

Annual CCR Landfill Inspection, Modules 1-3, Modules 4-6, and Modules 10-11

Columbia Dry Ash Disposal Facility

Prepared for:

Wisconsin Power and Light Company
W8375 Murray Road
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SCS ENGINEERS

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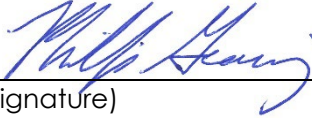
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PE CERTIFICATION

	<p>I, Phillip E. Gearing, hereby certify that this 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 Wisconsin.</p>
	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  (signature) </div> <div style="text-align: center;"> 12/19/2023 (date) </div> </div>
	<p>Phillip Gearing (printed or typed name)</p>
	<p>License number <u> E-45115 </u></p> <p>My license renewal date is July 31, 2024.</p> <p>Pages or sheets covered by this seal:</p>
	<p>All – Annual CCR Landfill Inspection – Columbia Dry Ash Disposal Facility</p>

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1.0 INTRODUCTION

1.1 PURPOSE

On July 7, 2023, SCS Engineers (SCS) completed an annual inspection of the Wisconsin Power and Light Company (WPL) Columbia Dry Ash Disposal Facility (COL) in Pardeeville, Wisconsin. The annual inspection was completed in accordance with the U.S. Environmental Protection Agency (U.S. EPA) coal combustion residuals (CCR) rule, 40 Code of Federal Regulations (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 COL facility includes an active CCR landfill, which currently consists of the following CCR units:

- Module 1 through Module 3 (existing CCR landfill per 40 CFR 257.53).
- Module 4 through Module 6, Module 10, and Module 11 (new CCR landfill per 40 CFR 257.53).

Modules 1 through 3 were previously described as separate existing CCR landfills, although they are contiguous and are managed as a single landfill by the facility and by the Wisconsin Department of Natural Resources. WPL previously clarified that Modules 1 through 3 are one existing CCR landfill under the federal CCR Rule, and this report reflects WPL's clarification. Modules 4, 5, 6, 10, and 11 are a new CCR landfill that initiated construction after October 19, 2015, and is therefore managed as a separate CCR unit under the CCR Rule, even though it is contiguous to Modules 1 through 3. Modules 10 and 11 were constructed in 2022 and 2023 and became operational in June 2023. Modules 7, 8, and 9 are permitted by the State of Wisconsin, but have not yet been developed.

The inspection requirements in 40 CFR 257.84(b)(1) apply to all of the CCR units listed above.

At the time of the inspection, the active CCR landfill units were in various stages of development or use, as described in the table below.

Disposal Phase	Unit	CCR Rule Status	Basis for Status
Phase 1	Modules 1 - 3	Existing CCR Landfill. Currently accepting CCR.	Final or interim grades have been reached. Final cover completed on portions of the CCR unit. Final closure per 257.102 will not be completed until final grades are reached throughout the CCR unit. Overlay from Module 4 and Module 10 was occurring onto Module 3.
Phase 1/ Phase 2	Modules 4 - 6, Module 10, and Module 11	New CCR Landfill. Currently accepting CCR.	CCR placement began on November 5, 2018 in the unit. CCR placement began in Modules 10 and 11 on June 1, 2023.

2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

SCS identified no deficiencies or releases during the annual inspection of the CCR units at COL. Deficiencies and releases must be remedied by the owner or operator as soon as feasible and the remedy documented.

SCS did identify additional conditions during the annual inspection that are not considered deficiencies but have the potential to become a deficiency if left unaddressed. Each condition and the recommendations provided by SCS to address them are summarized in the table below. These conditions and recommendations are described in further detail in **Section 4.0**.

Condition	CCR Unit / Area	Recommendation(s)	Report Section
Vegetation growth in down chutes, which could eventually affect final cover.	Grouted Down Chutes (Module 1 Final Cover)	Remove vegetation. Continue to observe and remove existing / future vegetation, as necessary. Monitor during 7-day inspections.	4.3.2
Vegetation growth near inlets and outlets. Vegetation directly adjacent to inlets and outlets was removed by hand during inspection.	Contact water culverts (Module 2)	Remove vegetation. Continue to observe and remove vegetation, as necessary. Monitor during 7-day inspections.	4.3.2
Woody vegetation growth in riprap, which may affect riprap stabilization and liner system if allowed to continue to grow.	West Riprap Slope (Contact Water/ Leachate Pond)	Remove woody growth or other unwanted vegetation in riprap. Continue to observe and remove vegetation, as necessary. Monitor during 7-day inspections.	4.3.2

Condition	CCR Unit / Area	Recommendation(s)	Report Section
Bare areas and rill erosion observed. Future erosion may eventually expose CCR if left un-vegetated.	Intermediate Cover (Modules 3 through 6)	Backfill and grade eroded areas. Add seed and erosion mat to bare areas to promote vegetation growth on intermediate cover. Monitor during 7-day inspections.	4.3.4
Tracking of CCR onto haul road.	West Haul Road Entrance and Access Road	Remove tracked material from haul roads per the fugitive dust plan. Add rock tracking areas for separation from landfill and haul road. Monitor during 7-day inspections.	4.4.2.1

3.0 ANNUAL INSPECTION

Mr. Phillip Gearing of SCS completed an annual inspection of active CCR landfill areas at COL, including Modules 1 through 3, Modules 4 through 6, and Modules 10 and 11 on July 7, 2023. Mr. Gearing is a licensed professional engineer in Wisconsin and holds a Bachelor of Science degree in Geological Engineering. He has over 17 years of experience in the design, construction, and operation of solid waste disposal facilities. The scope of the annual inspection is described in **Sections 3.1 and 3.2**. The results of the annual inspection are discussed in **Section 4.0**.

3.1 OPERATING RECORD REVIEW

SCS reviewed the available information in the operating record for COL. Information reviewed by SCS included operating record materials provided by WPL, and the information posted on Alliant Energy's CCR Rule Compliance Data and Information website for the COL facility.

3.2 VISUAL INSPECTION

SCS completed a visual inspection of Modules 1 through 3, Modules 4 through 6, and Modules 10 and 11 to identify signs of distress or malfunction of the CCR units.

The visual inspection included observations of the following:

- CCR placement areas including active filling areas, intermediate cover areas, final cover areas, and exterior non-CCR berms or slopes.
- Leachate collection and removal system components including visible leachate drainage layer materials.
- Leachate and contact water run-off management features including internal contact water drainage features, leachate collection system discharge pipe, and the leachate/surface water pond.
- Non-contact storm water run-on and run-off control features including swales located adjacent to active fill areas, on intermediate/final cover slopes, and outside the landfill limits and the south sedimentation basin.

4.0 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.

4.1 CHANGES IN GEOMETRY

No apparent changes in geometry were noted that would indicate distress or malfunction of the CCR units at the facility since the previous annual inspection of Modules 1 through 3 and Modules 4 through 6 at the COL facility completed under 40 CFR 257.84(b)(1). Modules 10 and 11 were constructed since the previous annual inspection and all changes in geometry observed during the annual inspection were the result of planned CCR filling in the current CCR units.

As noted in **Section 1.2**, all CCR units are currently accepting CCR. A majority of the CCR placement is occurring in Modules 4 through 6, Module 10, and Module 11, but with overlay into Module 3. Final cover or intermediate cover is established along portions of Modules 1 through 3 and Modules 4 through 6. Vegetation is established or becoming established on all final and intermediate cover areas.

4.2 CCR VOLUMES

The approximate volume of CCR contained in each of the active units near the time of the inspection is summarized below. Note that the inspection was performed on July 7, 2023, and a survey of CCR was performed on July 25, 2023. A description of how the estimate was developed is summarized below.

Disposal Phase	Unit	Estimated Volume of CCR in Place	Basis for Estimate and Source
Phase 1	Modules 1-3	1,035,000 cubic yards	CCR volume is less than 2022 volume due to excavation of material from the unit for use in moisture conditioning of pond closure CCR in Modules 5 and 6. There was CCR overlay onto Modules 2 and 3 at the time of the inspection and the unit had yet to reach the previous 2022 inspection elevations. Estimated volume based on a survey performed on 7/25/2023 compared to documented base grades. Estimated volume excludes final cover or intermediate cover material installed at time of survey. Estimated volume considers a vertical boundary at the Module 3 limit to Module 4 and Module 10.
Phase 1/ Phase 2	Modules 4 - 6, Module 10, and Module 11	705,000 cubic yards	CCR continued to be placed in Modules 4 through 6, including overlays. CCR placement began in Modules 10 and 11 in June 2023. CCR volume placed in Modules 4, 5, 6, 10, and 11 was estimated based on a survey performed on 7/25/2023 compared to documented top of leachate drainage layer grades. Estimated volume considers a vertical boundary at the Module 4 limit to Module 3, Module 10 limit to Module 3, and Module 11 limit to Module 4.

4.3 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 three horizontal to one 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.

4.3.1 Signs of Surface Movement or Instability

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

4.3.2 Inappropriate Vegetation Growth

No inappropriate vegetation growth impacting the CCR unit was noted during the inspection. The following items have the potential to become a deficiency if left unaddressed:

- Vegetation was observed in the grouted riprap down chutes located on the Module 1 Final Cover. WPL should remove existing vegetation before it becomes established and impacts the final cover. Continued removal of future vegetation as necessary and monitoring during 7-day inspections is recommended.
- Vegetation growth was observed in the inlets and outlets of the Module 2 contact water culverts. During the annual inspection, vegetation directly adjacent to the inlets and outlets was cleared away by hand. Continued removal of future vegetation as necessary and monitoring during 7-day inspections is recommended.
- Vegetation was observed on the west riprap slope in the contact water/leachate pond. WPL should remove woody vegetation growth in the riprap before it becomes established and impacts the riprap stability or liner system. The vegetative growth was not impacting the stability of the CCR landfill at the time of the inspection. Continued vegetation removal from the riprap and monitoring during 7-day inspections is recommended.
- Vegetation made it difficult to observe the leachate outlet from Module 1. The location was staked so it could be located. Vegetation directly adjacent to the Module 1 outlet was cleared away during the annual inspection. No issues with the current operation of the outlet were observed. WPL should monitor vegetation during 7-day inspections and keep the area maintained to allow for the effective observation of flow from the pipe outlet.

4.3.3 Animal Burrows

No animal burrows were noted during the inspection.

4.3.4 Erosion Damage

The following erosion damage was noted during the inspection:

- Areas of bare soil were observed on the intermediate cover of Modules 3 through 6 (CCR Unit Modules 1 through 3 and Modules 4 through 6). Bare soil may erode eventually exposing CCR if not addressed. Bare soil areas should have seed and erosion mat or hydromulch added to promote vegetation growth on the intermediate cover. WPL should continue to monitor during 7-day inspections.

- Rill erosion was observed on the intermediate cover of Module 6 (CCR Unit Modules 4 through 6). Continued erosion may eventually expose CCR if not addressed. WPL should backfill, grade, seed, and erosion mat of hydromulch eroded areas to promote vegetation growth on the intermediate cover. WPL should continue to monitor during 7-day inspections.

The bare soil and erosion conditions noted are not currently considered an operating deficiency since it is unlikely to have a significant impact on the function of the CCR unit. However, WPL should continue to observe these areas during 7-day inspections to confirm that the conditions observed during the visual inspection, or similar future conditions, are addressed. No additional erosion damage was noted during the inspection. The erosion areas were discussed with plant staff after the inspection was performed.

4.3.5 Unusual Surface Damage Caused by Vehicle Traffic

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

4.4 DISRUPTIVE CONDITIONS

4.4.1 Existing Disruptive Conditions

4.4.1.1 Current Inspection

No existing conditions that were disrupting the operation and safety of the CCR units were noted during the annual inspection.

4.4.1.2 Previous Inspection

No existing conditions that were disrupting the operation and safety of the CCR units were noted during the previous inspection.

4.4.2 Potentially Disruptive Conditions

4.4.2.1 Current Inspection

Tracking of CCR onto landfill haul road. The tracking of CCR onto the landfill west haul road was noted as a potentially disruptive condition. Tracking of CCR from Modules 4 through 6 was observed during the current inspection. The tracking and accumulation of CCR on the landfill entrance and access roads has the potential to produce fugitive dust if not addressed through maintenance of the roads as described in the fugitive dust control plan. WPL should remove CCR from the roads as indicated in the fugitive dust control plan on an as-needed basis.

The tracking and accumulation of CCR on the landfill haul roads is not currently considered an operating deficiency since WPL has maintained, and plans to continue maintaining, the haul roads as described in the fugitive dust control plan. The observed tracking and accumulation of CCR on the landfill haul roads can be addressed through regular housekeeping practices described in the fugitive dust control plan. WPL should maintain rock tracking areas as needed to create separation from active modules and the haul road. Monitoring of tracking and accumulation of CCR on the landfill haul road during 7-day inspections is recommended.

No other potentially disruptive conditions were noted during the inspection.

4.4.2.2 Previous Inspection

The tracking of CCR onto the landfill haul road was noted as a potentially disruptive condition. Tracking of CCR onto the landfill entrance and access roads was observed during the current inspection.

4.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

No changes to site conditions that appear to have the potential to affect the stability or operation of the facility were noted during the inspection.

5.0 FUTURE INSPECTIONS

5.1 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 inspection report is the basis for establishing the deadline to complete the next 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 CCR units Modules 1 through 3, Modules 4 through 6, and Modules 10 and 11 must be completed within 1 year of the placement of this inspection report in the operating record for the COL facility.

5.2 NEW CCR LANDFILLS AND LATERAL EXPANSIONS

The initial annual inspection for modules constructed 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).

The current annual inspection covers the initial annual inspection for the lateral expansion of the CCR unit with the construction of Modules 10 and 11 completed in June 2023.