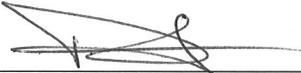




# Closure Plan for Existing CCR Surface Impoundment

Prepared for Interstate Power and Light Company  
Lansing Generating Station  
Lansing, IA

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8/26/2016  
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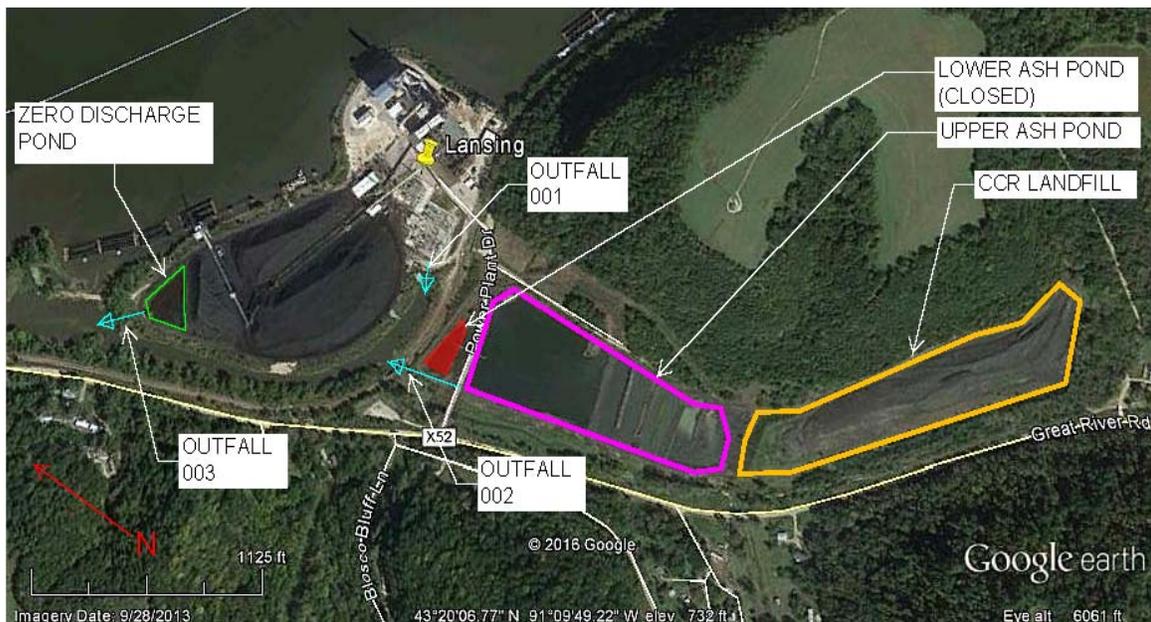
## 1. INTRODUCTION

Interstate Power and Light Company (IPL) – a wholly owned subsidiary of Alliant Energy – operates the Lansing Generating Station (LAN), located 3 miles southeast of Lansing, Iowa. Units 1 through 3 have been retired and Unit 4 is the only unit in operation, with a 275MW capacity. To comply with the requirements of the USEPA Final CCR Rule (40 CFR 257.50 thru 257.107), Alliant Energy, on behalf of its subsidiary IPL, submits the following Closure Plan applicable to the Upper Ash Pond, detailing the steps to be undertaken to close the existing CCR surface impoundment by leaving the CCR in place, in accordance with §257.102(b) of the CCR Rule.

This document provides the following required information:

- Facility information
- Estimate of the maximum inventory of CCR on-site
- Proposed CCR surface impoundment closure procedure
- Description of the proposed final cover system over the CCR material
- Schedule for completing all closure activities

LAN currently operates 3 surface impoundments at the site, of which the Upper Ash Pond is managed as an existing CCR impoundment under the provisions of the CCR Rule. Additionally, LAN also manages a CCR landfill that receives both bottom ash and fly ash. Further details are included in the following paragraphs. The overall layout of the facility is shown in Figure 1.



**Figure 1: Current Layout at Lansing Generating Station**

Of the 3 impoundments present at LAN, only one (the Upper Ash Pond) is regulated as an existing CCR surface impoundment per the CCR Rule. This pond receives Unit 4 bottom/economizer ash; Unit 4 hydroveyor water; sluiced fly ash, contact runoff water from the adjacent landfill; air heater washes; RO reject water; demineralizer regeneration wastewater; and Unit 4 boiler sump discharge. Its overall area, including the bottom ash dredging area on the southern end of the pond, is approximately 17 acres.

The Lower Ash Pond was permanently closed in September 2015 through removal of the CCR, prior to the effective date of the Rule. The Zero Discharge Pond receives coal pile and storm water runoff and is not considered a CCR unit per the provisions of the Rule. These two ponds are not subject to the Closure Plan requirement of the CCR Rule and are not discussed further in this plan.

The onsite CCR landfill, located upstream (South) of the Upper Ash Pond, occupies an area of approximately 16 acres and contains bottom ash, fly ash and scrubber by-product. A portion of the landfill has already been closed by installing a cover system that exceeds the current cover system requirements of the CCR Rule. Closure of the remaining portion of the landfill is discussed in a separate Closure Plan document and is not discussed further in this plan.

## 2. PROPOSED CCR IMPOUNDMENT CLOSURE PROCEDURE

The proposed closure of the CCR impoundments at LAN will be done according to the following steps:

- Dewatering of Upper Ash Pond
- Stabilization and grading of in-situ CCR material
- Installation of cover system – see Section 3
- Installation of rainwater/leachate collection, storage and treatment system

The cover system over the in-situ CCR will be designed to act as a bottom liner for a horizontal expansion of the adjacent CCR landfill, pending approval from the Iowa Department of Natural Resources.

Proposed final grades for the cover system over the in-situ Upper Ash Pond CCR will be such that they can accommodate future landfill expansion. Maximum slopes along the inboard edges of the perimeter berms will be 3H:1V.

Since the shape of this cover will naturally collect rainwater until the volume is filled with new CCR, a proposed storm water collection system will be installed over the cover system and sized to remove accumulated water.

Once dry ash disposal begins in this area, the storm water collection system will become the new CCR landfill leachate collection system.

Clean storm water from upstream of the impoundment, including clean storm water runoff from the closed portion of the CCR landfill cover, will be diverted southwest of the impoundment.

Contact storm water runoff from the active portion of the CCR landfill will be diverted to either a lined leachate collection pond, that is constructed within the confines of the existing impoundment after local removal of CCR, or a storage tank prior to treatment and discharge via the Station's NPDES-permitted outfalls.

### 3. PROPOSED COVER SYSTEM

As detailed in Section 2 of this plan, it is the intent of the cover system over the in-place CCR to function as a bottom liner for the expansion of the adjacent landfill area. The final cover will meet or exceed the minimum requirements of 40 CFR 257.102(d)(3)(i)(A) thru (D). It will consist, from bottom to top, of a compacted 24" thick layer appropriate low-permeability material having a hydraulic conductivity of no more than  $10^{-7}$  cm/s, overlaid with a minimum 30 mil geomembrane liner.

In order to preclude the accumulation of water on this system during future landfill operations, a 12" layer of aggregate along with embedded leachate collection piping will be installed on top of the geomembrane liner. The slope of this cover (future landfill liner) system, permeability and slope of the aggregate layer, spacing of the perforated piping collection network, and the pumping removal structure will be designed to keep less than a 12" storm water or leachate hydraulic head on the cover/liner, in accordance with 40 CFR 257.70(d)(1).

The materials of the cover system will be placed and compacted as required to minimize infiltration, limit erosion and future maintenance, and maintain positive drainage. Soil properties, compaction, permeability, and thickness testing will be performed to confirm compliance with the CCR Rule.

All other areas that are disturbed during the surface impoundment closure activities will be restored, either by providing a vegetative cover or an aggregate surface.

The cover over the future CCR material to be placed in the landfill expansion is beyond the scope of this Plan.

### 4. ESTIMATED MAXIMUM INVENTORY OF CCR

It is estimated that approximately 357,000 cubic yards of CCR are currently present in the Upper Ash Pond. This quantity was computed by considering the full 17 acres of the Upper Ash Pond, which includes the bottom ash handling area at its southern end, and comparing bathymetry data from 2015 to the original impoundment volume when constructed. This quantity does not include the volume of CCR in the existing CCR landfill adjacent to the impoundment.



## 5. ESTIMATED MAXIMUM AREA OF COVER

It is estimated that the proposed cover system will occupy an area equal to the area of the existing Upper Ash Pond, i.e. 17 acres.

## 6. SCHEDULE

Closure of the existing CCR surface impoundment is anticipated to require approximately 12 months. The schedule provided in Table 1 estimates a *closure* construction initiation date in March, 2021 following bottom ash handling conversion, with a completion of closure by January 2022. A first phase of preparatory work (Phase 1) will take place prior to the cessation of CCR flows to the Upper Ash Pond. Alliant Energy will obtain certification from an Iowa licensed professional engineer that the site was closed in compliance with the approved Closure Plan. The certification will be placed in the Station's operating record within 30 days of completing closure.

**TABLE 1: PLANNING LEVEL SCHEDULE FOR CLOSURE-IN-PLACE OF UPPER ASH POND**

Task Description	Anticipated Start Date	Anticipated Completion Date
<b>Pre-Design Activities</b>		
Preparation of <i>Closure Plan</i> for compliance with Federal CCR Rule	04/16/2016	10/16/2016
Post <i>Closure Plan</i> in the Station's Operating Record	10/16/2016	10/16/2016
Send a Notification of the availability of the Closure plan to the Relevant State Director and publish <i>Closure Plan</i> to the Station's Internet Website	10/16/2016	11/15/2016
Place <i>Post-Closure Plan</i> in the Station's Operating Record	10/16/2016	10/16/2016
Send Notification of availability of <i>Post-Closure Plan</i> to the State Director and place <i>Post-Closure Plan</i> to the Station's Internet Website	10/16/2016	11/15/2016
<b>Design / Bidding / Permitting</b>		
Engineering / Preparation of Bid docs / IDNR Closure Permit Application	07/2017	10/2017
Issue Request for Bids	10/2017	11/2017
Bids due	11/2017	11/2017
Bid Evaluation Period	11/2017	12/2017
Issue Award and Notice to Proceed	12/2017	12/2017
<b>Construction – Phase 1 (South Half)</b>		
Contractor Mobilization	03/2018	03/2018
Dewater southern half of Upper Ash Pond	04/2018	06/2018
Stabilize and regrade CCR in southern half of Pond	06/2018	09/2018
Construct Leachate Pond after local removal of CCR	10/2018	11/2018



Task Description	Anticipated Start Date	Anticipated Completion Date
Construct Storm Water pond after local removal of CCR	10/2018	11/2018
Install in-situ CCR cover system/landfill expansion liner in southern half of Upper Pond	03/2019	07/2019
<b>Construction – Phase 2 (North Half)</b>		
Place a <i>Notification of Intent to Close</i> the Surface Impoundment in the Station's Operating Record	01/2021	01/2021
Send <i>Notification of Intent to Close</i> to State Director and post Notification to the Station's Internet Website	02/2021	02/2021
Dewater north half of Upper Pond through water treatment system	03/2021	05/2021
Stabilize in-situ CCR, regrade and install cover system/landfill expansion liner in north half of Upper Pond	06/2021	11/2021
<b>Post-Construction Administration</b>		
Certification verifying the completion of closure in accordance with the closure plan	12/2021	12/2021
Place a Notification of Pond Closure Completion in the Station's Operating Record	01/2022	01/2022
Send Notification of availability of Closure Completion to Relevant State Director / place Closure Completion to the Station's Internet Website	01/2022	01/2022
Record a Notation of the CCR Impoundment Closure on the Deed of the Property	12/2021	12/2021
Place a Notification of the Deed Notation in the Station's Operating Record	01/2022	01/2022
Send Notification of availability of Deed Notation to Relevant State Director / place Deed Notation to the Station's Internet Website	01/2022	01/2022
Place a Notification of Completion of the Post-Closure Care in the Station's Operating Record	12/2051	12/2051
Send a Notification of the availability of the Post-Closure Care to the Relevant State Director and place Post-Closure Care to the Station's Internet Website	01/2052	01/2052

## 7. COMPLETION OF CLOSURE ACTIVITIES

To confirm completion of the close-in-place operation, IPL will retain a qualified engineer licensed in the State of Iowa to verify that the existing CCR surface impoundments have been closed in accordance with this closure plan and the requirements of 40 CFR 257.102(d). The qualified engineer will provide IPL with a written certification stating compliance as required in 40 CFR 257.102(f)(3). The Post-Closure Plan is presented in a separate document.

## 8. CERTIFICATIONS

It is S&L's opinion that this written closure plan meets the requirements of 40 CFR 257.102(b).

It is also S&L's opinion that the proposed final cover system as described herein meets the design requirements of 40 CFR 257.102(d)(3)(i).

## 9. REFERENCES

1. 40 CFR Part 257, Subtitle D, – Environmental Protection Agency Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, Federal Register, Vol. 80, No. 74.