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Interstate Power and Light Company

Burlington Generating Station

CCR Surface Impoundment Annual Inspection Report

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Executive Summary

This annual inspection report has been prepared in accordance with the requirements of the United States Environmental Protection Agency published Final Rule for Hazardous and Solid Waste Management System – Disposal of Coal Combustion Residual (CCR) from Electric Utilities (40 CFR Parts 257 and 261, also known as CCR Rule) and Extension of Compliance Deadlines for Certain Inactive Surface Impoundments.

This annual inspection report assesses the condition of existing CCR surface impoundments. Primarily, the annual inspection report is focused on the structural stability of the CCR surface impoundments and to ensure that the operation and maintenance of the CCR surface impoundments is in accordance with recognized and generally accepted good engineering standards.

At the time of the annual inspection, the surface impoundments were no longer receiving process water and the CCR material consolidation and capping activities had been complete in anticipation of impoundment closure.

After conducting the annual inspection, as well as review of available information pertaining to the status and condition of the existing CCR surface impoundments, and discussions with facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundments, there are no operating deficiencies and there have been no changes, other than the material consolidation activities, that have affected the stability or operation of the CCR surface impoundments since the previous annual inspection.

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1. INTRODUCTION

This annual inspection report has been prepared in accordance with the requirements of §257.83(b) of the United States Environmental Protection Agency (USEPA) published Final Rule for Hazardous and Solid Waste Management System – Disposal of Coal Combustion Residual (CCR), herein referenced as the CCR Rule.

1.1 CCR Rule Applicability

The CCR Rule requires annual inspections by a qualified professional engineer (PE) for existing CCR surface impoundments with a height of 5 feet or more and a storage volume of 20 acre-feet or more or the CCR surface impoundment has a height of 20 feet or more (40 CFR §§ 257.73(b), 257.73(d) and 257.83(b)).

1.2 Annual Inspection Applicability

The Interstate Power and Light Company (IPL), Burlington Generating Station (BGS) in Burlington, Iowa has four existing CCR surface impoundments that meet the requirements of Section 1.1, identified as follows:

- BGS Ash Seal Pond
- BGS Main Ash Pond
- BGS Economizer Pond
- BGS Upper Ash Pond

The CCR surface impoundments have been assigned a state identification number by the Iowa Department of Natural Resources (IDNR), which is 29-SDP-13-23C. As of December 30, 2021, BGS no longer used coal as a fuel source.

The annual inspection of the CCR surface impoundments at BGS was completed by a qualified PE on May 16, 2024. The annual inspection was completed to ensure that the design, construction, operation, and maintenance of the CCR surface impoundments at BGS are consistent with recognized and generally accepted good engineering standards.

The annual inspection of the CCR surface impoundments at BGS included a review of available information regarding the status and condition of the CCR surface impoundments. The information reviewed included relevant files available in the operating record at the time of the annual inspection, as well as the Alliant Energy CCR Rule Compliance Data and Information website entries for BGS (ccr.alliantenergy.com). These files for the CCR surface impoundments at BGS include, but is not limited to, CCR surface impoundment design and construction information (history of construction), hazard potential classification, structural stability assessment, safety factor assessment, hydrologic and hydraulic capacities (inflow flood control plan), results of 7-day inspections and instrumentation monitoring by a qualified person, and results of the previous annual inspection.

The annual inspection also included a visual inspection of the CCR surface impoundments to identify signs of distress or malfunction of the CCR surface impoundments and appurtenant structures. Additionally, the visual inspection included hydraulic structures underlying the base of the CCR surface impoundments or passing through the dikes of the CCR surface impoundments for structural integrity and continued safe and reliable operation.

2. ANNUAL INSPECTION REPORTING CRITERIA

The following sub-sections address the annual inspection reporting criteria per §257.83(b)(2) of the CCR Rule for the existing CCR surface impoundments located at BGS.

2.1 BGS Ash Seal Pond

2.1.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, and discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, consolidation activities have been completed in anticipation of closure and there have been no identified changes in outer boundaries of the impoundment geometry since the previous annual inspection.

2.1.2 Existing Instrumentation (§257.83(b)(2)(ii))

Instrumentation that supports the operation of the BGS Ash Seal Pond was removed during consolidation activities, which consisted of removal of the CCR and placement of backfill. There is no remaining instrumentation installed within the BGS Ash Seal Pond. The surface has been graded to drain; therefore water elevation data is no longer collected.

2.1.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the BGS Ash Seal Pond since the previous annual inspection were determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from IPL.

- At the time of the annual inspection, water was not observed to be present within the BGS Ash Seal Pond because the area is now graded to send surface stormwater runoff into the Mississippi River. Therefore, the minimum and present depth and elevation of water within the CCR surface impoundment was not collected.
- From the 1965 drawing of the original structural site preparation grading plan contours, the bottom contour elevation of the BGS Ash Seal Pond was approximately 12 feet below the top of crest of the south embankment at an elevation of 521 feet.
- At the time of the annual inspection, nearly all the CCR had been removed from the BGS Ash Seal Pond, with only limited amounts CCR remaining near the railroad and the condenser discharge pipe. The remaining amounts of CCR were closed in place. The impoundment was backfilled with sand and clay. The areas with limited amounts CCR remaining have received final cover prior to certifying completion of closure activities.

2.1.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was zero. It no longer impounds stormwater or receives process water.

2.1.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume, not including freeboard) within the BGS Ash Seal Pond at the time of the annual inspection includes zero cubic yards from water and limited quantities of CCR remain in place. The CCR remaining is located near the railroad and the condenser discharge pipe. A Closure Construction Documentation Report is being prepared and will contain information on the CCR volume remaining in place at the BGS Ash Seal Pond

2.1.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural weakness of the existing CCR surface impoundment and appurtenant structures.

Regarding the existing conditions of the BGS Ash Seal Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

2.1.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, other than the consolidation activities, there have been no other identified changes that have affected the stability or operation of the BGS Ash Seal Pond since the previous annual inspection.

2.2 BGS Main Ash Pond

2.2.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, and discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, consolidation activities have been completed and there have been no identified changes in outer boundaries of the impoundment geometry since the previous annual inspection. CCR has been consolidated to the BGS Main Ash Pond mainly from the BGS Ash Seal Pond. Although the maximum height of CCR has decreased, there are certain areas within the impoundment where the height of the CCR has increased.

2.2.2 Existing Instrumentation (§257.83(b)(2)(ii))

In the past, instrumentation that supported the operation of the BGS Main Ash Pond included a staff gauge to monitor the water elevation of the CCR surface impoundment. This instrumentation has been removed because of the closure activities and will not be replaced. There is no remaining instrumentation installed within the BGS Main Ash Pond. The surface has been capped and graded to drain; therefore water elevation data is no longer collected.

2.2.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the BGS Main Ash Pond since the previous annual inspection were determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from IPL.

- At the time of the annual inspection, water was not observed to be present within the BGS Main Ash Pond. The impoundment closure construction activities have been completed and the impoundment has been graded to drain stormwater from the top of the capped impoundment. The staff gauge has been removed. Therefore, the minimum and present depth and elevation of water within the CCR surface impoundment were not recorded.
- From the 1965 drawing of the original structural site preparation grading plan contours, the bottom contour elevation that was present prior to the construction of the BGS Main Ash Pond was approximately 524 feet.
- During closure construction activities, the BGS Main Ash Pond received most of the CCR from the BGS Ash Seal Pond and some CCR from the BGS Upper Ash Pond. A Closure Construction Documentation Report is being prepared and will contain information on the CCR volume and final cover elevations of the BGS Main Ash Pond. As result the maximum elevation of CCR and the deposition thickness has not been determined, although it is likely similar to past Annual Inspection Reports.

2.2.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was zero. The BGS Main Ash Pond had been regraded as part of the consolidation activities. The final surface directs stormwater runoff off the impoundment. The impoundment no longer receives process water; therefore no water impounded within the BGS Main Ash Pond.

2.2.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume, not including freeboard) within the BGS Main Ash Pond at the time of the annual inspection was estimated based on consolidation of CCR from the BGS Ash Seal Pond and the BGS Upper Ash Pond. The volume of impounded water is zero, because the impoundment no longer can retain stormwater or process water. Amendment No. 2 of the Closure Plan for Existing CCR Surface Impoundments, by SCS Engineers states the pre-closure estimated quantities of CCR include:

- BGS Ash Seal Pond – approximately 108,800 cy
- BGS Main Ash Pond – approximately 487,100 cy
- Economizer Ash Pond – Approximately 535,400 cy
- Upper Ash Pond – approximately 187,800 cy

At the time of the Annual Inspection, the BGS Ash Seal Pond CCR materials had been removed and the best estimate is that most of the CCR material had been consolidated to the BGS Main Ash Pond and only incidental amounts had been received from the BGS Upper Ash Pond. Therefore, the best estimate of CCR within the BGS Main Ash Pond is 595,900 cubic yards. The final amount of in place CCR will be determined as part of the final Closure Report.

2.2.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural weakness of the existing CCR surface impoundment.

Regarding the existing conditions of the BGS Main Ash Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

2.2.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there are two changes that have affected the stability or operation of the BGS Main Ash Pond since the previous annual inspection. Process water is no longer pumped to the BGS Main Ash Pond and the maximum height of the CCR was reduced as the closure activities consolidated the CCR into the BGS Main Ash Pond and the CCR was distributed throughout the impoundment, capped, and graded to drain stormwater off the capped areas.

During prior annual inspections, a seep area in the southeast corner of the impoundment has been observed. This area has been monitored by the facility staff since the discovery for worsening conditions or for any other issues that could affect the stability or operations of the impoundment. The inspections did not indicate any worsening of the area. During the Annual Inspection, no seepage was observed.

2.3 BGS Economizer Pond

2.3.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, and discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been several identified changes in the geometry since the previous annual inspection. The BGS Economizer Ash Pond footprint has changed slightly due to the consolidation of CCR in anticipation of closure activities but remains similar to the operational footprint. The side slopes have been reduced to approximately 4:1 and the overall height has appeared to have increased. The final changes in geometry will be documented within the final Closure Report.

2.3.2 Existing Instrumentation (§257.83(b)(2)(ii))

In the past, instrumentation that supported the operation of the BGS Economizer Pond included a staff gauge to monitor the water elevation of the CCR surface impoundment. This instrumentation has been removed because of the closure activities and will not be replaced. There is no remaining instrumentation installed within the BGS Economizer Pond. The surface has been capped and graded to drain; therefore water elevation data is no longer collected.

2.3.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the BGS Economizer Pond since the previous annual inspection were determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from IPL.

- At the time of the annual inspection, water was not observed to be present within the BGS Economizer Pond. The impoundment closure construction activities have been completed and the impoundment has been graded to drain stormwater from the top of the capped impoundment. The staff gauge has been removed. Therefore, the minimum and present depth and elevation of water within the CCR surface impoundment were not recorded.
- From the 1965 drawing of the original structural site preparation grading plan contours, the bottom contour elevation that was present prior to the construction of the BGS Economizer Pond was approximately 521 feet.
- During closure construction activities, the BGS Economizer Pond received most of the CCR from the BGS Upper Ash Pond and some CCR from the Ash Seal Pond. A Closure Construction Documentation Report is being prepared and will contain information on the CCR volume and final cover elevations of the BGS Economizer Ash Pond. As result the maximum elevation of CCR and the deposition thickness has not been determined, although it is likely to be slightly thicker than past Annual Inspection Reports.

2.3.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was zero. The BGS Economizer Ash Pond had been regraded as part of the consolidation activities. The final surface drains stormwater runoff from the impoundment and no longer receives process water. Storm or process water is no longer impounded within the BGS Economizer Ash Pond.

2.3.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume, not including freeboard) within the BGS Economizer Pond at the time of the annual inspection was estimated based on consolidation of CCR from mostly the BGS Upper Ash Pond and minimally from the BGS Ash Seal Pond. The volume of impounded water is zero, because the impoundment no longer has the ability to retain stormwater or process water. Amendment No. 2 of the Closure Plan for Existing CCR Surface Impoundments, by SCS Engineers states the pre-closure estimated quantities of CCR include:

- BGS Ash Seal Pond – approximately 108,800 cy
- BGS Main Ash Pond – approximately 487,100 cy
- Economizer Ash Pond – Approximately 535,400 cy
- Upper Ash Pond – approximately 187,800 cy

At the time of the Annual Inspection, the BGS Upper Ash Pond CCR materials have been largely consolidated into the BGS Economizer Pond footprint. Therefore the best estimate of CCR within the BGS Economizer Pond is 723,200 cubic yards. The final amount of in place CCR will be determined as part of the final Closure Report.

2.3.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural

weakness of the existing CCR surface impoundment. Additionally, there were no identified issues with the structural integrity of the hydraulic structures because they had been removed.

Regarding the existing conditions of the BGS Economizer Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

2.3.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there are three identified changes that have affected the stability or operation of the BGS Economizer Pond since the previous annual inspection. These changes include process water is no longer pumped to the BGS Economizer Ash Pond, the maximum height of the CCR was likely increased as the closure activities consolidated the CCR into the impoundment and the footprint of the BGS Economizer Ash Pond has increased due to the closure construction activities. CCR was distributed throughout the impoundment, capped, and graded to drain stormwater off the capped areas.

SCS Engineers conducted a Geotechnical Slope Stability Safety Factor Assessment Analysis dated June 19, 2024. This stability analysis concludes that the closure activities meet the stability requirements of 40 CFR 257.73(e).

2.4 BGS Upper Ash Pond

2.4.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, and discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been several identified changes in the geometry since the previous annual inspection. These changes include rip-rap addition on the interior and exterior slopes of the impoundment, removal of CCR within the BGS Upper Ash Pond, and rip-rap placement on the bottom of the slope of the BGS Economizer Ash Pond entering the BGS Upper Ash Pond.

2.4.2 Existing Instrumentation (§257.83(b)(2)(ii))

In the past, instrumentation that supported the operation of the BGS Upper Ash Pond included a Parshall flume discharge structure and equipment to measure the flow of the discharged water, as well as a staff gauge to monitor the water elevation of the CCR surface impoundment. This instrumentation is still in place and operational.

The flow data associated with the NPDES Outfall 001 discharge (i.e. maximum daily flow), since the previous annual inspection, was provided by IPL from May 1, 2023, and April 30, 2024. There were no recorded inundation events throughout this timeframe where the Mississippi River flooding sent back waters into the BGS Upper Ash Pond. Reviewing the provided flow data, the maximum daily flow recorded through NPDES Outfall 001 was 0.30 million gallons (March 14, 2024), which corresponds to a maximum elevation of 526.95 feet.

2.4.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the BGS Upper Ash Pond since the previous annual inspection were determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from IPL.

- At the time of the annual inspection, water was observed approximately two feet below the inlet of the BGS Upper Ash Pond. Therefore, the minimum and present depth and elevation of water within the CCR surface impoundment was unable to be recorded.
- Staff gauge water elevation data had not been recorded by IPL since the previous annual inspection, although the flows through the outfall were recorded by the ultrasonic level recorder. The maximum water elevation within the BGS Upper Ash Pond was recorded to be 526.95 feet (March 14, 2024).
- From the 1965 drawing of the original structural site preparation grading plan contours, the bottom contour elevation that was present prior to the construction of the BGS Upper Ash Pond was approximately 521 feet.

2.4.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was not estimated because of the closure construction activities, which included the removal of the CCR, changes in the impoundment surface area, and bathymetry within the BGS Upper Ash Pond. The water volume will be measured in the next annual inspection after the completion of the final Closure Report.

2.4.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume, not including freeboard) within the BGS Upper Ash Pond was not estimated because of the closure construction activities, which included the removal of the CCR, changes in the impoundment surface area, and bathymetry within the BGS Upper Ash Pond. The water volume will be measured in the next annual inspection after the completion of the final Closure Report. The CCR has been removed from the BGS Upper Ash Pond and mostly placed into the BGS Economizer Ash Pond. Therefore, the CCR no longer contributes to the total volume within the impoundment.

2.4.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural weakness of the existing CCR surface impoundment. Additionally, there were no identified issues with the structural integrity of the hydraulic structures (NPDES Outfall 001) associated with the BGS Upper Ash Pond.


Regarding the existing conditions of the BGS Upper Ash Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

2.4.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by BGS pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with BGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been no identified changes, other than the removal of the CCR materials that have affected the stability or operation of the BGS Upper Ash Pond since the previous annual inspection. At the time of inspection, the surface impoundment was no longer receiving process water.

3. CERTIFICATION

To meet the requirements of 40 CFR 257.83(b), I Mark W. Loerop hereby certify that I am a licensed professional engineer in the State of Iowa; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in 40 CFR 257.83(b).

By: 
Name: MARK LOEROP
Date: 6/20/2024

