

White Paper on CCR Rule Closure-in-Place

When EPA promulgated the CCR rule in 2015, it intentionally provided facilities the flexibility to determine whether CCR units were closed by leaving CCR in place (“closure-in-place”) or closed by removing CCR (“closure-by-removal”). The Agency explained in both the 2010 proposed rule and the 2015 final rule that most ash ponds were expected to close in place. The preamble to the final rule states:

As EPA acknowledged in the proposal, most facilities will likely not [] close their CCR units [by removal] given the expense and difficulty of such an operation. Because [closure by removal] is generally preferable from the standpoint of land re-use and redevelopment, EPA has explicitly identified this as an acceptable means of closing a CCR unit. However, both methods of closure (i.e., [closure by removal] and closure with waste in place) can be equally protective, provided they are conducted properly. Thus, consistent with the proposal, the final rule allows the owner or operator to determine whether [closure by removal] or closure with the waste in place is appropriate for their particular unit.¹

EPA’s consistent statements on closure methods in the proposed rule and the final rule, spanning 5 years, shows: (1) that the Agency intended to allow any unit to be closed in place, at the discretion of the owner or operator and in accordance with the requirements, and (2) that the performance standards were not intended to be impossible to achieve for any given unit. In parallel, the protectiveness of closures in place is buttressed by the rule’s post-closure care, groundwater monitoring, and when necessary, corrective action provisions.

Unfortunately, Agency statements interpreting the closure-in-place performance standard and certain amendments to that standard in the 2024 legacy rule² have caused increasing confusion in the regulated community on the closure-in-place performance standard. This confusion presents significant practical implementation challenges that unduly burden operators and create unnecessary compliance risks and liability concerns. These challenges, even when possible to overcome from a technical standpoint, add significant costs to the closure process without enhancing overall environmental protection.

Specifically, when the 2015 rule was promulgated, it was understood that the requirement to remove free liquids prior to installation of the cap was primarily focused on stabilization of the waste to support the final cover system, while the general closure performance standard—coupled with groundwater corrective action—was aimed at addressing ongoing and future releases to groundwater from the unit. This understanding was in line with industry experience in impoundment closure prior to promulgation of the CCR rule and with EPA’s explanation of a similar standard in the Subtitle C context. Subsequently, however, EPA announced that the CCR rule required complete elimination of *all* liquids prior to installation of the cover system, including all groundwater and porewater. To “clarify” this position, EPA amended the rule in 2024 to include

¹ 80 Fed. Reg. 21302, 21412 (Apr. 17, 2015).

² 89 Fed. Reg. 38950 (May 8, 2024).

a new definition for “liquids” that encompasses “all of the various types of liquids that may be present in a CCR unit, including water that was sluiced into an impoundment along with CCR, precipitation, surface water, groundwater, and any other form of water that has migrated into the impoundment, which may be found as free water or standing water ponded above CCR or porewater intermingled with CCR.”

EPA’s newly announced requirement to eliminate all liquids, including groundwater and porewater, prior to installing the final cover system is not possible due to various reasons, including ongoing precipitation into an open unit during the closure process and the rule’s strict timeframes for completing closure. Nor is it necessary to achieve the RCRA Subtitle D “protectiveness” standard,³ as the general closure-in-place performance standard in § 257.102(d)(1), along with the rule’s separate groundwater monitoring, corrective action and post-closure care requirements, are intended to address any remaining risk to groundwater from the closed unit.

Based on industry experience implementing the CCR rule over the past decade, we recommend that EPA clarify the existing closure-in-place performance standard with specific textual amendments and add an alternative closure-in-place performance standard. Specifically, EPA should clarify that the free liquids removal performance standard is achieved when the unit has been sufficiently dewatered to create a stable base for construction of the final cover system, restoring and codifying a consistent and technically feasible interpretation of closure-in-place. The alternative performance standard would provide EPA and states with another pathway to ensure environmental risks are fully addressed while taking into account the conditions specific to each site and closure. The following rule revisions would increase clarity in implementation of the rule, which maintains environmental protection and eliminates unnecessary costs:

1. Withdraw the 2024 definition of “liquids” due to procedural error.

EPA failed to provide proper notice and comment on the final definition of “liquids.” The proposed rule did not contain regulatory text to define “liquid,” but the preamble of the proposed rule explained that EPA considered “liquid” to include “groundwater that has migrated into the impoundment *due to the construction of the unit.*” Like the preamble, the final rule signed by the Administrator on April 24, 2024, defined “liquids” to include “groundwater that has migrated into the impoundment *due to the construction of the unit.*” But the rule ultimately published in the Federal Register on May 8, 2024, contains a different definition of “liquids” that deletes this limiting language and adds expanding language: “Liquids ... encompasses all of the various types of liquids that may be present in a CCR unit, including water that was sluiced into an impoundment along with CCR, precipitation, surface water, and groundwater, *and any other form of water* that has migrated into the impoundment ~~due to the construction of the unit~~, which may be found as

³ RCRA Subtitle D directs EPA to promulgate criteria distinguishing “sanitary landfills,” which are permissible under the statute, from “open dumps,” which are prohibited. 42 U.S.C. § 6944(a); *see id.* § 6903(14), (28). The statutory baseline for EPA’s criteria for sanitary landfills is that, at a minimum, they “shall provide that a facility may be classified as a sanitary landfill and not an open dump only if there is no reasonable probability of adverse effects on health or the environment from disposal of solid waste at such facility.” *Id.* § 6944(a). This is typically referred to as the RCRA Subtitle D “protectiveness standard.”

free water or standing water ponded above CCR or porewater intermingled with CCR.” No explanation for this change was ever provided by EPA.

The public, including regulated entities and independent professional engineers, never had the opportunity to review and comment on the adopted language before the final rule was published in the Federal Register. This was in violation of the Administrative Procedure Act (“APA”).

2. Clarify the existing performance standard for closure-in-place.

EPA should revise the text in § 257.102(d)(2)(i) to make clear that removal of free liquids is intended to ensure a stabilized base prior to installation of the cover system: *“To the extent necessary to create a stable base sufficient to support a final cover system, eliminate free liquids by removing liquid waste or solidifying the remaining wastes and waste residues.”*

This is in line with the original intent of the performance standard in the 2015 rule. Any potential risk to groundwater would be adequately addressed through the general performance standard in § 257.102(d)(1), along with the rule’s separate groundwater monitoring, corrective action and post-closure care requirements.

Alternatively, EPA could revise the text to conform with the infiltration/release performance standard, as follows: *“Control, minimize or eliminate free liquids by removing liquid wastes to the maximum extent feasible or solidifying the remaining wastes and waste residues.”*

3. Adopt a new alternative closure-in-place performance standard.

EPA should adopt a new alternative risk-based closure-in-place performance standard that allows a unit to be closed in contact with groundwater when there is no reasonable probability of adverse effects on health or the environment. For example, the Edison Electric Institute submitted a paper to EPA on June 6, 2025, *Edison Electric Institute Site-Specific Closure Alternative Performance Standard*, that includes this type of alternative closure standard. Proposed text follows: “If free liquids cannot be eliminated prior to installing the final cover system, the owner or operator must prepare a site-specific risk assessment demonstrating that the hydraulic condition of the unit presents no reasonable probability of adverse effects on human health or the environment.”

Below, we further detail why the closure-in-place performance standard as articulated by EPA is infeasible and explains why site-specific tailoring alternatives are necessary and permissible under RCRA.

Need for Technical Feasibility

The closure-in-place free liquids performance standard, coupled with the 2024 definition of “liquids,” has been applied by some regulators and public interest groups in a way that was not

contemplated when the 2015 rule was issued, creating regulatory confusion and causing unnecessary compliance risks for regulated facilities. Simply put, the “liquids” definition, as some regulators and public interest groups have attempted to apply it, makes it impossible to ever install a cover system.

As a simple example, in rainy areas, it is impossible to ensure that a unit remains completely dry before installing a cover system because precipitation constantly provides additional water. In the 2015 rule, EPA clearly did not intend to finalize an impossible standard. Further, it is well established that agencies are prohibited from finalizing standards that are impossible to meet.⁴

In fact, installation of the cover system provides significant benefits to water removal during closure. There should therefore not be any regulatory barriers to installing a cap once the unit is stable enough to support the cover system. Installing the cover system once stability is achieved controls and minimizes infiltration from precipitation and often promotes further dewatering and minimizes groundwater flow within the unit. Thus, installing the cover system when free liquids have been removed and the unit is stable to support the cover system (and not waiting until all liquids have been removed, if that is even possible) produces the outcomes that EPA intended all along.

Further exacerbating confusion is the frequent misuse of the terms “liquids” and “free liquids.” While EPA rule language has specific definitions for liquids and free liquids, the two are often carelessly interchanged when discussing the closure-in-place performance standard. Free liquids are “liquids that readily separate from the solid portion of a waste under ambient temperature and pressure.”⁵ The plain meaning of the word “readily” is “without much difficulty.”⁶ In other words, free liquids are liquids that are easy to remove from the solid portion of the waste. In fact, once the free liquids have been removed from a CCR unit enough to ensure cover system stability, additional extraction of liquids becomes increasingly difficult if not impossible. What remains is groundwater. As a technical matter, *some* groundwater may act as a free liquid, but depending on site-specific conditions, not all groundwater in a unit is readily separable from solids under ambient temperature and pressure. This is inherently site specific and closure specific, so any attempt to characterize *all* groundwater as a free liquid in *all* circumstances is inaccurate.

Consistency with EPA Pillars and Executive Orders

The clarifications and updates suggested in this document are consistent with EPA’s Powering the Great American Comeback initiative. Specifically, the updates support Pillar 1 (“Clean Air, Land, and Water for Every American”) by preserving environmental protection, Pillar 2 (“Restore American Energy Dominance”) by reducing unnecessary costs that prevent American electricity from being cost competitive and that saddle everyday Americans with costs that do not improve their lives and communities, and Pillar 3 (“Permitting Reform, Cooperative Federalism, and Cross-Agency Partnership”) by providing greater clarity and transparency in implementation of a

⁴ See, e.g., *Alliance for Cannabis Therapeutics v. Drug Enforcement Admin.*, 930 F.2d 936, 940 (D.C. Cir. 1991) (“Impossible requirements imposed by an agency are perforce unreasonable” and, therefore, arbitrary and capricious).

⁵ See 40 C.F.R. § 257.53.

⁶ *Readily*, Merriam-Webster Dictionary, <https://www.merriam-webster.com/dictionary/readily> (last visited Dec. 8, 2025).

complicated program. In addition, the suggested updates are consistent with the January 20, 2025 Executive Order 14154, Unleashing American Energy, which seeks to eliminate unreasonable regulatory burdens on the energy sector.

The CCR rule imposes significant costs on electricity providers, and thus consumers, while not contributing to electricity production. Consistent with this Administration's goals, EPA should minimize any extra costs related to the CCR program that do not offer further meaningful environmental protection. The suggested updates in this document will help clarify requirements and reduce the potential for increased and unnecessary costs of the program.

A Risk-Based Alternative is Legally Sound

EPA promulgated the first national regulations governing coal ash under RCRA Subtitle D in 2015.⁷ Because the rule was self-implementing, EPA determined that it was inappropriate to allow regulated entities to account for site-specific characteristics of individual CCR units due to the lack of regulatory oversight. Instead, the Agency chose to impose requirements that could be implemented through a "one-size-fits-all" regulatory regime that relied on the judgment of professional engineers to determine how each site could comply with relatively general performance standards. In fact, when it finalized the rule, EPA acknowledged that it removed certain provisions from the original 2010 proposal that would have allowed site-specific tailoring of the performance standards because there was no regulatory authority overseeing implementation of the rule through an enforceable permit program.⁸ Thus, while the resulting closure plans, designed and certified by qualified professional engineers, are necessarily site-specific and unique, the designs are intended to comply with a single set of requirements. It is understandable that applying a single set of requirements to each unique CCR unit closure can be challenging for regulated entities.

A year later, in 2016, Congress enacted the Water Infrastructure Improvements for the Nation Act (the "WIIN Act"),⁹ which transformed the 2015 CCR rule from a self-implementing program to one that Congress envisioned would be implemented through either a state or EPA permit program, much like other traditional federal environmental programs.¹⁰ Under the WIIN Act, states may request approval from EPA to operate their own CCR permit programs in lieu of the self-implementing federal rule, including through alternative state standards tailored to site-specific circumstances so long as they are "at least as protective as" the federal rule.¹¹ Likewise, EPA must adopt a federal permit program for non-participating states, thereby enabling EPA to do the same at the federal level.¹²

After passage of the WIIN Act, EPA proposed amendments to the 2015 CCR rule that, among other things, would incorporate certain risk-based concepts consistent with the new authorities

⁷ 80 Fed. Reg. 21302 (April 17, 2015).

⁸ *See id.* at 21398.

⁹ Pub. Law 114-322, §2301, 130 Stat. 1628, 1736-40 (2016).

¹⁰ EPA has approved four state permit programs (Oklahoma, Georgia, Texas, and North Dakota) and disapproved a fifth (Alabama). EPA has also proposed to approve a state permit program for Wyoming, but has not yet taken final action.

¹¹ *See* 42 U.S.C. § 6945(d)(1)(B)-(C).

¹² EPA has proposed but not yet finalized a federal permit program rule. *See* 85 Fed. Reg. 9940 (Feb. 20, 2020).

granted by Congress.¹³ For example, EPA proposed to empower participating states to waive corrective action requirements where they determine that (1) the groundwater is already impacted such that remediation of the CCR unit would provide no significant reduction in risk to actual or potential receptors, or (2) the groundwater is not currently or reasonably expected to be a source of drinking water and is not otherwise hydraulically connected to waters that would also experience exceedances.¹⁴ When EPA finalized the Phase One rule, it adopted two of the proposed risk-based concepts, deferring the others to future rulemaking.¹⁵

EPA's CCR rulemaking record makes clear that while EPA believed site-specific tailoring—such as the revised and alternative performance standard options presented in this paper—was not appropriate in a self-implementing program with no regulatory oversight, Congress subsequently authorized EPA to both enforce the rule and implement the rule through permit programs under the WIIN Act. EPA later proposed and finalized different tailoring concepts based on that authority. Given EPA's enforcement authority and ability to implement the program through permits, it is both appropriate and reasonable to now allow for site-specific tailoring to individual CCR unit characteristics and risks.

An alternative closure-in-place performance standard based on site-specific conditions is not precluded by the D.C. Circuit decision in *USWAG v. EPA*.¹⁶ The central issue in that case was whether unlined impoundments should be allowed to continue operating unless and until they were shown to cause groundwater contamination. Based on the demonstrated risks of leakage associated with continued operation of such impoundments, the court vacated and remanded the original rule provision that delayed their closure, potentially indefinitely. EPA subsequently revised the rule to mandate that all unlined impoundments cease operating in April 2021 and begin the closure process.¹⁷ As a result, the risk of continued operation is no longer pertinent to most unlined CCR impoundments. Indeed, nearly all of those impoundments are already in the process of closing (if not already closed), and have been for several years, thereby dramatically changing the nature and extent of risk (if any) compared to the evidence before the court in 2018.¹⁸

¹³ See Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Amendments to the National Minimum Criteria (Phase One); Proposed Rule, 83 Fed. Reg. 11584 (March 15, 2018).

¹⁴ *Id.* at 11600.

¹⁵ 83 Fed. Reg. 36435 (July 30, 2018) (“Provisions from the proposed rule that are not addressed in this rule will be addressed in a subsequent action.”).

¹⁶ 901 F.3d 414 (D.C. Cir. 2018).

¹⁷ 85 Fed. Reg. 53516 (Aug. 28, 2020) (now codified at 40 C.F.R. § 257.101(a)(1)). Under the amended rule, facilities had an opportunity to file site-specific extension requests by November 30, 2020. See 40 C.F.R. § 257.103(f)(1)–(2). Fifty-seven facilities did so, and a number of their requests remain pending. See [Coal Combustion Residuals \(CCR\) Part A Implementation | US EPA](#). Continued operation of those impoundments is deemed by EPA to be permissible pending final action on the original requests. However, those facilities remain subject to regular groundwater monitoring requirements and timely corrective action (if triggered by an exceedance of groundwater protection standards).

¹⁸ As the court explained in its decision, “[w]hen an unlined impoundment begins to leak, [CCR] will flow through the unit and into the environment unrestrained, such that retrofit or closure of the unit are typically the only corrective action strateg[ies] that [the] EPA can determine will be effective.” 901 F.3d. at 429 (internal citations omitted). Retrofit or closure is precisely what is happening now, all across the country. Moreover, dewatering, which is necessarily the first step in the closure process, eliminates hydraulic head and, together with installation of a final cover system, significantly reduces the risk of infiltration or releases.

Nothing in the D.C. Circuit’s 2018 decision precludes EPA from determining that an alternative closure performance standard is appropriate and will adequately address potential releases from a CCR unit. Further, nothing in the decision precludes EPA from allowing site-specific risk-based determinations.

More recently, the D.C. Circuit was called upon to review interpretations of the 2015 rule that EPA advanced in connection with certain facility-specific determinations proposed in January 2022, including interpretations of the terms “infiltration” and “free liquids” as used in the rule’s closure performance standards. Although the court addressed those terms in its decision, the court ultimately ruled that it lacked jurisdiction to hear industry’s challenges because they were not subject to direct review as a “regulation or requirement” under 42 U.S.C. § 6976(a)(1).¹⁹ Moreover, the court’s analysis of EPA’s closure performance standards would generally support, rather than impede, the alternatives proposed in this paper, enabling closures with engineering measures that control (but do not necessarily eliminate) releases to groundwater.

Conclusion

The closure-in-place performance standard as interpreted by EPA and modified in the legacy CCR rule presents practical implementation challenges for regulated entities. Consistent with this Administration’s priorities, the RCRA Subtitle D protectiveness standard, the WIIN Act and relevant case law, EPA should address these challenges by taking the following regulatory actions:

- Update the existing standard to clarify that removal of free liquids is intended to sufficiently stabilize the waste to support a final cover system, or alternatively, to control, minimize or eliminate free liquids to the maximum extent feasible.
- Amend the rule to incorporate a new risk-based alternative closure-in-place general performance standard that allows facilities to take into account site-specific conditions and closure of a unit.

¹⁹ *Electric Energy, Inc. v. EPA*, 106 F.4th 31 (D.C. Cir. 2024).