Annual CCR Landfill Inspection
Phase 3, Module 1
Phase 3, Module 2
Phase 4, Module 1

Edgewater I-43 Ash Disposal Facility

Prepared for:

Wisconsin Power and Light Company
Edgewater Generating Station
3739 Lakeshore Drive
Sheboygan, Wisconsin 53081

SCS ENGINEERS

25216069.18 | December 20, 2018

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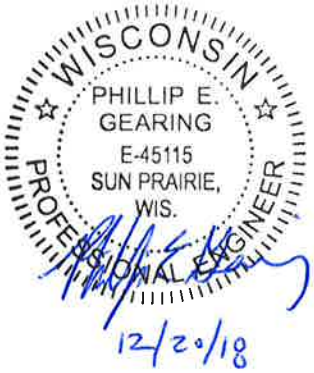
PE CERTIFICATION



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.

Phillip E Gearing 12/20/18

(signature) (date)

PHILLIP E GEARING

(printed or typed name)

License number E-45115

My license renewal date is August 30, 2020.

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1.0 INTRODUCTION

1.1 PURPOSE

SCS Engineers (SCS) completed an annual inspection of the Wisconsin Power and Light Company (WPL) Edgewater I-43 Ash Disposal Facility (I-43) in Sheboygan, Wisconsin. 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 I-43 facility includes a closed CCR landfill, which consists of disposal Phase 1 and Phase 2, and an active CCR landfill, which currently consists of three CCR units in disposal Phase 3 and Phase 4. The two landfills are located on the same property, but are not contiguous. The USEPA CCR Rule does not apply to Phase 1 and Phase 2, because they were closed before the effective date of the CCR Rule.

The active CCR landfill at I-43 is comprised of three existing CCR units:

- Phase 3, Module 1
- Phase 3, Module 2
- Phase 4, Module 1

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

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

Disposal Phase	Module	CCR Rule Status	Basis for Status
Phase 3	Module 1	Existing. Accepting CCR as overlay fill is placed and as filling progresses in Phase 3, Module 2.	Final or interim grades have been reached. Final cover present on portions of the CCR unit. Final closure per 257.102 will not be completed until final grades are reached throughout the CCR unit.
	Module 2	Existing. Accepting CCR.	Module construction began before the effective date of the CCR Rule and was completed in December 2015. The unit began receiving CCR after state approval of the construction, which was issued in March 2016.
Phase 4	Module 1	Existing. Not currently accepting CCR. Will accept CCR following construction of Phase 4, Module 2.	Final or interim grades have been reached. Existing final cover on portions of the CCR unit. Final closure per 257.102 will not be completed until final grades are reached throughout the CCR unit.

2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

SCS identified no deficiencies or releases during the annual inspection of the CCR units at I-43. Deficiencies and releases must be remedied by the owner or operator as soon as feasible and the remedy documented.

SCS did identify 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 / Location	Recommendation(s)	Report Section
Vegetation growth may cause inefficiencies with inspections.	Perimeter drainage swales	Vegetated areas shall be maintained and mowed to be beneficial for inspections.	4.3.2
Vegetation growth in the contact water swale.	West of Phase 4, Module 1	Remove vegetation, especially any woody seedlings, before becoming established.	4.3.2
Bare spots observed from mowing operations at tops of slopes.	Area 1 (Phase 3, Module 1), Area 2 (Phase 4, Module 1) final cover areas	Reseed bare areas and mulch or install erosion mat to promote growth.	4.3.4
Bare soil and minor cracking of soil	Southwest corner (Toe of slope) Area 2 (Phase 4, Module 1) final cover	Fill soil cracks and reseed area. Mulch or install erosion mat to promote growth.	4.3.4

Condition	CCR Unit / Location	Recommendation(s)	Report Section
Erosion observed around the outlet of toe drain.	Northwest corner of Area 2 (Phase 4, Module 1) final cover	Fill eroded area with soil. Place aggregate at and around outlet to prevent future erosion	4.3.4
Erosion observed around the outlet of toe drain.	Center of east slope of Area 1 (Phase 3, Module 1) final cover	Fill eroded area with soil. Place aggregate at and around outlet to prevent future erosion	4.3.4
CCR tracking on roads	Exit from Phase 3, Module 1	Continue to use regular housekeeping practices as described in the fugitive dust plan.	4.4.2.1

3.0 ANNUAL INSPECTION

Mr. Phillip Gearing of SCS completed an annual inspection of active CCR landfill areas at I-43, including Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 on August 2, 2018. Mr. Gearing is a licensed professional engineer in Wisconsin and holds a Bachelor's of Science degree in Geological Engineering. He has over 12 years of experience in the design, construction, and operation of solid waste disposal facilities. 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.

3.1 OPERATING RECORD REVIEW

SCS reviewed the available information in the operating record for I-43. 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 I-43 facility.

3.2 VISUAL INSPECTION

SCS completed a visual inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 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, 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 swales, the storage basin, and the storage basin pumping system.
- Non-contact storm water run-on and run-off control features, including swales located adjacent to active fill areas but outside the landfill limits and the on-site storm water management 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 Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 at the I-43 facility completed under 40 CFR 257.84(b)(1). All changes in geometry observed during the annual inspection were the result of planned CCR filling.

At the time of the visual inspection, CCR placement was ongoing in Phase 3, Module 2 and overlay onto Phase 3, Module 1. Final grades where no future CCR placement is anticipated in Phase 3, Module 1 have been reached. Interim grades exist in Phase 3, Module 1 for the continued overlay of additional CCR in Module 1. Final cover exists on portions of the north, east, and top slopes and intermediate cover soils are in place on all remaining areas of Phase 3, Module 1.

At the time of the visual inspection, no active CCR placement was ongoing in Phase 4, Module 1. Final grades where no future CCR placement is anticipated in Phase 4, Module 1 have been reached. Interim grades exist where future CCR placement is planned when adjacent CCR unit construction will allow for the overlay of additional CCR in Phase 4, Module 1. Final cover exists on portions of the north, east, south, and top slopes and intermediate cover soils are in place on the remaining west slope of the module.

4.2 CCR VOLUMES

The approximate volume of CCR contained in each of the CCR units at the time of the inspection is summarized below. A description of how the estimate was developed and the sources used are also summarized below.

Disposal Phase	Module	Estimated Volume of CCR in Place	Basis for Estimate and Source
Phase 3	Module 1	130,782 cubic yards	Estimated volume based on interim capacity permitted with state Department of Natural Resources plus the amount of CCR placed in the overlay of Module 1, based on a survey performed on 6/28/2018.
	Module 2	142,152 cubic yards	Estimated volume based on cubic yards consumed between the opening of the module and 6/28/2018. A topographic survey was performed on 6/28/2018. Volume placed between 6/28/2018 and 8/2/2018 was projected based on incoming tonnages and current density. Disposal records were provided by WPL.
Phase 4	Module 1	73,300 cubic yards	Estimated volume based on interim capacity permitted with state Department of Natural Resources.

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 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

4.3.1 Signs of Surface Movement of Instability

No signs of surface movement or instability were noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1.

4.3.2 Inappropriate Vegetation Growth

No inappropriate vegetation growth impacting the CCR unit was noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1, except as observed below:

- Vegetation growth in perimeter drainage swales may cause inefficiencies with inspections. SCS discussed vegetation maintenance outside of cover areas for the benefit of inspections with plant staff. The vegetation is not impacting the stability of the CCR landfill.

- Vegetation growth was observed in the contact water swale west of Phase 4, Module 1SCS discussed removing vegetation, especially any woody seedlings, before it becomes established with plant staff. The vegetation is not impacting the stability of the CCR landfill.

4.3.3 Animal Burrows

No animal burrows were noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1.

4.3.4 Erosion Damage

The following erosion or potential erosion items were observed during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 and are listed below:

- Bare soil areas from mowing operations were observed along the top of the slopes in the Area 1 (Phase 3, Module 1) and Area 2 (Phase 4, Module 1) final cover areas. These areas are potential erosion locations.

- Bare soil and minor soil cracking was observed at the toe of the slope in the southwest corner of Area 2 (Phase 4, Module 1) final cover area.

- Minor erosion was observed around the outlets of two toe drains. The center toe drain in the Area 1 (Phase 3, Module 1) final cover on the east slope and the northwest most toe drain in Area 2 (Phase 4, Module 1) final cover.

Resolution of the erosion and potential erosion items were discussed with plant staff.

No other erosion damage was noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1.

4.3.5 Unusual Surface Damage Caused by Vehicle Traffic

No unusual surface damage caused by vehicle traffic was noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1.

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

The tracking of CCR onto landfill haul roads was noted as a potentially disruptive condition. The tracking and accumulation of CCR on the landfill haul roads has the potential to produce fugitive dust if not addressed through maintenance of the roads as described in the fugitive dust control plan. Tracking of CCR was observed during the current inspection. Landfill staff has indicated that CCR is removed 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.

Movement of aggregate in the contact swale east of the access road to Phase 3, Module 1 was observed and could potentially cause a disruptive condition. Sediment could build up where aggregate has moved and some vegetation growth was observed. Observed items could eventually lead to prevention of proper flow to the contact swale culvert beneath the access road to Phase 3,

Module 1. This is not considered an operating deficiency since WPL plans to maintain the aggregate and remove vegetation, as necessary.

No other potentially disruptive conditions were noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1.

4.4.2.2 Previous Inspections

CCR tracking on haul roads, as discussed in Section 4.4.2.1, was observed during the previous inspection and noted as a potentially disruptive condition.

4.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

No site changes were noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 when comparing to the previous annual 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 Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 must be completed within 1 year of the placement of this inspection report in the operating record for the facility.

5.2 NEW CCR LANDFILLS AND LATERAL EXPANSIONS

As discussed above, all of the CCR units at the I-43 facility are considered existing CCR units. 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)(3)(ii).

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