



**ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING**

**CCR RULE REMEDY SELECTION
SEMIANNUAL PROGRESS REPORT
PERIOD FROM
OCTOBER 2021 TO MARCH 2022**

LINED ASH DISPOSAL AREA, PRIMARY ASH SETTLING POND,
AND SECONDARY ASH SETTLING POND
CAYUGA GENERATING STATION
3300 NORTH SR 63
CAYUGA, INDIANA
SW ID: #83-UP-01

ATC PROJECT NO. 170LF01194

MAY 12, 2022

PREPARED FOR:

DUKE ENERGY INDIANA, LLC
1000 EAST MAIN STREET
WP994
PLAINFIELD, IN 46168
ATTENTION: MS. BRISTOL GROHOL



May 12, 2022

Ms. Bristol Grohol
Duke Energy Indiana, LLC
1000 East Main Street
WP994
Plainfield, Indiana 46168

Re: **Remedy Selection Semiannual Progress Report**
Lined Ash Disposal Area, Primary Ash Settling Pond, and Secondary Ash
Settling Pond
Cayuga Generating Station
Cayuga, Vermillion County, Indiana
ATC Project No. 170LF01194

ATC Group Services LLC

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Dear Ms. Grohol:

In accordance with your request, ATC Group Services LLC (ATC) has prepared the enclosed Remedy Selection Semiannual Progress Report for the Lined Ash Disposal Area, Primary Ash Settling Pond, and Secondary Ash Settling Pond at the Cayuga Generating Station (Cayuga Station) in Cayuga, Vermillion County, Indiana.

We appreciate the opportunity to be of assistance with this project. If you have any questions regarding this letter, please contact our office.

Sincerely,

A handwritten signature in black ink that reads "Kendra Reininga".

Kendra Reininga
Staff Geologist

A handwritten signature in black ink that reads "Robert T. Duncan".

Robert T. Duncan, L.P.G.
Principal Geologist

REMEDY SELECTION SEMIANNUAL PROGRESS REPORT

Chapter 40 CFR § 257.97(a) of the United States Environmental Protection Agency's (USEPA) Coal Combustion Residuals (CCR) Rule requires the owner or operator of a CCR unit, in the process of selecting a groundwater corrective action remedy, to prepare a progress report semiannually until a final remedy has been selected. The purpose of the semiannual progress report is to summarize steps taken, during the period covered by the report, towards selecting and designing the final remedy.

This report covers progress made towards selecting or designing a remedy to address the groundwater protection standard (GWPS) exceedances found in the Lined Ash Disposal Area, Primary Ash Settling Pond, and Secondary Ash Settling Pond groundwater monitoring network at the Cayuga Station in Cayuga, Indiana in accordance with the requirements in 40 CFR § 257.97(a) and any interim measures taken by Duke Energy. USEPA has defined interim actions as those taken "to control or abate ongoing risks to human health and the environment in advance of the final remedy selection"¹. In addition, for superfund sites, the USEPA has stated that early actions (interim remediation action), before the final remedy is selected, can provide additional site characterization information that greatly improves the ability to make sound long-term remedy decisions².

This report is comprised of activities which occurred during the period of October 2021 through March 2022.

1.0 Status of CCR Units and Interim Actions

In Indiana, the Indiana Department of Environmental Management (IDEM), under 329 IAC 10-9-1(c), regulates the final disposal of solid waste in a surface impoundment at the end of its operation.

"For a coal combustion residuals impoundment subject to 40 CFR 257, Subpart D, final disposal of solid waste in the impoundment at the end of the operation of the impoundment is subject to approval by the commissioner, based on the requirements for coal combustion residuals impoundments in 40 CFR 257.50 through 40 CFR 257.107* and on other management practices that are protective of human health and the environment."*

In order to comply with this state specific requirement, a modified closure and post-closure plan was submitted to IDEM for the CCR units at Cayuga Station on December 21, 2016. IDEM approved the modified closure and post-closure plan that includes Cayuga's Lined Ash Disposal Area, Primary Ash Settling Pond, and Secondary Ash Settling Pond. IDEM's approval was received on January 17, 2020.

¹Table 1: Interim Corrective Action Quick Reference Table
<https://www.epa.gov/sites/production/files/2016-01/documents/table1.pdf>

²Rules of Thumb for Superfund Remedy Selection
<https://semspub.epa.gov/work/HQ/174931.pdf>

In a similar fashion to USEPA guidance, the IDEM Remediation Closure Guide identifies that it would be prudent and cost effective to use an interim remedial action to reduce contaminant mass during the final remedy selection process³. As identified in the June 2019 Assessment of Corrective Measures report for the CCR units; source control actions, such as ceasing CCR and non-CCR waste-stream inputs to a unit, dewatering a CCR unit, and the implementation of the closure plan for the CCR unit; will be taken, some of which have already been initiated, to isolate the source of the releases to the environment which will be a part of selecting and designing the final remedy for the CCR unit.

1.1 Summary of Interim Actions Completed

In compliance with the requirements of § 257.102(g), Duke Energy placed a notice of intent to close the CCR units in the facility operating record, and ceased all CCR and non-CCR flows to the Lined Ash Disposal Area, Primary Ash Settling Pond, and Secondary Ash Settling Pond. Completed interim actions described in prior reports include decanting water from the Lined Ash Disposal Area and Primary Ash Settling Pond and certified closure by removal and repurposing of the Secondary Ash Settling Pond. During this reporting period design structural fill subgrade was reached in the footprint of the Lined Ash Disposal Area. At the Primary Ash Settling Pond, the facility completed removal of visible ash as part of the modified in-place closure. The evaluation of the changes these interim actions have on groundwater concentrations will be key to designing and selecting the final remedy for the observed groundwater exceedances.

2.0 Status of the Groundwater Monitoring and Corrective Action Program

In compliance with the requirements of § 257.90(b) and § 257.94 through § 257.95, Duke Energy is continuing the assessment monitoring program which requires semiannual groundwater monitoring and comparison to GWPS. Currently, characterization of the nature and extent of the GWPS exceedances, as required in § 257.95(g)(1), is on-going. The facility complied with § 257.96 by preparing the June 2019 CCR Assessment of Corrective Measures Report, and Duke continues to prepare semiannual reports describing the progress in selecting the remedy as defined in § 257.97.

2.1 Summary of Interim Actions Completed

Completed interim action includes the following:

- Groundwater data is evaluated semiannually in March and September at the Cayuga Station for both IDEM and CCR compliance. During this reporting period Duke Energy evaluated and reported results for samples collected for the September 2021 assessment groundwater monitoring event. The groundwater monitoring data was evaluated for statistically significant exceedances and compared to GWPS. Laboratory results and the groundwater quality status report were submitted to IDEM on November 22, 2021. Additional GWPS exceedances in the September 2021 sampling event were reported for two monitoring wells, whose field forms indicated damage to their flush mount covers and sediment infiltration. Well development and

³IDEM Remediation Closure Guide July 9, 2012
https://www.in.gov/idem/cleanups/files/remediation_closure_guide.pdf

resampling of these wells was completed in December 2021 and the well pads were repaired in March 2022.

- Duke Energy posted a Notice of Groundwater Protection Standard Exceedance to the CCR public Website, for both the Primary Ash Settling Pond and Secondary Ash Settling Pond, on March 1, 2022.
- On November 15, 2021, Duke Energy completed the *Remedy Selection Semiannual Progress Report* for the period April through September 2021 to comply with § 257.97. The report was posted to the CCR public website on December 15, 2021.
- On December 10, 2021, Duke Energy completed the *CCR Annual Groundwater Monitoring and Corrective Action Report* to comply with § 257.90(e). The report was posted to the public website on February 8, 2022.
- Ash placement and consolidation to design subgrade of the Lined Ash Disposal Area was completed and liner was staged to begin installation.
- Duke Energy completed ash excavation, visual inspection of ash removal, and installation of clay liner at the Primary Ash Settling Pond.
- Duke Energy collected groundwater samples from the monitoring well network in March 2022.

3.0 Projected Activities for the Next Six Months

Projected activities for the upcoming six months include the following:

- Continue interim source control actions to assist in the selection and development of a final remedy.
- Complete closure of the Lined Ash Disposal Area and Secondary Ash Settling Pond to control and isolate the source of the releases.
- Work to abandon and replace 3 monitoring wells, install 2 nature and extent wells, abandon 1 piezometer due to closure activities, and investigate the nature and extent of impacts will continue. The Sampling and Analysis Plan will be updated to reflect these changes to the monitoring network.
- Continue work to select a remedy or remedies that protect human health and the environment. A report of the selection of final remedy will be submitted to the agency for review and approval prior to implementation. Selection of the final remedy may not be completed during the next six months.

- Perform an Alternate Source Demonstration for the observed GWPS exceedances of Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Radium 226 and 228 combined, and Thallium at the Primary Ash Settling Pond and Secondary Ash Settling Pond.
- Evaluate the results of the March 2022 sampling event and any GWPS exceedances. Laboratory results and the groundwater monitoring data and statistical analysis report will be submitted to IDEM in May 2022. Any new parameters that exceed GWPS will be considered in selection of the final remedy.
- Initiate geosynthetic liner installation at the Lined Ash Disposal Area.
- Collect groundwater samples from the detection and assessment monitoring wells in September 2022.