AECOM

CCR Rule 2025 Annual Inspection Report

Morrow CCR Impoundment
STS Hydropower, LLC

40 CFR 257.83 (b)

February 6, 2025

Background and Site Description

An inactive coal combustion residuals (CCR) surface impoundment (the "Site") containing historical CCRs generated by the former coal-fired Morrow Power Plant electrical generating station is located on property owned by STS Hydropower, LLC (STS), adjacent to the operating 800 KW Morrow Hydroelectric Project, located on the Kalamazoo River in Comstock Township, Michigan. STS currently estimates the surface area of the impoundment is approximately 61 acres (ac) with approximately 56 ac on property owned by STS. Available historical publications and conversations with STS indicate that the Morrow Power Plant was constructed in the late 1930s and operated until the early 1980s by Consumers Power, historically sluicing CCR materials to the nearby impoundment. Approximately the southeastern third of the impoundment is open water/marsh with the balance forested with mature shrubs and trees (see **Figure 1**).

Figure 1 – Morrow CCR Impoundment

The 2015 CCR Rule and 2024 Legacy CCR Rule (40 CFR 257.83(b)) require owners and operators of CCR units to perform annual inspections by a qualified professional engineer. Below are applicable citations from the CCR Rule with responses to each to document how each requirement has been met.

§257.83(b) Annual inspections by a qualified professional engineer.
(1) If the existing or new CCR surface impoundment or any lateral expansion of the CCR surface impoundment or legacy CCR surface impoundments is subject to the periodic structural stability assessment requirements under § 257.73(d) or § 257.74(d), the CCR unit must additionally be inspected on a periodic basis by a qualified professional engineer 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:

> ***(i) 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., CCR unit design and construction information required by §§ 257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under §§ 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections);***
>
> Due to the CCR Unit only very recently becoming a regulated impoundment as of November 8, 2024 under the Legacy CCR Rule, the documentation in the operating record has only begun to be developed. AECOM is familiar with the limited documentation to date.
>
> ***(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures; and***
>
> ***(iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.***
>
> A visual inspection of the CCR Unit was performed by Mr. Andrew N. Rodzianko, P.E., on December 10, 2024. An inspection form with photographs is included as an attachment to this report to document the observations made relative to the above requirements. This is the initial annual inspection of the CCR Unit.

§257.83(b)(2) Inspection report. The qualified professional engineer must prepare a report following each inspection that addresses the following:

> ***(i) Any changes in geometry of the impounding structure since the previous annual inspection;***
>
> This is the initial annual inspection of the CCR Unit. As such, no changes to geometry of the impounding structure can be noted at this time.

(ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection;

There is no known instrumentation. Limited available historical documentation of the impoundment do not indicate instrumentation present.

(iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;

This is the initial annual inspection of the CCR Unit. However, there are no ongoing operations that would vary the depths or elevations of water or CCR in the impoundment. See response to ***(v)*** below for information regarding the present depth and elevation of the impounded water and CCR.

(iv) The storage capacity of the impounding structure at the time of the inspection;

See response to ***(v)*** below.

(v) The approximate volume of the impounded water and CCR at the time of the inspection;

Based on data collected through topographic and bathymetric surveys and subsurface sampling conducted during October through December of 2024, the following can be estimated:

- The depth of impounded water ranges from 0 to 5 feet (ft). The water surface elevation of impounded water is approximately 776 ft (NAVD88).
- The thickness of impounded CCR ranges from 0 to 20 ft. The thickness of the material is greatest in the northwest corner of the CCR Unit and generally decreases as you fan outward in a southeastern direction.
- The storage capacity of the impoundment is approximately 116,500 cubic yards (cy) or 72.2 ac-ft between the water surface and the low point of the perimeter berm.
- The volume of impounded water is approximately 20,000 cy or 12.4 ac-ft. This represents an estimate of the free water near the southeast corner of the CCR Unit and does not include interstitial water within CCR material nor shallow/marshy areas where bathymetric data could not be obtained.
- The volume of impounded CCR is estimated to be approximately 576,000 cy, of which approximately 479,000 is believed to be on STS property and the remaining 97,000 on property owned by others. Additionally, it is estimated that 112,000 cy of CCR was used as fill material to construct the dike along the north, east, and a portion of the south perimeter of the CCR Unit and that another 1,000 cy of CCR is stockpiled in an area immediately to the west of the CCR Unit. The CCR volumes provided should be understood as rough estimates based on limited subsurface data. Actual vertical and horizontal limits of CCR between subsurface data points may fluctuate from the assumed interpolations/extrapolations. As such, a range of +/- 25% is recommended to be applied to the CCR volumes.

(vi) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures; and

Several minor issues are noted in the attached inspection form (**Attachment**) and are categorized as maintenance or monitoring issues; however, no indications were observed of structural weakness or existing conditions that could disrupt the safety or integrity of the CCR Unit. The CCR Unit is inactive and no longer operating.

(vii) Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

This is the initial annual inspection of the CCR Unit. As such, no changes to the impounding structure can be noted at this time.

§257.83(b)(3) Timeframes for conducting the initial inspection —

(i) Existing CCR surface impoundments. The owner or operator of the CCR unit must complete the initial inspection required by paragraphs (b)(1) and (2) of this section no later than January 19, 2016.

Due to the CCR Unit only very recently becoming a regulated impoundment as of November 8, 2024 under the Legacy CCR Rule, the applicable compliance deadline for completion of the initial annual inspection of the CCR Unit is Monday, February 10, 2025 per 40 CFR 257.100(f)(3)(iv). This document is dated February 6, 2025, ahead of the required deadline.

§257.83(b)(4) Frequency of inspections.

(i) Except as provided for in paragraph (b)(4)(ii) of this section, 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. For purposes of this section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by § 257.105(g)(6).

See response to ***(ii)*** below.

(ii) In any calendar year in which both the periodic inspection by a qualified professional engineer and the quinquennial (occurring every five years) structural stability assessment by a qualified professional engineer required by §§ 257.73(d) and 257.74(d) are required

to be completed, the annual inspection is not required, provided the structural stability assessment is completed during the calendar year. If the annual inspection is not conducted in a year as provided by this paragraph (b)(4)(ii), the deadline for completing the next annual inspection is one year from the date of completing the quinquennial structural stability assessment.

The deadline for completing the subsequent annual inspection is currently anticipated to be May 8, 2027 or one year subsequent to submitting the initial structural stability assessment due to the fact that the deadline for the initial structural stability assessment will be May 8, 2026, thus negating the need to complete an annual inspection during the 2026 calendar year.

§257.83(b)(5) If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.

No deficiency or release has been identified needing attention as part of this inspection report.

I certify that this CCR Rule 2025 Annual Inspection Report meets the requirements of 40 CFR §257.83(b).

Signature: _____

Name: Andrew N. Rodzianko

Title: Senior Civil Engineer

Certification Date: 2/6/25

Attachment:
STS Morrow CCR Impoundment – Annual Inspection Form

STS Morrow CCR Impoundment – Annual Inspection Form

Station/Owner: Morrow CCR Impoundment / STS Hydropower, LLC		County, State: Kalamazoo, Michigan
Date of Last Inspection: NA – Initial Annual Inspection		Date of Current Inspection: 12/10/2024
Inspected By (Name/Company): Andrew Rodzianko, PE (AECOM)	Signature:	Phone: (440) 785-5658 Email: andrew.rodzianko@aecom.com
Weather ☒ Dry ☐ Wet ☐ Snow ☐ Other: Overcast	Temperature: 40° F	Recent precipitation: 0.25" in past 7 days

Perimeter Inspection

§257.83 (b) (1) (ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures.

Inspection Criteria (Condition Observations)	Outboard Slope (Y/N*)	Crest (Y/N*)	Inboard Slope (Y/N*)	*If yes, additional comment required and mark location on Figure 1.
Vegetation >2" Diameter	Y	N	Y	See Comments/Action Items #1 below
Vegetation >6" Height	Y	N	Y	See Comments/Action Items #1 below
Animal Burrows/Disturbance	N	Y	Y	Minor/surficial disturbance
Erosion Rill	N	N	N	
Wetness/Seepage	Y	Y	Y	See Comments/Action Items #2 below
Slides/Scarps/Sloughing	N	N	N	
Depressions/Ruts	Y	Y	Y	See Comments/Action Items #3 below
Unlevel Surfaces	N	N	N	
Misalignment	N	N	N	
Sink Holes	N	N	N	
Bulges	N	N	N	
Cracks (Tension/Desiccation)	N	N	N	
Undermining (Wave Action)	N	N	N	
Vegetation or Sediment in Riprap	Y	N	N	Soil covering riprap on outboard slope in NW corner (see Figure 1 and Photo 2)
Displaced Riprap	N	N	N	
Additional Observations	N	N	Y	Deteriorating concrete along slope between outlet structure and perimeter road, see Comments/Action Items #4 below

Comments/Action Items:

1. Several small trees and tall grasses were observed on both the inboard and outboard slopes of the perimeter dike along the north and east sides of the CCR Unit where bordering open water (see Photos 3-5). While not a significant concern at present, the trees should be cut down to prevent potential future issues caused by large/woody root systems and the grasses should be mowed somewhat regularly to allow better inspection of the slopes.
2. Wetness observed throughout the site due to it being wet season and recent wet weather, however noted one specific location (see Figure 1 and Photo 11) where water was observed flowing across the perimeter road from a swampy area (south) and into the CCR Unit (north). Some channelization observed but no significant erosion otherwise. Continue to observe and consider future project, however no action recommended at this time.
3. Depressions/ruts (see Photos 11-12) caused by vehicle tire tracks in multiple locations around perimeter, particularly along south and west perimeter, and by water flowing across road as noted above, the latter may also be a result of animal activity. Periodic maintenance of roadway recommended.
4. Deteriorating/cracking concrete (see Figure 1 and Photo 7) along inboard slope adjacent to the outlet structure does not appear to pose any immediate issue, however this area should continue to be monitored.

Actions ☐ None/No New Action ☒ Monitoring ☒ Minor Repair ☐ Major Repair/Engineering

STS Morrow CCR Impoundment – Annual Inspection Form

Outlet Structure

§257.83 (b) (1) (iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.

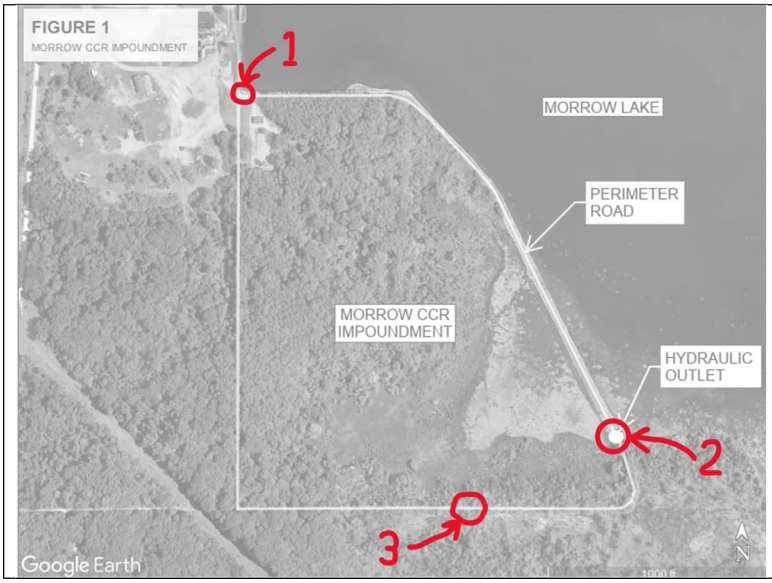
Inspection Criteria (Condition Observations)	Issue Observed (Y/N*)	*If yes, additional comment required.
Differential Water Levels (>1 ft) Between Impoundment and Lake	N	see Comments/Action Items #1 below
Abnormal Discoloration of Lake Water at Outlet Discharge	N	
Abnormal Flow at Discharge	N	
Abnormal Debris/Obstruction or Sediment	Y	Buildup of vegetative debris around trash guard/riser structure and in outlet channel to lake, see Comments/Action Items #2 below
Trash Guard	Y	Corrosion and debris buildup observed
Riser Structure	Y	Corrosion and debris buildup observed
Conduit through Dike	N	
Additional Observations	N	

Comments/Action Items:

1. Water levels between the CCR Unit and Morrow Lake are in relative equilibrium with little to no flow observed passing through the outlet structure. This is understood to be the normal condition.
2. Debris buildup (see Figure 1 and Photos 6-7 and 9) at both the inlet and outlet ends of the outlet structure should be cleared regularly to remove obstructions to flow and allow for better inspections.

Actions ☐ None/No New Action ☒ Monitoring ☒ Minor Repair ☐ Major Repair/Engineering

Are there any other abnormal conditions at the Impoundment that could pose a risk to public health, safety or welfare, the environment or natural resources? ☐ Yes ☒ No



Additional Comments:

1. Soil covering riprap on outboard slope in NW corner
2. Hydraulic Outlet: buildup of vegetative debris around trash guard/riser structure and in outlet channel to lake and deteriorating concrete along slope between structure and perimeter road.
3. Water observed flowing across the perimeter road and into the CCR Unit.

Photo 1: Northern perimeter outboard slope looking ESE.

Photo 2: Soil covering riprap on outboard slope in NW corner.

Photo 3: Road along northern perimeter looking E. Tall grass on outboard slopes (left side).

Photo 4: Road along northeast perimeter looking SE. Tall grass on outboard slopes (left side).

Photo 5: Road along eastern perimeter looking NNW. Several typical small trees and tall grass on slopes visible.

Photo 6: Inlet end of hydraulic outlet looking W towards CCR Unit from perimeter road.

Photo 7: Inlet end of hydraulic outlet looking N. Buildup of vegetative debris around trash guard/riser structure and deteriorating concrete along slope between structure and perimeter road.

Photo 8: Outlet end of hydraulic outlet looking E towards Morrow Lake from perimeter road.

Photo 9: Outlet end of hydraulic outlet. No observable flow. Crown of pipe visible, submerged under lake water level. Debris buildup visible under water in channel from pipe to lake.

Photo 10: Outlet end of hydraulic outlet looking S. Riprap and concrete slope protection in fair condition.

Photo 11: Road along southern perimeter looking E. Water flowing across road from south (right) to north (left). Vehicular rutting visible.

Photo 12: Road along western perimeter looking S. Vehicular rutting visible.