



Initial Annual CCR Landfill Inspection

Lansing Landfill

Prepared for:

Interstate Power and Light Company

Lansing Generating Station
2320 Power Plant Drive
Lansing, Iowa 52151

Prepared by:

SCS ENGINEERS
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Madison, Wisconsin 53718-6751
(608) 224-2830

January 2016
File No. 25215159.00

Offices Nationwide
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1	Operating Record Summary

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PE CERTIFICATION

	<p>I, Eric J. Nelson, hereby certify that this Initial Annual CCR Landfill Inspection Report meets the requirements of 40 CFR 257.84(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: right;"> 01/18/2016 (date) </div> </div>
	<p style="text-align: center;">Eric J. Nelson</p> (printed or typed name)
	<p>License number <u>23136</u></p>
	<p>My license renewal date is December 31, <u>2016</u>.</p>
<p>Pages or sheets covered by this seal: <u>Initial Annual CCR Landfill Inspection Report text and Table 1</u> <u>dated January 2016, and delivered January 18, 2016.</u></p>	

1.0 INTRODUCTION

1.1 PURPOSE

SCS Engineers (SCS) completed an annual inspection of the Interstate Power and Light Company (IPL) Lansing Landfill (LAN) in Lansing, Iowa. The annual inspection was completed in accordance with the U.S. Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) rule, 40 CFR 257 Subpart D, in particular 257.84(b)(1). According to 40 CFR 257.84(b)(1), an annual inspection by a qualified professional engineer is required for all existing and new CCR landfills and any lateral expansion of a CCR landfill. 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. 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., 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.

This report has been prepared in accordance with 40 CFR 257.84(b)(2) to document the annual inspection.

1.2 BACKGROUND

The LAN Landfill includes an active CCR landfill, which currently consists of a single CCR unit. The LAN Landfill has received CCR both before and after the effective date of the CCR Rule.

The inspection requirements in 40 CFR 257.84(b)(1) apply to the existing (active) CCR unit listed above.

2.0 ANNUAL INSPECTION

Mr. Eric Nelson of SCS completed an annual inspection of the LAN Landfill on November 24, 2015. Mr. Nelson is a licensed professional engineer in Iowa and holds a Bachelor's of Science degree in Geological Engineering. He has over 17 years of experience in the design, construction, and operation of solid waste disposal facilities. This was the initial annual inspection of the LAN Landfill. 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 LAN 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 LAN facility. The materials reviewed are summarized in **Table 1**.

2.2 VISUAL INSPECTION

SCS completed a visual inspection of the LAN Landfill to identify signs of distress or malfunction of the CCR unit.

The visual inspection included observations of the following:

- CCR placement areas including active filling areas, final cover areas, and exterior non-CCR berms or slopes.
- Contact water run-off management features including internal contact water drainage features and discharges to the LAN Upper Ash Pond.
- Non-contact storm water run-on and run-off control features including swales located adjacent to active fill areas.

3.0 INSPECTION RESULTS

The results of the annual inspection, along with a description of any deficiencies or releases identified during the visual inspection, are summarized in the following sections.

3.1 CHANGES IN GEOMETRY

This is the initial annual inspection of the LAN Landfill facility completed under 40 CFR 257.84(b)(1). There are no previous annual inspections to which SCS could compare the current geometry of the landfill structure.

At the time of the visual inspection, active CCR placement was evident. Final cover was in place along nearly the entire south and east slopes with the remaining landfill areas being open.

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

3.2 CCR VOLUMES

The approximate volume of CCR contained in the LAN Landfill at the time of inspection is 311,000 cubic yards. This estimate is based on a design capacity of 446,900 cubic yards less the

approximate capacity remaining (140,900 cubic yards) as of August 27, 2015, according to a topographic survey completed by Mohn Surveying and airspace calculations completed by SCS, plus an estimated 5,000 cubic yards of CCR placed in the three months since the August 27 topographic survey. CCR placed since the survey is estimated based on CCR disposal rate estimates provided by IPL.

3.3 APPEARANCE OF STRUCTURAL WEAKNESS

The inspection included a review of the appearance of an actual or potential structural weakness of the CCR unit. The visual inspection included a review of CCR fill areas including the top slopes, internal side slopes, external side slopes, and internal ramps/haul roads for the presence of the following conditions:

- Signs of surface movement or instability:
 - Sloughing, slumping, or sliding
 - Surface cracking
 - Slopes in excess of 3 horizontal to 1 vertical (3H:1V)
 - Toe of slope bench movement
 - Evidence of inadequate compaction of exposed CCR
- Inappropriate vegetation growth
- Animal burrows
- Erosion damage
- Unusual surface damage caused by vehicle traffic

3.3.1 Signs of Surface Movement or Instability

Slopes in excess of 3H:1V and evidence of inadequate compaction of exposed CCR were noted in one specific location during the inspection. A steep slope (approximately 2H:1V) was observed on an interior waste slope located along the south side of the northern landfill access road. Inadequate compaction in portions of this slope was indicated by erosion in the exposed CCR.

The slope observed is relatively short (vertically only about 10 to 15 feet high) and the erosion areas are localized. At the top of the slope is a 60 to 80 foot wide bench for landfill equipment access. Although steep, it is notable that the slope is, and has been, supporting landfill equipment and recent final cover construction equipment traffic without issue. The site received approximately 0.00 inches of precipitation the day before the inspection¹ and 0.92 inches of precipitation over the seven days prior to the inspection,² which may have contributed to the erosion observed. Based on the inspection, these conditions are unlikely to have a significant impact on the overall stability of the CCR fill in this module. The conditions and potential improvements such as flattening the steep slope were discussed with LAN facility staff during the inspection.

1 Source is Weather Underground (<http://www.wunderground.com/>) for Viroqua, Wisconsin on 11/23/15.

2 Source is Weather Underground (<http://www.wunderground.com/>) for Viroqua, Wisconsin from 11/17-11/23/15.

The conditions noted are not currently considered an operating deficiency since they are unlikely to have significant impact on the function of the CCR unit. However, additional observation of these areas is recommended to ensure that the conditions observed during the visual inspection, or similar future conditions, are addressed and do not have an impact on the overall stability of the CCR unit.

No other signs of surface movement or instability were noted during the inspection.

3.3.2 Inappropriate Vegetation Growth

Heavy grassy vegetation was noted during the inspection in the upper surface water/contact water retention area located within the landfill limits at the west end of the CCR unit. However, no signs of significant sediment buildup that might inhibit the discharge of water as designed were noted. Also, no signs of surface water/contact water discharges from the retention area other than through the outlet structure were observed.

The conditions noted are not currently considered an operating deficiency since they are unlikely to have significant impact on the function of the CCR unit. However, additional observation of this area is recommended to ensure that the vegetation conditions do not impact the function of the retention area or the discharge structure, as ponding of water in this area has the potential to impact the stability of the CCR unit.

No other inappropriate vegetation growth was noted during our inspection.

3.3.3 Animal Burrows

No animal burrows were noted during the inspection.

3.3.4 Erosion Damage

Erosion damage to exposed CCR surfaces was noted during the inspection as discussed in **Section 3.3.1**. Mild erosion of exposed CCR along the steep slope adjacent to the northern landfill access road was observed. The erosion observed does not appear to impact the overall stability of the CCR fill.

Erosion in the surface water/contact water management feature (perimeter ditch) located along the northern limits of the landfill was noted during the inspection. At the far east end of the landfill, this feature appeared to be recently constructed or maintained as evidenced by grade stakes and recent ground disturbance. The erosion noted was present in what appeared to be recently graded material. At the far west end of the landfill where erosion was also noted, this feature becomes narrow and more deeply incised before discharging to a retention area located between the landfill and the adjacent LAN Upper Ash Pond.

The conditions noted are not currently considered an operating deficiency since they are unlikely to have significant impact on the function of the CCR unit. However, additional observation of this area is recommended to ensure that these features are maintained to prevent the uncontrolled

flow of surface and contact water, as erosion and uncontrolled flow of surface water or contact water has the potential to impact the stability of the CCR unit.

No other erosion damage was noted during the inspection.

3.3.5 Unusual Surface Damage Caused by Vehicle Traffic

No unusual surface damage caused by vehicle traffic was noted during the inspection.

3.4 DISRUPTIVE EXISTING CONDITIONS

No disruptive existing conditions were noted during the inspection.

3.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

This is the initial annual inspection of the LAN Landfill facility completed under 40 CFR 257.84(b)(1). There are no previous annual inspections to which SCS could compare the current site conditions of the landfill to fulfill the requirement in 40 CFR 257.84(b)(2)(iv).

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

4.0 FUTURE INSPECTIONS

4.1 EXISTING CCR LANDFILL

As stated in 40 CFR 257.84(b)(4), the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. The owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record.

The next annual inspection of the LAN Landfill must be completed within one year of the placement of this inspection report in the operating record for the LAN facility.

4.2 NEW CCR LANDFILLS AND LATERAL EXPANSIONS

The initial annual inspection for any lateral expansion in the future must be completed within 14 months of the initial receipt of CCR in the module per 40 CFR 257.84(b)(4).

TABLE

- 1 Operating Record Summary

**Table 1. Operating Record Summary
IPL Lansing Landfill / Lansing, Iowa
SCS Engineers Project #25215159.00**

	Record Date	Source
Operating Criteria		
CCR Fugitive Dust Control Plan	9/23/2015	Website
7-Day Inspection	10/19/2015	IPL
7-Day Inspection	10/22/2015	IPL
7-Day Inspection	10/26/2015	IPL
7-Day Inspection	10/29/2015	IPL
7-Day Inspection	11/5/2015	IPL
7-Day Inspection	11/9/2015	IPL
7-Day Inspection	11/11/2015	IPL
7-Day Inspection	11/16/2015	IPL
7-Day Inspection	11/19/2015	IPL
7-Day Inspection	11/23/2015	IPL

Notes:

1) Items sourced to the Website are from Alliant Energy's CCR Rule Compliance Data and Information website as of 1/05/16.

See <http://ccr.alliantenergy.com/Lansing/index.htm>

2) Items sourced to IPL are from the facility Operating Record as of the date of inspection.

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