



Initial Annual Inspection  
Inactive CCR Surface  
Impoundment - Main Ash Pond

**M.L. Kapp Generating Station  
Clinton, Iowa**

Prepared for:

**Interstate Power and Light Company**

M.L. Kapp Generating Station  
2001 Beaver Channel Parkway  
Clinton, Iowa 52732

Prepared by:

**SCS ENGINEERS**  
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July 2017  
File No. 25216200.01

**Offices Nationwide**  
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No.

- A Temporary Well Information

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## PE CERTIFICATION

	<p>I, Eric J. Nelson, hereby certify that this Initial Annual CCR Surface Impoundment Inspection Report meets the requirements of 40 CFR 257.83(b)(2), was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p>
	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">               (signature)         </div> <div style="text-align: center;">             July 11, 2017              (date)         </div> </div>
	<p style="text-align: center;">Eric J. Nelson (printed or typed name)</p>
	<p>License number <u>23136</u></p> <p>My license renewal date is December 31, <u>2018</u>.</p>
	<p>Pages or sheets covered by this seal:  <u>Initial Annual Inspection, Inactive CCR Surface Impoundment - Main Ash Pond dated July 2017</u></p>

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## 1.0 INTRODUCTION

SCS Engineers (SCS) completed an initial annual inspection of the Main Ash Pond at the Interstate Power and Light Company (IPL) M.L. Kapp Generating Station (KAP) in Clinton, Iowa. The initial annual inspection was completed on June 8, 2017, and in accordance with the U.S. Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) rule, 40 CFR 257 Subpart D, in particular 257.83(b)(1). IPL is currently in the process of closing the Main Ash Pond, and closure construction activities were ongoing at the time of the initial annual inspection.

### 1.1 PURPOSE

The purpose of the annual inspection is to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. Per 40 CFR 257.83(b)(1), the inspection must, at a minimum, include:

- A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by 257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections); and
- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures.
- A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.

This initial annual inspection report has been prepared in accordance with the requirements of 40 CFR 257.83(b)(2) to document the annual inspection.

### 1.2 BACKGROUND

The Main Ash Pond at KAP is an inactive surface impoundment. Effective on October 4, 2016, with the USEPA direct final action on the CCR rule that was published August 5, 2016, inactive surface impoundments became subject to the requirements for existing CCR surface impoundments.

According to 40 CFR 257.83(b)(1), an annual inspection by a qualified professional engineer is required for CCR surface impoundments that are subject to the periodic structural assessment requirements in 40 CFR 257.73(d) or 257.74(d). Based on information provided in the August 2016 Closure Plan (Sargent & Lundy, 2016a), the Main Ash Pond has a height of 5 feet or more and a storage volume of 20-acre feet or more, so it is subject to the requirements of 40 CFR 257.73(d).

The Main Ash Pond includes a primary (southern) and secondary (northern) pond within the limits of an older single impoundment that was originally constructed around 1965. The original impoundment embankment height is approximately 11 feet with an area of 32 acres. The approximate elevation of the top of the original embankment is 590 feet. The primary and secondary pond system was constructed in 2002 (Sargent & Lundy, 2016a).

Prior to the start of closure construction, the primary pond embankment elevation was approximately 10 feet above the crest of the original impoundment (elevation of 600 feet) with an area of approximately 7.6 acres. The primary pond area is based on the approximate scaled area within the topographic peak that surrounds the pond on the drawings provided with the August 2016 Closure Plan. The secondary pond was approximately 4.3 acres with a perimeter rim elevation of approximately 590 feet, which is the same as the top elevation of the original impoundment. The secondary pond area is based on the approximate scaled area within the 590 foot contour that surrounds the pond. Based on a survey completed in April 2016, the estimated capacity of the primary pond prior to closure construction was 55 acre-feet. The estimated capacity of the secondary pond prior to closure construction was 22 acre-feet (Sargent & Lundy, 2016a).

CCR was sluiced from KAP, which is located approximately 1/2 mile to the southeast, to the primary pond. The CCR settled into the pond and water flowed from the primary to the secondary pond via gravity pipe. Water from the secondary pond was pumped back to KAP and eventually discharged to the Mississippi River under a National Pollutant Discharge Elimination System (NPDES) permit issued by the Iowa Department of Natural Resources (Sargent & Lundy, 2016a).

The sluice piping from KAP and the gravity pipe between the primary and secondary ponds no longer exists. The piping has been removed as part of the pond closure construction. At the time of the SCS inspection, the primary pond had been filled in and only a small portion of the secondary pond near an existing pump house remained.

## 2.0 SURFACE IMPOUNDMENT INSPECTION

Mr. Eric Nelson of SCS completed an annual inspection of the Main Ash Pond on June 8, 2017, and in accordance with 40 CFR 257.83(b)(1). Mr. Nelson is a licensed professional engineer in Iowa and holds a Bachelor's of Science degree in Geological Engineering. He has over 18 years of experience in the design, construction, and operation of solid waste disposal facilities and impoundment closures.

The scope of the annual inspection is described in Sections 2.1 and 2.2. The results of the annual inspection are discussed in Section 3.0.

### 2.1 OPERATING RECORD REVIEW

SCS reviewed the available information in the operating record for the Main Ash Pond prior to the visual inspection discussed in **Section 2.2**. Information reviewed by SCS included operating record materials provided by IPL and the information posted on Alliant Energy's CCR Rule



Compliance Data and Information website for the KAP facility. The materials reviewed are summarized in **Table 1**.

Because of the timing of the inspection and the inactive status of the Main Ash Pond, the current materials in the operating record are limited. A majority of the operating record files listed in 40 CFR 257.83(b)(1)(i) for review as part of the annual inspection are not yet required and have not been prepared. Items that have a compliance deadlines after the date of the SCS inspection, and the initial inspection reporting deadline, and have not yet been completed or placed into the operating record are listed below:

- CCR unit design and construction information required by 40 CFR 257.73(c)(1)
- Previous periodic structural stability assessments required under 40 CFR 257.73(d)
- Results of previous annual inspections

## 2.2 VISUAL INSPECTIONS

SCS completed a visual inspection of the Main Ash Pond to identify signs of distress or malfunction of the CCR unit and appurtenant structures per 40 CFR 257.83(b)(1)(ii). The visual inspection also included a review of the hydraulic structures underlying the base of the CCR unit or passing through the embankment of the CCR unit for structural integrity and continued safe and reliable operation per 40 CFR 257.83(b)(1)(iii).

The visual inspection included observations of the following:

- The slopes and crest of the original impoundment embankment
- Remnants of the primary and secondary ponds
- The existing concrete outfall structure at the northern extent of the Main Ash Pond
- The existing pumphouse
- Current closure construction activities

## 3.0 INSPECTION RESULTS

The results of the annual inspection, along with a description of any deficiencies identified during the visual inspection, are summarized in the following sections in accordance with 40 CFR Part 257.83(b)(2).

### 3.1 CHANGES IN GEOMETRY

This is the initial annual inspection of the Main Ash Pond at the KAP facility completed under 40 CFR 257.83(b)(1). There are no previous annual inspections in the operating record to which SCS could compare the current geometry of the impounding structure. However, at the time of the visual inspection, impoundment closure construction activities were underway. Based on the SCS review of documents provided by IPL, which included a closure plan prepared for the Main Ash Pond to obtain a state closure permit, significant changes to the geometry of the impoundment have recently taken place. The changes are summarized in the list below:

- Nearly the entire footprint of the Main Ash Pond within the original impoundment berm has been re-graded to create the subgrade for the impoundment closure final cover. A series of six mounds, a perimeter drainage ditch, and intermediate drainage channels between the mounds have been rough graded.
- A portion of the Main Ash Pond has been excavated for clean closure around the existing concrete outfall structure at the northern extent of the impoundment and the location of a proposed future storm water basin (Sargent & Lundy, 2016b).
- The primary pond has been backfilled and no longer exists.
- Only a remnant of the secondary pond remains near the outlet to the existing pumphouse.

Changes to geometry of the impounding structure will be assessed at the time of the next annual inspection.

### 3.2 INSTRUMENTATION

Based on the SCS document review, field inspection, and discussions with IPL staff managing the Main Ash Pond closure construction, the only instrumentation that exists for the impoundment are four survey benchmarks located around the site and a water level monitor in the existing pumphouse. Temporary wells installed in July 2016 to evaluate the groundwater flow direction at the site, as described in the August 2016 Closure Plan, were abandoned prior to closure construction. Temporary well locations and water level data are provided in **Appendix A**. There is no geotechnical monitoring instrumentation at the Main Ash Pond.

The four benchmarks appeared to be in good condition at the time of our inspection. The water level monitor in the pumphouse also appeared to be in working order and was reading a level of 5.80 feet. According to IPL staff, the water level monitoring data for the pumphouse is not recorded.

Since this is the initial annual inspection of the Main Ash Pond and water level data is not recorded, there is no previous instrumentation data available for comparison.

### 3.3 HISTORIC IMPOUNDED WATER AND CCR CONDITIONS

This is the initial annual inspection of the Main Ash Pond at the KAP facility completed under 40 CFR 257.83(b)(1). There are no previous annual inspections in the operating record from which the approximate minimum, maximum, and present depth and elevation of impounded water have been recorded.

At the time on the SCS inspection water was impounded in two locations:

- Remnant of secondary pond at a depth of approximately 12 to 18 inches and an elevation of approximately 582.5 feet.
- Excavation around the existing concrete outfall structure at the northern extent of the impoundment at a depth of 6 to 12 inches and an estimated elevation of 579 feet.

### 3.4 CURRENT STORAGE CAPACITY

The estimated storage capacity of the two areas where water was impounded at the time of the inspection is provided below.

- Remnant of secondary pond: 1.4 acre-feet (8,000 square feet with 7.5 feet of freeboard)
- Excavation around the existing concrete outfall structure: 14.1 acre-feet (56,000 square feet with 11 feet of freeboard)

Some additional storage capacity is provided by the perimeter ditch and intermediate drainage channels that have been rough graded as part of the closure construction. These features are actively being constructed, so the volume of these features is not static nor was it estimated at the time of the inspection.

### 3.5 CURRENT IMPOUNDED WATER AND CCR CONDITIONS

The estimated volume of water in the two areas where water was impounded at the time of the inspection is provided below.

- Remnant of secondary pond: 0.3 acre-feet (8,000 square feet with up to 18 inches of water)
- Excavation around the existing concrete outfall structure: 1.3 acre-feet (56,000 square feet with up to 12 inches of water)

The volume of CCR impounded in the Main Ash Pond at the time of our inspection is approximately 580,000 cubic yards. This is assumed to be the same as the estimated total maximum inventory of CCR provided in the state closure plan (Sargent & Lundy, 2016a).

### 3.6 APPEARANCE OF STRUCTURAL WEAKNESS

The inspection included a review of the appearance of an actual or potential structural weakness of the Main Ash Pond. The visual inspection included a review of the areas described in **Section 2.2** for the presence of the following conditions:

- Seepage
- Sloughing, slumping, or sliding
- Excessive settlement
- Surface cracking
- Inappropriate vegetation growth
- Animal impacts
- Erosion damage
- Failing riprap
- Failing outlet or outfall structures

#### 3.6.1 Seepage

No active seeps or signs of seepage such as open pathways in slopes or around outlet pipes, boils, or sinkholes were noted during the inspection.

#### 3.6.2 Sloughing, Slumping, or Sliding

No sloughing, slumping, or sliding of the impoundment embankments was noted during the inspection.

#### 3.6.3 Excessive Settlement

No excessive settlement of the impoundment embankments was noted during the inspection.

#### 3.6.4 Surface Cracking

No surface cracking of the impoundment embankments was noted during the inspection.

#### 3.6.5 Inappropriate Vegetation Growth

The outboard slopes of the original impoundment embankment had recently been mowed with the following exceptions.

The area around the existing concrete outfall structure at the northern extent of the Main Ash Pond was heavily vegetated. The heavy vegetation consisted of tall grass, which obstructed the view of the concrete outfall structure and concrete apron from the top of the embankment. However, SCS assessed the structures from the toe of the embankment, so the vegetation was not noted as a deficiency. These features are scheduled for upgrade and maintenance as part of the ongoing closure activities.

Areas of tall grassy vegetation in wet, low lying areas where flood waters had recently receded that could not be mowed along the north and east embankments of the original impoundment. These un-mowed areas could not be inspected, but did not impact the ability to inspect the embankment and were not noted as a deficiency.

The outboard slope and approximately 8 to 10 feet of the crest on the west embankment that borders the right-of-way for U.S. Highway 67 had also not been mowed. The un-mowed areas of the west embankment slope included tall grasses, brushy vegetation, and a few small trees. These areas border the perimeter fence for the Main Ash Pond, which sits at the outside shoulder of the embankment crest. The un-mowed areas of the embankment crest were located between the perimeter fence and the silt fence installed for the closure construction as well as areas immediately adjacent to project side of the silt fence. These areas included tall grasses. According to IPL, the un-mowed areas outside of the fence are within the right-of-way for U.S. Highway 67 and maintenance is not currently the responsibility of IPL. These un-mowed areas could not effectively be inspected and represent a deficiency.

Although the heavy vegetation limited the ability to effectively inspect the west embankment of the impoundment, the areas of heavy vegetation along the west embankment represent a low risk to the operation and safety of the Main Ash Pond for the following reasons:

- The Main Ash Pond is an inactive impoundment
- The volume of impounded water is limited
- The impounded water is 500 or more feet away

Ultimately the closure of the Main Ash Pond that is currently underway will address this deficiency.

### **3.6.6 Animal Impacts**

Burrowing animal activity was noted in the area of the north embankment and along the perimeter fence at the top of the west embankment. The 7-day inspections completed by qualified IPL staff have also noted burrowing animal activity.

Backfilling an animal burrow as they are identified is part of IPL's current inspection and maintenance program as documented in the 7-day inspection reports. Continued backfilling of the burrows with bentonite is all that is typically required to repair the damage and limit any further impact to the operation or safety of the impoundment. As such, the animal burrows identified during our inspection do not constitute a deficiency.

### **3.6.7 Erosion Damage**

No erosion damage of the impoundment embankments was noted during the inspection.

### **3.6.8 Failing Riprap**

No failing riprap was noted during the inspection.

### 3.6.9 Failing Outlet or Outfall Structures

The existing concrete outfall structure at the northern extent of the Main Ash Pond is generally in good condition. However, the concrete pad below discharge structure has settled and cracked, and the existing flap gate valve is stuck in the open position. According to IPL, a concrete plug has been installed in the discharge pipe to prevent any discharge or potential backflow of flood waters.

The existing concrete outfall structure is currently not being utilized in operation of the Main Ash Pond. The concrete apron will be removed and replaced with riprap, and the flap gate valve will be restored to working order as part of the closure construction. As such, the needed maintenance noted during our inspection does not constitute a deficiency.

## 3.7 DISRUPTIVE EXISTING CONDITIONS

This CCR impoundment is highly disturbed due to the ongoing closure construction activities. However, because the Main Ash Pond is an inactive impoundment and the remaining impounded water is a fraction of the original capacity, these activities are not disruptive to the operation or safety of the impoundment.

No other disruptive existing conditions were noted during the inspection.

## 3.8 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

This is the initial annual inspection of the Main Ash Pond at the KAP facility completed under 40 CFR 257.83(b)(1). There are no previous annual inspections in the operating record to which SCS could compare the current site conditions of the landfill to fulfill the requirement in 40 CFR 257.83(b)(2)(iv).

Changes to site conditions that may have affected the stability or operation of the Main Ash Pond will be assessed at the time of the next annual inspection.

## 4.0 REFERENCES

Sargent & Lundy LLC, Closure Plan – Inactive CCR Surface Impoundment, Interstate Power and Light Company, M.L. Kapp Generating Station, August 19, 2016.

Sargent & Lundy LLC, Addendum #1 Closure Plan – Inactive CCR Surface Impoundment, Interstate Power and Light Company, M.L. Kapp Generating Station, November 4, 2016.

## **TABLES**

- 1 Operating Record Summary

**Table 1. Operating Record Summary  
Main Ash Pond - IPL ML Kapp Generating Station / Clinton, Iowa  
SCS Engineers Project #25216200.01**

	Record Date	Source
<b>Location Restrictions</b>		
No materials in operating record as of 6/23/17		Website
<b>Design Criteria</b>		
No materials in operating record as of 6/23/17		Website
<b>Operating Criteria</b>		
CCR Fugitive Dust Control Plan	3/17/2017	Website
7-Day Inspection	3/17/2017	IPL
7-Day Inspection	3/24/2017	IPL
7-Day Inspection	3/28/2017	IPL
7-Day Inspection	4/4/2017	IPL
7-Day Inspection	4/7/2017	IPL
7-Day Inspection	4/11/2017	IPL
7-Day Inspection	4/14/2017	IPL
7-Day Inspection	4/17/2017	IPL
7-Day Inspection	4/21/2017	IPL
7-Day Inspection	4/24/2017	IPL
7-Day Inspection	4/28/2017	IPL
7-Day Inspection	5/1/2017	IPL
7-Day Inspection	5/5/2017	IPL
7-Day Inspection	5/12/2017	IPL
7-Day Inspection	5/15/2017	IPL
7-Day Inspection	5/22/2017	IPL
7-Day Inspection	5/25/2017	IPL
7-Day Inspection	5/30/2017	IPL
7-Day Inspection	6/2/2017	IPL
7-Day Inspection	6/8/2017	IPL
<b>Groundwater Monitoring</b>		
No materials in operating record as of 6/23/17		Website
<b>Closure/Post-Closure Care</b>		
Notice of Intent to Close	12/14/15	Website
CCR Surface Impoundment Closure Permit Application	8/26/16	IPL
CCR Surface Impoundment Closure Permit Application Addendum #1	11/7/16	IPL

Notes:

- 1) Items sourced to the Website are from Alliant Energy's CCR Rule Compliance Data and Information website as of 6/23/17.  
See <http://ccr.alliantenergy.com/MLKapp/Ponds/index.htm>
- 2) Items sourced to IPL are from the facility Operating Record as of the date of inspection.

I:\25216200.00\Deliverables\Initial Annual Inspection\Operating Record Files\[Table 1 Operating Record Summary\_KAP.xlsx]Summary



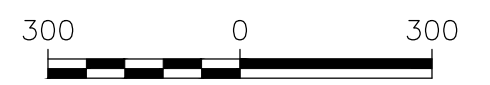
## **APPENDIX A**

### Temporary Well Information



LEGEND

- TW-5 ⊕ PROPOSED TEMPORARY WELL LOCATIONS
- MW303 ⊕ PROPOSED PERMANENT WELL LOCATIONS
- ⓪ SURFACE WATER ELEVATION MONITORING LOCATION



SCALE: 1" = 300'

PROJECT NO.	25216127.00	DRAWN BY:	AHB
DRAWN:	07/07/16	CHECKED BY:	KK
REVISED:	07/25/16	APPROVED BY:	

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	ALLIANT ENERGY 4902 N. BILTMORE LANE #1008 MADISON, WI 53708

SITE
INTERSTATE POWER AND LIGHT CO. ML KAPP GENERATING STATION MAIN ASH POND CLINTON, IOWA

MONITORING WELL LOCATION MAP
------------------------------

FIGURE
1

I:\25216127.00\Drawings\Boring Location Plan.dwg, 7/25/2016 5:08:44 PM

**Table 1. Water Level Summary**  
**Interstate Power & Light - M.L. Kapp / SCS Engineers Project #25216127**

Raw Data	Depth to Water in feet below top of well casing							Mill Creek - depth to water in feet below bridge deck	Mississippi River (Beaver Slough) Gauge <sup>(1)</sup>
	TW2	TW3	TW4	TW5	TW6	TW7	TW8		
<b>Measurement Date</b>									
July 19, 2016	13.92	7.84	8.26	8.78	13.37	13.98	5.83	13.69	13.00
July 25, 2016	13.72	7.71	8.44	7.57	12.98	13.09	6.68	10.41	16.63
February 15, 2017	14.53	8.54	9.26	8.81	14.30	14.19	12.94	13.37	13.54
March 1, 2017	13.35	8.00	7.85	6.95	11.62	12.42	6.54	9.55	17.56

Well Number	Ground Water Elevation in feet above mean sea level (amsl)							Surface Water Elevation in feet above mean sea level	
	TW2	TW3	TW4	TW5	TW6	TW7	TW8	Mill Creek	Mississippi River <sup>(2)</sup>
<b>Top of Casing Elevation (feet amsl)</b>	592.10	583.00	583.76	582.96	588.42	588.87	589.49	587.94 (Bridge Deck Elevation)	--
<b>Screen Length (ft)</b>	10	10	10	10	10	10	10	--	--
<b>Total Depth (ft from top of casing)</b>	21.04	14.07	18.17	14.84	20.80	20.42	18.24	--	--
<b>Top of Well Screen Elevation (ft)</b>	581.06	578.93	575.59	578.12	577.62	578.45	581.25	--	--
<b>Measurement Date</b>									
July 19, 2016	578.18	575.16	575.50	574.18	575.05	574.89	583.66	574.25	575.68
July 25, 2016	578.38	575.29	575.32	575.39	575.44	575.78	582.81	577.53	579.31
February 15, 2017	577.57	574.46	574.50	574.15	574.12	574.68	576.55	574.57	576.22
March 1, 2017	578.75	575.00	575.91	576.01	576.80	576.45	582.95	578.39	580.24
<b>Bottom of Well Elevation (ft)</b>	571.06	568.93	565.59	568.12	567.62	568.45	571.25	--	--

Notes: Created by: MDB Date: 7/25/2016  
 NM = not measured Last revision by: KAK Date: 3/6/2017  
 Checked by: MDB Date: 5/23/2017

1: Mississippi River elevation data from [rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=BSCI4&fid=BSCI4&dt=S](http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=BSCI4&fid=BSCI4&dt=S). 7/19/16 measurement at 14:00. 7/25/16 measurement at 11:00. 2/15/17 measurement at 12:00. 3/1/17 measurement at 12:00.  
 2: Gauge zero is 562.68 ft NGVD29.

I:\25216127.00\Data and Calculations\Tables\MLK\_wlstat.xlsx\levels