

STATE OF NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
**DIVISION OF ENERGY, MINERAL AND LAND RESOURCES**

# DRAFT

**REPORT OF PROCEEDINGS  
OF PUBLIC HEARING AND COMMENT PERIOD  
(HEARING OFFICERS' REPORT)**

**NEW RULE ADOPTION:**

**“15A NCAC 02K .0224 - ADDITIONAL REQUIREMENTS FOR DAMS  
THAT IMPOUND COAL COMBUSTION RESIDUALS”**

ENVIRONMENTAL MANAGEMENT COMMISSION  
RALEIGH, NORTH CAROLINA  
NOVEMBER 8, 2018

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## I. Summary and Recommendation

### A. Background and Summary

#### Reason for Proposed Action:

In August of 2014, the NC General Assembly adopted legislation that provided a broad program to address existing and future coal combustion residual (CCR) management. The approved legislation is referred to as the Coal Ash Management Act, or CAMA. Similarly, in December of 2014, the USEPA Administrator signed the “Final Rule: Disposal of Coal Combustion Residuals (CCR) for Electric Utilities.” Relative to the dam safety elements of the EPA rule, the North Carolina CCR requirements are very similar to those of the federal program. The EMC asked the Division of Energy, Mineral, and Land Resources (DEMLR) staff to assess the equivalency of the State’s CCR Dam Safety elements to those of the federal requirements and to recommend needed changes in the State’s Dam Safety program. After the analysis, the staff prepared a proposed additional rule, 15A NCAC 02K .0224, that would update the State’s CCR, Dam Safety program to be “at least as protective as” the federal requirements.

#### Proposed Changes

- The size specifications to be regulated by the State’s CCR requirements have been reduced which may bring a few impoundments under the jurisdiction of the State’s rules.
- Spillway design requirements have generally been made more restrictive to provide greater safety.
- Conduit inspection requirements have always been in the Dam Safety program but they are more-clearly outlined in these rule changes to provide emphasis.
- Inspections for Structural Stability and Slope Protection have been required by the State dam safety program for years but these requirements are more-specifically dictated in the federal CCR regulations. To make North Carolina’s program more closely match the federal program, the criteria taken from the federal requirements will be included in the State rules.
- The self-inspection requirements are included in the federal rules which are in effect. Adoption of those requirements in State rules will not alter the impacts to the operators of regulated CCR facilities. A portion of the federal rule is adopted by reference.

#### Public Hearings Held

During the month of September 2018, the Department of Environmental Quality (DEQ), Division of Energy, Mineral and Land Resources conducted four public hearings at the following dates and locations where members of the Environmental Management Commission (EMC) served as the hearing officers.

- September 4, 2018 in Goldsboro served by Dr. Suzanne Lazorick
- September 20, 2018 in Mooresville served by Bill Puette
- September 25, 2018 in Asheville served by George Pettus
- September 27, 2018 in Reidsville served by Shannon Arata

### B. Public Comments and Responses

There were only three letters received that specifically addressed the text of the proposed Dam Safety rule in 15A NCAC .02K.0224. However, there were several general comments made at the hearings, or provided in written comments, that could have an impact on the proposed rule wording and those have been included in this report. A short, summarized list of the “Major Comments Received” is provided in List B-1 below and Tables B-2 and B-3 (also shown below) contain the oral and written comments received

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that relate to proposed CCR Dam Safety rule. Section F of this Report of Proceedings contain copies of the letters received that pertain to the proposed rule.

## List B-1 Major Comments Received (oral and written):

- Several citizens urged the Commission not to use the state rules as a substitute for the federal rules.
- A citizen emphasized the importance of the state agency making dam information public and easily visible.
- Duke Energy made several suggestions on reducing the inspection and analysis requirements for closed impoundments.
- Duke Energy suggested that the proposed rule will require structural stability assessments for closed impoundments that do not have any pool loading
- Duke Energy indicated that adding the federal CCR requirements of “five feet/20 acre-foot” will require additional evaluations/testing at two sites.
- The Southern Environmental Law Center (SELC) suggested that “North Carolina does not need, and DEQ should not establish, a DEQ permitting program for the federal CCR Rule.”
- The Southern Environmental Law Center suggested that the proposed rules should include a requirement for making Environmental Action Plans for coal combustion residual impoundments available to the public.
- The SELC encouraged the EMC to adopt more stringent rules that prevent siting in floodplains and to add incident management and emergency plans for coal ash spills.
- Clean Water for NC wants the rules to include more specifics for required instrumentation for the weekly inspections and that the frequency of annual inspection of hydraulic structures and the proposed five-year frequency for structural stability assessment be increased.

## Table B-2 Oral Comments Received at Hearings and Responses

*(Only those comments related to the proposed rule are included.)*

<b>Comment: (oral)</b>	<b>A citizen asked if the public would be able to see the (dam-related) data that was provided to the State.</b>
Response:	Yes, all data, unless determined to be protected under state statutes, such as being ruled a trade secret or confidential, is available for public review. The agency will prioritize its efforts to utilize methods enable access all collected data. All information related to dams is available to the public by submitting an information request from to the dam safety office with the exception of Emergency Action Plans which are not provided to the public per North Carolina statute per NCGS 143-

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	215.31(a1) (6). However, it appears that Duke Energy has posted their EAPs on their website.
<b>Comment:</b> (oral)	<b>A citizen asked if dam inspections should be random and not announced to the power company.</b>
Response:	Although the staff recognizes that the concept of random inspections does seem more appropriate for a regulatory agency, in most situations, safety responsibilities dictate that the power companies be made aware of an inspection to adequately prepare for site visit safety. There are, however, situations, such as active dam construction activities and ongoing enforcement, where frequent unannounced inspections are beneficial.
<b>Comment:</b> (written)	<b>Michael Caraway, representing the Down East Coal Ash Coalition, stated that no agency is addressing the damage that has been done to the people and the environment from past CCR storage and disposal practices.</b> He mentioned the effects of having a processing plant in his back yard and noted that a friend had recently passed way from cancer.
Response:	The hearing officers appreciate the concern voiced by the Coalition member and will encourage the agencies to look for opportunities to use their authorities to bring improvements in those important areas.
<b>Comment:</b> (oral)	<b>Several citizens noted that they had seen the cancer, diabetes, compromised immunities and other adverse health effects on their neighbors and themselves due to CCRs in the environment.</b>
Response:	The hearing officers appreciate the concerns about adverse health effects from exposure of harmful substances in the environment and hope that the new dam safety rule will help reduce the potential for exposure to coal ash.
<b>Comment:</b> (oral)	<b>Lesley Griffith, a representative of the Southern Environmental Law Center (SELC), encouraged the EMC to adopt more stringent rules that prevent siting in floodplains or other landfills, that add incident management and emergency plans and to have active plans for coal ash spills.</b> She urged the Commission not to use the state rules as a substitute for the federal rules and to put a hold on permits for Lee, Buck and Cape Fear until all research is complete.
Response:	The hearing officers appreciate the concern voiced by the SELC regarding siting of landfills in floodplains. As for using the State rules for the federal rule (program delegation), the proposed rule change does not include any delegation proposal. Emergency Action Plans (EAPs) are required by state statute for high and intermediate Hazard dams.

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<b>Comment: (oral)</b>	<b>Hope Taylor with Clean Water for NC suggested that the definition of 100 yr flood is insufficient given climate change.</b>
Response	<p>The 100-year flood values are determined from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 program that is calibrated from precipitation gauge data on regular intervals. This calibration takes into account updated rain gage data and therefore is reflective of the effects that climate change has on the probability of a one percent annual storm. Due to a funding approach for NOAA Atlas 14, which necessitates that work is done in volumes based on state boundaries, each volume is completed independently and at different times depending on funding availability. NOAA Atlas 14 methods for data quality control, frequency analysis and interpolation evolve over time.</p> <p>The proposed dam safety rule also references the Probable Maximum Flood (PMF). PMF values were originally developed by NOAA in the 1970's and are derived from maximizing parameters that contribute to rainfall amounts. Essentially, all the atmospheric conditions that contribute to how much rain will fall are set to the maximum theoretical value and the result from that is what determines the PMF value. Because all these parameters are already maximized, they are independent from changing weather conditions because they are already set at the upper bound.</p>
<b>Comment: (oral)</b>	<b>Hope Taylor, with Clean Water NC, requested that the state reevaluate all factors of safety.</b>
Response	We appreciate the comments. We reviewed our dam safety rule requirements and we believe that the factors of safety selected in the proposed rule are equal to or more conservative than industry standards and are appropriate.



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**Table B-3 Written Comments Received and Responses**

*(Only those comments related to the proposed rule are included. For copies of the entire written comments, see Section II.F. of this report.)*

<p><b>Comment:</b> (written) Duke Energy</p>	<p><b>Proposed Section .0224(a)(2):</b> The proposed definition of “CCR unit” does not include an exemption for basins that have been closed, including those that have been closed by leaving CCR in place. Duke Energy suggests that the final state rule expressly exempt closed CCR surface impoundments from the definition of “CCR unit” under this section.</p>
<p>Response:</p>	<p>The Hearing Officers concur with the staff’s conclusion that exempting all closed CCR impoundments would result in some facilities not being appropriately monitored.</p>
<p><b>Comment:</b> (written) Duke Energy</p>	<p>“Proposed Section .0224(b)(2) would provide that the additional dam requirements will apply to a CCR unit that “contains residuals to an elevation of five feet or more above the downstream toe of the structure and that has a storage volume of 20 acre-feet or more. . . .” This would require Duke Energy to send structural stability assessments to DEQ for the 1978 and 1985 basins at Cape Fear, which are currently exempt from the CCR Rule. As a result of the United States Court of Appeals for the District of Columbia Circuit’s decision in <i>Utility Solid Waste Activities Group v. EPA</i> (No. 15-1219), EPA must undertake a rulemaking to make changes to the CCR Rule to implement the court’s judgment regarding the regulation of legacy impoundments. In light of the fact that the Company must close these impoundments pursuant to CAMA, combined with the uncertainty of how they ultimately will be regulated under the CCR Rule, Duke Energy suggests exempting inactive impoundments at closed power plants and incorporating EPA’s new standards regulating these units once EPA promulgates a final rule regulating legacy ponds.”</p>
<p>Response:</p>	<p>The exemption cited by Duke has been vacated by the United States Court of Appeals for the D.C. Circuit. See <i>Util. Solid Waste Activities Grp. v. Env’tl. Prot. Agency</i>, 901 F.3d 414, 434 (D.C. Cir. 2018), (holding that the exemption in 40 C.F.R. § 257.50(e) was arbitrary and capricious). The hearing officers recommend moving forward with the Rule as proposed.</p>

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<p><b>Comment:</b> (written) Duke Energy</p>	<p><b>“Proposed Section .0224(c)(2) would provide that “a qualified engineer, or person under his or her responsible charge, shall conduct monitoring of all instrumentation supporting the operation of the CCR unit no less than once per month according to the standards listed under 40 CFR 257.83(a). . . .” Duke Energy suggests defining “instrumentation” and explicitly delineating what equipment must be monitored on a monthly basis.”</b></p>
<p>Response:</p>	<p>Although a definition of instrumentation might be of some limited benefit, we do not believe that such a definition should specify what equipment must be monitored on a monthly basis. Our major concern is that a definition could limit the use of newer technologies which might provide more accurate results.</p>
<p><b>Comment:</b> (written) Duke Energy</p>	<p><b>“Proposed Section .0224(d) would provide that all CCR dams shall have a spillway system with capacity to pass a flow resulting from a design flood as specified in the Minimum Spillway Design Flood for CCR Units Table. The hazard categories in the table are based on 15A NCAC 02K .0105, which notes that high hazard dams are “located where failure will likely cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads.” DEQ takes the position that a dam is classified as high hazard if it has the potential to cause economic damage greater than \$200,000. I don’t think this is a law/rule just a rule of thumb. See Documents related to HAZARD CLASSIFICATION, DEQ (Feb. 14, 2018). If the \$200,000 damage threshold is the basis for classification, then all CCR basins will be classified as high hazard and subject to Probable Maximum Flood (“PMF”) rather than fractional PMF, to which Duke Energy’s CCR units are currently subject. Duke Energy suggests distinguishing between an existing impoundment and a closed, capped impoundment when determining the hazard classification.”</b></p>
<p>Response</p>	<p>An inverted capped impoundment is similar in nature to a dry detention pond in that both have the potential to impound and result in a potential risk to public safety. However, dry detention ponds are usually more dangerous than continuously impounding ponds because of the flashiness and wet-dry cycles</p> <p>In determining a hazard classification for a dam, the State Statute requires the agency look for the potential for “loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads.” State rules also specify that the potential for “environmental damage” can also be a factor to consider in classification of dams. The \$200,000 figure is not in a rule or statute and has only been used by the DEMLR staff as guidance to assess the potential for economic damage in determining the hazard classification.</p>

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<p><b>Comment:</b> (written) Duke Energy</p>	<p><b>“Proposed Section .0224(e)(4) would require stability assessments for CCR units with downstream slopes that may be inundated by the pool of an adjacent water body. The assessments shall include conditions for maximum pool loading, minimum pool loading, and rapid drawdown of the adjacent waterbody. As written, this section will require structural stability assessments for closed impoundments, which would not have any pool loading. Duke Energy suggests exempting closed impoundments from this requirement.”</b></p>
<p>Response:</p>	<p>The agency does not agree with the Duke Energy position that closed impoundments do not have any pool loading on the downstream slope. The agency believes that closed impoundments are still structural dams and should not be categorically exempt. Furthermore, any potential for downstream inundation of a regulated dam will require that these analyses be done.</p>
<p><b>Comment:</b> (written) SELC (Southern Environmental Law Center)</p>	<p><b>“North Carolina does not need, and DEQ should not establish, a DEQ permitting program for the federal CCR Rule. A DEQ permitting program exercising delegated authority from the federal CCR Rule would undercut the rights of North Carolina’s citizens to enforce the federal CCR Rule, would impose unnecessary and unsustainable costs and burdens on DEQ itself, and adds nothing to the ability of DEQ to regulate, monitor, and enforce as to coal ash sites in North Carolina.”</b></p>
<p>Response:</p>	<p>The hearing officers appreciate the position of the SELC. However, the proposed Dam Safety rule proposal does not include a recommendation on the delegation of the federal permitting program. That would be a separate action if it were proposed.</p>
<p><b>Comment:</b> (written) SELC (Southern Environmental Law Center)</p>	<p><b>Emergency Action Plans</b> <b>“The proposed rules leave out the federal requirement that Duke Energy and other utilities post online Emergency Action Plans and maps showing what would happen if one of these unlined, leaking, earthen coal ash lagoons were to fail and spill coal ash into our waters. Duke Energy has already tried to keep the public in the dark in violation of a federal disclosure requirement, before conservation groups enforced the law against the violation. North Carolina needs to hold Duke Energy accountable going forward. Incorporating this requirement into state rules underscores the importance of transparency and public information regarding the dangerous storage of coal ash near waterways. This transparency should be a part of North Carolina’s rules, apart from and in addition to the requirement currently present in the federal rule. Under 40 C.F.R. § 257.107, Duke Energy and other owners or operators of coal ash lagoons “must maintain a publicly accessible Internet site (CCR Web site)” containing information specified in the Rule. On this website, utilities must publish an Emergency Action Plan for high hazard and significant hazard coal ash lagoon dams. Id. § 257.105 (f)(5). At a minimum the Emergency Action Plan must “include a map which</b></p>

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	<p>delineates the downstream area which would be affected in the event of a CCR unit failure and a physical description of the CCR unit”; “define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving the CCR unit”; and “provide contact information of emergency responders.” Id. § 257.73. Although the draft rules incorporate the basic requirement to have a public website (Section .2017(c)), there is no mention of an emergency action plan. DEQ must make clear that North Carolina’s rules include the requirement to create, maintain, and make public an emergency action plan showing the downstream areas that would be flooded in the event of a dam failure catastrophe. Access to information is a key part of the federal CCR Rule and must also be a key part of North Carolina’s rules. As EPA has explained in the Preamble to the Rule, “the establishment and maintenance of this information . . . on a publicly accessible Internet site” is important because citizens need “access to all of the information necessary to show that the rule has been implemented in accordance with the regulatory requirements.” 80 Fed. Reg. 21,302, 21,426. Any regulations DEQ adopts must recognize the public’s need to know the coal ash risks in their communities. These public information requirements are all the more important in North Carolina, where Duke Energy has already violated the federal requirements to post complete and public Emergency Action Plans. Instead of complying with the requirement like every other major utility in the country, Duke Energy posted plans with blacked-out maps of the inundation risks. It also redacted contact information for responsible personnel in the event of a safety emergency. Only after conservation groups discovered Duke Energy’s illegal hiding of this critical information and notified Duke Energy that they intended to sue, Duke Energy gave in and posted unredacted maps and information. DEQ must make sure that this dam safety information remains up to date and available to the communities around and downstream of Duke Energy’s coal ash ponds.”</p>
<p>Response:</p>	<p>It is the Department’s interpretation of state statute in 143-215.31(a1) (6) that they are not allowed to provide EAPs to the public. However, federal regulations do require that the affected utility must post their EAPs on the internet and DEQ understands that Duke Energy has now posted the EAP’s on their web site.</p>
<p><b>Comment:</b> (written) Clean Water for NC</p>	<p>“Clean Water for NC is a 34 year old statewide, science based Environmental Justice Organization with members in over 60 North Carolina counties. We have been involved in advocacy on both statewide coal ash issues and in working for safe replacement water supplies for residents close to 3 Duke facilities with significant coal ash deposits: Asheville Plant, Cliffside as well as residents around Roxboro and Mayo plants in Person County.</p>

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	<p><b>c) Inspections and Structural Stability Assessments</b>  The at least weekly inspections for changes in flow or color of all discharges from hydraulic structures that pass underneath deposited CCR are important and, along with a decision tree of action steps, must be rigorously documented to prevent uncontrolled release of CCR associated materials such as occurred on the Dan River in 2014. The monthly inspections of all instrumentation “supporting” the operation of a CCR unity are also critical and a detailed checklist of minimum instrumentation and expected ranges of indicators for safe operation and reliability must be specified.</p> <p>An annual inspection of all hydraulic structures underlying the base of the CCR unit is probably only marginally adequate to ensure structural integrity. The frequency of inspection should be increased and specified parameters to indicate structural integrity should be included in the rules. The structural stability assessment should be carried out every two or three years, during which time loading and hydraulic conditions in the CCR unit could have changed significantly.</p> <p><b>e) safety factor assessments</b>  Each of the safety factors used in assessing the structural stability of a CCR unit, including the calculated static factor of safety for the long-term, maximum storage pool loading, the calculated static factor of safety under the maximum surcharge pool loading condition, the calculated seismic factor of safety, and the calculated liquefaction factor of safety must be rigorously re-evaluated at least every two years to assure that the factors are well characterized as to their contribution to structural stability, and generously protective of human safety and the environment. “</p>
<p>Response:</p>	<p>The hearing officers agree with Ms. Taylor on the importance of the inspections and structural stability assessments. However, they concur with the DEMLR staff’s opinion that the intervals described in the proposed rules are adequate. They also concur with the staff’s opinion that the rule should not define what equipment must be monitored on a monthly basis. The staff’s concern is that new technologies might make a rule’s specification obsolete. The hearing officers also concur with the staff recommendation that the five-year interval for updating the structural analysis is adequate in capturing the changing site conditions and emergency technologies.</p>

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## C. Recommended Final Rule Language\*

\* Although the Hearing Officers have received many valuable comments and suggestions to guide the work of the DEMLR staff, they have not recommended any changes in the text from the rule as presented at the public hearings.

### 15A NCAC 02K .0224 ADDITIONAL REQUIREMENTS FOR DAMS THAT IMPOUND COAL COMBUSTION RESIDUALS

a) For the purposes of this Rule:

- (1) “CCR” means Coal Combustion Residuals.
- (2) “CCR unit” means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the context of the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified. For the purpose of this Rule, the term only applies to CCR dams and surface impoundments.
- (3) “Dam” means a structure and appurtenant works erected to impound or divert water.
- (4) “Design flood” means the flood hydrograph that is used during an engineering assessment of the CCR unit.
- (5) “Liquefaction” means a phenomenon whereby a saturated or partially saturated soil loses strength and stiffness in response to an applied stress, usually earthquake shaking or other sudden change in stress condition, causing it to behave like a liquid.
- (6) “PMF” means Probable Maximum Flood.
- (7) “Probable Maximum Flood” means the flood that may be expected from the most severe combination of critical meteorological and hydrological conditions that are reasonably possible in the drainage basin. Rainfall associated with the PMF can be found at the following locations: [http://www.nws.noaa.gov/oh/hdsc/PMP\\_documents/HMR51.pdf](http://www.nws.noaa.gov/oh/hdsc/PMP_documents/HMR51.pdf) and [http://www.nws.noaa.gov/oh/hdsc/PMP\\_documents/HMR52.pdf](http://www.nws.noaa.gov/oh/hdsc/PMP_documents/HMR52.pdf).
- (8) “Toe” means the point of intersection between the upstream or downstream face of a dam and the natural ground.
- (9) “100-year flood” means a flood that has a 1-percent chance of recurring in any given year. Rainfall amounts for the 100-year flood can be found at: [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html) and [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html).

(b) This Rule shall apply to a CCR unit that meets one or more of the following:

- (1) has a dam height of 25 feet or more above the downstream toe of the structure and has a storage volume of 50 acre-feet or more, unless the unit is exempt by G.S. 143-215.25A; or
- (2) contains residuals to an elevation of five feet or more above the downstream toe of the structure and that has a storage volume of 20 acre-feet or more; or

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- (3) contains residuals to an elevation of greater than or equal to 20 feet above the downstream toe of the structure; or
- (4) has been classified as high hazard.
- (c) Inspections and Structural Stability Assessments of CCR units shall be completed as follows:
- (1) At intervals not exceeding seven days, a qualified engineer, or a person under his or her responsible charge, shall inspect the discharge of all outlets of hydraulic structures that pass underneath the base of the CCR unit for discoloration of discharge or changes in flow.
- (2) A qualified engineer, or a person under his or her responsible charge, shall conduct monitoring of all instrumentation supporting the operation of the CCR unit no less than once per month according to the standards listed under 40 CFR 257.83(a), which is hereby incorporated by reference, including subsequent amendments and additions. A copy of this document may be obtained at no cost at [https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr257\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr257_main_02.tpl)
- (3) During the annual inspections of all CCR units, a qualified engineer, or a person under his or her responsible charge, shall conduct a visual inspection of hydraulic structures underlying the base of the CCR unit in order to maintain structural integrity by being kept free of deterioration, deformation, distortion, bedding deficiencies, sedimentation, and debris.
- (4) A qualified engineer, or a person under his or her responsible charge, shall conduct structural stability assessments and shall document whether the design, construction, operation, and maintenance of the CCR unit is consistent with the provisions of 40 CFR 257.73(d) and 257.74(d), which is hereby incorporated by reference, including subsequent amendments and additions, the NC Dam Safety Law of 1967, and the rules of this Subchapter. The structural stability assessment shall be completed by a qualified engineer once every five years and submitted to the Department for review.
- (d) All CCR dams described in Paragraph (b) of this Rule shall have a spillway system with capacity to pass a flow resulting from a design flood-as specified in the Minimum Spillway Design Flood for CCR Units table provided in this Item. These requirements shall apply in place of the Minimum Spillway Design Flood table under Rule .0205(e) of this Section, unless the applicant provides calculations, designs, and plans to show, to the satisfaction of the Director, that the design flow can be stored, passed through, or passed over the CCR unit without failure occurring. The combined capacity of all spillways shall be designed, constructed, operated and maintained to adequately manage flow during and following the peak discharge as provided in the following table.

<b>Minimum Spillway Design Flood for CCR Units</b>		
<b>Hazard<sup>1</sup></b>	<b>Size<sup>2</sup></b>	<b>Spillway Design Flood<sup>3</sup></b>
<u>Low (Class A)</u>	<u>Small</u>	<u>100 YR</u>
	<u>Medium</u>	<u>100 YR</u>
	<u>Large</u>	<u>1/3 PMF (Probable Maximum Flood)</u>
	<u>Very Large</u>	<u>½ PMF</u>
<u>Intermediate (Class B)</u>	<u>Small</u>	<u>1000 YR</u>
	<u>Medium</u>	<u>1/3 PMF or 1000 YR whichever is larger</u>

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	<u>Large</u>	<u>½ PMF</u>
	<u>Very Large</u>	<u>¾ PMF</u>
<u>High (Class C)</u>	<u>Small</u>	<u>PMF (Probable Maximum Flood)</u>
	<u>Medium</u>	<u>PMF</u>
	<u>Large</u>	<u>PMF</u>
	<u>Very Large</u>	<u>PMF</u>
<sup>1</sup> The “Hazard” categories in this table for CCR units are based on 15A NCAC 02K .0105 Classification of Dams and are the same “Hazard” categories shown in the “Minimum Spillway Design Storms” table for non-CCR dams contained in Rule .0205(e) of this Section. <sup>2</sup> The “Size” categories are the same as described in the “Criteria for Spillway Design Storm Size Classification” table found in Rule .0205(e) of this Section. <sup>3</sup> The “Spillway Design Flood” specifications were derived from the combination of the more-stringent criterion from the spillway design-flood elements of the federal CCR regulations and the existing spillway design elements of Rule .0205(e) of this Section.		

(e) Structural stability assessments shall be evaluated as follows:

- (1) For purposes of this Rule, the critical cross sections utilized for the required structural stability assessments, are the cross sections anticipated by the design engineer to be the most susceptible to structural failure.
- (2) CCR surface impoundments shall be assessed under seismic loading conditions for a seismic loading event with a 2 percent probability of exceedance in 50 years, equivalent to a return period of approximately 2,500 years, based on the USGS Seismic Hazard Maps for seismic events with this return period for the region where the CCR unit is located. This document is hereby incorporated by reference, including subsequent amendments and editions. A copy may be obtained at no cost at <https://earthquake.usgs.gov/hazards/hazmaps>.
- (3) CCR units constructed of soils that are susceptible to liquefaction, as identified by a liquefaction potential analysis, shall meet liquefaction factors of safety. The liquefaction potential analysis shall include:
  - (A) The calculated static factor of safety for the end-of-construction loading condition shall equal or exceed 1.30. The assessment of this loading condition is only required for the initial safety factor assessment and is not required for subsequent assessments;
  - (B) the calculated static factor of safety for the long-term, maximum storage pool loading condition shall equal or exceed 1.50;
  - (C) the calculated static factor of safety under the maximum surcharge pool loading condition shall equal or exceed 1.40;
  - (D) the calculated seismic factor of safety shall equal or exceed 1.00; and
  - (E) for dams constructed of soils that have susceptibility to liquefaction, the calculated liquefaction factor of safety shall equal or exceed 1.20. Post-liquefaction stability analyses shall include characterization of the site conditions, identification of the



# CCR Dam Safety Rule

minimum liquefaction-inducing forces based on soil characterization, determination of seismic effect on liquefied layers of the embankment, and calculation of factors of safety against each liquefied layer of the embankment.

(f) CCR units and surrounding areas that are constructed of earthen material shall be designed, constructed, operated, and maintained so that the vegetation meets the conditions outlined in the FEMA 534 guidance document entitled, “Technical Manual for Dam Owners: Impacts of Plants on Earthen Dams” issued on September 2005. This document is hereby incorporated by reference, including subsequent amendments and editions. A copy may be obtained at no cost at <https://www.fema.gov/media-library/assets/documents/1027> . However, alternative forms of slope protection may be approved by the Director, upon request by a qualified engineer through a plan submittal, which is shown to provide equal or better protection from erosion as would be achieved with vegetation.

*History Note: Authority G.S. 143-215.26; 143-215.27; 143-215.31; 143-215.32; 143-215.34; 143-215.25A(6);  
Eff. XXXX, 20XX*

## **D. Hearing Officers’ Recommendation**

The Hearing Officers recommend that the proposed rule 15A NCAC 02K .0224 as presented at the four public hearings, and included in Section I.C. of this Report, be adopted by the Environmental Management Commission.

# CCR Dam Safety Rule

## II. Support Information

### A. Memos for Designation of Hearing Officers



#### ENVIRONMENTAL MANAGEMENT COMMISSION

NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENTAL QUALITY

John D. Solomon  
Chairman  
Julie A. Wilsey  
Vice Chairman

Roy Cooper, Governor  
Michael S. Regan, Secretary


David W. Anderson  
Shannon M. Arata  
Gerard P. Carroll  
Charles Carter  
Marion Deerhake  
Charles B. Elam  
Mitch Gillespie

Steve Keen  
Dr. Suzanne Lazorick  
Dr. Stan Meiburg  
George H. Pettus  
Manning Puette  
Dr. Albert R. Rubin

September 4, 2018

#### MEMORANDUM

To: Commissioner Suzanne Lazorick

From: J. D. Solomon   
Chairman of Environmental Management Commission

Subject: Hearing Officer Appointment

A public hearing has been scheduled for Tuesday, September 4, 2018 at 6:00 P.M. at Wayne Community College at 3000 Wayne Memorial Drive, Goldsboro, NC. The purpose of this hearing is to seek public input on two sets of Coal Combustion Residual-related (CCR) rules. This is one of the four hearings that are scheduled to hear comments from the public. The Division of Energy, Mineral, and Land Resources will be presenting a proposed rule providing "Additional Requirements for Dams That Impound Coal Combustion Residuals" and the Division of Waste Management will be presenting a set of proposed rules relating to the "Disposal and Recycling" of coal combustion residuals.

I am hereby appointing you to serve as hearing officer for this hearing. Please receive all relevant public comments and work with the other three Commission hearing officers to prepare the two Hearing Officers' Reports that will be provided to the full Commission.

JDS/act

Cc: Lois Thomas  
Andrew Brooks  
Ed Mussler

State of North Carolina | Environmental Quality  
1611 Mail Service Center | Raleigh, North Carolina 27699-1611  
919-707-9023

An Equal Opportunity Affirmative Action Employer

# CCR Dam Safety Rule



## ENVIRONMENTAL MANAGEMENT COMMISSION

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Dr. Stan Meiburg  
George H. Pettus  
Manning Puette  
Dr. Albert R. Rubin

September 4, 2018

## MEMORANDUM

To: Commissioner George Pettus

From: J. D. Solomon   
Chairman of Environmental Management Commission

Subject: Hearing Officer Appointment

A public hearing has been scheduled for Tuesday, September 25, 2018 at 6:00 P.M. at Asheville Buncombe Technical Community College, 340 Victoria Road, Asheville, NC. The purpose of this hearing is to seek public input on two sets of Coal Combustion Residual-related (CCR) rules. This is one of the four hearings that are scheduled to hear comments from the public. The Division of Energy, Mineral, and Land Resources will be presenting a proposed rule providing "Additional Requirements for Dams That Impound Coal Combustion Residuals" and the Division of Waste Management will be presenting a set of proposed rules relating to the "Disposal and Recycling" of coal combustion residuals.

I am hereby appointing you to serve as hearing officer for this hearing. Please receive all relevant public comments and work with the other three Commission hearing officers to prepare the two Hearing Officers' Reports that will be provided to the full Commission.

JDS/lct

Cc: Lois Thomas  
Andrew Brooks  
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# CCR Dam Safety Rule



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Steve Keen  
Dr. Suzanne Lazorick  
Dr. Stan Meiburg  
George H. Pettus  
Manning Puette  
Dr. Albert R. Rubin

September 4, 2018

### MEMORANDUM

To: Commissioner Shannon Arata

From: J. D. Solomon   
Chairman of Environmental Management Commission

Subject: Hearing Officer Appointment

A public hearing has been scheduled for Thursday, September 27, 2018 at 6:00 P.M. at Rockingham Community College, Wrenn Memorial Drive Highway 65, Wentworth, NC. The purpose of this hearing is to seek public input on two sets of Coal Combustion Residual-related (CCR) rules. This is one of the four hearings that are scheduled to hear comments from the public. The Division of Energy, Mineral, and Land Resources will be presenting a proposed rule providing "Additional Requirements for Dams That Impound Coal Combustion Residuals" and the Division of Waste Management will be presenting a set of proposed rules relating to the "Disposal and Recycling" of coal combustion residuals.

I am hereby appointing you to serve as hearing officer for this hearing. Please receive all relevant public comments and work with the other three Commission hearing officers to prepare the two Hearing Officers' Reports that will be provided to the full Commission.

JDS/lct

cc: Lois Thomas  
Andrew Brooks  
Ed Mussler

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# CCR Dam Safety Rule



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Steve Keen  
Dr. Suzanne Lazorick  
Dr. Stan Meiburg  
George H. Pettus  
Manning Puette  
Dr. Albert R. Rubin

September 4, 2018

## MEMORANDUM

To: Commissioner Bill Puette

From: J. D. Solomon   
Chairman of Environmental Management Commission

Subject: Hearing Officer Appointment

A public hearing has been scheduled for Thursday, September 20, 2018 at 6:00 P.M. at Mitchell Community College, 219, N. Academy Street, Mooresville, NC. The purpose of this hearing is to seek public input on two sets of Coal Combustion Residual-related (CCR) rules. This is one of the four hearings that are scheduled to hear comments from the public. The Division of Energy, Mineral, and Land Resources will be presenting a proposed rule providing "Additional Requirements for Dams That Impound Coal Combustion Residuals" and the Division of Waste Management will be presenting a set of proposed rules relating to the "Disposal and Recycling" of coal combustion residuals.

I am hereby appointing you to serve as hearing officer for this hearing. Please receive all relevant public comments and work with the other three Commission hearing officers to prepare the two Hearing Officers' Reports that will be provided to the full Commission.

JDS/lct

Cc: Lois Thomas  
Andrew Brooks  
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# CCR Dam Safety Rule

## **B. Hearing Officer's Prepared Remarks**

(Presentation given at each hearing by the four different hearing officers.)

*I am calling this public hearing to order. My name is \_\_\_\_\_. I am a member of the Environmental Management Commission. I am the presiding officer for this evening's hearing. This public hearing is the first (second, third, fourth) of four public hearings that are being held by the Environmental Management Commission to solicit written and oral comments on rules relating to the safe storage and disposal of Coal Combustion Residuals or CCRs. The Environmental Management Commission is granted authority in the North Carolina General Statutes to adopt certain rules as long as the procedures specified in General Statute 150B are followed. Accordingly, a public notice containing the proposed rules under consideration was published in the August 15, 2018 edition of the North Carolina Register and on the Department of Environmental Quality (DEQ) website, and was advertised through a Department press release, and sent by e-mail to interested parties including, but not limited to, advocacy groups, local government contacts, and industry contacts. The audio of this hearing is being recorded for the record.*

*The purpose of these four hearings is to receive public comments on two different sets of rules that are being considered for adoption by the Environmental Management Commission. The Commission will be seeking comments on one rule that has been proposed by the Dam Safety Section of the Division of Energy, Mineral, and Land Resources and 18 rules that have been proposed by the Solid Waste Section of the Division of Waste Management. Both of these Divisions are in the Department of Environmental Quality.*

*As the hearing officer, it is my responsibility to listen to your comments and assist in the preparation of the hearing report, which summarizes the information presented tonight, all comments received tonight and throughout the comment period, and provides recommendations to the Commission on the proposed rule-making. The Commission will make the decision on the final action, which may be to accept the hearing officer's recommendations, modify them, or take a different course of action. As it now stands, the Commission should consider the adoption of the proposed rules at their November 8, 2018 meeting in Raleigh. The Commission is interested in your comments on the two different sets of rules to help them decide what the final rule language should be for their consideration. The Commission is not only seeking your comments on the proposed rule language, but also on the Regulatory Impact Analysis documents prepared by each of the two Divisions.*

*Information on these two different sets of rules has been made available on the DEQ website since August 15, 2018, and a fact sheet containing a website address to obtain this information is also provided at the table in the entryway. The information on the website includes proposed wording of the rules, an explanation of the rules, information on the public comment period, and information on the possible impacts from the rules as is provided in the Regulatory Impact Analysis.*

*The fact sheet also includes contact information for submitting written comments. If anyone has written comments they would like to provide, including any speakers who have written copies of their comments, please provide them to the staff at the table in the entryway. Written comments prepared after the hearing may be submitted by e-mail or US Mail to the appropriate Division contact person for each rule set as shown on the provided fact sheet.*

## CCR Dam Safety Rule

*All comments received by October 15, 2018 will be included in the public comment record. Equal weight is given to both written and oral comments.*

*I appreciate everyone's attendance and would like to take this time to recognize any public officials in attendance tonight. Now I would like to invite any additional public or elected officials to stand and introduce themselves. I would also like to recognize members of the DEQ staff that are here. Will you please raise your hands?*

*At this time, I will provide an overview of how the meeting will be conducted: In order to help the two Divisions keep the comments separate on the two different set of rules, we are dividing the presentations and the solicitation of comments into two separate comment periods. The staff of the Division of Energy, Mineral and Land Resources will present their proposed rule first and I will then ask for comments on that rule and, immediately following that or at 7 o'clock (whichever occurs first), the Division of Waste Management will present their proposed set of rules and I will then ask for comments on those rules. After receiving comments on the waste management rules, I will ask if there are additional comments that you want to provide. Those comments can be on either or both sets of rules.*

*I will call on speakers for each rule set in the order they signed up to speak. If you wish to speak and have not yet signed up, you still have the opportunity to do so at the table in the entryway. When your name is called, please come to the microphone, and clearly state your name and any group you may be representing or affiliated with. Each speaker will be limited to 5 minutes so that everyone who wishes to speak has an opportunity to do so. Staff will keep track of the time and raise a sign to indicate when you have 1 minute remaining and when you have 30 seconds remaining to finish your comments. All public comments will be directed to me as the hearing officer. I ask that everyone respect the right of others to speak without interruption. Please keep your comments concise and limit them to the proposed rulemaking. At the end of the meeting, if time remains, we will ask if anyone who did not sign up would now like the chance to speak. At this time, we will begin the presentations.*

*Presentation on the Dam Safety Rule*

*Andrew Brooks, State Dam Safety Engineer with the Division of Energy, Land, and Mineral Resources, will now give a presentation on the proposed Dam Safety rule that would be codified in 15A NCAC 02K.0224 entitled "Additional Requirements for Dams that Impound Coal Combustion Residuals." After the presentation, I will ask for your comments on the Dam Safety rule.*

*I will now call on speakers that signed up to give comments only on the Dam Safety Rule. (Speakers were called in the order that they registered.)*

*That is all of the participants who signed up to give comments only on the Dam Safety rule. Presentation on the Waste Management Rules*

*Larry Frost, Permitting Engineer with the Division of Waste Management, will now give a presentation on the proposed CCR Rules that would be codified in 15A NCAC 13B .2000 entitled "Coal Combustion Residuals Management." After the presentation, I will ask for your comments on the Waste Management CCR Rules. I will now call on speakers who signed up to give comments only on the Waste Management CCR Rule. (Speakers were called in the order that they registered.)*

*That is all of the speakers who signed up to give comments on the Division of Waste Management CCR rules. I will now call on remaining speakers who signed up to give comments on either or both sets of rules. Is there anyone else who did not sign up to speak but would now like to provide a comment on either or both sets of rules?*

## CCR Dam Safety Rule

*I would like to thank everyone for attending tonight's hearing. Your input is greatly appreciated. If there are no more comments, then this hearing is closed. The public comment period will remain open until October 15, 2018.*



# CCR Dam Safety Rule

## C. Public Notice Prior to Hearings

# NORTH CAROLINA REGISTER

VOLUME 33 • ISSUE 04 • Pages 315 – 455

August 15, 2018

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Dana McGhee, Publications Coordinator  
Lindsay Woy, Editorial Assistant  
Cathy Matthews-Thayer, Editorial Assistant

#### 14B NCAC 05 .0311 ADJUSTMENTS TO GRANTS

Requests for adjustments (regarding budget, program, and personnel, for example) to approved applications may be made at any time up to 90 days before the project's scheduled termination date by using the Subgrant Adjustment Form and providing sufficient explanation for the proposed amendments.

Authority G.S. 143B-477; 143B-479.

#### SECTION .0400 - PENALTIES

#### 14B NCAC 05 .0401 GRANT TERMINATION OR SUSPENSION

(a) A grant may be terminated or fund payments suspended by the executive director, where he or she finds a failure to comply with the terms and conditions of the:

- (1) grant award contract;
- (2) grant application;

#### TITLE 15A – DEPARTMENT OF ENVIRONMENTAL QUALITY

Notice is hereby given in accordance with G.S. 150B-21.2 that the Environmental Management Commission intends to adopt the rule cited as 15A NCAC 02K .0224.

Link to agency website pursuant to G.S. 150B-19.1(c):  
<https://deq.nc.gov/permits-regulations/rules-regulations/proposed-rules>

Proposed Effective Date: January 1, 2019

There are two sets of Coal Combustion Residual-related (CCR) rules sharing these public hearing locations and hearing officers. The Division of Energy, Mineral, and Land Resources will be presenting a proposed rule, 15A NCAC 02K .0224 "Additional

# CCR Dam Safety Rule

## PROPOSED RULES

Requirements for Dams That Impound Coal Combustion Residuals," that would update the State's CCR Dam Safety program to be "at least as protective as" the dam-safety-related federal requirements. The Division of Waste Management (DWM) will be presenting a set of proposed rules relating to the "Disposal and Recycling" of coal combustion residuals. The purpose of the DWM proposed rules are to streamline and clarify the State's regulatory requirements for CCR landfills, impoundment, closure and dust control and transportation plans for recycling of residuals.

Four public hearings will be held to solicit comments on the proposed rules. The time and locations are as follows.

### Public Hearing:

Date: September 4, 2018

Time: 6:00 p.m.

Location: Wayne Community College Richard Auditorium, 3000 Wayne Memorial Drive, Goldsboro, NC 27534

### Public Hearing:

Date: September 20, 2018

Time: 6:00 p.m.

Location: Mitchell Community College Bldg B, MCB 117 Multipurpose Room, 219 N. Academy Street, Mooresville, NC 28115

### Public Hearing:

Date: September 25, 2018

Time: 6:00 p.m.

Location: Asheville Buncombe Technical Community College - Ferguson Auditorium, 340 Victoria Road, Asheville, NC 28801

### Public Hearing:

Date: September 27, 2018

Time: 6:00 p.m.

Location: Rockingham Community College, Room 100, Auditorium in Advanced Technology, Building 215, Wrenn Memorial Drive Highway 65, Wentworth, NC 27375

The public is invited to attend the hearings and provide verbal or written comments on the proposed rules and the associated Regulatory Impact Analysis (RIA) for each Division's proposals. The RIA and the proposed rule language for the Dam Safety rule can be found on the DEQ "Proposed Rules" webpage at: <https://deq.nc.gov/permits-regulations/rules-regulations/proposed-rules>. Comments on the proposed Dam Safety Rule should be directed to Division of Energy, Mineral, and Land Resources and comments on the Division of Waste Management's "Disposal and Recycling" rules should be directed to the Division of Waste Management.

**Reason for Proposed Action:** In August of 2014, the NC General Assembly adopted legislation that provided a broad program to address existing and future coal combustion residual (CCR) management. The approved legislation is referred to as the Coal Ash Management Act, or CAMA. Similarly, in December of 2014, the USEPA Administrator signed the "Final Rule: Disposal of Coal Combustion Residuals (CCR) for Electric Utilities."

Relative to the dam safety elements of the EPA rule, the North Carolina CCR requirements are very similar to those of the federal program. The EMC asked the Division of Energy, Mineral, and Land Resources (DEMRLR) staff to assess the equivalency of the State's CCR Dam Safety elements to those of the federal requirements and to recommend needed changes in the State's Dam Safety program. After the analysis, the staff prepared a proposed additional rule, 15A NCAC 02K .0224, that would update the State's CCR Dam Safety program to be "at least as protective as" the federal requirements.

Comments may be submitted to: Andrew Brooks, P.E., State Dam Safety Engineer, Division of Energy, Mineral, and Land Resources, 1612 Mail Service Center, Raleigh, NC 27699-1612; email [Andrew.brooks@ncdenr.gov](mailto:Andrew.brooks@ncdenr.gov)

Questions on the hearings or proposed rules can be directed to Mr. Brooks at 919-707-9219 or at the email address above or to Daniel Kang at 919-707-9239.

Comment period ends: October 15, 2018

### Procedure for Subjecting a Proposed Rule to Legislative Review:

If an objection is not resolved prior to the adoption of the rule, a person may also submit written objections to the Rules Review Commission after the adoption of the Rule. If the Rules Review Commission receives written and signed objections after the adoption of the Rule in accordance with G.S. 150B-21.3(b2) from 10 or more persons clearly requesting review by the legislature and the Rules Review Commission approves the rule, the rule will become effective as provided in G.S. 150B-21.3(b1). The Commission will receive written objections until 5:00 p.m. on the day following the day the Commission approves the rule. The Commission will receive those objections by mail, delivery service, hand delivery, or facsimile transmission. If you have any further questions concerning the submission of objections to the Commission, please call a Commission staff attorney at 919-431-3000.

### Fiscal impact (check all that apply).

- State funds affected
- Environmental permitting of DOT affected
- Analysis submitted to Board of Transportation
- Local funds affected
- Substantial economic impact ( $\geq$ \$1,000,000)
- Approved by OSBM
- No fiscal note required by G.S. 150B-21.4

## CHAPTER 02 - ENVIRONMENTAL MANAGEMENT

### SUBCHAPTER 02K - DAM SAFETY

#### SECTION .0200 - OBTAINING APPROVAL FOR DAM CONSTRUCTION: REPAIR: OR REMOVAL

#### 15A NCAC 02K .0224 ADDITIONAL REQUIREMENTS FOR DAMS THAT IMPOUND COAL COMBUSTION RESIDUALS

(a) For the purposes of this Rule:

# CCR Dam Safety Rule

## PROPOSED RULES

- (1) "CCR" means Coal Combustion Residuals.
- (2) "CCR unit" means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the context of the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified. For the purpose of this Rule, the term only applies to CCR dams and surface impoundments.
- (3) "Dam" means a structure and appurtenant works erected to impound or divert water.
- (4) "Design flood" means the flood hydrograph that is used during an engineering assessment of the CCR unit.
- (5) "Liquefaction" means a phenomenon whereby a saturated or partially saturated soil loses strength and stiffness in response to an applied stress, usually earthquake shaking or other sudden change in stress condition, causing it to behave like a liquid.
- (6) "PMF" means Probable Maximum Flood.
- (7) "Probable Maximum Flood" means the flood that may be expected from the most severe combination of critical meteorological and hydrological conditions that are reasonably possible in the drainage basin. Rainfall associated with the PMF can be found at the following locations:  
[http://www.nws.noaa.gov/oh/hdsc/PMP\\_documents/HMR51.pdf](http://www.nws.noaa.gov/oh/hdsc/PMP_documents/HMR51.pdf) and  
[http://www.nws.noaa.gov/oh/hdsc/PMP\\_documents/HMR52.pdf](http://www.nws.noaa.gov/oh/hdsc/PMP_documents/HMR52.pdf)
- (8) "Toe" means the point of intersection between the upstream or downstream face of a dam and the natural ground.
- (9) "100-year flood" means a flood that has a 1-percent chance of recurring in any given year. Rainfall amounts for the 100-year flood can be found at:  
[https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html) and  
[https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html).
- (b) This Rule shall apply to a CCR unit that meets one or more of the following:
- (1) has a dam height of 25 feet or more above the downstream toe of the structure and has a storage volume of 50 acre-feet or more, unless the unit is exempt by G.S. 143-215.25A; or
  - (2) contains residuals to an elevation of five feet or more above the downstream toe of the structure and that has a storage volume of 20 acre-feet or more; or
  - (3) contains residuals to an elevation of greater than or equal to 20 feet above the downstream toe of the structure; or
  - (4) has been classified as high hazard.
- (c) Inspections and Structural Stability Assessments of CCR units shall be completed as follows:
- (1) At intervals not exceeding seven days, a qualified engineer, or a person under his or her responsible charge, shall inspect the discharge of all outlets of hydraulic structures that pass underneath the base of the CCR unit for discoloration of discharge or changes in flow.
  - (2) A qualified engineer, or a person under his or her responsible charge, shall conduct monitoring of all instrumentation supporting the operation of the CCR unit no less than once per month according to the standards listed under 40 CFR 257.83(a), which is hereby incorporated by reference, including subsequent amendments and additions. A copy of this document may be obtained at no cost at [https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr257\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr257_main_02.tpl)
  - (3) During the annual inspections of all CCR units, a qualified engineer, or a person under his or her responsible charge, shall conduct a visual inspection of hydraulic structures underlying the base of the CCR unit in order to maintain structural integrity by being kept free of deterioration, deformation, distortion, bedding deficiencies, sedimentation, and debris.
  - (4) A qualified engineer, or a person under his or her responsible charge, shall conduct structural stability assessments and shall document whether the design, construction, operation, and maintenance of the CCR unit is consistent with the provisions of 40 CFR 257.73(d) and 257.74(d), which is hereby incorporated by reference, including subsequent amendments and additions, the NC Dam Safety Law of 1967, and the rules of this Subchapter. The structural stability assessment shall be completed by a qualified engineer once every five years and submitted to the Department for review.
- (d) All CCR dams described in Paragraph (b) of this Rule shall have a spillway system with capacity to pass a flow resulting from a design flood as specified in the Minimum Spillway Design Flood for CCR Units table provided in this Item. These requirements shall apply in place of the Minimum Spillway Design Flood table under Rule .0205(e) of this Section, unless the applicant provides calculations, designs, and plans to show, to the satisfaction of the Director, that the design flow can be stored, passed through, or passed over the CCR unit without failure occurring. The combined capacity of all spillways shall be designed, constructed, operated and maintained to adequately manage flow during and following the peak discharge as provided in the following table.

Minimum Spillway Design Flood for CCR Units		
Hazard <sup>1</sup>	Size <sup>2</sup>	Spillway Design Flood <sup>3</sup>



# CCR Dam Safety Rule

## PROPOSED RULES

Low (Class A)	Small	100 YR
	Medium	100 YR
	Large	1/3 PMF (Probable Maximum Flood)
	Very Large	1/4 PMF
Intermediate (Class B)	Small	1000 YR
	Medium	1/3 PMF or 1000 YR, whichever is larger
	Large	1/4 PMF
	Very Large	1/4 PMF
High (Class C)	Small	PMF (Probable Maximum Flood)
	Medium	PMF
	Large	PMF
	Very Large	PMF
<p><sup>1</sup> The "Hazard" categories in this table for CCR units are based on 15A NCAC 02K .0105 Classification of Dams and are the same "Hazard" categories shown in the "Minimum Spillway Design Storms" table for non-CCR dams contained in Rule .0205(e) of this Section.</p> <p><sup>2</sup> The "Size" categories are the same as described in the "Criteria for Spillway Design Storm Size Classification" table found in Rule .0205(e) of this Section.</p> <p><sup>3</sup> The "Spillway Design Flood" specifications were derived from the combination of the more-stringent criterion from the spillway design-flood elements of the federal CCR regulations and the existing spillway design elements of Rule .0205(e) of this Section.</p>		

(e) Structural stability assessments shall be evaluated as follows:

- (1) For purposes of this Rule, the critical cross sections utilized for the required structural stability assessments, are the cross sections anticipated by the design engineer to be the most susceptible to structural failure.
- (2) CCR surface impoundments shall be assessed under seismic loading conditions for a seismic loading event with a 2 percent probability of exceedance in 50 years, equivalent to a return period of approximately 2,500 years, based on the USGS Seismic Hazard Maps for seismic events with this return period for the region where the CCR unit is located. This document is hereby incorporated by reference, including

- (3) subsequent amendments and editions. A copy may be obtained at no cost at <https://earthquake.usgs.gov/hazards/hazmaps>. CCR units constructed of soils that are susceptible to liquefaction, as identified by a liquefaction potential analysis, shall meet liquefaction factors of safety. The liquefaction potential analysis shall include:
  - (4) Stability assessments shall be required for CCR units with downstream slopes that may be inundated by the pool of an adjacent water body. These assessments shall include conditions for maximum pool loading, minimum pool loading, and rapid drawdown of the adjacent waterbody.
  - (5) The safety factor assessments shall be supported by the following engineering calculations:
    - (A) The calculated static factor of safety for the end-of-construction loading condition shall equal or exceed 1.30. The assessment of this loading condition is only required for the initial safety factor assessment and is not required for subsequent assessments;
    - (B) the calculated static factor of safety for the long-term, maximum storage pool loading condition shall equal or exceed 1.50;
    - (C) the calculated static factor of safety under the maximum surcharge pool loading condition shall equal or exceed 1.40;
    - (D) the calculated seismic factor of safety shall equal or exceed 1.00; and
    - (E) for dams constructed of soils that have susceptibility to liquefaction, the calculated liquefaction factor of safety shall equal or exceed 1.20. Post-liquefaction stability analyses shall include characterization of the site conditions, identification of the minimum liquefaction-inducing forces based on soil characterization, determination of seismic effect on liquefied layers of the embankment, and calculation of factors of safety against each liquefied layer of the embankment.
- (f) CCR units and surrounding areas that are constructed of earthen material shall be designed, constructed, operated, and maintained so that the vegetation meets the conditions outlined in the FEMA 534 guidance document entitled, "Technical Manual for Dam Owners: Impacts of Plants on Earthen Dams" issued on September 2005. This document is hereby incorporated by reference, including subsequent amendments and editions. A copy may be obtained at no cost at <https://www.fema.gov/media-library/assets/documents/1027>. However, alternative forms of

# CCR Dam Safety Rule

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## *PROPOSED RULES*

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slope protection may be approved by the Director, upon request by a qualified engineer through a plan submittal, which is shown to provide equal or better protection from erosion as would be achieved with vegetation.

*Authority* G.S. 143-215.26; 143-215.27; 143-215.31; 143-215.32; 143-215.34; 143-215.25A(6).

\*\*\*\*\*

**Location:** *Rockingham Community College, Room 100 Auditorium in Advanced Technology Building, 215 Wrenn Memorial Drive Highway 65, Wrentham, NC 27375*

**Reason for Proposed Action:** *The Division of Waste Management proposes regulations 15A NCAC 13B .2001 through .2018 which are as stringent or more so than the EPA's rules for the management of coal combustion residuals, as well as existing North Carolina industrial landfill rules and the Coal Ash Management Act. The proposed rule's purpose is to streamline*

# CCR Dam Safety Rule

## D. Attendees at the Hearings

### D-1 Goldsboro Hearing

- a. **Hearing Officer:** Commissioner Dr. Suzanne Lazorick
- b. **Other Attendees:**

	PRINT NAME	AFFILIATION (Resident, Elected Official, Other)
1	Michael Carroway	Down East Coal Ash
2	Joseph H. Seay	Citizen
3	Dawn Mays	NC DEQ - Durham
4	Margaret Henriques	Down East Coal Ash
5	LARRY FROST	NC DEQ
6	Sherril Stanley	NC DEQ
7	Gwen Massenberg	Citizen
8	Shawn McKee	NC DEQ
9	Barbara Nelson	
10	Gerri Sherard	concerned citizen
11	Nesley Garwood	
12	Wanda Flythe	citizen - Northampton
13	Joseph Flythe	" "
14	Jennifer Tilton	Citizen
15	Benjamin Jackson	NC DEQ
16	Leslie Griffith	SELC
17	ADAM PRIEST	APTIM
18	Esther I Johnson	Gerri Sherard
19	Laura Leonard	NC DEQ
20	Therese Vick	BREDL

# CCR Dam Safety Rule

	PRINT NAME	AFFILIATION (Resident, Elected Official, Other)
21	Emily Peacock	
22	Eric Smith	NCDEQ - DWR
23	Mary Chapman	Private Citizen
24	Regina R. Harvey	Private Citizen
25	Suzanne Lutzorik	EMC - Hearing <sup>CDR</sup>
26	Rev. Mary Reese	
27	Jessica Montre	NCDEQ
28	Elizabeth Werner	DEQ - DWM
29	Will Hart	NCDEQ - DWR
30	Robert Bright	NCDEQ - DAQ
31	Kurt + Todd	NCDEQ - DAQ
32	Daniel Kony	NCDEQ - DEMUR
33	Jordan Pappas	"/
34	Andrew Brooks	"/
35	Mary Ann Terlinghi	Wynnefield Party
36	David Brantley	citizen
37		
38		
39		
40		

	PRINT NAME	AFFILIATION (Resident, Elected Official, Other)
41	Bilinda Carraway	volunteer
42	Larsene Taylor	DECAC
43	Kristiann Herding	Citizen
44	Jillian Riley	Siema Club

# CCR Dam Safety Rule

	PRINT NAME	AFFILIATION (Resident, Elected Official, Other)
	Bobby Jones	
61	Bobby Jones	DOWNEAST COAL Pk
62	SEKIA Royal	Resident
63		
64	Added speakers	
65	Belinda Carrway	
66	Rev Mary Reese	

	PRINT NAME	AFFILIATION (Resident, Elected Official, Other)
81	Shirley Kee	citizen
82	Beverly Kee	citizen
83	Barbara Dant	Wayne Co. Dem Party Ch
84	Carolyn Holmes	Wayne County Dem. Party
85	William Larson	Wayne County Dem Party
86	Ellen Lorscheider	DEQ - DWM
87	Ed Messler	DEQ - DWM
88		



# CCR Dam Safety Rule

## 2. Mooresville Hearing

a. **Hearing Officer:** Commissioner Bill Puette

b. **Other Attendees:**

	PRINT NAME	AFFILIATION (Resident, Elected Official, Other)
1	Eric Smith	DEQ - DWR
2	LARRY FROST	NCDEQ
3	CHARLES GERSTELL	NCDEQ - DWM
4	Mahling W Puette	EMC
5	ZAHID KHAN	NCDES
6	Carolina Fonseca Jimenez	DEQ
7	Brandy Costner	NCDEQ DWR
8	Joanna Harrison	NCDEQ - DWR
9	Steve Lanter	NCDEQ - DWR CO
10	Andrew Brasler	NCDEQ - Dam Safety
11	Andrew Pittner	DEQ - DWR - MRO
12	Jim Harpaz	NC DAQ - MRO
13	Benjamin Jackson	NC DEQ DWM
14	Ryan Czop	Duke
15	Bryson Sheets	Duke
16	Bob Caudle	NCDEQ - DAQ
17	Tamera Epkin	NCDEQ - DEMLR
18	Christy Thomas	DEQ
19	Teresa Bradford	DEQ - DWM
20	Kim Suez	DEQ - DWM

# CCR Dam Safety Rule

## 3. Asheville Hearing

a. **Hearing Officer:** Commissioner George Pettus

b. **Other Attendees:** (see below)

If you do not wish to speak, you may submit written comments to public

	PRINT NAME	AFFILIATION <small>(Resident, Elected Official, Other)</small>	<small>(if)</small>
1	Amanda Strawderman	Clean Water for NC	
2	Caroline F. Sturte	DEQ	
3	LARRY FROST	DEQ	
4	Deb Aja	DEQ - DWM	
5	GEORGE H. PETTUS	DEM HEARING OFFICER	
6	Ted Campbell	DEQ - DWR	
7	LONDON DAYLON	" "	
8	Stacy Aikens	DEQ - DEMUR	
9	Andrew Broder	DEQ - Dan Sheffy	
10	Michael Cooper	DEQ - Public Affairs	
11	Ashley Featherstone	WNC Regional Air Quality Agency	
12	BLENDAN DAVEY	DEQ - DAZ	
13	Lee Hill	DEQ - DWM	
14	OLUFEMI LEWIS	SIRRA CLUB	
15			

# CCR Dam Safety Rule

## 4. Reidsville (Wentworth) Hearing

a. **Hearing Officer:** Commissioner Shannon Arata

b. **Other Attendees:** (see below)

	PRINT NAME	AFFILIATION <small>(Resident, Elected Official, Other)</small>
1	ERIC SMITH	NCDEQ-DWR
2	LARRY FROST	NCDEQ-DWM
3	Elizabeth Werner	NCDEQ - DWM
4	Ben Jackson	NCDEQ - DWM
5	Shawn McKee	NCDEQ - DWM
6	Andrew Brooks	NCDEQ - DEMLR
7	Debra Watts	NCDEQ - DWR.
8	Taylor Hartsfield	NCDEQ - DAQ
9	Steve Lanter	NCDEQ - DWR
10	Shannon Arata	EMC
11	Carolina F. Innes	DEQ
12	M. Michael Cooper	DEQ - Public Affair
13	Jessica Mentie	DEQ - DWM
14	Megan Kimberly	SELCC
15	MELONIE MARTIN	DUKE
16	Aops Taylor	Clean Water for NC
17	Ridge Graham	
18	RIDGE GRAHAM	APP VOICES
19	Sarah Mathis	APP VOICES
20	Wmattler Galt	NCDEQ
	Shuying Wang	NCDEQ-INSRO

# CCR Dam Safety Rule

## E. Regulatory Impact Analysis



### REGULATORY IMPACT ANALYSIS for Propose Rule for Coal Combustion Residual Dams 6/26/18 (approved by OSBM)

#### A. General Information

**Agency:** Department of Environmental Quality, Division of Energy, Mineral, and Land Resources (DEMLR)

**Rule Title:** Additional Design Requirements for Dams that Impound Coal Combustion Residuals

**Citation:** 15A NCAC 02K .0224

**Rulemaking Authority:** GS 143-215.3(a)(1); GS 143-215.31; GS 143B-282

#### **Staff Contacts:**

Andrew Brooks, State Dam Safety Engineer [Andrew.brooks@ncdenr.gov](mailto:Andrew.brooks@ncdenr.gov)  
(919-707-9219)

Boyd DeVane, Assistant Dam Safety Engineer [Boyd.devane@ncdenr.gov](mailto:Boyd.devane@ncdenr.gov)  
(919-707-9212)

#### **Impact Summary:**

State government:	Minimal costs
Local government:	None
Regulated utilities	None
Federal government:	None
Substantial economic impact:	No

#### **Divisions with Coal Combustion Residuals (CCR) Responsibilities:**

The North Carolina General Assembly has adopted several legislative initiatives that have resulted in a comprehensive program of dealing with coal combustion residuals in the state. Because CCR facilities and units potentially affect the land, air, surface water and groundwater, several divisions in the Department of Environmental Quality (DEQ) have important responsibilities in regulation of CCR facilities. Two divisions, the Division of Waste Management and the Division of Energy, Mineral and Land Resources have substantial regulatory responsibilities. Both of those Divisions are proposing rule changes that relate to CCR responsibilities and each is preparing a regulatory impact analysis. This Regulatory Impact Analysis (RIA) for DEMLR will be on the impacts expected from the changes proposed in the Dam Safety Rules found in 15A NCAC, Subchapter 2K. Similarly, an analysis will be developed

# CCR Dam Safety Rule

on the proposed changes in the Solid Waste Management Rules in 15A NCAC Subchapter 13B, Section .2000

## **B. Purpose of the Proposed Rule**

The purpose of the proposed DEMLR rule is to include, in the NC Administrative Code, some criteria of the Federal Coal Combustion Residual (CCR) rule requirements that are not presently specified in the current NC Dam Safety statutes or rules. This will ensure that state rules are equal to or more stringent than the federal CCR rules. This action could enable North Carolina to receive EPA approval to implement, some or all of the elements of the federal CCR program.

## **C. History of State and Federal Regulatory Controls**

The North Carolina General Assembly adopted the “**Dam Safety Law of 1967**” (Law) to prevent property damage, personal injury and loss of life from the failure of dams. The Law also provided for protection of the downstream water quality through control of releases. The Law has been modified several times since its adoption. The Dam Safety program adopted rules in Chapter 15A, Subchapter 2K that provide more specificity for implementing the Law.

The N.C. General Assembly amended the North Carolina Dam Safety Law in **2009** to include jurisdiction over impoundments at coal-fired power plants, including coal ash ponds. It included requirements that existing coal ash impoundments that are at least 15 feet high and capable of impounding at least 10 acre-feet must be inspected by the N.C. Division of Energy, Mineral and Land Resources’ dam safety inspectors and maintained in good repair. Also, before starting new construction, modification, repair or removal of these impoundments, the individual or company seeking approval is required to receive state approval of engineering plans and specifications under the North Carolina Dam Safety Law.

In **August of 2014**, the NC General Assembly adopted legislation that provided a broad program to address existing and future Coal Combustion Residual (CCR) management. The Law, which is referred to as the Coal Ash Management Act, or CAMA, gave mandates to:

- Require the Department (DEQ) to establish a schedule and process for closure and remediation of all coal combustion residuals (CCR) surface impoundments.
- Require closure and remediation of certain CCR surface impoundments no later than August 1, 2019;
- Require an assessment of the risks to public health, safety, and welfare, the environment, and natural resources of CCR impoundments located beneath CCR landfills to determine the advisability of continued operation;
- Require the assessment of groundwater;
- Require a survey of drinking water supply wells and replacement of contaminated water supplies;
- Require all electric generating facilities to convert to generation of dry fly ash;
- Prohibit disposal of Stormwater to CCR surface impoundments; and,
- Require the Department of Transportation to develop technical specifications for use of coal combustion products.

In **December of 2014**, the USEPA Administrator signed the “Final Rule: Disposal of Coal Combustion Residuals (CCR) for Electric Utilities.” Relative to the dam safety elements of the EPA rule, the North Carolina CCR requirements are very similar to the federal program. In a few

# CCR Dam Safety Rule

aspects, North Carolina has some requirements that are more stringent than the federal CCR rules and in a few places, North Carolina CCR requirements may be less stringent. However, since impacted units and facilities are required to comply with both programs, the impact of adopting the proposed rule is expected to be minor.

On **July 26, 2016**, the EPA Administrator signed a direct final rule and a companion proposal to extend for certain inactive CCR surface impoundments the compliance deadlines established by the regulations for the disposal of CCR under subtitle D of the Resource Conservation and Recovery Act (RCRA). The comment period for the direct final rule ended on August 22, 2016. Because no adverse comments were received, the rule became effective on October 4, 2016.

On **December 16, 2016**, President Obama signed the “Water Infrastructure Improvements for the Nations Act” (WIIN). Section 2301 of that Act, “Approval of State Programs for Control of Coal Combustion Residuals” sets forth procedures to enable states to assume parts or the entirety of the federal CCR program. The Act stipulates that “Each State may submit to the Administrator, in such form as the Administrator may establish, evidence of a permit program or other system of prior approval and conditions under State law for regulation by the State of coal combustion residuals units that are located in the State that, after approval by the Administrator, will operate in lieu of regulation of coal combustion residuals units in the State.” The program does not have to be identical to the current CCR rule but must be “at least as protective as” the CCR rule.

**Significance of Presenting this “History.”** The importance of chronicling the history is to illustrate how North Carolina’s dam safety and coal combustion residual programs in DEMLR and the US EPA’s related CCR program have been progressing on very similar paths for several years and have resulted in CCR-related dam safety requirements that are very similar in requirements and effect.

## **D. General Summary of Proposed Rule Changes**

- The size specifications to be regulated by the State’s CCR requirements have been reduced which may bring a few impoundments under the jurisdiction of the State’s rules.
- Spillway design requirements have generally been made more restrictive to provide greater safety.
- Conduit inspection requirements have always been in the Dam Safety program but they are more-clearly outlined in these rule changes to provide emphasis.
- Inspections for Structural Stability and Slope Protection have been required by the State dam safety program for years but these requirements are more-specifically dictated in the federal CCR regulations. To make North Carolina’s program more closely match the federal program, the criteria taken from the federal requirements will be included in the State rules.
- The self-inspection requirements are included in the federal rules which are in effect. Adoption of those requirements in State rules will not alter the impacts to the operators of regulated CCR facilities. A portion of the federal rule is adopted by reference.

## **E. Proposed Rule Changes and Impacts**

The purpose of adopting this rule is to assure that the State’s CCR Dam Safety program is “as protective as” the federal CCR regulations. For most coal combustion dam safety program areas,

# CCR Dam Safety Rule

the State's laws and rules are requiring the same regulatory elements as existing federal programs. However, the proposed rule contains some elements that are either not presently required or elements that do not contain the specificity of the federal rules.

The proposed rule:

1. Includes a list of defined terms used in the rule (see paragraph (a)). These do not add additional requirements but only define terms used in the rule.
2. Includes more-specific requirements for inspections and structural stability assessments of CCR units (see paragraph (c)). The proposed rule specifies that the owner of the CCR unit will:
  - inspect the “discharge of all outlets of hydraulic structures that pass underneath the base” of a CCR unit at least once per seven days, and
  - “conduct monitoring of all instrumentation supporting the operation of the CCR unit no less than once per month. . .”, and
  - “conduct a visual inspection of hydraulic structures underlying the base of the CCR unit” during an annual inspection, and
  - Once every five years, conduct structural stability assessments consistent with the federal requirements.

Specific conduit requirement language has been added to emphasize the importance of maintaining structural integrity of conduits underlying the base of impoundments. The additional rule language specifies that when conduits run under impoundments, they must be maintained and inspected on an annual basis by a qualified engineer. This proposed portion of the rule does not change any requirements for CCR facilities regulated under current federal rules. However, it serves a benefit by placing emphasis in the State rules on the need for careful oversight over conduits, including those associated with the entire facility, not just those going through the dike.

3. Includes spillway design flood requirements that in some cases are more stringent than the existing State spillway design requirements (see paragraph (d)). However, all CCR dams in the state must meet these specifications by a certain date because of the federal rules. Therefore, having the state rules reflect the same requirements should not have any effect on the state or on the regulated operations.
4. Includes structural stability assessment specifications that will ensure consistency with federal rule requirements (see paragraph (e)(1) - (e)(3)). The structural stability assessment specifications that are proposed for state rule inclusion are being followed now by all regulated utilities and the State has access to, and reviews, the information. Therefore, having the State rules reflect the same requirements should not have any effect on the State Dam Safety agency or on the regulated operations.
5. Includes stability assessments for CCR units with downstream slopes that may be inundated by the pool of an adjacent water body (see paragraph (e)(4)). Although the State rules may not have specifically noted this requirement, it has always been a practice in approving CCR facilities and has been a requirement of the federal rules. Therefore, having the State rules reflect the same requirements should not have any effect on the State Dam Safety agency or on the regulated operations.
6. Requires that safety factor assessments are supported by specific engineering calculations (see paragraph (e)(5)). Although the utilization of specific engineering calculations has been

# CCR Dam Safety Rule

- a State requirement of CCR facilities, some of the factors included in the federal rules are more stringent than those of State rules and statutes. However, the requirement to use the federally-imposed criteria is in effect and is followed in North Carolina. Therefore, having the State rules reflect the same requirements should not have any effect on the State Dam Safety agency or on the regulated operations.
7. Contains language to combine the state lower limits to require compliance with the CCR with the lower limits of the federal CCR rules (see paragraph (b)). The state statutes have a lower limit where the dam safety law applies of 25' height (and 50 ac. ft. volume), except where the dams have been classified as "high hazard" and then there is no lower limit whereas the federal rules specify a lower limit of five feet (and 20 ac. ft. volume). Paragraph (b) is written to assure that the rule applies to dams covered by both the state and federal requirements. However, since the state and the federal CCR requirements have both been in effect for years, there should be no impact by modifying the State rules to now include the federal requirements.
  8. Contains a requirement that all CCR dams that contain earthen material "shall be designed, constructed, operated, and maintained so that the vegetation meets the conditions outlined in the FEMA 534 guidance document "Technical Manual for Dam Owners: Impacts of Plants on Earthen Dams" (see paragraph (f)). The State has been mandating nearly-equivalent vegetation requirements to the federal guidance for years and since the adoption of the federal CCR rules, CCR facilities have been required to follow these guidelines. Therefore, adopting these specifics into the State rules should not have any impact on the State Dam Safety agency nor the regulated facilities.

## **F. Why are we Seeking these Rule Changes?**

### **What is the problem?**

The Division of Energy, Mineral, and Land Resources sees no significant problem with the dam-safety, coal combustion residuals programs being implemented as they are. The state legislature has adopted several legislative initiatives that have provided a comprehensive program of dealing with coal combustion residuals. The State Dam Safety program could continue operating as it has, with the federal government having a program and the state having a very similar program. However, it has been suggested that having the State rules be supplemented with any, more-specific or more-stringent federal requirements, would serve a benefit to the State and the regulated public. It has also been suggested that the State consider delegation of some, or all, of the federal CCR program as is now allowed by the WIIN Act (Public Law 114-322, December 16, 2016). In order to be considered for delegation of the federal program, the State must first adopt rules that provide equal or better protection as the federal rules.

### **Where might improvements be seen?**

Having the State CCR rules be consistent with those of the EPA would significantly simplify the understanding of what criteria must be met to comply with both State and federal programs. Having State rules that will contain the requirements for compliance with the federal program will be a benefit to all stakeholders, and could serve as a basis for delegation of the federal CCR program to the State.

## **G. Comparison of the Baseline versus State Program Supplemented with Additional Criteria**

Although there are some differences in criteria, the federal Dam Safety CCR program is almost identical in the requirements that are applied to CCR facilities by the North Carolina program.



# CCR Dam Safety Rule

For the federal program, there are no changes proposed from the baseline. For North Carolina's program, there will be some additional criteria added to match criteria of the federal program. However, since there are only a few criteria that differ in the two programs and since the existing, dam-related portions of CCR facilities have been under the requirements of both the State and the federal regulations, there should not be an increase from the baseline requirements applied to a facility. If the only criteria that had been applied were the State criteria, and additional criteria were added, we could recognize an increase from the baseline. However, the criteria applied to a facility will not change although the State rules will change.

## **H. How will the Changes Affect Environmental Protection?**

The proposed changes in the Dam Safety rules would make them more stringent than the existing state rules. However, since the regulated entities are already required to implement these more-stringent standards, having these standards in the State rules should not be expected to affect environmental protection.

## **I. What Will Be the Costs Resulting from the Change?**

- **To State government, any additional cost will be minimal.** Some staff have projected that there will be additional information received because of the additional State requirements. However, for most of the facilities, the additional federal information is already being received by the State agency and reviewed. There will be a few inspections where additional data will be collected. However, dealing with the additional data could only add a few minutes to some inspections. Although there may be some minimal cost involved with the proposed rule changes, the existing coal ash-funded positions will easily be able to assume the minor additional work.
- **To local governments, there will be no additional costs.**
- **To federal government, there should be no change in resource needs for overseeing facilities located in North Carolina.**
- **To regulated entities, if they are meeting the existing state and federal requirements, there should be no impact.** Since the regulated entities must comply with both the federal regulations and NC laws and rules related to CCR facilities, the proposed rule changes should not have any adverse fiscal impact. However, if the State agency has authority to enforce the additional, federally-derived requirements, then a failure of the regulated entity to comply could result in additional resources applied to enforcement.

## **J. Uncertainties Analysis**

It appears to the Division that there are very few uncertainties associated with this Regulatory Impact Analysis if the proposal for the Environmental Management Commission to adopt the new rule is accomplished. Because the rule's proposals are straightforward, and are intended to incorporate existing State and federal requirements, implementing them should not result in any notable differences in impacts to the federal, state or local CCR dam safety-related programs. Similarly, adopting the changes proposed in the rule should not have a notable effect on the regulated utilities nor the environment or health and safety of the public. The federal and the State programs have been in full operation for several years and the small changes in the State criteria to make them "as protective as" those of the federal rules are not expected to change the

# CCR Dam Safety Rule

operation of either program. The outcome of the rule change is straightforward and the “Impact Analysis” is predictable.

In spite of the predictability of the “Analysis” of the rule adoption, there is a possibility that the Department of Environmental Quality could seek, and eventually achieve, delegation of the federal program’s implementation. This outcome could have an impact on the costs and benefits to the State and federal governments as well as the regulated public and the affected environments. The expected outcomes, benefits and costs of a federal program delegation are described below:

1. **To State government** – If the State were to seek and achieve federal program delegation, there would be additional uncertainty added to this Analysis because of potential changes in the State’s role. The State presently takes an active role in the overall implementation of the dam safety-related coal combustion residuals program and the State’s oversight role would not change if the State were to seek and achieve federal program delegation. However, with program delegation there could be some fiscal impacts if the State were to receive reporting information that they do not presently receive. Most of the reporting that is done for the federal program is also now provided to the State. However, it has been suggested that some additional data may be received if delegation were to occur, resulting in additional expenses.
2. **To Federal Government** – If the State were to seek and achieve federal program delegation, there may be some reduction in the resources that are required from the federal government. Although from the federal government’s perspective, the coal combustion residual program is “self-implementing,” meaning that enforcement of these requirements will be by citizen suits (filed either by private citizens or by States), it appears that considerable resources are applied by the EPA to maintain the program. However, because EPA does rely on the program “implementing” itself, delegation to a state may not provide the federal agency savings that would normally be associated with traditional, EPA program delegations.
3. **To Regulated Entities** –Program delegation to the State would have an impact on the regulated utilities and would modify the outcome of this Analysis. Having to deal with the program requirements of only one regulatory agency would seem to provide a reduction in duplication of some requirements and a related cost reduction to the affected utility. Similarly, communications with an agency that is closer geographically is usually a benefit for a regulated entity. In the absence of delegation, the regulated entities would be subject to both state and federal rules on dam safety-related issues and enforcement actions through both citizen suit processes and state regulatory oversight.
4. **To the Environment and Public Safety** - At the present time, there is a self-implementing federal program and separate state rules and laws addressing the dam safety issues relating to coal combustion residuals. Incorporating the federal requirements into state rules may provide additional opportunities to ensure compliance through citizen suit and state agency oversight. If the State agency were to be delegated federal responsibilities, State enforcement of the rules would supersede federal enforcement that relies on-citizen suits in federal court; regulatory oversight would proceed through the State agency. However, having one principal coal combustion residuals program implementation agency may result in a more efficient program delivery, a reduction in taxpayer resources applied to the coal combustion residual program, and more thorough and consistent enforcement.

# CCR Dam Safety Rule

## F. Letters Received Related to Dam Safety

**COMMENTS OF DUKE ENERGY**

on the

**North Carolina Department of Environmental Quality's Proposed Rules Relating  
to**

**The Disposal and Recycling of Coal Combustion Residuals  
(15A N.C.A.C. 13B .2001 *et al.*)**

**&**

**Additional Requirements for Dams that Impound Coal Combustion Residuals  
(15A N.C.A.C. 02K .0224)**

Submitted to:

**Ellen Lorscheider  
Deputy Director Division of Waste Management  
1646 Mail Service Center  
Raleigh, NC 27699-1646**

E-mail: [publiccomments@ncdenr.gov](mailto:publiccomments@ncdenr.gov)

**October 15, 2018**

# CCR Dam Safety Rule

Duke Energy Business Services LLC (“Duke Energy” or “Company”), on behalf of Duke Energy Carolinas LLC and Duke Energy Progress LLC, submits the enclosed comments to the North Carolina Department of Environmental Quality’s (“DEQ”) Proposed Rules Relating to the Disposal and Recycling of Coal Combustion Residuals and Additional Requirements for Dams that Impound Coal Combustion Residuals (“Proposed Rules”).

Duke Energy has long supported the regulation of coal combustion residuals (“CCR”) as nonhazardous waste under Subtitle D of the Resource Conservation and Recovery Act (“RCRA”), and welcomes the opportunity to provide comment on the Proposed Rules. Regulatory certainty is of utmost importance as we continue to make investments on behalf of our customers to comply with state and federal CCR regulations. To that end, Duke Energy has been diligently working to install the necessary systems to transition to dry ash management, further enhance the structural stability of dams, and dewater and safely close coal ash surface impoundments.

Headquartered in Charlotte, N.C., Duke Energy’s Electric Utilities and Infrastructure business unit serves approximately 3.4 million customers in North Carolina. At such time the Coal Ash Management Act of 2014 (“CAMA”) was promulgated, Duke Energy had 31 CCR surface impoundments in its coal-fired fleet across North Carolina and eight operational CCR landfills. The Company is making significant investments in these facilities to comply with the CAMA and is irrevocably on the path toward closure of all ash basins in the state. In fact, two basins in the state (Asheville 1982 Basin and Cliffside Units 1-4 Basin) have already been completely excavated, and Duke Energy is nearing completion of the two ash basins at Riverbend. At the same time, we continue to move toward closure of the 1964 basin at Asheville, as well as the ash basins at our Dan River and Sutton plants.

The outcome of this rulemaking is extremely important to Duke Energy and its customers, and the Company appreciates DEQ’s efforts to amend North Carolina’s solid waste and dam rules to align the requirements with the authorities provided by the Water Infrastructure Improvements for the Nation Act (“WIIN Act”). The WIIN Act fundamentally changed the statutory authority underpinning the federal Disposal of Coal Combustion Residuals From Electric Utilities rule at 40 C.F.R. Part 257 (“CCR Rule”) by giving states the authority to implement and enforce the CCR Rule through state permit programs. It is, therefore, logical to amend the state rules to incorporate the federal criteria and establish other criteria that EPA determines are at least as protective as the criteria in the CCR Rule. Although this rulemaking is only a first step for the state to align its CCR management program with the CCR Rule, the ultimate approval of a North Carolina CCR permit program by EPA will allow common-sense, site-specific solutions that protect the environment under a proven regulatory construct.

# CCR Dam Safety Rule

*Most of the comments from Duke Energy were on proposed rules in 15A NCAC 13B .2001-.2018 relating to the Coal Combustion Residuals Management and are covered in a separate Report of Proceedings. Therefore, only the comments related to the Dam Safety rules are included in this document. [Hyperlink to full letter.](#)*

## **Additional Requirements for Dams that Impound Coal Combustion Residuals (15A N.C.A.C. 02K .0224)**

1. Proposed Section .0224(a)(2): The proposed definition of “CCR unit” does not include an exemption for basins that have been closed, including those that have been closed by leaving CCR in place. Duke Energy suggests that the final state rule expressly exempt closed CCR surface impoundments from the definition of “CCR unit” under this section.
2. Proposed Section .0224(b)(2) would provide that the additional dam requirements will apply to a CCR unit that “contains residuals to an elevation of five feet or more above the downstream toe of the structure and that has a storage volume of 20 acre-feet or more. . . .” This would require Duke Energy to send structural stability assessments to DEQ for the 1978 and 1985 basins at Cape Fear, which are currently exempt from the CCR Rule. As a result of the United States Court of Appeals for the District of Columbia Circuit’s decision in *Utility Solid Waste Activities Group v. EPA* (No. 15-1219), EPA must undertake a rulemaking to make changes to the CCR Rule to implement the court’s judgment regarding the regulation of legacy impoundments. In light of the fact that the Company must close these impoundments pursuant to CAMA, combined with the uncertainty of how they ultimately will be regulated under the CCR Rule, Duke Energy suggests exempting inactive impoundments at closed power plants and incorporating EPA’s new standards regulating these units once EPA promulgates a final rule regulating legacy ponds.
3. Proposed Section .0224(c)(2) would provide that “a qualified engineer, or person under his or her responsible charge, shall conduct monitoring of all instrumentation supporting the operation of the CCR unit no less than once per month according to the standards listed under 40 CFR 257.83(a). . . .” Duke Energy suggests defining “instrumentation” and explicitly delineating what equipment must be monitored on a monthly basis.
4. Proposed Section .0224(d) would provide that all CCR dams shall have a spillway system with capacity to pass a flow resulting from a design flood as specified in the Minimum Spillway Design Flood for CCR Units Table. The hazard categories in the table are based on 15A NCAC 02K .0105, which notes that high hazard dams are “located where failure will likely cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads.” DEQ takes the position that a dam is classified as high hazard if it has the potential to cause economic damage greater than \$200,000. See Documents related to HAZARD

# CCR Dam Safety Rule

CLASSIFICATION, DEQ (Feb. 14, 2018). If the \$200,000 damage threshold is the basis for classification, then all CCR basins will be classified as high hazard and subject to Probable Maximum Flood ("PMF") rather than fractional PMF, to which Duke Energy's CCR units are currently subject. Duke Energy suggests distinguishing between an existing impoundment and a closed, capped impoundment when determining the hazard classification.

5. Proposed Section .0224(e)(4) would require stability assessments for CCR units with downstream slopes that may be inundated by the pool of an adjacent water body. The assessments shall include conditions for maximum pool loading, minimum pool loading, and rapid drawdown of the adjacent waterbody. As written, this section will require structural stability assessments for closed impoundments, which would not have any pool loading. Duke Energy suggests exempting closed impoundments from this requirement.

In closing, Duke Energy appreciates the opportunity to comment on the Proposed Rules. The comments we have included herein are intended to highlight areas for additional clarification and specificity. We believe that implementing the CCR Rule through an enforceable permit program will provide regulatory certainty as we work toward safely closing all ash basins across our service territories and make critical investments on behalf of our customers.

# CCR Dam Safety Rule

## SOUTHERN ENVIRONMENTAL LAW CENTER

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October 15, 2018

### VIA E-MAIL AND U.S. MAIL

Ellen Lorscheider  
Deputy Director  
Division of Waste Management  
1646 Mail Service Center  
Raleigh, NC 27699-1646  
publiccomments@ncdenr.gov

**Re: Proposed Rules for Coal Combustion Residual (“CCR”) and Coal Combustion Product (“CCP”) Management**

Dear Ms. Lorscheider:

On behalf of Appalachian Voices, Cape Fear River Watch, Catawba Riverkeeper Foundation, Dan River Basin Association, MountainTrue, Roanoke River Basin Association, Sierra Club, Sound Rivers, Waccamaw Riverkeeper, Waterkeeper Alliance, Winyah Rivers Foundation, and itself, the Southern Environmental Law Center submits the following comments to the North Carolina Department of Environmental Quality (“DEQ”) on its proposed coal combustion residual (“CCR”) rules. In response to an earlier draft of the proposed rules circulated in connection with public meetings held last winter, we submitted written comments in March and April 2018. We incorporate those comments here. Please find them attached for your reference (see Attachments 1 and 2).

### I. Introduction

The proposed rules contain many good provisions, and we do not object to strong state rules for coal ash facilities. We agree, as DEQ highlights in its regulatory impact analysis, that strong, consistent state rules are necessary to protect the people and waters of North Carolina, particularly because the federal rule is in flux. For example, the water protection requirements set forth in Section .2013(i) are clear and strong—particularly subparagraph (3), which explicitly prohibits disposing of solid waste in water. We support many of the protections contained in these standards, and note in these comments gaps in protections and areas for improvement.

However strong the new state rules may be, two fundamental issues remain. First, the easiest and best way to protect the people and waters of North Carolina is to require Duke Energy to clean up its coal ash. By court order, criminal plea agreement, settlement agreement, and statute, Duke Energy is already required to excavate more than 50 million tons of coal ash at eight sites across North Carolina and every site in South Carolina. The communities around every leaking coal ash pond in the state deserve the same protections. Duke Energy must be

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# CCR Dam Safety Rule

*This letter was addressed to the Division of Waste Management whose proposed rules do not specifically address dam safety issues. However the letter contained a section on Emergency Action Plans (EAPs) which do relate to dam safety. Therefore, the portions of the October 15, 2018 letter that relate to EAPs are included here and addressed in Table B-3. [Hyperlink to full letter.](#)*

Excerpted text

## **b. Emergency Action Plans**

The proposed rules leave out the federal requirement that Duke Energy and other utilities post online Emergency Action Plans and maps showing what would happen if one of these unlined, leaking, earthen coal ash lagoons were to fail and spill coal ash into our waters. Duke Energy has already tried to keep the public in the dark in violation of a federal disclosure requirement, before conservation groups enforced the law against the violation. North Carolina needs to hold Duke Energy accountable going forward. Incorporating this requirement into state rules underscores the importance of transparency and public information regarding the dangerous storage of coal ash near waterways. This transparency should be a part of North Carolina's rules, apart from and in addition to the requirement currently present in the federal rule.

Under 40 C.F.R. § 257.107, Duke Energy and other owners or operators of coal ash lagoons “must maintain a publicly accessible Internet site (CCR Web site)” containing information specified in the Rule. On this website, utilities must publish an Emergency Action Plan for high hazard and significant hazard coal ash lagoon dams. *Id.* § 257.105 (f)(5). At a minimum the Emergency Action Plan must “include a map which delineates the downstream area which would be affected in the event of a CCR unit failure and a physical description of the CCR unit”; “define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving the CCR unit”; and “provide contact information of emergency responders.” *Id.* § 257.73. *It's a 'Loaded Dice' Problem*, NY TIMES, Oct. 5, 2018, available at <https://www.nytimes.com/2018/10/05/climate/rain-floods-extreme-weather.html>.

Although the draft rules incorporate the basic requirement to have a public website (Section .2017(c)), there is no mention of an emergency action plan. DEQ must make clear that North Carolina's rules include the requirement to create, maintain, and make public an emergency action plan showing the downstream areas that would be flooded in the event of a dam failure catastrophe. Access to information is a key part of the federal CCR Rule and must also be a key part of North Carolina's rules. As EPA has explained in the Preamble to the Rule, “the establishment and maintenance of this information . . . on a publicly accessible Internet site” is important because citizens need “access to all of the information necessary to show that the rule has been implemented in accordance with the regulatory requirements.” 80 Fed. Reg. 21,302, 21,426. Any regulations DEQ adopts must recognize the public's need to know the coal ash risks in their communities.

These public information requirements are all the more important in North Carolina, where Duke Energy has already violated the federal requirements to post



# CCR Dam Safety Rule

complete and public Emergency Action Plans. Instead of complying with the requirement like every other major utility in the country, Duke Energy posted plans with blacked-out maps of the inundation risks. It also redacted contact information for responsible personnel in the event of a safety emergency. Only after conservation groups discovered Duke Energy's illegal hiding of this critical information and notified Duke Energy that they intended to sue, Duke Energy gave in and posted unredacted maps and information. DEQ must make sure that this dam safety information remains up to date and available to the communities around and downstream of Duke Energy's coal ash ponds.

## CLEAN WATER FOR NORTH CAROLINA

**From:** Hope Taylor <[hope@cwfn.org](mailto:hope@cwfn.org)>

**Sent:** Monday, October 15, 2018 10:44 PM

**To:** SVC\_DENR.publiccomments <[publiccomments@ncdenr.gov](mailto:publiccomments@ncdenr.gov)>

**Subject:** [External] CCR Rules: Clean Water for NC comments on draft rules for Dams that Impound CCR

**CAUTION:** External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to [Report Spam](#).

Andrew Brooks, Dam Safety Engineer  
Division of Mining Energy and Land Resources  
NC Dept. of Environmental Quality

Dear Mr. Brooks:

Please accept these comments from Clean Water for NC on the draft rules for Dams that Impound Coal Combustion Residuals. Clean Water for NC is a 34 year old statewide, science based Environmental Justice Organization with members in over 60 North Carolina counties. We have been involved in advocacy on both statewide coal ash issues and in working for safe replacement water supplies for residents close to 3 Duke facilities with significant coal ash deposits: Asheville Plant, Cliffside as well as residents around Roxboro and Mayo plants in Person County.

### c) Inspections and Structural Stability Assessments

The at least weekly inspections for changes in flow or color of all discharges from hydraulic structures that pass underneath deposited CCR are important and, along with a decision tree of action steps, must be rigorously documented to prevent uncontrolled release of CCR associated materials such as occurred on the Dan River in 2014. The monthly inspections of all instrumentation "supporting" the operation of a CCR unity are also critical and a detailed

## CCR Dam Safety Rule

checklist of minimum instrumentation and expected ranges of indicators for safe operation and reliability must be specified.

An annual inspection of all hydraulic structures underlying the base of the CCR unit is probably only marginally adequate to ensure structural integrity. The frequency of inspection should be increased and specified parameters to indicate structural integrity should be included in the rules. The structural stability assessment should be carried out every two or three years, during which time loading and hydraulic conditions in the CCR unit could have changed significantly.

### e) safety factor assessments

Each of the safety factors used in assessing the structural stability of a CCR unit, including the calculated static factor of safety for the long-term, maximum storage pool loading, the calculated static factor of safety under the maximum surcharge pool loading condition, the calculated seismic factor of safety, and the calculated liquefaction factor of safety must be rigorously re-evaluated at least every two years to assure that the factors are well characterized as to their contribution to structural stability, and generously protective of human safety and the environment.

Thank you very much for your kind attention to these concerns,

Hope Taylor, MSPH  
*Executive Director*  
*Clean Water for NC*  
*3326 Guess Rd. Suite 105*  
*Durham, NC 27705*  
*(919) 401-9600*