cobalt	Yes (Table 5-2)							
Copper	Yes (Table 5-2)							x
Iron					x	x	x	x
Lead	Yes (Table 5-2)							x
Manganese	Yes (Table 5-2)		x	x	x	x	x	x
Mercury	Yes (Table 5-2)							
Nickel	Yes (Table 5-2)					x		
Selenium	Yes (Table 5-2)	x	x	x	x	x	x	
Sulfate	Yes (Table 5-2)	x	x	x	x	x	x	x
Zinc	Yes (Table 5-2)							
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [3]		10	9	9	10	9	10	9
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [4]		63%	56%	56%	63%	56%	63%	56%

Waukegan

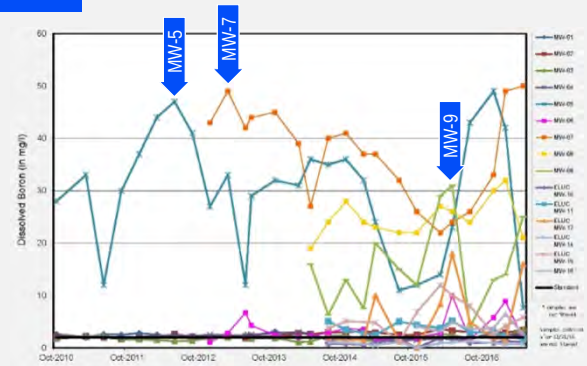

East Greenwood Avenue
Melvin Amstutz Highway
Pershing Road
Previously Established ELUC Boundary
Property Line
ELUC Boundary Extension
Lake Michigan

Waukegan

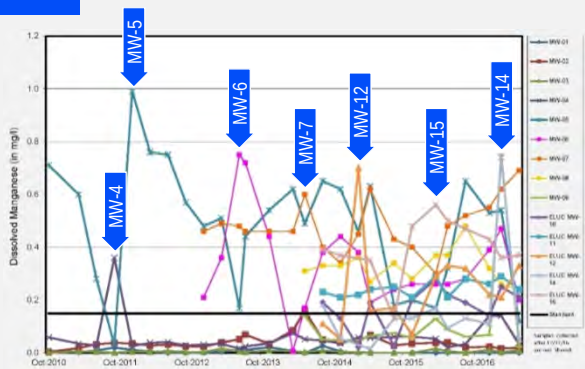
Barium



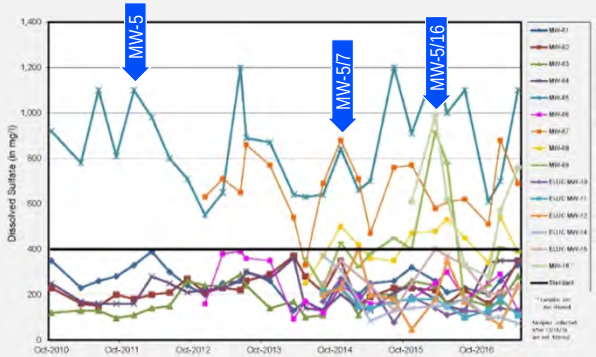
Boron



Manganese



Sulfate



Waukegan

Updated Groundwater Constituent Temporal Trend Testing Results

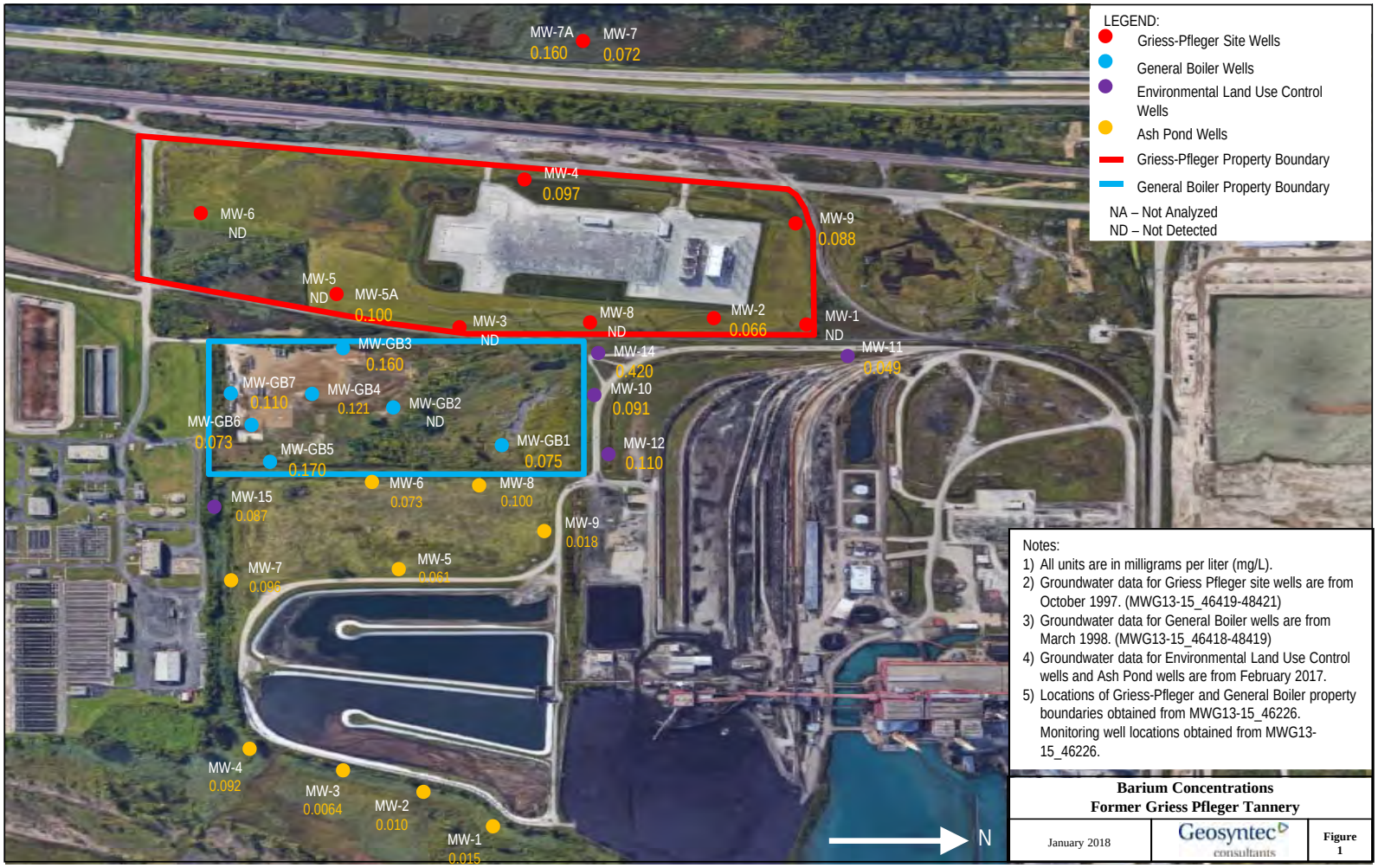
Monitoring Well	Barium		Boron		Manganese		Sulfate	
	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)
MW-01	Decreasing	-0.0026	Decreasing	-0.093	Decreasing	-0.0010	Decreasing	-8.3
MW-02	No conclusion	--	Increasing	0.22	No conclusion	--	No conclusion	--
MW-03	No conclusion	--	Increasing	0.11	No conclusion	--	Increasing	10
MW-04	Increasing	0.0048	No conclusion	--	No conclusion	--	No conclusion	--
MW-05	Decreasing	-0.0019	No conclusion	--	Decreasing	-0.035	No conclusion	--
MW-06	No conclusion	--	Increasing	0.49	Decreasing	-0.033	Decreasing	-19
MW-07	No conclusion	--	Decreasing	-2.1	Increasing	0.022	No conclusion	--
MW-08	No conclusion	--	No conclusion	--	No conclusion	--	No conclusion	--
MW-09	No conclusion	--	No conclusion	--	No conclusion	--	No conclusion	--

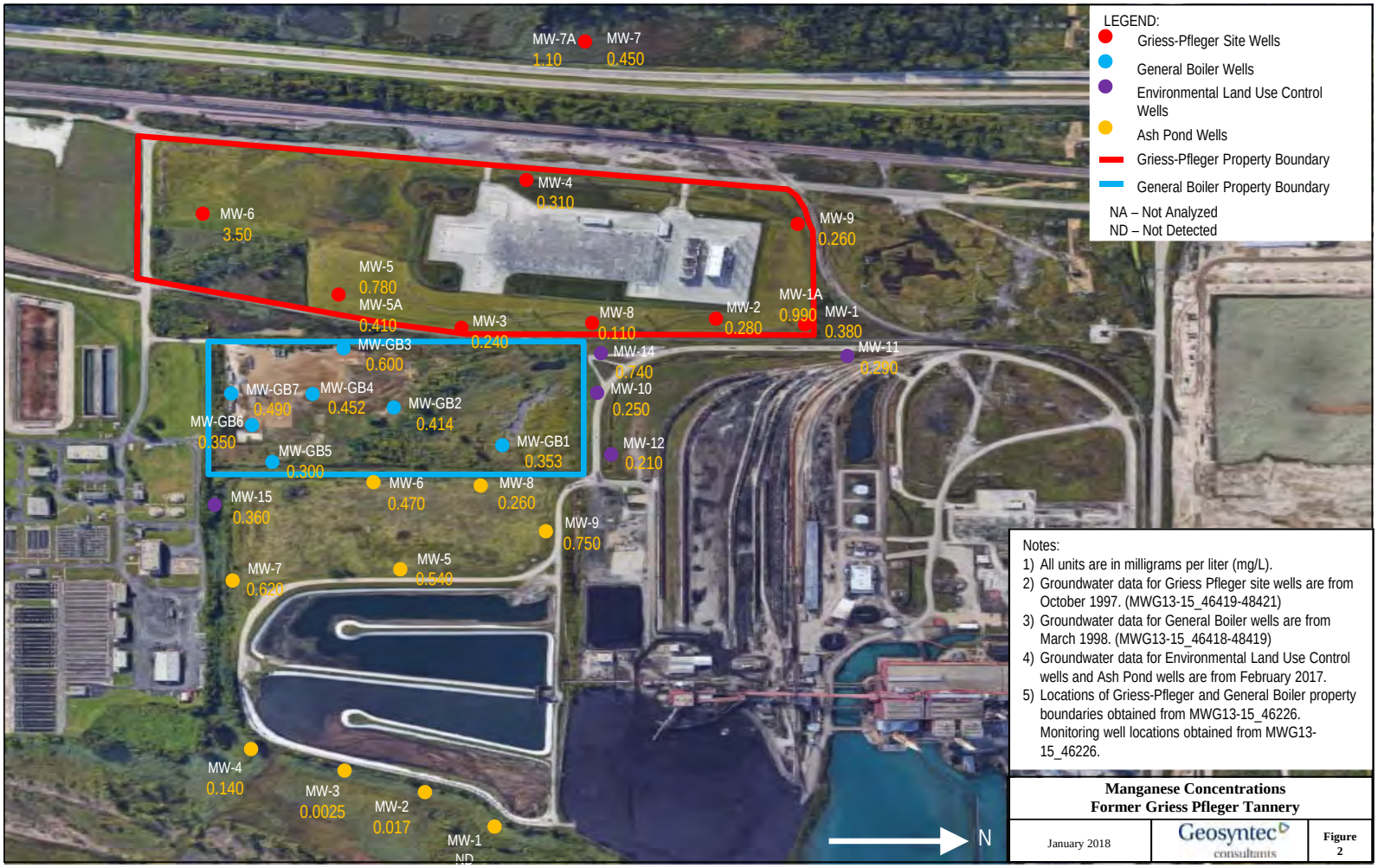
Waukegan

Updated Temporal Trend Testing of Groundwater Concentrations for Site-Specific Indicators of Ash in Ponds

Trend	Barium	Boron	Manganese	Sulfate
Increasing	1 well	3 wells	1 well	1 well
Decreasing	2 wells	2 wells	3 wells	2 wells
No conclusion	6 wells	4 wells	5 wells	6 wells

- Overall, it appears that groundwater concentrations are neither increasing nor decreasing because:
  - The indicators are increasing at 1 to 3 wells out of 9 wells
  - The indicators are decreasing at 2 to 3 wells out of 9 wells
  - No conclusions could be made at 4 to 6 wells out of 9 wells

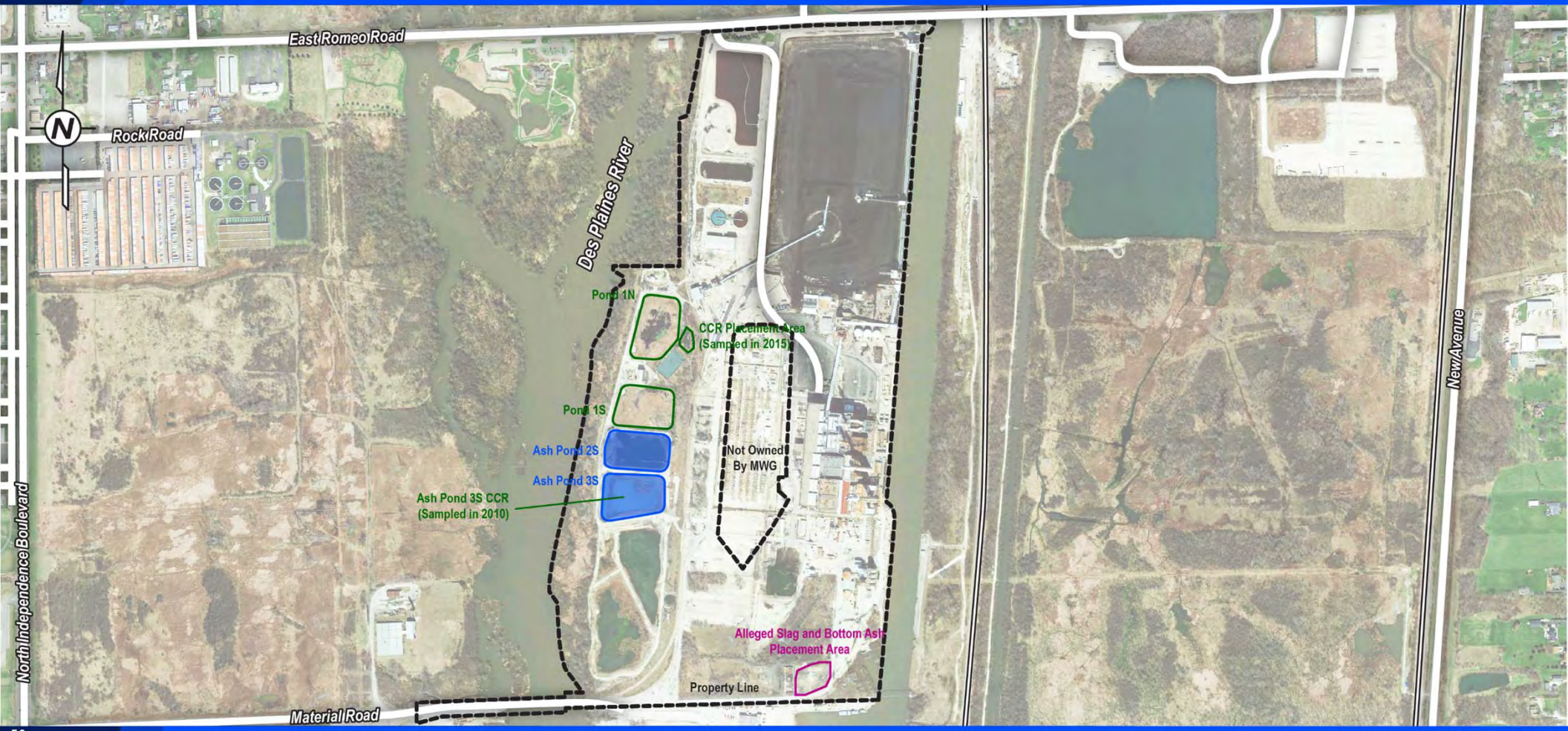

MW-7A
0.160
MW-7
0.072
MW-4
0.097
MW-6
ND
MW-9
0.088
MW-5
ND
MW-5A
0.100
MW-3
ND
MW-8
ND
MW-2
0.066
MW-1
ND
MW-11
0.049
MW-GB3
0.160
MW-14
0.420
MW-GB7
0.110
MW-GB4
0.121
MW-GB2
ND
MW-10
0.091
MW-GB6
0.073
MW-GB5
0.170
MW-GB1
0.075
MW-12
0.110
MW-6
0.073
MW-8
0.100
MW-15
0.087
MW-9
0.018
MW-7
0.096
MW-5
0.061
MW-4
0.092
MW-3
0.0064
MW-2
0.010
MW-1
0.015
N
LEGEND:
Griess-Pfleger Site Wells
General Boiler Wells
Environmental Land Use Control Wells
Ash Pond Wells
Griess-Pfleger Property Boundary
General Boiler Property Boundary
NA – Not Analyzed
ND – Not Detected
Notes:
1) All units are in milligrams per liter (mg/L).
2) Groundwater data for Griess Pfleger site wells are from October 1997. (MWG13-15_46419-48421)
3) Groundwater data for General Boiler wells are from March 1998. (MWG13-15_46418-48419)
4) Groundwater data for Environmental Land Use Control wells and Ash Pond wells are from February 2017.
5) Locations of Griess-Pfleger and General Boiler property boundaries obtained from MWG13-15_46226. Monitoring well locations obtained from MWG13-15_46226.
Barium Concentrations
Former Griess Pfleger Tannery
January 2018
Geosyntec consultants
Figure 1


LEGEND:
Griess-Pfleger Site Wells
General Boiler Wells
Environmental Land Use Control Wells
Ash Pond Wells
Griess-Pfleger Property Boundary
General Boiler Property Boundary
NA – Not Analyzed
ND – Not Detected
MW-7A 1.10
MW-7 0.450
MW-4 0.310
MW-6 3.50
MW-9 0.260
MW-5 0.780
MW-5A 0.410
MW-3 0.240
MW-8 0.110
MW-2 0.280
MW-1A 0.990
MW-1 0.380
MW-GB3 0.600
MW-14 0.740
MW-11 0.290
MW-GB7 0.490
MW-GB4 0.452
MW-GB2 0.414
MW-10 0.250
MW-GB6 0.350
MW-GB5 0.300
MW-GB1 0.353
MW-12 0.210
MW-15 0.360
MW-6 0.470
MW-8 0.260
MW-9 0.750
MW-7 0.620
MW-5 0.540
MW-4 0.140
MW-3 0.0025
MW-2 0.017
MW-1 ND
N
Notes:
1) All units are in milligrams per liter (mg/L).
2) Groundwater data for Griess Pfleger site wells are from October 1997. (MWG13-15_46419-48421)
3) Groundwater data for General Boiler wells are from March 1998. (MWG13-15_46418-48419)
4) Groundwater data for Environmental Land Use Control wells and Ash Pond wells are from February 2017.
5) Locations of Griess-Pfleger and General Boiler property boundaries obtained from MWG13-15_46226. Monitoring well locations obtained from MWG13-15_46226.
Manganese Concentrations
Former Griess Pfleger Tannery
January 2018
Geosyntec consultants
Figure 2

Will County – Site History and Surroundings

- Operating for 40+ years before MWG (1955)
- Review of Impoundments/Ponds
  - IN and 1S removed from service/1'water
  - 2S and 3S lined and relined
- Pond ash sample results (2010)
- Historic areas and samples (2015)
- Administrative Controls/ GMZ and ELUC
- No potable water wells/no risk to receptors

Will County

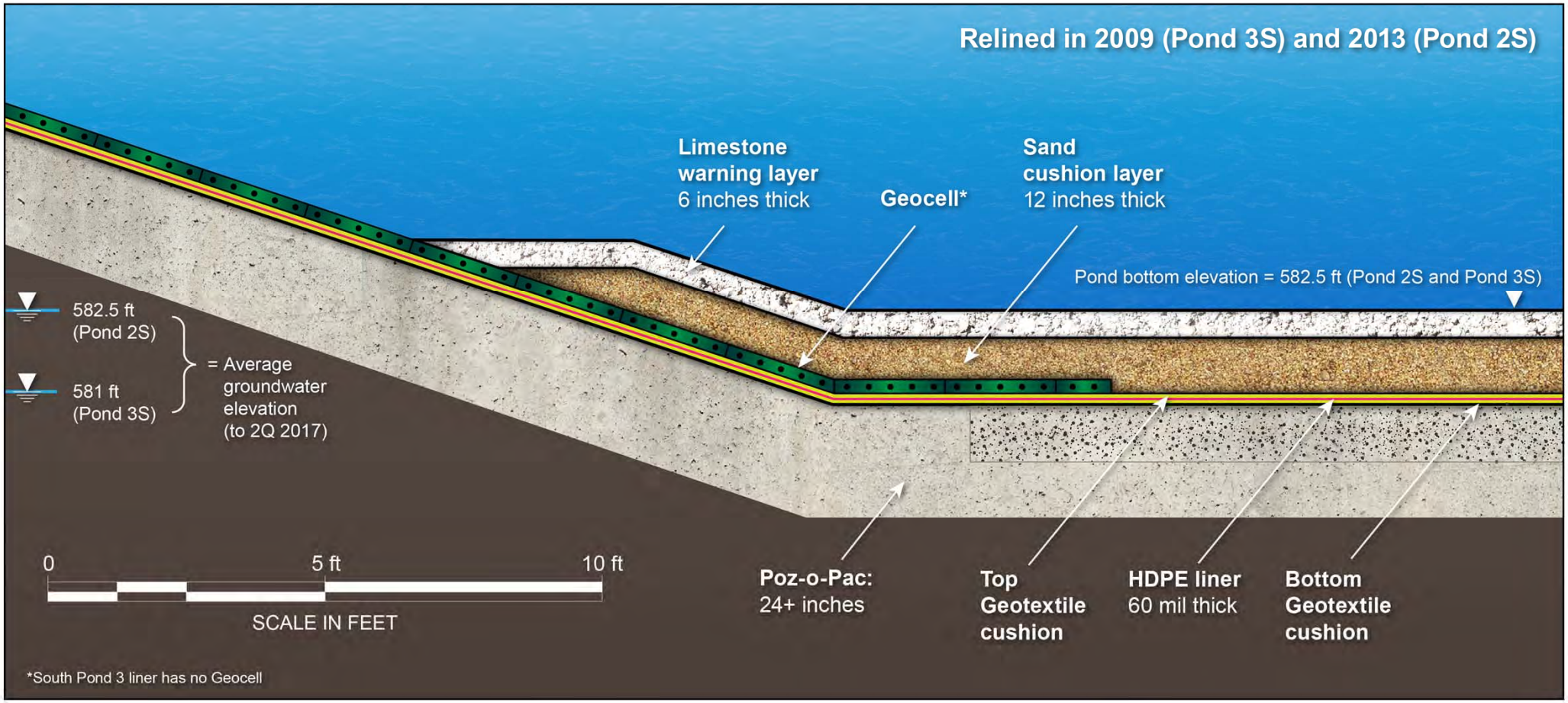

East Romeo Road
Rock Road
Des Plaines River
Pond 1N
CCR Placement Area
(Sampled in 2015)
Pond 1S
Ash Pond 2S
Ash Pond 3S
Ash Pond 3S CCR
(Sampled in 2010)
Not Owned
By MWG
Alleged Slag and Bottom Ash
Placement Area
Property Line
North Independence Boulevard
Material Road
New Avenue

Will County – Impoundments

Station	Ash Pond	Date Constructed – Liners	Date Relined With HDPE	Scheduled Ash Removal
Will County Only Unit 4 operating Scheduled to close May 2020	Pond 1N and Pond 1S	1977 Poz-o-Pac—36 inches	Removed from service with dewatering systems	NONE 1' remaining water
	Pond 2S	1977 • Bituminous seal coat • Poz-o-Pac—36 inches thick	2013 Poz-o-Pac; geotextile; HDPE; geo-textile; geocell; sand cushion; warning layer	1-2 yrs*
	Pond 3S	1977 • Bituminous seal coat • Poz-o-Pac—36 inches thick	2009 Poz-o-Pac; geotextile; HDPE; geo-textile; sand cushion; warning layer	1-2 yrs

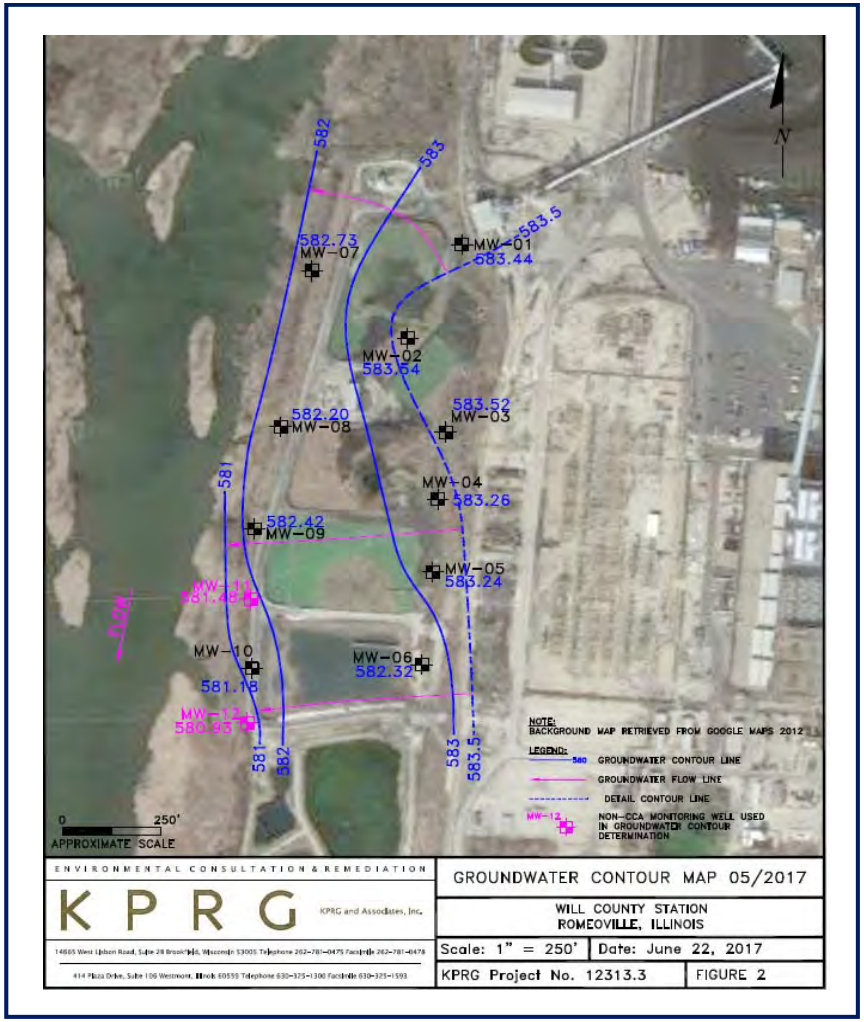
*Maddox testimony

Will County – South Ponds 2 and 3



Will County


East Romeo Road
Rock Road
Des Plaines River
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
Not Owned By MWG
Property Line
North Independence Boulevard
New Avenue
Material Road


582
583
583.5
582.73
MW-07
MW-01
583.44
MW-02
583.64
582.20
MW-08
583.52
MW-03
581
MW-04
583.26
582.42
MW-09
MW-05
583.24
MW-11
581.48
MW-10
581.18
MW-06
582.32
MW-12
580.93
581
582
583
583.5
N
0
250'
APPROXIMATE SCALE
NOTE:
BACKGROUND MAP RETRIEVED FROM GOOGLE MAPS 2012
LEGEND:
580 GROUNDWATER CONTOUR LINE
GROUNDWATER FLOW LINE
DETAIL CONTOUR LINE
MW-12 NON-CCA MONITORING WELL USED IN GROUNDWATER CONTOUR DETERMINATION
ENVIRONMENTAL CONSULTATION & REMEDIATION
K P R G
KPRG and Associates, Inc.
GROUNDWATER CONTOUR MAP 05/2017
WILL COUNTY STATION
ROMEOVILLE, ILLINOIS
Scale: 1" = 250'
Date: June 22, 2017
KPRG Project No. 12313.3
FIGURE 2

Will County – Updated Table 5-5

Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (MWG site specific analyses)

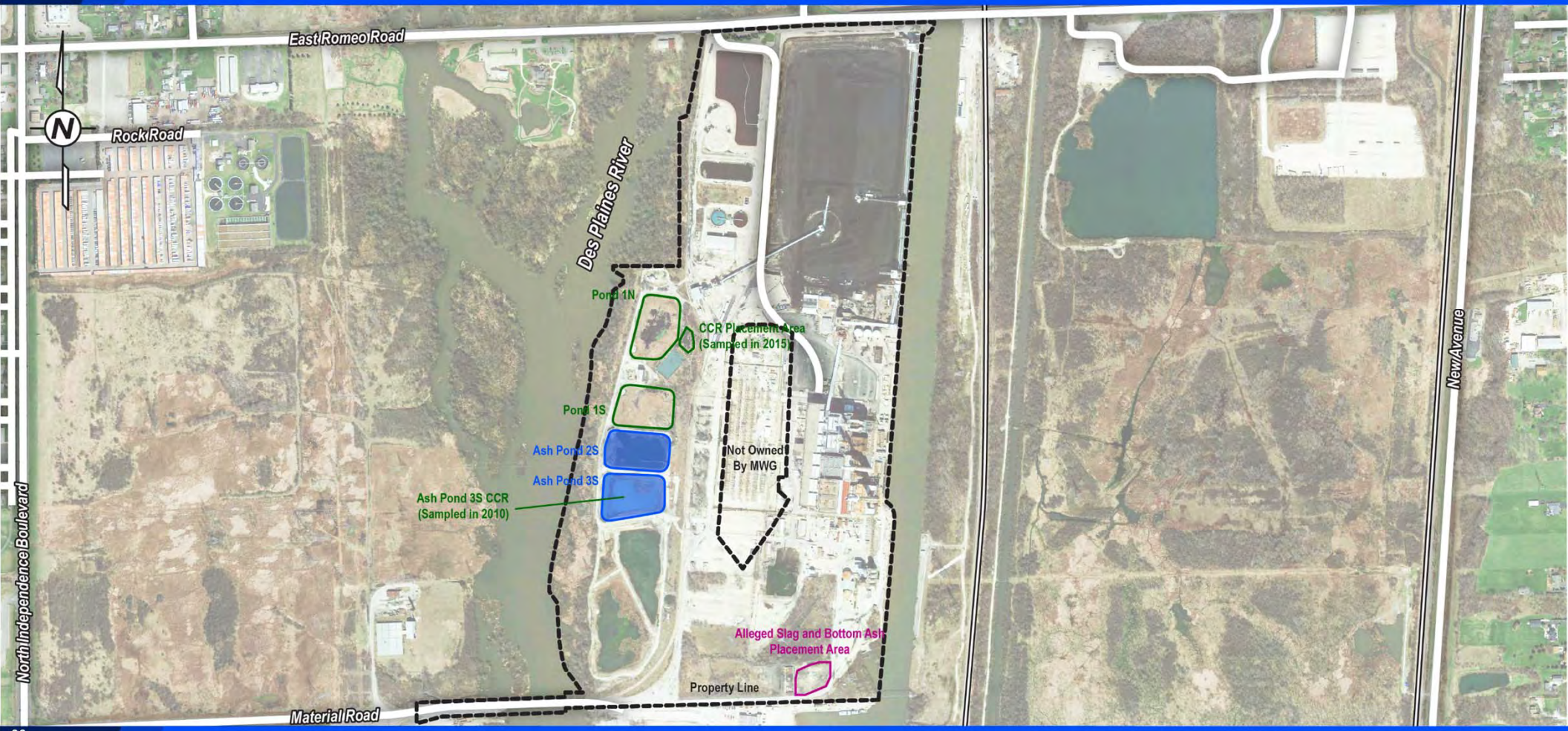
Constituent	Constituent is an Indicator of Leachate from Ash Currently Stored in Impoundments [1]	Constituents Detected During Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2]									
		Will County Generating Station									
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
Arsenic			x	x		x	x	x	x	x	x
Barium	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x
Boron	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x
Cobalt				x	x				x		
Iron		x	x		x		x	x	x		x
Lead			x								
Manganese		x	x	x	x	x	x	x	x	x	x
Mercury		x			x						
Nickel		x	x	x	x	x	x	x	x	x	x
Selenium		x			x	x	x	x	x	x	x
Sulfate	Yes (Table 5-1)	x	x	x	x	x	x	x	x	x	x
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [3]		5	5	4	6	4	5	5	6	4	5
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash Currently Stored in Impoundments [4]		63%	63%	57%	67%	57%	63%	63%	67%	57%	63%

Will County – Updated Table 5-4

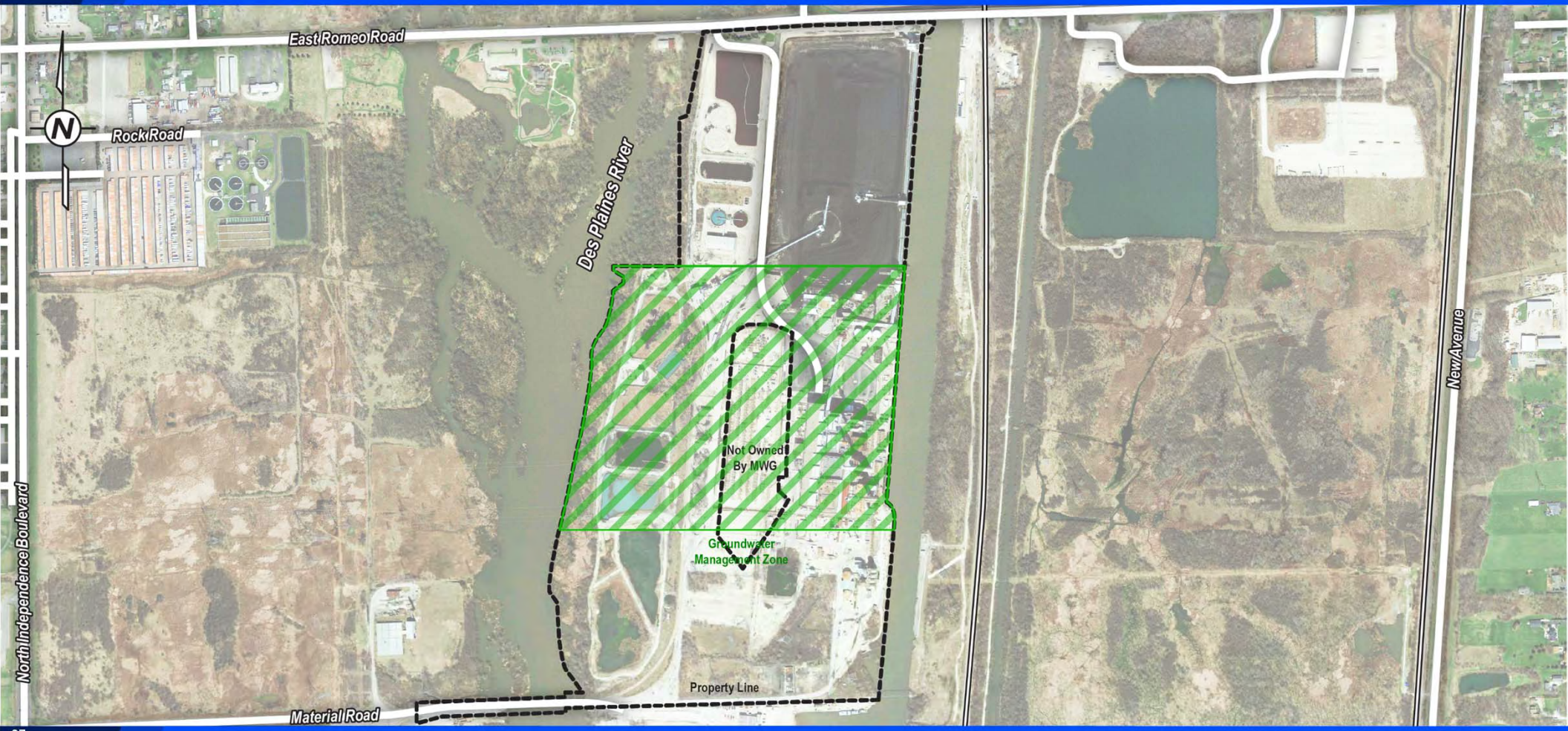
Quarterly Groundwater Monitoring (2016-Q3 to 2017-Q2) Compared to Indicators in Impoundments/ponds (EPRI, 2006)

		Constituents Detected During Most Recent Year (2016-Q3 to 2017-Q2) of Quarterly Groundwater Monitoring [2]									
		Will County Generating Station									
Constituent	Constituent is an Indicator of Leachate from Ash in Impoundments [1]	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
Antimony	Yes (Table 5-2)										
Arsenic	Yes (Table 5-2)		x	x		x	x	x	x	x	x
Barium	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x
Boron	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x
Cadmium	Yes (Table 5-2)										
Chromium	Yes (Table 5-2)										
Cobalt	Yes (Table 5-2)			x	x				x		
Copper	Yes (Table 5-2)										
Iron		x	x		x		x	x	x		x
Lead	Yes (Table 5-2)		x								
Manganese	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x
Mercury	Yes (Table 5-2)	x			x						
Nickel	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x
Selenium	Yes (Table 5-2)	x			x	x	x	x	x	x	x
Sulfate	Yes (Table 5-2)	x	x	x	x	x	x	x	x	x	x
Zinc	Yes (Table 5-2)										
Number of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [3]		9	9	8	8	8	9	9	8	8	9
Percentage of Observed Constituents that are not Consistent with Indicators of Leachate from Ash in Impoundments [4]		56%	56%	50%	50%	50%	56%	56%	50%	50%	56%

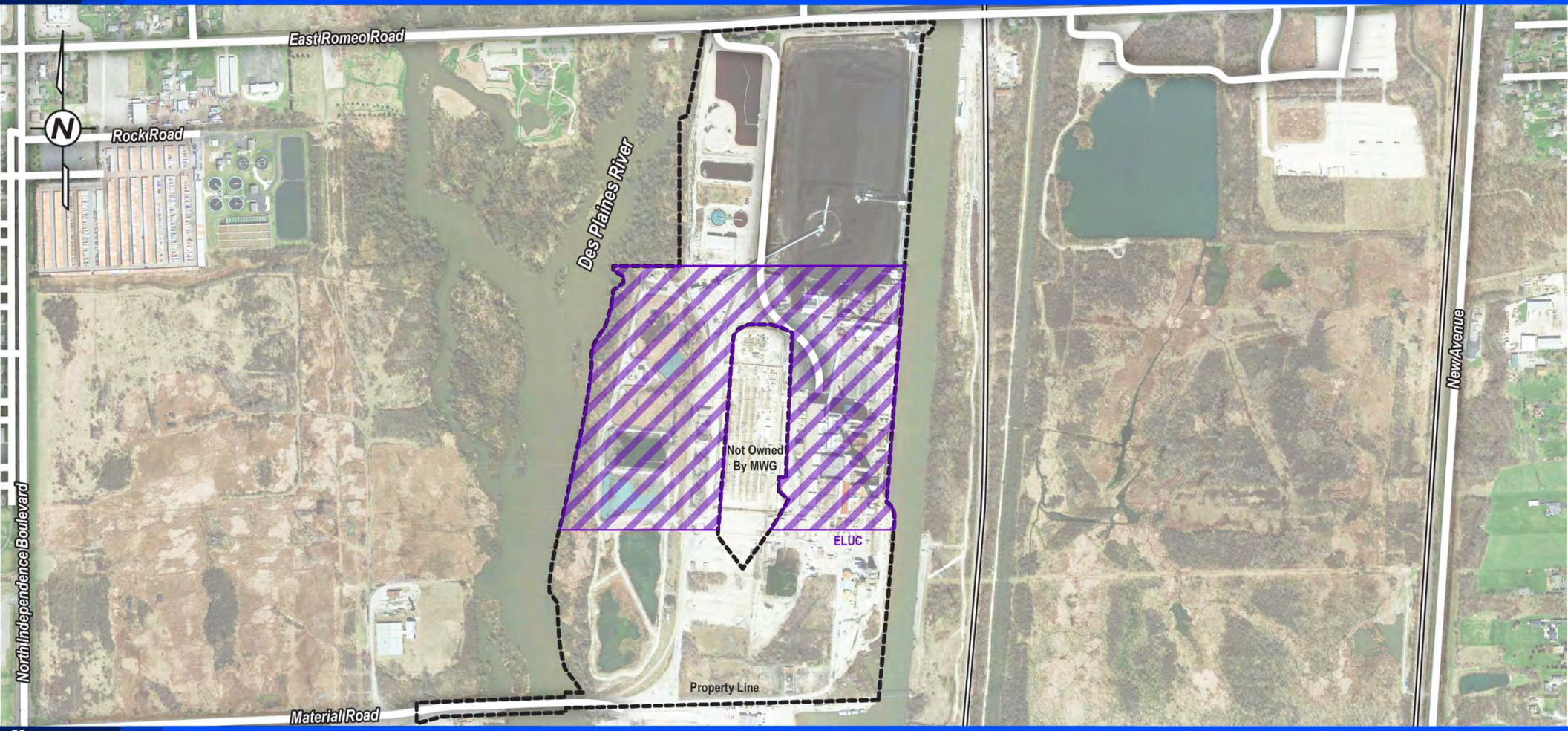
Will County


East Romeo Road
Rock Road
Des Plaines River
Pond 1N
CCR Placement Area
(Sampled in 2015)
Pond 1S
Ash Pond 2S
Ash Pond 3S
Ash Pond 3S CCR
(Sampled in 2010)
Not Owned
By MWG
Alleged Slag and Bottom Ash
Placement Area
Property Line
North Independence Boulevard
Material Road
New Avenue

Will County

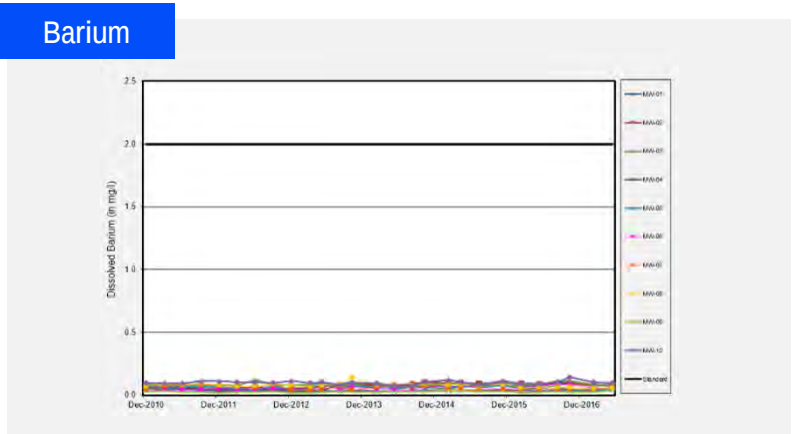

East Romeo Road
Rock Road
Des Plaines River
North Independence Boulevard
New Avenue
Material Road
Not Owned By MWG
Groundwater Management Zone
Property Line

Will County

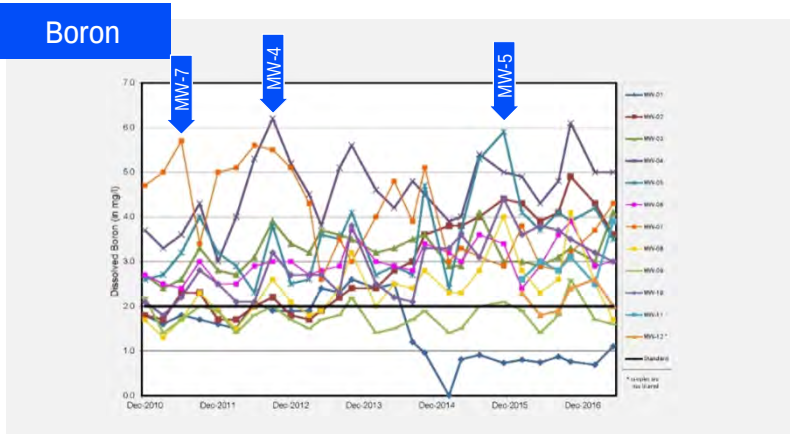

East Romeo Road
Rock Road
Des Plaines River
North Independence Boulevard
New Avenue
Material Road
Not Owned By MWG
ELUC
Property Line
N

Will County

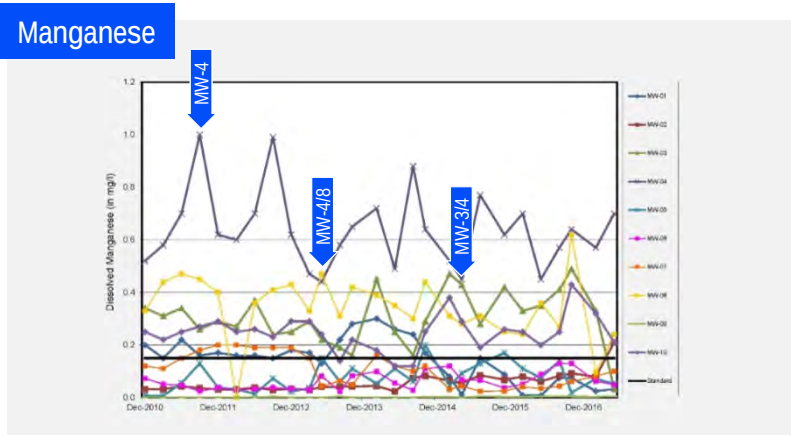
Barium



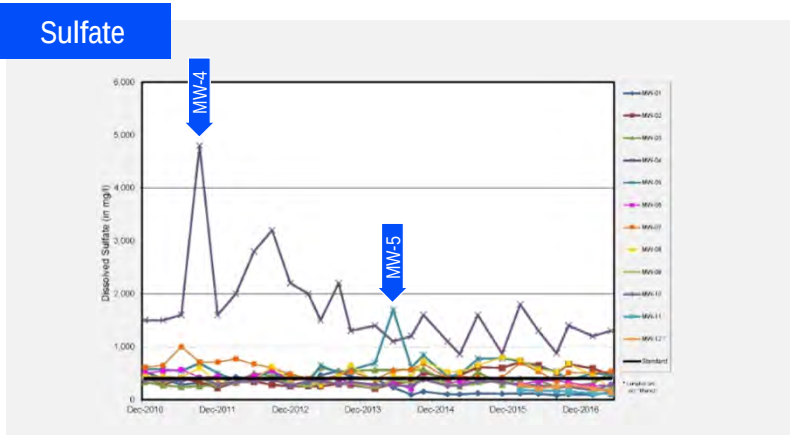
Boron



Manganese



Sulfate



Will County

Updated Groundwater Constituent Temporal Trend Testing Results

Monitoring Well	Barium		Boron		Manganese		Sulfate	
	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)	Trend Direction [a]	Slope (mg/L/yr)
MW-01	Increasing	0.0088	Decreasing	-0.22	Decreasing	-0.026	Decreasing	-61
MW-02	Increasing	0.0065	Increasing	0.49	Increasing	0.014	Increasing	55
MW-03	No conclusion	--	Increasing	0.076	No conclusion	--	No conclusion	--
MW-04	Decreasing	-0.0024	Increasing	0.18	No conclusion	--	Decreasing	-220
MW-05	No conclusion	--	Increasing	0.23	Increasing	0.0098	No conclusion	--
MW-06	Increasing	0.0042	No conclusion	--	Increasing	0.0079	Decreasing	-34
MW-07	Decreasing	-0.0039	Decreasing	-0.3	Decreasing	-0.022	Decreasing	-39
MW-08	Decreasing	-0.0036	Increasing	0.19	Decreasing	-0.016	Increasing	26
MW-09	Increasing	0.00091	No conclusion	--	Increasing	0.00034	Decreasing	-22
MW-10	No conclusion	--	Increasing	0.24	No conclusion	--	Decreasing	-20

Will County

Updated Temporal Trend Testing of Groundwater Concentrations for Site-Specific Indicators of Ash in Ponds

Trend	Barium	Boron	Manganese	Sulfate
Increasing	4 wells	6 wells	4 wells	2 wells
Decreasing	3 wells	2 wells	3 wells	6 wells
No conclusion	3 wells	2 wells	3 wells	2 wells

- Overall, it appears that groundwater concentrations are neither increasing nor decreasing because:
  - The indicators are increasing at 2 to 6 wells out of 10 wells
  - The indicators are decreasing at 2 to 6 wells out of 10 wells
  - No conclusions could be made at 2 to 3 wells out of 10 wells

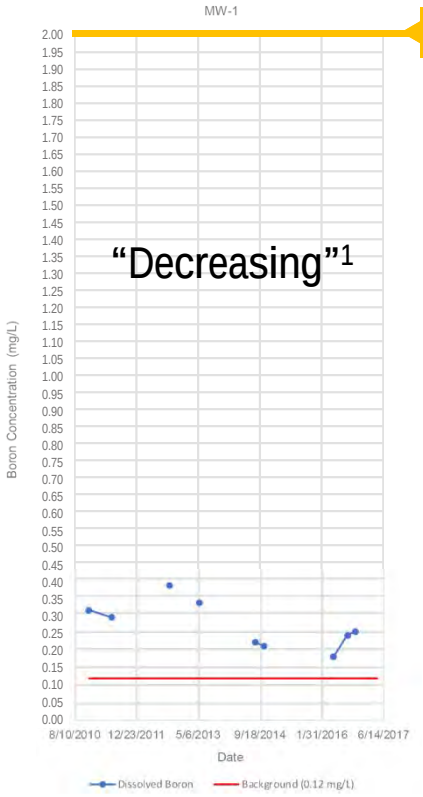
***SIERRA CLUB, ET AL. V. MIDWEST GENERATION, LLC* PCB 13-15**

RESPONDENT MIDWEST GENERATION, LLC'S
POST HEARING BRIEF

ATTACHMENT 2

EXHIBIT 908
JOLIET #29 MONITORING WELL SLIDES COMPARED TO CLASS 1 STANDARD BASED UPON COMPLAINANTS' EXHIBIT 411

Joliet #29 Monitoring Well-1 Boron Concentration



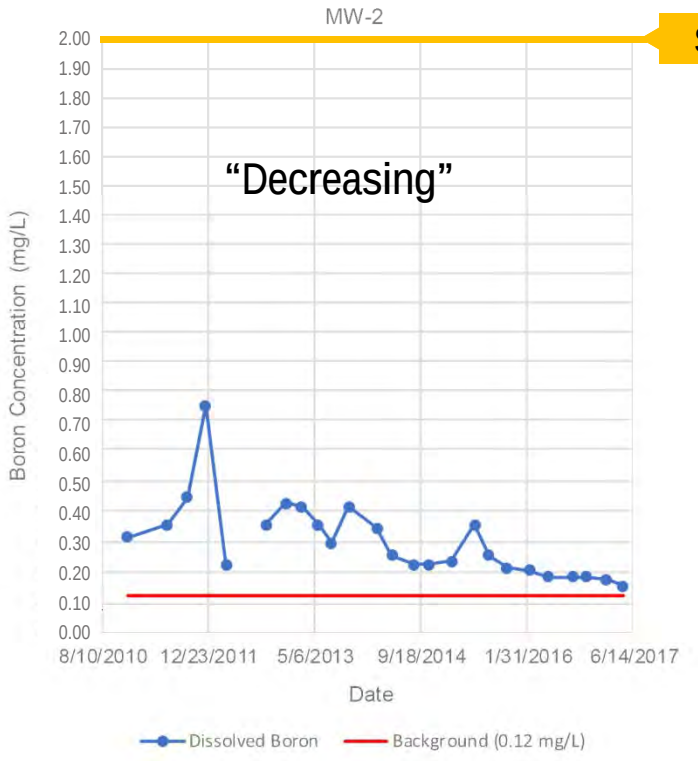
Standard Boron Levels: 2.00

"Decreasing"[1]

Class I Standard
(Not applicable in GMZ)

[1] J. Kunkel description (visual)
Oct 20, 2017 Complainant's Notice of Filing at 7

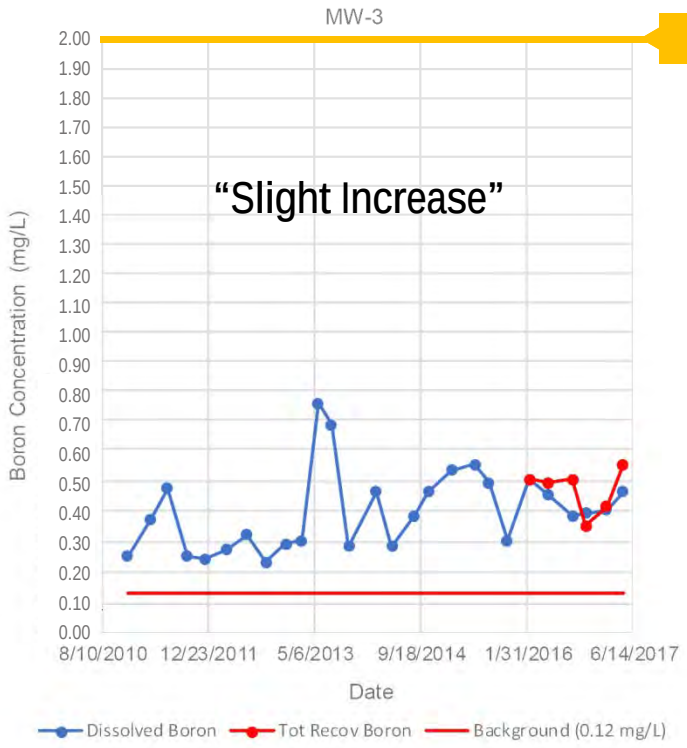
Joliet #29 Monitoring Well-2 Boron Concentration



Class I Standard
(Not applicable in GMZ)

Oct 20, 2017 Complainant's Notice of Filing at 7

Joliet #29 Monitoring Well-3 Boron Concentration



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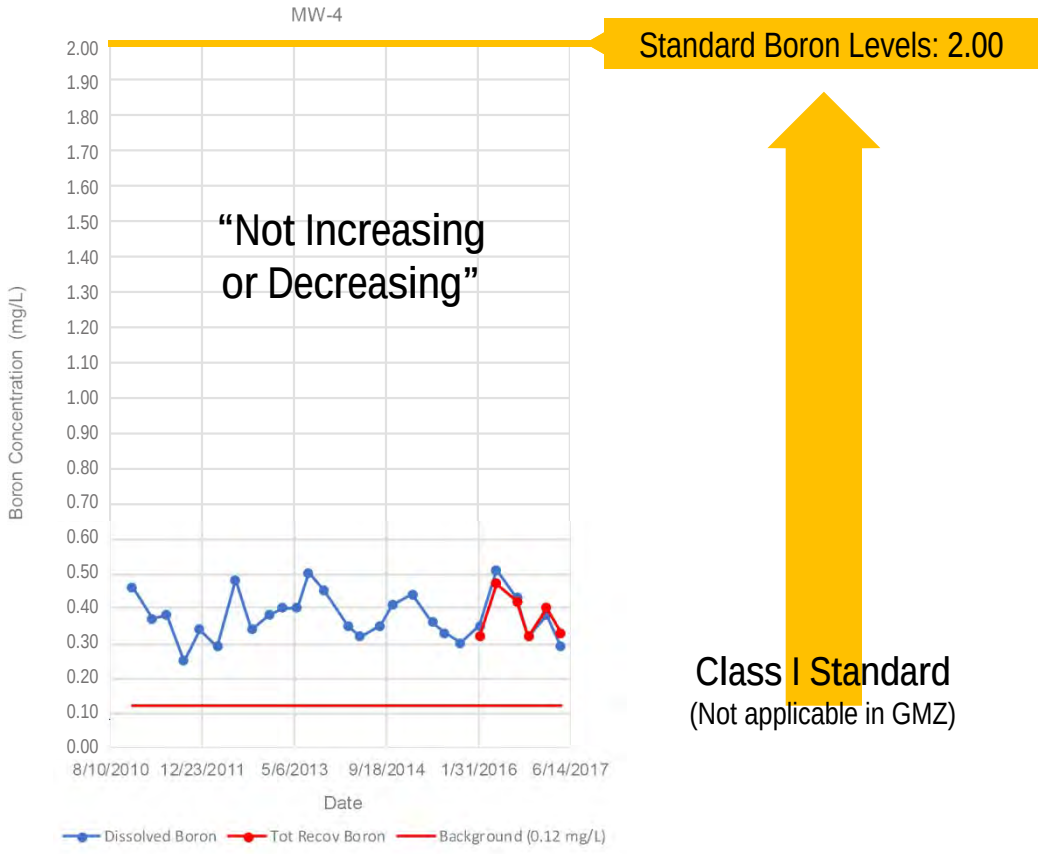
Joliet #29 Monitoring Well-4 Boron Concentration



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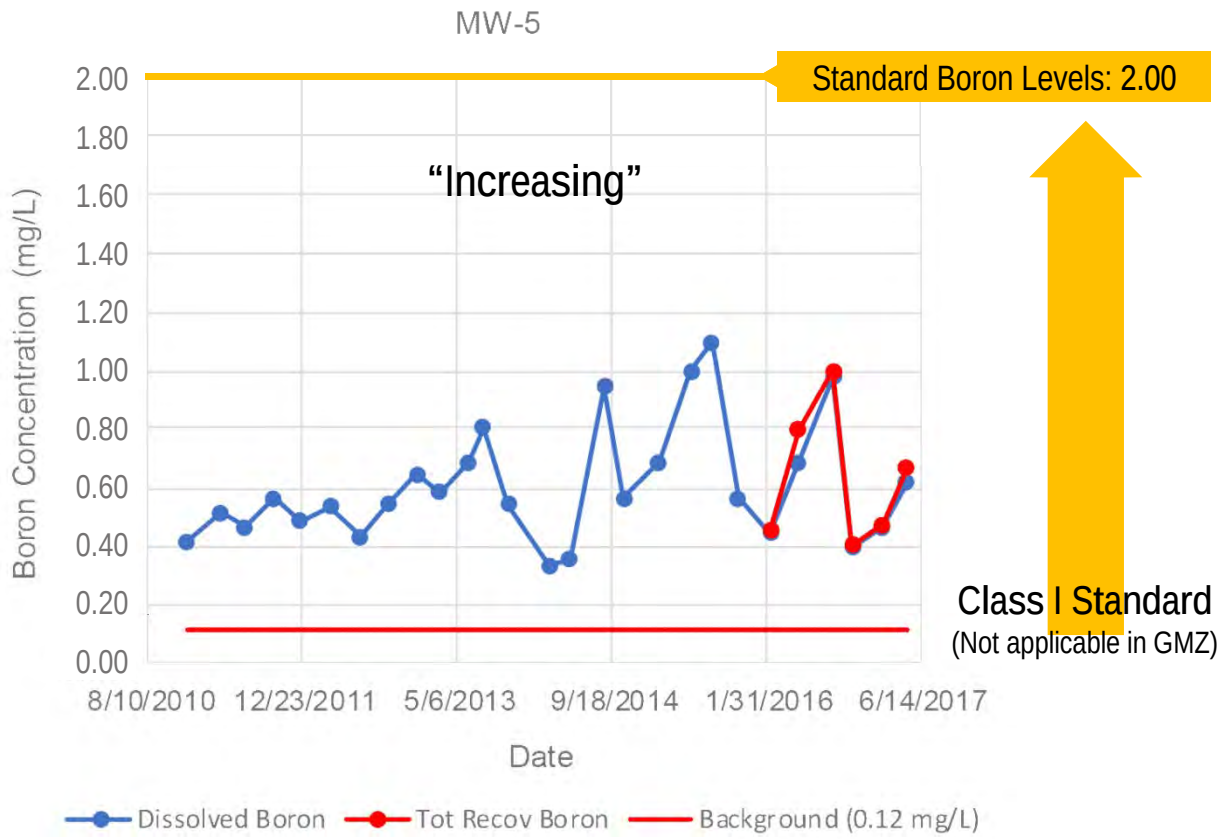
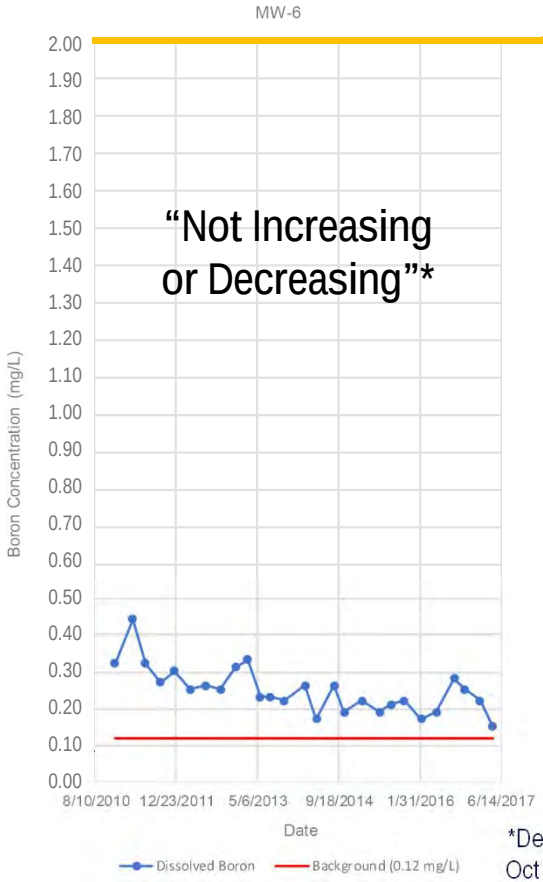
Joliet #29 Monitoring Well-5 Boron Concentration



Oct 20, 2017 Complainant's Notice of Filing at 8

Joliet #29 Monitoring Well-6 Boron Concentration



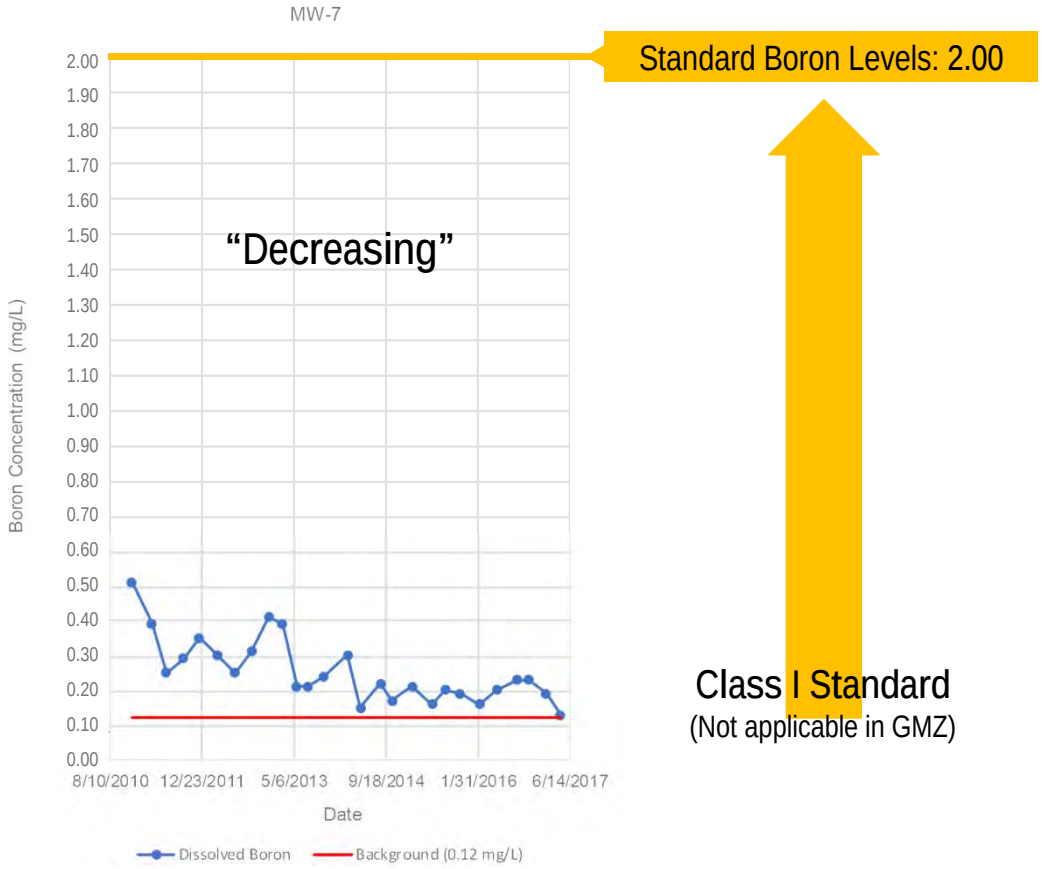
"Not Increasing or Decreasing"*

Standard Boron Levels: 2.00

Class I Standard
(Not applicable in GMZ)

*Decreasing (based on Seymour Trend Testing) Oct 20, 2017 Complainant's Notice of Filing at 8

Joliet #29 Monitoring Well-7 Boron Concentration



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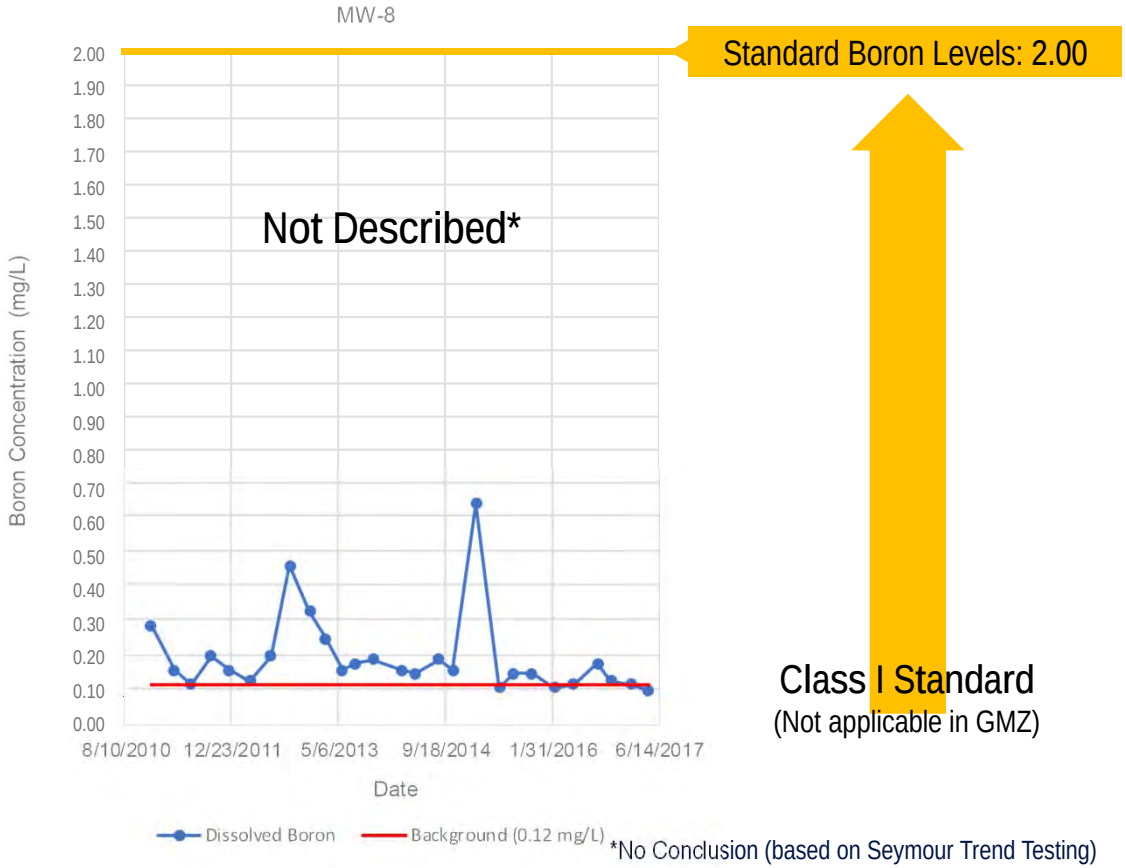
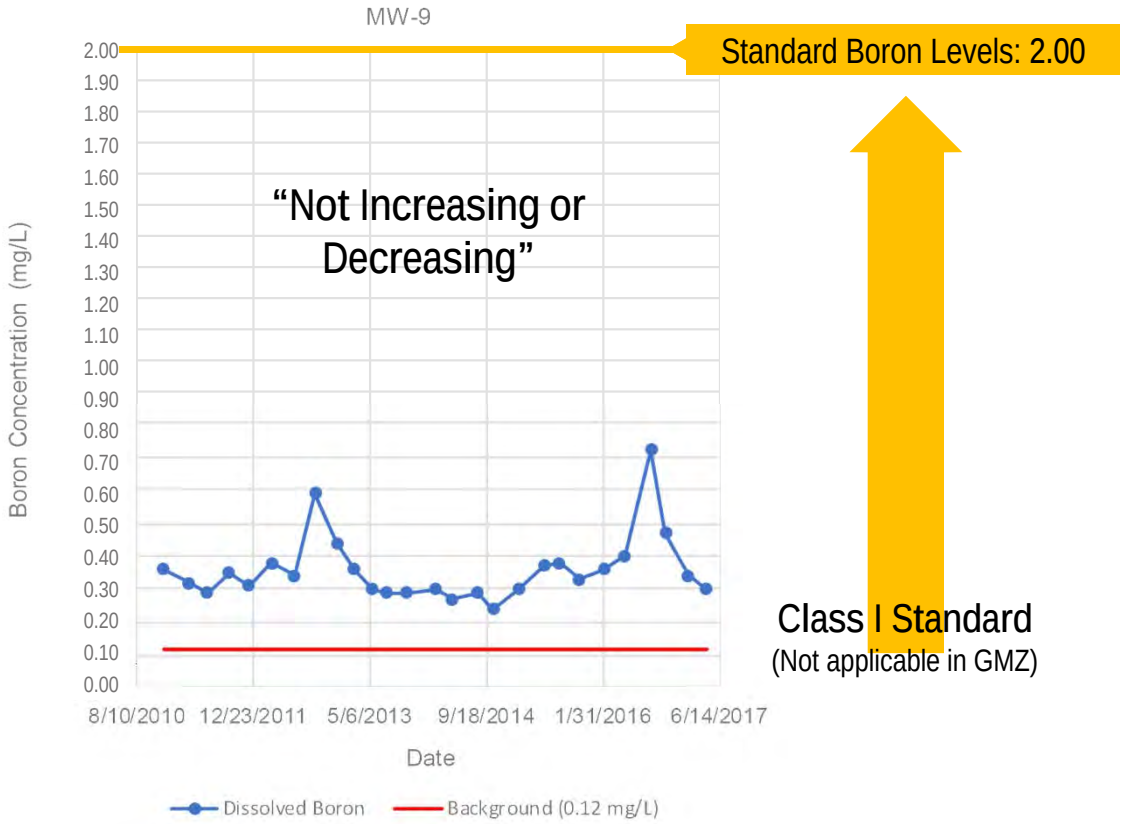
Joliet #29 Monitoring Well-8 Boron Concentration



*No Conclusion (based on Seymour Trend Testing)
Oct 20, 2017 Complainant's Notice of Filing at 9

Joliet #29 Monitoring Well-9 Boron Concentration



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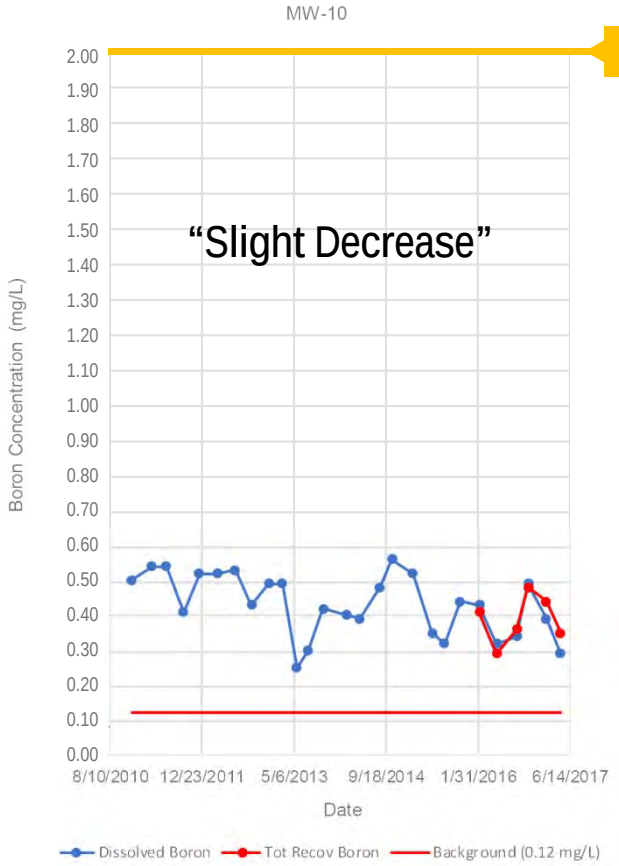
Joliet #29 Monitoring Well-10 Boron Concentration



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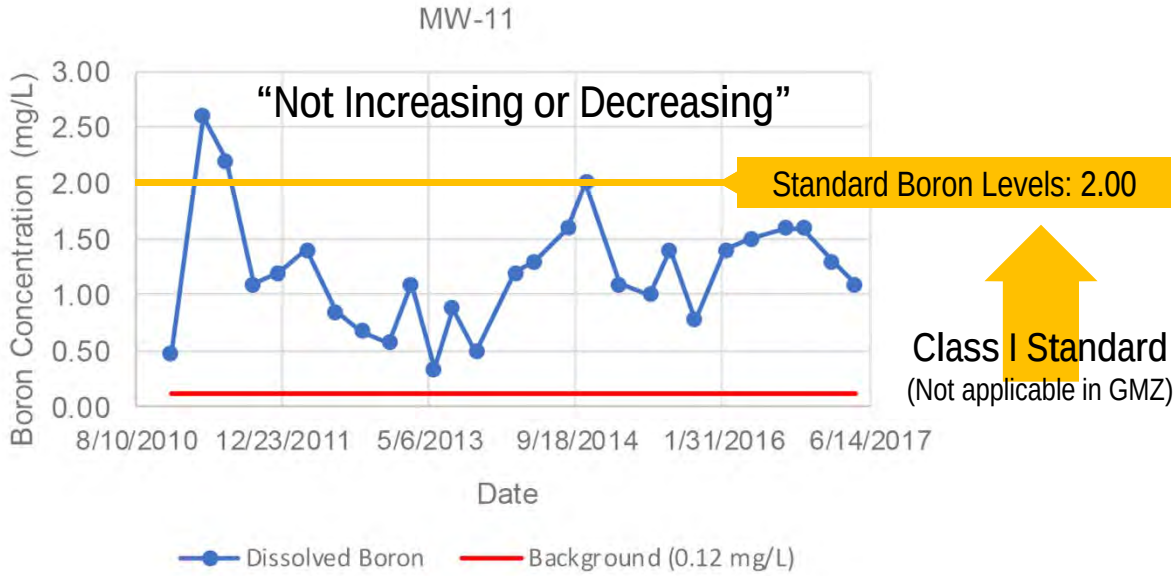
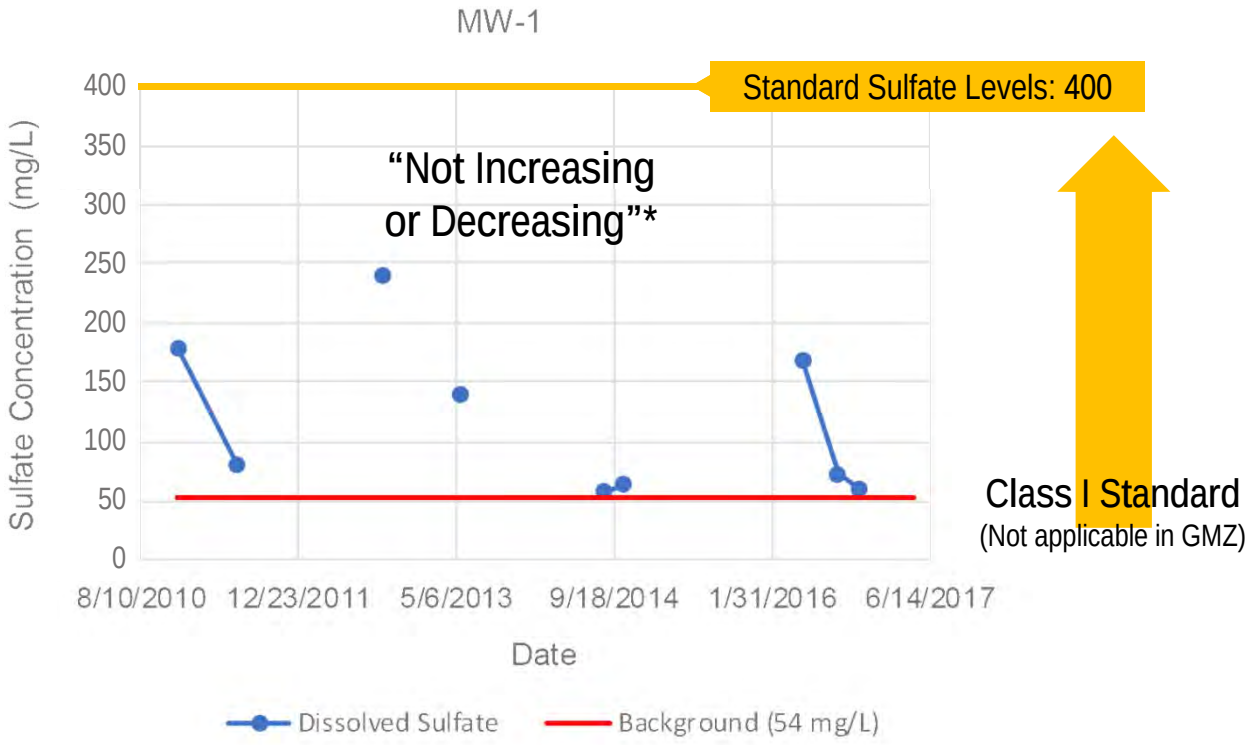
Joliet #29 Monitoring Well-11 Boron Concentration



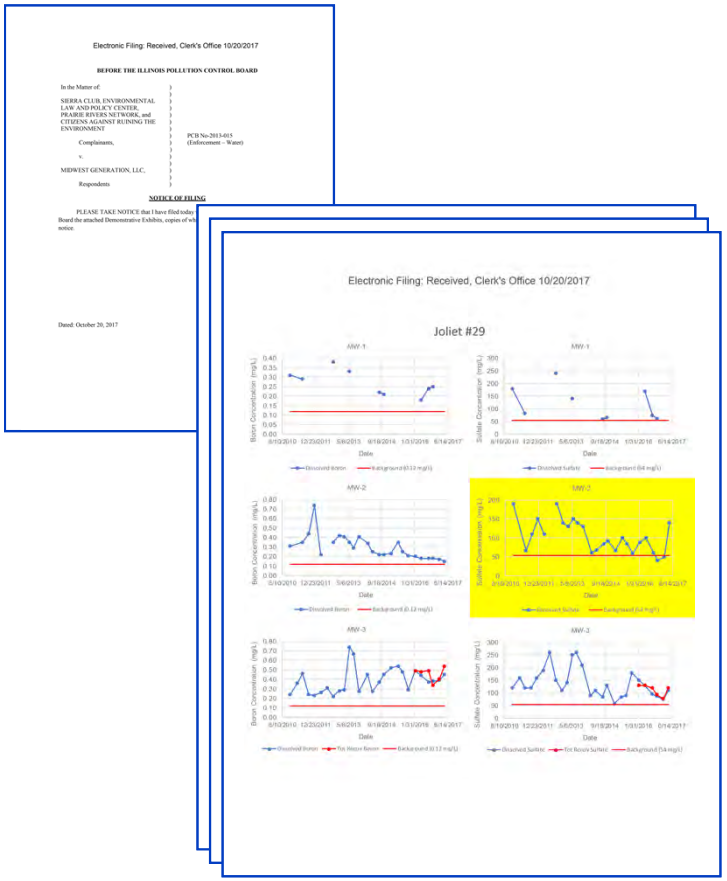
Oct 20, 2017 Complainant's Notice of Filing at 10

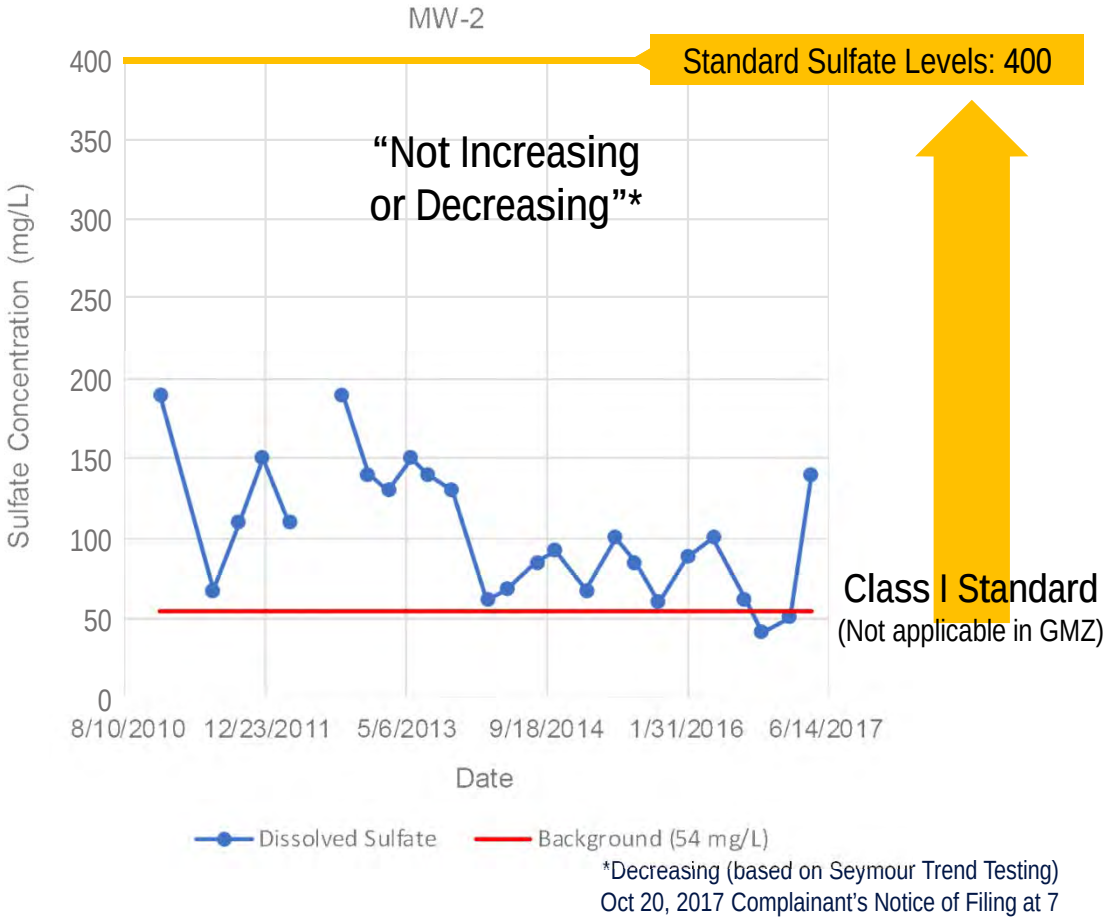
Joliet #29 Monitoring Well-1 Sulfate Concentration



*Decreasing (based on Seymour Trend Testing)
Oct 20, 2017 Complainant's Notice of Filing at 7

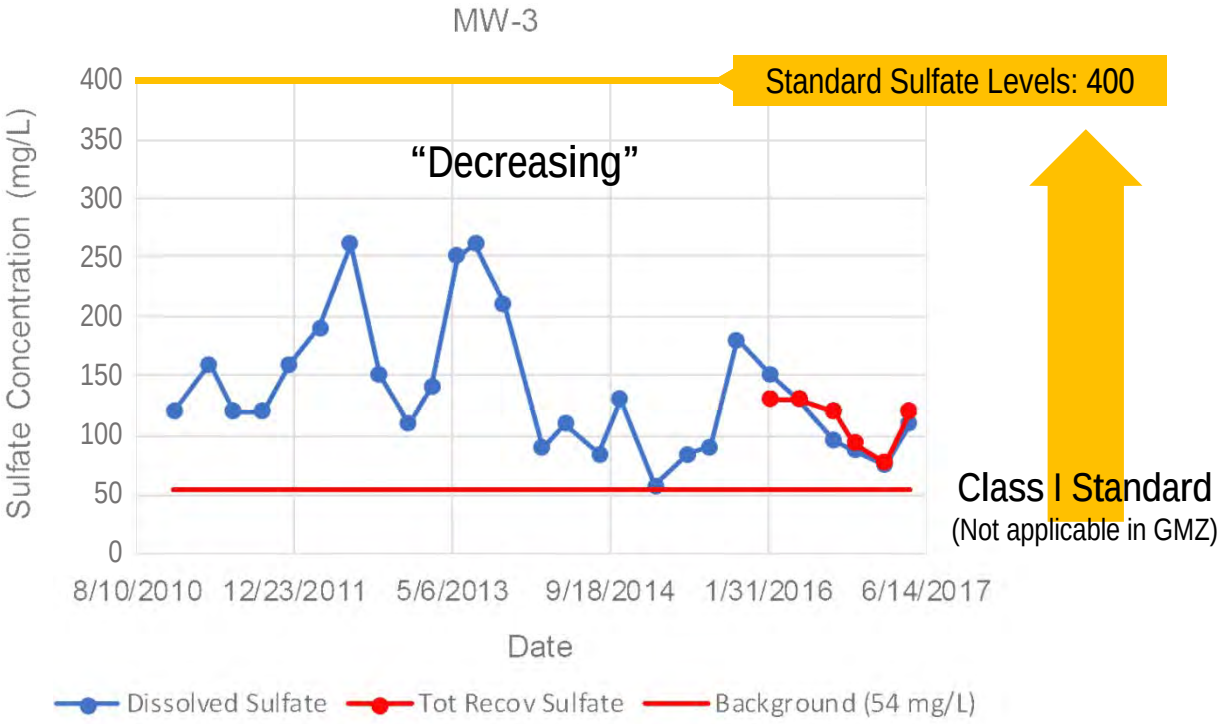
Joliet #29 Monitoring Well-2 Sulfate Concentration





*Decreasing (based on Seymour Trend Testing)
Oct 20, 2017 Complainant's Notice of Filing at 7

Joliet #29 Monitoring Well-3 Sulfate Concentration



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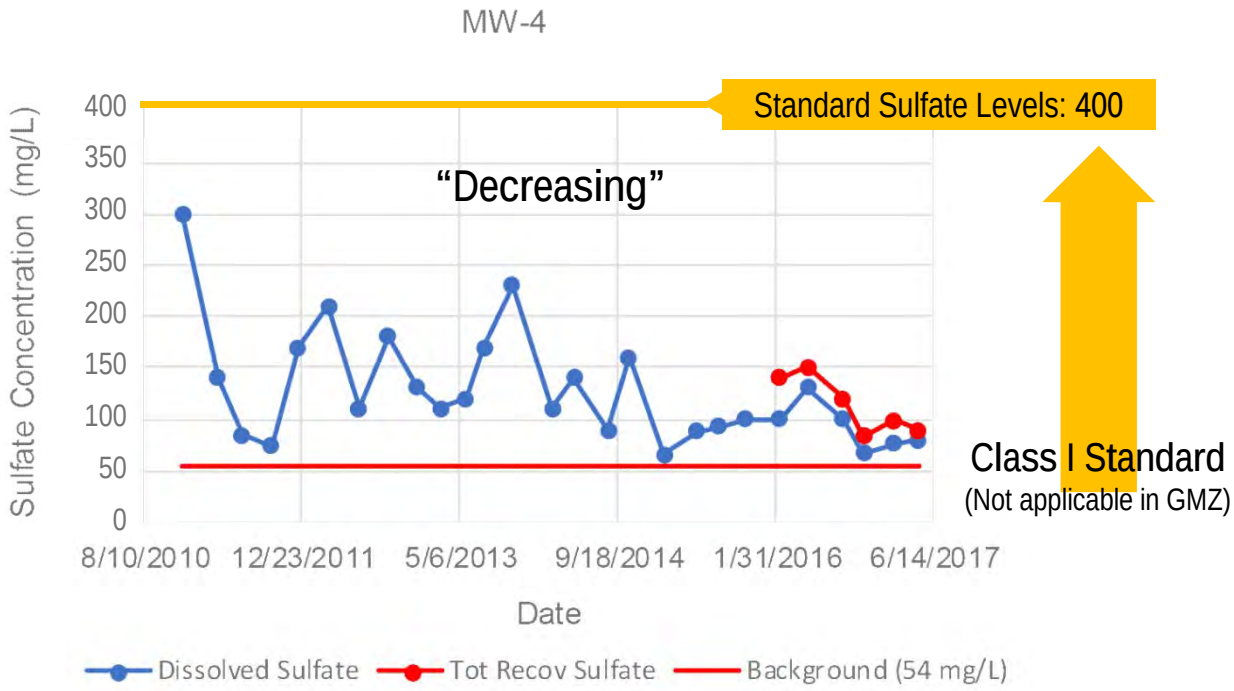
Joliet #29 Monitoring Well-4 Sulfate Concentration



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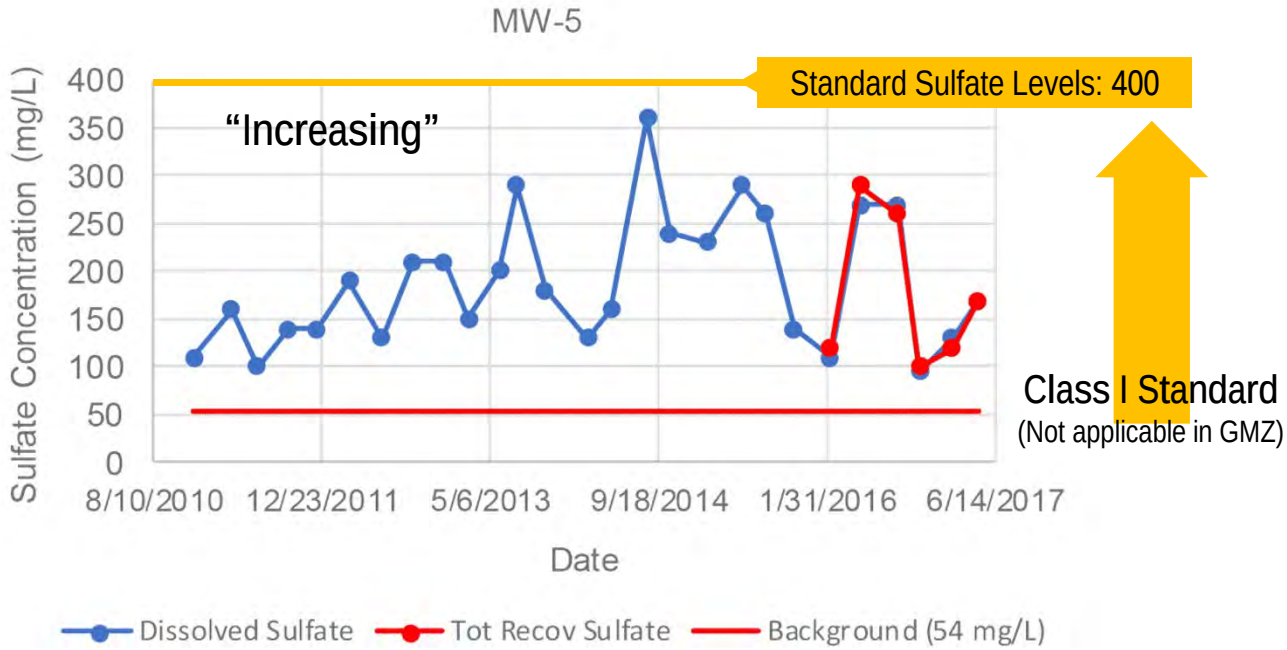
Joliet #29 Monitoring Well-5 Sulfate Concentration



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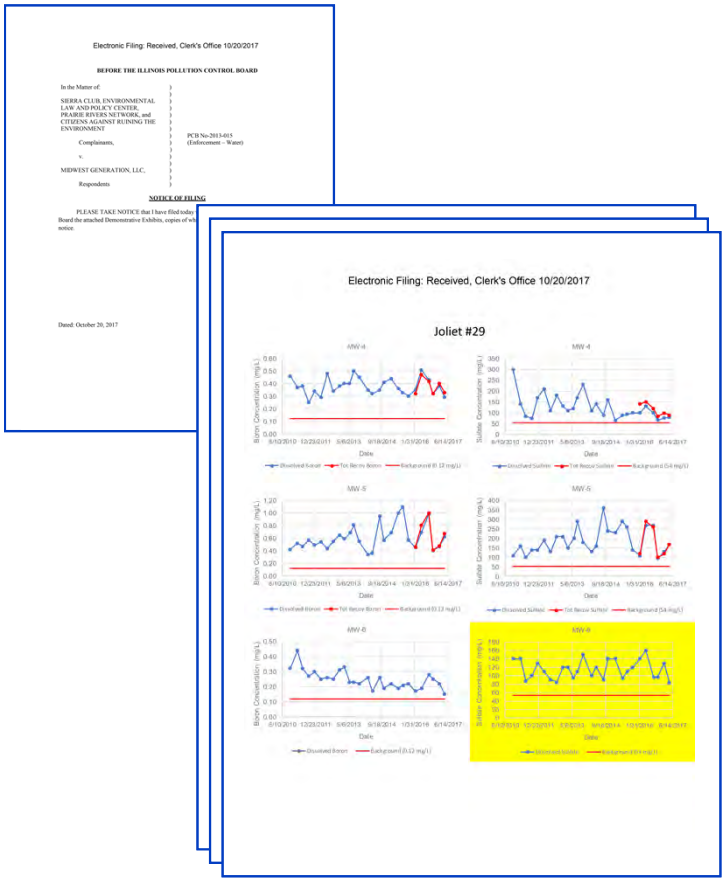
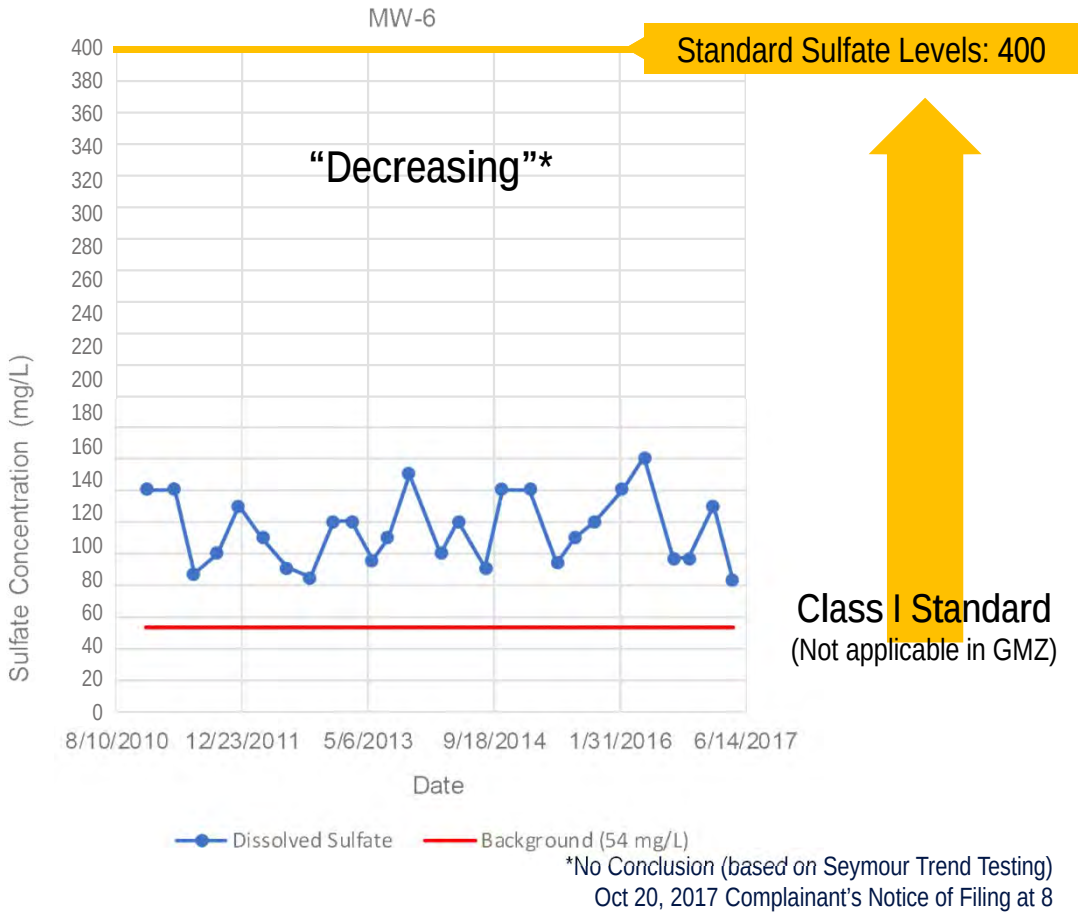
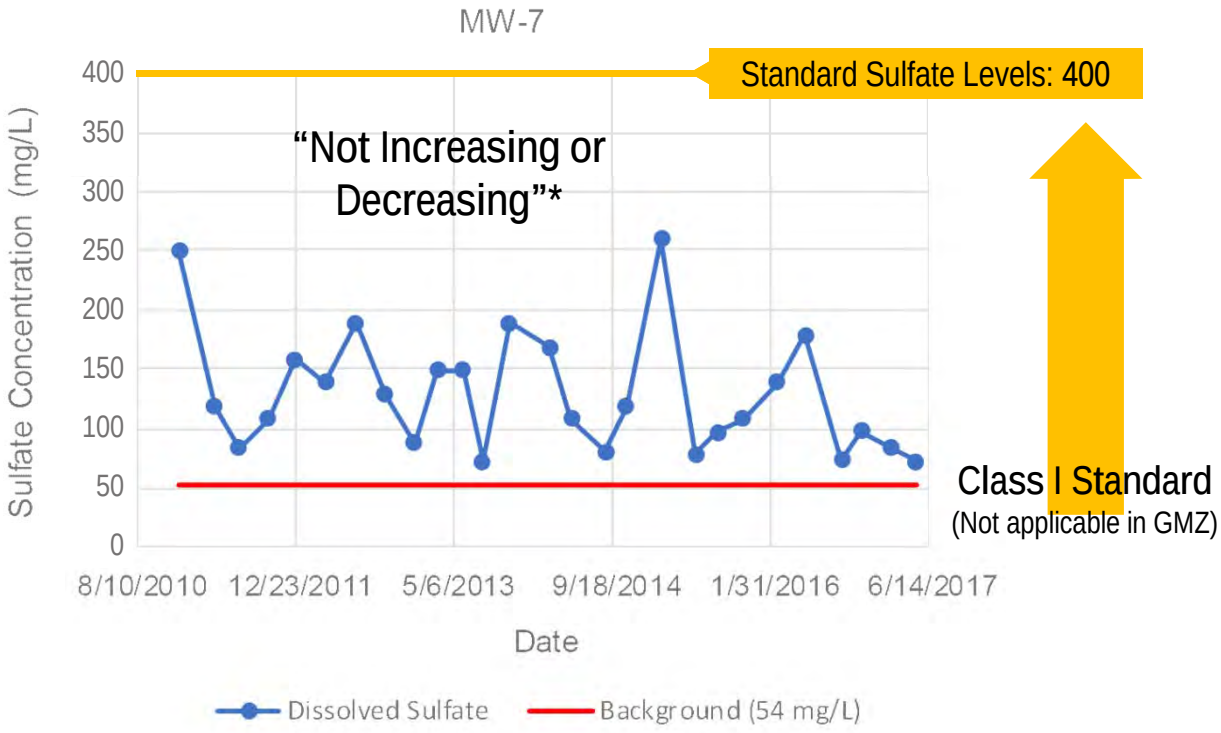
Joliet #29 Monitoring Well-6 Sulfate Concentration





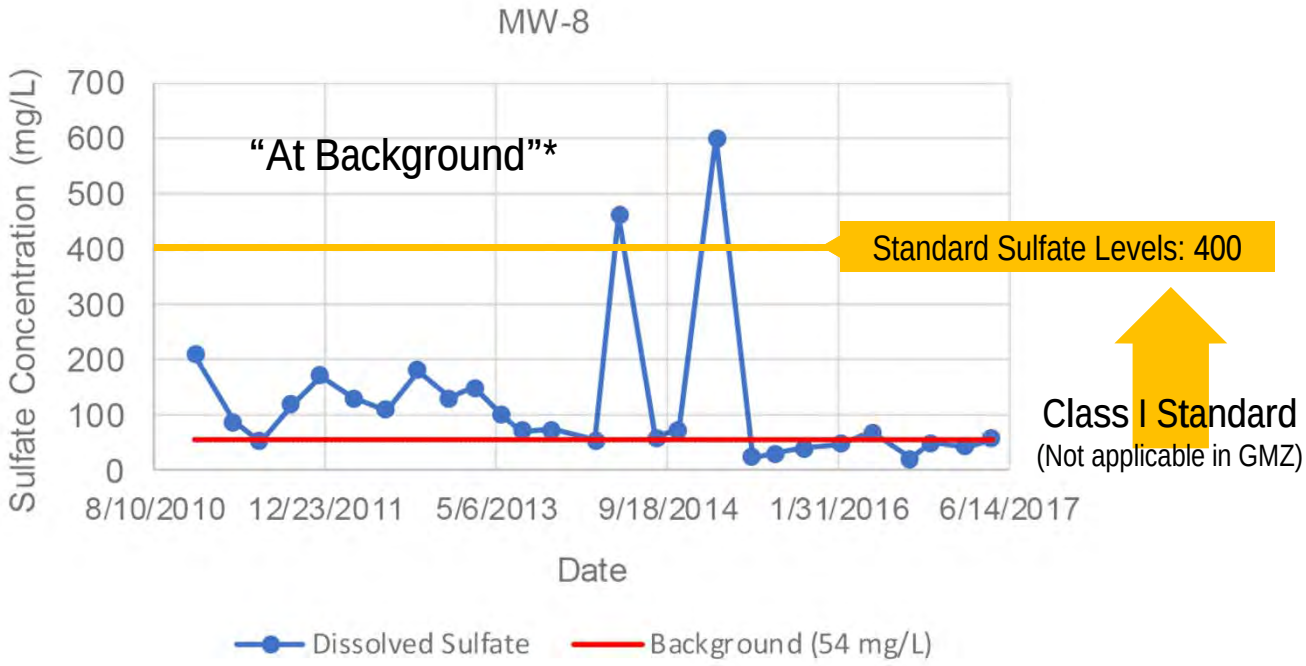
*No Conclusion (based on Seymour Trend Testing)
Oct 20, 2017 Complainant's Notice of Filing at 8

Joliet #29 Monitoring Well-7 Sulfate Concentration



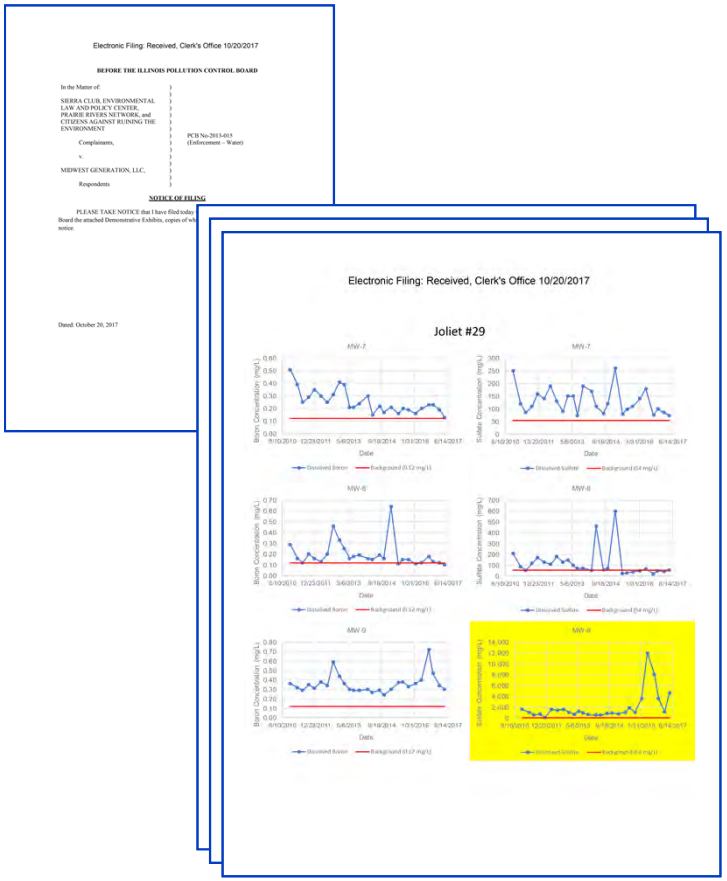
*Decreasing (based on Seymour Trend Testing)
Oct 20, 2017 Complainant's Notice of Filing at 9

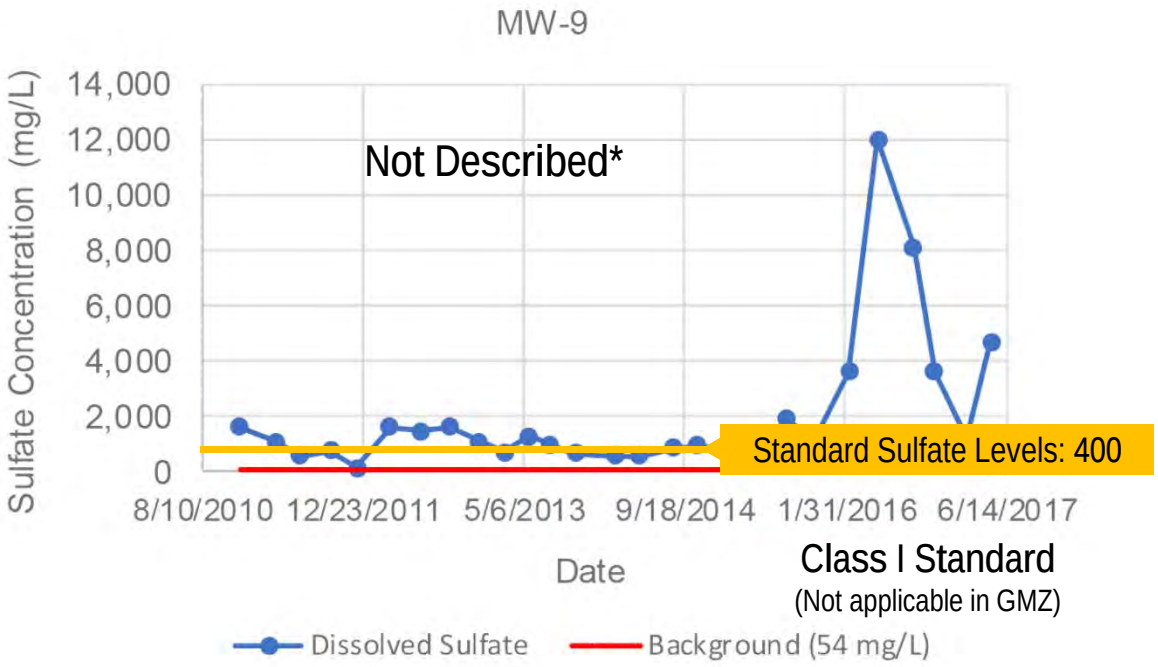
Joliet #29 Monitoring Well-8 Sulfate Concentration



*No Conclusion (based on Seymour Trend Testing)
Oct 20, 2017 Complainant's Notice of Filing at 9

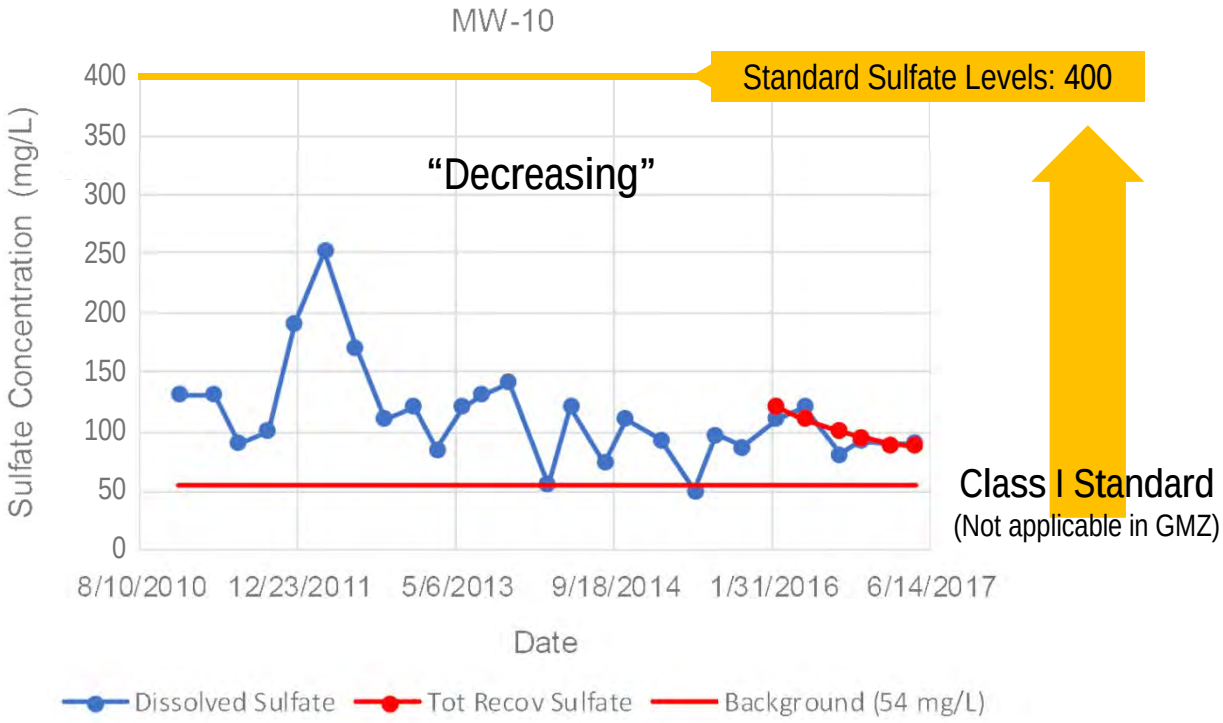
Joliet #29 Monitoring Well-9 Sulfate Concentration





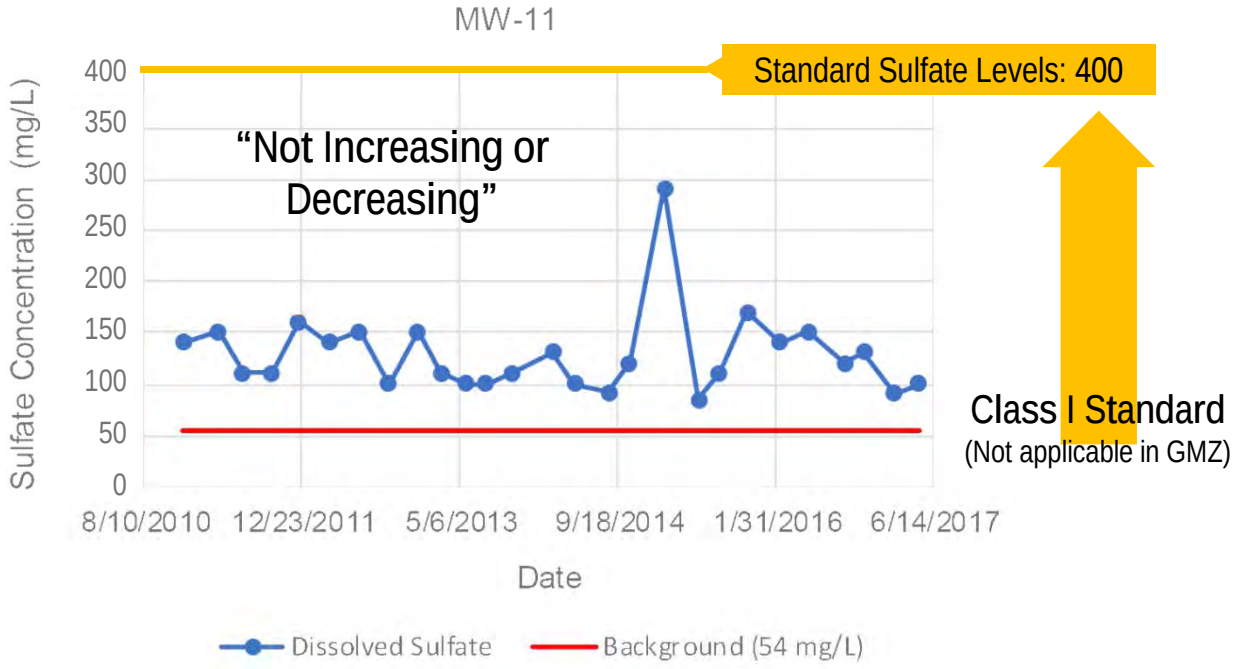
*Increasing (based on Seymour Trend Testing)
Oct 20, 2017 Complainant's Notice of Filing at 9

Joliet #29 Monitoring Well-10 Sulfate Concentration



Oct 20, 2017 Complainant's Notice of Filing at 10

Joliet #29 Monitoring Well-11 Sulfate Concentration



Oct 20, 2017 Complainant's Notice of Filing at 10