



CCR Rule History of Construction Report

Morrow CCR Impoundment STS Hydropower, LLC

40 CFR 257.73 (c)(1)

February 9, 2026



CCR Rule History of Construction Report

The 2015 CCR Rule and 2024 Legacy CCR Rule (40 CFR 257.73(c)(1)) require owners and operators of CCR units to compile a history of construction for the unit. This History of Construction Report (Report) is intended to meet the requirements of Section 257.73 (c)(1)(i) through (xii) of the CCR Rule. Below are applicable citations from the CCR Rule with responses to each to document how each requirement has been met. It should be noted that the current owner of the property where the CCR surface impoundment is located did not construct or operate the impoundment, the original construction information for the Morrow CCR Impoundment is limited, and significant information gaps exist for the engineering methods, design drawings, and construction dates related to the impoundment. AECOM has conducted site investigations of the impoundment that are unrelated to the development of this Report but ultimately form a substitute body of knowledge for the impoundment’s construction history to date.

NOTE: Information in the History of Construction is based on information that was reasonably and readily available. The CCR Rule does not require owners of existing surface impoundments to generate new information or provide anecdotal or speculative information regarding the design or construction history (Final Rule Preamble, Fed Reg 80, page 21380).

§257.73 Structural Integrity criteria for existing CCR surface impoundments

(c)(1) No later than October 17, 2016 [February 9, 2026 for Legacy CCR units], the owner or operator of the CCR unit must compile a history of construction, which shall contain, to the extent feasible, the information specified in paragraphs (c)(1)(i) through (xi) of this section;

(i) The name and address of the person(s) owning or operating the CCR unit; the name associated with the CCR unit; and identification number of the CCR unit if one has been assigned by the state;

The name and address of the person(s) owning the legacy CCR surface impoundment:

STS Hydropower, LLC (240) 482-2700
2 Bethesda Metro Center, Suite 1330 info@eaglecreekre.com
Bethesda, MD 20814

The name associated with the legacy CCR surface impoundment:

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Identification number of the legacy CCR surface impoundment if one has been assigned by the state:

State ID Number: MID051763696 (Note: the ID number listed may only refer to the overall site and may not apply to the CCR surface impoundment located at the site.)

(ii) The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7 1/2 minute or 15-minute topographic quadrangle map, or a topographic map of

equivalent scale if a USGS map is not available;

Information to identify the CCR impoundment is included in Attachment A. This figure illustrates where the unit is located at the facility, the facility address, and the latitude and longitude of the unit.

(iii) A statement of purpose for which the CCR unit is being used;

The impoundment originally functioned as a coal ash disposal facility for the adjacent Morrow Power Plant which was owned and operated by Consumers Power for the duration of its operating history. Both the plant and the impoundment have remained inactive since the cessation of power generation at the plant in 1982. The approximate 61-acre impoundment itself is split between open water, marshy areas, and woodlands that divide the footprint into approximately 10 acres, 14 acres, and 37 acres, respectively. STS Hydropower, LLC stated that they acquired approximately 56 acres of the impoundment as part of a hydroelectric project land acquisition circa 1983. Approximately 5 acres of the impoundment is owned by others.

(iv) The name and size in acres of the watershed within which the CCR unit is located;

The Morrow CCR Impoundment is located on the western portion of the Kalamazoo River Subbasin watershed (Hydrologic Unit Code: 0405003), which encompasses approximately 646,400 acres.

(v) A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed;

In pursuit of relevant data for the Morrow CCR Impoundment, AECOM requested records from Consumers Energy (former operator of Morrow Power Plant) through STS Hydropower on October 29, 2024. However, no significant records were provided as of the date of this report. Construction plans related to the Morrow Dam from 1937 provide a generalized section for the left embankment of the dam, which also serves as the western berm of the impoundment, that indicate the presence of a concrete corewall located on the inboard side of the embankment. Based on AECOM subsurface investigations, the foundation soils of the Morrow CCR Impoundment consist of fine to medium silty sands ranging from well-graded to poorly-graded which are interspersed with localized beds of lean or fat clays. The perimeter dike surrounding the northern, eastern, and a portion of the southern perimeter of the impoundment were found to consist of CCR material underlaid with soils similar to the impoundment's foundation soils. This section of the perimeter dike includes a layer of limestone riprap armoring on the inboard and outboard side slopes. The western berm of the impoundment consists of fine, poorly-graded sand. The southern berm of the impoundment consists of a raised access road whose foundation is comprised of fine, silty sand with traces of coarse sand and fine gravel.

(vi) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR unit; the method of site preparation and construction of each zone of the CCR unit; and the approximate dates

of construction of each successive stage of construction of the CCR unit;

Review of historical aerial photographs and available historical publications indicate the impoundment's first stage of construction began with the completion of the Morrow Dam in 1941, whose left embankment would eventually form the western berm of the current CCR Impoundment. By 1946 the northern section of the perimeter dike jutting into Morrow Lake was completed, and as of 1976 the dike had been extended to the southeast to connect to the existing raised access road on the lake's southern shoreline, forming the current boundary of the impoundment. See response to (v) above for information regarding the known materials comprising the berms and perimeter dikes of the impoundment.

(vii) At a scale that details engineering structures and appurtenances relevant to the design, construction, operation, and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the normal operating pool surface elevation and the maximum pool surface elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment, and any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation;

As stated in section (v), a Morrow Dam construction plan indicates the presence of a concrete corewall along the inboard side of the western berm of the impoundment; this corewall has a top elevation of 779 ft, a width of 9-inches, is constructed on top of piling, and extends approximately 1,800 ft south along the length of the embankment. This plan shows the crest of the western berm to be 12 ft wide with 2H:1V side slopes and has an elevation of 781 ft. Available regulatory documents pertaining to Morrow Dam maintenance indicate that in 2010 a low area of the perimeter dike was raised approximately two to six inches to meet the surrounding crest elevation of 781 ft, and in 2011 erosion protection improvements (riprap) were made to outboard slopes of the northern perimeter dike as well as the inboard and outboard slopes of the eastern perimeter dike of the impoundment adjacent to the inundated area of the unit. Construction drawings showing cross-sections of these slope improvements depict a dike crest width of 20 ft with several layers of angular riprap placed over geotextile fabric installed on the 3H:1V side slopes. These cross-sections also indicate the normal operating pool surface elevation of the inundated area of the impoundment to be 775 ft.

AECOM conducted a subsurface investigation in October 2024 that entailed drilling twenty geotechnical borings throughout the impoundment interior to determine the depth of CCR. From this investigation, the maximum depth of CCR was found to be 13 ft in the northwestern corner of the impoundment and this layer of CCR material generally decreased in thickness towards the southeastern direction. Due to drilling limitations, no subsurface investigation was conducted in the inundated area of the impoundment. Visual inspections of the impoundment identified a hydraulic outlet structure located in the southeastern corner. This hydraulic outlet is comprised of a riser structure and outlet pipe through the

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dike that discharges into Morrow Lake. Morrow Dam regulatory documents from 2012 indicate the outlet is approximately 4 ft in diameter.

(viii) A description of the type, purpose, and location of existing instrumentation;

AECOM installed a total of seven groundwater monitoring wells at the impoundment over two separate installation events in November of 2024 and August of 2025. Table 8-1 below shows the survey data for each of the monitoring wells installed at the unit. Regulatory documents from 2012 pertaining to the Morrow Dam indicate that the perimeter dike had fourteen observation wells along its length that were monitored by STS in the 1980’s but these wells have since been abandoned. Only two of the wells are still visible.

Table 8-1

Name	Location Relative to CCR Unit ¹	Northing	Easting	Top of Casing Elevation (ft msl)	Total Depth (ft btoc)²
MW-5	Upgradient Well	282949.99	12820013.98	790.40	18.10
MW-1	Downgradient well	285306.73	12818649.92	774.32	18.30
MW-2	Downgradient well	284736.67	12818885.98	775.60	18.10
MW-3	Downgradient well	284307.55	12818907.55	779.89	17.85
MW-4	Downgradient well	284018.47	12819116.46	783.39	18.00
MW-6	Downgradient well	286009.90	12818981.86	779.93	37.85
MW-7	Downgradient well	285998.22	12819471.26	780.19	18.85

Notes:

¹ Upgradient and downgradient relative locations will be verified during the first eight rounds of baseline monitoring.

² Total depths measured during August 2025 groundwater sampling event.

ft msl = feet above mean sea level

ft btoc = feet below top of casing

ft bgs = feet below ground surface

(ix) Area-Capacity curves for the CCR unit;

There is no known, existing area-capacity curve for the CCR Morrow Impoundment. However, as stated in (vii) AECOM conducted a subsurface investigation within the boundary of the impoundment, which provided CCR thicknesses (i.e. bottom of CCR surface) outside of the inundated areas. The inundated area of the impoundment could not be assessed with typical investigative methods used within the wooded and/or marshy areas. As a result, the inundated area was estimated conservatively to have a uniform 3-ft thickness of CCR within its footprint. In addition to the subsurface investigation, AECOM performed a topographic survey to determine the existing topography of the impoundment which was supplemented with a bathymetric survey for the inundated area. An analysis of the estimated bottom of CCR in the impoundment and the existing topography was performed, and it was

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estimated that approximately 479,000 cubic yards of CCR material is contained within the impoundment boundary on STS property while 97,000 cubic yards lie outside of STS-owned property.

(x) A description of each spillway and diversion design features and capacities and calculations used in their determination;

As stated in (vii), the existing hydraulic outlet structure for the unit is located in the southeastern corner of the impoundment and is comprised of a riser structure and outlet pipe that discharges flow through the perimeter dike to Morrow Lake. There are currently no known existing design drawings, hydraulic calculations (i.e. peak flow, inflow design flood, etc.), or historical information for this structure. Most of the structure is below water level and cannot be directly observed.

(xi) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit;

The CCR unit is inspected on an annual basis as required by 40 CFR 257.83 (b) and inspected weekly as required by 40 CFR 257.83 (a)(i). Deficiencies are either identified as requiring additional observation or entered as a Work Order request to trigger repairs. In addition to inspections required by the CCR Rule, the Morrow Dam requires periodic inspections per 18 CFR 12.35 and the scope of these inspections overlap with structures related to the Morrow CCR Impoundment structures (i.e. western berm and perimeter dike).

(xii) “Any record of knowledge of structural instability of the CCR unit.”

There is no known historical structural instability related to the Morrow CCR Impoundment, and no current knowledge of any structural stability analysis performed for the impoundment during its history.

