BEFORE THE
ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: PETITION OF SOUTHERN ILLINOIS POWER COOPERATIVE FOR AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845 OR, IN THE ALTERNATIVE, A FINDING OF INAPPLICABILITY	AS 2021-006 (Adjusted Standard)

NOTICE OF FILING

To: Don Brown, Clerk of the Board
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PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board Southern Illinois Power Cooperative's Post-Hearing Opening Brief in Support of its Petition for a Finding of Inapplicability, or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845, All SIPC Admitted Exhibits, and a Certificate of Service, copies of which are herewith served upon you.

Respectfully Submitted,

SOUTHERN ILLINOIS POWER
COORPERATIVEtive

/s/ *Sarah L. Lode*

Dated: October 10, 2025

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CERTIFICATE OF SERVICE

I, the undersigned, certify that on this 10th day of October:

I have electronically served a true and correct copy of the attached SOUTHERN ILLINOIS POWER COOPERATIVE'S POST-HEARING OPENING BRIEF IN SUPPORT OF ITS PETITION FOR A FINDING OF INAPPLICABILITY, OR, IN THE ALTERNATIVE, AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845 by electronically filing with the Clerk of the Illinois Pollution Control Board and by e-mail upon the following persons:

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My e-mail address is Sarah.Lode@afslaw.com;

The number of pages in the e-mail transmission is 1,801.

The e-mail transmission took place before 5:00 p.m.

/s/ *Sarah L. Lode*

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SOUTHERN ILLINOIS POWER COOPERATIVE'S POST-HEARING OPENING BRIEF IN SUPPORT OF ITS PETITION FOR A FINDING OF INAPPLICABILITY, OR, IN THE ALTERNATIVE, AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845

Submitted on behalf of
Southern Illinois Power Cooperative

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INTRODUCTION

Southern Illinois Power Cooperative ("SIPC") respectfully submits, pursuant to the Hearing Officer's June 16, August 29, and October 2, 2025, Orders, this post-hearing opening brief in support of its petition for a finding of inapplicability of or, in the alternative, an adjusted standard from 35 Ill Admin. Code Part 845 ("Part 845").

There are two sets of units at issue in this proceeding. First, the units SIPC refers to together as the "De Minimis Units." The De Minimis Units are made up of the South Fly Ash Pond, Pond 3/3a, Pond 6, Pond 4, and Former Pond B-3. *See* AS 2021-006, Second Amended Petition of Southern Illinois Power Cooperative for an Adjusted Standard from 35 Ill. Admin. Code Part 845 and a Finding of Inapplicability ("Second Amended Petition") at 9–15 (Dec. 20, 2024); *see also* Site Map Prepared by Andrews Engineering for SIPC (May 2021), SIPC Ex. 3.[1] Second, the units SIPC refers to together as the "Former Landfill Area." The Former Landfill Area is made up of the Initial Fly Ash Holding Area, the Replacement Fly Ash Holding Area, and the Fly Ash Holding Area Extension (together the "Former Fly Ash Holding Units"), as well as the Former CCR Landfill that sits on top of the Former Fly Ash Holding Units. *See* Second Amended Petition at 15–19; *see also* Site Map, SIPC Ex. 3. The GoogleEarth image, below, shows approximate locations and current features of the units at issue in this proceeding.

[1] For ease of review, SIPC has compiled all its admitted Exhibits, filed them simultaneous with its Opening Brief, and indicated on its Index of Exhibits where the current version of the Exhibit can be located in the record for this proceeding.

AS 2021-006, Petitioner's Response to IEPA's Recommendation Regarding SIPC's Petition for Adjusted Standard from 35 Ill. Admin. Code Part 845 and a Finding of Inapplicability ("Response") at 5 (Apr. 10, 2025). A Site Map is also available at SIPC Ex. 3.

The De Minimis Units are not coal combustion residuals ("CCR") surface impoundments regulated by Part 845. SIPC has provided evidence demonstrating that these units are secondary and tertiary finishing ponds and stormwater/leachate collection ponds that have never received CCR in the substantive or significant quantities that would give rise to them being designed to hold an accumulation of CCR or to treat, store, or dispose of CCR. These units contain less CCR (and total sediment) than the universe of units intended to be regulated as CCR surface impoundments under Part 845. The units are among the types of ponds the United States Environmental Protection Agency ("USEPA") expects to (and do) contain only *de minimis* amounts of CCR. Furthermore, the De Minimis Units are not the types of surface impoundments found to pose a risk to human health or the environment justifying regulation. Accordingly, they qualify for a finding of inapplicability. In the alternative, they meet the criteria for the limited adjusted standard SIPC requests or an interim adjusted standard as raised by the Illinois Pollution Control Board's (the "Board's") hearing questions, if the Board deems such an interim adjusted standard necessary.

The Former Landfill Area is also not a CCR surface impoundment regulated under Part 845. Rather, this area is made up of CCR fill and/or a historic CCR landfill—units that do not meet the definition of "CCR surface impoundments." For decades, the Former CCR Landfill (including the Former Fly Ash Holding Units) was categorized and treated as a landfill, not a surface impoundment, by the Illinois Environmental Protection Agency ("IEPA") and under Illinois law. The Former Fly Ash Holding Units, located below the Former CCR Landfill, have been dewatered and closed for decades and serve as structural fill supporting the Former CCR Landfill. The Former Landfill Area, therefore, qualifies for a finding of inapplicability. In the alternative, it qualifies for the adjusted standard SIPC requests, or an interim adjusted standard as raised by the Board's hearing questions, if the Board deems such an interim adjusted standard necessary.

The units at issue in this proceeding are unique in Illinois. To SIPC's knowledge, the De Minimis Units are the only units in Illinois with a dispute as to their *de minimis* nature. Similarly, the Former Landfill Area is the only area formerly treated by IEPA over which there is a dispute regarding designation as a Part 845 CCR surface impoundment, as more fully explained below. This unique nature further supports a finding of inapplicability or, in the alternative, an adjusted standard.

I. FACTUAL BACKGROUND

A. SIPC

SIPC is a nonprofit electric cooperative. Electric cooperatives, like SIPC, are created to provide electricity in rural and other lesser served areas where utilities do not find it profitable to operate. Transcript of June 10, 2025 Hearing at 45:6–16. SIPC provides electricity to one of the poorest geographic areas in Illinois. *Id.* at 46:12–17. As an electric cooperative, SIPC is ultimately governed by a group of seven electric distribution cooperatives whose members are made up of the individual customers located within each of the distribution cooperative's geographic area. These members include homeowners, small businesses, farmers, and other "ordinary people" in southern Illinois. *See* Testimony of Wendell Watson PowerPoint Demonstrative, SIPC Ex. 48 at 3; *see also* June 10 Tr. at 46:1–17. As a non-profit and power cooperative, any cost burdens placed on the Marion Station are borne directly by these members. June 10 Tr. at 46:18–23.

B. Marion Generating Station

SIPC owns and operates Marion Generating Station ("Marion Station" or the "Station"), a gas and coal-fired power plant located approximately seven miles south of the City of Marion in Williamson County, Illinois. Site Map, SIPC Ex. 3; Watson Demonstrative, SIPC Ex. 48 at 3. In addition to owning the 4,674 acres comprising and surrounding Marion Station, SIPC owns the lake located to the east of the Station—Lake of Egypt. June 10 Tr. at 47:20–21. Lake of Egypt was constructed in the early 1960s to provide cooling water for the Station's coal-fired generating units. *Id.* at 47:15–19. Lake of Egypt also provides some public water supply and is used for recreational purposes, such as boating and fishing. The water in Lake of Egypt is periodically tested by the local water authority, which issues annual Drinking Water Quality Reports. *Id.* at 156:12–15; *see also, e.g.,* Lake Egypt Water District IL 1995200, Annual Drinking Water Quality Report (Jan. 1–Dec. 30, 2019), SIPC Ex. 4. The Station does not discharge any wastewater to Lake of Egypt. June 10 Tr. at 48:2–9. A creek, called Little Saline Creek, is located to the north of Marion Station. Limited wastewater from the Station is discharged pursuant to a National Pollution Discharge Emission System ("NPDES") permit to Little Saline Creek. *Id.* at 47:21–48:9; *see also* IEPA Reissued National Pollutant Discharge Elimination System Permit, No. IL0004316 (February 1, 2007), SIPC Ex. 13.

Currently, there is one coal-fired boiler (known as Unit 123) and two gas-fired simple-cycle units (known as Units 5 and 6) that operate at the Marion Station. June 10 Tr. at 47:5–14. Historically, a coal-fired unit known as Unit 4 operated at Marion Station from 1978 to October 2020. June 10 Tr. at 59:12 (indicating that Unit 4 retired in 2020); *id.* at 112:3–4 (indicating that Unit 4 began operating in 1978); *see also* Watson Demonstrative, SIPC Ex. 48 at 4. Three coal-fired cyclone generating units, with their own associated boilers (known as Units 1, 2, and 3) also operated at Marion Station from 1962 to June 2003. June 10 Tr. at 110:1–8; *see also* Watson Demonstrative, SIPC Ex. 48 at 4. However, starting in 1978, upon the construction of Unit 4, Units 1, 2, and 3 typically did not operate unless Unit 4 was offline. June 10 Tr. at 112:18–113:4 ("[U]nits

1, 2 and 3 really did not run after unit 4 was built for many years except when unit 4 was offline, and then they would try to start them.").

C. Procedural Background

SIPC originally filed its Petition in this matter requesting a finding of inapplicability or, in the alternative, an adjusted standard on May 11, 2021. AS 2021-006. Petition of Southern Illinois Power Cooperative for an Adjusted Standard from 35 Ill. Admin. Code Part 845 or, in the Alternative, a Finding of Inapplicability (May 11, 2025). On September 2, 2021, SIPC filed its Amended Petition adding additional investigation and expert evidence to its Petition. AS 2021-006, Amended Petition of Southern Illinois Power Cooperative for an Adjusted Standard from 35 Ill. Admin. Code Part 845 or, in the Alternative, a Finding of Inapplicability (Sept. 2, 2021). On December 20, 2024, SIPC filed its Second Amended Petition providing additional expert reports and narrowing the scope of the adjusted standard requested in this proceeding (SIPC's Second Amended Petition shall be referred to herein as the "Petition"). Second Amended Petition. IEPA filed its Initial Recommendation in this matter on January 13, 2023, and filed its Amended Recommendation (incorporating its Initial Recommendation) on February 3, 2025 (together, these documents are referred to herein as the "Recommendation"). *See* AS 2021-006, Recommendation of the Illinois Environmental Protection Agency ("Recommendation") (Jan. 1, 2023); AS 2021-006, Amended Recommendation (Feb. 3, 2025). On April 10, 2025, SIPC filed its Response to the Agency's Recommendation (the "Response"). *See* Response.

A hearing for this matter was held in Marion, Illinois on June 10, 11, and 12, 2025. *See generally* June 10 Tr.; Transcript of June 11, 2025 Hearing; Transcript of June 12, 2025 Hearing. During that hearing, SIPC presented seven witnesses. This included three witnesses who are current or former SIPC employees familiar with operations of the units that are the subject of this proceeding and who have also submitted declarations supporting SIPC's Petition:

- Wendell Watson, Director of Environmental Services[2] at SIPC. June 10 Tr. at 41:24–103:21; Declaration of Wendell Watson, Revised SIPC Ex. 1; Watson Demonstrative, SIPC Ex. 48.

- Todd Gallenbach, former Vice President of Power Production at SIPC. June 10 Tr. at 104:1–219:23; Declaration of Todd Gallenbach, SIPC Ex. 2; Testimony of Todd Gallenbach PowerPoint Demonstrative, SIPC Ex. 49.

- Jason McLaurin, Environmental Coordinator at SIPC. June 11 Tr. at 227:10–267:14; Declaration of Jason McLaurin, SIPC Ex. 32; Second Declaration of Jason McLaurin, SIPC Ex. 41; Testimony of Jason McLaurin PowerPoint Demonstrative, SIPC Ex. 50.

These witnesses provided testimony regarding, among other items, current and former operation of the units at issue in this proceeding and the current and former management of CCR at the Marion Station.

SIPC also presented testimony from four expert witnesses, all of whom have also submitted affidavits or reports in support of SIPC's Petition.

- David Hagen, an expert in CCR surface impoundment operations, waste characterization, and hydrogeology. June 11 Tr. at 273:10–16; Pond Investigation Report for Certain Ponds at SIPC's Marion Station, SIPC Ex. 29; Haley & Aldrich, *Evaluation Report: Southern Illinois Power Company Marion Station* (April 2025), SIPC Ex. 40; Curriculum Vitae of David Hagen, SIPC Ex. 51; Testimony of David Hagen PowerPoint Demonstrative, SIPC Ex. 52.

- Kenneth Liss, an expert in landfill and surface impoundment closure, management, and operation as well as groundwater characterization. June 11 Tr. at 368:17–369:1; Declaration of Kenn Liss, SIPC Ex. 9; Andrews Engineering, SIPC's Proposed Closure Plan for IEPA Site No. 199055505 (Dec. 16, 2020), SIPC Ex. 10; Supplemental Declaration of Kenneth W. Liss, SIPC Ex. 30; Second Declaration of Kenn Liss, SIPC Ex. 47; *Curriculum Vitae* of Kenneth W. Liss, SIPC Ex. 53; Testimony of Kenneth W. Liss PowerPoint Demonstrative, SIPC Ex. 54.

- Ari Lewis, an expert in the areas of risk assessment and analysis, including risk evaluation and characterization of CCR surface impoundments. June 11 Tr. at 406:5–11; Ari Lewis, M.S. *Support for the Petition of an Adjusted Standard for Pond 4, Ponds 3 and 3A, Pond S-6, Former Pond B-3, and South Fly Ash Pond* (Dec. 20, 2024), SIPC Ex. 36; *id.* at 90–104 (C.V. of Ari Lewis); Gradient, *Human*

[2] Mr. Watson retired from his position as Director of Environmental Service on September 12, 2025.

Health Risk Assessment, Marion Power Station (Dec. 20, 2024), SIPC Ex. 37; Testimony of Ari S. Lewis PowerPoint Demonstrative, SIPC Ex. 55.

- Andrew Bittner, an expert in the areas of contaminant fate and transport, migration of CCR in groundwater and surface water, groundwater and surface water modeling, and the preparation and evaluation of closure impact assessments. June 11 Tr. at 454:6–14; Andrew Bittner, M.Eng., P.E. *Closure Impact Assessment, Pond 4* (Dec. 20, 2024), SIPC Ex. 38; *id.* at 30–40 (C.V. of Andrew Bittner); Testimony Exhibits for Andrew Bittner, P.E. PowerPoint Demonstrative, SIPC Ex. 56.

In contrast, IEPA presented one witness at the hearing, former IEPA Geologist Lynn Dunaway. *See* June 12 Tr. at 483:7–547:22. Outside of the limited testimony provided by Mr. Dunaway, IEPA has provided no witness support for the opinions and conclusions in its Recommendation.

D. Generation of CCR at Marion Station

Coal-fired generating units are the only source of CCR at the Marion Station. The following chart provides a summary of the coal-fired generating units that have or do exist at Marion Station, their years of operation, and the types of CCR generated at each unit.

Boiler Unit	**Years of Operation**	**Types of CCR Generated**
Unit 123	2003 – Current	Fly ash and bed ash
Units 1, 2, and 3	1962 – June 2003	Fly ash and bottom ash
Unit 4	1978 – October 2020	Fly ash, bottom ash, scrubber sludge (before 2009), and gypsum (after 2009)

See June 10 Tr. at 125:15–17; Watson Demonstrative, SIPC Ex. 48 at 4.

The majority of CCR generated throughout Marion Station's operation has been managed dry on-site or transported off-site for beneficial use. The manner in which CCR generated from each of the coal-fired units has been disposed varies by unit and timeframe, which is more fully described below.

1. Boiler Unit 123 fly ash and bed ash.

CCR from Unit 123 has never been disposed of at Marion Station. June 10 Tr. at 126:21–23; Gallenbach Demonstrative, SIPC Ex. 49 at 5. Since the start of its operations in 2003 through present day, all the fly ash and bed ash generated at Unit 123 is collected dry and transported off-site in trucks for beneficial use. June 10 Tr. at 50:15–20; *see also id.* at 125:18–126:8. Due to the type of boiler, Unit 123 does not generate scrubber sludge or gypsum. *Id.* at 101:2–5.

2. Boiler Unit 4 fly ash, scrubber sludge/gypsum, and bottom ash

<u>Boiler Unit 4 fly ash.</u> From 1978 to 1985, fly ash from Unit 4 was collected dry, mixed with Unit 4 scrubber sludge, and disposed of via an overland conveyer to the Former CCR Landfill. *Id.* at 117:22–118:19; Gallenbach Demonstrative, SIPC Ex. 49 at 4. Process water, which is often referred to as spent water and does not contain CCR, was generated during the process of collecting the dry fly ash and was sent to the Replacement Fly Ash Holding Area. June 10 Tr. at 117:22–118:14; *id.* at 113:16–22, 114:9–11 (describing "spent water"); *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 4. During freezing conditions, when the overland conveyer used to send dry fly ash to the Former CCR Landfill could not operate, fly ash from Unit 4 was disposed of in the Replacement Fly Ash Holding Area. June 10 Tr. at 117:18–119:18; June 10 Tr. at 112:14–17 ("[Q. W]hen that fly ash was disposed of wet from 1978 through 1985, where would it have been disposed of? A. Into the replacement fly ash holding area."); *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 4. Freezing conditions would occur approximately three to five times a year. June 10 Tr. at 119:19–23.

From 1985 to 2003, fly ash from Unit 4 continued to be collected dry, mixed with Unit 4 scrubber sludge, and sent to the Former CCR Landfill for disposal. *Id.* at 119:24–120:3; Gallenbach Demonstrative, SIPC Ex. 49 at 4. Spent water that did not contain CCR was also generated from boiler operation during this time, which was sent to a unit called Pond A-1.[3] June 10 Tr. at 120:4–8; Gallenbach Demonstrative, SIPC Ex. 49 at 4. Again, during the rare occurrence of freezing conditions, Unit 4 fly ash was disposed of in Pond A-1. *Id.* at 120:9–15.

In 2003, a circulating fluidized bed ("CFB") boiler was built, which allowed fly ash to be generated and collected without the use of any water. *Id.* at 120:16–121:7; Gallenbach Demonstrative, SIPC Ex. 49 at 4. From 2003 to 2009, fly ash from Unit 4 continued to be collected dry, mixed with Unit 4 scrubber sludge, and disposed of in Former CCR Landfill. June 10 Tr. at 120:16–121:7. With the construction of the CFB, spent water was no longer created during the collection of ash, so the Station stopped discharging spent water to Pond A-1. June 10 Tr. at 121:1–14 ("Q. And how did that allow you to no longer use any water in the ash collection process? A. So the ash off of CFB has calcium oxide in it, quicklime. It cannot come in contact with the water. It's exothermic. So in the design of it, we had to pull all our ash completely dry. It could not come in contact with water.").

Finally, from 2009 to October 2020, Unit 4 fly ash was no longer disposed of in the Former CCR Landfill. The fly ash was collected dry, stored temporarily in an onsite silo, and then trucked offsite for beneficial use. *Id.* at 121:19–122:2, 124:2–12; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 4.

Boiler Unit 4 scrubber sludge and gypsum. From 1978 to 2009, Unit 4 scrubber sludge was mixed dry with fly ash and disposed of consistent with the Unit 4 fly ash, as described above.

From 2009 to 2020, the scrubber sludge was treated with forced oxidization, which turned it into gypsum (a marketable by-product). This dry gypsum was stored on a temporary storage pad

[3] Pond A-1 is not a subject of this proceeding.

until it was taken offsite for beneficial use. June 10 Tr. at 122:3–123:2, 123:13–124:1; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 4.

During intermittent emergency conditions—such as start-up, shut down, and freezing conditions—and until October 2015, the Station would pump scrubber slurry to long, narrow strips on top of the Former CCR Landfill, where it was allowed to decant, with the decant water flowing to Pond 3/3a. The dry scrubber sludge was then spread on the Former CCR Landfill. June 11 Tr. at 244:19–246:7; *see also* June 11 Tr. at 249:8–250:5 (indicating that freezing conditions caused malfunctions in the scrubbing process, which required an alternative method of temporary disposal).

Boiler Unit 4 bottom ash. At all times, bottom ash generated from Unit 4 operations was temporarily placed in Ponds 1 and 2. The bottom ash was then removed from Ponds 1 and 2 and taken offsite for beneficial use. June 10 Tr. at 52:17–21 (noting bottom ash was sold for uses such as asphalt shingles); *id.* at 123:6–12; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 4. Ponds 1 and 2 stopped operating once Unit 4 was retired in 2020 and are not covered by SIPC's Petition.

3. Boiler Units 1, 2, and 3 fly ash and bottom ash

Boiler Units 1, 2, and 3 produced only fly ash and bottom ash; they did not produce scrubber sludge or gypsum. June 10 Tr. at 110:1–17.

Boiler Units 1, 2, and 3 fly ash. Prior to 1977, fly ash from Units 1, 2, and 3 was collected in multiclones and transported wet to the Initial Fly Ash Holding Area for disposal. *Id.* at 110:24–111:8; Gallenbach Demonstrative, SIPC Ex. 49 at 3.

From 1978 through 1985, a hydroveyor system was installed, allowing fly ash from Units 1, 2, and 3 to be collected dry, placed in a storage silo, and then transported for disposal to the Former CCR Landfill. June 10 Tr. at 111:18–112:13; *see also* Gallenbach Demonstrative, SIPC

Ex. 49 at 3. Spent water that did not contain CCR was generated during the process of collecting the dry fly ash and was sent to the Replacement Fly Ash Holding Area. June 10 Tr. at 113:16–114:11. While fly ash was overwhelmingly collected and disposed of dry on the Former CCR Landfill during this period, on occasion fly ash from Units 1, 2, and 3 may have been disposed of with water in the Replacement Fly Ash Holding Area. Tr. *Id.* at 112:5–17.

From 1985 to 2003, fly ash from Units 1, 2, and 3 was collected dry, mixed with Unit 4 scrubber sludge, and disposed of in the Former CCR Landfill. *Id.* at 114:12–115:4; Gallenbach Demonstrative, SIPC Ex. 49 at 3. Spent water that did not contain CCR was disposed of in Pond A-1. June 10 Tr. at 115:8–116:1. On occasion, during freezing conditions, fly ash from Units 1, 2, and 3 may have also been disposed of with water in Pond A-1. *Id.* at 114:13–115:15; Gallenbach Demonstrative, SIPC Ex. 49 at 3.

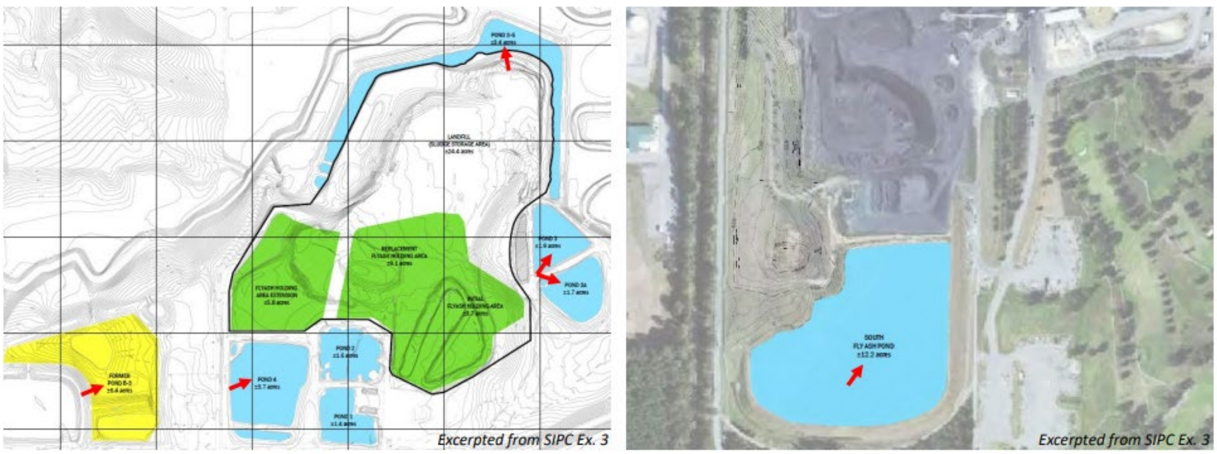
Boiler Units 1, 2, and 3 bottom ash. At all times, bottom ash generated from Units 1, 2, and 3 was temporarily placed in Ponds 1 and 2. The bottom ash was then removed from those ponds and taken offsite for beneficial use. June 10 Tr. at 52:17–21 (noting bottom ash was sold for uses such as asphalt shingles); *see also id.* at 116:5–17.

E. The Units at Issue in the Proceeding

There are two sets of units at issue in this proceeding. First, the units that are referred to together as the De Minimis Units. *See* Second Amended Petition at 9–5; Site Map, SIPC Ex. 3. Second, the units that are referred to together as the Former Landfill Area. *See* Second Amended Petition at 15–19; Site Map, SIPC Ex. 3. Both sets of units are discussed more fully below.

1. The De Minimis Units

The De Minimis Units are all part of a finishing pond system at Marion Station used to treat water before it discharges through an NPDES-permitted discharge point into Little Saline Creek. June 10 Tr. at 48:2–9; 2007 NPDES Permit, SIPC Ex. 13. The red arrows in the maps below point to the location of each of the De Minimis Units. In accordance with SIPC's NPDES permit, water from the South Fly Ash Pond is permitted to flow to Pond 3/3a, then to Pond 6, and finally to Pond 4 before discharging through Outfall 002 into Little Saline Creek. 2007 NPDES Permit, SIPC Ex. 13. Historically, an NPDES discharge point also existed from Former Pond B-3 to Little Saline Creek. *See* June 10 Tr. at 138:5–11. Decanted water from Pond A-1 flowed to Former Pond B-3 before discharging through that NPDES outfall. *Id.* at 130:17–131:21.



Site Map, SIPC Ex. 3 (excerpted); Watson Demonstrative, SIPC Ex. 48 at 5.

<u>South Fly Ash Pond</u>. The South Fly Ash Pond is located on the southern portion of the Station, just south of the Station's coal pile. Site Map, SIPC Ex. 3; Watson Demonstrative, SIPC Ex. 48 at 6. Since its construction in 1989, the sole use of the South Fly Ash Pond has been to receive decant water from Emery Pond. June 10 Tr. at 53:22–54:23; *id.* at 128:1–7. Historically, Emery Pond was used to collect stormwater runoff, water from drains at the Station, and some scrubber sludge. *Id.* at 55:4–8. In 2020, Emery Pond was closed in accordance with 40 C.F.R. Part 257, Subpart D (the "Federal CCR Rule" or "Part 257 Rules") and retrofit with liner. *Id.* at 54:24–55:3. Since that time, the former Emery Pond now serves as the Station's stormwater basin, collecting stormwater and some floor drain water. *Id.* at 54:24–55:11.

The output from the former Emery Pond is designed to limit sedimentation from flowing into the South Fly Ash Pond. *See* June 10 Tr. at 54:3–6 ("[W]e are sending water from Emery Pond, what's the former Emery Pond, which is now our stormwater basin, to the south fly ash pond, and the *decant* water from that pond goes to the south fly ash pond." (emphasis added)); *id.* at 55:12–56:4; *id.* at 128:8–21; *id.* at 129:6–130:8. As Mr. Gallenbach explained, both prior to and following its closure and retrofit, a dam exists in the former Emery Pond to prevent sediments from entering the pump, and the type of pump used to move water to the South Fly Ash Pond is one that is used to move water, not water with sediment, and could not withstand pumping any significant or appreciable amount of sediment. *Id.* at 128:8–130:8 ("Q. How did the south fly ash pond receive water from Emery Pond? A. So there's . . . a pump station. It has wickets in front of it. Th[ere] is a wicket dam, . . . a rock dam in front of that to keep any solids, and [then] there's . . . a deep well pump that pumps it from there up to the south fly ash pond. Q. You said there's a deep well pump? Can you just describe a little bit further what a deep well pump is? [A. I]t's not a . . . sludge pump or . . . it's not designed to really pump solids. It's just designed to pump water."). Thus, to the extent the South Fly Ash Pond received any CCR, it was *de minimis*, consisting only of residual CCR in decanted pond overflow from the former Emery Pond.

The South Fly Ash Pond never directly received CCR from boiler operations at the Marion Station. *Id.* at 130:9–16. The South Fly Ash Pond was originally constructed for the purpose of serving as a replacement for Pond A-1, IEPA Water Pollution Control Permit, No. 1989-EN-3064 (May 17, 1989), SIPC Ex. 12; however, it was never used for that purpose. June 10 Tr. at 127:8–24; *see also* Gallenbach Declaration, SIPC Ex. 2. Rather, the South Fly Ash Pond has always been used as a polishing or finishing pond used to treat water (not sediments) from the former Emery Pond—now the stormwater basin—as part of the Station's NPDES system. *Id.* at 54:11–15.

A pond investigation confirms the South Fly Ash Pond contains minimal sediments, with a mean sediment thickness of approximately 1.57 feet, representing approximately 11 percent of historic pond volume. *See* Pond Investigation Rep., SIPC Ex. 29 at 7; Hagen Demonstrative, SIPC Ex. 52 at 4. That is far less than the amount of sediment present in a typical CCR surface impoundment that is used for the storage, treatment, or disposal of CCR. Pond Investigation Rep., SIPC Ex. 29 at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."); *see also* June 11 Tr. at 433:19–434:16 (testimony by Ms. Lewis distinguishing the amount of CCR seen in primary ponds or secondary ponds that receive significant amounts of ash as compared to the De Minimis Units). Further, of that small amount of sediment, only a fraction (ranging from 10 percent to 64 percent in the sediment samples that were taken from the South Fly Ash Pond) is estimated to include CCR material. Pond Investigation Rep., SIPC Ex. 29 at 14; Hagen Demonstrative, SIPC Ex. 52 at 8. The South Fly Ash Pond's berm does not contain CCR. Pond Investigation Rep., SIPC Ex. 29, Attachment C (boring logs for B-B3a and B-B3b).

Therefore, the South Fly Ash Pond was not designed to receive or manage an accumulation of CCR and never directly received CCR. Thus, any CCR contained within the South Fly Ash Pond throughout its life was incidental, *de minimis* amounts contained in decant water from the former Emery Pond/stormwater basin or atmospheric deposition. The South Fly Ash Pond is also not currently regulated as a CCR surface impoundment under the Federal CCR Rule. June 10 Tr. at 56:5–13.

Pond 3/3a. The whole of Pond 3/3a was initially known as Pond 3. In 1982, an internal berm was constructed within Pond 3, creating the 3a area within the footprint of the original pond. Gallenbach Declaration, SIPC Ex. 2; *see also* June 10 Tr. at 57:11–17. Pond 3/3a is the next pond in the NPDES finishing pond system at Marion Station and serves (or has served) four main functions. June 10 Tr. at 56:17; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 8. First, historically, Pond 3/3a may have received decanted overflow water from the Initial Fly Ash Holding Area until it stopped operating in approximately 1978. IEPA Water Pollution Control Permit, No. 1977-EN-5732 (Nov. 14, 1977), SIPC Ex. 5; IEPA Water Pollution Control Permit, No. 1973-ED-1343-OP (June 1973), SIPC Ex. 14; June 10 Tr. at 131:18–21 ("[Q. W]hat kind of water would it have received from the initial fly ash holding area? A. It would have been decanted water, the overflow."). Second, Pond 3/3a also received runoff from stormwater and the Station's floors. June 10 Tr. at 130:17–131:4. Third, Pond 3/3a received coal pile runoff. *Id.* Finally, Pond 3/3a has received decanted water from the South Fly Ash Pond since that Pond's construction in 1989. *Id.* at 57:3–7 ("How would you describe the quality of water flowing from the south fly ash pond to pond 3/3A? A. It is decant water, so whatever solids were in the previous would be separated and only the water would be going to the pond."); *see also id.* at 130:17–131.

Pond 3/3a also received a few ancillary sources of water throughout its life. Occasionally, prior to October 2015 and typically during freezing events (occurring two to three times a year), small amounts of decanted water from long, narrow strips located on top of the Former CCR Landfill was piped to Pond 3/3a. June 11 Tr. at 244:19–246:7; *see also* June 11 Tr. at 249:8–250:5 (indicating that freezing conditions caused malfunctions in the scrubbing process, which required an alternative method of temporary disposal). Further, SIPC occasionally utilized a horseshoe shaped area on top of the southeast side of the Former CCR Landfill for pH control or to receive scrubber sludge during emergency conditions until 2015, *see infra* at 120–21, and decant water from that area was also piped to Pond 3/3a. June 11 Tr. at 246:16–247:14. Lastly, SIPC also noticed it was possible that some stormwater runoff from the Former CCR Landfill may have also flowed towards Pond 3/3a. Accordingly, in 2007, a berm was constructed to the west of Pond 3/3a to prevent stormwater runoff from the Former CCR Landfill from entering into Pond 3/3a. *Id.* at 132:5–14; *see also* Gallenbach Declaration, SIPC Ex. 2.

A pond investigation confirms that Pond 3/3a contains minimal sediments, with a mean sediment thickness of approximately 1.38 feet in the pond 3 area and 1.45 feet in the pond 3a area, representing approximately 9 and 13.3 percent of the volume of each area, respectively. *See* Pond Investigation Rep., SIPC Ex. 29 at 7; Hagen Demonstrative, SIPC Ex. 52 at 4. That is far less than the amount of sediment present in a typical CCR surface impoundment that is used for the storage, treatment, or disposal of CCR. Pond Investigation Rep., SIPC Ex. 29 at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."); *see also* June 11 Tr. at 433:19–434:16 (testimony by Ms. Lewis distinguishing the amount of CCR seen in primary ponds or secondary ponds that receive significant amounts of ash as compared to the De Minimis Units). Further, of that small amount of sediment, only a fraction (ranging from 23 percent to 34 percent in the samples that were taken from Pond 3/3a respectively) is estimated to include CCR material. Pond Investigation Rep., SIPC Ex. 29 at 14 (explaining slag, fly ash, and bottom ash (*i.e.* CCR) makes up 23 percent and 34 percent, respectively, of the sediment samples from Pond 3/3a); *see also* Hagen Demonstrative, SIPC Ex. 52 at 8. Additionally, Pond 3/3a sediment samples contain carbon contents much higher than would be expected from CCR materials. Pond Investigation Rep., SIPC Ex. 29 at 8–10. A carbon versus nitrogen and a hydrogen versus nitrogen correlation analysis demonstrates that coal or coal fines are the likely common contributor to the organic content in the pond sediment samples identified with a high carbon content. *Id.*; *see also* June 11 Tr. at 287:6–288:1 (The sediment in Pond 3/3a, which had a carbon content of more than 20 percent, is "unlikely to have any significant ash source, like a CCR source. It's . . . far more likely that it would be coal or organic materials or a little bit of both."); Hagen Demonstrative, SIPC Ex. 52 at 7 ("The carbon vs. hydrogen and hydrogen v. nitrogen correlation are inconsistent with burned coal.").

Therefore, Pond 3/3a was never designed to receive or manage CCR and never directly received CCR. Thus, any CCR contained within Pond 3/3a throughout its life was incidental, *de minimis* amounts contained in decant water, stormwater runoff, or atmospheric deposition. Pond 3/3a is also not currently regulated by the Federal CCR Rule. June 10 Tr. at 57:18–22.

Pond 6. Pond 6, sometimes referred to as Pond S-6, historically served and currently serves two functions. First, it is a stormwater runoff pond for the Former CCR Landfill. *Id.* at 57:23–58:3; Gallenbach Demonstrative, SIPC Ex. 49 at 9. Second, it receives decant water from Pond 3/3a, so the water can be conveyed to an NPDES discharge point. June 10 Tr. at 58:4–8. Originally, Pond 6 discharged to the Station's NPDES Outfall 001; however, in or around 1993, in accordance with an IEPA permit, Outfall 001 was eliminated, and SIPC extended Pond 6 and installed pumps to pump water from Pond 6 to Pond 4, where it now discharges pursuant to the Station's NPDES permit.[4] Letter from SIPC to IEPA (Sept. 16, 1993), SIPC Ex. 8.

A pond investigation confirms that Pond 6 contains minimal sediments, with a mean sediment thickness of approximately 0.84 feet, representing approximately 8.2 percent of pond volume. *See* Pond Investigation Rep., SIPC Ex. 29 at 7; Hagen Demonstrative, SIPC Ex. 52 at 4. That is far less than the amount of sediment present in a typical CCR surface impoundment that is used for the storage, treatment, or disposal of CCR. Pond Investigation Rep., SIPC Ex. 29. at 7–8

[4] Pond 6, as defined by SIPC and as apparent from permit documents, aerials, and site inspection documents, consists of the horseshoe shaped pond located to the north of the Former Landfill Area. While IEPA has never explicitly defined the area it considers to be Pond 6 in this proceeding, it appears to, in its Recommendation, conflate this horseshoe shaped pond with the Former Landfill Area and appears to be referring to the entirety of this area as Pond 6.

("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."); *see also* June 11 Tr. at 433:19–434:16 (testimony by Ms. Lewis distinguishing the amount of CCR seen in primary ponds or secondary ponds that receive significant amounts of ash as compared to the De Minimis Units). Further, of that small amount of sediment, only a fraction (ranging from 30 percent to 53 percent in the samples that were taken from Pond 6) is estimated to include CCR material. Pond Investigation Rep., SIPC Ex. 29. at 14; *see also* Hagen Demonstrative, SIPC Ex. 52 at 4.

Thus, Pond 6 was not designed to receive and never directly received CCR from boiler operations and is not currently regulated under the Federal CCR Rule. June 10 Tr. at 58:16–22. Thus, any CCR contained within Pond 6 throughout its life was incidental, *de minimis* amounts contained in Former CCR Landfill stormwater runoff, Pond 3/3a decant water, atmospheric deposition, or other stormwater runoff.

Pond 4. Pond 4 currently serves as the final finishing pond at the Station prior to water being discharged through NPDES Outfall 002 into Little Saline Creek. June 10 Tr. at 59:3–4; 2007 NPDES Permit, SIPC Ex. 13; Gallenbach Demonstrative, SIPC Ex. 49 at 10. Pond 4 receives coal pile runoff, stormwater runoff, and decanted overflow water from Pond 6. June 10 Tr. at 59:2–7 (describing the function Pond 4 serves at the Station); *id.* at 60:21–61:3 ("[Q. W]hat is the quality of water flowing from pond 6 to pond 4? A. Again, it's very clear. There's not any visible particulate. . . . It's decant water, basically, and by -- usually by the time the water gets to pond 6, it's already been decanted, and so it's very clear."); *id.* at 135:17–19 ("How would you describe the quality of water going from pond 6 to pond 4? A. I mean, it was decanted, fairly clean water."). Water flows from Pond 6 to Pond 4 through a pumping station that is designed to pump clean water, not sediment. *Id.* at 136:4–17 ("Q. And how does water travel from pond 6 to pond 4? A.

There's a pumping station. . . . the water. Q. . . . [W]ould you expect a different type of pump to have to be used if the water did contain sediments? A. It would be a different type of pump."); June 11 Tr. at 231:18–232:17 ("It's a pump that's designed to pump clean water. We have the pump set up in a -- we call it clear well. We ha[ve] rock berms on each side. The pump intake is suspended a foot or two below water line to ensure it's the cleanest water."). Additionally, the pipe that runs from Pond 6 to Pond 4 has a significant elevation change, which does not allow for the pumping of sediment. June 11 Tr. at 232:1–17 ("[T]he pump itself can't handle pushing solids, particularly up to the -- we're talking [70 to 80] feet in elevation change, and that's why we have to ensure that -- it's not even so much solids. It's also -- it's vegetation. We got to make sure it's clean at the intake in order to -- if not, we burn up pumps left and right.").

Historically, Pond 4 also received decanted water from Ponds 1 and 2 (via a valved culvert pipe that went through the berm between the units) until Ponds 1 and 2 stopped operating upon Unit 4's retirement in the fall of 2020. June 10 Tr. at 59:4–12; *id.* at 59:17–20 ("Q. How did water travel from ponds 1 and 2 to pond 4 back when water from ponds 1 and 2 did go there? A. It -- There's a drain that feeds into a pipe that runs into pond 4."); *id.* at 59:21–60:14 (Mr. Watson's testimony discussing the characteristics of bottom ash and the decant water travelling from Ponds 1 and 2 to Pond 4, while operational); *id*. at 136:18–23 ("How would you describe the quality of water from ponds 1 and 2 that went into pond 4? A. It again is decanted water, so it's just the overflow."). Visual observations from witnesses at the Station confirm that water flowing from Ponds 1 and 2 to Pond 4 was clear of solids. *Id.* at 59:21–60:14 (Mr. Watson explaining that solids "settled out of and separated out from" from water prior to travelling to Pond 4); *id.* at 136:18–137:12. In addition, the Station's bottom ash was very coarse, dense, and heavy, and any bottom ash sluiced to Ponds 1 and 2 would be expected to settle quickly and not stay suspended in the decant water travelling to Pond 4. *Id.* at 59:21–60:14.

Coal fines are the predominant source of any sediment in Pond 4, historically and now. June 11 Tr. at 233:12–234:17 ("Most of [the material in Pond 4 during the Fall of 2010 cleaning], like I said, it was coal fines. It was black, granular in nature, that we receive from our coal yard runoff, and like I said, that stuff was taken back to the plant. We recombusted it. That stuff was predominantly located on the southern sections of the pond. As we started to get into the northern sides of it, we started getting more into the organic sludgy material. That stuff was separated, allowed to dry, and we put that stuff on the landfill."); *id.* at 236:18–238:2 (explaining that 60 percent of the coal yard stormwater runoff flows in the direction of Pond 4 and explaining the location of sedimentation visible in aerials of Pond 4, *see, e.g.,* McLaurin Declaration, SIPC Ex. 41 at 3–5, confirms that sedimentation is coal pile runoff); *see also* June 10 Tr. at 146:5–17 (explaining materials removed from Pond 4 in 2003 as part of Station maintenance activities were taken to the coal yard, dried, and burned).

A pond investigation confirms that Pond 4 contains minimal sediments, with a mean sediment thickness of approximately 1.67 feet, representing approximately 10.9 percent of pond volume. *See* Pond Investigation Rep., SIPC Ex. 29 at 7; Hagen Demonstrative, SIPC Ex. 52 at 4. That is far less than the amount of sediment present in a typical CCR surface impoundment that is used for the storage, treatment, or disposal of CCR. Pond Investigation Rep., SIPC Ex. 29 at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."); *see also* June 11 Tr. at 433:19–434:16 (testimony by Ms. Lewis distinguishing the amount of CCR seen in primary ponds or secondary ponds that receive significant amounts of ash as compared to the De Minimis Units).

Further, of that small amount of sediment, only a fraction (ranging from 25 percent to 68 percent in the samples that were taken from Pond 4) is estimated to include CCR material. Pond Investigation Rep., SIPC Ex. 29 at 14. Additionally, samples from Pond 4 contained carbon contents much higher than would be expected from CCR materials. *Id.* at 8–10; June 11 Tr. at 287:6–288:1 (The sediment in Pond 4, which had a carbon content of more than 20 percent, is "unlikely to have any significant ash source, like a CCR source. It's . . . far more likely that it would be coal or organic materials or a little bit of both."). A carbon versus nitrogen and hydrogen versus nitrogen correlation analysis demonstrated that unburned coal is the likely common contributor to the organic content in pond sediment samples. Pond Investigation Rep., SIPC Ex. 29 at 8–10; Hagen Demonstrative, SIPC Ex. 52 at 7 ("The carbon vs. hydrogen and hydrogen v. nitrogen correlation are inconsistent with burned coal.").

Thus, Pond 4 is not designed to and did not directly receive CCR from boiler operations and is not currently regulated as a CCR surface impoundment under the Federal CCR Rule. June 10 Tr. at 60:15–61:9; Gallenbach Demonstrative, SIPC Ex. 49 at 10. Any CCR contained within Pond 4 throughout its life was incidental, *de minimis* amounts contained in Pond 6 decant water, Ponds 1 and 2 decant water, coal pile runoff, or atmospheric deposition.

Former Pond B-3. Historically, Former Pond B-3 served two functions: serving as a secondary finishing pond to Pond A-1 and receiving coal pile runoff. June 10 Tr. at 61:10–15; *id.* at 137:23–138:11; June 11 Tr. at 238:8–10. Water was treated in Former Pond B-3 prior to being discharged through former NPDES Outfall 005 into Little Saline Creek. June 11 Tr. at 238:8–239:5; IEPA Ex. BB. During rare, intermittent outages of Pond A-1, Former Pond B-3 may have received some discharges of fly ash from Units 1, 2, and 3 prior to their shutdown in 2003. June 10 Tr. at 138:12–23; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 11. In its Petition, SIPC noted that upon information and belief, Pond A-1 was taken offline at most three to four times between 1985 and 2003, and each of those outages lasted approximately two weeks. Second Amended Petition at 14. Highlighting the rarity of this occurrence, Mr. Gallenbach, the former Vice President of Power Production who worked at the Marion Station from 1991 to 2022, testified that during his career at the Station he could recall only one instance, lasting for about a week, in which Former Pond B-3 was used instead of Pond A-1 for this purpose. June 10 Tr. at 138:12–23. Most (or all) of those outages would have occurred during boiler shutdowns, when Marion Station was operating at less than full capacity and generating less ash. *See* Gallenbach Declaration, SIPC Ex. 2 at 2; *see also* June 11 Tr. at 433:1–10 (Former Pond B-3 "did receive direct ash, but it was very short time frames and . . . from what I understand from other reports that I've read, that was during a time where the plant wasn't sort of operating at full steam, so the amount of ash generated would have been small . . . ."). Accordingly, any fly ash sluiced to Former Pond B-3 during these intermittent outages would have been minimal.

Currently, Former Pond B-3 contains no water or sediments. June 10 Tr. at 61:22–62:14; June 11 Tr. at 241:11–13 (confirming no CCR has been placed in Former Pond B-3 since its 2017 closure); *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 11. The only remnant of Former Pond B-3 at the Station is an internal berm made of clay. June 10 Tr. at 184:13–19. In 2017, Former Pond B-3 was permanently closed with IEPA oversight. June 11 Tr. at 238:15–22; IEPA Ex. BB. The unit was completely dewatered, its berm was breached, and any sediment contained within the unit was removed. June 10 Tr. at 62:1–2 (noting Former Pond B-3 was "completely cleaned out and empty" other than the weeds that have grown where the Pond used to exist); *id.* at 138:24–139:20 (explaining Former Pond B-3 did not contain any sediment and was incapable of holding water after its closure in 2017). As Mr. McLaurin explained at hearing, after Former Pond

B-3 was dewatered, the sediments were allowed to dry. June 11 Tr. at 239:8–13. Most of the materials removed from the Pond were coal fines, which were recombusted as fuel at the Station. *Id.* Other materials in the Pond included dying and dead vegetation and decayed algae. *Id*. at 239:22–240:2. Any material that was not combusted was tested and, based on those test results, disposed of at Perry Ridge Landfill or used for land application around the Pond, as appropriate. *Id.* at 240:3–11. A representative from IEPA's local field office visited the Station twice to observe the closure activities at Former Pond B-3. June 11 Tr. at 239:16–21; IEPA Ex. BB. During the first visit, IEPA directed SIPC to remove a bit more of the sedimentation from Former Pond B-3. June 11 Tr. at 239:16–21. SIPC did as requested and during IEPA's second visit, IEPA observed that all the sedimentation had been removed and gave SIPC its sign-off to commence with final reclamation grading of the area in accordance with the site reclamation plan. *Id.* After SIPC completed its removal of sediment from Former Pond B-3, it sampled the new bottom of the former impoundment and confirmed the closure was clean. *Id.* at 240:23–241:10; *see also* Pond Investigation Rep., SIPC Ex. 29 at 12; Hagen Demonstrative, SIPC Ex. 52 at 14 (prior sampling of Former Pond B-3 demonstrating concentrations below Illinois groundwater quality standards (35 Ill. Admin. Code Part 620) with the exception of two clear anomalies).

2. Organic Material and Sediment in the De Minimis Units.

Outside of Station operations, organic materials are a considerable source of the sediment found within all the De Minimis Units. The grounds at Marion Station, including around the De Minimis Units, contain grass, including a significant amount of phragmites, a tall perennial grass that is regularly mowed. *See* June 10 Tr. at 140:3–23 ("We have a tremendous amount of phragmites that grows around our ponds, and grass, and so as the groundskeeper -- once or twice a year when he cuts that, it falls in the pond, and all your leaves. It's southern Illinois. There are a lot of trees. So all that organic material makes its way to the pond."); *see also* June 11 Tr. at 236:5–9 ("We got a 200-acre facility. We mow every day, I mean, continually mow in the summertime . . . ."). The clippings from the mowed and landscaped organic materials regularly end up within the De Minimis Units. *Id.*

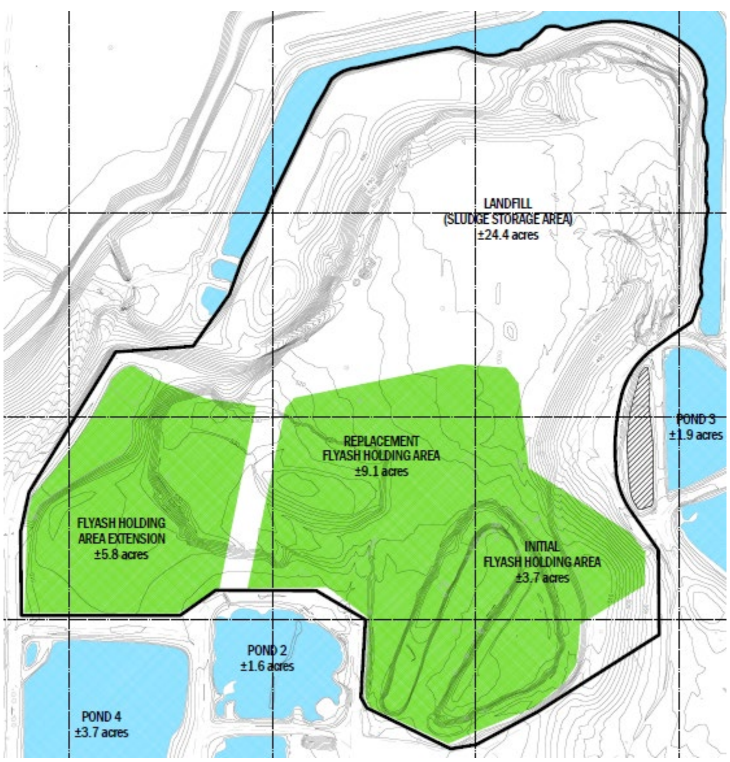
The presence of organic matter within the De Minimis Units has been confirmed through visual observations of materials removed from Pond 4 and as part of routine maintenance cleanings. *See* June 10 Tr. at 140:21–23 ("Q. How would you characterize the physical characteristics of this organic matter in the pond? A. Kind of a black muck."). Operational experience allows SIPC employees such as Mr. McLaurin to visually distinguish CCR sediment, organic material, and coal. June 11 Tr. at 235:2–16 ("Q. Based on your operational experience, are you aware of what CCR materials look like? A. Yes. . . . And based on your operational experience, are you aware of what scrubber sludge looks like? A. Yes."); *see also* June 11 Tr. at 240:12–22 ("Q. I would like to now address question 3 from the Board, and I believe we just touched on this a little bit, but they discuss a sludge. So that sludge, what would that have been? A. There, it would have been dying vegetation."); *see also* June 11 Tr. at 235:2–16 ("As we started to get into the northern sides of [Pond 4], we started getting more into the organic sludgy material. That stuff was separated, allowed to dry, and we put that stuff on the landfill."). As Mr. McLaurin explained, a significant portion of the sediment removed from Pond 4 in 2010 was made up of muddy organic materials. June 11 Tr. at 233:12–234:17, 236:2–9 ("Q. And the muddy materials -- you called them organic materials -- based on your operational experience, what was that material comprised of? A. Dead and dying vegetation.").

Additionally, a Polarized Light Microscopy ("PLM") analysis, while only of limited areas of the De Minimis Units, supports the presence of organic materials. Hagen Demonstrative, SIPC

Ex. 52 at 7–8 (outlining the percentage of "other" material found during the PLM analysis and defining that category to include organics); *see also* June 11 Tr. at 296:8–15 ("'Other' is just that. It's those materials that are part of the sample that would be related to potentially naturally-occurring things like quartz and carbonate and things like that. It would also include organics, maybe some clay minerals, things like that, just -- but they're really -- oftentimes they're just part of the sample and oftentimes they're naturally occurring.").

F. The Former Landfill Area

The Former Landfill Area (outlined in the bold black line in the figure below) is made up of the Former Fly Ash Holding Units (depicted in green on the figure below) and the Former CCR Landfill that these units ultimately became a part of. While some or all the Former Fly Ash Holding Units contained water and CCR historically, they have all since been dewatered and are now located underneath the Former CCR Landfill. June 10 Tr. at 149:22–150:8.



Site Map, SIPC Ex. 3 (excerpted).

Initial Fly Ash Holding Area. Upon information and belief, the Initial Fly Ash Holding Area received wet fly ash collected from Units 1, 2, and 3 from the start of the Station's operations until approximately 1977. June 10 Tr. at 150:13–22; Gallenbach Declaration, SIPC Ex. 2; Gallenbach Demonstrative, SIPC Ex. 49 at 19. In October 1977, IEPA issued a permit to SIPC for construction of the Replacement Fly Ash Holding Area with a condition that the Initial Fly Ash Holding Area be abandoned and covered. *See* 1977 IEPA Permit, SIPC Ex. 5; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 19. By the early 1990s, Station personnel observed that the unit was dewatered and closed. June 10 Tr. at 150:23–151:1. By that time, the area was covered by a combination of the Former CCR Landfill and a soil/vegetation cover. *Id.* at 151:5–8; Gallenbach Declaration, SIPC Ex. 2. Based upon these area observations and in light of the "abandon and cover" permit condition, SIPC believes that the area was covered before the 1990s pursuant to the permit condition issued and approved by IEPA. Once this unit was dewatered and closed, it served as a structural base for and was treated as part of the Former CCR Landfill. June 10 Tr. at 153:24–154:5.

Replacement Fly Ash Holding Area. SIPC constructed the Replacement Fly Ash Holding Area around 1978. 1977 IEPA Permit, SIPC Ex. 5; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 20. This unit received spent water from the hydroveyer system and, occasionally, received sluiced fly ash during intermittent emergencies—generally freezing weather—when the fly ash could not be conveyed dry to the Former CCR Landfill. June 10 Tr. at 151:15–152:1. The disposal of fly ash and spent water in this unit ended upon the construction of Pond A-1 in 1985. *Id.* By the early 1990s, the Replacement Fly Ash Holding Area was dewatered and covered by the Former CCR Landfill. *Id.* at 152:2–4. Once this unit was dewatered and closed, it served as a structural base for and was treated as part of the Former CCR Landfill. *Id.* at 153:24–154:5.

Fly Ash Holding Area Extension. In or around 1982, SIPC received a permit from IEPA to construct the Fly Ash Holding Area Extension to the west of the Replacement Fly Ash Holding Area and build a berm around a portion of the Former Landfill Area. *See* IEPA Water Pollution Control Permit, No. 1981-EN-2776- 1 (Oct. 13, 1981), SIPC Ex. 7; June 10 Tr. at 152:11–18; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 21. The extent to which the Fly Ash Holding Area Extension actually received any fly ash is unknown. As Mr. Gallenbach testified, while its initial purpose was to serve as a backup option to receive fly ash in the event additional space was needed for disposal due to the growth of the Station, he does not believe the unit was ever used for this purpose. June 10 Tr. at 152:19–153:15. As of the 1990s, the Fly Ash Holding Area Extension did not hold water and was covered, at least in part, by the Former CCR Landfill. *Id.* at 153:16–23. Once this unit was dewatered and closed, it served as a structural base for and was treated as part of the Former CCR Landfill. *Id.* at 153:24–154:5.

Former CCR Landfill. The Former CCR Landfill operated from 1978 to October 2015. *Id.* at 154:10–14; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 22. The Former CCR Landfill received a mixture of dry fly ash and dry scrubber sludge, which was sent to the Former Landfill Area via conveyor. June 10 Tr. at 154:15–155:4; September 13, 1993 and August 27, 2009, RCRA Inspection Reports, SIPC Ex. 45. Once the material fell off the conveyor, a contractor, using a bulldozer, spread out and graded the materials. June 10 Tr. at 154:15–155:4. While the Former CCR Landfill operated until October 2015, it received very minimal materials starting in 2009. *Id.* at 121:15–122:2 (explaining that after 2009, when the forced oxidation system was installed, all fly ash was mixed together and sold off-site for beneficial reuses); *see also id.* at 155:5–9; Gallenbach Demonstrative, SIPC Ex. 49 at 22.

Over time, the Former CCR Landfill came to be located on top of the Former Fly Ash Holding Units. This practice of constructing a CCR landfill on top of a closed CCR surface impoundment is a common method of CCR disposal. *See* Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21,302 (April 17, 2015), Revised SIPC Ex. 17 at 21,373. These types of units, sometimes referred to as overfills, "are commonly employed to allow continuing use of CCR disposal sites and to avoid the need to develop CCR management units at other sites." *Id.* This type of CCR management can increase the stability of the underlying closed impoundment, reduce the need for new infrastructure construction, and avoid having to transport CCR significant distances for off-site disposal. *Id.* While USEPA promulgated performance standards and technical specifications applicable to new overfills in 2015, *id.*, no such requirements existed at the time the Former CCR Landfill was built on top of the closed Former Fly Ash Holding Units.

The Former CCR Landfill stopped receiving waste prior to October 2015 and is not regulated pursuant to Part 257. *See* 40 C.F.R. § 257.53 (defining inactive and existing CCR Landfill as being dependent on whether the unit continued receiving CCR after October 19, 2015); *see also* June 10 Tr. at 155:5–9.

The Former CCR Landfill operated and was regulated by IEPA as a 35 Ill. Admin. Code Part 815 permit-exempt landfill. June 10 Tr. at 155:10–156:17. In September 1992, SIPC submitted an Initial Facility Report ("IFR") for the Former CCR Landfill. Initial Facility Report – for On-Site Facilities (Sept. 18, 1992), SIPC Ex. 15; *see also* 35 Ill. Admin. Code § 815.202 (requiring existing landfills to submit an IFR to IEPA by September 18, 1992). In 1993, SIPC installed groundwater monitoring wells and began submitting annual Part 815 groundwater monitoring reports in accordance with the Illinois regulations. *See* June 11 Tr. at 244:1–14; Examples of Onsite

Permit Exempt "815" Facility Annual Reports (2009 and 2019), SIPC Ex. 44. Over the years, IEPA visited the Station and conducted inspections of the area, treating it as a landfill. *See e.g.*, IEPA Violation Notice L-2020-00035 (Mar. 20, 2020), SIPC Ex. 16; *see also* June 10 Tr. at 65:8–67-21; *id.* at 156:2–17. In 1993, IEPA observed that "[t]he process of coal combustion generates bottom ash, fly ash, and scrubber ash. The bottom ash is used by Ground Grit of New Orleans, Louisiana, in the manufacture of roofing products. The fly ash and scrubber ash *are landfilled on-site*." RCRA Inspection Reports, SIPC Ex. 45. In 2019, IEPA noted that "[t]he landfill is regulated under 35 Illinois Administrative Code 815." IEPA Violation Notice L-2020-00035 (Mar. 20, 2020), SIPC Ex. 16.

Former Landfill Area. The entirety of the Former Landfill Area (*i.e.*, the Former CCR Landfill and the Former Fly Ash Holding Units located under the Former CCR Landfill), is part of the Part 815 landfill at the Station. *See* RCRA Inspection Reports, SIPC Ex. 45 (identifying landfill area as approaching Lake of Egypt Road to the south). IEPA explained that "[t]he onsite landfill is situated on the north side of Lake of Egypt Road. [IEPA] was informed landfill operations began about 1978. The landfill is approximately 50 acres in size. It was used for the deposition of mostly scrubber sludge as well as some fly ash." 2020 Landfill VN, SIPC Ex. 16. SIPC witness Kenn Liss, a former manager of the Groundwater Unit in the Permit Section of IEPA's Bureau of Land and who worked at the Agency from approximately 1984 through 1999, explained that once the Former Fly Ash Holding Units stopped operating as surface impoundments, meaning they were no longer used to hold or store water and no longer required an NPDES permitted-outfall (due to their dewatering), they became regulated landfills and, in his experience, were treated as such by IEPA. June 11 Tr. at 374:3–375:7; *id.* at 376:23–377:4.

In March 2020, IEPA issued a Violation Notice relating to the Former Landfill Area, alleging violations of Section 21 of the Illinois Environmental Protection Act, Illinois's *landfill* regulations, and Illinois's groundwater quality standards. 2020 Landfill VN, SIPC Ex. 16; *see also* June 11 Tr. at 378:11−379:11. In December 2020, SIPC submitted a Closure Plan to IEPA, intending to close the Former Landfill Area in compliance with Illinois's landfill regulations. Landfill Closure Plan, SIPC Ex. 10; *see also* June 11 Tr. at 379:15−21; *id.* at 380:4−12; *id.* at 381:12-24 (explaining the cover and monitoring in the Closure Plan included and encompassed the Former Fly Ash Holding Units). Mr. Liss and his current firm, Andrews Engineering, conducted a review of documentation and physical inspection of the Former Landfill Area to assist in preparing the Closure Plan. June 11 Tr. at 370:10−18; *id.* at 384:5−15. During that review, Mr. Liss became aware of the Former Fly Ash Holding Units. *Id.* at 384:16–385:6. In Mr. Liss's opinion, the entirety of the Former Landfill Area, including the Former Fly Ash Holding Units, make up the regulated, permit-exempt landfill. *Id.* at 385:7−23. On or about May 3, 2021, IEPA recategorized the Former CCR Landfill as a CCR surface impoundment: "The Illinois EPA's [Bureau of Land] was recently informed by the Illinois EPA's [Bureau of Water] that the area at Southern Illinois Power Cooperative which [the Bureau of Land] has considered to be a Part 815 on site landfill meets the definition of a [CCR] surface impoundment and should be addressed by [Bureau of Water] under Part 845." IEPA Bureau of Land, Response/Document Review at Marion Station (May 7, 2021), SIPC Ex. 43 at 1.

G. Data on Human Health and Environmental Impacts

With its Petition, its Response, and at hearing, SIPC presented several pieces of evidence demonstrating the units at issue in this proceeding do not pose a risk to human health or the environment and are not expected to pose a future risk to human health or the environment.

A pond investigation report presented by SIPC expert David Hagen sampled and analyzed each of the De Minimis Units. *See generally* Pond Investigation Rep., SIPC Ex. 29. The report presented multiple lines of evidence demonstrating that all the De Minimis Units contain a nominal amount of sediment and CCR compared to typical CCR surface impoundments and that the De Minimis Units are not adversely impacting (or expected to adversely impact) groundwater. *See generally id*.

SIPC's toxicology and risk assessment expert, Ari Lewis, performed a human health and ecological risk assessment ("HHERA") in support of SIPC's Petition. HHERA, SIPC Ex. 37. This HHERA included looking at the potential avenues for human health and ecological exposure to constituents of interest. HHERA, SIPC Ex. 37 at 1; *see also* June 11 Tr. at 409:24–411:12. Ms. Lewis's analysis included conservatively assuming that the constituents of interest found in groundwater sampling at the Marion Station were from the De Minimis Units, despite evidence that they are not. *See* June 11 Tr. at 416:19–417:2 ("So what we did is we looked at all of the groundwater monitoring wells in the area, and for any constituent that exceeded groundwater protection standards, the maximum, whatever the maximum was, regardless if it was a background well, a monitoring well, we included that, so if there was a maximum concentration greater than the groundwater protection standards that were established in 845, we included that."); *see also* HHERA, SIPC Ex. 37 at 20. This assessment led her to conclude that the De Minimis Units, and more broadly Marion Station as a whole, do not pose a risk to human health or the environment. HHERA, SIPC Ex. 37 at 34 ("Based on the evaluation presented in this report, no unacceptable risks to human or ecological receptors resulting from CCR exposures associated with the Site were identified."); *see also* June 11 Tr. at 423:2–6 ("[T]he ponds of interest that we were evaluating, pond 4, former pond B-3, 3 and 3A, pond 6 and the south fly ash pond, did not pose a risk to human health or the environment, and the environment meaning ecological receptors."); Lewis Demonstrative, SIPC Ex. 55 at 24.

Ms. Lewis's conclusions include that the De Minimis Units (and Station as a whole) do not pose a risk to groundwater used as drinking water or for other household purposes, Lake of Egypt surface water used as drinking water, recreators boating or swimming in Lake of Egypt, anglers consuming locally caught fish, or ecological receptors (*e.g.*, fish) exposed to surface water or sediment. Lewis Demonstrative, SIPC Ex. 55 at 1−12; *see generally* HHERA, SIPC Ex. 37. The closest drinking water well is located over 2,000 feet away and is upgradient from the Marion Station. Watson Demonstrative, SIPC's Ex. 48 at 3; *see also* June 10 Tr. at 48:10–49:2. The HHERA confirmed that there is no complete drinking water pathway via groundwater from the Station. June 11 Tr. at 423:16−18 ("Looking at the groundwater pathway, we concluded that there was no complete drinking water pathway via groundwater . . . .").

Some public comments expressed concerns regarding drinking water quality from Lake of Egypt. Ms. Lewis's HHERA demonstrates no such risk exists. HHERA, SIPC Ex. 37 at 34 ("For Lake of Egypt surface water used as a public drinking water supply, all COIs were below the Illinois Class I GWPS, thus no unacceptable risks were identified for the use of Lake of Egypt surface water as drinking water."); *see also* Lewis Demonstrative, SIPC Ex. 55 at 12 ("No unacceptable risks were identified for the use of Lake of Egypt surface water as drinking water."). This lack of risk is further emphasized by the annual municipal drinking water quality reports for the Lake of Egypt. June 10 Tr. at 49:3−12;[5] *see also* Lake of Egypt Drinking Water Quality Report,

[5] At hearing, Mr. Watson mentioned that SIPC has done its own evaluation of Lake of Egypt to confirm its water quality. The Board's Scientific Advisor asked for documentation of that evaluation, if available. In response to this request, SIPC is attaching the document setting forth the results of SIPC's evaluation. This evaluation was conducted in connection with SIPC's closure of Emery Pond to confirm that water samples from Lake of Egypt demonstrate no "measurable, adverse impact on the lake." *See* Hanson Engineering, Emery Pond Groundwater Protection Evaluation at 28-30 (July 24, 2020), included as Attachment 1.

SIPC Ex. 4. Significantly, the only De Minimis Unit located in an area with groundwater flow towards Lake of Egypt is the South Fly Ash Pond. *See* HHERA, SIPC Ex. 37 at 17 ("However, in the southern section of the Site, there is a component of groundwater flow that is to the east toward the Lake of Egypt."); *see also* Bittner Demonstrative, SIPC Ex. 56 at 6 (depicting the flow of groundwater at the site). Groundwater around the other De Minimis Units flows towards Little Saline Creek, which is not a source of drinking water.

In addition, SIPC expert Andrew Bittner conducted a Closure Impact Assessment related specifically to Pond 4. Mr. Bittner's analysis concluded that continued operation of Pond 4 will not result in any greater risk to human health or the environment compared to closure of the unit. Closure Impact Assessment, SIPC Ex. 38 at 18 ("[Closure by removal] does not lead to greater environmental or human health benefit as compared to continued operation of Pond 4. Specifically, [closure by removal] will not result in any reduction in risks to human health or the environment and will not result in any improvement to groundwater quality or surface water quality."); *see also* Bittner Demonstrative, SIPC 56 at 7–8.

As explained below, while the evidence demonstrates that the units subject to this proceeding are not having an adverse impact on human health or the environment, in response to the Board's question on the subject, SIPC is open to conducting an additional groundwater investigation, with an enhanced Part 845 compliant monitoring network, as part of an interim adjusted standard to further characterize the impacts, or lack thereof, of the units at issue in this proceeding. *See Pre-Filed Questions Submitted by the Illinois Pollution Control Board Directed to Southern Illinois Power Cooperative and the Illinois Environmental Protection Agency* at 3–5 (Jun. 6, 2025) (Question 10); *see also infra* Section IV.

II. LEGAL BACKGROUND

A. Regulatory Background

CCR disposal is regulated at the state and federal level. The Federal CCR Rule was first promulgated on April 17, 2015, pursuant to the federal Resource Conservation and Recovery Act, Subtitle D, and includes comprehensive technical requirements for regulated CCR surface impoundments. *See generally* 40 C.F.R. Part 257, Subpart D; 80 Fed. Reg. 21,302, Revised SIPC Ex. 17. It defines a "CCR surface impoundment" as "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." 40 C.F.R. § 257.53. USEPA's 2014 Risk Assessment served as the basis for USEPA's regulation of CCR surface impoundments. USEPA, *Human and Ecological Risk Assessment of Coal Combustion Residuals* (Dec. 2014), SIPC Ex. 46 (excerpted).

At the state level, the Illinois Legislature adopted the Illinois Coal Ash Pollution Prevention Act (the "Illinois CCR Act") on July 30, 2019. 415 Ill. Comp. Stat. 5/22.59. The Illinois CCR Act adopted the Federal CCR Rule's definition of a CCR surface impoundment: "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." 415 Ill. Comp. Stat. 5/3.143. A pond that does not satisfy this definition is not subject to the Part 257 Rules or the Illinois CCR Act. The Illinois CCR Act also required the Board to adopt rules governing CCR surface impoundments that were at least as protective and comprehensive as the Federal CCR Rule. *See* 415 Ill. Comp. Stat. 5/22.59(g).

On March 30, 2020, IEPA proposed regulations titled "Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments" to be included as Part 845 of Illinois Administrative Code's Title 35. According to the Statement of Reasons issued with the proposed regulations,

> [t]he foremost purpose and effect of this regulatory proposal is to fulfill Illinois EPA's statutory obligation to propose CCR rules consistent with the requirements in Section 22.59(g). The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois. . . . Groundwater has an essential and pervasive role in the social and economic well-being of Illinois, and is important to the vitality, health, safety, and welfare of its citizens. This rule has been developed based on the goals above and the principle that groundwater resources should be utilized for beneficial and legitimate purposes. *See* 415 ILCS 55/1 *et seq*. ***Its purpose is to prevent waste and degradation of Illinois' groundwater***. The proposed rule establishes a framework to manage the underground water resource to allow for maximum benefit of the State.

R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA's Statement of Reasons (Mar. 30, 2020), SIPC Ex. 18 at 10 (emphasis added).

The Board issued its Second Notice Opinion and Order on the Part 845 proposal on February 4, 2021. *See generally* R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845,* Illinois Pollution Control Board's Second Notice Opinion and Order ("Second Notice Opinion") (Feb. 4, 2021). The Second Notice Opinion largely adopted IEPA's proposed rules, including its definition of "CCR surface impoundment" as a "natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR." *Id.* at 11; *see also* 35 Ill. Admin. Code § 845.120. Thus, the Board, like the legislature, adopted the Federal CCR Rule's definition of "CCR surface impoundment." IEPA and the Board did not conduct their own risk assessment to justify the promulgation of the Part 845 regulations. Rather, they relied upon USEPA's 2014 Risk Assessment to support the Illinois regulations. R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, First Supplement to IEPA Pre-Filed Responses (Aug. 5, 2020), SIPC Ex. 24 at 37–38 (noting reliance upon USEPA's 2014 Risk Assessment for Part 845 rulemaking). Thus, USEPA's 2014 Risk Assessment also serves as a basis for Illinois's regulation of CCR surface impoundments.

When promulgating Part 845, the Board acknowledged that regulatory relief, including an adjusted standard, is appropriate and "available to owners and operators when they disagree with an IEPA determination concerning whether a unit is a CCR surface impoundment." Second Notice Opinion at 14, 17, 97 (explaining the availability of adjusted standards to address issues such as de minimis units and site-specific characteristics).

Following approval by the Joint Committee on Administrative Rules, the Board adopted Part 845 as final on April 15, 2021, with an effective date of April 21, 2021. *See* R2020- 019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, Illinois Pollution Control Board's Final Order Adopted Rule ("Final Order") (Apr. 15, 2021).

B. The Definition of "CCR Surface Impoundments" Does Not Include Units that Contain a De Minimis Amount of CCR.

Part 845 is clear that it regulates only "CCR surface impoundments." The regulation's "Scope and Purpose" Section specifies that Part 845 applies to "owners and operators of new and existing CCR surface impoundments," 35 Ill. Admin. Code § 845.100(a), and "inactive CCR surface impoundments at active and inactive electric utilities or independent power producers." *Id.* § 845.100(b).

Under the Federal CCR Rule, and in turn Part 845, CCR surface impoundments do not include units containing a *de minimis* amount of CCR. IEPA and USEPA have affirmed that impoundments containing *de minimis* amounts of CCR are not regulated CCR surface impoundments. June 12 Tr. at 512:15–21 (agreeing that "Part 845 does not regulate impoundments that contain a de minimis amount of CCR"); 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357

(USEPA explaining it "agrees with commenters that units containing only truly 'de minimis' levels of CCR are unlikely to present the significant risks this rule is intended to address."); *see also* Second Notice Opinion at 14–15, 17 (declining to define the term *de minimis* but acknowledging that a *de minimis* exception exists).

Of central concern in this matter is what quantity of CCR in a surface impoundment is, in fact, *de minimis*. Neither Part 845 nor the Federal CCR Rule defines the term *de minimis*. *See* 35 Ill. Admin. Code Part 845; 40 CFR Part 257, Subpart D. However, USEPA has explained that the *de minimis* exception stems from the proper interpretation of the plain language definition of CCR surface impoundment, as revised by USEPA when promulgating its final rule:

> [A] CCR surface impoundment as defined in this rule *must meet three criteria*: (1) The unit is a natural topographic depression, man made excavation or diked area; (2) the unit is designed to hold an accumulation of CCR and liquid; and (3) the unit treats, stores or disposes of CCR. These criteria correspond to the units that are the source of the significant risks covered by this rule, and are consistent with the proposed rule. EPA agrees with commenters that relying solely on the criterion from the proposed rule that the unit be designed to accumulate CCR could inadvertently capture units that present significantly lower risks, such as process water or cooling water ponds, because, although they will accumulate any trace amounts of CCR that are present, *they will not contain the significant quantities that give rise to the risks modeled in EPA's assessment*. By contrast, *units that are designed to hold an accumulation of CCR and in which treatment, storage, or disposal occurs will contain substantial amounts of CCR and consequently are a potentially significant source of contaminants*.

80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357 (emphasis added). Thus, a pond qualifying for the *de minimis* exception will, necessarily, contain some amount of CCR. June 12 Tr. at 519:13–15. However, it will not contain CCR in the "significant quantities" that give rise to the risks modeled in USEPA's 2014 Risk Assessment supporting the regulation of CCR surface impoundments; nor will it contain "substantial amounts of CCR" that could in turn be a potential significant source of contaminants. 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357. Put differently, such units do not contain "significant quantities" or "substantial amounts of CCR" and

are, therefore, not "designed to hold an accumulation of CCR" and are not ponds that "treat[], store[], or dispose[] of CCR." *Id.*

While the definition of "CCR surface impoundment" is the ultimate guidepost for whether a unit qualifies for a *de minimis* exception, USEPA has also provided some examples of *de minimis* units, which—while not binding on Illinois's interpretation of Part 845—are informative:

> [s]urface runoff, coal pile runoff, CCR landfill leachate, stormwater and evaporation ponds would not generally be expected to meet the definition of a CCR surface impoundment, because based on their typical design and function, such units are not usually designed primarily to hold an accumulation of CCR and liquid and would not be expected to treat, store, or dispose of CCR.

USEPA*, Frequent Questions about Definitions and Implementing the Final Rule Regulating the Disposal of Coal Combustion Residuals*, SIPC Ex. 34 at 9. USEPA further explained, that while it has provided examples of units that "typically would be expected to fall outside of" the definition of a CCR surface impoundment, the examples it provided "were *not intended to be exclusive or definitive*." *Id.* (emphasis added). Similarly, USEPA recently reiterated that "evaporation ponds, or secondary or tertiary finishing ponds that have not been properly cleaned up" are expected to "contain no more than a de minimis amount of CCR" and as such are not intended to be subject to regulation. *Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Legacy CCR Surface Impoundments*, 89 Fed. Reg. 38,950 (May 8, 2024), Revised SIPC Ex. 33 at 39,050.

C. CCR Landfills Are Not CCR Surface Impoundments.

Part 845 regulates CCR surface impoundments; it does not regulate CCR landfills. 35 Ill. Admin. Code § 845.100(h) ("[T]his Part does not apply to landfills that receive CCR.").

Illinois law, as well as federal law, makes clear that landfills are not surface impoundments. Under Illinois law, landfills and surface impoundments have been defined as exclusive of one another since the promulgation of the Illinois landfill regulations in the early 1990s. A landfill is "a unit or part of a facility in or on which waste is placed and accumulated over time for disposal, and *that is not . . . a surface impoundment* . . . ." 35 Ill. Admin. Code § 810.103 (emphasis added). A surface impoundment is "a natural topographic depression, a man-made excavation, or a diked area into which flowing wastes, such as liquid wastes or wastes containing free liquids, are placed. For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, *a surface impoundment is not a landfill*." *Id*. (emphasis added); *see also* IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 6 ("A man-made excavation where CCR is disposed could be a CCR surface impoundment or a landfill, but a landfill that receives CCR is not a CCR surface impoundment."). Thus, under the Illinois regulatory regime, landfills and surface impoundments have long been recognized as distinct. *See* AS 2009-001, *In the Matter of: Petition of Ameren Energy Generating Company for Adjusted Standards from 35 Ill. Adm. Code Parts 811, 814, and 815 (Hutsonville Power Station)*, Order of the Board (Mar. 5, 2009) (determining that a site-specific rulemaking—and not the existing landfill regulations—was more appropriate to regulate the closure of CCR surface impoundments); *see generally* R2009-021, *In the Matter of: Ameren Ash Pond Closure Rules (Hutsonville Power Station): Proposed 35 Ill. Adm. Code 840.101 through 840.152 (Site Specific Rulemaking)*.

The Federal CCR Rule similarly recognizes this distinction, explicitly stating that a CCR landfill is not a CCR surface impoundment: "CCR landfill or landfill means an area of land or an excavation that receives CCR and *which is not a surface impoundment* . . . ." 40 C.F.R. § 257.53 (emphasis added). The Part 257 Rules likewise contains separate and distinct requirements for CCR landfills and CCR surface impoundments. *Compare, e.g.,* 40 C.F.R. § 257.70 *with* 40 C.F.R. § 257.72 (comparing liner design criteria for new CCR Landfills with the same criteria for new CCR surface impoundments); *compare also* 40 C.F.R. § 257.84 *with* 40 C.F.R § 257.83 (comparing inspection requirements for CCR landfills with inspection requirements for CCR surface impoundments). USEPA's CCR Legacy Rule, promulgated in 2024, continues to make the distinction between CCR surface impoundments and landfills by promulgating federal requirements for CCR landfills that ceased receiving CCR prior to October 19, 2015, and other non-surface impoundment areas where CCR was managed. *See, e.g.*, 40 C.F.R. § 257.53 (defining "Inactive CCR Landfill" and "CCR management unit").

D. Standard of Review for Finding of Inapplicability

The Board has recognized that a petition for an adjusted standard can, in the alternative, seek a finding of inapplicability from the regulation at issue. *See* AS 2009-003*, In the Matter of Petition of Westwood Lands, Inc. for an Adjusted Standard from Portions of 35 Ill. Adm. Code 807.14 and 35 Ill. Adm. Code 807.104 and 35 Ill. Adm. Code 810.103 or, in the Alternative, a Finding of Inapplicability*, Opinion and Order of the Board (Oct. 7, 2010) (granting request for a finding of inapplicability from solid waste regulations); AS 2004-002, *In the Matter of Petition of Jo'Lyn Corporation and Falcon Waste and Recycling Inc. for an Adjusted Standard from 35 Ill. Adm. Code 807.103 and 35 Ill. Adm. Code 810.103, or in the Alterative, a Finding of Inapplicability*, Opinion and Order of the Board (Apr. 7, 2005) (granting a request for a finding of inapplicability from solid waste regulations).

Recently, the Board reviewed and issued a final opinion on a request to find Part 845 inapplicable to a 10-acre site located at the Waukegan Station. *See* AS 2021-003, *In the Matter of: Petition of Midwest Generation, LLC for a Finding of Inapplicability for the Waukegan Station*, Opinion and Order of the Board (Mar. 20, 2025). In reviewing that request, the Board applied the factors identified in 415 Ill. Comp. Stat. 5/28.1(c), *see infra* Section II.E., as the legal standard when considering the petitioner's request that Part 845 not apply in its entirety. AS 2021-003, Opinion and Order of the Board at 6–7 (Mar. 20, 2025). In the Argument Sections below, SIPC discusses each of the 415 Ill. Comp. Stat. 5/28.1(c) factors for the units at issue in this proceeding but notes that a finding of inapplicability need not address each of these factors as, at its core, it is intended to determine whether the general regulation is applicable in the first place rather than whether the petitioner is entitled to an adjustment from its requirements. *See, e.g.*, AS 2004-002, Opinion and Order of the Board (Apr. 7, 2005) (reviewing applicability of the law and not applying the adjusted standard factors in 415 Ill. Comp. Stat. 5/28.1(c)).

E. Standard of Review for an Adjusted Standard

An adjusted standard is justified upon the following demonstration by SIPC:

> (1) factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;
>
> (2) the existence of those factors justifies an adjusted standard;
>
> (3) the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and
>
> (4) the adjusted standard is consistent with any applicable federal law.

415 Il. Comp. Stat 5/28.1(c).

Section 28.1(a) of the Act provides that the Board may grant an adjusted standard "for persons who can justify such an adjustment." 415 Ill. Comp. Stat. 5/28.1(a). Section 27(a) provides in pertinent part that, when adopting regulations under the Illinois Environmental Protection Act, "the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution." 415 Ill. Comp. Stat. 5/27(a).

III. ARGUMENT

A. A Finding of Inapplicability or, in the Alternative, SIPC's Proposed Adjusted Standard Is Justified for the De Minimis Units.

1. Part 845 Is Inapplicable to the South Fly Ash Pond.

The South Fly Ash Pond is not a CCR surface impoundment regulated under Part 845. This unit is *de minimis* because it does not contain the "significant" or "substantial" quantities of CCR required for it to be designed to *hold an accumulation of CCR* or to *treat, store, or dispose of CCR*. SIPC has presented multiple lines of evidence to demonstrate that the South Fly Ash Pond contains *de minimis* levels of CCR and is, therefore, not a CCR surface impoundment. These lines of evidence include the following: (1) the South Fly Ash Pond has served as a secondary finishing pond, never directly receiving sluiced ash, making it among the types of ponds expected to contain a *de minimis* amount of CCR, (2) the South Fly Ash Pond's mean total sediment and CCR thickness is far less than what would be expected of a typical CCR surface impoundment designed to hold an accumulation of CCR, (3) the South Fly Ash Pond's characteristics are different than and unique from the CCR surface impoundments intended to be regulated by Part 845 and modeled by USEPA's 2014 Risk Assessment (which was relied upon by the Board when promulgating Part 845), and in fact, a site-specific risk assessment demonstrates this unit does not pose any risk to human health or the environment, and (4) the South Fly Ash Pond is not a potentially significant source of CCR contaminants.

First, the characteristics of the South Fly Ash Pond demonstrate that it has operated differently than, and contains a small amount of CCR and total sediment compared to, regulated CCR surface impoundments. The South Fly Ash Pond served as a secondary finishing pond and never directly received sluiced ash from Station operations or water with a significant amount of CCR from a preceding pond. *See* June 10 Tr. at 130:9–16 ("[Q. T]o your knowledge, was CCR from the facility ever directly placed or sluiced into the south fly ash pond? A. It was never. Q. And how would you characterize the amount of CCR that may have gone to the south fly ash pond historically? A. A very, very small amount"); June 11 Tr. at 428:24–429:6 ("[T]he south fly ash pond never directly received sluiced ash from plant operations, . . . it would be just from other plant activities and as a result did not receive significant amounts of ash, and this was confirmed by the estimate of the amount of fly ash that was . . . measured in the pond."); Hagen Demonstrative, SIPC Ex. 52 at 4 (outlining the sediment thickness of South Fly Ash Pond).

Indeed, the only water the South Fly Ash Pond received as part of the Station's operations was decant water from the former Emery Pond, now the Station's stormwater basin, which was pumped into the southwest corner of the South Fly Ash Pond. *See* June 10 Tr. at 128:1–7; Gallenbach Demonstrative, SIPC Ex. 49 at 7. Although the former Emery Pond was at times used to treat CCR, the manner by which the decant water travelled to the South Fly Ash Pond would have made it impossible for significant amounts of sediment to travel with that water. *See supra* at 14; *see also* June 10 Tr. at 128:8–21 ("Q. How did the south fly ash pond receive water from Emery Pond? A. So there's . . . a pump station. It has wickets in front of it. Th[ere] is a wicket dam, . . . a rock dam in front of that to keep any solids, and [then] there's . . . a deep well pump that pumps it from there up to the south fly ash pond. Q. You said there's a deep well pump? Can you just describe a little bit further what a deep well pump is? [A. I]t's not a . . . sludge pump or . . . it's not designed to really pump solids. It's just designed to pump water."); *id.* at 129:6–130:8 (explaining the pump used to move water from Emery Pond to the South Fly Ash Pond is not designed to be able to handle sluice water or water containing significant amounts of sediment). As USEPA explained, secondary finishing ponds like the South Fly Ash Pond are among the types of surface impoundments expected to contain a *de minimis* amount of CCR due to their operation and use. 89 Fed. Reg. 38,950, Revised SIPC Ex. 33 at 39,050.

Second, the South Fly Ash Pond contains far less sediment than a regulated CCR surface impoundment. A bathymetric survey found that the mean sediment thickness in the approximately 12.2-acre South Fly Ash Pond is only 1.57 feet.[6] Pond Investigation Rep., SIPC Ex. 29 at 7; Support for De Minimis Units, SIPC Ex. 36 at 6. As Mr. Hagen—who has worked on the investigation and closure of over 30 CCR surface impoundments—explained, a CCR surface impoundment designed to hold an accumulation of CCR and that treats, stores, or disposes of CCR would be expected to contain significantly more CCR, and sediment more generally, than that measured in the South Fly Ash Pond. June 11 Tr. at 314:13−18 (explaining that a pond that "receives a significant amount of CCR from a previous impoundment" typically will have "[s]ignificant accumulation" in the "tens of feet"); Pond Investigation Rep., SIPC Ex. 29 at 7−9, 25 ("Based on [USEPA] information, CCR disposal typically occurs at more than 735 active on-site CCR surface impoundments, which average more than 50 acres in size and have an estimated average depth of 20 feet of ash."). In its Recommendation, IEPA presented an estimate of the number of truckloads it may take to remove the sediments located in the South Fly Ash Pond. Recommendation at 27. As Mr. Hagen explained, the number of truckloads needed to clean a typical CCR surface impoundment is often in the tens of thousands, or "orders of magnitude greater" than the number of truckloads IEPA estimated may be needed to remove sediment from the South Fly Ash Pond. June 11 Tr. at 315:7–316:15.[7]

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[6] Approximately 73 percent of the South Fly Ash Pond was surveyed for the bathymetric survey. Pond Investigation Rep., SIPC Ex. 29 at 2. Certain areas of the pond were inaccessible due to water levels. June 11 Tr. at 281:8–282:5. However, the results from the survey were extrapolated to provide an estimate for the entirety of the South Fly Ash Pond. *Id.*; *see also id.* at 352:24–353:11.

[7] As SIPC noted in its Response and during the hearing, there are flaws with IEPA's estimates regarding the amount of CCR in the South Fly Ash Pond and the other De Minimis Units. Among other issues, IEPA assumes all sediment

The South Fly Ash Pond had approximately 10 to 20 truckloads of material removed over the course of a week in 2003 as part of regular maintenance activities at the Station. June 10 Tr. at 144:18–145:17. As SIPC's experts explained, this is a relatively nominal amount of CCR or even sediment more generally. *See* June 11 Tr. at 315:7–22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment"); *id.* at 433:19–434:16 (testimony by Ms. Lewis distinguishing the amount of CCR seen in primary ponds or secondary ponds that receive significant amounts of ash as compared to the De Minimis Units). As Ms. Lewis explained, regardless of whether sediments from the pond were cleaned out as part of routine maintenance in 2003, the rate of accumulation still makes the amount of both sediments generally, and CCR specifically, insignificant and insubstantial compared to a typical CCR surface impoundment. *Id.* at 432:12–19 ("[Q: D]oes the fact that some of these units were cleaned historically impact your assessment of whether they were de minimis? A. I mean, I considered it, but even considering that, the amount of time that has elapsed since that occurred and the small amount still, you know, leads me to believe that they're considered de minimis ponds.").

The South Fly Ash Pond's *de minimis* nature is made clear when comparing the pond to other CCR surface impoundments in Illinois that are regulated under Part 845. In the Part 845 rulemaking, IEPA generated a list of units it believed would be regulated under Part 845. While the De Minimis Units were included in this list, their characteristics are clearly unique from the other regulated units. *See* IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181–82

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is CCR, includes sediment used to construct the berms of the Pond in its estimate, and in the case of the South Fly Ash Pond, incorrectly assumes an area that consists of a coal pile storage pad located to the north of the South Fly Ash Pond is part of the Pond. *See generally* Response; *see also* June 11 Tr. at 257:19; *id.* at 317:6–318:23; Evaluation Report, SIPC Ex. 40; McLaurin Second Declaration, SIPC Ex. 41; Hagen Demonstrative, SIPC Ex. 52 at 16.

(IEPA's table of the 73 units it believed to be regulated by Part 845, including the De Minimis Units); *compare* Support for De Minimis Units, SIPC Ex. 36 at 6 (the South Fly Ash Pond "covers an area of approximately 12.2 acres") *and id*. at 9 (noting a mean sediment thickness of 1.57 feet in the South Fly Ash Pond) *with* 2014 Risk Assessment, SIPC Ex. 46, Attachment A-2 (listing potential CCR surface impoundments, including those identified by IEPA, demonstrating those units not subject to this Petition are—on average—much larger and contain a greater depth of CCR (4 to 68 feet for the Illinois units) than the South Fly Ash Pond) *and* Pond Investigation Rep., SIPC Ex 29 at 7 (Based on information provided by USEPA, CCR surface impoundments "average more than 50 acres in size.").

Further, only a portion of the sediment in the South Fly Ash Pond is CCR. The pond received sources of sediment other than CCR. To the extent small amounts of sediments entered the South Fly Ash Pond with the decant water from the former Emery Pond, those sediments would have contained, at most, insignificant amounts of scrubber sludge. *See* June 10 Tr. at 54:16–23 (describing that only decant water was sent to the South Fly Ash Pond, after allowing for settling in Emery Pond); *id.* at 55:21–56:4 (describing the quality of water traveling from the stormwater basin, after Emery Pond's closure, to the South Fly Ash Pond); *id.* at 129:2–5 (describing the quality of water travelling from Emery Pond to the South Fly Ash Pond as "a gray water, your process plant water, stormwater runoff."). Like all the ponds at Marion Station, a considerable amount of the sediment in the South Fly Ash Pond is from organic materials. *See supra* Section I.E.2.; *id.* at 140:15–20 (explaining how ponds at the Station include sedimentation from the "tremendous amount of phragmites that grow[] around [the Station's] ponds," as well as other grass and leaves). SIPC expert David Hagen performed a carbon versus hydrogen and hydrogen versus nitrogen correlation on sediment samples collected from the South Fly Ash Pond. This analysis concluded that the correlation of these constituents in the samples from the South Fly Ash Pond's sediments are inconsistent with the correlation one would expect for burned coal (*i.e.*, CCR). June 11 Tr. at 288:12–289:17; *see also* Pond Investigation Rep., SIPC Ex. 29 at 8; Hagen Demonstrative, SIPC Ex. 52 at 7 ("The carbon vs. hydrogen and hydrogen v. nitrogen correlation are inconsistent with burned coal."). A PLM analysis further supports that only a small portion of the 1.57 feet of sediment in the South Fly Ash Pond is CCR. Pond Investigation Rep., SIPC Ex. 29 at 1; Support for De Minimis Units, SIPC Ex. 36 at 9 (extrapolating the depth of CCR in the unit to 0.63 feet (or 7.6 inches) based on the PLM results).[8]

Third, and relatedly, the South Fly Ash Pond is unique from those units the Board intended to be regulated by Part 845. As discussed above, the Board relied on USEPA's 2014 Risk Assessment as a basis for promulgating Part 845. *See supra* at 36–37; *see generally* Second Notice Opinion at 43–44, 46–47, 48, 49–50 (relying on the 2014 Risk Assessment in various of the Board findings for the promulgation of Part 845). The South Fly Ash Pond does not have those characteristics for which risks were modeled in USEPA's 2014 Risk Assessment. June 11 Tr. at 441:4–443:8 (explaining the De Minimis Units, including the South Fly Ash Pond, "differ significantly in concept[] and in practice from the surface impoundments that were evaluated by

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[8] The PLM analysis identified a portion of the materials in the South Fly Ash Pond samples as coal fines and identified another portion of the materials as "Other." The "Other" category is made up of materials that are naturally occurring such as quartz, carbonate, organics, and clay minerals. June 11 Tr. at 296:8–15. IEPA has tried to assert that the "Other" category is made up *entirely* of scrubber sludge. June 12 Tr. at 529:19–22 ("[Q. I]s it IEPA's contention that 100 percent of the "other" material identified with PLM analysis in Mr. Hagen's report, SIPC Exhibit 29, is CCR? A. Yes."). Mr. Hagen explained at hearing that to a reasonable degree of scientific certainty there would not be "a significant amount of scrubber sludge" in the samples upon which the PLM analysis was conducted because scrubber sludge was disposed of in the Former CCR Landfill and information regarding the Station suggested that "all sorts of other materials that are naturally occurring" were present and likely to make up the "Other" category. June 11 Tr. at 296:7–297:16; *see also* Pond Investigation Rep., SIPC Ex. 29 at 13 (explaining "[t]he scrubber sludge sample has no identifiable fly ash, bed ash, bottom ash, and slag components; all particles are classified in the 'Other' category. Therefore, for Pond sediment and berm samples, the "Other" category could potentially include some scrubber sludge. However, we understand that scrubber sludge at the Site was not generally stored, treated or disposed of in the Pond system but was initially sent to the on-site former CCR landfill or, more recently, shipped off site for beneficial reuse. Accordingly, we would not expect to see significant amounts of sludge in the Pond sediments.")

EPA and were concluded to pose a risk"). As Ms. Lewis explains, the surface impoundments modeled in the 2014 Risk Assessment were conceptually different than the South Fly Ash Pond. The conceptual model used in USEPA's 2014 Risk Assessment assumed that sluiced CCR was "being continually sent," to a surface impoundment, and sediment was allowed to accumulate for "a long period of time until the capacity [of the pond] was [] reached." *Id.* at 439:14–440:7; *see also* Support for De Minimis Units, SIPC Ex. 36 at 13−14. The South Fly Ash Pond did not continually receive CCR or operate in a manner where CCR solids accumulated until the Pond reached capacity. *See supra* at 14–15; *see also* Support for De Minimis Units, SIPC Ex. 36 at 10 (explaining that sediment makes up just 19.1 percent of the volume of the South Fly Ash Pond and CCR makes up just 7.6 percent of the volume of the South Fly Ash Pond). The South Fly Ash Pond did have debris and sediment removed in 2003. *See supra* at 46. This debris and sediment removal occurred as part of regular maintenance activities at the Station and "was not conducted regularly or because [] CCR was 'at capacity.'" Support for De Minimis Units, SIPC Ex. 36 at 14. Mr. Gallenbach, who was present for the maintenance cleaning, estimates only approximately 10 to 20 truckloads of material were removed from the pond at that time over the course of a week, which is far less than the truckloads required to remove sediment from a unit at capacity. June 10 Tr. at 144:18−145:17; *see also* June 11 Tr. at 315:7−22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment."). And further, as discussed above, the sediment did not contain significant amounts of CCR. June 11 Tr. at 288:12−289:17; *see also* Pond Investigation Rep., SIPC Ex. 29 at 1, 8; Support for De Minimis Units, SIPC Ex. 36 at 9 (extrapolating the depth of CCR in the unit to 0.63 feet (or 7.6 inches) based on the PLM results); Hagen Demonstrative, SIPC Ex. 52

at 7 ("The carbon vs. hydrogen and hydrogen v. nitrogen correlation are inconsistent with burned coal.").

The South Fly Ash Pond is also significantly smaller and unique compared to the surface impoundments modeled in the 2014 Risk Assessment and used to justify the Part 845 rulemaking. *See supra* at 36–37 (noting that both IEPA and the Board relied on USEPA's 2014 Risk Assessment). The 2014 Risk Assessment evaluated over 700 units and, of those over 700 units, only 13 had a listed waste depth of less than two feet. 2014 Risk Assessment, SIPC Ex. 46. That means the South Fly Ash Pond's total sediment thickness is less than the CCR thickness of 98% of all the nationwide surface impoundments modeled as part of the 2014 Risk Assessment, and its approximated CCR thickness is less than 99% of all the nationwide surface impoundments modeled as part of the 2014 Risk Assessment.

Storage Pond	**CCR Thickness (ft)**	**Sediment Thickness (ft)**	**CCR thickness as Percentile of Depth Distribution of SI in 2014 CCR Risk Assessment**	**Sediment Thickness as Percentile of depth Distribution of SI in 2014 CCR Risk Assessment**	**Estimated Sediment volume as a Fraction of Pond volume**	**Estimated CCR Volume as Fraction of Pond Volume**
South Fly Ash Pond	0.63	1.57	1%	2%	8.2%	3.4%

Support for De Minimis Units, SIPC Ex. 36 at 15 (noting that, in contrast, the 50th percentile of units in the 2014 Risk Assessment had a depth of 13.6 feet, the 90th percentile had a depth of 36.6 feet, and the maximum depth of CCR in units was 190.1 feet). Significantly, the 2014 Risk Assessment found risk only from CCR surface impoundments within the 90th percentile of the units evaluated. Support for De Minimis Units, SIPC Ex. 36 at 11−13. And it is these risks Part 845 was developed to address. *See supra* at 36–37; *see also* IEPA's Statement of Reasons, SIPC

Ex. 18 at 10 (indicating the purposes for developing the Part 845 proposal). Further, a site-specific risk analysis of the South Fly Ash Pond demonstrates that this Pond does not, in fact, pose a risk to human health or the environment. *See generally* HHERA, SIPC Ex. 37; *see also supra* Section I.G. Given the South Fly Ash Pond's small size, minimal depth, and the fact that it operated differently than typical CCR surface impoundments in Illinois and the conditions modeled in the conceptual site model used for the 2014 Risk Assessment, it is far from the type of surface impoundment found to pose a risk or intended to be regulated by Part 845. Support for De Minimis Units, SIPC Ex. 36 at 11−16; *see also* June 11 Tr. at 428:22−429:14; Lewis Demonstrative, SIPC Ex. 55 at 16.

Finally, expert analysis demonstrates the South Fly Ash Pond is not a potentially significant source of CCR contaminants. Mr. Hagen's pond investigation concluded it was unlikely that the South Fly Ash Pond is contributing to groundwater exceedances or will contribute to such exceedances in the future. Pond Investigation Rep., SIPC Ex. 29 at 20−25; *see also* Hagen Demonstrative, SIPC Ex. 52 at 12. This conclusion is based on the results of shake tests conducted of the sediment within the South Fly Ash Pond, which sampled the Pond for constituents that could be associated with CCR. June 11 Tr. at 304:17−305:3. Only two constituents, sulfate and Total Dissolved Solids ("TDS"),[9] were found at concentrations higher than Illinois groundwater standards.[10] Pond Investigation Rep., SIPC Ex. 29 at 20. A bivariate analysis and an analysis

[9] One sample also included a selenium concentration above Illinois groundwater standards. However, as explained by Mr. Hagen, this single selenium concentration "is considered a local anomaly" and "[t]he results indicate that CCR materials and coal in Pond sediments are not a source that consistently result in elevated selenium concentrations in water that is in contact with the sediments." Pond Investigation Rep., SIPC Ex. 29 at 18.

[10] In this brief, the term "Illinois groundwater standards" refers to Class I and Class II groundwater quality standards, 35 Ill. Admin. Code Part 620, and the Part 845 groundwater protection standards, 35 Ill. Admin. Code § 845.600(a). The Pond Investigation Report, SIPC Ex. 29, compares shake test results to the Illinois Class I and Class II groundwater quality standards. However, the Class I standards for the constituents evaluated are the same as the Part 845 groundwater protection standards for those constituents. Thus, any comparison to Class I groundwater quality standards discussed in the Pond Investigation Report, SIPC Ex. 29, also applies to the Part 845 groundwater protection standards.

comparing the shake test results from the South Fly Ash Pond to groundwater sampling results at the Station support that the South Fly Ash Pond is not causing or contributing to groundwater contamination. Pond Investigation Rep., SIPC Ex. 29 at 20–25; *see also* June 11 Tr. at 307:12–308:12. Any TDS concentrations result from the sulfate concentrations (together with calcium). Pond Investigation Rep., SIPC Ex. 29 at 20. A review of ten years of groundwater data demonstrates that sulfate concentrations in groundwater monitoring wells in the vicinity of or potentially downgradient of the South Fly Ash Pond are consistently below Illinois groundwater standards (with the exception of one outlier), suggesting any sulfate in the South Fly Ash Pond is not causing or contributing to groundwater contamination and is not likely to cause or contribute to such contamination in the future. *Id.* at 20–24; *id.*, Attachment F. The shake test results did not find elevated levels of any other constituents, including boron, a constituent ubiquitously found as an indicator of CCR. June 11 Tr. at 306:15–22 (explaining boron is commonly associated with CCR, often used as an indicator constituent for CCR, and observed "over and over" in CCR ponds).

Further, even assuming the South Fly Ash Pond was impacting groundwater at the Station, the site-specific HHERA confirms that constituents that were found in the groundwater at the Station do not pose a risk to human health or the environment, including to drinking water, use of water for other household purposes, recreators, anglers, and ecological (*i.e.*, environmental) receptors. June 11 Tr. at 423:14–424:5; Lewis Demonstrative, SIPC Ex. 55 at 1–12; *see also generally* HHERA, SIPC Ex. 37.

Thus, the evidence clearly demonstrates that the South Fly Ash Pond is not the type of unit regulated by Part 845. The South Fly Ash Pond does not contain that significant quantities of CCR that give rise to the risks modeled in EPA's 2014 Risk Assessment. Nor does it contain substantial amounts of CCR such that it serves as a potentially significant source of contaminants. The South

Fly Ash Pond is, therefore, not a CCR surface impoundment because it is not "designed to hold an accumulation of CCR" or a pond that "treats, stores, or disposes of CCR."

2. *In the Alternative, the South Fly Ash Pond Qualifies for the Adjusted Standard Sought by SIPC.*

a. Factors relating to the South Fly Ash Pond are substantially and significantly different from the factors relied upon by the Board in adopting Part 845.

Factors relating to the South Fly Ash Pond are substantially and significantly different than the factors relied upon by the Board in adopting Part 845. In determining which types of CCR surface impoundments pose the risks that Part 845 seeks to address, the Federal CCR Rule is instructive; both because of its identical definition of CCR surface impoundment and the fact that IEPA did not perform its own risk assessment to support its Part 845 proposal and, instead, modeled its proposal on the Part 257 Rules, which relied upon USEPA's 2014 Risk Assessment as a basis for regulating CCR surface impoundments. In other words, because the IEPA-proposed and Board-adopted Part 845 rules were based on Part 257, and no risk assessment was performed in connection with the Part 845 rulemaking, USEPA's 2014 Risk Assessment informed the development of Part 845. USEPA was clear that the 2014 Risk Assessment supported regulation of those "units that contain *a large amount* of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." 80 Fed. Reg. 21,302, Revised Ex. 17 at 21,357 (emphasis added); *see also* Support for De Minimis Units, SIPC Ex. 36 at 4–10. The South Fly Ash Pond is not such a unit.

As discussed above, the South Fly Ash Pond is not the type of unit intended to be regulated, and it varies greatly from a typical CCR surface impoundment. *See supra* Section III.A.1. (discussing how the characteristics of the South Fly Ash Pond make it a *de minimis* unit). Comparatively, the South Fly Ash Pond contains a small amount of CCR (and total sediment) and has never operated with the characteristics that were found to give rise to the risks warranting regulation. *See supra* at 48–51; *see also* Support for De Minimis Units, SIPC Ex. 36 at 8–10, 11-16; Pond Investigation Rep., SIPC Ex. 29 at 7–9. Significant or substantial amounts of CCR were never deposited into the South Fly Ash Pond nor would a deposit of significant or substantial amounts of CCR have been possible. *See supra* at 14–15. Shake tests taken of pond sediment samples, as well as Station groundwater monitoring results, demonstrate any potential CCR-related constituents in the South Fly Ash Pond have not caused and are not expected to cause a material adverse impact on groundwater. *See* Pond Investigation Rep., SIPC Ex. 29 at 26; *see also* Support for De Minimis Units, SIPC Ex. 36 at 11–16 Hagen Demonstrative, SIPC Ex. 52 at 12 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). Further, a site-specific risk assessment of the De Minimis Units, including South Fly Ash Pond, confirms there is no unacceptable risk to human health or the environment from CCR constituents that may have migrated to groundwater. *See generally* HHERA, SIPC Ex. 37 (demonstrating no unacceptable risk to human health or ecological receptors).

Finally, factors related to the South Fly Ash Pond's burden of compliance are substantially and significantly different from the factors related to the burden of compliance relied upon by the Board when promulgating Part 845. Specifically, during the rulemaking, IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to the Federal CCR Rule, and therefore, owners had years to develop and implement compliance plans. *See* Final Order at 8–9. However, the South Fly Ash Pond is not subject to Part 257, and thus, there has been no need to undertake compliance actions, such as groundwater and location restriction assessments. *See* Liss Declaration, SIPC Ex. 47; June 10 Tr. at 56:9–13 (indicating that the South Fly Ash Pond is not subject to the Federal CCR Rule). Accordingly, the timing and Part 845 compliance costs for the South Fly Ash Pond differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject to Part 257 that already had years of compliance activity that could be used to comply with Part 845. June 11 Tr. at 396:1–24 (explaining that without monitoring systems installed under the Federal CCR Rule, time is needed to conduct a groundwater investigation to determine where to put the wells and begin monitoring); *see also* Final Order at 8–9 (indicating that Part 845's technical and economic reasonableness was determined based in part on the fact that owners and operators would already be subject to regulation under the Federal CCR).

Additionally, evidence indicates low hydraulic conductivity, or a slow rate of groundwater movement, at Marion Station. June 11 Tr. at 397:20–400:9; *see also* Liss Second Declaration, SIPC Ex. 47. This suggests a longer timeframe than the allowed six months is required to design and install a groundwater monitoring well network and collect representative groundwater samples for the South Fly Ash Pond. June 11 Tr. at 397:20–400:9.

Thus, the factors relating to the South Fly Ash Pond are unique.

b. <u>The existence of the South Fly Ash Pond's unique factors justifies the requested adjusted standard.</u>

As already described, the South Fly Ash Pond's unique factors justify that this unit should not be regulated under Part 845 at all. *See supra* Section III.A.1. These unique factors further justify the limited adjusted standard SIPC seeks for the South Fly Ash Pond in the event the Board does not grant the requested finding of inapplicability.

For the South Fly Ash Pond, SIPC is proposing that the full scope of Part 845 requirements apply as they otherwise would and seeks an adjustment only from the dates on which operating permit and closure construction permit applications are due in the event a finding of inapplicability is not granted. Specifically, SIPC requests adjustment from 35 Ill. Admin. Code § 845.220(d)(1). This subsection requires the identification of a closure prioritization category in a closure construction application. Under Part 845, closure prioritization categories dictate when a closure construction permit application containing a final closure plan must be submitted. 35 Ill. Admin. Code § 845.700(g), (h). However, given that Part 845's requirements have been stayed during this proceeding, and the dates to submit a permit application have now passed, SIPC is proposing the adjusted standard assign a site-specific date for the South Fly Ash Pond to submit its closure construction application. SIPC proposed 12 months for that submittal in its Petition. *See* Second Amended Petition, Appendix A. IEPA's Recommendation proposes 16 months as a more appropriate timeframe for SIPC's submittal of a closure construction permit application. Recommendation ¶ 28. SIPC does not object to IEPA's recommended timeframe. Thus, SIPC is requesting, in the event a finding of inapplicability is not granted, that Section 845.220(d) be adjusted to allow SIPC 16 months to submit the South Fly Ash Pond's closure construction permit application.

SIPC is also requesting an adjustment to 35 Ill. Admin. Code § 845.230 to modify the date its initial operating permit application for the South Fly Ash Pond is due to 12 months after entry of the adjusted standard. As Mr. Liss explained, because the South Fly Ash Pond is not subject to the Federal CCR Rule, SIPC requires a minimum of 12 months (and possibly longer) to design and install a groundwater monitoring system, collect representative groundwater samples, and conduct a hydrogeological assessment for an operating permit application. Liss Second Declaration, SIPC Ex. 47; June 11 Tr. at 394:11–399:10 (explaining why at least a year is required to develop and conduct the groundwater analysis required to be included with an operating permit application). Given that information collected for the operating permit application will necessarily inform the closure construction permit, including the proposed closure plan, it only makes sense that the closure construction permit application be submitted at the same time as or after the operating permit application.

c. The requested adjusted standard for the South Fly Ash Pond will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the board in adopting Part 845.

Environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting Part 845 will not result if the South Fly Ash Pond is not regulated under Part 845 and will certainly not result from the limited adjusted standard SIPC seeks in the alternative. Like the Part 257 Rules relating to CCR surface impoundments, Part 845 was intended to address the risks posed by CCR surface impoundments that have resulted or are likely to result in groundwater contamination. IEPA's Statement of Reasons, SIPC Ex. 18 at 10 ("The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois"); Second Notice Opinion at 1 ("Among the program's primary goals is protecting groundwater from contamination by CCR pollutants leaking from surface impoundments.").

As discussed above, the characteristics of the South Fly Ash Pond indicate this unit is not having and is not expected to have an adverse impact on human health or the environment in its current form. The unit does not "contain *a large amount* of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." 89 Fed. Reg. 38,950, Revised SIPC Ex. 17 at 21,357 (emphasis added); Support for De Minimis Units, SIPC Ex. 36 at 4–10. An evaluation of shake test results from South Fly Ash Pond sediments and groundwater sampling results at the Station indicate the South Fly Ash Pond is not contributing to and is not expected to contribute to Illinois groundwater standard exceedances. Pond Investigation Report, SIPC Ex. 29 at 12; June 11 Tr. at 302:23−304:4; Hagen Demonstrative, SIPC Ex. 52 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). Additionally, a site-specific risk assessment that looked at impacts from the South Fly Ash Pond to a range of possible human health and environmental receptors (and that conservatively assumed the South Fly Ash Pond was contributing to groundwater contamination at the Station) found the South Fly Ash Pond does not pose a current risk to human health or the environment and that the South Fly Ash Pond does not pose a reasonable possibility of adverse effects of human health or the environment in the future. *See* Support for De Minimis Units, SIPC Ex. 36 at 4–20; *see generally* HHERA, SIPC Ex. 37.

Based on the evidence, no adverse environmental or health effects will result in the event Part 845 is inapplicable to the South Fly Ash Pond. Further, under the limited adjusted standard SIPC seeks as an alternative to a finding of inapplicability, no adjustments are requested from the Part 845 requirements intended to protect human health and the environment. This includes no adjustment from closure standards, groundwater monitoring requirements, and corrective action requirements. Therefore, no adverse environmental or health effects would result from granting an adjusted standard.

d. The South Fly Ash Pond's proposed adjusted standard is consistent with applicable federal law.

SIPC's proposed adjusted standard for the South Fly Ash Pond is consistent with federal law. The Board has acknowledged that "Part 257 is self-implementing," and therefore, it is up to SIPC and USEPA to determine whether the units at issue are subject to the Federal CCR Rule. *See* AS 2021-005*, In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board at 44 (Jun. 26, 2025). SIPC has evaluated the South Fly Ash Pond and determined that it is not regulated as an existing CCR surface impoundment or inactive CCR surface impoundment under the Federal CCR Rule. Consequently, the proposed adjusted standard is consistent with Part 257. *See id.* ("Because EEI believes Joppa West is not subject to Part 257, the Board finds that the interim adjusted standard is consistent with federal law."); *see also* 35 Ill. Admin. Code § 104.406(i).

3. Part 845 Is Inapplicable to Pond 3/3a.

Pond 3/3a is not a CCR surface impoundment regulated under Part 845. This unit is *de minimis* because it does not contain the "significant" or "substantial" quantities of CCR required for it to be designed to *hold an accumulation of CCR* or to *treat, store, or dispose of CCR*. SIPC has presented multiple lines of evidence to demonstrate that Pond 3/3a contains *de minimis* levels of CCR. These lines of evidence include the following: (1) Pond 3/3a has served as a secondary and tertiary finishing pond and never directly receiving sluiced ash, making it among the types of ponds expected to contain a *de minimis* amount of CCR, (2) Pond 3/3a's mean sediment and CCR thickness is far less than what would be expected of a typical CCR surface impoundment designed to hold an accumulation of CCR, (3) Pond 3/3a's characteristics are different than and unique from the CCR surface impoundments intended to be regulated by Part 845 and modeled by USEPA's 2014 Risk Assessment (which was relied upon by the Board when promulgating Part 845), and in fact, a site-specific risk assessment demonstrates it does not pose any risk to human health or the environment, and (4) Pond 3/3a is not a potentially significant source of CCR contaminants.

First, the characteristics of Pond 3/3a demonstrate that it has operated differently than, and contains a small amount of CCR and total sediment compared to, regulated CCR surface impoundments. Pond 3/3a served as a secondary and tertiary finishing pond and never directly received sluiced ash from Station operations or water with a significant amount of CCR from a preceding pond. *See* June 10 Tr. at 132:2–21 ("Q. To your knowledge, did pond 3 ever directly receive CCR or have CCR directly placed within it? A. It did not. . . . Q. How would you characterize the amount of CCR that may have gone to pond 3/3A historically? A. It would have been very small amounts."); June 11 Tr. at 429:20–430:1 ("[Pond 3/3A] never directly received sluiced ash from plant operations. As a consequence, there was not a significant amount of ash estimated to be in the ponds. I didn't give the inches before, but I had that on the slide, but in th[e] cases of ponds 3 and 3A was estimated around 4.7 inches."); Hagen Demonstrative, SIPC Ex. 52 at 4 (outlining the sediment thickness of each active De Minimis Units). Indeed, the only types of water Pond 3/3a received as part of plant operations were decant water from the Initial Fly Ash Holding Area for a limited period of time, decant water from the South Fly Ash Pond, decant water from the long narrow strips and horseshoe-shaped area atop the Former CCR Landfill, coal pile runoff, and other stormwater runoff. *See supra* at 13. The water moving from the Initial Fly Ash Holding Area, the South Fly Ash Pond, the long, narrow strips, and the horseshoe-shaped area atop the Former CCR Landfill to Pond 3/3a did not include any appreciable amount of sediments. *See* June 10 Tr. at 57:3–7 ("How would you describe the quality of water flowing from the south fly ash pond to pond 3/3A? A. It is decant water, so whatever solids were in the previous would be separated and only the water would be going to the pond."); *id.* at 131:18–21 ([Q. W]hat kind of water would it have received from the initial fly ash holding area? A. It would have been decanted water, the overflow"); June 11 Tr. at 246:2–7 (indicating that the water in the long narrow strips was decanted to the pond 3 area of Pond 3/3a using standpipes); *id.* at 248:2–14 (indicating that the water from the horseshoe shaped area was decanted using a standpipe to the pond 3 area of Pond 3/3a). As USEPA provided by example, secondary and tertiary finishing ponds like Pond

3/3a are among the types of surface impoundments expected to contain a *de minimis* amount of CCR due to their operation and use. 89 Fed. Reg. 38,950, Revised SIPC Ex. 33 at 39,050.

Second, Pond 3/3a contains far less sediment than a regulated CCR surface impoundment. The pond 3 area is approximately 1.9 acres with a mean sediment thickness of 1.5 feet, while the pond 3a area is approximately 1.7 acres with a mean sediment thickness of 1.4 feet. Pond Investigation Rep., SIPC Ex. 29 at 7; Support for De Minimis Units, SIPC Ex. 36 at 6. As Mr. Hagen, who has worked on the investigation and closure of over 30 CCR surface impoundments explained, a CCR surface impoundment designed to hold an accumulation of CCR and that intended treats, stores, or disposes of CCR would be expected to contain significantly more CCR, and sediment more generally, than that measured in Pond 3/3a. June 11 Tr. at 272:4–9; *see also id.* at 276:7–11 ("Q. In your experience, what volume of CCR do you typically see in a CCR surface impoundment? A. Gosh. It can vary. However, it's not uncommon to have tens of feet of CCR in a CCR surface impoundment."); Pond Investigation Rep., SIPC Ex. 29 at 7–9, 25 ("Based on [USEPA] information, CCR disposal typically occurs at more than 735 active on-site CCR surface impoundments, which average more than 50 acres in size and have an estimated average depth of 20 feet of ash."); June 11 Tr. at 314:13–18 (explaining a pond that "receives a significant amount of CCR from a previous impoundment" typically will have "[s]ignificant accumulation" in the "tens of feet."). In its Recommendation, IEPA presented an estimate of the number of truckloads it may take to remove the sediments located in Pond 3/3a. Recommendation at 10 (pond 3 area), 15 (pond 3a area). The number of truckloads needed to clean a typical CCR surface impoundment is often in the tens of thousands, or "orders of magnitude greater" than the number of truckloads IEPA estimated may be needed to remove sediment from Pond 3/3a. June 11 Tr. at 315:7–316:15.[11]

In contrast, Pond 3/3a had approximately 20 to 50 truckloads of material removed over the course of two to three weeks in 2003 as part of regular maintenance activities at the Station. June 10 Tr. at 149:1–3. The pond 3 area was cleaned again in 2006 and 2011 and the pond 3a area was cleaned again in 2014. Gallenbach Demonstrative, SIPC Ex. 2 at 2. As SIPC's experts explained, this is a relatively nominal amount of CCR and sediment more generally. June 11 Tr. at 315:7–22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment"). As Ms. Lewis explained, regardless of whether sediments from the Pond were cleaned out as part of routine maintenance, the rate of accumulation in Pond 3/3a between cleanings still makes the amount of both sediment generally, and CCR specifically, insignificant and insubstantial compared to a typical CCR surface impoundment. June 11 Tr. at 432:12–19 ("[Q: D]oes the fact that some of these units were cleaned historically impact your assessment of whether they were de minimis? A. I mean, I considered it, but even considering that, the amount of time that has elapsed since that occurred and the small amount still, you know, leads me to believe that they're considered de minimis ponds.").

Pond 3/3a's *de minimis* nature is made clear when comparing the Ppond to other CCR surface impoundments in Illinois that are regulated under Part 845. Pond 3/3a's characteristics, along with those of the other De Minimis Units, are clearly unique from the other, regulated, units included on the list. *See* IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181–82

[11] As SIPC noted in its Response and during the hearing, there are flaws with IEPA's estimates regarding the amount of CCR in Pond 3/3a and the other De Minimis Units. Among other items, IEPA assumes all sediment is CCR and includes sediment used to construct the berms of the Pond in its estimate of pond materials. June 11 Tr. at 317:6–318:23; Evaluation Report, SIPC Ex. 40; Hagen Demonstrative, SIPC Ex. 52 at 16.

(IEPA's table of the 73 units it believed to be regulated by Part 845, including the De Minimis Units); *compare* Support for De Minimis Units, SIPC Ex. 36 at 6 (Pond 3/3a have "approximate areas of 1.9 and 1.7 acres, respectively") *and id*. at 9 (noting a mean sediment thickness of 1.38 and 1.45 feet in Pond 3/3a, respectively) *with* 2014 Risk Assessment, SIPC Ex. 46, Attachment A-2 (listing potential CCR surface impoundments, including those identified by IEPA, demonstrating those units are—on average—much larger and contain a greater depth of CCR (4 to 68 feet for the Illinois units)than Pond 3/3a) *and* Pond Investigation Rep., SIPC Ex 29 at 7 (Based on information provided by USEPA, CCR surface impoundments "average more than 50 acres in size.").

Further, only a portion of the sediment in Pond 3/3a is CCR. The Pond received sources of sediment other than CCR. To the extent small amounts of sediment entered with the decant water from the South Fly Ash Pond, Initial Fly Ash Holding Area, or the long, narrow strips and horseshoe-shaped area atop the Former CCR Landfill, those sediments would have included coal fines and sediment from stormwater runoff in addition to incidental, if any, CCR. *See supra* at 15–17. Like all the ponds at Marion Station, a considerable amount of sediment in Pond 3/3a is from organic material. *See supra* Section I.E.2.; June 10 Tr. at 140:15−20 (explaining how ponds at the Station include sedimentation from the "tremendous amount of phragmites that grow[] around [the Station's] ponds," grass, and leaves); June 11 Tr. at 282:24−283:8 (explaining the sediment calculation in the bathymetric survey would have included the organic materials in the pond). SIPC expert David Hagen performed a carbon, nitrogen, and hydrogen analysis of samples from Pond 3/3a. The samples from pond 3a area had a high carbon content indicating the source of sediment was not CCR but rather was coal or an organic source. Pond Investigation Rep., SIPC Ex. 29 at 8; Hagen Demonstrative, SIPC Ex. 52 at 6; *see also* June 11 Tr. at 285:4−16; *id.* at 287:6−288:1 (explaining that because samples from the pond 3a area had a carbon content greater than 20 percent "it's unlikely to have any significant ash source, like CCR. It's . . . far more likely that would be coal or organic materials or a little bit of both"). A carbon versus hydrogen and hydrogen versus nitrogen correlation on sediment samples collected from Pond 3/3a also concluded that the correlation of these constituents in the samples from the Pond 3/3a are inconsistent with the correlation one would expect for these constituents in burned coal (*i.e.*, CCR). June 11 Tr. at 288:12−289:17. A PLM analysis further supports that only a small portion of sediment in Pond 3/3a is CCR. Pond Investigation Rep., SIPC Ex. 29 at 1; Support for De Minimis Units, SIPC Ex. 36 (extrapolating the depth of CCR in the unit to 0.39 feet, or 4.7 inches based on the PLM results); *see also* Lewis Demonstrative, SIPC Ex. 55 at 17 (same).

Third, and relatedly, Pond 3/3a is unique from those units the Board intended to be regulated by Part 845. The Board relied on USEPA's 2014 Risk Assessment as a basis for promulgating Part 845. *See supra* at 36–37; *see generally* Second Notice Opinion at 43−44, 46−47, 48, 49−50 (relying on the 2014 Risk Assessment in various of the board findings for the promulgation of Part 845). Pond 3/3a does not have those characteristics for which risks were modeled in USEPA's 2014 Risk Assessment. June 11 Tr. at 441:4–443:8 (explaining the De Minimis Units, including the Pond 3/3a, "differ significantly in concept[] and in practice from the surface impoundments that were evaluated by EPA and were concluded to pose a risk"). As Ms. Lewis explains, the CCR surface impoundments modeled in the 2014 Risk Assessment were conceptually different than Pond 3/3a. Lewis Demonstrative, SIPC Ex. 55 at 23–24. The conceptual model used in USEPA's 2014 Risk Assessment assumed that sluiced CCR was "being continually sent," to a surface impoundment, and sediment was allowed to accumulate for "a long period of time until the capacity [of the pond] was [] reached." June 11 Tr. at 439:14–440:7; Support for De Minimis Units, SIPC Ex. 36 at 13−14. Pond 3/3a did not continually receive CCR or operate in a manner where CCR solids accumulated until the Pond reached capacity. *See supra* at 62; *see also* June 11 Tr. at 439:14–440:7; Support for De Minimis Units, SIPC Ex. 36 at 10 (explaining sediment makes up just 9 percent to 13.3 percent of the total volume of Pond 3/3a and that estimated CCR makes up just 2.6 to 3.6% of the total volume of Pond 3/3a).

The pond 3 area of Pond 3/3a did have debris and sediment removed in 2003, 2006, and 2011, while the pond 3a area had debris and sediment removed in 2003 and 2014. *See supra* at 62. All debris and sediment removal occurred as part of Station maintenance activities at the Station and "was not conducted regularly or because [] CCR was 'at capacity.'" Support for De Minimis Units, SIPC Ex. 36 at 14–15 (demonstrating sediment makes up a small percentage of Pond 3/3a's total capacity). In fact, Mr. Gallenbach, who was present for the 2003 maintenance cleaning, estimates only approximately 20 to 50 truckloads of material were removed from the Pond at that time over the course of a few weeks, which is far less than the number of truckloads required to remove sediment from a unit at capacity. June 10 Tr. at 148:29–149:3; *see also* June 11 Tr. at 315:7–22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment."). And further, as discussed above, the sediment did not contain significant amounts of CCR. Pond Investigation Rep., SIPC Ex. 29 at 1, 8; *see also* June 11 Tr. at 287:6–288:1 (explaining that because samples from 3a had a carbon content greater than 20 percent "it's unlikely to have any significant ash source, like CCR. It's . . . far more likely that would be coal or organic materials or a little bit of both); *id.* at 288:12–289:17 (explaining that the carbon versus hydrogen and hydrogen versus nitrogen correlation on Pond 3/3a sediment samples are inconsistent with the correlation expected from burned coal); Support for De Minimis Units, SIPC Ex. 36 (extrapolating the depth of CCR in the unit to 0.39 feet, or 4.7 inches based on the PLM results).

Pond 3/3a is also significantly smaller than and unique compared to the surface impoundments modeled in the 2014 Risk Assessment upon which IEPA and the Board relied. *See supra* at 36–37 (noting that both IEPA and the Board relied on USEPA's 2014 Risk Assessment). The 2014 Risk Assessment evaluated over 700 units and, of those over 700 units, only 13 had a listed waste depth of less than two feet. 2014 Risk Assessment, SIPC Ex. 46; *see also* Pond Investigation Rep., SIPC Ex. 29 at 8. That means Pond 3/3a's thickness, even with its small size, is less than the CCR thickness of 99% of all the nationwide CCR surface impoundments modeled as part of the 2014 Risk Assessment, and its approximated CCR thickness is less than 100% of all the nationwide surface impoundments modeled as part of the 2014 Risk Assessment.

Storage Pond	**CCR Thickness (ft)**	**Sediment Thickness (ft)**	**CCR thickness as Percentile of Depth Distribution of SI in 2014 CCR Risk Assessment**	**Sediment Thickness as Percentile of depth Distribution of SI in 2014 CCR Risk Assessment**	**Estimated Sediment volume as a Fraction of Pond volume**	**Estimated CCR Volume as Fraction of Pond Volume**
Pond 3/3a	0.39	1.38 (3); 1.45(3a)	< Minimum SI Depth	1%	9% (3); 13.3% (3a)	2.6% (3); 3.6% (3a)

Support for De Minimis Units, SIPC Ex. 36 at 10, 15 (noting that, in contrast, the 50th percentile of units in the 2014 Risk Assessment had a depth of 13.6 feet, the 90th percentile had a depth of 36.6 feet, and the maximum depth of CCR in units was 190.1 feet). Significantly, the 2014 Risk Assessment found risk only for CCR surface impoundments within the 90th percentile of the units evaluated. 2014 Risk Assessment, SIPC Ex. 46. And it is these risks for which Part 845 was developed. *See supra* at 36–37; *see also* IEPA's Statement of Reasons, SIPC Ex. 18 at 10 (indicating the purposes for developing the Part 845 proposal). Further, a site-specific risk analysis for Pond 3/3a demonstrates that this Pond does not, in fact, pose a risk to human health or the environment. *See generally* HHERA, SIPC Ex. 37; *see also supra* Section I.G. Given Pond 3/3a's small size, minimal depth, and the fact that it operated differently than the typical CCR surface impoundments in Illinois and those conditions modeled for the 2014 Risk Assessment, Pond 3/3a is far from the type of CCR surface impoundment found to pose a risk or intended to be regulated by Part 845. Support for De Minimis Units, SIPC Ex. 36 at 11−16.

Finally, expert analysis demonstrates the Pond 3/3a is not a potentially significant source of CCR contaminants. Mr. Hagen's pond investigation concluded it is unlikely that Pond 3/3a is contributing to an Illinois groundwater standard exceedance or will contribute to such an exceedance in the future. Pond Investigation Rep., SIPC Ex. 29 at 20–25; *see also* Hagen Demonstrative, SIPC Ex. 52 at 12. This conclusion is based on the results of shake tests conducted on the sediment within Pond 3/3a, which sampled for constituents that could be associated with CCR. Pond Investigation Rep., SIPC Ex. 29 at 11−12; June 11 Tr. at 304:17–305:3; *see also* Hagen Demonstrative, SIPC Ex. 52 at 10, 12. There were no exceedances of Illinois groundwater standards in the pond 3a area of Pond 3/3a, indicating this area is not causing or contributing to and would not be expected to cause or contribute to an exceedance of Illinois groundwater standards. Pond Investigation Rep., SIPC Ex. 29 at 11−12; *see also* Hagen Demonstrative, SIPC Ex. 52 at 12 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). In the pond 3 area of Pond 3/3a, one sample exceeded the Illinois groundwater standard for arsenic. Pond Investigation Rep., SIPC Ex. 29 at 16−17. However, arsenic concentrations were below the Illinois groundwater standard in all the other samples, including CCR control samples, indicating this single elevated arsenic concentration is "a local anomaly" and that any potential CCR materials in the pond 3 area of Pond 3/3a are "not a source that can consistently result in elevated arsenic concentrations in water that is in contact with the sediment." Pond Investigation Rep., SIPC Ex. 29 at 16–17. Two other constituents, sulfate and TDS, were also found at concentrations higher than Illinois groundwater standards. *Id.* at 20. A bivariate analysis and an analysis comparing the shake test results from the pond 3 area of Pond 3/3a to groundwater sampling results at the Station support that the pond 3 area of Pond 3/3a is not causing or contributing to groundwater contamination due to these constituents. June 11 Tr. at 307:12–308:12; *see also* Pond Investigation Rep., SIPC Ex. 29 at 20–25. Any TDS concentrations result from the sulfate concentrations (together with calcium). Pond Investigation Rep., SIPC Ex. 29 at 20. A review of ten years of groundwater data demonstrates that sulfate concentrations in groundwater monitoring wells in the vicinity of or potentially downgradient of Pond 3/3a are consistently below Illinois groundwater standards, suggesting any sulfate in Pond 3/3a is not causing or contributing to groundwater contamination and is not likely to cause or contribute to such contamination in the future. *Id.* at 20–24; *id.,* Attachment F. The shake test results did not find elevated levels of any other constituents, including boron, a constituent ubiquitously found as an indicator of CCR. June 11 Tr. at 306:15–22 (explaining boron is commonly associated with CCR, often used as an indicator constituent for CCR, and observed "over and over" in CCR ponds); *see also* Hagen Demonstrative, SIPC Ex. 52 at 12.

Further, even assuming the Pond 3/3a was impacting groundwater at the Station, the site-specific HHERA confirms that constituents that were found in the groundwater at the Station do not pose a risk to human health or then environment, including to drinking water, use of water for other household purposes, recreators, anglers, and ecological (*i.e.*, environmental) receptors. Lewis Demonstrative, SIPC Ex. 55 at 1–12; *see also generally* HHERA, SIPC Ex. 37.

Thus, the evidence clearly demonstrates that Pond 3/3a is not the type of unit regulated by Part 845. Pond 3/3a does not contain the significant quantities of CCR that give rise to the risks modeled in USEPA's 2014 Risk Assessment. Nor does it contain substantial amounts of CCR such that it serves as a potentially significant source of contaminants. Pond 3/3a is, therefore, not a CCR surface impoundment because it is not "designed to hold an accumulation of CCR" or a pond that "treats, stores, or disposes of CCR."

4. In the Alternative, Pond 3/3a Qualifies for the Adjusted Standard Sought by SIPC.

a. <u>Factors relating to Pond 3/3a are substantially and significantly different from the factors relied upon by the Board in adopting Part 845.</u>

For the reasons noted above, Pond 3/3a is not the type of unit intended to be regulated and it varies greatly from a typical CCR surface impoundment. *See supra* Section III.A.3 (discussing the unique nature of Pond 3/3a and its *de minimis* quality). Compared to typical surface impoundments, Pond 3/3a contains a small amount of CCR (and total sediment) and has never operated with the characteristics that were found to give rise to the risks warranting regulation. *See supra* at 64–66; Support for the De Minimis Units, SIPC Ex. 36 at 8–16; *see also* Pond Investigation Rep., SIPC Ex. 29 at 7–9. Significant or substantial amounts of CCR were never deposited into Pond 3/3a nor would a deposit of significant or substantial amounts of CCR have been possible because CCR was not sluiced there, and the Pond functions merely as a finishing pond. *See supra* at 15–18. Shake tests conducted of Pond 3/3a sediment samples, as well as Station groundwater sampling results, demonstrate any potential CCR-related constituents in Pond 3/3a have not caused and are not expected to cause a material adverse impact on groundwater at the Station. *See* Pond Investigation Rep., SIPC Ex. 29 at 26; *see also* Support for De Minimis Units, SIPC Ex. 36 at 11–16; Hagen Demonstrative, SIPC Ex. 52 at 12 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). Further, a site-specific risk assessment of the De Minimis Units, including Pond 3/3a, confirms there is no unacceptable risk to human health or the environment from CCR constituents that may have migrated to groundwater from Pond 3/3a or the De Minimis Units at large. Support for De Minimis Units, SIPC Ex. 36 at 17–20 (demonstrating no unacceptable risk to human health or ecological receptors).

Finally, factors related to the burden of Pond 3/3a's compliance are substantially and significantly different from the factors related to the burden of compliance relied upon by the Board when promulgating Part 845. Specifically, during the rulemaking, IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to Part 257. *See* Final Order at 8–9. Therefore, owners had years to develop and implement compliance plans. *See id*. However, as discussed above, the De Minimis Units, including Pond 3/3a, are not subject to the Federal CCR Rule, and thus, there has been no need to undertake compliance actions, such as groundwater and location restriction assessments. *See* Liss Second Declaration, SIPC Ex. 47; June 10 Tr. at 57:18–22. Accordingly, the timing and cost of Part 845 compliance for Pond 3/3a differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject to Part 257 and that already had years of Part 257 compliance activity that could be used to comply with Part 845. June 11 Tr. at 396:1–24 (explaining that without monitoring systems installed under the federal CCR rule, time is needed to conduct a groundwater investigation to determine where to put the wells and begin monitoring).

Additionally, evidence indicates low hydraulic conductivity, or a slow rate of groundwater movement, at Marion Station. June 11 Tr. at 397:20–400:9; *see also* Liss Second Declaration, SIPC

Ex. 47. This suggests a longer timeframe than the allowed six months is required to design and install a groundwater monitoring well network and collect representative groundwater samples for Pond 3/3a. June 11 Tr. at 397:20–400:9 (explaining 12 months are required, at a minimum).

Thus, the factors relating to Pond 3/3a are unique.

b. The existence of Pond 3/3a's unique factors justifies an adjusted standard.

As already described, Pond 3/3a's unique factors justify that this unit should not be regulated under Part 845 at all. *See supra* Section III.A.3. They further justify the limited adjusted standard SIPC requests for Pond 3/3a in the event the Board does not grant the requested finding of inapplicability.

For the Pond 3/3a, SIPC is proposing the same adjusted standard as the South Fly Ash Pond—requesting only an extension of the deadlines to submit operating permit and closure construction permit applications—and the adjusted standard is justified for the same reasons. *See supra* Section III.A.2.b.

c. The requested standard for Pond 3/3a will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting Part 845.

Environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting Part 845 will not result if Pond 3/3a is not regulated under Part 845 and will certainly not result from the limited adjusted standard proposed by SIPC in the alternative. Like the Part 257 Rules relating to surface impoundments, Part 845 was intended to address the risks posed by CCR surface impoundments that have resulted or are likely to result in groundwater contamination. IEPA Statement of Reasons, SIPC Ex. 18 at 10 ("The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois");

Second Notice Opinion at 1 ("Among the program's primary goals is protecting groundwater from contamination by CCR pollutants leaking from surface impoundments.").

As discussed above, the characteristics of Pond 3/3a indicate this unit is not having and is not expected to have an adverse impact on human health or the environment in its current form. The unit does not "contain *a large amount* of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357 (emphasis added); Support for De Minimis Units, SIPC Ex. 36 at 4–10. An evaluation of shake test results from the Pond and groundwater sampling results at the Station indicate Pond 3/3a is not contributing to and is not expected to contribute to Illinois groundwater standard exceedances (and that Pond 3a sediments had no exceedances of constituents commonly associated with CCR). Pond Investigation Rep., SIPC Ex. 29 at 12; June 11 Tr. at 303:2–304:4; Hagen Demonstrative, SIPC Ex. 52 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). Additionally, a site-specific risk assessment that looked at impacts to the range of possible human health and environmental receptors by Pond 3/3a (and that conservatively assumed the Pond 3/3a was contributing to groundwater contamination at the Station) found Pond 3/3a does not pose a current risk to human health or the environment and that the Pond 3/3a does not pose a reasonable possibility of adverse effects of human health or the environment in the future. *See generally* HHERA, SIPC Ex. 37; *see also* Support for De Minimis Units, SIPC Ex. 36 at 4–20.

Based on the evidence, no adverse environmental or health effects will result in the event that none of Part 845 applies to Pond 3/3a. Further, under the limited adjusted standard SIPC seeks as an alternative to a finding of inapplicability, no adjustments are requested from the Part 845 requirements intended to protect human health and the environment. This includes closure standards, groundwater monitoring requirements, and corrective action requirements, all of which would apply to the unit. Therefore, no adverse environmental or health effects will result if an adjusted standard is granted.

d. The adjusted standard for Pond 3/3a is consistent with applicable federal law.

SIPC's proposed adjusted standard for Pond 3/3a is consistent with federal law. The Board has acknowledged that "Part 257 is self-implementing," and therefore, it is up to SIPC and USEPA to determine whether the units at issue are subject to the Federal CCR Rule. *See* AS 2021-005*, In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board at 44 (Jun. 26, 2025). SIPC has evaluated Pond 3/3a and determined that it is not regulated as an existing CCR surface impoundment or inactive CCR surface impoundment under the Federal CCR Rule. Consequently, the proposed adjusted standard is consistent with Part 257. *See id.* ("Because EEI believes Joppa West is not subject to Part 257, the Board finds that the interim adjusted standard is consistent with federal law."); *see also* 35 Ill. Admin. Code § 104.406(i).

5. Part 845 Is Inapplicable to Pond 6.

Pond 6 is not a CCR surface impoundment regulated under Part 845. This unit is *de minimis* because it does not contain the "significant" or "substantial" quantities of CCR required for it to be designed to *hold an accumulation of CCR* or to *treat, store, or dispose of CCR*. SIPC has presented multiple lines of evidence to demonstrate that Pond 6 contains *de minimis* levels of CCR. These lines of evidence include the following: (1) Pond 6 has served as a tertiary finishing pond and a landfill leachate collection pond and never directly received sluiced ash, making it among the types of ponds expected to contain a *de minimis* amount of CCR, (2) Pond 6's mean sediment and CCR thickness is far less than what would be expected of a typical CCR surface impoundment designed to hold an accumulation of CCR, (3) Pond 6's characteristics are different than and unique from the CCR surface impoundments intended to be regulated by Part 845 and modeled by USEPA's 2014 Risk Assessment (which was relied upon by the Board when promulgating Part 845), and in fact, a site-specific risk assessment demonstrates it does not pose any risk to human health or the environment, and (4) Pond 6 is not a potentially significant source of CCR contaminants.

First, the characteristics of Pond 6 demonstrate that it has operated differently than, and contains a small amount of CCR and total sediment compared to, regulated CCR surface impoundments. Pond 6 served as a tertiary finishing pond (receiving decanted water from Pond 3/3a) and a landfill leachate collection pond (collecting stormwater runoff from the Former CCR Landfill). *See* June 10 Tr. at 133:10–18; Gallenbach Demonstrative, SIPC Ex. 49 at 9. Based on these functions, Pond 6 never directly received sluiced ash from Station operations or water with a significant amount of CCR from a preceding pond. June 10 Tr. at 134:8–19 ("[Q. To your knowledge, was CCR ever directly sluiced or placed into pond 6? A. It was not. Q. How would you characterize the amount of CCR that may have gone to pond 6? A. A small amount. . . . The scrubber sludge [from the stormwater runoff], it just would be on the bottom of the pond."); *see also* June 11 Tr. at 432:12–15 ("[Pond 6] never directly received sluiced ash, so it wasn't a primary impoundment. The amount of ash that was estimated to be in the pond was, again, a very negligible amount, 4.2 inches."); Hagen Demonstrative, SIPC Ex. 52 at 4 (outlining the sediment thickness of each active De Minimis Unit); *see also* June 10 Transcript at 58:4–8 ("Q. What is the purpose of pond 6 receiving water from pond 3/3A? A. It's receiving the decant water from pond 3 so that that water then can be conveyed on further to the discharge -- NPDES discharge point."). As USEPA provided by example, secondary or tertiary finishing ponds and "CCR landfill leachate, stormwater and evaporation ponds," like Pond 6, are among the types of ponds expected to contain a *de minimis* amount of CCR due to their operation and use. USEPA CCR Rule FAQs, SIPC Ex. 34 at 9; *see also* 89 Fed. Reg. 38,950, Revised SIPC Ex. 33 at 39,050

Second, Pond 6 contains far less sediment than a regulated CCR surface impoundment. Pond 6 is approximately 3.4 acres with a mean sediment thickness of 0.84 feet. Pond Investigation Rep., SIPC Ex. 29 at 7; Support for De Minimis Units, SIPC Ex. 36 at 6; Hagen Demonstrative, SIPC Ex. 52 at 4. As Mr. Hagen, who has worked on the investigation and closure of over 30 CCR surface impoundments explained, a CCR surface impoundment designed to hold an accumulation of CCR and that intended treats, stores, or disposes of CCR would be expected to contain significantly more CCR, and sediment more generally, than that measured in Pond 6. June 11 Tr. at 272:4−9; *see also id.* at 276:7−11 ("Q. In your experience, what volume of CCR do you typically see in a CCR surface impoundment? A. Gosh. It can vary. However, it's not uncommon to have tens of feet of CCR in a CCR surface impoundment."); *id.* at 314:13−18 (explaining a pond that "receives a significant amount of CCR from a previous impoundment" typically will have "[s]ignificant accumulation" in the "tens of feet."); Pond Investigation Rep., SIPC Ex. 29 at 7–9, 25 ("Based on [USEPA] information, CCR disposal typically occurs at more than 735 active on-site CCR surface impoundments, which average more than 50 acres in size and have an estimated average depth of 20 feet of ash."). In its Recommendation, IEPA presented an estimate of the number of truckloads it may take to remove the sediments located in Pond 6. Recommendation at 31–32. The number of truckloads needed to clean a typical CCR surface impoundment is often in the tens of thousands, or "orders of magnitude greater" than the number of truckloads IEPA estimated may be needed to remove sediment from Pond 6. June 11 Tr. at 315:7–316:15.[12]

Pond 6 has been cleaned once in its operational history. In 2003, sediment made up approximately 20 to 30 percent of Pond 6's volume. Gallenbach Demonstrative, SIPC Ex. 49 at 16. As part of regular maintenance activities, a long stick excavator was used to move the sediment collected in Pond 6 to the Former CCR Landfill. *Id.*; June 10 Tr. at 148:2−148:16. As SIPC's experts explained, this is a relatively nominal amount of CCR or even sediment more generally. June 11 Tr. at 315:7−22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment"). As Ms. Lewis explained, regardless of whether sediments from the pond were cleaned out as part of routine maintenance, the rate of accumulation in Pond 6 since that cleaning still makes the amount of both sediments generally, and CCR specifically, insignificant and insubstantial compared to a typical CCR surface impoundment. June 11 Tr. at 432:12−19 ("[Q: D]oes the fact that some of these units were cleaned historically impact your assessment of whether they were de minimis? A. I mean, I considered it, but even considering that, the amount of time that has elapsed since that occurred and the small amount still, you know, leads me to believe that they're considered de minimis ponds.").

Pond 6's *de minimis* nature is made clear when comparing the Pond to other CCR surface impoundments in Illinois that are regulated under Part 845. Pond 6's characteristics, along with those of the other De Minimis Units, are clearly unique from the other regulated units included on

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[12] As SIPC noted in its Response and during the hearing, there are flaws with IEPA's estimates regarding the amount of CCR in Pond 6 and the other De Minimis Units. Among other issues, IEPA assumes all sediment is CCR and includes sediment used to construct the berms of the Pond in its estimate of total Pond sediment. June 11 Tr. at 317:6–318:23; Evaluation Report, SIPC Ex. 40; McLaurin Second Declaration, SIPC Ex. 41.

the list. *See* IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181−82 (IEPA's table of the 73 units it believed to be regulated by Part 845, including the De Minimis Units); *compare* Support for De Minimis Units, SIPC Ex. 36 at 10 (indicating that Pond 6 is 3.6 acres in size) *and id*. at 9 (noting a mean sediment thickness of 0.84 feet in Pond 6) *with* 2014 Risk Assessment, SIPC Ex. 46, Attachment A-2 (listing CCR surface impoundments, including those identified by IEPA, demonstrating those units are—on average—much larger and contain a greater depth of CCR (4 to 68 feet for the Illinois units) than Pond 6) *and* Pond Investigation Rep., SIPC Ex 29 at 7 (Based on information provided by USEPA, CCR surface impoundments "average more than 50 acres in size.").

Only a portion of the sediment in Pond 6 is CCR. Like all the ponds at Marion Station, a considerable amount of sediment in Pond 6 is from organic material. *See supra* Section I.E.2.; June 10 Tr. at 140:15−20 (explaining how ponds at the Station include sedimentation from the "tremendous amount of phragmites that grow[] around [the Station's] ponds," grass and leaves); June 11 Tr. at 282:24−283:8 (explaining the sediment calculation in the bathymetric survey would have included the organic materials in the pond). SIPC's expert David Hagen performed a carbon, nitrogen, and hydrogen analysis of samples from Pond 6. *See* Hagen Demonstrative, SIPC Ex. 52 at 6−7. A carbon versus hydrogen and hydrogen versus nitrogen correlation performed with this evidence concluded that the correlation of these constituents in the samples from the Pond 6 are inconsistent with the correlation one would expect in burned coal (*i.e.*, CCR). June 11 Tr. at 288:12−289:17. A PLM analysis further supports that only a small portion of sediment in Pond 6 is CCR. Pond Investigation Rep., SIPC Ex. 29 at 1; Hagen Demonstrative, SIPC Ex. 52 at 8; *see also* Support for De Minimis Units, SIPC Ex. 36 (extrapolating the depth of CCR in the unit to 0.35 feet (or 4.2 inches) based on the PLM results).

Third, and relatedly, Pond 6 is unique from those units the Board intended to be regulated by Part 845. Pond 6 does not have those characteristics for which risks were modeled in USEPA's 2014 Risk Assessment. *See* June 11 Tr. at 441:4–443:8 (explaining the De Minimis Units, including Pond 6, "differ significantly in concept[] and in practice from the surface impoundments that were evaluated by EPA and were concluded to pose a risk"). As Ms. Lewis explains, the surface impoundments modeled in the 2014 CCR Risk Assessment were conceptually different than Pond 6. The conceptual model used in USEPA's Risk Assessment assumed that sluiced CCR was "being continually sent" to a surface impoundment, and sediment was allowed to accumulate for "a long period of time until the capacity [of the pond] was [] reached." June 11 Tr. at 439:14–440:7; Support for De Minimis Units, SIPC Ex. 36 at 13–14. Pond 6 did not continually receive CCR or operate in a manner where CCR solids accumulated until the Pond reached capacity. *See supra* at 76; *see also* Support for De Minimis Units, SIPC Ex. 36 at 18 (explaining currently sediment makes up only approximately 8.2% of total pond volume and estimated CCR only about 3.4% of total pond volume); Gallenbach Demonstrative, SIPC Ex. 49 at 16; June 10 Tr. at 148:2–148:16. Pond 6 did have debris and sediment removed in 2003. *See supra* at 76. This debris and sediment removal occurred as part of regular maintenance activities at the Station and "was not conducted regularly or because [] CCR was 'at capacity.'" Support for De Minimis Units, SIPC Ex. 36 at 14. In fact, Mr. Gallenbach, who was present for the maintenance cleaning, estimates that the unit contained only roughly 20 to 30 percent of the pond's total volume in sediment, which is far less than the number of truckloads required to remove sediment from a unit at capacity. June 10 Tr. at 148:12–16; see also June 11 Tr. at 315:7–22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment."). And further, as discussed above, the sediment did not contain significant amounts of CCR. *See* Pond Investigation Rep., SIPC Ex. 29 at 1, 8; *see also* June 11 Tr. at 288:12–289:17 (explaining that carbon versus hydrogen and hydrogen versus nitrogen correlation performed on Pond 6 sediment samples are inconsistent with the correlation one would expect in burned coal); Support for De Minimis Units, SIPC Ex. 36 (extrapolating the depth of CCR in the unit to 0.35 feet (or 4.2 inches) based on the PLM results).

Pond 6 is also significantly smaller and unique compared to the surface impoundments modeled in the 2014 Risk Assessment and used to justify the Part 845 rulemaking. *See supra* at 36–37 (noting that both IEPA and the Board relied on USEPA's 2014 Risk Assessment); *see also* Support for De Minimis Units, SIPC Ex. 36 at 10 (noting Pond 6's size). The 2014 Risk Assessment evaluated over 700 units and, of those over 700 units, only 13 had a listed waste depth of less than two feet. 2014 Risk Assessment, SIPC Ex. 46. That means Pond 6's total sediment thickness, even with its small size, is less than the CCR depth of 99% of all the nationwide surface impoundments modeled as part of the 2014 Risk Assessment and its approximated CCR thickness is less than the CCR depth of 100% of the nationwide surface impoundments modeled as part of the 2014 Risk Assessment.

Storage Pond	**CCR Thickness (ft)**	**Sediment Thickness (ft)**	**CCR thickness as Percentile of Depth Distribution of SI in 2014 CCR Risk Assessment**	**Sediment Thickness as Percentile of depth Distribution of SI in 2014 CCR Risk Assessment**	**Estimated Sediment volume as a Fraction of Pond volume**	**Estimated CCR Volume as Fraction of Pond Volume**
Pond 6	0.35	.84	< Minimum SI Depth	1%	8.2%	3.4%

Support for De Minimis Units, SIPC Ex. 36 at 10, 15 (noting that, in contrast, the 50th percentile of units in the 2014 Risk Assessment had a depth of 13.6 feet, the 90th percentile had a depth of 36.6 feet, and the maximum depth of CCR in units was 190.1 feet). Significantly, the 2014 Risk

Assessment found risk only in CCR surface impoundments within the 90th percentile of the units evaluated. 2014 Risk Assessment, SIPC Ex. 46. And it is these risks that Part 845 was developed to address. *See supra* at 36–37; *see also* IEPA's Statement of Reasons, SIPC Ex. 18 at 10 (indicating the purposes for developing the Part 845 proposal). Further, a site-specific risk analysis for Pond 6 demonstrates that the Pond does not, in fact, pose a risk to human health or the environment. *See generally* HHERA, SIPC Ex. 37; *see also supra* Section I.G. Given Pond 6's small size, minimal depth, and the fact that it operated differently than the typical CCR surface impoundments in Illinois and those conditions modeled for the 2014 Risk Assessment, it is far from the type of surface impoundment found to pose a risk or intended to be regulated by Part 845. Support for De Minimis Units, SIPC Ex. 36 at 11−16.

Finally, expert analysis demonstrates the Pond 6 is not a potentially significant source of CCR contaminants. Mr. Hagen's pond investigation concluded it was unlikely that Pond 6 is contributing to an Illinois groundwater standard exceedance. Hagen Demonstrative, SIPC Ex. 52 at 12; *see also* Pond Investigation Rep., SIPC Ex. 29 at 12. This conclusion is based on the results of shake tests conducted of the sediment within Pond 6, which sampled the Pond for constituents that could be associated with CCR. June 11 Tr. at 304:17−305:3. Only two constituents, sulfate and TDS, were found at concentrations higher than Illinois groundwater standards. Pond Investigation Rep., SIPC Ex. 29 at 20. A bivariate analysis and an analysis comparing the shake test results from Pond 6 to groundwater sampling results at the Station support that Pond 6 is not causing or contributing to groundwater contamination. June 11 Tr. at 307:12−308:12; Pond Investigation Rep, SIPC Ex. 29 at 20−25. Any TDS concentrations result from sulfate concentrations (together with calcium). Pond Investigation Rep, SIPC Ex. 29 at 20. A review of ten years of groundwater data demonstrates that sulfate concentrations in groundwater monitoring wells in the vicinity and potentially downgradient of Pond 6 are consistently below groundwater standards, suggesting any sulfate in Pond 6 is not causing or contributing to groundwater contamination and is not likely to cause or contribute to such contamination in the future. Pond Investigation Rep, SIPC Ex. 29 at 20–24; *id.*, Attachment F. The shake test results did not find elevated levels of any other constituents, including boron, a constituent ubiquitously found as an indicator of CCR. June 11 Tr. at 306:15–22 (explaining boron is commonly associated with CCR, often used as an indicator constituent for CCR, and observed "over and over" in CCR ponds).

Further, even assuming Pond 6 was impacting groundwater at the Station, the site-specific HHERA confirms that constituents that were found in the groundwater at the Station do not pose a risk to human health or then environment, including to drinking water, use of water for other household purposes, recreators, anglers, and ecological (*i.e.*, environmental) receptors. Lewis Demonstrative, SIPC Ex. 55 at 1–12; *see also generally* HHERA, SIPC Ex. 37.

Thus, the evidence clearly demonstrates that Pond 6 is not the type of unit regulated by Part 845. Pond 6 does not contain significant quantities of CCR that give rise to the risks modeled in USEPA's 2014 Risk Assessment, nor does it contain substantial amounts of CCR such that it serves as a potentially significant source of contaminants. Pond 6 is, therefore, not a CCR surface impoundment because it is not "designed to hold an accumulation of CCR" or a pond that "treats, stores, or disposes of CCR."

6. In the Alternative, Pond 6 Qualifies for the Adjusted Standard Sought by SIPC.

a. Factors relating to Pond 6 are substantially and significantly different from the factors relied upon by the Board in adopting Part 845.

For the reasons noted above, Pond 6 is not the type of unit intended to be regulated and it varies greatly from a typical CCR surface impoundment. *See supra* Section III.A.5. (discussing those factors that make Pond 6 a *de minimis* unit). Compared to those surface impoundments, Pond 6 contains a small amount of CCR (and total sediment) and has never operated with the characteristics that were found to give rise to the risks warranting regulation. *See supra* at 77–80; *see also* Support for De Minimis Units, SIPC Ex. 36 at 8–10, 11−16; *see also* Pond Investigation Rep., SIPC Ex. 29 at 7−9. Significant or substantial amounts of CCR were never deposited into Pond 6 nor would a deposit of significant or substantial amounts of CCR have been possible. *See supra* at 18–22; *see also* June 10 Tr. at 134:14−135:1; Gallenbach Demonstrative, SIPC Ex. 49 at 9. Shake tests conducted on Pond 6 sediment samples, as well as Station groundwater sampling results, demonstrate any potential CCR-related constituents in Pond 6 have not caused and are not expected to cause a material adverse impact on groundwater at the Station. *See* Pond Investigation Rep., SIPC Ex. 29 at 26; *see also* Support for De Minimis Units, SIPC Ex. 36 at 11–16; SIPC Ex. 36 at 11–16; Hagen Demonstrative, SIPC Ex. 52 at 12 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). Further, a site-specific risk assessment of the De Minimis Units, including Pond 6, confirms there is no unacceptable risk to human health or the environment from CCR constituents that may have migrated to groundwater. Support for De Minimis Units, SIPC Ex. 36 at 17–20 (demonstrating no unacceptable risk to human health or ecological receptors); June 11 Tr. at 431:12−19.

Finally, factors related to the burden of Pond 6's compliance are substantially and significantly different from the factors related to the burden of compliance relied upon by the Board when promulgating Part 845. Specifically, during the rulemaking, IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to Part 257. *See*

Final Order at 8–9. Therefore, owners had years to develop and implement compliance plans. *See id*. However, as discussed above, the De Minimis Units, including Pond 6, are not subject to Part 257, and thus, there has been no need to undertake compliance actions, such as groundwater and location restriction assessments. *See* Liss Second Declaration, SIPC Ex. 47; June 10 Tr. at 58:19–22 (indicating that Pond 6 is not regulated by the Federal CCR Rule). Accordingly, the timing and cost of Part 845 compliance for Pond 6 differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject to Part 257 and that already had years of Part 257 compliance activity that could be used to comply with Part 845. June 11 Tr. at 396:1–24 (explaining that without monitoring systems installed under the federal CCR rule, time is needed to conduct a groundwater investigation to determine where to put the wells and begin monitoring).

Additionally, evidence indicates low hydraulic conductivity, or a slow rate of groundwater movement, at Marion Station. June 11 Tr. at 397:20–400:9; *see also* Liss Second Declaration, SIPC Ex. 47. This suggests a longer timeframe than the allowed six months is required to design and install a groundwater monitoring well network and collect representative groundwater samples for Pond 6. *Id.* (explaining 12 months are required, at a minimum).

Thus, the factors relating to Pond 6 are unique.

b. The existence of Pond 6's unique factors justifies the proposed adjusted standard.

As described above, Pond 6's unique factors justify that this unit should not be regulated under Part 845 at all. *See supra* Section III.A.5. Those unique factors further justify the limited adjusted standard SIPC seeks for Pond 6 in the event the Board does not grant the requested finding of inapplicability.

The proposed adjusted standard contains two primary adjustments from Part 845's requirements. First, SIPC is requesting, in the alternative should a finding of inapplicability not be granted, an adjustment to the deadline for SIPC to submit an operating permit application, 35 Ill. Admin. Code § 845.230, and closure construction permit application, 35 Ill. Admin. Code § 845.220(d), for this unit. The adjusted standard proposes a period of 18 months for SIPC to make these submissions. This proposed adjusted standard is justified for the same reasons as for the South Fly Ash Pond and Pond 3/3a, including needing enough time to collect representative groundwater samples and conduct a hydrogeological assessment. *See supra* III.A.2.b, 4.b. Further, Pond 6 serves as the stormwater runoff pond for the Former CCR Landfill. Thus, it makes sense for its closure to be coordinated with the closure of the Former Landfill Area. SIPC is proposing an initial six-month period after entry of the adjusted standard to determine the market viability of CCR in the Former Landfill Area for beneficial use. The 18-month period for submittal of an operating permit application and construction permit application is consistent with allowing for a 12-month period for preparation of these application materials after the initial six-month evaluation period.

Second, in the event closure by removal with beneficial use of CCR is a viable closure option for the Former Landfill Area, the adjusted standard will allow SIPC to request additional time, in two-year increments, from IEPA to complete closure, so long as CCR from the Former Landfill Area continues to be removed for beneficial use. The adjusted standard includes requirements for SIPC to provide a narrative demonstration to IEPA explaining why the extension is needed, how it will allow for the continued beneficial use of CCR, and the estimated date on which the beneficial use of CCR in the Former Landfill Area will be complete. No more than five, two-year extensions will be allowed. Again, Pond 6's unique position as a stormwater runoff pond for the Former Landfill Area justifies this adjustment, which would align Pond 6's closure with the closure of the Former Landfill Area.

c. The requested standard for Pond 6 will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting Part 845.

Environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting Part 845 will not result if Pond 6 is not regulated under Part 845 and will certainly not result from the limited adjusted standard proposed by SIPC in the alternative. Like the Part 257 Rules relating to CCR surface impoundments, Part 845 was intended to address the risks posed by CCR surface impoundments that have resulted or are likely to result in groundwater contamination. IEPA's Statement of Reasons, SIPC Ex. 18 at 10 ("The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois"); Second Notice Opinion at 1 ("Among the program's primary goals is protecting groundwater from contamination by CCR pollutants leaking from surface impoundments.").

As discussed above, the characteristics of the Pond 6 indicate this unit is not having and is not expected to have an adverse impact on human health or the environment in its current form. The unit does not "contain *a large amount* of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357 (emphasis added); Support for the De Minimis Units, SIPC Ex. 36 at 4–10. An evaluation of shake test results from Pond 6 and groundwater sampling results at the Station indicate the unit is not contributing to and is not expected to contribute to Illinois groundwater standard exceedances. Pond Investigation Rep., SIPC Ex. 29 at 12; June 11 Tr. at 303:2–304:4; Hagen Demonstrative, SIPC Ex. 52 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances.").

Additionally, a site-specific risk assessment that looked at impacts to the range of possible human health and environmental receptors by Pond 6 (and that conservatively assumed Pond 6 was contributing to groundwater contamination at the Station) found Pond 6 does not pose a current risk to human health or the environment and that Pond 6 does not pose a reasonable possibility of adverse effects of human health or the environment in the future. *See generally* HHERA, SIPC Ex. 37; *see also* Support for De Minimis Units, SIPC Ex. 36 at 4–20; June 11 Tr. at 431:12–19.

Based on the evidence, no adverse environmental or health effects will result in the event that none of Part 845 applies to Pond 6. Further, under the limited adjusted standard requested by SIPC as an alternative to a finding of inapplicability, no adjustments are requested from the Part 845 requirements intended to protect human health and the environment. This includes closure standards, groundwater monitoring requirements, and corrective action requirements, all of which will still apply. Therefore, no adverse environmental or health effects will result if an adjusted standard is granted.

d. Pond 6's proposed adjusted standard is consistent with applicable federal law.

SIPC's proposed adjusted standard for Pond 6 is consistent with federal law. The Board has acknowledged that "Part 257 is self-implementing," and therefore, it is up to SIPC and USEPA to determine whether the units at issue are subject to the Federal CCR Rule. *See* AS 2021-005*, In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board at 44 (Jun. 26, 2025). SIPC has evaluated Pond 6 and determined that it is not regulated as an existing CCR surface impoundment or inactive CCR surface impoundment under the Federal CCR Rule. Consequently, the proposed adjusted standard is consistent with Part 257. *See id.* ("Because EEI believes Joppa

West is not subject to Part 257, the Board finds that the interim adjusted standard is consistent with federal law."); *see also* 35 Ill. Admin. Code § 104.406(i).

7. Part 845 Is Inapplicable to Pond 4.

Pond 4 is not a CCR surface impoundment regulated under Part 845. This unit is *de minimis* because it does not contain the "significant" or "substantial" quantities of CCR required for it to be designed to *hold an accumulation of CCR* or to *treat, store, or dispose of CCR*. SIPC has presented multiple lines of evidence to demonstrate that Pond 4 contains *de minimis* levels of CCR. These lines of evidence include the following: (1) Pond 4 has served as a final finishing and secondary finishing pond and never directly received sluiced ash, making it among the types of ponds expected to contain a *de minimis* amount of CCR, (2) Pond 4's mean sediment and CCR thickness is far less than what would be expected of a typical CCR surface impoundment designed to hold an accumulation of CCR, (3) Pond 4's characteristics are different than and unique from the CCR surface impoundments intended to be regulated by Part 845 and modeled by USEPA's 2014 Risk Assessment (which was relied upon by the Board when promulgating Part 845), and in fact, a site-specific risk assessment demonstrates it does not pose any risk to human health or the environment, and (4) Pond 4 is not a potentially significant source of CCR contaminants.

First, the characteristics of Pond 4 demonstrate that it has operated differently than, and contains a small amount of CCR and total sediment compared to, CCR surface impoundments that are intended to be regulated under Part 845. Pond 4 serves as a final finishing pond—and previously served as a secondary finishing pond—receiving decanted water from Pond 6, decanted water from Ponds 1 and 2, and coal pile stormwater runoff. *See supra* at 19–21; June 10 Tr. at 135:2–16; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 10. Pond 4 never directly received sluiced ash from Station operations or water with a significant amount of CCR from a preceding pond. *See* June 10 Tr. at 137:13−18, ("[Q.] To your knowledge, was any CCR ever placed or sluiced directly into pond 4? A. It was not. Q. And how would you characterize the amount of CCR that may have gone to pond 4? A. A very, very, very small amount."); June 11 Tr. at 432:4−11 ("[Pond 4] never directly received sluiced ash directly from plant operations, therefore not operating as a primary impoundment. The amount of estimated ash in that pond was 10.8 inches."); Hagen Demonstrative, SIPC Ex. 52 at 4 (outlining the sediment thickness of each active De Minimis Unit). As USEPA provided by example, secondary or tertiary finishing ponds and coal pile runoff ponds, like Pond 4, are among the types of ponds expected to contain a *de minimis* amount of CCR due to their operation and use. *See* USEPA CCR Rule FAQs, SIPC Ex. 34 at 9; *see also* 89 Fed. Reg. 38,950, Revised SIPC Ex. 33 at 39,050.

Second, Pond 4 contains far less sediment than a regulated CCR surface impoundment. Pond 4 is approximately 3.7 acres with a mean sediment thickness of 1.67 feet. Pond Investigation Rep., SIPC Ex. 29 at 7; Support for De Minimis Units, SIPC Ex. 36 at 6; Hagen Demonstrative, SIPC Ex. 52 at 4. As Mr. Hagen, who has worked on the investigation and closure of over 30 CCR surface impoundments, explained, a CCR surface impoundment designed to hold an accumulation of CCR and that treats, stores, or disposes of CCR would be expected to contain significantly more CCR, and sediment more generally, than that measured in Pond 4. June 11 Tr. at 272:4–9; *see also id.* at 276:7–11 ("Q. In your experience, what volume of CCR do you typically see in a CCR surface impoundment? A. Gosh. It can vary. However, it's not uncommon to have tens of feet of CCR in a CCR surface impoundment."); *id.* at 314:13−18 (explaining a pond that "receives a significant amount of CCR from a previous impoundment" typically will have "[s]ignificant accumulation" in the "tens of feet."); Pond Investigation Rep., SIPC Ex. 29 at 7–9, 25 ("Based on [USEPA] information, CCR disposal typically occurs at more than 735 active on-site CCR surface impoundments, which average more than 50 acres in size and have an estimated average depth of 20 feet of ash.”). In its Recommendation, IEPA presented an estimate of the number of truckloads it may take to remove the sediments located in Pond 4. Recommendation at 18. The number of truckloads needed to clean a typical CCR surface impoundment is often in the tens of thousands, or “orders of magnitude greater” than the number of truckloads IEPA estimated may be needed to remove sediment from Pond 4. Hearing Tr. at 315:7–316:15.[13] Pond 4 has been cleaned twice in its operational history.

In 2003, as part of regular Station maintenance activities, Pond 4 was dewatered and approximately 50 truckloads of sediment were removed. Gallenbach Demonstrative, SIPC Ex. 49 at 14; June 10 Tr. at 146:18–20. A similar cleaning was conducted in 2010, also as part of routine maintenance. McLaurin Declaration, SIPC Ex. 32; *see also* McLaurin Demonstrative, SIPC Ex. 50 at 4; June 11 Tr. at 338:18–20. As Ms. Lewis explained, regardless of whether sediments from the Pond were cleaned out as part of routine maintenance, the rate of accumulation in Pond 4 still makes the amount of both sediment generally, and CCR specifically, insignificant and insubstantial compared to a typical CCR surface impoundment. June 11 Tr. at 432:12–19 (“[Q: D]oes the fact that some of these units were cleaned historically impact your assessment of whether they were de minimis? A. I mean, I considered it, but even considering that, the amount of time that has elapsed since that occurred and the small amount still, you know, leads me to believe that they’re considered de minimis ponds.”).

Pond 4’s *de minimis* nature is made clear when comparing the Pond to other CCR surface impoundments in Illinois that are regulated under Part 845. Pond 6’s characteristics, along with

[13] As SIPC noted in its Response and during the hearing, there are flaws with IEPA’s estimates regarding the amount of CCR in Pond 4 and the other De Minimis Units. Among other issues, IEPA assumes all sediment is CCR and includes sediment used to construct the berms of the Pond in its estimate of Pond materials. June 11 Tr. at 317:6–318:23; Evaluation Report, SIPC Ex. 40; McLaurin Second Declaration, SIPC Ex. 41.

those of the other De Minimis Units, are clearly unique from the other, regulated, units included on the list. *See* IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181–82 (IEPA's table of the 73 units it believed to be regulated by Part 845, including the De Minimis Units); *compare* Support for De Minimis Units, SIPC Ex. 36 at 6 (Pond 4 "covers an area of approximately 3.7 acres") *and id*. at 9 (noting a mean sediment thickness of 1.67 feet in Pond 4) *with* 2014 Risk Assessment, SIPC Ex. 46, Attachment A-2 (listing CCR surface impoundments, including those identified by IEPA, demonstrating those units are—on average—much larger and contain a greater depth of CCR (4 to 68 feet for the Illinois units) than Pond 4) *and* Pond Investigation Rep., SIPC Ex 29 at 7 (Based on information provided by USEPA, CCR surface impoundments "average more than 50 acres in size.").

The evidence indicates that the sediment in Pond 4 is mainly made up of coal fines and organic matter, not CCR. After the cleanings conducted in 2003 and 2010, the majority of sediment removed from Pond 4 were taken to the coal yard and burned as fuel. June 10 Tr. at 146:5–17 (explaining materials removed in 2003 were taken to coal yard and burned); June 11 Tr. at 233:10–236:9 (confirming visual observation of coal fines in Pond 4 and explaining that 60 to 70 percent of the materials removed in 2010 consisted of coal fines that were burned as fuel and that the remaining materials consisted of organic material like dead and dying vegetation); *see also* McLaurin Declaration, SIPC Ex. 32. Notably, CCR cannot be burned as fuel. June 11 Tr. at 234:23–235:1 ("Q. And in your experience, can CCR be burned as coal? A. No."); Pond Investigation Rep., SIPC Ex. 29 at 8; *see also* McLaurin Second Declaration, SIPC Ex. 41. Like all the ponds at Marion Station, a considerable amount of sediment in Pond 4 is from organic material. *See supra* Section II.E.2.; June 10 Tr. at 140:15–20 (explaining how ponds at the Station include sedimentation from the "tremendous amount of phragmites that grow[] around [the Station's] ponds", grass and leaves); June 11 Tr. at 282:24–283:8 (explaining the sediment calculation in the bathymetric survey would have included the organic materials in the pond). SIPC expert, David Hagen, performed a carbon, nitrogen, and hydrogen analysis on samples from Pond 4. The samples from Pond 4 had a high carbon content, indicating the source of sediment was not CCR but rather was coal or an organic source. June 11 Tr. at 285:4–16; *id.* at 287:6–288:1 (explaining that because samples from Pond 4 had a carbon content greater than 20 percent "it's unlikely to have any significant ash source, like CCR. It's . . . far more likely that would be coal or organic materials or a little bit of both); *see also* Pond Investigation Rep., SIPC Ex. 29 at 8; Hagen Demonstrative, SIPC Ex. 52 at 6. A carbon versus hydrogen and hydrogen versus nitrogen correlation performed also concluded that the correlation of these constituents in the samples from Pond 4 is inconsistent with the correlation one would expect for these constituents in burned coal (*i.e.*, CCR). June 11 Tr. at 288:12–289:17; Hagen Demonstrative, SIPC Ex. 52 at 7. A PLM analysis further supports that only a small portion of sediment in Pond 4 is CCR. Pond Investigation Rep., SIPC Ex. 29 at 1; Hagen Demonstrative, SIPC Ex. 52 at 8; *see also* Support for De Minimis Units, SIPC Ex. 36 (extrapolating the depth of CCR in the unit to 0.90 feet (or 10.8 inches) based on the PLM results); Lewis Demonstrative, SIPC Ex. 55 (same).

Third, and relatedly, Pond 4 is unique from those units the Board intended to be regulated by Part 845. Pond 4 does not have those characteristics for which risks were modeled in USEPA's 2014 Risk Assessment. June Tr. 11 at 441:4–443:8 (explaining the De Minimis Units, including Pond 4, "differ significantly in concept[] and in practice from the surface impoundments that were evaluated by EPA and were concluded to pose a risk"). As Ms. Lewis explains, the surface impoundments modeled in the 2014 Risk Assessment were conceptually different than Pond 4. The conceptual model used in USEPA's 2014 Risk Assessment assumed that sluiced CCR was "being continually sent," to a surface impoundment, and sediment was allowed to accumulate for "a long period of time until the capacity [of the pond] was [] reached." June 11 Tr. at 439:14–440:7; Support for De Minimis Units, SIPC Ex. 36 at 13–14. Pond 4 did not continually receive CCR or operate in a manner where CCR solids accumulated until the Pond reached capacity. *See supra* at 89 (explaining the evidence strongly supports a large portion of the sediment in Pond 4 being coal fines and organic matter); June 11 Tr. at 439:14–440:7; *see also* Support for De Minimis Units, SIPC Ex. 36 at 10 (explaining currently sediment makes up only approximately 6.6 percent of total pond volume and PLM estimated CCR only about 3.6 percent of total pond volume). Pond 4 did have debris and sediment removed in 2003 and 2010. *See supra* at 89. This debris and sediment removal occurred as part of regular maintenance activities at the Station and "was not conducted regularly or because [] CCR was 'at capacity.'" Support for De Minimis Units, SIPC Ex. 36 at 14. In fact, Mr. Gallenbach, who was present for the 2003 maintenance cleaning, estimates only approximately 50 truckloads of material were removed from the Pond, which is far less than the number of truckloads required to remove sediment from a unit at capacity. June 10 Tr. at 146:2–20; *see also* June 11 Tr. at 315:7□22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment."). Again, the 2010 removal of debris and sediment was done as part of routine Station maintenance. June 11 Tr. at 233:15–16. Mr. McLaurin, who was present for the 2010 cleaning, indicated that the material inside the pond was predominately coal fines. *Id.* at 233:17–21; *id.* at 234:1–22. As discussed, the sediment did not contain significant amounts of CCR. June 11 Tr. at 287:6–288:1 (explaining that because samples from Pond 4 had a carbon content greater than 20 percent "it's unlikely to have any significant ash source, like CCR. It's . . . far more likely that would be coal or organic materials or a little bit of both); *see also* Pond

Investigation Rep., SIPC Ex. 29 at 1, 8; June 11 Tr. at 288:12–289:17 (explaining that a carbon versus hydrogen and hydrogen versus nitrogen correlation performed on Pond 4 sediments concluded the correlation was inconsistent with the correlation one would expect for these constituents in burned coal (*i.e.*, CCR)); Support for De Minimis Units, SIPC Ex. 36 at 15 (extrapolating the depth of CCR in the unit to 0.90 feet (or 10.8 inches) based on the PLM results).

Pond 4 is also significantly smaller than and unique compared to the surface impoundments modeled in the 2014 Risk Assessment upon which the Board relied in promulgating Part 845. *See supra* at 36–37 (noting that both IEPA and the Board relied on USEPA's 2014 Risk Assessment); *see also* Support for the De Minimis Units, SIPC Ex. 36 at 6 (indicating Pond 4's size in acres). The 2014 Risk Assessment evaluated over 700 units and, of those over 700 units, only 13 had a listed waste depth of less than two feet. 2014 Risk Assessment, SIPC Ex. 46; *see also* Pond Investigation Rep., SIPC Ex. 29 at 8. That means Pond 4's total sediment thickness, even with its small size, is less than the CCR depth of 98% of all the nationwide surface impoundments modeled as part of the 2014 Risk Assessment, and its PLM approximated CCR thickness is less than the CCR depth of 99% of all the nationwide surface impoundments modeled as part of the 2014 Risk Assessment.

Storage Pond	**CCR Thickness (ft)**	**Sediment Thickness (ft)**	**CCR thickness as Percentile of Depth Distribution of SI in 2014 CCR Risk Assessment**	**Sediment Thickness as Percentile of depth Distribution of SI in 2014 CCR Risk Assessment**	**Estimated Sediment volume as a Fraction of Pond volume**	**Estimated CCR Volume as Fraction of Pond Volume**
Pond 4	0.9	1.67	1%	2%	6.6%	3.6%

Support for De Minimis Units, SIPC Ex. 36 at 10, 15 (noting that, in contrast, the 50th percentile of units in the 2014 Risk Assessment had a depth of 13.6 feet, the 90th percentile had a depth of

36.6 feet, and the maximum depth of CCR in units was 190.1 feet). Significantly, the 2014 Risk Assessment found risk only in CCR surface impoundments within the 90th percentile of the units evaluated. 2014 Risk Assessment, SIPC Ex. 46. And it is these risks that Part 845 was developed to address. *See supra* at 36–37; *see also* IEPA's Statement of Reasons, SIPC Ex. 18 at 10 (indicating the purposes for developing the Part 845 proposal).

Further, a site-specific risk analysis for Pond 4 demonstrates that this Pond does not, in fact, pose a risk to human health or the environment. *See generally* HHERA, SIPC Ex. 37; *see also supra* Section I.G. A closure impact assessment conducted for Pond 4 also demonstrates continued operation of Pond 4 will not result in any greater risk to human health or the environment compared to closure of the unit under Part 845, emphasizing that its continued operation will not pose a risk to human health or the environment. Closure Impact Assessment, SIPC Ex. 38; *see also* Bittner Demonstrative, SIPC Ex. 56 at 7. Given Pond 4's small size, minimal depth, and the fact that it operated differently than the typical CCR surface impoundments in Illinois and those conditions modeled for the 2014 Risk Assessment, it is far from the type of surface impoundment found to pose a risk or intended to be regulated by Part 845. Support for De Minimis Units, SIPC Ex. 36 at 11−16; *see also* Lewis Demonstrative, SIPC Ex. 55 at 19.

Finally, expert analysis demonstrates Pond 4 is not a potentially significant source of CCR contaminants. Mr. Hagen's pond investigation concluded that Pond 4 is not contributing to an Illinois groundwater standard exceedance, nor would it contribute to such an exceedance in the future. Ex. 29 at 12; *see also* Hagen Demonstrative, SIPC Ex. 52 at 12 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). This conclusion is based on the results of shake tests conducted on the sediment within Pond 4, which sampled the Pond for constituents that could be associated with CCR. June 11 Tr. at 304:17–305:3. The sediments tested in Pond 4 were all below Illinois groundwater standards, confirming that Pond 4 is not a source of groundwater contamination and will not be a source of such contamination going forward. Pond Investigation Rep., SIPC Ex. 29 at 12, 17 (showing concentrations of antimony, arsenic, boron, chloride, fluoride, selenium, sulfate, thallium and TDS below groundwater standards); *see also* June 11 Tr. at 305:9–305:22 (noting Pond 4 "sediments contain materials that would be highly unlikely to impact groundwater quality"). Further, even assuming Pond 4 was impacting groundwater at the Station, the site-specific HHERA confirms that constituents that were found in the groundwater at the Station do not pose a risk to human health or then environment, including to drinking water, use of water for other household purposes, recreators, anglers, and ecological (*i.e.*, environmental) receptors. Lewis Demonstrative, SIPC Ex. 55 at 1–12; *see also* HHERA, SIPC Ex. 37.

Thus, the evidence clearly demonstrates that Pond 4 is not regulated by Part 845. Pond 4 does not contain the significant quantities of CCR that would give rise to the risks modeled in USEPA's 2014 Risk Assessment. Nor does it contain substantial amounts of CCR such that it serves as a potentially significant source of contaminants. Pond 6 is, therefore, not a CCR surface impoundment because it is not "designed to hold an accumulation of CCR" or a pond that "treats, stores, or disposes of CCR."

8. In the Alternative, Pond 4 Qualifies for the Adjusted Standard Sought by SIPC.

a. <u>Factors relating to Pond 4 are substantially and significantly different from the factors relied upon by the Board in adopting Part 845.</u>

For the reasons noted above, Pond 4 is not the type of unit intended to be regulated, and it varies greatly from a typical CCR surface impoundment. *See supra* Section III.A.7. (discussing Pond 4's unique characteristics and *de minimis* status). Compared to typical CCR surface impoundments, Pond 4 contains a small amount of CCR (and total sediment) and has never operated with the characteristics that were found to give rise to the risks warranting regulation. *See supra* at 91–93; *see also* Pond Investigation Rep., SIPC Ex. 29 at 7–9; Support for De Minimis Units, SIPC Ex. 36 at 8–16. Significant or substantial amounts of CCR were never deposited into Pond 4, nor would a deposit of significant or substantial amounts of CCR have been possible, as it only receives decant water and stormwater runoff. *See supra* at 19–22. Shake tests taken of pond sediment samples as well as Station groundwater sampling results demonstrate any potential CCR-related constituents in Pond 4 have not caused and are not expected to cause a material adverse impact on groundwater at the Station. *See* Pond Investigation Rep., SIPC Ex. 29 at 26; Support for De Minimis Units, SIPC Ex. 36 at 11–16; Hagen Demonstrative, SIPC Ex. 52 at 12 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances.").

Further, a site-specific risk assessment of the De Minimis Units, including Pond 4, confirms there is no unacceptable risk to human health or the environment from CCR constituents that may have migrated to groundwater. HHERA, SIPC Ex. 36 at 17–20 (demonstrating no unacceptable risk to human health or ecological receptors). Moreover, the closure impact assessment for Pond 4 concludes that closure of Pond 4—compared to its continued operation—would result in no reduction of risk to health or the environment, thus, the extension of the closure construction permit application deadline will not have an adverse impact on health or the environment. Closure Impact Assessment, SIPC Ex. 38 at 12; Bittner Demonstrative, SIPC Ex. 56 at 7. Specifically, the closure impact assessment demonstrates there are there is little risk of flood-related CCR release from Pond 4; based on current groundwater monitoring data, Pond 4 is not the likely source of any potential groundwater standard exceedances; closure of Pond 4 is unlikely to affect the surface water quality in Little Saline Creek (however, construction activity associated with a closure or retrofit could increase the potential for surface runoff and sedimentation); and construction activities associated with closure or retrofit could result in air quality impacts (*e.g.*, fugitive dust and green-house gas emissions) in greater amounts than Pond 4 remaining in operation. Closure Impact Assessment, SIPC Ex. 38 at 12–16; *see also* Bittner Demonstrative, SIPC Ex. 56 at 8. Thus, extending the period for closing Pond 4 will not have an adverse human health or environmental impact.

Pond 4 also serves as an essential component of current facility operations. Specifically, for some time now, its primary purpose has been to control and collect stormwater runoff from the coal pile at the Station. This is different from CCR surface impoundments, which have a primary purpose of CCR disposal or storage. *See* Pond Investigation Rep., SIPC Ex. 29 at 7; Support for De Minimis Units, SIPC Ex. 36 at 10.

Finally, factors related to the burden of Pond 4's compliance are substantially and significantly different from the factors related to the burden of compliance the Board relied on when promulgating Part 845. Specifically, during the rulemaking, IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to the Federal CCR Rule, and therefore, owners had years to develop and implement compliance plans. *See* Final Order at 8–9. However, as discussed above, the De Minimis Units, including Pond 4, are not subject to the Part 257 Rules, and thus, there has been no need to undertake compliance actions, such as groundwater and location restriction assessments. *See* Liss Second Declaration, SIPC Ex. 47; *see also* June 10 Tr. at 58:19–22 ("Q. And is [Pond 6] currently being regulated as a CCR surface impoundment under Part 257, Subpart D, otherwise commonly referred to as the federal CCR rule?

22 A. No."). Accordingly, the timing and cost of Part 845 compliance for Pond 4 differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject the Federal CCR Rule and that already had years of compliance activity that could be used to comply with Part 845. June 11 Tr. at 396:1–24 (explaining that without monitoring systems installed under the federal CCR rule, time is needed to conduct a groundwater investigation to determine where to put the wells and begin monitoring).

Additionally, evidence indicates low hydraulic conductivity, or a slow rate of groundwater movement, at Marion Station. June 11 Tr. at 397:20–400:9; *see also* Liss Second Declaration, SIPC Ex. 47. This suggests a longer timeframe than the allowed six months is required to design and install a groundwater monitoring well network and collect representative groundwater samples for Pond 4. June 11 Tr. at 397:20–400:9 (explaining 12 months are required, at a minimum).

Thus, the factors relating to Pond 4 are unique.

b. <u>The existence of Pond 4's unique factors justifies the proposed adjusted standard.</u>

As already described, Pond 4's unique factors justify that this unit should not be regulated under Part 845 at all. *See supra* Section III.A.7. They further justify the limited adjusted standard SIPC seeks for Pond 4 in the event the Board does not grant the requested finding of inapplicability.

The proposed adjusted standard contains two adjustments from Part 845 requirements for Pond 4. First, it seeks an adjustment to the deadline for SIPC to submit an operating permit application for Pond 4. *See* 35 Ill. Admin. Code § 845.230. This adjustment is necessary given that regulatory deadlines for submittal of an initial operating permit under Part 845 has passed. *See* 35 Ill. Admin. Code §§ 845.230, .700. SIPC's proposed an adjusted standard that would allow it a period of 12 months to submit its operating permit application. As described for the South Fly Ash Pond and Pond 3/3a, such a timeframe is warranted and justified. *See supra* Section III.A.2.b., 4.b.

Second, SIPC seeks, in the alternative should a finding of inapplicability not be granted, an adjustment to the Part 845 closure construction permit application deadline, 35 Ill. Admin. Code § 845.220(d), and relatedly, the initiation of closure deadline. 35 Ill. Admin. Code § 845.700. Under the adjusted standard, SIPC will be required to either initiate closure or begin retrofitting Pond 4, by way of submitting a closure construction permit application, upon the earlier of the following occurrences: (1) within 12 months of a finding that CCR within Pond 4 are the source of an exceedance of the Section 845.600 groundwater protection standards, or (2) the end of the life of the Marion Station. Thus, the adjusted standard will allow SIPC to continue operation of Pond 4 through the end of Marion Station's life, so long as it is not contributing to groundwater contamination, as measured through a Part 845 compliant groundwater monitoring program. If Pond 4 is found to contribute to a groundwater protection standard exceedance, this extension no longer applies, and SIPC must submit a closure or retrofit construction permit application for Pond 4 within 12 months of that finding. The factors discussed above, including Pond 4's essential use to collect coal pile runoff, the minimal amount of sediment in Pond 4, the evidence that sediment in Pond 4 is largely coal and organics, the shake test data indicating sediments from Pond 4 are not contributing to and are not likely to contribute to Illinois groundwater standard exceedances, and the HHERA indicating Pond 4 does not pose a risk to human health and the environment, all justify the requested adjustment. This adjustment is further justified by the closure impact assessment for Pond 4 demonstrating there is no reduction in risk to health or the environment that would be achieved through the closure of Pond 4. Closure Impact Assessment, SIPC Ex. 38 at 12; Bittner Demonstrative at 7. Therefore, an extension of the deadline for a closure construction permit application and initiation of closure will not adversely impact human health or the environment.

c. The requested standard for Pond 4 will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting Part 845.

Environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting Part 845 will not result if Pond 4 is not regulated under Part 845 and will certainly not result from the limited adjusted standard proposed by SIPC in the alternative. Like the Part 257 Rules relating to CCR surface impoundments, Part 845 was intended to address the risks posed by CCR surface impoundments that have resulted or are likely to result in groundwater contamination. IEPA Statement of Reasons, SIPC Ex. 18 at 10 ("The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois"); Second Notice Opinion at 1 ("Among the program's primary goals is protecting groundwater from contamination by CCR pollutants leaking from surface impoundments.").

As discussed above, the characteristics of the Pond 4 indicate this unit is not having and is not expected to have an adverse impact on human health or the environment in its current form. The unit does not "contain *a large amount* of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." 89 Fed. Reg. 38,950, Revised SIPC Ex. 17 at 21,357 (emphasis added); Support for De Minimis Units, SIPC Ex. 36 at 4–10. An evaluation of shake test results from Pond 4 (demonstrating no exceedances of constituents associated with CCR) and groundwater sampling results at the Station indicate Pond 4 is not contributing to and is not expected to contribute to Illinois groundwater protection standard exceedances. Pond Investigation Rep., SIPC Ex. 29 at 12; June 11 Tr. at 303:2–304:4; Hagen Demonstrative, SIPC Ex. 52 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). Additionally, a site-specific risk assessment that looked at impacts to the range of possible human health and environmental receptors by Pond 4 (and that conservatively assumed Pond 4 was contributing to groundwater contamination at the Station) found Pond 4 does not pose a current risk to human health or the environment and that the Pond 4 does not pose a reasonable possibility of adverse effects to human health or the environment in the future. *See* Support for De Minimis Units, SIPC Ex. 36 at 4–20; *see generally* HHERA, SIPC Ex. 37.

Finally, the closure impact assessment conducted for Pond 4 demonstrates that continued operation of Pond 4 will not result in any greater risk to human health or the environment compared to closure of the unit. *See generally* Closure Impact Assessment, SIPC Ex. 38; Bittner Demonstrative, SIPC Ex. 56. The closure impact assessment evaluated a variety of potential risks, including risks to potential human health and environmental receptors, risk of future CCR releases, impacts on groundwater quality, impacts on surface water quality, impacts on air quality, climate change and sustainability, worker safety, community impacts, environmental justice, and potential impacts resulting from noise and visual disturbances to recreators in areas of scenic, recreational, and historical value. *Id.* This list of potential impacts both includes and exceeds the list of potential environmental and health effects considered by the Board when adopting Part 845.

Based on the evidence, no adverse environmental or health effects will result in the event that none of Part 845 applies to Pond 4. Further, under the limited adjusted standard requested by SIPC, Pond 4 will still be subject to the groundwater monitoring and corrective action requirements in Part 845. Accordingly, if Pond 4 contributes to a Part 845 groundwater protection standard exceedance, it will result in corrective action, similar to any other unit regulated under Part 845. Additionally, as explained above, to the extent Pond 4 is found to have contributed to an exceedance, the extension of its closure construction permit application deadline to the end of the life of Marion Station will no longer apply. Instead, SIPC will be required to submit a closure or retrofit construction permit application within 12 months of such a finding. Therefore, no adverse environmental or health effects will result if an adjusted standard is granted.

d. Pond 4's proposed adjusted standard is consistent with applicable federal law.

SIPC's proposed adjusted standard for Pond 4 is consistent with federal law. The Board has acknowledged that "Part 257 is self-implementing," and therefore, it is up to SIPC and USEPA to determine whether the units at issue are subject to the Federal CCR Rule. *See* AS 2021-005*, In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board at 44 (Jun. 26, 2025). SIPC has evaluated Pond 4 and determined that it is not regulated as an existing CCR surface impoundment or inactive CCR surface impoundment under the Federal CCR Rule. Consequently, the proposed adjusted standard is consistent with Part 257. *See id.* ("Because EEI believes Joppa West is not subject to Part 257, the Board finds that the interim adjusted standard is consistent with federal law."); *see also* 35 Ill. Admin. Code § 104.406(i).

9. Part 845 Is Inapplicable to Former Pond B-3.

Former Pond B-3 is not a CCR surface impoundment regulated under Part 845. This unit is *de minimis* because it does not contain the "significant" or "substantial" quantities of CCR required for it to be designed to *hold an accumulation of CCR* or to *treat, store, or dispose of CCR*. SIPC has presented multiple lines of evidence to demonstrate that the Former Pond B-3 contains *de minimis* levels of CCR. These lines of evidence include the following: (1) Former Pond B-3 operated fundamentally differently than a typical CCR surface impoundment, making it among the types of ponds expected to contain a *de minimis* amount of CCR, (2) Former Pond B-3 currently contains no sediment or liquid, meaning it necessarily cannot hold an accumulation of CCR, (3) Former Pond B-3's characteristics are different than and unique from the CCR surface impoundments intended to be regulated by Part 845 and modeled by USEPA's 2014 Risk Assessment (which was relied upon by the Board when promulgating Part 845), and in fact, a site-specific risk assessment demonstrates it does not pose any risk to human health or the environment, and (4) Former Pond B-3 is not a potentially significant source of CCR contaminants.

First, the characteristics of Former Pond B-3 demonstrate that it has operated differently than, and currently contains no CCR or sediment, compared to CCR surface impoundments that are intended to be regulated under Part 845. Former Pond B-3 served as a secondary finishing pond, receiving decanted water from Pond A-1 and coal pile stormwater runoff. Gallenbach Demonstrative, SIPC Ex. 49 at 11; June 11 Tr. at 238:3–10 (noting that in addition to primarily serving as a secondary pond to Pond A-1, Former Pond B-3 received coal pile runoff). As USEPA has explained, "secondary or tertiary finishing ponds that have not been properly cleaned up" and "coal pile runoff" ponds, are among the types of ponds expected to contain a *de minimis* amount of CCR. USEPA CCR Rule FAQs, SIPC Ex. 34 at 9; *see also* 89 Fed. Reg. 38,950, Revised SIPC Ex. 33 at 39,050. On no more than three to four occasions, during outages at the Station, Former Pond B-3 may have received some discharges of fly ash from Units 1, 2, and 3 prior to their shut down in 2003; however, any CCR that entered during such outages would have been minimal. Gallenbach Demonstrative, SIPC Ex. 49 at 11; June 11 Tr. at 433:1–15; ("There was -- actually was some periods of time where . . . this unit did receive direct ash, but it was very short time frames and not expected to be routine, and I would have expected very small amount of ash to have entered . . . during three to four outages that were two weeks, and I -- from what I understand from other reports that I've read, that was during a time where the plant wasn't sort of operating at full steam, so the amount of ash generated would have been small, and of course it -- because it wasn't -- you know, the times that it did receive ash were extremely small windows of time, that would make it different than the types of ponds that were envisioned in EPA's risk assessment in support of the rule."). The outages lasted no more than a week or two and would have occurred during boiler shutdowns when Marion Station was operating at less than full capacity and generating less ash. June 10 Tr. at 138:12–23 (explaining the one outage during which Former Pond B-3 was used during Mr. Gallenbach's tenure at SIPC lasted approximately a week).

Second, Former Pond B-3 is currently dewatered and contains no CCR or sediment. June 10 Tr. at 61:22–62:14; *id.* at 138:24–139:20. Further, when it was in operation, Former Pond B-3 did not contain a significant amount of sediment or CCR. In 2003, while Former Pond B-3 was still in operation, it was cleaned as part of regular Station maintenance activities. During that cleaning, less than 50 truckloads of material were removed from Former Pond B-3. June 10 Tr. at 147:9–11; *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 15. Similarly, during its final closure in 2017, SIPC witness Jason McLaurin estimates SIPC removed approximately 40 to 50 10-ton trucks worth of material from Former Pond B-3 that was burned at Unit 123 and Unit 4 and approximately 10 to 15 25-ton trucks worth of material from Former Pond B-3 that was disposed of at a sanitary landfill. June 11 Tr. at 255:12–256:11. The number of truckloads needed to clean a typical CCR surface impoundment is often in the tens of thousands, or "orders of magnitude greater" than the number of truckloads required to clean Former Pond B-3. June 11 Tr. at 315:7-316:15.[14] Former Pond B-3's *de minimis* nature is made clear when comparing the Pond to other

[14] In its Recommendation, IEPA presented an estimate of the number of truckloads it may take to remove the sediments located in internal berm of Former Pond B-3 (the only remnant of the former pond that remains). Recommendation at 23. However, the berm was constructed of clay (not CCR) and is not part of the sediments located under a hydraulic head and, therefore, not relevant in the consideration of whether the unit is a CCR surface impoundment. 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357 (emphasis added); Support for De Minimis Units, SIPC Ex. 36 at 4–10; *see also* June 10 Tr. 184:15–185:3 (explaining the internal berm at Former Pond B-3 is made of clay and may have come from the clay removed to build the South Fly Ash Pond). In fact, boring logs for samples taken from the berm of Former Pond B-3 confirm that CCR is not present within the berm. Pond Investigation Rep., SIPC Ex. 29, Attachment C. Additionally, analysis of berm content is not relevant in determining what may have, at one point in the past, been contained within Former Pond B-3. *See* June 11 Tr. at 301:12–17 ("Q. In your experience, does analyzing a berm

CCR surface impoundments in Illinois that are regulated under Part 845. Former Pond B-3's characteristics, along with those of the other De Minimis Units, are clearly unique from the other regulated units included on the list. *See* IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181–82 (IEPA's table of the 73 units it believed to be regulated by Part 845, including the De Minimis Units); *compare* Support for De Minimis Units, SIPC Ex. 36 at 6 (Former Pond B-3 "approximately covers 6.4 acres") *with* 2014 Risk Assessment, SIPC Ex. 46, Attachment A-2 (listing CCR surface impoundments, including those identified by IEPA, demonstrating those units are—on average—much larger than Former Pond B-3) *and* Pond Investigation Rep., SIPC Ex 29 at 7 (Based on information provided by USEPA, CCR surface impoundments "average more than 50 acres in size.").

Further, the evidence indicates that the majority of sediments located in Former Pond B-3 during its operation were coal fines and organic matter, not CCR. A majority of the materials removed from Former Pond B-3 during 2003 and 2017 were taken to the coal yard and combusted as fuel. June 10 Tr. at 147:1–8 (noting material cleaned from Former Pond B-3 in 2003 was hauled to the coal yard and burned); June 11 Tr. at 239:8–13 (addressing the 2017 closure, "Q. What was the scope to which sediment was removed from former pond B-3? A. Like I said, we dewatered and let it dry, then we scraped up the material. The majority of the material, again, is coal fines. We brought it back to the facility to be recombusted. The material that we couldn't combust that we want to get rid of we took to a sanitary landfill."); *see also* Gallenbach Demonstrative, SIPC Ex. 49 at 15. Notably, CCR cannot be burned as fuel. June 11 Tr. at 234:23–235:1 ("Q. And in your experience, can CCR be burned as coal? A. No."); Pond Investigation Rep., SIPC Ex. 29 at 8; *see also* McLaurin Second Declaration, SIPC Ex. 41. Like all the ponds at Marion Station, a

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sample tell you anything about what's been deposited in a pond? A. The answer to that is no. What's – The contents of the pond is what's accumulated in the pond. Berms are part of the construction."); *id.* at 344:17–345:8.

considerable amount of sediment in Former Pond B-3 is from organic materials. *See supra* Section I.E.2.; June 10 Tr. at 140:15–20 (explaining how ponds at the Station include sedimentation from the "tremendous amount of phragmites that grow[] around [the Station's] ponds", grass and leaves); June 11 Tr. at 239:22–240:2 (explaining material visible in Pond B-3 during its 2017 closure included dead and dying vegetation and decayed algae).

Third, and relatedly, Former Pond B-3 is unique from the units the Board intended to be regulated by Part 845. Former Pond B-3 Pond does not have and never has had the characteristics for which risks were modeled in USEPA's 2014 Risk Assessment. June 11 Tr. at 441:4–443:8 (explaining that the De Minimis Units, including Former Pond B-3, "differ significantly in concept[] and in practice from the surface impoundments that were evaluated by EPA and were concluded to pose a risk"). As Ms. Lewis explains, the CCR surface impoundments modeled in the 2014 Risk Assessment were conceptually different than Former Pond B-3. The conceptual model used in USEPA's 2014 Risk Assessment assumed that sluiced CCR was "being continually sent," to a surface impoundment, and sediment was allowed to accumulate for "a long period of time until the capacity [of the pond] was [] reached." June 11 Tr. at 439:14–440:7; *see also* Support for De Minimis Ponds, SIPC Ex. 36 at 13–14. Former Pond B-3 did not continually receive CCR or operate in a manner where CCR solids accumulated until the Pond reached capacity, and Former Pond B-3 did have debris and sediment removed in 2003. *See supra* at 104–105. This debris and sediment removal occurred as part of regular maintenance activities at the Station and "was not conducted regularly or because [] CCR was 'at capacity.'" Support for De Minimis Units, SIPC Ex. 36 at 14. Mr. Gallenbach, who was present for the maintenance cleaning, estimates less than 50 truckloads of material were removed from the Pond at that time, which is far less than the amount of truckloads required to remove sediment from a unit at capacity. June 10 Tr. at 147:9–11;

see also June 11 Tr. at 315:7□22 (noting it would take "tens of thousands of truckloads or more" and a matter of years to remove CCR that has accumulated from "a typical CCR surface impoundment."). In 2017, Former Pond B-3 was cleaned to clay and its berm was breeched, so the unit can no longer hold water. McLaurin Demonstrative, SIPC Ex. 50 at 6. Since that time, this unit has not held nor received any sediment. June 11 Tr. at 238:15–22. And further, as discussed above, the sediment did not contain significant amounts of CCR. Pond Investigation Rep., SIPC Ex. 29 at 8; *see also* June 10 Tr. at 147:1–8 (noting material cleaned from Former Pond B-3 in 2003 was hauled to the coal yard and burned); June 11 Tr. at 239:8–13 (noting that during the 2017 closure, the "majority of the material, again, [was] coal fines," which were "brought it back to the facility to be recombusted," and that the remaining material SIPC "couldn't combust [was taken] to a sanitary landfill."); *id.* at 239:22–240:2 (explaining material visible in Pond B-3 during its 2017 closure included dead and dying vegetation and decayed algae).

As described above, Former Pond B-3 is also significantly smaller than and unique compared to the surface impoundments modeled in the 2014 Risk Assessment relied upon by IEPA and the Board relied. *See supra* at 36–37 (noting that both IEPA and the Board relied on USEPA's 2014 Risk Assessment). Further, a site-specific risk analysis for Former Pond B-3 demonstrates that the Pond does not, in fact, pose a risk to human health or the environment. *See generally* HHERA, SIPC Ex. 37; *see also supra* Section I.G. Given Former Pond B-3's small size and that it operated differently than the conditions modeled in the conceptual site model used for the 2014 Risk Assessment, it is far from the type of surface impoundment found to pose a risk or intended to be regulated. *See* Support for De Minimis Units, SIPC Ex. 36 at 11–16.

Finally, expert analysis demonstrates the Former Pond B-3 is not a potentially significant source of CCR contaminants. Mr. Hagen's pond investigation concluded that Former Pond B-3 is not contributing to an Illinois groundwater standard exceedance, nor would it be expected to contribute to such an exceedance in the future. Pond Investigation Rep., SIPC Ex. 29 at 12; *see also* Hagen Demonstrative, SIPC Ex. 52 at 14 ("Former Pond B-3 samples from closure indicate it is not contributing to groundwater contamination."). IEPA oversight of the cleaning and closure of Former Pond B-3 in 2017 confirmed that all sediments from the unit were, in fact, removed. June 11 Tr. at 239:16–21; *see also* IEPA Ex. BB. SIPC sampled the bottom of the unit after the closure. Hagen Demonstrative, SIPC Ex. 52 at 14 (summary of Pond B-3 shake test sampling). There were only two exceedances of Illinois groundwater standards, both of which were anomalies. Pond Investigation Rep., SIPC Ex. 29 at 19. There was a concentration of arsenic higher than Illinois Class II groundwater standards, which is a "a local anomaly." *Id.* None of the other samples from Former Pond B-3 had a concentration of arsenic higher than any Illinois groundwater standards. *Id.* Additionally one shake test result revealed a pH value slightly higher than Illinois groundwater standards but is another "anomaly." *Id.* Notably, at 9.09 S.U., the elevated pH value is just slightly above the Class I, Class II, and Part 845 pH groundwater standard of 6.5-9 S.U. Pond Investigation Rep., SIPC Ex. 29 at 12; Hagen Demonstrative, SIPC Ex. 52 at 14. None of the other shake test samples indicated elevated pH levels. *Id.*; *see also* Pond Investigation Rep., SIPC Ex. 29 at 19. As Mr. Hagen concludes "[t]he results indicate[] that any sediments in the former Pond B-3 area are not likely to result in unacceptable CCR impacts on groundwater quality." *Id.*; *see also* Hagen Demonstrative, SIPC Ex. 52 at 14 ("Former Pond B-3 samples from closure indicate it is not contributing to groundwater contamination.")

Further, even assuming the Former Pond B-3 was impacting groundwater at the Station, the site-specific HHERA confirms that constituents that were found in the groundwater at the Station do not pose a risk to human health or the environment, including to drinking water, use of water for other household purposes, recreators, anglers, and ecological (*i.e.*, environmental) receptors. *See generally* HHERA, SIPC Ex. 37; Lewis Demonstrative, SIPC Ex. 55 at 1−12.

Thus, the evidence clearly demonstrates that Former Pond B-3 is not the type of unit regulated by Part 845. Former Pond B-3 does not, and did not ever, contain the significant quantities of CCR that would give rise to the risks modeled in USEPA's 2014 Risk Assessment. Nor does it contain substantial amounts of CCR such that it serves as a potentially significant source of contaminants. Former Pond B-3 is, therefore, not a CCR surface impoundment because it is not "designed to hold an accumulation of CCR" or a pond that "treats, stores, or disposes of CCR."

10. In the alternative, Former Pond B-3 Qualifies for the Adjusted Standard Sought by SIPC.

a. <u>Factors relating to Former Pond B-3 are substantially and significantly different from the factors relied upon by the Board in adopting Part 845.</u>

For the reasons noted above, Former Pond B-3 is not the type of unit intended to be regulated, and it varies greatly from a typical CCR surface impoundment. *See supra* Section III.A.9. (discussing Former Pond B-3's unique characteristics that make it a *de minimis* unit). In 2017, Former Pond B-3 was cleaned out down to the clay and has not held water since that time, and a large portion of the removed sediment was burned as fuel. *See supra* at 23–24. Significant or substantial amounts of CCR were never deposited into Former Pond B-3. *See supra* at 22–23. Shake tests taken of pond sediment samples at the time of closure, as well as Station groundwater sampling results, demonstrate any potential CCR-related constituents in Former Pond B-3 have not caused and are not expected to cause a material adverse impact on groundwater at the Station. *See* Support for De Minimis Units, SIPC Ex. 36 at 11–16; Hagen Demonstrative, SIPC Ex. 52 at 12 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances.”). Further, a site-specific risk assessment of the De Minimis Units, including Former Pond B-3, confirms there is no unacceptable risk to human health or the environment from CCR constituents that may have migrated to groundwater. Support for De Minimis Units, SIPC Ex. 36 at 17–20 (demonstrating no unacceptable risk to human health or ecological receptors).

Since 2017, unlike all (or nearly all) of the units regulated by Part 845, Former Pond B-3 has been cleaned of sediments and no longer holds water, except in a small area of the former pond where stormwater may collect after storms before drainage and evaporation. *See* IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181−82 (IEPA’s table of the 73 units it believed to be regulated by Part 845, including the De Minimis Units). Given that Former Pond B-3 has been cleaned to the clay, the only material that remains is a small internal berm with little, if any, CCR. *See supra* at n.14; *see also* Pond Investigation Rep., SIPC Ex. 29, Appendix C.

Finally, factors related to the burden of Former Pond B-3’s compliance are substantially and significantly different from the factors related to the burden of compliance relied upon by the Board when promulgating Part 845. Specifically, during the rulemaking, IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to the Federal CCR Rule, and therefore, owners had years to develop and implement compliance plans. *See* Final Order at 8–9. However, as discussed above, the De Minimis Units, including Former Pond B-3, are not subject to the Part 257 Rules, and thus, there has been no need to undertake compliance actions, such as groundwater and location restriction assessments. *See* Liss Second Declaration, SIPC Ex. 47; June 10 Tr. at 61:19–21 (“Q. Is [Former Pond B-3] being regulated as a CCR surface impoundment under the federal CCR rule? A. No.”). Accordingly, the timing and cost of Part 845 compliance for Former Pond B-3 differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject to Part 257 and that already had years of compliance activity that could be used to comply with Part 845. June 11 Tr. at 396:1–24 (explaining that without monitoring systems installed under the federal CCR rule, time is needed to conduct a groundwater investigation to determine where to put the wells and begin monitoring).

Additionally, evidence indicates low hydraulic conductivity, or a slow rate of groundwater movement, at Marion Station. June 11 Tr. at 397:20–400:9; *see also* Liss Second Declaration, SIPC Ex. 47. This suggests a longer timeframe than the allowed six months is required to design and install a groundwater monitoring well network and collect representative groundwater samples for Former Pond B-3. June 11 Tr. at 397:20–400:9 (explaining 12 months are required, at a minimum).

Thus, the factors relating to Former Pond B-3 are unique.

b. The existence of Former Pond B-3's unique factors justifies an adjusted standard.

As already described, Former Pond B-3's unique factors justify that this unit should not be regulated under Part 845 at all. *See supra* Section III.A.9. These unique factors further justify the limited adjusted standard SIPC requests for Former Pond B-3 in the event the Board does not grant the requested finding of inapplicability.

SIPC proposes four categories of Part 845 adjustments for Former Pond B-3 should a finding of inapplicability not be granted. First, assuming Former Pond B-3 is designated an "inactive CCR surface impoundment" under Part 845, the proposed adjusted standard requests adjustments to allow the unit to be subject to the same operating permit, and other operating requirements, applicable to units that completed closure prior to June 30, 2021. *See* 35 Ill. Admin. Code § 845.230(d)(3). Second, it proposes an adjustment from the location restriction requirements in Part 845, Subpart C, the design criteria in Part 845, Subpart D (other than Section 845.430, which relates to slope maintenance), and the operating criteria in Part 845, Subpart E (other than Sections 845.520 and 845.550(e), which relate to Emergency Action Plans and Annual Groundwater Monitoring and Corrective Action Report requirements, respectively). Third, it proposes the elimination of construction permit requirements. *See* 35 Ill. Admin. Code § 845.220.

The factors discussed above justify these first three adjustments. There is no ongoing management of sediment with water, let alone CCR with water, that would justify the unit being subject to many of the Part 845 requirements related to ongoing operation, such as location restrictions, design criteria, and operating criteria. The provisions from Part 845's Subpart C, Subpart D, and Subpart E excluded by SIPC's proposed adjusted standard are intended to address physical circumstances that do not exist at Former Pond B-3. *See generally* Second Notice Opinion at 32–61; *see also supra* at 22–24 (discussion of the characteristics of the unit). Instead, Former Pond B-3 is most similar to a unit that underwent closure prior to the promulgation of Part 845. Thus, it makes sense for Former Pond B-3 to be subject to the same operating permit requirements, location restrictions, design criteria, and operating criteria applicable to those units. This is what SIPC has proposed in its adjusted standard. Further, due to the limited steps (if any) that remain to complete closure of Former Pond B-3 by removal (in accordance with Part 845 performance standards) and the fact that the berm contains little, if any, CCR, it does not make sense for the unit to be subject to Part 845's full closure construction permitting requirements. There is only one possible method to close this unit—closure by removal—and it has already been completed. Under the adjusted standard, SIPC would have to submit a final closure plan to set forth any additional steps that are necessary (if applicable) to complete and meet the Section 845.740 Closure by Removal performance standards for Former Pond B-3.

The fourth adjustment sought is to the deadlines for SIPC to submit an operating permit application, 35 Ill. Admin. Code § 845.230, and closure plan. 35 Ill. Admin. Code § 845.220(d). This adjustment is necessary given that regulatory deadlines under Part 845 for these submittals have now passed. The adjusted standard proposes a period of 12 months for SIPC to make these submissions. As with previously discussed ponds, such as the South Fly Ash Pond, Pond 3/3a, and Pond 4, this proposed adjustment to submission deadlines is justified. *See supra* at Section III.A.2.b., 4.b., 8.b. Given that information collected for the operating permit application will necessarily inform the closure plan, it only makes sense that the closure plan be submitted at the same time as or after the operating permit application.

c. <u>The requested standard for Former Pond B-3 will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting Part 845.</u>

Environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting Part 845 will not result if Former Pond B-3 is not regulated under Part 845 and will certainly not result from the limited adjusted standard proposed by SIPC in the alternative. Like the Part 257 Rules relating to CCR surface impoundments, Part 845 was intended to address the risks posed by CCR surface impoundments that have resulted or are likely to result in groundwater contamination. IEPA Statement of Reasons, SIPC Ex. 18 at 10 ("The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois"); Second Notice Opinion at 1 ("Among the program's primary goals is protecting groundwater from contamination by CCR pollutants leaking from surface impoundments.").

As discussed above, the characteristics of Former Pond B-3 indicate this unit is not having and is not expected to have an adverse impact on human health or the environment in its current form. The unit does not "contain *a large amount* of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." 89 Fed. Reg. 38,950, Revised SIPC Ex. 17 at 21,357 (emphasis added); Support for De Minimis Units, SIPC Ex. 36 at 4–10. In fact, it currently contains no sediment under a hydraulic head. An evaluation of shake test results from the Former Pond B-3 and groundwater sampling results at the Station indicate Former Pond B-3 is not contributing to and is not expected to contribute to Illinois groundwater standard exceedances. Pond Investigation Rep., SIPC Ex. 29 at 12; June 11 Tr. at 303:2–304:4; Hagen Demonstrative, SIPC Ex. 52 ("Based on shake tests and groundwater monitoring results, the units at issue are unlikely to be contributing to groundwater quality standard exceedances."). Additionally, a site-specific risk assessment that looked at impacts to a range of possible human health and environmental receptors by Former Pond B-3 (and that conservatively assumed the Former Pond B-3 was contributing to groundwater contamination at the Station) found Former Pond B-3 does not pose a current risk to human health or the environment and that the Former Pond B-3 does not pose a reasonable possibility of adverse effects to human health or the environment in the future. *See* Support for De Minimis Units, SIPC Ex. 36 at 4–20; *see generally* HHERA, SIPC Ex. 37.

Based on the evidence, no adverse environmental or health effects will result in the event that none of Part 845 applies to Former Pond B-3. Further, under the limited adjusted standard requested by SIPC as an alternative to a finding of inapplicability, no adjustments are requested from the Part 845 requirements intended to protect human health and the environment. This includes closure standards, groundwater monitoring requirements, and corrective action requirements, all of which will still apply. Therefore, no adverse environmental or health effects will result if an adjusted standard is granted.

d. Former Pond B-3's proposed adjusted standard is consistent with applicable federal law.

SIPC's proposed adjusted standard for Former Pond B-3 is consistent with federal law. The Board has acknowledged that "Part 257 is self-implementing," and therefore, it is up to SIPC and USEPA to determine whether the units at issue are subject to the Federal CCR Rule. *See* AS 2021-005*, In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board at 44 (Jun. 26, 2025). SIPC has evaluated Former Pond B-3 and determined that it is not regulated as an existing CCR surface impoundment or inactive CCR surface impoundment under the Federal CCR Rule. Consequently, the proposed adjusted standard is consistent with Part 257. *See id.* ("Because EEI believes Joppa West is not subject to Part 257, the Board finds that the interim adjusted standard is consistent with federal law."); *see also* 35 Ill. Admin. Code § 104.406(i).

B. A Finding of Inapplicability or, in the Alternative, SIPC's Proposed Adjusted Standard Is Justified for the Former Landfill Area.

1. Part 845 Is Not Applicable to the Former Fly Ash Holding Units.

Part 845 does not apply to the Former Fly Ash Holding Units because they are not "natural topographic depression[s], man-made excavation[s], or diked area[s], which [are] designed to hold an accumulation of CCR and liquids." 35 Ill. Admin. Code § 845.120.

Since the 1990s, the Former Fly Ash Holding Units have been dry and used as structural fill beneath the then-active Former CCR Landfill, which, in turn, has been operated and regulated as an on-site, permit-exempt landfill pursuant to 35 Ill. Admin. Code Part 815. *See, e.g.*, 2020 Landfill VN, SIPC Ex. 16; June 10 Tr. at 151:5–8, 152:2–4, 153:16–20 (describing all of the Former Fly Ash Holding Units are being dewatered by the early 1990s). Therefore, these units do not meet the definition of a CCR surface impoundment. Rather, the Former Fly Ash Holding Units serve as structural fill for the Former CCR Landfill and became classified as a landfill under Illinois law once they stopped operating and were dewatered.

Under the plain language of Part 845, the Former Fly Ash Holding Units are not currently, and were not as of October 19, 2015, "designed to hold an accumulation of CCR and liquids" and accordingly, fall outside of the plain language definition of "CCR surface impoundment." *See supra* at Part III.B.1; *see also* U.S. EPA, Comment Summary and Response Document: Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities; Proposed Rule, Vol. 3 (Dec. 2014), SIPC Ex. 25 at 73 ("CCR surface impoundments that have been dewatered and are no longer able to hold free liquids" prior to October 19, 2015 "are not subject to [Part 257]."). These units were closed, dewatered, and covered by the Former CCR Landfill as of the 1990s. *See* June 10 Tr. at 152:2–4; *id.* at 153:16–23; (explaining each of these areas was no longer operating and were dewatered as of the 1990s); 1977 IEPA Permit, SIPC Ex. 5 (describing planned closure for Initial Fly Ash Area). Accordingly, the units did not hold liquids as of or after October 19, 2015, and are, therefore, not CCR surface impoundments. IEPA did not include the Former Fly Ash Holding Units when listing the 73 units it believed were regulated by Part 845. IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181–82 (IEPA's table of the 73 units it believed to be regulated by Part 845).

Under the Illinois landfill program, the Former Fly Ash Holding Units became a "landfill" once they stopped operating and were closed. As Mr. Liss explained, consistent with the regulatory definitions in Section 810.103, when these units stopped operating and were closed, liquid wastes were no longer placed within them, they were dewatered, and they no longer required connection to an NPDES outfall they became landfill. June 11 Tr. at 374:2–375:7 (the Former Fly Ash Holding Units became a landfill "[w]hen they quit operating as a surface impoundment"); *id.* at 384:16–23 (explaining his understanding of Bureau of Land's position in 1988 (when he worked for IEPA) that the Former Fly Ash Holding Units were landfill, noting "our position was that if its filled up and its acting like a landfill, Bureau of Land's going to regulate it as a landfill"); *id.* at 385:7–23[15]; *see also* 35 Ill. Admin. Code § 810.103. Upon this change in characteristics, the Former Fly Ash Holding Units were no longer surface impoundments under Illinois law.

The federal regulatory regime provides further support against classifying the Former Fly Ash Holding Units as CCR surface impoundments under Part 845. Under the federal regulatory regime, the Former Fly Ash Holding Units serve as structural fill used to support a portion of the Former CCR Landfill and, therefore, are "CCR management units" (and, necessarily, not CCR surface impoundments) under the Part 257 rules. 40 C.F.R. § 257.53 (excluding CCR surface impoundments from the definition of "CCR management unit"). In the 2024 Legacy Rule, USEPA discussed a similar CCR-containing unit that was identified as a CCR management unit. Specifically, USEPA explained, "[p]rior to development of [a] 60-acre [a]sh [l]andfill, CCR was disposed in an impoundment from approximately 1939 to 1978. After the impoundment was dewatered in 1978, dry CCR was disposed in this area in several stages of CCR placement up until the time Ash Landfill began operation." 89 Fed. Reg. 38,950, Revised SIPC Ex. 33 at 39,038–39 (provided as an example of a CCRMU). The "underlying historic ash impoundment and other closed stages of the landfill" were identified as units that were not regulated by the Federal CCR Rule and therefore were CCR management units. *Id.* This factual situation is analogous to that of the Former Fly Ash Holding Units and the Former CCR Landfill that now sits on top of them. The Former Fly Ash Holding Units were dewatered and closed. Over time, dry CCR overfill was placed

[15] As permit-exempt landfills, no specific requirements applied to the dewatering and closure of the Former Fly Ash Holding Units at the time they were closed, but the change in characteristics changed their status. June 11 Tr. at 373:7–14; *id.* at 374:3–7; 35 Ill. Admin. Code Part 815.

on top of these units with the Former Fly Ash Holding Units serving as a structural fill base for the Former CCR Landfill. Thus, the Former Fly Ash Holding Units are CCR management units, not CCR surface impoundments. These types of units are subject to separate regulatory requirements and are not intended to be regulated as CCR surface impoundments under Part 845. *See* Second Notice Opinion at 12 (declining to regulate "unconsolidated coal ash fills," *i.e.* CCR management units, as part of the promulgated Part 845 regulations); R2020-019 (A), *In the Matter of: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845 (Sub Docket A),* Second Notice Order of the Board at 11 (May 15, 2025) (noting the self-implementing nature of the federal CCR management rule and declining to move forward with an Illinois rulemaking for CCR management units).

2. Part 845 Is Not Applicable to the Former CCR Landfill.

The Former CCR Landfill is not a CCR surface impoundment because it is not "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids." 35 Ill. Admin. Code § 845.120.[16]

IEPA appears to rely on its Exhibit CC to demonstrate the Former CCR Landfill is in an "excavated" area. However, as Mr. Liss explains, that document identifies construction activities undertaken in connection with the Former CCR Landfill that are typical for the construction of a landfill. June 11 Tr. at 390:4–393:8. Specifically, it depicts "slopes of some of the area landfill" and provides a "map view" of the landfill. *Id.* at 390:4–12. The document also references stripping topsoil in the area where the Former CCR Landfill came to be located "for purposes of drainage." *Id.* at 390:20–391:10. As Mr. Liss explains, the activity being described is grading, a typical activity conducted in constructing landfill areas to manage stormwater and precipitation runoff. *Id.*

[16] The Former CCR Landfill was used to "treat[], store[], or dispose[] of CCR" until October 2015 but did so as a CCR landfill not a surface impoundment.

at 390:9–17. Notably, this type of grading is different from the "excavating" that would be required for a surface impoundment. *Id.* at 393:18–394:5 (explaining "grading is done to make things either dip one way or become level, that's all"). Here, the grading helped establish stormwater runoff flow from the Former CCR Landfill to the north into Pond 6. *See* June 11 Tr. at 391:3–8 (indicating that the Former Landfill Area was likely being graded "for purposes of drainage"). Additionally, as IEPA itself has explained, a landfill can exist in an excavated area, so that characteristic alone is not telling or persuasive regarding whether to characterize a unit as a CCR surface impoundment or a CCR landfill. IEPA Responses to Pre-Filed Questions, Revised Ex. 22 at 6.

Accordingly, characterization of whether the Former CCR Landfill is a CCR surface impoundment turns on whether it is "designed to hold an accumulation of . . . liquids." As Mr. Hagen explained, the Former CCR Landfill was built upon dry land; thus, the dry materials being sent to the area were not being placed into an area with liquids but rather were being placed dry on dry land. June 11 Tr. at 323:18–20; Hagen Demonstrative, SIPC Ex. 52 at 17 (referencing IEPA Ex. 1, 2). Ultimately, there are only two potential sources of water that appear to be the basis of IEPA's argument that the Former CCR Landfill is a surface impoundment, neither of which support characterizing the entire area as a CCR surface impoundment in contravention of the long-standing regulatory status of the unit.

The first source of water is precipitation. Like all landfills, when it rained, precipitation fell on the Former CCR Landfill. As Mr. Liss explained, the landfill was designed for that precipitation to runoff and flow towards Pond 6, which served as a stormwater collection area and had the explicit purpose of collecting the stormwater for eventual discharge out of an NPDES outfall. June 11 Tr. at 326:13–18; 2020 Landfill VN, SIPC Ex. 16 at 9 (documenting that landfill is sloped to promote surficial flow towards "stormwater ditch" or "moat" (*i.e.* Pond 6)). Mr. Liss and Mr.

Hagen have explained that the use of berms to control the flow of stormwater and the presence of catch basins to collect stormwater runoff are common features in landfills. June 11 Tr. at 324:5–22; *see also id.* at 386:6–9 (Mr. Liss indicating that ditches and ponds are generally necessary for landfill stormwater management); Evaluation Report, SIPC Ex. 40 at 13 (explaining that runoff areas are necessary features of landfills located below the waste/sludge, so that runoff may be collected and controlled). IEPA does not disagree that the landfill was designed to allow the flow of stormwater towards Pond 6. June 12 Tr. at 535:16–23; *see also* IEPA Ex. RR (noting a "dike" (*i.e.,* Pond 6) was being built around the Former CCR Landfill (then termed the scrubber sludge storage area) "to contain any possible runoff"); IEPA Ex. AA (showing the Former CCR Landfill (then termed the scrubber sludge storage area) with the horseshoe shaped area dredged to create Pond 6 around the northern end of the landfill to collect runoff). If the presence of stormwater and its related runoff turns a landfill into a surface impoundment, then there would be no need to distinguish between landfills and surface impoundments. Virtually all landfills would meet the definition of a surface impoundment, and any CCR landfill would necessarily turn into a CCR surface impoundment. Thus, the presence of precipitation and related stormwater runoff at the Former CCR Landfill does not turn this unit into a surface impoundment, and any suggestion that it does so is preposterous and inapposite to the clear regulatory intent that landfills and surface impoundments be separately defined and regulated.

The second potential source of water identified by IEPA was the intermittent presence of long narrow areas of water and a horseshoe shaped area of water located on top of a portion of the Former CCR Landfill. The long narrow areas were used in the event of emergency conditions during sub-freezing temperatures at the Station, when scrubber solids were temporarily pumped into these strips. *See supra* at 11; McLaurin Second Declaration, SIPC Ex. 41; June 11 Tr. at

245:1–246-1 (noting these areas were used no more than a couple to a few times a year). The scrubber solids were allowed to decant, and the solids were then removed from the strips and placed dry onto the Former CCR Landfill. McLaurin Second Declaration, SIPC Ex. 41. These areas were temporary, relatively shallow (approximately six to seven feet in depth), did not extend to other areas of the landfill, and did not extend anywhere near the bottom of the landfill (which averages 30 to 45 feet thick across the main body of the Former CCR Landfill). June 11 Tr. at 245:9–17; *see also* Landfill Closure Plan, SIPC Ex. 10 at 5. These areas did not contain water year-round and, in fact, after the scrubber solids decanted, the decanted water from these areas was immediately drained via standpipes in a "fairly short order time frame" to the pond 3 area of Pond 3/3a. June 11 Tr. at 246:4–247:1. The horseshoe shaped area was built on top of tens of feet of CCR that were deposited dry as part of the Former CCR Landfill on top of the Initial Fly Ash Holding Area. June 11 Tr. at 248:15–22; McLaurin Second Declaration, SIPC Ex. 41. This area was used for pH control and at times was used for the same purpose as the long narrow strips, with decanted water draining via a siphon to the pond 3 area of Pond 3/3a. June 11 Tr. at 247:14–23. This horseshoe area was approximately six to eight feet deep and did not extend to the bottom of landfill. *Id.*; McLaurin Second Declaration, SIPC Ex. 41. The Former CCR Landfill stopped operating prior to October 19, 2015, and was rarely used between 2009 and 2015. June 10 Tr. at 155:5–9 ("Q. And approximately when did the former landfill cease operations? A. It really stopped receiving material when we did the forced oxidation, you know, in '09, but then it was completely closed in '15."); *see also id.* at 122:4–123:2; *id.* at 123:13–124:1; *id.* at 154:10–14. Accordingly, these limited areas on top of the Former CCR Landfill were not "designed to hold water" as of or after October 19, 2015. *See* IEPA Ex. 15–18 (aerials after October 2015 showing both areas dry and with no indication of the presence of liquids). Further, because any CCR placed in these areas was removed and placed dry on other portions of the Former CCR Landfill, McLaurin Second Declaration, SIPC Ex. 41, the areas did not "contain CCR" on or after October 19, 2015. Additionally, the presence of these areas on limited portions of the Former CCR Landfill cannot and should not turn the remainder of the Former CCR Landfill into a surface impoundment. Thus, the presence of these areas does not make the Former CCR Landfill a CCR surface impoundment.

Finally, the presence of the Former Fly Ash Holding Units underneath a portion of the Former CCR Landfill does not turn the Former CCR Landfill (or the portion of the Former CCR Landfill on top of the Former Fly Ash Holding Units) into a surface impoundment. Rather, in this circumstance, the Former CCR Landfill is "overfill" on the Former Fly Ash Holding Units and is defined as a landfill. 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,373; June 11 Tr. at 376:23–377:4 (noting rather than being a depressed, excavated, or diked area designed to accumulate liquids, "waste accumulated well above whatever the [former] structure was . . . and it wasn't used to hold water or [] liquid waste . . ."); 89 Fed. Reg. 38,950, Revised SIPC Ex. 33 at 39,038–39 (characterizing both closed CCR surface impoundments and "ash landfill" built on top of closed CCR surface impoundments as CCR management units).

Notably, treating the Former CCR Landfill as a surface impoundment now will run against decades-long precedent. From the start of operations in 1978 through 2021, the Former CCR Landfill was considered a landfill by IEPA, and upon the promulgation of the Illinois landfill regulations in the early 1990s, the area was regulated as an unpermitted Part 815 landfill. *See, e.g.*, 2020 Landfill VN, SIPC Ex. 16 (IEPA 2019 inspection and subsequent violation notice, treating the area as a "landfill regulated under 35 Illinois Administrative Code 815"); IEPA Response/Document Review at Marion Station, SIPC Ex. 43 (2021 IEPA letter noting that Bureau of Land "has considered [the Former CCR Landfill] to be a Part 815 on site landfill"); Onsite Permit Exempt "815" Facility Annual Reports, SIPC Ex. 44 (examples of the annual On-site Permit Exempt "815" Facility reports to IEPA for the Former CCR Landfill in accordance with the Illinois landfill regulations.); RCRA Inspection Reports, SIPC Ex. 45 (conducting inspections of the landfill and defining its area); June 10 Tr. at 156:2–17 (Mr. Gallenbach describing his experience with IEPA where the Bureau of Land classified the Former CCR Landfill as a landfill); June 11 Tr. at 242:22–244:18 (Mr. McLaurin describing his interactions with IEPA where the Bureau of Land classified the Former CCR Landfill as a landfill); *id.* at 383:2–10 (explaining that based on discussions with IEPA regarding the landfill closure plan for the Former Landfill Area, Mr. Liss's impression was that IEPA considered the area to be "100 percent a landfill"). The characterization of the Former CCR Landfill as a landfill is consistent with IEPA's exclusion of the unit from its list of potentially regulated units during the Part 845 rulemaking proceeding. IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181–82 (IEPA's table of the 73 units it believed to be regulated by Part 845). SIPC's landfill expert confirmed that based on his visual observation of the Former CCR Landfill and review of documentation associated with the unit, the Former CCR Landfill is a landfill and not a surface impoundment. June 11 Tr. at 372:2–16. He further noted that based on his knowledge, IEPA has considered the area a landfill since his tenure at the Agency starting in the 1980s. June 11 Tr. at 374:13–375:7.

The Former CCR Landfill has, thus, been characterized as a landfill from its inception and subject to the Part 815 landfill requirements since their promulgation in the early 1990s. Illinois landfill regulations, since their adoption and consistent with Part 257 and Part 845, clearly state that a landfill is not a surface impoundment. 35 Ill. Admin. Code § 810.103 ("'Landfill' means a unit or part of a facility in or on which waste is placed and accumulated over time for disposal, and that is not . . . a surface impoundment . . . ."); *see also* 35 Ill. Admin. Code § 810.104 ("For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, a surface impoundment is not a landfill."). No revisions to Illinois landfill regulations were made after the promulgation of Part 845. Thus, if IEPA's attempt to recategorize the Former CCR Landfill is allowed, then one of two untenable circumstances exist (1) the Former CCR Landfill will have been subject to decades of "inapplicable" regulation, regulatory burden, and expense under the Illinois landfill program, or (2) the Former CCR Landfill has been, since the promulgation of Part 845, subject to overlapping and conflicting regulatory requirements under Part 815 and Part 845 (*e.g.*, the landfill regulations and Part 845 each have their own closure, monitoring, and reporting requirements). Both outcomes are far from the regulatory intention of Part 845.

Notably, if the Board concludes the Former Landfill Area is not a Part 845 CCR surface impoundment, the area will still be subject to the closure and groundwater monitoring requirements under the Illinois landfill regulations, and subject to Illinois groundwater standards (35 Ill. Admin. Code Part 620).[17] The landfill closure requirements are intended to result in closure of a unit in a manner protective of human health and the environment. *See* 35 Ill. Admin. Code Part 811. As Mr. Liss explained, a closure plan under the landfill regulations and related groundwater monitoring will necessarily include closure and groundwater monitoring of the entire Former Landfill Area: both the Former CCR Landfill and the Former Fly Ash Holding Units. June 11 Tr. at 380:4–382:3.

[17] It will also be subject to any applicable federal regulations for inactive CCR landfills.

3. *In the Alternative, the Former Landfill Area Qualifies for the Adjusted Standard Sought by SIPC.*

a. Factors relating to the Former Landfill Area are substantially and significantly different from the factors relied upon by the Board in adopting Part 845.

For the reasons described above, factors relating to the Former Landfill Area (which includes both the Former Fly Ash Holding Units and the Former CCR Landfill) are substantially and significantly different from the factors relied upon in adopting Part 845. *See supra* Section III.B.1., 2.

Landfills and surface impoundments have always been distinct types of units. While the Part 257 Rules include regulation of CCR landfills, Part 845 specifically excludes CCR landfills or other areas of CCR fill from regulation. *See* Second Notice Opinion at 12 (finding regulation of unconsolidated coal ash fills and piles beyond the scope of the Part 845 rulemaking); *see also* 35 Ill. Admin. Code § 845.100 (limiting the applicability of Part 845 only to CCR surface impoundments). In determining which types of CCR surface impoundments pose the risks that Part 845 seeks to address, the Federal CCR Rule and the 2014 Risk Assessment conducted in support of the regulation of CCR surface impoundments are instructive. IEPA and the Board relied on the Part 257 Rules when drafting, promulgating, and enacting Part 845, going so far as to not conduct an independent Part 845 risk assessment and instead relying on the findings of USEPA's 2014 Risk Assessment. *See supra* at 36–37; *see generally* Second Notice Opinion at 43–44, 46–47, 48, 49–50 (relying on the 2014 Risk Assessment in various of the board findings for the promulgation of Part 845). Based on the 2014 Risk Assessment, USEPA was clear that it was targeting for regulation those surface impoundments "that contain a large amount of CCR *managed with water*, *under a hydraulic head* that promotes the rapid leaching of contaminants." 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357 (emphasis added). The Former Landfill Area does not qualify as such a unit. The Former CCR Landfill's and Former Fly Ash Holding Units' lack of CCR surface impoundment characteristics is further reflected by IEPA's exclusion of the units from its list of Part 845 potentially regulated units. IEPA Responses to Pre-Filed Questions, SIPC Ex. 22 at 150, 181−82 (IEPA's table of the 73 units it believed to be regulated by Part 845).

As of October 19, 2015, the Former Landfill Area did not contain CCR managed with water and under a hydraulic head such that it would promote the rapid leaching of contaminants. The Former Fly Ash Holding Units do not contain liquids and have not contained liquids for at least thirty years. Any CCR remaining in the Former Fly Ash Holding Units is not under a hydraulic head and presents far less risk to groundwater than the units the Board sought to regulate in Part 845 (which the Board acknowledged when it declined to extend the Part 845 rulemaking to CCR landfills). *See* Support for De Minimis Units, SIPC Ex. 36 at 14 ("As noted in the 2015 CCR Rule, 'units that contain a large amount of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants,' which, in turn, will drive risk."); *see also* 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,342 ("EPA's risk assessment shows that the highest risks are associated with CCR surface impoundments due to the hydraulic head imposed by impounded water."). The Former Fly Ash Holding Units are now covered by and serving as structural fill for the Former CCR Landfill. The CCR located within the Former CCR Landfill was disposed of dry via a conveyor (with the only exception being the limited, temporary use of the long narrow strips and the horseshoe-shaped area located in limited portions). *See supra* at 28–30. Notably, a bulldozer was operated on top of the Former CCR Landfill to move and manage the CCR deposited there. June 10 Tr. at 154:15−155:4. The operation of a bulldozer on top of a typical CCR surface impoundment, indeed any unit with a hydraulic head, would be physically impossible.

Another significant and substantial difference in the factors relating to the Former Landfill Area is its categorization and treatment as a permit-exempt landfill under Illinois landfill regulations. 2020 Landfill VN, SIPC Ex. 16 (IEPA 2019 inspection and subsequent violation notice, treating the area as a "landfill regulated under 35 Illinois Administrative Code 815"); IEPA Response/Document Review at Marion Station, SIPC Ex. 43 (2021 IEPA letter noting that Bureau of Land "has considered [the Former CCR Landfill] to be a Part 815 on site landfill"); Onsite Permit Exempt "815" Facility Annual Reports, SIPC Ex. 44 (examples of the annual On-site Permit Exempt "815" Facility reports to IEPA for the Former CCR Landfill in accordance with the Illinois landfill regulations.); RCRA Inspection Reports, SIPC Ex. 45 (conducting inspections of the landfill and defining its area); June 10 Tr. at 156:2–17 (Mr. Gallenbach describing his experience with IEPA where the Bureau of Land classified the Former CCR Landfill as a Landfill); June 11 Tr. at 242:22–244:18 (Mr. McLaurin describing his interactions with IEPA where the Bureau of Land classified the Former CCR Landfill as a landfill). SIPC submitted a Part 815 Initial Facility Report to IEPA, submitted annual Part 815 reports and groundwater monitoring results to IEPA, IEPA inspected the area as a landfill, and in response to an IEPA violation notice and request, SIPC prepared and submitted a Part 811 Closure Plan to IEPA for the permanent closure of the Former Landfill Area in accordance with the Illinois landfill regulations. *Id.*; *see also* Landfill Closure Plan, SIPC Ex. 10; June 11 Tr. at 383:2–10 ("Q. And during those discussions, what was your impression regarding whether IEPA considered this area to be a landfill or a surface impoundment at that time? A. It was 100 percent a landfill.").

The Former Landfill Area is also unique due to the proximity of the Former Fly Ash Holding Units to the Former CCR Landfill. These units make up one contiguous area. Thus, from a practical perspective, it makes little sense to consider or require separate closure measures for the Former Fly Ash Holding Units and the Former CCR Landfill. June 11 Tr. at 386:10‒387:16 (explaining the impracticalities of closing the Former Fly Ash Holding Units separately from the Former CCR Landfill, including the lack of a continuous cap, technical issues that could "defeat[] the purpose of an impermeable cap," maintenance issues, and explaining "[i]f the goal is to close them and to prevent infiltration and then to monitor them, looking at it as a whole is a far better way of doing it."). Indeed, a closure cover system addressing the Former CCR Landfill would necessarily address the closure of the Former Fly Ash Holding Units. *Id.*; *see also id.* at 379:15‒21; *id.* at 380:4‒12; *id.* at 381:12‒24.

Finally, factors related to the burden of compliance by the Former Landfill Area are substantially and significantly different from the factors related to the burden of compliance relied upon by the Board when promulgating Part 845. Specifically, during the rulemaking, IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to Part 257, and therefore, owners had years to develop and implement compliance plans. *See* Final Order at 8–9. However, as discussed above, the Former Landfill Area is not subject to Part 257, and thus, there has been no need to undertake compliance actions under Part 257, such as groundwater and location restriction assessments. *See* Liss Second Declaration, SIPC Ex. 47; *see also supra* at 29 (indicating that the Former CCR Landfill is not regulated by the Federal CCR Rule). Accordingly, the timing and cost of Part 845 compliance for the Former Landfill Area differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject to Part 257 that already had years of Part 257 compliance activity that could be used to comply with Part 845. June 11 Tr. at 396:1‒24 (explaining that without monitoring systems installed under the Federal CCR Rule, time is needed to conduct a groundwater investigation to determine where to put the wells and begin monitoring).

Additionally, evidence indicates low hydraulic conductivity, or a slow rate of groundwater movement, at Marion Station. Liss Second Declaration, SIPC Ex. 47; June 11 Tr. at 397:20–400:9. This suggests a longer timeframe than the allowed six months is required to design and install a groundwater monitoring well network and collect representative groundwater samples. *Id.* (explaining 12 months are required, at a minimum).

b. The existence of the Former Landfill Area's unique factors justifies an adjusted standard.

The Former Landfill Area's unique factors justify that it should not be regulated under Part 845 at all. They further justify the limited adjusted standard SIPC requests for the Former Landfill Area in the event the Board does not grant a finding of inapplicability.

The proposed adjusted standard requests only three adjustments from the Part 845 requirements. First, SIPC's proposed adjusted standard provides adjustments from provisions setting deadlines for submittal of operating and closure construction permit applications. *See* 35 Ill. Admin. Code §§ 845.220(d)(1), .230., 700(g), (h). This adjustment is a necessity because the Former Landfill Area is not regulated under Part 257, and the Part 845 deadlines for operating and construction permit applications have passed during the pendency of this adjusted standard proceeding. This adjustment also allows time to pursue the unique opportunity of using CCR from the Former Landfill Area for beneficial use. The adjusted standard requests an 18-month period to submit both an operating permit application and a closure construction permit application for this area. An 18-month period is justified because first, a six-month period is required to effectively determine whether a market for use of the CCR in the Former Landfill Area exists, which may differ based on the timing of a final decision in this proceeding. Second, as Mr. Liss explained, because the Former Landfill Area is not subject to Part 257, a minimum of 12 months (and possibly longer) will be required to design and install a groundwater monitoring system, collect representative groundwater samples, and conduct a hydrogeological assessment for an operating permit application. Liss Second Declaration, SIPC Ex. 47; June 11 Tr. at 394:11–399:10 (explaining why at least a year is required to develop and conduct the groundwater analysis required to be included with an operating permit application). Given that information collected for the operating permit application will necessarily inform the closure construction permit application, including the proposed closure plan, the closure construction permit application should be submitted at the same time as or after the operating permit application.

Second, the proposed adjusted standard provides an adjustment from the closure alternative assessment requirements in 35 Ill. Admin. Code § 845.710. Specifically, it would allow SIPC to forego a closure alternatives assessment and, instead, close the landfill via removal with beneficial use of the remaining CCR, if such a closure is deemed feasible, or, in the alternative, to close in place with a 35 Ill. Admin. Code § 845.750 compliant final cover system. This adjustment is justified by the Former Landfill Area's unique characteristics, including the fact that its CCR is viable for beneficial use and its decades of operation (including the dry disposal of fly ash and scrubber sludge) and treatment as a landfill.

Finally, in the event closure by removal with beneficial use of CCR is a viable closure option for the Former Landfill Area, the adjusted standard would allow SIPC to request additional time, in two-year increments, from IEPA to complete closure, so long as CCR in the area continues to be removed for beneficial use. The proposed adjusted standard includes requirements for Petitioner to provide a narrative demonstration to IEPA explaining why the extension is needed, how it will allow for the continued "beneficial use of CCR," and the estimated date upon which "beneficial use of CCR" will be complete. No more than five two-year extensions will be allowed.

c. The requested adjusted standard for the Former Landfill Area will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting Part 845.

The adjusted standard will not result in any adverse impacts to human health or the environment. The HHERA found that the Station as a whole, including the Former Landfill Area is not posing any unacceptable risk to human health or the environment. *See generally* HHERA, SIPC Ex. 37. The proposed adjusted standard will still require closure in conformance with Part 845 performance standards and compliance with Part 845 groundwater monitoring and corrective action requirements, so—to the extent the Former Landfill Area is impacting groundwater—those impacts will be addressed. Additionally, to the extent beneficial use of CCR from the Former Landfill Area is feasible, such use has significant environmental benefits.

> The beneficial use of CCR is a primary alternative to current disposal methods. And as EPA has repeatedly concluded, it is a method that, when performed correctly, can offer significant environmental benefits, including greenhouse gas (GHG) reduction, energy conservation, reduction in land disposal (along with the corresponding avoidance of potential CCR disposal impacts), and reduction in the need to mine and process virgin materials and the associated environmental impacts. . . . Three of the most widely recognized beneficial applications of CCR are the use of coal fly ash as a substitute for Portland cement in the manufacture of concrete, the use of FGD gypsum as a substitute for mined gypsum in the manufacture of wallboard, and the use of CCR as a substitute for sand, gravel, and other materials in structural fill. Reducing the amount of cement, mined gypsum, and virgin fill produced by substituting CCR leads to large supply chain-wide reductions in energy use and GHG emissions. . . . CCR can be substituted for many virgin materials that would otherwise have to be mined and processed for use. These virgin materials include limestone to make cement, and Portland cement to make concrete; mined gypsum to make wallboard, and aggregate, such as stone and gravel for uses in concrete and road bed. Using virgin materials for these applications requires mining and processing, which can impair wildlife habitats and disturb otherwise undeveloped land. It is beneficial to use secondary materials—provided it is done in an environmentally sound manner—that would otherwise be disposed of, rather than to mine and process virgin materials, while simultaneously

> reducing waste and environmental footprints. . . . Beneficially using CCR instead of disposing of it in landfills and surface impoundments also reduces the need for additional landfill space and any risks associated with their disposal. . . . As discussed in the final rule RIA, the current beneficial use of CCR as a replacement for industrial raw materials (e.g., Portland cement, virgin stone aggregate, lime, gypsum) provides substantial annual life cycle environmental benefits for these industrial applications.

80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,329.

Accordingly, the proposed adjusted standard for the Former Landfill Area will not have adverse impacts on human health or the environment and, in fact, may have environmental benefits.

d. <u>The proposed adjusted standard for the Former Landfill Area is consistent with applicable federal law.</u>

SIPC's proposed adjusted standard for the Former Landfill Area is consistent with federal law. The Board has acknowledged that "Part 257 is self-implementing," and, therefore, it is up to SIPC and USEPA to determine whether the units at issue are subject to the Federal CCR Rule. *See* AS 2021-005*, In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board at 44 (Jun. 26, 2025). SIPC has evaluated the Former Landfill Area and determined that it is not regulated as an existing CCR surface impoundment or inactive CCR surface impoundment under the Federal CCR Rule. Consequently, the proposed adjusted standard is consistent with Part 257. *See id.* ("Because EEI believes Joppa West is not subject to Part 257, the Board finds that the interim adjusted standard is consistent with federal law."); *see also* 35 Ill. Admin. Code § 104.406(i).

IV. <u>ALTERNATIVE INTERIM ADJUSTED STANDARD</u>

In questions raised by the Board in anticipation of the hearing, the Board invited comment "on whether an interim adjusted standard would be appropriate to allow for the collection of reliable groundwater monitoring data using the enhanced groundwater monitoring network to better characterize the environmental impacts of the units at issue." *Pre-Filed Questions Submitted by the Illinois Pollution Control Board Directed to Southern Illinois Power Cooperative and the Illinois Environmental Protection Agency* at 4 (Jun. 6, 2025). As noted at hearing, in the event the Board does not grant SIPC's requested finding of inapplicability for one or more of the units subject to this proceeding, SIPC supports an interim adjusted standard to collect additional groundwater monitoring data, if the Board feels such an interim adjusted standard is appropriate. Under its adjusted standard proposal, SIPC is already proposing to install a Part 845 compliant groundwater monitoring network for the units subject to this proceeding. An interim adjusted standard would allow for the collection of data under such an enhanced groundwater monitoring network to further characterize the environmental impacts (if any) of the units to make a more informed decision regarding whether regulation and closure under Part 845 is or is not, in fact, justified.

If the Board denies SIPC's request for a finding of inapplicability and further determines a permanent adjusted standard is not justified at this time, an interim adjusted standard is appropriate due to the unique characteristics of these units (as described above), including the limited amount of groundwater data available.[18] The De Minimis Units contain far less total sediment and CCR than a typical CCR surface impoundment, *see supra* at 45, 61, 75, 88, 103–05, and the Former Landfill Area operated for decades as an Illinois Part 815 landfill, being regulated as such by IEPA. *See supra* at 122–24. None of the units in this proceeding are subject to regulation under Part 257 and, accordingly, the groundwater data available related to the units is limited to the existing

[18] The petitioner in an adjusted standard proceeding bears the burden of proof but, as the Board's scientific experts will recognize, a longer period of time than allowed for a petition for adjusted standard would be required to install an enhanced monitoring network and gather sufficient data points to further characterize the groundwater potentially impacted by the units at issue in this proceeding.

groundwater monitoring network at the Station. *See* Pond Investigation Rep., SIPC Ex. 29, Attachment F (data from existing monitoring network). For the De Minimis Units, an interim adjusted standard would allow for further evidence to demonstrate the units' *de minimis* status, including that the units do not pose a risk to groundwater and are not a significant source of contaminants to groundwater (and the units therefore, are not "designed to hold an accumulation of CCR" and do not "treat[], store[], or dispose[] of CCR."). 80 Fed. Reg. 21,302, Revised SIPC Ex. 17 at 21,357. For the Former Landfill Area, an interim adjusted standard could allow for further characterization to confirm the type of corrective action and closure that is necessary to be protective of groundwater.

Allowing time for SIPC to collect additional data with an enhanced, Part 845 compliant, groundwater monitoring network would allow for clarification of the units' impact while having no detrimental impact on human health or the environment. The HHERA demonstrates that the Station is not posing a risk to any potential human or environmental receptors. Further, the shake tests performed on the De Minimis Units demonstrate sediments from these units are unlikely to be contributing to Illinois groundwater standard exceedances. As described below, an interim adjusted standard could include corrective action requirements in the event a unit is found to be contributing to groundwater contamination, providing further protection to human health and the environment.

There is already precedent for such an interim adjusted standard, which could work similarly to the one approved by the Board in AS 2021-005. *See* AS 2021-005, *In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board (Jun. 26, 2025) (granting interim adjusted standard lasting for a period of seven years). In essence, the interim adjusted standard could provide an adjustment from the closure requirements in Part 845, 35 Ill. Admin. Code Part 845, Subpart G, for a limited period of time while further characterization work occurs. The other requirements in Part 845 could apply during that period, including groundwater monitoring and, if the Board believes it appropriate, corrective action requirements. An interim adjusted standard could also require a final report evaluating the remaining heavy metals for transport in the groundwater. Like AS 2021-005, that report could include a mass transport model, a geochemical model, and a flow model demonstrating (1) whether groundwater contamination from the units at issue in this proceeding that exceeds the groundwater protection standards in Section 845.600 is dispersing or diffusing in a manner that does not contribute to an exceedance of the Section 845.600 standards outside of the facility property boundary, and, if applicable, (2) whether implementing corrective action protects human health and the environment. *See* AS 2021-005, *In the Matter of: Petition of Electric Energy, Inc. for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845*, Order of the Board at 39–40 (Jun. 26, 2025). The report could also include a human health risk assessment and ecological risk assessment verifying that the above actions protect human health and the environment. *Id.* At the end of the interim adjusted standard period, SIPC could file for a permanent adjusted standard/finding of inapplicability or, in the alternative, the Part 845 standards would start to apply in full.

IEPA's excuses for why an interim adjusted standard would not work here, when it was approved in AS 2021-005, are not persuasive. IEPA claims that an interim adjusted standard is not appropriate in this proceeding because the geology underlying the Station and the units at issue is comprised of a "relatively thin sandy clay layer underlain by weather sandstone," representing a "high potential for migration and groundwater monitoring, and potentially required corrective action" and therefore "should be addressed more expeditiously." IEPA Ex. 56 at 9–10.

While IEPA notes the presence of sandy clay and weathered sandstone, SIPC's 2024 Annual Report[19] identifies the dominant lithology in the monitored zone as finer-grained material with low hydraulic conductivity values. The 2024 Annual Report further describes the uppermost water-bearing zone as having a hydraulic conductivity of less than 1E-04 centimeters per second, which is consistent with low-permeability materials.

Further, as Mr. Liss indicated during hearing, the 2024 Annual Report also memorialized a slow rate of groundwater flow. *Id.* at 3–4. Based on the reported hydraulic conductivity and groundwater velocity values, the time required for changes in groundwater chemistry is expected to be influenced by the low permeability and limited flow rate of the aquifer. The saturated thickness and material present in the groundwater unit further constrains the time required for change. Despite IEPA's assertion to the contrary, an expedited schedule for groundwater monitoring and potentially corrective action, as opposed to an interim adjusted standard, is not warranted by site geology.

V. CONCLUSION

SIPC respectfully requests that the Board grant its request for inapplicability or, in the alternative, an adjusted standard as set forth herein.

Respectfully Submitted,

SOUTHERN ILLINOIS POWER
COORPERATIVE

/s/ *Bina Joshi*
One of its attorneys

Dated: October 10, 2025

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[19] Available at https://www.sipower.org/wp-content/uploads/2025/02/2024-State-Annual-Report-_Final.pdf. This annual report is publicly available and was submitted to IEPA. SIPC is happy to provide a copy to the Board in this proceeding if the Board desires.

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SIPC POST-HEARING OPENING BRIEF, ATTACHMENT 1

Hanson Engineering, Emery Pond Groundwater Protection Evaluation at 28-30 (July 24, 2020)

Emery Pond

Groundwater Protection Evaluation

Marion Power Plant
Southern Illinois Power Cooperative
Marion, Williamson County, Illinois

April 23, 2020
revised July 24, 2020

HANSON
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Abbreviations

BGS – below ground surface
CCR – Coal Combustion Residuals
CFR – Code of Federal Regulations
COC – Contaminant of Concern
EPA – Environmental Protection Agency
FGD – flue gas desulfurization
GMZ – Groundwater Management Zone
GPS – groundwater protection standard [after 40 CFR 257.95(h)]
IAC – Illinois Administrative Code
mg/L – milligram per liter
ug/L – microgram per liter

1. Introduction

The Southern Illinois Power Cooperative (SIPC) Marion Power Plant's Emery Pond and adjacent FGD loadout area (Site) is situated at the northwest corner of Lake of Egypt, and approximately seven and one-half miles south of the City of Marion in Williamson County, Illinois. The Site is located generally in the Northeast ¼ of Section 26, Township 10 South, Range 2 East of the Third Principal Meridian (see Figure 1). The purpose of this report is to present the groundwater flow and contaminant transport evaluation associated with the FGD loadout area and the Emery Pond. The Emery Pond has existed for storm and process water control for some time, and the Loadout Area was constructed and placed into service in spring 2009. The layout of the Site is depicted on Figure 2.

This Groundwater Protection Evaluation models the time it will take for groundwater in and around the FGD loadout area and Emery Pond to achieve steady state compliance with applicable Illinois groundwater quality standards and evaluates compliance with federal groundwater protection standards (GPS) under various closure scenarios. Specifically, Hanson modeled the time it will take for groundwater surrounding Emery Pond to achieve Illinois Class I (35 IAC 620.410)[†] groundwater quality standards, focused on those alleged to have been exceeded in a Violation Notice earlier issued by Illinois EPA. In addition to evaluating the time necessary to meet Class I standards, Hanson also evaluated the two 40 CFR Part 257, Appendix IV constituents (arsenic and cobalt) with reported exceedances of the GPS calculated pursuant to 40 CFR 257.96(d)(2).

Hanson used a conservative surrogate approach to model existing conditions as described in Section 4.3 below, and to model three potential corrective actions: (1) removal of CCR from the Site and backfill with clean soil (Section 4.4); (2) removal of CCR from the Site and installation of a composite liner (Section 4.5); and (3) removal of CCR from the Site and installation of a composite liner and perimeter toe drain (Section 4.6). In addition, and as requested by Illinois EPA, Hanson used site-specific data to model on a constituent-by-constituent basis the time it will take for groundwater to reach compliance with Class I groundwater quality standards and applicable GPS for the selected remedy (removal of CCR from Emery Pond and the adjacent FGD storage area, and installation of a composite liner and perimeter toe drain) as described in Section 4.8. Hanson's modeling predicts that under the selected remedy, the groundwater will reach compliance with Class I groundwater quality standards and the GPS for the two applicable 40 CFR Part 257, Appendix IV constituents in 27 years. Finally, as described in Section 5, Hanson modeled any impacts of the Emery Pond groundwater plume on Lake of Egypt and determined that the impacted groundwater is not predicted to cause Lake of Egypt surface water quality standard exceedances. Consistently, actual sampling from the Lake of Egypt, as described in Hanson's (2020) separate Corrective Action Plan and Selected Remedy, confirms that there has been no measurable adverse impact on the lake from groundwater discharges in the vicinity of the Site.

Emery Pond currently does not and will not in the future receive CCR within the meaning of 40 CFR Part 257. Therefore, once the closure by removal of CCR and the subsequent lining of the former Emery Pond is complete, the new Storm Water Basin will not meet the definition of a regulated CCR surface impoundment under 40 CFR 257, 415 ILCS 5/3.143, or the proposed Illinois 35 IAC 845 rules. Nonetheless, SIPC must continue to monitor the ongoing mitigation of CCR constituent concentrations

[†] This report models compliance with Class I standards because they are the most stringent Illinois groundwater quality standards and will provide the most conservative estimate of the time it will take to achieve compliance. However, the use of such standards does not constitute or concede a Class I groundwater classification determination. For a specific analysis of groundwater classification at the Site, please see Hanson's Hydrogeologic Investigation Report dated March 29, 2019 and its Addendum dated July 9, 2019.

and compliance with applicable groundwater protection standards under 40 CFR 257 and proposed Illinois regulations. As set forth in the separate Groundwater Monitoring Plan, groundwater monitoring is also proposed with respect to state groundwater standards, and planned corrective action is described in the Closure Plan and Corrective Action Plan and Selected Remedy also submitted in connection with the closure of the Site. Accordingly, this report provides a basis for selecting the final corrective action for the Site and estimating the time needed to maintain a Groundwater Management Zone (GMZ) until Class I groundwater quality standards are attained at the Site.

2. Project Background

2.1 Physical Setting

The site is located in the Shawnee Hills section within the Interior Low Plateaus (physiographic) Province (Leighton et al., 1948). Site geology consists of glacially derived deposits of the Wisconsian and Illinoisan Stages overlying Pennsylvanian Age bedrock. The existing topography is a maturely eroded upland of gently sloping knolls and ridges (see Figure 1).

The “Berg Circular” indicates that the Site has less than 6 m (< 19.7 ft.) of loess overlying silty and sandy diamictons[‡] of the Glasford Formation (undifferentiated), overlying the Pennsylvanian Caseyville Formation (Berg et al., 1987).

Groundwater flow at the Marion Power Plant generally trends to the north northeast, but locally at the Site, groundwater discharges toward Lake of Egypt within the unlithified deposits and fill materials. Groundwater elevations have been measured and recorded at the Site since 2017. Various water quality parameters required by the US EPA coal combustion residuals (CCR) Rules at Title 40 Code of Federal Regulations, Part 257 (40 CFR 257) have been monitored during this period. Concentrations of several CCR indicator parameters including boron, chloride, sulfate, and total dissolved solids (TDS), have been found in several monitoring wells above the Class I (Potable Resource) Groundwater Standard limits [35 Illinois Administrative Code, Part 620.410 (35 IAC 620.410)].

2.2 Climate Data

Average climatic data was obtained from the Illinois State Water Survey. The data was recorded between 1990 and 2018 from Carbondale, Illinois, which is located approximately twenty miles northwest of the Site. The data includes monthly maximum and monthly minimum daily temperatures and average rainfall for each month calculated from daily values collected over the 28-year period. The data is summarized in Table 1.

Table 1: Average Monthly Temperature Extremes and Precipitation for Carbondale, IL

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Annual
Max Temperature - °F	42.1	46.6	56.5	67.3	75.8	84.1	86.9	86.2	79.8	68.9	55.9	44.9	68.2
Min Temperature - °F	24.2	27.5	35.5	44.9	54.8	63.5	67.0	64.5	56.1	45.1	35.5	27.7	45.5
Precipitation - inches	3.09	2.96	4.37	5.23	4.43	3.92	3.68	3.07	3.24	3.35	4.35	3.74	45.4

Source: Water and Atmospheric Resources Monitoring Program. Illinois Climate Network. (2019). Illinois State Water Survey, 2204 Griffith Drive, Champaign, IL.

‡ diamicton (di-a-mic'-ton) A comprehensive, nongenetic term proposed by Flint et al. (1960) for a non-sorted or poorly sorted, non-calcareous, terrigenous sediment that contains a wide range of particle sizes, such as sand and/or larger particles in a muddy matrix.

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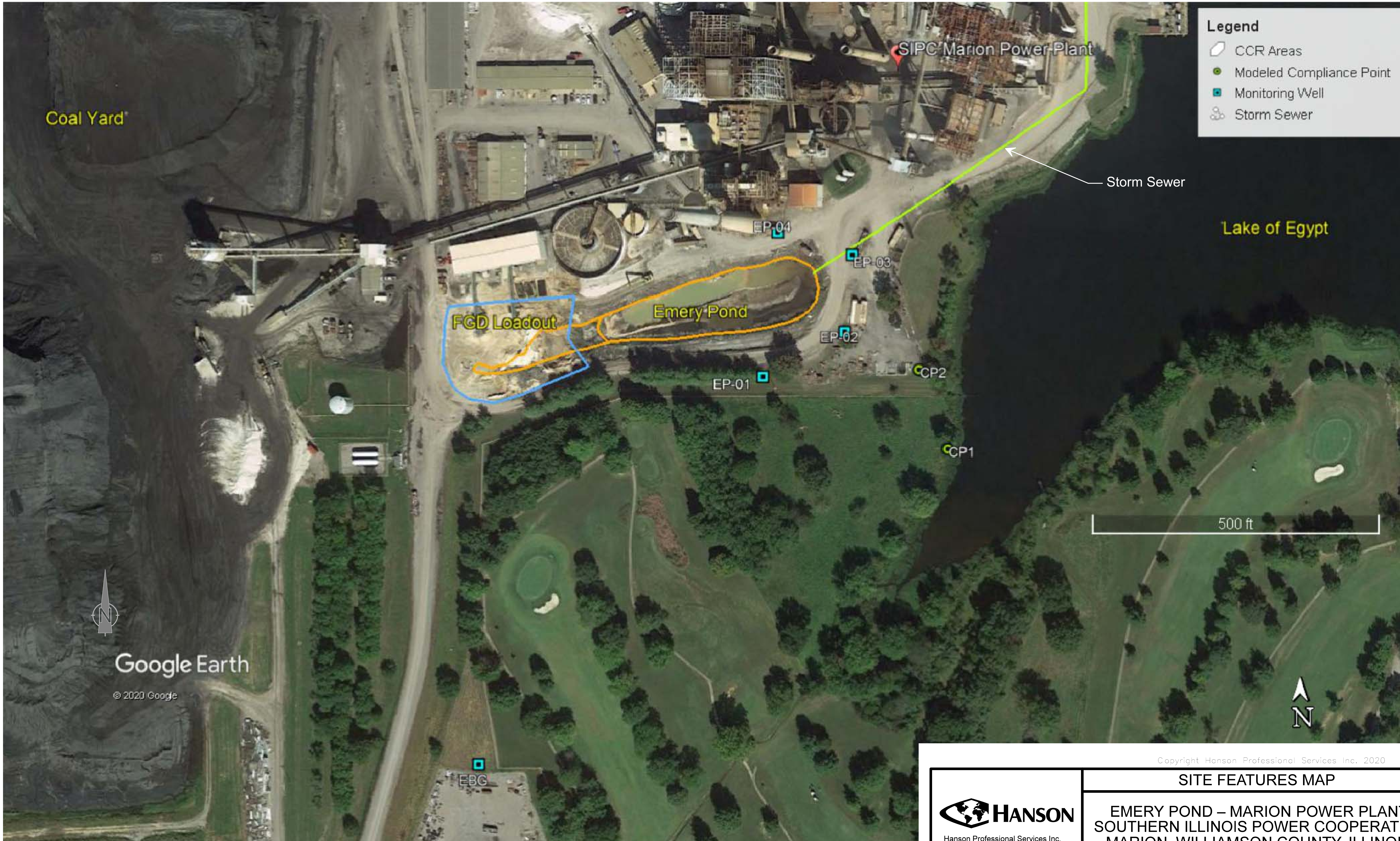

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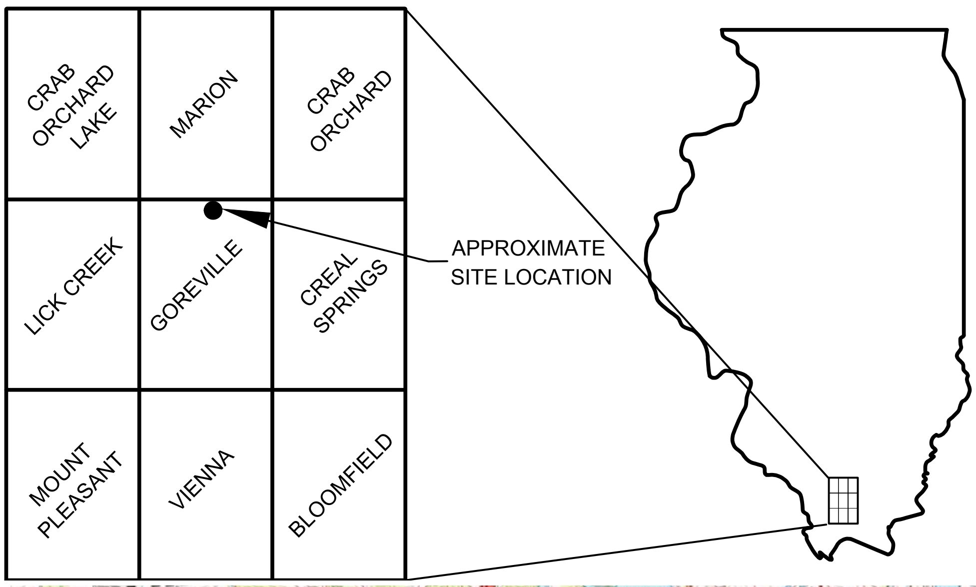
SITE FEATURES MAP

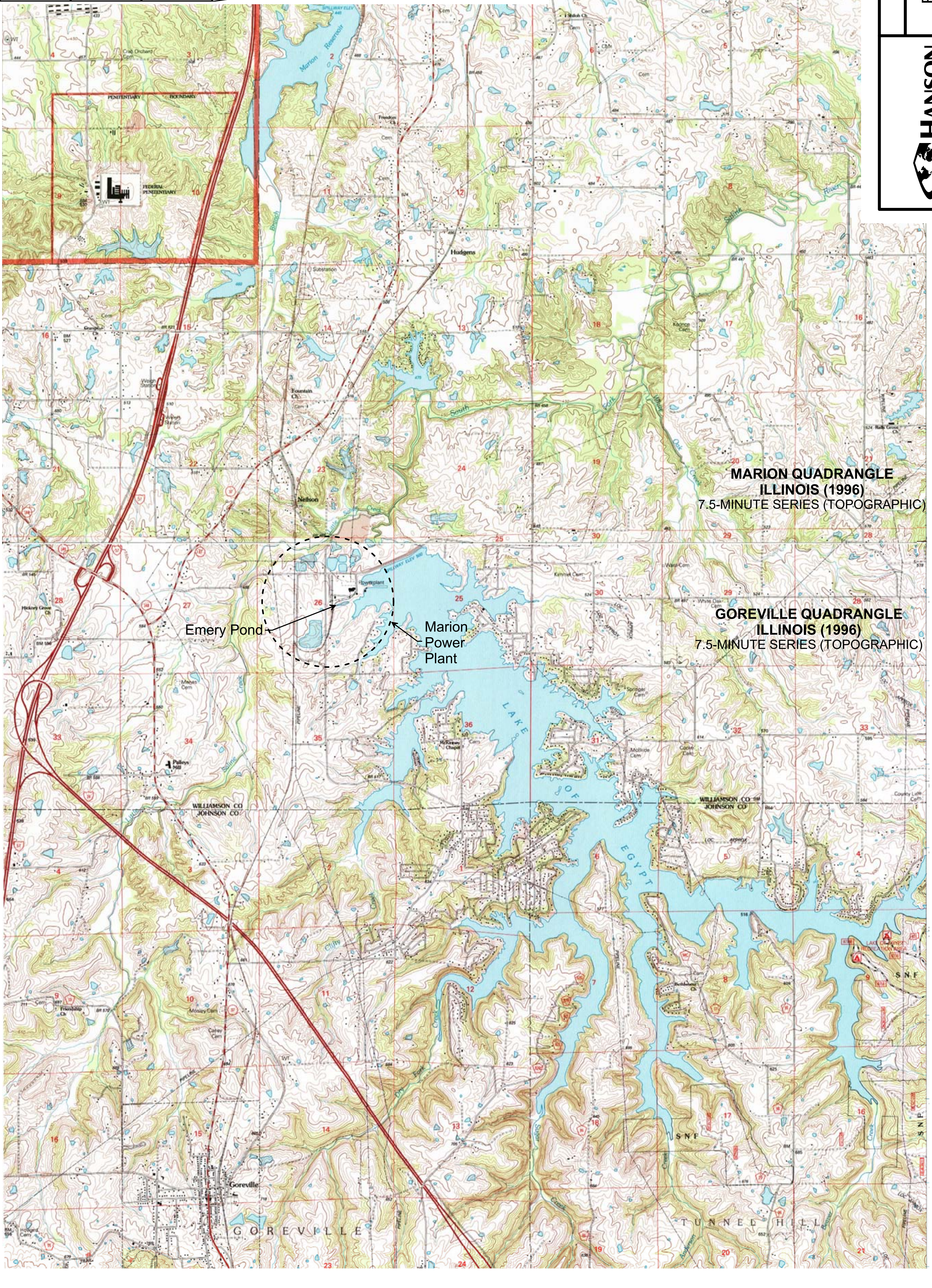
EMERY POND – MARION POWER PLANT
SOUTHERN ILLINOIS POWER COOPERATIVE
MARION, WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022B

FIGURE 2

QUADRANGLE MAP LOCATIONS (7.5' SERIES)





SITE LOCATION MAP

EMERY POND – MARION POWER PLANT
SOUTHERN ILLINOIS POWER COOPERATIVE
MARION, WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022B

FIGURE 1

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2.3 Unlithified Deposits

Regionally, the unlithified deposits consist of a thin veneer of Roxana Loess overlying silty and sandy diamictons of the Glasford Formation. These deposits are generally thin (less than 20 feet). In the case of the Roxana Loess, it is found intermittently. The Glasford Formation is leached of carbonates and weathered to yellowish brown to strong brown in color (Jacobson, 1992).

3. Groundwater Compliance and Corrective Action

Currently the Site is following the groundwater monitoring requirements of 40 CFR 257.90-93. Semiannual monitoring occurs at the five (5) monitoring wells around the Site (see Figure 2 for well locations). Compliance is based on a comparison of monitoring results to the Site's calculated GPSs. The Site has been in assessment monitoring (per 40 CFR 257.95) since GPSs were exceeded for Appendix III parameters in 2018 (see **Error! Not a valid bookmark self-reference.**).

Table 2: Appendix III Exceedances over GPS*

Parameter	EP-01	EP-02	EP-03	EP-04
Boron, total	▲	▲	▼	▲
Calcium, total	▲	▲	▼	▲
Chloride, total	▼	▼	▲	▲
Fluoride, total	▼	▼	▼	▼
pH	▼	▼	▲	▲
Sulfate, total	▲	▲	▲	▲
Total Diss. Solids	▲	▲	▲	▲

* Appendix IV parameter monitoring has also shown statistically significant increase above the GPS for total Arsenic and total Cobalt at EP-03 and EP-04.

The evaluated corrective action scenario addressing these exceedances is to close Emery Pond by removal (per 40 CFR 257.101) which will include removal of the FGD materials at the loadout area and underlying bed ash. The planned corrective action is further described in the related Closure Plan and Corrective Action Plan and Selected Remedy. Once the removal is complete, SIPC will install a composite liner system compliant with 40 CFR 257.72 and construct a new Storm Water Basin to collect storm water and possibly other discharges but not CCR. The selected remedy also incorporates a GMZ, dispersive and diffusive flux of COC concentrations in groundwater following CCR source removal, a perimeter toe drain, and continued monitoring of groundwater until the groundwater reaches compliance with applicable standards.

An evaluation of groundwater flow and potential groundwater impacts to the Site and surrounding properties has been performed to evaluate the effectiveness of the potential corrective actions and the need for, and duration of, a GMZ under 35 IAC 620.450(a)(4). This evaluation used MODFLOW (McDonald & Harbaugh, 1988; McDonald & Harbaugh, 1996), a finite-difference groundwater flow model, in conjunction with MT3D (Zheng, 1990) a three-dimensional contaminant transport model. Modeling the Site was assisted by using the pre-/post-processor Processing MODFLOW X version 10.0.23 (Simcore, 2020).

4. Groundwater Flow and Contaminant Transport Model Selection

4.1 Transport Processes

Using the design components and combining the analysis of groundwater flow and geologic information presented in the Hydrogeologic Investigation Report (Hanson, 2019a) and its addendum (Hanson, 2019b), the transport process within each layer may be analyzed with respect to migration of the COCs. For review purposes, this discussion is divided into two parts: transport pathway and transport mechanism.

Within the Site deposits, migration of contaminants is primarily controlled by diffusion. This can best be seen when the value for the coefficient of hydrodynamic dispersion is analyzed. This coefficient consists of two parts: $D'_{ij} = D_{ij} + (D^*_d)_{ij}$, where D_{ij} is the coefficient of advective (mechanical) dispersion, and $(D^*_d)_{ij}$ is the coefficient of molecular (chemical) diffusion. D_{ij}, the coefficient of advective dispersion, is defined as the product of the average linear velocity and the dispersivity ($D_{ij} = \bar{v}\ \alpha_{ijkl}$) (Bear, 1972). As the velocity becomes smaller, the advective dispersion coefficient value approaches the value of the molecular diffusion coefficient.

As this occurs, diffusion becomes the dominant transport mechanism. Bear and Verruijt (1990) provide an analytical method for determining whether the system is diffusion or advection dominated. This method uses the Peclet number to assess the study "environment" with respect to a type curve (see Appendix A). The Peclet number is defined as:

$$Pe = L\bar{v} / D^*_d$$

where,

Pe = Peclet number,

L = characteristic length,

$\bar{v}$ = average linear velocity, and

D^*_d = coefficient of molecular diffusion.

Domenico and Schwartz (1990) use the dimensionless Fourier number ($L^2/t_e D^*_d$) to provide a value for the characteristic length. The Fourier number may be expanded to produce a proportionality such that $L \propto \sqrt{D^*_d t_e}$, where t_e equals the time of interest. For the alluvial layers that could act as potential pathways at the Site, the Peclet number calculations are listed in Table 3. Velocities used for the Peclet evaluation are the primary velocity within the layer (e.g., horizontal flow for the water bearing zone).

Table 3. Advection/Diffusion Calculation Parameters and Results

Layer	Darcy velocity v_a (ft/day)	Porosity N_e [dim]	Avg. linear velocity $\bar{v}$ (ft/day)	Diffusion D^*_d (ft^2/day)	Time t_e (day)	Length L (ft)	Peclet Number Pe [dim]
Diamicton (silty)	0.00038	0.275§	0.0014	0.00059**	365	0.464	1.10
Fill (silty)	0.00038	0.315§	0.0012	0.00059**	365	0.464	0.944

§ Calculated as $[1 – (\rho_b / \rho_s)] – 5\%$.
** Chloride ion (Shackelford, 1990)

Horizontal flow in the diamictons and fill produces velocities that approximately fall in Zone II (0.4 < Pe < 5.0), or the zone where mechanical dispersion and chemical diffusion are the same order of magnitude. For an advection-diffusion equal environment, the USGS MODFLOW model (groundwater flow component) coupled with MT3D (transport component) should provide a reasonable appraisal of possible contaminant migration at the Site.

4.2 Surrogate Concentrations

To assess the three potential corrective actions, Hanson used surrogate modeling, which is described further below in Sections 4.3, 4.4 and 4.5. For the selected remedy, actual constituent-by-constituent modeling was performed, as described in Section 4.8, with results presented in Appendix G.

This surrogate modeling uses a conservative approach to assess the model results relative to the actual site conditions and concentrations. Several potential source samples were analyzed, including Emery Pond open water (unwaters), pore water from sediments (dewaters), and a leachate extract of the FGD material. The maximum concentration from the various sources for each parameter was then used for the surrogate calculations. The surrogate concentration was set to unity (as one thousand permille or 1000‰), and the parameter with the greatest percent change between observed concentration and the groundwater standard became the modeled surrogate [*surrogate as max‰ = (max. concentration / GW standard) x 1000*]. As shown in Table 4, a surrogate concentration of 29.85‰ represents the most conservative (greatest percent difference) between source concentration and Class I groundwater standard (35 IAC 620.410) or the CCR GPS (40 CFR 257.96).

4.3 Existing Conditions Scenario

4.3.1 Groundwater Flow Model (MODFLOW)

<u>4.3.1a</u> <u>Model Setup</u>

The purpose of the flow model is to provide the framework needed to reconstruct the existing conditions over the past 12-13 years. For this evaluation, the model contains the following assumptions:

1. Only groundwater in the unlithified materials was modeled,
2. All geologic units and earthen structures were assumed to be homogeneous and isotropic within its mapped area (e.g., hydraulic conductivity),
3. All horizontal contact angles were assumed to be 90° within each model cell,
4. Steady state conditions were modeled, and variations in pond or lake levels were not evaluated,
5. Calibration targets for water levels were the average (arithmetic mean) of the historic water level data at each monitoring well, and
6. External stresses were constant (e.g., recharge uniform within model zones).

The Model layout (model grid with input values) and input files are in Appendix B-1. MODFLOW input parameters presented as grid maps include boundary conditions, hydraulic conductivity, initial head, and recharge. Times within the model were evaluated approximately every year for the past 13 years with the Emery Pond and FGD loadout area adding to the flow regime.

TABLE 4. Surrogate Concentrations Relative to Class I GW Standard

		Source Sample Analyses					Statistical Calculations						
Analyte	Units	FGD Groundwater	Emery Pond unwater	Emery Pond dewater	Emery Pond unwater 2	Gypsum	Maximum	Minimum	Average	Class I GW Std.*	Δ% max	Surrogate as ‰max	Surrogate as ‰avg
Boron	mg/L	6.85	34.4	1.49	67.	0.5	67.	0.5	22.05	2.	3,250.	29.85	90.71
Calcium	mg/L				832.	698.	832.	698.	765.	–			
Chloride	mg/L	388.	2,040.	1,450.	2,190.	15.	2,190.	15.	1,216.6	200.	995.	91.32	164.39
Sulfate	mg/L	1,290.	973.	917.	2,000.	1,350.	2,000.	917.	1,306.	400.	400.	200.	306.28
TDS	mg/L	2,910.	5,530.	5,840.	6,380.	2,140.	6,380.	2,140.	4,560.	1,200.	431.67	188.09	263.16
pH	SU	7.63	7.92		7.77		7.92	7.63	7.77	6.5	21.85	820.71	836.19
		7.63	7.92		7.77		7.92	7.63	7.77	9.	-12.	1,136.36	1,157.8
Arsenic	ug/L	50.6	25.	25.	1.7	10.	50.6	1.7	22.46	10.	406.	197.63	445.24
Cadmium	ug/L	6.9	22.3	1.	19.	2.	22.3	1.	10.24	5.	346.	224.22	488.28
Cobalt	ug/L				14.9	5.	14.9	5.	9.95	1,000.	-98.51	67,114.09	100,502.51
Lead	ug/L	240.	15.	15.	2.6	7.5	240.	2.6	56.02	7.5	3,100.	31.25	133.88
Selenium	ug/L	9.1	334.	88.1	82.		334.	9.1	128.3	50.	568.	149.7	389.71
Thallium	ug/L				2.	2.	2.	2.	2.	2.	0.	1,000.	1,000.
										CCR GPS^	Δ% max	Surrogate as ‰max	Surrogate as ‰avg
Arsenic	ug/L									5.	912.	98.81	222.62
Cadmium	ug/L									10.	123.	448.43	976.56
Cobalt	ug/L									19.1	-21.99	1,281.88	1,919.6
Lead	ug/L									10.	2,300.	41.67	178.51
Selenium	ug/L									7.	4,671.43	20.96	54.56
Thallium	ug/L									50.	-96.	25,000.	25,000.

*35 IAC 620.410
^40 CFR 257.96(d)(2)
Red - not detected above listed concentration

Additional non-global inputs include:

- Drain conductance (storm drain) = 2.0 ft/day per unit length and elevation at 505.5 ft.
- General head boundary conductance (Lake of Egypt) = 7.985 and elevation at 500 ft.

4.3.1b Model Sensitivity Evaluation

A dynamic evaluation of model input parameter sensitivity was performed as part of the flow model development. Several inputs had measured values which were not varied from the mean or average values calculated from the field data or set by known boundary conditions. These data included horizontal hydraulic conductivity, layer thickness, and the constant head locations.

Other input parameters, including recharge, drain conductance & elevation were varied as part of the model development process to reasonably represent the Site's potentiometric data.

4.3.1c Flow Model Results

Results of the model output, including potentiometric surface maps in 5-year time steps, are included in Appendix B-2[††]. Head calibration curves are presented in Figure 3. The difference in head measurements between actual versus calculated is generally less than one foot, except for EP03. The flow model could be made to match the heads more closely in EP03, but at the expense of the adjusted drain elevation directly influencing the calculated heads at EP04. Also note that many of the model cells in Layer 1 are dry (maroon cell color). This can be expected with a phreatic surface.

4.3.2 Contaminant Transport Model (MT3D) Setup

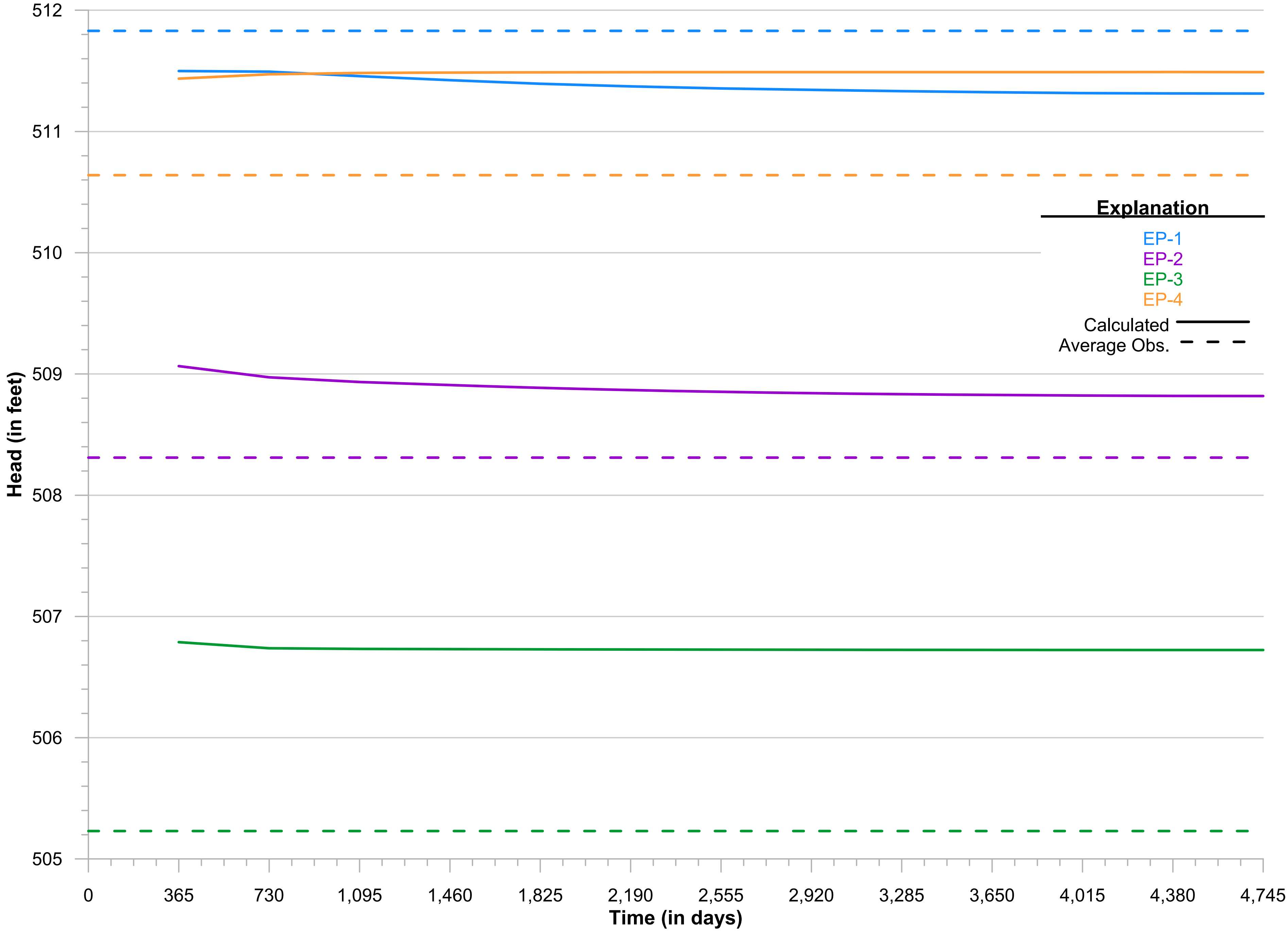
4.3.2a Model Setup

MT3D, the contaminant transport model, was used to provide an estimate of the capacity the subsurface environment has to contaminant migration. For this evaluation, the transport model contains the following assumptions:

1. Only transport in the unlithified materials was modeled,
2. The water bearing strata was assumed to be homogeneous and isotropic within any identified lithology zone (e.g., effective porosity, dispersivity, etc.),
3. Steady state conditions were modeled, and variations in pond or lake levels were not evaluated,
4. Contaminant recharge was set to one thousand permille (1000‰) from the Gypsum Loadout Area and 500‰ from Emery Pond for the first 3 years and then 1000‰ from both for the remaining 10 years (as a time-variant constant concentration source), and
5. Source concentrations were based on 1000‰ of a contaminant (a surrogate contaminant that represents the worst-case concentration observed between the COCs).

[††] Annual potentiometric surface data is also presented on the concentration isopleth maps.

FIGURE 3. Calculated versus Observed Heads – Existing Conditions



4.3.2b Transport Model Specific Inputs

In the transport model surrogate approach, a rigorous evaluation of the transport input parameters was not performed. MODFLOW values needed for the transport modeling (i.e., effective porosity) were calculated from actual site data, ($n_e = [1 - (\rho_b / \rho_s)] - 10\%$) and used to calculate average linear velocity ($\overline{v}$) for the MT3D model.

The MT3D Advection Package used the Finite Difference solution scheme and a Forward Averaging particle tracking algorithm. General defaults were used for the number of particles (per cell, initial, maximum, and minimum).

MT3D dispersion inputs use a calculated value for longitudinal dispersivity (α_L) that was determined using an equation proposed by Xu and Eckstein (1995). The paper presents three equations for the evaluation of longitudinal dispersivity. These equations are:

$$\alpha_L = 1.20(\log_{10}L)^{2.958} \text{ for 1:1:1 scheme}$$

$$\alpha_L = 0.94(\log_{10}L)^{2.693} \text{ for 1:1½:2 scheme}$$

$$\alpha_L = 0.83(\log_{10}L)^{2.414} \text{ for 1:2:3 scheme}$$

The 1:1½:2 scheme was selected for its median value. An effective length of 10 ft. (3.048 m.) was selected for the calculation, resulting in a longitudinal dispersivity value of 0.94 ft. From this number, horizontal transverse dispersivity ($\alpha_{Th} = \alpha_L * 0.1$), and vertical transverse dispersivity ($\alpha_{Tv} = \alpha_L * 0.01$) were also calculated within the MT3D model.

4.3.2c Transport Model Results

The transport model was evaluated at two time steps that represent Hanson's estimate of initial transport and best fit to currently observed concentrations at the Site. The first step represents the initial concentration profile at the Gypsum Loadout (1000‰) and Emery Pond (500‰), the second step began at Year 3, or when the Gypsum Loadout and Emery Pond both provide full contaminant input (1000‰) into the groundwater system‡‡. Table 5 shows the predicted surrogate concentrations (C_p) at 3-year intervals and Figure 4 shows the calculated versus actual concentrations at the Site monitoring wells.

Table 5. MT3D Predicted Surrogate Concentrations – Existing Conditions Scenario

Well ID	C_p - 3 yrs.	C_p - 6 yrs.	C_p - 9 yrs.	C_p - 12 yrs.
EP01	201.17‰	460.96‰	483.39‰	483.93‰
EP02	0.00‰	245.56‰	241.68‰	240.02‰
EP03	0.19‰	0.65‰	0.70‰	0.70‰
EP04	68.52‰	227.34‰	227.99‰	227.61‰

As noted, the groundwater flow and contaminant transport models were not designed to provide precise predicted concentrations at monitoring points around the Site. Due to the assumptions used for the

‡‡ Through various trials, Hanson found that partial contaminant input from Emery Pond for a few years combined with full contaminant input for the remaining time periods provided a reasonable match to current concentrations within the 11-12 year contaminant migration timeframe dictated by the initial use of the FGD loadout area.

model (e.g., homogeneity), the model only provides a best fit over the timeframe of the model. MT3D files and output maps are found in Appendix B-3.

4.4 Soil Backfill Scenario

4.4.1 Groundwater Flow Model (MODFLOW)

4.4.1a Model Setup

The purpose of the flow model is to provide the framework needed to project future conditions once CCR is removed from the Site and the pond and loadout area are backfilled with clean soil. For this evaluation, the groundwater flow model retained many of the Existing Conditions Scenario assumptions, but additional or changed inputs include:

- Drain conductance (storm drain) – the drain was removed and redirected elsewhere (outside model domain),
- Constant head cells were removed from the Emery Pond footprint,
- The top of Layer 1 was gently sloped toward Lake of Egypt, and
- Soil backfill was assigned the same hydraulic properties as the unlithified materials (horizontal hydraulic conductivity = 1.5 ft/day – no map image included).

The Model layout (model grid with input values) and input files are in Appendix C-1. The changed MODFLOW input parameters are presented as grid maps. Times within the model were evaluated approximately every year for 30 years.

4.4.1b Model Sensitivity Evaluation

General model inputs were retained from the Existing Conditions scenario. Groundwater flow approached steady state after about 12 years, whereby the model adjusted to the new flow dynamics. Results of the MODFLOW output, including potentiometric surfaces at 5-year time steps are included in Appendix C-2. Head calibration curves are presented in Figure 5.

4.4.1c Flow Model Results

The Soil Backfill Scenario extrapolated groundwater heads into the future based on the calibrated Existing Conditions Scenario inputs, while holding many of the input parameters static from one scenario to the next. The potentiometric surface maps (see Appendix C-2) show a gradual increase in head in the northwest corner of the model over about a 12-14 year period. This increase in head is related to the removal of the constant head source of Emery Pond, and the hydraulic conductivity and recharge now dominate flow dynamics. Figure 5 shows this effect at monitoring wells EP03 and EP04. Because much of Layer 1 is dry, potentiometric surface maps are only shown approximately every 5 years.

FIGURE 4. Calculated versus Observed Concentrations – Existing Conditions

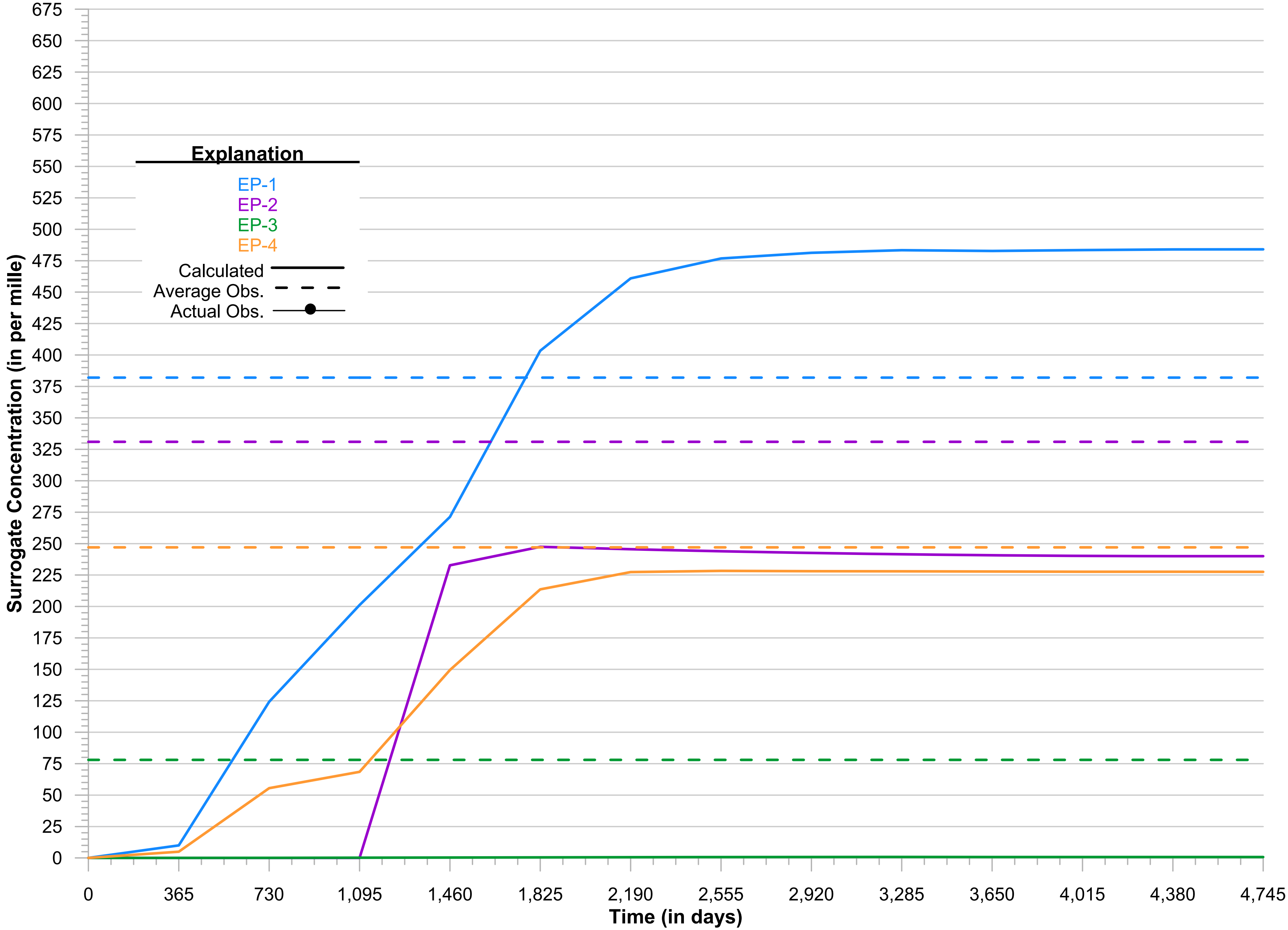
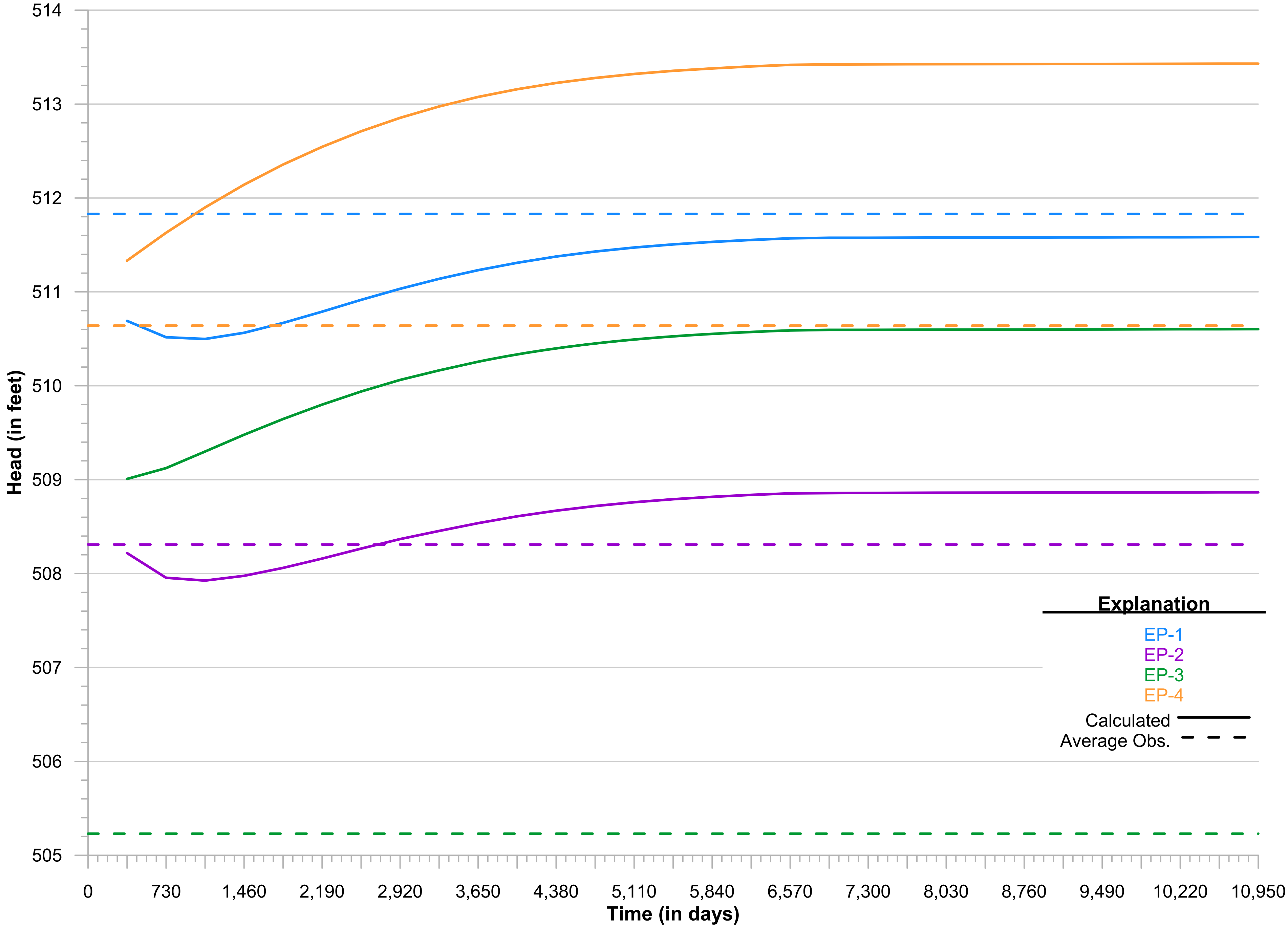


FIGURE 5. Calculated versus Observed Heads – Soil Backfill Scenario



4.4.2 Contaminant Transport Model (MT3D)

4.4.2a Model Setup

MT3D, the contaminant transport model, was used to provide an estimate of the capacity the subsurface environment has to contaminant migration. For this evaluation, the transport model modified or added the following assumptions from the Existing Conditions Scenario:

- Contaminant recharge was set to zero permille (0‰) to represent the clean closed FGD loadout area and Emery Pond, and
- Initial concentrations were set to Layer 2 values at Year 12 of the Existing Conditions Scenario.

4.4.2b Transport Model Results

The transport model was evaluated at one time step over the course of 30 years (in 1-year increments). The initial concentration profile of this scenario matches the profile at the end of the Existing Conditions Scenario. Table 6 shows the predicted surrogate concentrations (C_p) at 3-year intervals and Figure 6 shows the calculated versus the Existing Conditions Scenario concentrations (at the end of the model period) at the Site monitoring wells.

Table 6. MT3D Predicted Surrogate Concentrations – Soil Backfill Scenario

Well ID	C_p - 3 yrs.	C_p - 6 yrs.	C_p - 9 yrs.	C_p - 12 yrs.	C_p - 15 yrs.
EP01	175.89‰	14.43‰	36.49‰	31.54‰	28.73‰
EP02	3.99‰	43.83‰	27.44‰	18.13‰	12.67‰
EP03	200.47‰	65.26‰	39.08‰	23.21‰	15.86‰
EP04	107.60‰	68.48‰	35.62‰	24.66‰	16.56‰

Model results appear reasonable based on the Existing Conditions Scenario and assumptions used as part of this scenario. MT3D files and output maps are found in Appendix C-3. Figure 6 shows compliance is met in 15 years 50 days at the existing monitoring wells. It takes approximately 4 more years for modeled concentrations downgradient of the Site to fall below 30‰.

4.5 Liner Scenario

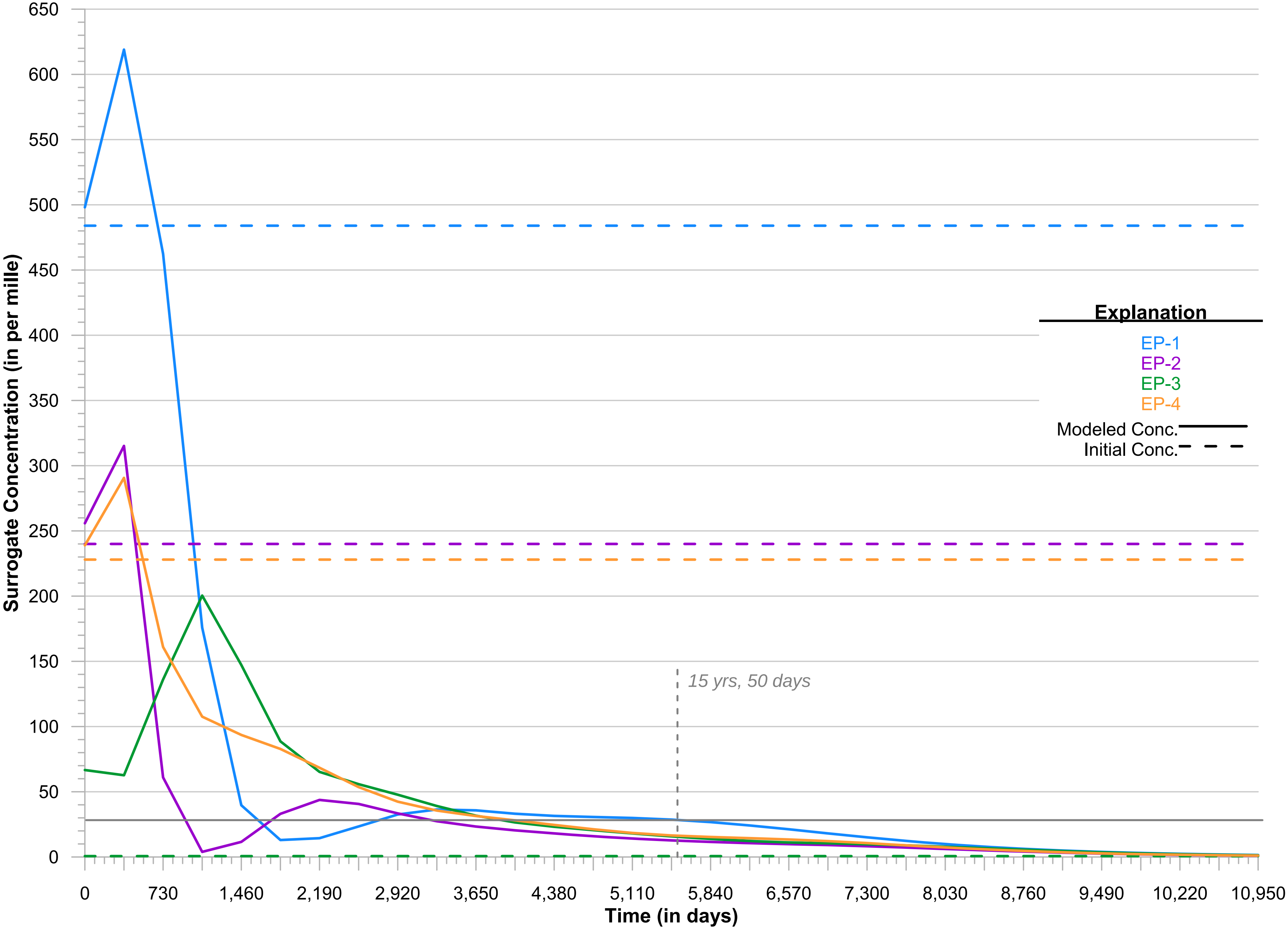
4.5.1 Groundwater Flow Model (MODFLOW)

4.5.1a Model Setup

This flow model provides the framework to project future conditions once the Emery Pond closed and the new Storm Water Basin is constructed with a CCR Rule (40 CFR 257.72) composite liner system. For this evaluation, the groundwater flow model retained many of the Existing Conditions Scenario assumptions, but additional or changed inputs include:

- Constant head cells at the pond were removed, and Layer 1 cells were set as a no-flow cells (*IBOUND=0*) representing the HDPE (high-density polyethylene) liner,
- The grid cells around the pond were subdivided 3:1, and
- The soil component of the composite liner system was assigned a hydraulic conductivity of 1×10^{-7} cm/s (0.00028 ft/day) in Layer 2.

FIGURE 6. Calculated versus Initial Concentrations – Soil Backfill Scenario



The Model layout (model grid with input values) and input files are in Appendix D-1. The changed MODFLOW input parameters are presented as grid maps. Times within the model were evaluated approximately every year for 30 years.

4.5.1b Model Sensitivity Evaluation

General model inputs were retained from the Existing Conditions scenario. Groundwater flow approached steady state after about 10 years, whereby the model stabilized to the new flow dynamics. Results of the MODFLOW output, including potentiometric surfaces at each time step are included in Appendix D-2. Head calibration curves are presented in Figure 7.

4.5.1c Flow Model Results

The Liner Scenario extrapolated groundwater heads into the future based on the calibrated Existing Conditions Scenario inputs, while holding many of the input parameters static from one scenario to the next. The potentiometric surface maps (see Appendix D-2) show a minor increase in head in the northwest corner of the model over about a 10-12 year period. However, there is a dramatic lowering of heads observed on the southeast downgradient side of Storm Water Basin (EP01 and EP02 heads drop 5 to 6 feet). Because much of Layer 1 is dry, potentiometric surface maps are only shown approximately every 5 years.

4.5.2 Contaminant Transport Model (MT3D)

4.5.2a Model Setup

MT3D, the contaminant transport model, is used to provide an estimate of the capacity that the subsurface environment has to contaminant migration. For this evaluation, the transport model contained the assumptions that were modified from the Existing Conditions Scenario:

- Contaminant recharge was set to zero permille (0‰) to represent the clean closed FGD loadout area and the Storm Water Basin, and
- Initial concentrations were set to Layer 2 values at Year 12 of the Existing Conditions Scenario.

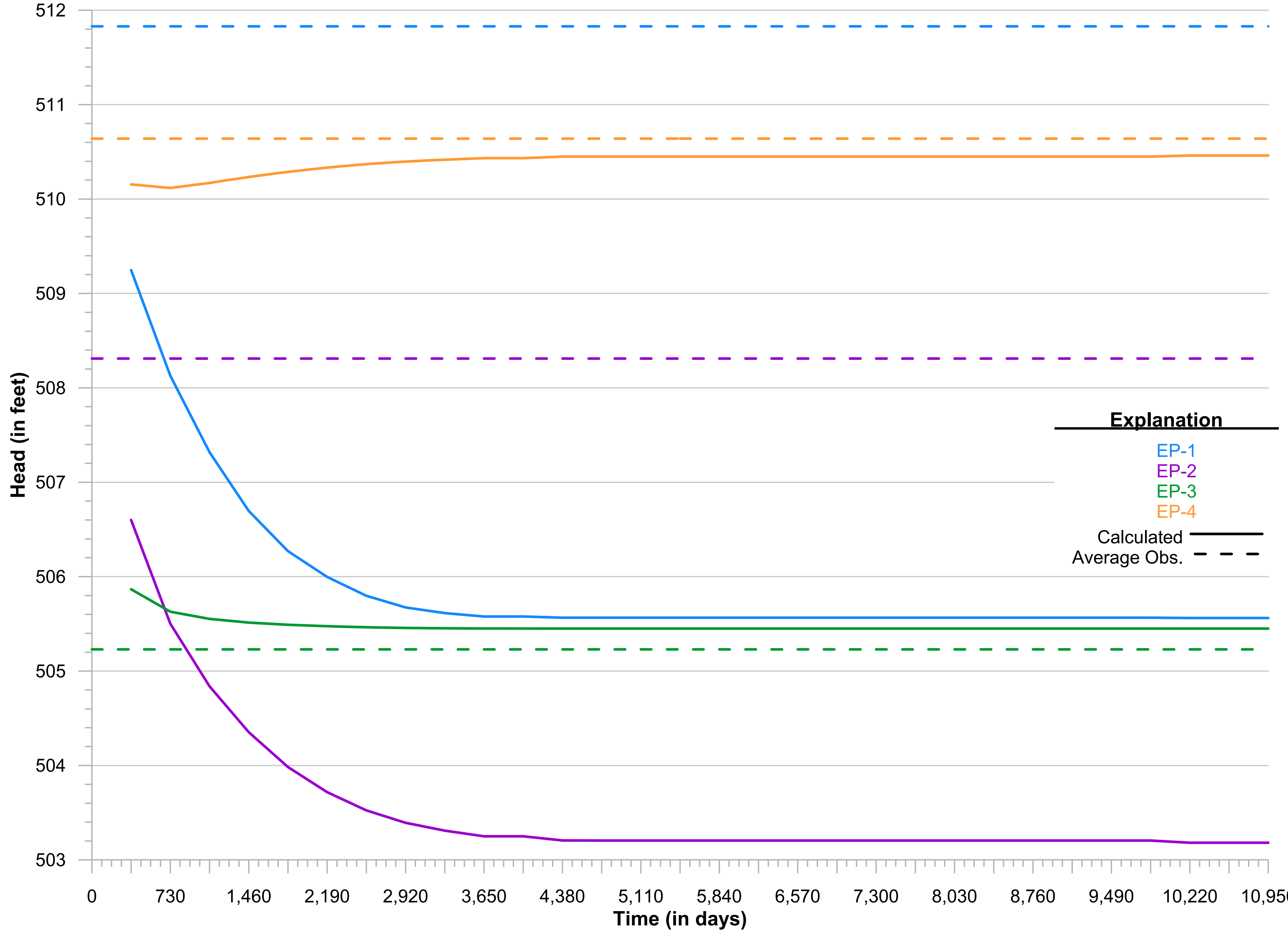
4.5.2b Transport Model Results

The transport model was evaluated at one time step over the course of 30 years (in 1-year increments). The initial concentration profile of this scenario matches the profile at the end of the Existing Conditions Scenario. Table 7 shows the predicted surrogate concentrations (C_p) at 3-year intervals and Figure 8 shows the calculated versus the Existing Conditions Scenario concentrations (at the end of the model period) at the Site monitoring wells.

Table 7. MT3D Predicted Surrogate Concentrations – Liner Scenario

Well ID	C_p - 3 yrs.	C_p - 6 yrs.	C_p - 9 yrs.	C_p - 12 yrs.	C_p - 15 yrs.
EP01	160.73‰	100.29‰	113.99‰	34.07‰	3.38‰
EP02	616.22‰	342.28‰	144.72‰	47.51‰	22.32‰
EP03	91.87‰	50.61‰	35.59‰	29.30‰	12.32‰
EP04	95.37‰	70.85‰	41.85‰	24.66‰	6.52‰

FIGURE 7. Calculated versus Observed Heads – Liner Scenario



Model results appear reasonable based on the Existing Conditions Scenario and assumptions used as part of this scenario. MT3D files and output maps are found in Appendix C-3. Figure 8 shows compliance is met in 14 years 10 days at the existing monitoring wells. It takes an additional 6 more years for all model concentrations to fall below 30‰.

4.6 Liner and Drain Scenario

4.6.1 Groundwater Flow Model (MODFLOW)

4.6.1a <u>Model Setup</u>

This flow model provided the framework to project future conditions once the Storm Water Basin is constructed with a CCR Rule (40 CFR 257.72) composite liner system plus a perimeter drain located adjacent to the floor of the lined basin. For this evaluation, the groundwater flow model retained many of the Existing Conditions Scenario assumptions, but additional or changed inputs include:

- Constant head cells at the pond were removed, and Layer 1 cells were set as a no-flow cells (*IBOUND=0*) representing the HDPE (high-density polyethylene) liner,
- The grid cells around the pond were subdivided 3:1, and
- The soil component of the composite liner system was assigned a hydraulic conductivity of 1×10^{-7} cm/s (0.00028 ft/day) in Layer 2, and
- A perimeter drain was added surrounding the lined area of the pond in Layer 2 with conductance equal to 0.003 ft/day at elevation 503.

The Model layout (model grid with input values) and input files are in Appendix E-1. The changed MODFLOW input parameters are presented as grid maps. Times within the model were evaluated approximately every year for 30 years.

4.6.1b <u>Model Sensitivity Evaluation</u>

General model inputs were retained from the Existing Conditions scenario. Groundwater flow approached steady state after about 10 years, whereby the model stabilized to the new flow dynamics. Results of the MODFLOW output, including potentiometric surfaces at each time step are included in Appendix E-2. Head calibration curves are presented in Figure 9.

4.6.1c <u>Flow Model Results</u>

The Liner Scenario extrapolated groundwater heads into the future based on the calibrated Existing Conditions Scenario inputs, while holding many of the input parameters static from one scenario to the next. The potentiometric surface maps (see Appendix E-2) shows a similar minor increase in head in the northwest corner of the model over about a 10-12 year period as in the Liner Scenario model. Again, there is also a dramatic lowering of heads observed on the southeast downgradient side of Storm Water Basin (EP01 and EP02 heads drop 5 to 6 feet) as shown in Figure 9. Because much of Layer 1 is dry, potentiometric surface maps are only shown approximately every 5 years.

FIGURE 8. Calculated versus Initial Concentrations – Liner Scenario

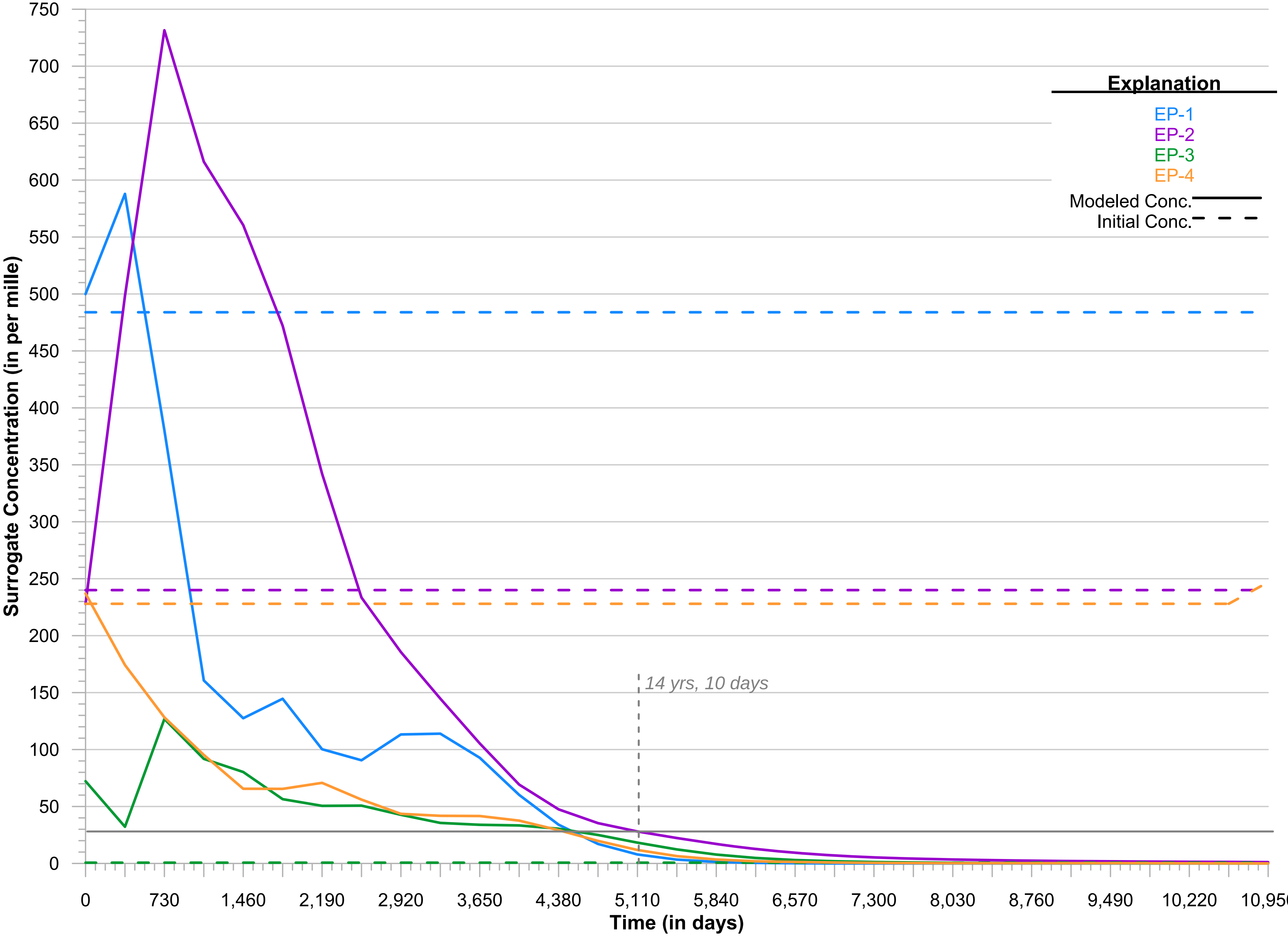
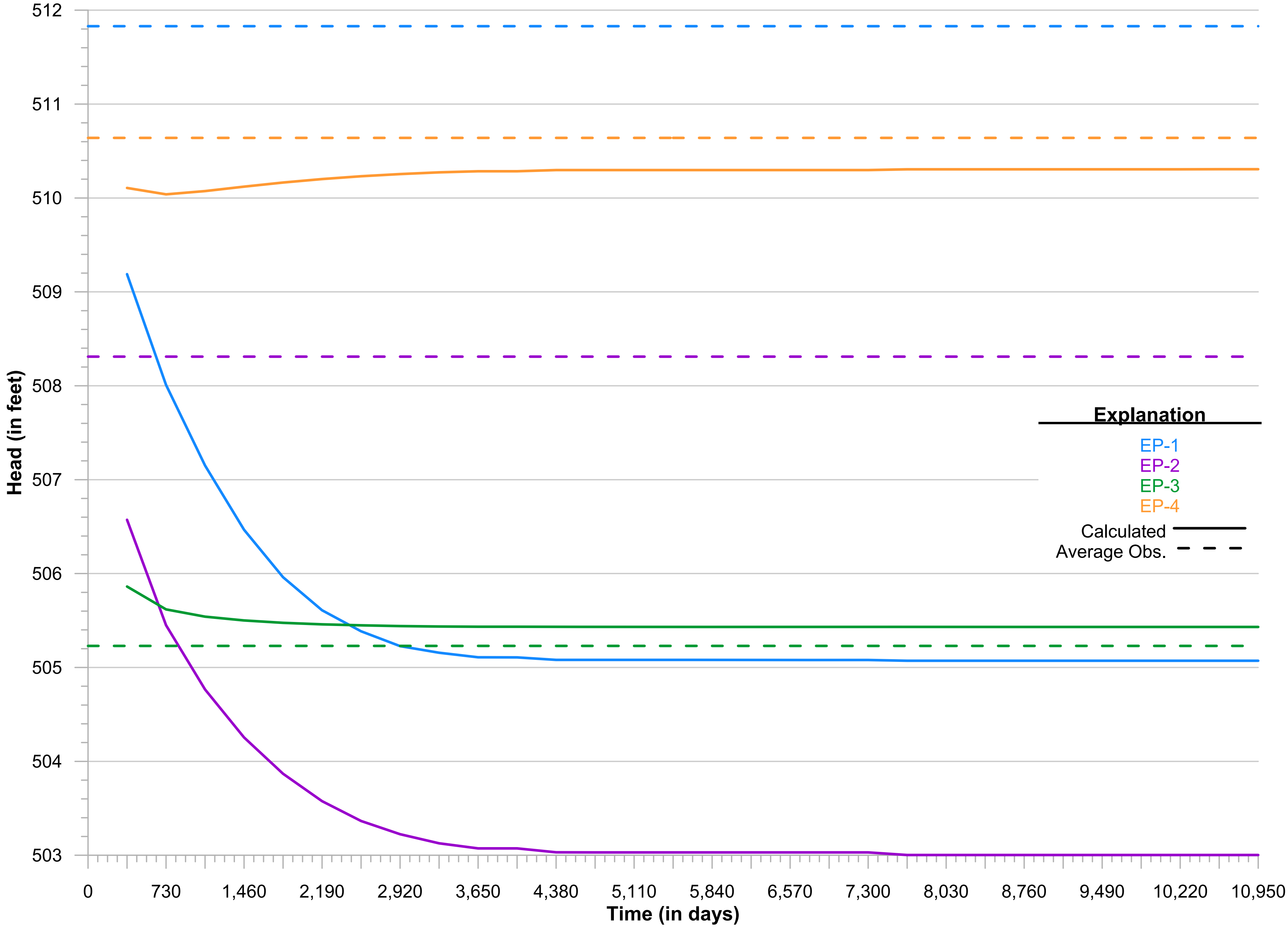


FIGURE 9. Calculated versus Observed Heads – Liner and Drain Scenario



4.6.2 Contaminant Transport Model (MT3D)

4.6.2a Model Setup

MT3D, the contaminant transport model, is used to provide an estimate of the capacity that the subsurface environment has to contaminant migration. For this evaluation, the transport model contained the assumptions that were modified from the Existing Conditions Scenario:

- Contaminant recharge was set to zero permille (0‰) to represent the clean closed FGD loadout and the lined Storm Water Basin, and
- Initial concentrations were set to Layer 2 values at Year 12 of the Existing Conditions Scenario,

4.6.2b Transport Model Results

The transport model was evaluated at one time step over the course of 30 years (in 1-year increments). The initial concentration profile of this scenario matches the profile at the end of the Existing Conditions Scenario. Table 8 shows the predicted surrogate concentrations (C_p) at 3-year intervals and Figure 10 shows the calculated versus the Existing Conditions Scenario concentrations (at the end of the model period) at the Site monitoring wells.

Table 8. MT3D Predicted Surrogate Concentrations – Liner and Drain Scenario

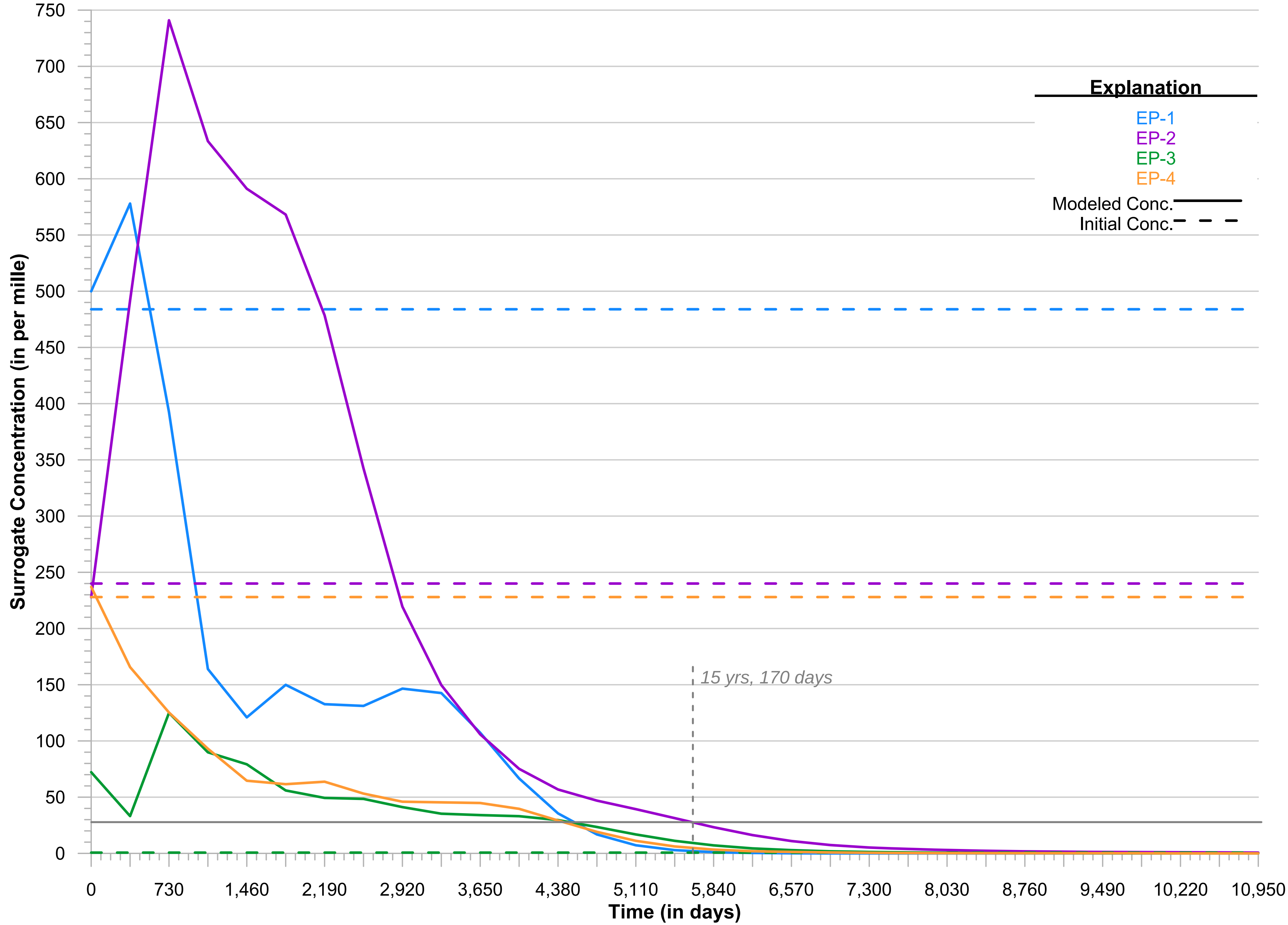
Well ID	C_p - 3 yrs.	C_p - 6 yrs.	C_p - 9 yrs.	C_p - 12 yrs.	C_p - 15 yrs.
EP01	164.02‰	132.69‰	142.62‰	35.64‰	2.95‰
EP02	633.53‰	478.57‰	149.71‰	56.92‰	31.42‰
EP03	89.95‰	49.36‰	35.38‰	29.62‰	11.22‰
EP04	93.16‰	63.77‰	45.38‰	29.26‰	6.18‰

Model results appear reasonable based on the Existing Conditions Scenario and assumptions used as part of this scenario. MT3D files and output maps are found in Appendix C-3. Figure 10 shows compliance is met in 15 years 170 days at the existing monitoring wells. It takes an additional 7 years for the model concentrations to fall below 30‰. The perimeter drain system is predicted to collect about 83 cubic feet per day or about 622 gallons per day once the model reached steady state.

Although this scenario does take longer for contaminants to reach the appropriate groundwater standard, there are at least three advantages the perimeter drain adds,

1. The perimeter drain can intercept groundwater before impacting liner construction activities,
2. Although MT3D does not include the drain component of contaminant transport, it is possible that the drain will collect contaminants and remove them from groundwater, and
3. The drain provides a long-term factor of safety for the liner system. This drain can protect from liner uplift or sidewall blowout from excessive (external) hydrostatic pressures.

FIGURE 10. Calculated versus Initial Concentrations – Liner and Drain Scenario



4.7 Surrogate Modeling Summary

Hanson has performed a groundwater flow and contaminant transport evaluation for the Emery Pond at SIPC's Marion Power Plant. Processing Modflow X was used as a pre- and post-processor for the groundwater flow model, MODFLOW, and the contaminant transport model, MT3D. The modeling evaluated existing groundwater conditions as well as three cleanup scenarios for meeting the appropriate groundwater standard (Illinois Class I groundwater standard or US EPA CCR GPS for the 40 CFR 257.Appendix IV exceedances) at any location downgradient of the Site.

The Site evaluation consisted of four (4) parts:

1. A model showing the transport processes representing the currently observed water levels and concentrations at the Site monitoring wells (Existing Conditions Scenario),
2. A model depicting the future effects of clean closing the Site and backfilling the area with clean soil (Soil Backfill Scenario),
3. A model depicting the future effects of closure by removal and installing a composite liner system to use the area as the Storm Water Basin (Liner Scenario),
4. And, a model depicting the future effects of closure by removal, installing a composite liner system to use the area as the Storm Water Basin, and installing a perimeter toe drain adjacent to the base of the liner system to aid in construction and provide a factor of safety during operation (Liner and Drain Scenario).

Observations from the modeling effort include:

- In the Existing Conditions scenario, the flow model and contaminant transport design appear to reasonably represent the actual time between the beginning of use of the FGD loadout area (Spring 2009 or about 12 years ago) and the current state of groundwater at the Site,
- Layer 1 has many dry cells in all four model scenarios, but this can be expected with a phreatic water bearing zone,
- Because of the large number of dry cells in Layer 1, much of the contaminant transport is vertical through this layer,
- The fastest time to cleanup appears to be the Liner only scenario (at 14 years and 10 days at the monitoring well locations),
- Adding the drain to the liner scenario added almost 1½ years to the cleanup time. It is likely that the drain restricts groundwater movement, reducing the gradient (and therefore velocity) of groundwater downgradient of Emery Pond,
- The drains do assist in removal of contaminants in the Liner and Drain Scenario. This can be observed in the cumulative mass budget summaries in the output list file.
- And, although groundwater at the monitoring wells met the compliance standards in approximately 19 years, the time to reach compliance at all points downgradient of Emery Pond takes an additional 7 to 8 years.
- Illinois EPA staff identified a concentration increase at EP-4 at model year 29. Hanson cannot corroborate this observation. No concentration increases occur after closure scenario model year 2 or 3 (cumulative year 14 or 15) as shown in Figure 6, Figure 8, and Figure 10.

4.8 Modeling Actual Concentrations with the Selected Remedy

Although the surrogate model scenarios presented in the previous sections are representative of contaminant transport at the Site, Illinois EPA staff has requested that for the selected remedy modeling results be presented based on source concentrations for each individual COC using site-specific data. Hanson has therefore modeled each COC listed in Table 4 using the maximum concentrations listed under Statistical Calculations columns. Only the selected remedy (clean closure with CCR Rule compliant liner and perimeter toe drain) scenario was modeled for this exercise. Results of these contaminant transport model runs are tabulated in Appendix G with the periods with Class I exceedances highlighted in the table. Additionally, the time to compliance after clean closure for each constituent at each compliance point is summarized in Table 9.

Table 9. Time (in years) to Compliance at Model Observation Points

	EP-1	EP-2	EP-3	EP-4	CP1¹	CP2¹
Boron	19	19	14	14	21	27
Calcium	□	□	□	□	□	□
Chloride	8	10	2	1	7	14
Sulfate	11	8	○	◊	◊	12
TDS	2	8	○	◊	4	11
Arsenic	2	8	○	◊	4	11
Cadmium	12	8	○	◊	◊	11
Cobalt	○	○	○	○	○	○
Lead	10	14	2	7	10	18
Selenium	5	10	○	1	5	13
Thallium	○	○	○	○	○	○

□ No Class I standard.
○ Modeled values never exceed Class I standard.
◊ Meets Class I standard before post-closure year 1.
¹ Locations for CP1 and CP2 are shown on Figure 2. These locations were selected because of contaminant plumes moving through these points in the later model years.

As with the surrogate model runs, Boron (actual) concentrations represent the worst-case relative to time to compliance.

5. Compliance with Surface Water Quality Standards

Along with meeting groundwater quality standards, possible impacts from groundwater discharges to the predicted intersecting surface water body, the Lake of Egypt, were also assessed. The MT3D (Zheng, 1990) output file provides contaminant mass values at various input and output boundary conditions. For Lake of Egypt that boundary is the General Head Boundary. Calculations used the difference in the mass of contaminants from Year 11 and Year 12[§§] (representing the current year's conditions). This mass was combined with a finite volume of the bay adjacent to Emery Pond (see Figure 11) coupled with an estimate of the recharge that portion of the bay would see, based on evapotranspiration data. The mass of contaminants plus bay volume plus recharge provide estimated concentrations in mg/L. These calculations are presented in Appendix H and summarized in Table 10.

[§§] Mass of contaminants is based on the Liner + Drain Scenario using the Surrogate Model results (initial concentration of 1000‰). The mass loading difference between Year 11 and Year 12 represents the mass of contaminants entering the system in 2020.

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HANSON Hanson Professional Services Inc.	LAKE OF EGYPT SAMPLE LOCATION MAP
	EMERY POND – MARION POWER PLANT SOUTHERN ILLINOIS POWER COOPERATIVE MARION, WILLIAMSON COUNTY, ILLINOIS
	HANSON NO. 18E0022B FIGURE 11

Based on the predicted concentrations of lake water mixed with groundwater, Hanson finds that groundwater discharges to Lake of Egypt do not cause exceedances of the Public and Food Processing Water Supply Standards found in 35 IAC 302. To further show that there is no surface water impairment, water samples were collected at various location in Lake of Egypt (see Figure 11). These sampling data and related conclusions are discussed further in the Corrective Action and Selected Remedy Plan (Hanson, 2020), but in short this sampling shows that any impacted groundwater discharge to the Lake of Egypt is not causing a measurable, adverse impact on the lake.

Table 10. Estimated Daily Impacts to Lake of Egypt

Parameter	35 IAC 302 Std. (in mg/L)	Predicted Concentration (in mg/L)
Boron	1.0	0.452
Calcium	n/a	5.61
Chloride	250	14.78
Sulfate	250	13.5
TDS	500	43.05
Arsenic	0.05	0.000169
Cadmium	0.01	0.00015
Cobalt	n/a	0.000101
Lead	0.05	0.00162
Selenium	0.01	0.00225
Thallium	n/a	0.0000135

6. Conclusions

This Groundwater Protection Evaluation was developed to evaluate several of the more practical potential corrective measures presented as part of the Corrective Action and Selected Remedy Plan (Hanson, 2020), as well as the need for and a duration of a GMZ in connection with the corrective action. After developing a model scenario that represents current conditions (Existing Conditions Scenario), Hanson further evaluated three potential closure scenarios for Emery Pond. These closure scenarios all utilize clean closure of the Emery Pond and adjoining Gypsum Loadout Area as the first step in closure, as well as dispersive and diffusive flux of COCs over time. The three closure scenarios evaluated in this report are, Soil Backfill, Liner, and Liner and Drain.

Based on the need to manage storm water at the Marion Power Plant, the Soil Backfill Scenario is not considered a viable option, leaving the two lined Storm Water Basin alternatives. Between these two options, variations in the contaminant transport performance was nominal. To provide additional safety during and post-construction, and to add additional groundwater cleanup by removal of groundwater adjacent to the new pond liner, Hanson recommends the Liner and Drain Scenario as the best mitigation alternative for Emery Pond. An evaluation of each of the COCs indicates that Boron will take the longest to reach compliance (concentrations below the Class I: Potable Resource Standard [35 IAC 620.410]), at a time approximately 27 years after clean closure of Emery Pond and the Gypsum Loadout Area and use of the Liner and Drain Scenario.

7. Licensed Professional Acknowledgement

The geological work product contained in this document has been prepared under my personal supervision and has been prepared and administered in accordance with the standards of reasonable professional skill and diligence.

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Expires 3/31/2021

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