UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles **84 Fed. Reg. 40,353 (Aug. 14, 2019)**	)	**Docket ID No. EPA-HQ-OLEM-2018-0524** *Submitted via regulations.gov*

COMMENTS OF EARTHJUSTICE, COMITÉ DIÁLOGO AMBIENTAL, INC., ENVIRONMENTAL INTEGRITY PROJECT, WATERKEEPER ALLIANCE, INC., SIERRA CLUB, SOUTHERN ENVIRONMENTAL LAW CENTER, NATURAL RESOURCES DEFENSE COUNCIL, CLEAN WATER ACTION, CATAWBA RIVERKEEPER FOUNDATION, CITIZENS COAL COUNCIL, CLEAN WATER FOR NORTH CAROLINA, CLEAN WISCONSIN, HOOSIER ENVIRONMENTAL COUNCIL, MONTANA ENVIRONMENTAL INFORMATION CENTER, POTOMAC RIVERKEEPER NETWORK, WATERKEEPERS CHESAPEAKE, WINYAH RIVERS ALLIANCE, PRAIRIE RIVERS NETWORK, YADKIN RIVERKEEPER, AND VIVE BORIKÉN

October 15, 2019

EXECUTIVE SUMMARY

EPA's Phase 2 Proposal[1] was born directly from industry requests and has no justification beyond a reduction in operating costs for the electric utility industry and associated industries. Any short-term cost savings would come at tragic expense in the form of unsafe drinking water, groundwater and surface water contamination, polluted air, and disease caused by exposure to toxic chemicals. The Trump Administration's proposal would significantly weaken environmental protections and endanger the health of Americans nationwide. The EPA's proposal is arbitrary and capricious and fails to meet the protectiveness standard of § 4004(a) of the Resource Conservation and Recovery Act ("RCRA").[2]

The proposed rule eviscerates existing protections for the disposal of coal combustion residuals (CCR or coal ash), the toxic waste generated from the burning of coal by the nation's electric utility industry. EPA proposes to lift essential safeguards despite the widespread harm to health and the environment caused by coal ash, one of the largest industrial wastestreams in the nation. The utility industry's own data show that *91 percent* of coal plants are currently contaminating groundwater with hazardous coal ash toxins, such as arsenic and lithium, to levels exceeding EPA's own health standards.[3] Data also reveal that *both lined and unlined* coal ash landfills are leaking. No other industry can claim such a heinous record.

Because of the high risk of harm from the release of hazardous substances, the use of unencapsulated coal ash should be banned. Coal ash beneficial use projects are fundamentally different than coal ash landfills, and these differences warrant its prohibition, or at the very least, much greater regulation than is applied to coal ash landfills. Any placement of coal ash on land – even placement that includes liners and cover – requires the certainty of expert long-term monitoring and maintenance to ensure the buried ash is not leaking, disturbed, uncovered or abandoned. Most landowners are poorly equipped, both technically and financially, to carry out these challenges. As a result, landowners themselves, as well as the surrounding community, may be harmed by the presence of coal ash as fill. Mismanagement has resulted in significant harm to human health and the environment, as evidenced by the many fill sites where covers have eroded, water has been contaminated, and sites have been abandoned. This damage has occurred across the U.S., from Indiana to Puerto Rico. EPA must treat the placement of coal ash on land, in any volume or location, as the dangerous deposition of a hazardous substance, known to have a high likelihood of creating highly toxic air and water pollution and presenting substantial risk of direct contact and ingestion.

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[1] Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles, 84 Fed. Reg. 40,353 (Aug. 14, 2019), hereinafter "Phase 2 Proposal."

[2] 42 U.S.C. § 6901 *et seq.*

[3] Environmental Integrity Project & Earthjustice, Coal's Poisonous Legacy: Groundwater Contaminated by Coal Ash Across the U.S. ((Mar. 2, 2019, rev. July 11, 2019) ("Coal's Poisonous Legacy"), *available at* https://www.environmentalintegrity.org/reports/coals-poisonous-legacy/.

Further, the Trump EPA is in a terrible hurry to finalize this proposed rollback.[4] The administration is so rushed that it has run afoul of legal requirements to provide all Americans the opportunity to participate in its rulemaking. EPA ignored multiple requests to translate the proposal into Spanish, extend the comment period, and hold a public hearing in Puerto Rico -- despite the fact that the most polluting coal ash pile and dozens of toxic coal ash fill sites are currently threatening Puerto Rico residents.

The Phase 2 Proposal:

- Allows unlimited use of toxic coal ash as a substitute for clean fill with no regulatory controls or oversight. Placement of coal ash would not be subject to public notice, monitoring, dust controls or other safeguards to prevent the release of contaminants to air, soil and water.

- Removes critical regulatory protections from CCR waste piles that are currently causing significant air and water pollution. The proposal would allow owners of current CCR waste piles to escape responsibility to clean up contaminated groundwater.

To meet the statutory protectiveness standard of RCRA, EPA must:

- Regulate the use of CCR as fill as "disposal" and subject such fills to all of the protections required at new CCR landfills, including the installation of liners, leachate collection, groundwater monitoring, and caps, as well at the requirement to complete an environmental demonstration. Commenters request a complete prohibition on the use of CCR as fill.

- Retain current safeguards at onsite CCR waste piles, which are currently regulated as landfills and subject to all the requirements applicable to landfills. In addition, EPA must strengthen dust controls at CCR piles by requiring cover of all waste piles.

- Improve significantly the transparency requirements of the CCR Rule to increase the public's understanding of the extent of water pollution caused by coal ash and to facilitate public participation in the implementation of the Rule;

- Add boron to Appendix IV and establish a groundwater protection standard for boron that protects human and ecological health;

- Reopen the comment period and publish the proposed rule and associated documents in Spanish to allow the full participation of residents of Puerto Rico who will be harmed by this proposed rule.

- Comply immediately with Executive Order 12,898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to

[4] Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21,302 (Apr. 17, 2015), hereinafter "2015 CCR Rule" or "CCR Rule."

prevent disproportionately high and adverse health or environmental impact on low-income communities and communities of color.

Failure to allow Americans to exercise their legal right of participation in agency rulemakings and the failure to retract and amend the proposal to comply with statutory standards of protectiveness for health and the environment will result in litigation by those who stand to be injured by this reckless and dangerous regulatory proposal.

Submitted by:

Earthjustice, Comité Diálogo Ambiental, Inc., Environmental Integrity Project, Waterkeeper Alliance, Inc., Sierra Club, Southern Environmental Law Center, Natural Resources Defense Council, Clean Water Action, Catawba Riverkeeper Foundation, Citizens Coal Council, Clean Water for North Carolina, Clean Wisconsin, Hoosier Environmental Council, Montana Environmental Information Center, Potomac Riverkeeper Network, Waterkeepers Chesapeake, Winyah Rivers Alliance, Prairie Rivers Network, Yadkin Riverkeeper, and Vive Borikén

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I. FACTUAL BASIS

A. Substantial Quantities of Unencapsulated CCR Are Placed on Land Annually in the Guise of "Beneficial Use."

Over the course of more than a century of burning coal to generate electricity, immense volumes of coal ash have been placed on land for disposal and reuse purposes. The American Coal Ash Association ("ACAA") has provided estimates of coal ash generation and use in the U.S. from 1966 to 2017.[5] Their data indicate that:

- From 1966 to 2017, U.S. electric utility companies generated approximately **4.5 billion tons** of coal ash; and
- From 1966 to 2017, approximately **1.5 billion tons** of coal ash, an average of one third (33 percent) of the total volume generated, was used "beneficially" in some manner, which includes placement on the ground as "structural fill."

Although detailed data regarding types of coal ash "beneficial" use are not publicly available for the period 1966 to 1999, the ACAA has published and posted annual "Production and Use Reports" for coal ash generated and used between 2000 and 2017.[6] These detailed reports provide specific data that reveal the enormous quantities of ash placed on the ground as "fill." Between 2000 and 2017, the reports indicate that approximately 118.4 million tons were used for "structural fill/embankments."[7] These reports, however, underestimate the total amount of coal ash used in fill projects, because the ACAA data represent volumes that are reported voluntarily by some users, but neither states nor EPA track all coal ash fill applications. In addition, this figure represents an underestimation of the volume of unencapsulated CCR placed on land because other applications, such as agricultural use, soil modification/stabilization, and snow and ice control, are not included in this total.

Despite the certain underestimation of the total amount of coal ash used as fill during the last 18 years, the volume reported by ACAA is enormous. 118.4 million tons of coal ash could bury the entire state of Kentucky roughly three feet deep in solid waste. Imagined another way, this volume of coal ash could cover a six-lane highway, one foot deep, for nearly 10,000 miles – stretching from Washington, D.C. to Sydney, Australia.

Furthermore, according to the ACAA production and use reports, the percentage of coal ash used for structural fill was approximately 17 percent of the total amount of CCR used in the time period between 2000 and 2010. Therefore, based on the ACAA's estimate of 1.5 billion

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[5] American Road & Transportation Builders Association, ACAA, Production and Use of Coal Combustion Products in the U.S.: Market Forecast Through 2023, at 11 & 14, Figs. 1-1 & 2-1 (June 2015); ACAA, Ash at Work: Applications, Science and Sustainability of Coal Ash, Issue 1, at 14, Chart 1 (2008); ACAA, Coal Combustion Product (CCP) Production & Use Survey Reports, 2014 – 2017, *available at* https://www.acaa-usa.org/publications/productionusereports.aspx. The underlying estimates are available in "ACAA Prod-Util Estimates_1966-2017.xlsx" (attached).

[6] *See* ACAA, Coal Combustion Product (CCP) Production & Use Survey Reports, 2000 – 2017, *available at* https://www.acaa-usa.org/publications/productionusereports.aspx.

[7] *Id.*

tons of coal ash "beneficially" used from 1966 to 2017, approximately 255 million tons were likely used nationally as structural fill over that same time period.[8] As discussed in detail in these comments, most states do not regulate the use of coal ash as fill (*see* Section II., *infra*), and consequently there are few regulations requiring liners, groundwater monitoring, testing of ash, or characterization of placement sites. Furthermore, very few states prohibit the placement of ash near groundwater, waterbodies, drinking water wells, homes, unstable areas or floodplains. Thus both the historic and continuing use of coal ash as fill presents a substantial risk to health and the environment, because data indicate that CCR, which leaches hazardous substances, has caused significant contamination at hundreds of sites across the nation.

B. CCR Placed on Land as "Beneficial Use" Has Caused Serious Harm to Human Health and the Environment.

Coal ash placed on the land has contaminated groundwater and surface water and polluted air at numerous sites across the nation. In fact, EPA admitted in the 2015 CCR Rule that the number of damage cases resulting from placement of CCR was "*by far the largest number of documented cases in the history of the RCRA program*,"[9] and many of these EPA-confirmed cases of damage to health and the environment were actually fill sites. EPA also specifically likened fill sites to disposal in the 2015 CCR Rule, stating that "a number of proven damage cases involve the large-scale placement, *akin to disposal*, of CCRs, under the guise of 'beneficial use.' The 'beneficial use' in these cases involved the filling of old, unlined quarries or gravel pits, or the regrading of landscape with large quantities of CCRs."[10] Furthermore, additional information shows that such harm is continuing in the absence of local, state and federal restrictions on coal ash use.

1. *EPA has confirmed at least 22 damages cases caused by the use of coal ash as fill.*

Reuse of unencapsulated CCR has been demonstrated to present similar risks and pose similar harms to health and the environment as CCR disposal, and EPA itself has confirmed many CCR damage cases involving unencapsulated fill sites. In fact, when EPA promulgated the 2015 CCR rule, it confirmed 158 coal ash damage cases,[11] at least 22 of which were sites

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[8] According to the oral testimony of Thomas Adams, President, American Coal Ash Association, at the EPA Public Hearing for the Phase 2 Proposed Rule in Arlington, VA on October 2, 2019, approximately 180 million tons of CCR has been used for structural fill since 1980.

[9] 80 Fed. Reg. at 21,450 (emphasis added). Note that EPA in this sentence tallies 157 cases, but the accurate number is 158, as EPA's damage case spreadsheet erroneously numbered two potential damage cases as number 16. *See* Alexander Livnat, U.S. Environmental Protection Agency, CCR Damage Case Database, Technical Support Document on Damage Cases, Docket No. EPA-HQ-RCRA-2009-0640 (Dec. 18, 2014) (Document No. EPA-HQRCRA-2009-0640-12123), https://www.regulations.gov/#!documentDetail;D=EPA-HQ-RCRA-2009-0640-12123 [hereinafter Damage Case Database] (attached). Consequently, while EPA's rule and supporting documents state that there are 157 confirmed damage cases, there were actually 158 proven and potential sites contained in EPA's database.

[10] 75 Fed. Reg. at 35,155.

[11] EPA's database and documents claim that it confirmed 157 damage cases. *See, e.g.*, Damage Case Database. However, EPA's damage case spreadsheet erroneously numbered two potential damage cases as number 16. Consequently, while EPA's rule and supporting documents state that there are 157 confirmed damage cases, there

involving structural fills or other unencapsulated placement on the land of CCRs.[12] Furthermore, one quarter of the 40 "proven"[13] damage cases – 10 out of 40[14] – involve fill sites containing unencapsulated CCR.

The following 22 contaminated sites were documented by EPA as examples where dumping of coal ash in the guise of "re-use" caused health-threatening contamination of water. At 9 of the 22 sites, EPA documented that coal ash contaminated drinking water above health standards. EPA cited these damage cases as the basis for requiring a demonstration that coal ash re-used as "fill" will not contaminate groundwater, surface water or air.[15]

Table 1. EPA-Confirmed Coal Ash Damage Cases at Re-Use Sites[16]

No.	EPA Damage Case No.	Coal Ash Re-Use Site Damage Case	Contaminants in Groundwater	State	Confirmed Damage Type
1	PR04	Town of Pines Groundwater Superfund Site	In off-site wells: arsenic, boron, molybdenum, lead, selenium, iron, manganese (also boron, ammonium in surface water)	IN	Proven

were actually 158 proven and potential sites contained in EPA's database.

[12] *See* Table 1, *infra.*

[13] "*Proven damage case* means those cases with (i) Documented exceedances of primary maximum contaminant levels (MCLs) or other health-based standards measured in ground water at sufficient distance from the waste management unit to indicate that hazardous constituents have migrated to the extent that they could cause human health concerns, and/or (ii) where a scientific study provides documented evidence of another type of damage to human health or the environment (*e.g.*, ecological damage), and/or (iii) where there has been an administrative ruling or court decision with an explicit finding of specific damage to human health or the environment. In cases of co-management of CCRs with other industrial waste types, CCRs must be clearly implicated in the reported damage." 75 Fed. Reg. at 35,132; *see also* 80 Fed. Reg. at 21,452 (incorporating the Proposed Rule's definition). The first ten sites on Table 1 are proven damage cases.

[14] "*Potential damage case* means those cases with documented MCL exceedances that were measured in ground water beneath or close to the waste source. In these cases, while the association with CCRs has been established, the documented exceedances had not been demonstrated at a sufficient distance from the waste management unit to indicate that waste constituents had migrated to the extent that they could cause human health concerns." *Id.* The latter 12 sites on Table 1 are potential damage cases.

[15] A list of additional coal ash dump sites that have contaminated drinking water is available at https://earthjustice.org/features/map-coal-ash-contaminated-sites.

[16] *See* Damage Case Database. For additional narrative descriptions of each site, see EPA's Damage Case Compendiums. Alexander Livnat, U.S. EPA, Damage Case Compendium, Technical Support Document, Vol. I: Proven Damage Cases (Dec. 18, 2014) (Doc. ID EPA-HQ-RCRA-2009-0640-12118) [hereinafter Damage Case Compendium, Vol. I] (attached); Alexander Livnat, U.S. EPA, Damage Case Compendium, Technical Support Document, Vol. IIa: Potential Damage Cases (Reassessed, Formerly Published) (Dec. 18, 2014) (Doc. ID EPA-HQ-RCRA-2009-0640-12119) [hereinafter Damage Case Compendium, Vol. IIa], (attached); Alexander Livnat, U.S. EPA, Damage Case Compendium, Technical Support Document, Volume IIb., Pt. 1: Potential Damage Cases (Dec. 18, 2014) (Doc. ID EPA-HQ-RCRA-2009-0640-12120) [hereinafter Damage Case Compendium, Vol. IIb. Pt. 1] (attached); Alexander Livnat, U.S. EPA, Damage Case Compendium, Technical Support Document, Volume IIb.,

No.	EPA Damage Case No.	Coal Ash Re-Use Site Damage Case	Contaminants in Groundwater	State	Confirmed Damage Type
2	PR05	Constellation Energy's BBSS S&G Quarries, Gambrills.	Arsenic, cadmium, lead, thallium, beryllium, nickel, aluminum, manganese, sulfate, lithium	MD	Proven
3	PR09	North Lansing Landfill, Lansing Board of Light & Water	Lead, selenium, lithium, manganese, boron, sulfate	MI	Proven
4	PR17	Swift Creek Structural Fill (ReUse/Full Circle Solutions)	Arsenic, lead, sulfate	NC	Proven
5	PR27	DOE Oak Ridge Y-12 Plant Chestnut Ridge Operable Unit 2	Aluminum, manganese, iron, zinc (also arsenic, selenium, thallium, aluminum, iron, and manganese in surface water)	TN	Proven
6	PR28	Trans-Ash Coal Combustion Waste Fill	Off-site: mercury On-site: arsenic, chromium, lead, mercury (also mercury in surface water and sediment)	TN	Proven
7	PR34	VEPCO Chisman Creek Superfund Site (NPL)	Nickel, selenium, vanadium, sulfate (also vanadium, nickel, sulfate in surface water)	VA	Proven
8	PR36	WEPCO Cedar-Sauk	Selenium, sulfate, boron	WI	Proven
9	PR38	WE Energies Highway 59	Arsenic, boron, molybdenum, manganese, iron, sulfate, chloride, total dissolved solids ("TDS")	WI	Proven
10	PR39	WE Energies Oak Creek Power Plant (Ravine Fill Collapse)	(Chromium, arsenic in surface water)	WI	Proven

Pt. 2: Potential Damage Cases (Dec. 18, 2014) (Doc. ID EPA-HQ-RCRA-2009-0640-12121) [hereinafter Damage Case Compendium, Vol. IIb. Pt. 2] (attached); Alexander Livnat, U.S. EPA, Damage Case Compendium, Technical Support Document, Volume III: Rejected Damage Cases (Dec. 18, 2014) (Doc. ID EPA-HQ-RCRA-2009-0640-12122) [hereinafter Damage Case Compendium, Vol. III (attached).

No.	EPA Damage Case No.	Coal Ash Re-Use Site Damage Case	Contaminants in Groundwater	State	Confirmed Damage Type
11	PTa07	Dynergy Midwest Hennepin Power Station	Iron, manganese, boron, sulfate, TDS	IL	Potential
12	PTa09	Powerton Plant	Arsenic, selenium, lead, chromium, nitrate, iron, manganese, sulfate, TDS, boron (also manganese in surface water)	IL	Potential
13	PTa21	K.R. Rezendes Ash Landfill (South Main Street)	Selenium, arsenic	MA	Potential
14	PTa31	Cinergy/Cinncinati Miamiview Landfill	Manganese, sulfate	OH	Potential
15	PTa33	Battlefield Golf Course Superfund Site (Chesapeake)	Arsenic, chromium, lead, vanadium, copper, manganese, iron, and boron (boron in off-site drinking wells (also aluminum, iron manganese (off-site) and thallium, chromium, lead, aluminum, iron, manganese (on-site))	VA	Potential
16	PTa37	Lemberger Landfill	VOCs, inorganic constituents, CVOCs, arsenic, barium, cadmium, chromium, lead	NY	Potential
17	PTa39	WEPCO Port Washington	Selenium, boron, sulfate	WI	Potential
18	PTb09	Joliet 9 Generating Station, Lincoln Stone Quarry	Arsenic, selenium, cadmium, barium, boron, sulfate, molybdenum, ammonia, TDS, pH, copper	IL	Potential
19	PTb14	George Neal Station North Landfill	Arsenic, iron, manganese, sulfate	IA	Potential
20	PTb15	George Neal Station South Ash Monofill	Arsenic, barium, selenium, zinc, iron, manganese, sulfate	IA	Potential

No.	EPA Damage Case No.	Coal Ash Re-Use Site Damage Case	Contaminants in Groundwater	State	Confirmed Damage Type
21	PTb46	GenOn Portland Station Bangor Quarry Ash Disposal Site	Fluoride, aluminum, iron, manganese, sulfate, TDS (also hexavalent chromium, selenium, cadmium, boron in surface water)	PA	Potential
22	PTb55	WE Energies Oak Creek Power Plant, Disposal Area Fill Sites	Molybdenum, arsenic, fluoride, mercury, boron, manganese, sulfate	WI	Potential

Note that seven of these damage cases had been identified by EPA in its 2013 posting of a list of seven "Structural Fills that Have Resulted in Damage Cases" as part of its Notice of Data Availability; these are: (1) the Bunge Rocky Acres Site; (2) the Lansing Board of Power and Light North Lansing Landfill site; (3) the VEPCO Chisman Creek Superfund Site; (4) the WEPCO Cedar Sauk site; (5) the WEPCO Highway 59 Site; (6) Gambrills; and (7) the Battlefield Golf Course.[17] All of the others, including these, were confirmed by EPA as proven or potential damage cases in EPA's 2014 Damage Case Database.[18]

Complete narrative information for each of the unencapsulated fill site damage cases listed in Table 1 can be found in EPA's Damage Case Database and Damage Case Compendiums,[19] and case summaries are provided in the attached Addendum, "EPA-Confirmed Damage from Coal Ash as Fill – Case summaries."

Given that very few CCR fill sites monitor groundwater for CCR pollution, the scope of the damage most certainly extends to many sites beyond the universe confirmed by EPA.

2. *Use of CCR as fill has contaminated drinking water.*

In total, data show that many of the coal ash fill sites confirmed by EPA as damage cases have contaminated drinking water and threatened human health. In fact, many of the EPA damage cases cited above in Table 1, *supra,* document the contamination of residential drinking water. EPA's 2014 Damage Case Database and Damage Case Compendiums[20] confirmed these damage cases involving coal ash placed as "fill" at the following sites contaminated drinking water with coal ash contaminants:

[17] EPA, "Structural Fills that Have Resulted in Damage Cases" (undated), Doc. No. EPA-HQ-RCRA-2012-0028-0009 (posted on Aug. 2, 2013 to the docket for EPA, Hazardous and Solid Waste Management System: Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities, Notice of Data Availability ("NODA") and Request for Comment, 78 Fed. Reg. 46,940, 46,943 (Aug. 2. 2013)) (attached).
[18] *See* Damage Case Database and Damage Case Compendium Vols. I, IIa, IIb. Pt. 1, & IIb. Pt. 2.
[19] *See* Damage Case Database and Damage Case Compendium Vols. I, IIa, IIb. Pt. 1, & IIb. Pt. 2.
[20] *See* Damage Case Database and Damage Case Compendium Vols. I, IIa, IIb. Pt. 1, & IIb. Pt. 2.

1) Town of Pines Superfund Site, Town of Pines, IN (groundwater contaminants include arsenic, boron, molybdenum, lead, selenium, and sulfate);
2) Constellation Energy: BBSS S&G Quarries, Gambrills, MD (groundwater contaminants include arsenic, cadmium, lead, thallium, beryllium, nickel, aluminum, manganese, sulfate, lithium);
3) Trans Ash (groundwater contaminants include mercury in off-site groundwater, arsenic, chromium, lead, and mercury in on-site groundwater);
4) VEPCO Chisman Creek Superfund Site, Yorktown, VA (groundwater contaminants include nickel, selenium, vanadium, sulfate);
5) WEPCO Highway 59 (7,500 cubic yards of ash placed below the water table, WEPCO paid to replace private wells, and contaminants include arsenic, boron, molybdenum, manganese, iron, sulfate, chloride, total dissolved solids);
6) Dominion Virginia Power, Battlefield Golf Course Superfund Site, Chesapeake, VA (contaminants include boron, arsenic chromium, copper, lead vanadium; boron was in 25 residential drinking wells);
7) Joliet 9 (boron in 8 residential wells at five times background levels, and boron was the only ash pollutant monitored); and
8) WE Energies, Oak Creek Power Plant Fill Sites, Oak Creek, WI (contaminants include boron and molybdenum; 33 private wells had molybdenum levels higher than the state groundwater standard).[21]

An additional confirmed damage case may also be responsible for residential well contamination:

9) The Druecker Fly Ash Site, WEPCO Port Washington Facility, Ozaukee County, WI (contaminants include boron and selenium; "the site affects a residential, private water well supply. In lieu of providing up-gradient well monitoring data, the DNR representative stated that in his best professional judgment the boron levels reported for the well are not naturally occurring, and that the contaminants must come from the quarry because of the proximity to the monitoring well").

In addition, although it was not confirmed as an EPA damage case because the coal ash was not generated by an electric utility, drinking water was contaminated by coal ash placed as fill at an additional site reviewed by EPA (which, as stated *infra*, had been contained on EPA's 2013 list of "Structural Fills that Have Resulted in Damage Cases"[22]:

10) The Rocky Acres Coal Combustion By-Product Disposal Site, operated by Bunge North America Corporation in Oakwood, IL.[23]

    At the Rocky Acres structural fill site:

[21] U.S. EPA, Damage Case Compendium, Technical Support Document, Vol. IIb, Pt. II, Potential Damage Cases (Dec. 18, 2014) at 125–134.
[22] *See* "Structural Fills that Have Resulted in Damage Cases" (attached).
[23] EPA, Damage Case Compendium, Vol. III, at 8–11. *See also* Environmental Integrity Project and Earthjustice, Out of Control: Mounting Damages from Coal Ash Waste Sites (Feb. 24, 2010)

> High levels of lead, iron and manganese, above the state groundwater standards have also been found in two residential wells in the adjacent Grays Siding neighborhood. IEPA advised the residents in these two homes to stop drinking water from their wells, but no alternative source of drinking water has been provided. In addition, the coal ash itself has been encroaching on residential property.

Lastly, in addition to the sites already confirmed by EPA, the State of North Carolina identified contaminated groundwater near a probable drinking water well in Robeson County, NC:

11) Alamac Road site in Robeson County, N.C.[24]

At the Alamac Road site in Robeson County, N.C., placement of about 45,000 tons of CCR that were used as structural fill on 12.8 acres of land may have resulted in contamination of residential drinking water sources. Placement of ash began ash at the site in 1992 without proper state authorization, and state tests of groundwater near the site found levels of contaminants exceeding state groundwater standards. In 1993, the North Carolina Division of Solid Waste Management issued a notice of violation, stating that tests showed "levels of arsenic, cadmium, chromium, lead, selenium, sulfate and total dissolved solids" exceeding safety standards — and that some of the contaminated samples came from a monitoring site near a private residence thought to have a drinking water well.

The number of CCR fill sites identified to date where coal ash has contaminated drinking water wells reflects the very limited testing of private and municipal wells near fill sites, not the extent of the harm. As stated above, there is no requirement to monitor groundwater near structural fill sites, very few requirements to provide public notice of the existence of the fill, and no routine testing of drinking water wells for coal ash contamination.

3. *Use of CCR as fill has caused pollution of air.*

The use of coal ash as structural fill has caused serious air pollution as well as water pollution. The science of the harm to human health from fugitive dust is well established. The harm from inhalation of CCR dust is caused by multiple factors. Injury is caused by respiration of small particulates (PM 2.5) that lodge in the lung;[25] exposure to radioactivity;[26] uptake of

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[24] *See* S. Sturgis, When Recycling Goes Bad, Grist, May 27, 2010 at https://grist.org/article/dumpsites-in-disguise/. 1993 Notice of violation, *available at* https://grist.files.wordpress.com/2010/05/alamac_violn_notice.pdf.

[25] Alan H. Lockwood, Lisa Evans, Ash in Lungs: How Breathing Coal Ash Is Hazardous To Your Health, 13-15 (2014), *available at* https://earthjustice.org/sites/default/files/files/Ash_In_Lungs_1.pdf, hereinafter "Ash in Lungs," (attached).

[26] *Id.* at 5. Burning coal concentrates the radionuclides approximately three to ten times the levels found in the initial coal seams. The radioactive metals stay with the coal ash when the carbon is burned off. *See* Figure 1, Graph from Radioactive Elements in Coal and Fly Ash: Abundance, Forms, and Environmental Significance. U.S. Geological Survey Fact Sheet FS-163-97. October 1997; *see also* Ruhl et al., The environmental effects of the Tennessee Valley Authority (TVA) coal ash spill in Kingston, TN (2009; 2010) (attached); Lauer et al., Naturally Occurring Radioactive Materials in Coals and Coal Combustion Residuals in the United States (2015).

heavy metals, including mercury;[27] inhalation of silica that causes lung disease, and exposure to hydrogen sulfide.[28]

Workers handling coal ash in "beneficial use" operations (e.g., at structural fills and minefills) often experience harmful exposure to airborne ash. A construction manager overseeing the use of coal ash as fill in the construction of a golf course in Chesapeake, Virginia brought a law suit claiming serious injury due to inhalation of fly ash.[29] Some landscapers in North Carolina who placed tons of coal ash as fill and soil amendment in Iredell County have reported suffering from cancer.[30]

Workers at CCR disposal sites have also experienced serious injuries to health due to inhalation of CCR. Workers at the Arrowhead Landfill in Uniontown, Alabama, which received more than 4 million tons of coal ash from the cleanup of the TVA Kingston spill in 2009–2010, reported significant injuries to health.[31] Landfill workers at the Janes M. Gavin Plant CCR landfill in Cheshire, Ohio filed a lawsuit against the plant owner, American Electric Power, for injury to their health from inhalation of coal ash.[32] In addition, the cleanup workers at the TVA Kingston spill site have alleged in a lawsuit against the cleanup contractor that inhalation of coal ash caused the death of more than 40 workers and sickened hundreds more.[33] A jury recently

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[27] Ash in Lungs at 6. Implementation of the federal Clean Air Mercury Rule significantly increases the mercury content in fly ash because the mercury capture required by the rule will result in more mercury ending up in the solid waste created by coal burning. According to EPA testing of fly ash at plants that had mercury controls, the mercury in ash increased by a median factor of 8.5, and in one case, by a factor of 70. *See also*, U.S. Environmental Protection Agency, National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry, Federal Register, Vol 71, No. 244, December 20, 2006.

[28] Ash in Lungs.

[29] *See* Rostami, Mary, "Chesapeake fly ash suit against Dominion refiled," Norfolk Virginian-Pilot, Feb. 22, 2012, *available at* http://hamptonroads.com/2012/02/chesapeake-fly-ash-suit-against-dominion-refiled, describing lawsuit by construction manager at the Battlefield Golf Course who alleges his cancer is attributable to arsenic exposure.

[30] *See* Testimony of Susan Wind, EPA Public Hearing on Phase 2 Proposal, Arlington, VA, Oct. 2, 2019.

[31] Haworth, Holly, "Something Inside of Us," Oxford American, Issue 82, Nov. 11, 2013, *available at* http://www.oxfordamerican.org/articles/2013/nov/11/something-inside-us/.

[32] *See* Gearino, Dan, "Workers sue AEP over health risks at power plant's landfill," Columbus Dispatch, Sep. 6, 2014,available at https://www.dispatch.com/article/20140906/NEWS/309069926. According to the complaint, workers were "exposed, unprotected, to coal-combustion-byproduct waste, a radioactive amalgam of hazardous constituents that pose known risks for human health,"

[33] *See* Satterfield, Jamie, "*Judge rejects TVA contractor's ask for a new trial over coal ash contamination lawsuit,* Knox News, Mar. 1, 2019, *available at* https://www.knoxnews.com/story/news/crime/2019/03/01/judge-says-evidence-backs-jury-verdict-kingston-coal-ash-contamination/3017696002/; *see also* Jamie Satterfield, *Sickened Kingston coal ash workers left with faulty, manipulated test results*, Knox News, Sept. 2, 1018, Knox News, https://www.knoxnews.com/story/news/crime/2018/09/02/kingston-coal-ash-spill-faulty-manipulated-testing/1126963002/; https://www.knoxnews.com/story/news/crime/2017/08/23/epa-bowed-tva-contractor-worker-safety-standards-nations-largest-coal-ash-disaster-records-say/574855001/; https://www.knoxnews.com/story/news/crime/2017/08/11/kingston-coal-ash-spill-cleanup-probe-spurs-more-complaints-disease-death/551596001/; https://www.knoxnews.com/story/news/crime/2018/03/28/tva-coal-ash-spill-cleanup-roane-county-lawsuits-dead-dying-workers/458342002/; https://www.mensjournal.com/features/coal-disaster-killing-scores-rural-americans; https://abcnews.go.com/Health/wireStory/tva-backlash-grows-coal-ash-spill-workers-fall-65234169; Sworn Declaration of R. Doug Hudgens, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv-00462-TAV-HBG, Doc. 129-7 (E.D. Tenn. Oct. 28, 2017); Affidavit of Dan. R. Gouge, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv-00462-TAV-HBG, Doc. Doc. 129-5 (E.D. Tenn. Oct. 28, 2017); Kingston Ash Release Response Project, Jan. 2013 Rev. 06, at Table 4-2: Fly Ash Constituent Information,

agreed that the contact with and the inhalation of CCR could cause multiple serious diseases in the cleanup workers, including hypertension, coronary artery disease, lung cancer, leukemia and other hematologic malignancies, skin cancer, allergic contact dermatitis, peripheral neuropathy, asthma, chronic obstructive pulmonary disease, and other respiratory conditions.[34]

EPA itself has long recognized the threat to human health posed by inhalation of CCR at disposal and beneficial use sites. In 2010, EPA completed a "Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills."[35] EPA observed that large structural fill sites pose similar risks to CCR landfills,[36] and EPA found that CCR landfills are likely to violate NAAQS standards, if not covered *daily*.[37] Further, in 2014, as part of the record for its 2015 CCR Rule, EPA completed a damage case report specific to fugitive CCR dust impacts.[38] Among the 27 sites listed by EPA as "fugitive dust damage cases" are 7 structural fill sites.[39]

One of the EPA damage cases in the 2014 report describes the fugitive dust from the Arizona Public Service Four Corners Power Plant in Fruitland, New Mexico. It is well documented that members of the Navajo Nation are adversely impacted by fugitive dust from the CCR units at the plant, which is located on the Navajo Reservation.[40] Tribal members have frequently reported clouds of toxic dust rising from the plant's multiple coal ash impoundments and a landfill that stands 110-feet above the desert floor.[41] Exposure to the dust has been associated with health problems, including asthma and other respiratory ailments, as well as higher-than-normal rates of cancer among Navajo residents.[42] Moreover, the coal ash, which is deposited by the wind over hundreds of acres, jeopardizes the Navajo people's ability to practice traditional healings that are embedded in their culture. Similar damage and exposure to fugitive dust injured the health and well-being of members of the Moapa Tribe of Paiutes from disposal operations at the Reid Gardner Plant in Moapa, Nevada.[43]

4. *CCR placement in mines has caused significant damage.*

The evidence of damage from CCR fill sites and other unencapsulated placement of CCRs is vast, and EPA's failure to regulate all CCR fill sites with the same environmental protections afforded to disposal sites is contrary to the documented risks unencapsulated fill sites

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Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv- 00462-TAV-HBG, Doc. 129-1 (E.D. Tenn. Oct. 28, 2017.

[34] No. 3:13-cv-00505-TAV-HBG, Verdict Form (E.D. Tenn. Nov. 7, 2018) (attached).

[35] EPA, Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills (May 2010), Docket ID No. EPA-HQ-RCRA-2009-0640-0142 (attached).

[36] 75 Fed. Reg. at 35,155.

[37] EPA, Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills (May 2010), Docket ID No. EPA-HQ-RCRA-2009-0640-0142 (attached).

[38] EPA, Damage Cases: Fugitive Dust Impact, Docket ID No. EPA-HQ-RCRA-2009-0640-11992 (Dec. 18, 2014) (attached).

[39] *Id.*

[40] Ash in Lungs at 13-15.

[41] *Id.*

[42] EPA, Damage Cases: Fugitive Dust Impact, Docket ID No. EPA-HQ-RCRA-2009-0640-11992 (Dec. 18, 2014) at 45-46.

[43] *See id.*

pose to health and the environment. The APA requires an agency to consider the evidence before it. Indeed, courts have held that "if the record reveals that the agency has failed to consider an important aspect of the problem or has offered an explanation for its decision that runs counter to the evidence before [it], we must find the agency in violation of the APA."[44]

Placement of large volumes of unencapsulated CCR on the land is already commonly performed without any federal regulation, often under the guise of "beneficial use" in the form of minefilling. Minefilling – the practice of placing unencapsulated CCR in mines, has resulted in the release of coal ash pollutants into the environment in areas already plagued by mining pollution. Numerous studies document the damage caused by this practice, which is explained in detail in the attached addendum, "Damage from CCR Placement in Mines" (attached).

Minefill sites are also poster children of environmental justice, as well. Mining communities where coal ash minefilling occurs are often low-income communities already saddled with health impacts from coal mining pollution.[45]

Despite the grave threats reuse projects can pose to health and the environment, EPA's Phase 2 Proposal fails to consider the extensive evidence of damage at CCR minefills, which is instructive of the dangers posed by unencapsulated CCR fill sites generally. EPA's final 2015 CCR Rule failed to regulate large unencapsulated fill sites and failed to even establish a specific framework to ensure that the safety demonstration that will apply to fill sites over 12,400 tons will be robust and adequate to prevent future instances of harm. EPA's proposed revisions to the final rule should take into account that potential releases of CCR constituents into the environment at unencapsulated fill sites will mimic releases at unlined disposal and minefill sites. Consequently, EPA's Phase 2 Proposal does not meet the protectiveness standard of RCRA or comply with the Administrative Procedure Act. In order to comply with these laws, EPA must fully regulate as disposal sites placement at all fill sites.

5. *New evidence shows that use of coal ash as fill is currently threatening harm to human health and the environment.*

Rampant use of coal ash as structural fill is not a vestige of past practices. Despite the obvious and ample evidence of damage caused by such projects and the rapidly expanding body of data documenting groundwater contamination at land disposal sites across the nation, there is no indication that use of CCR as fill is diminishing. In addition, CCR fills placed years ago continue to cause harm, especially at sites where CCR was placed in groundwater, where the site was never covered, and where the CCR, through weathering or subsequent excavation, has become exposed to water, wind and direct human contact. These are not hypothetical problems, but serious hazards currently plaguing numerous communities where CCR has been used "beneficially" as fill. The following examples illustrate the many ongoing risks and present danger posed by CCR structural fills.

[44] *California v. FCC*, 39 F.3d 919, 925 (9th Cir. 1994) (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Auto Ins. Co.*, 463 U.S. 29, 43 (1983)).

a. Southeastern Puerto Rico: Coal ash used as fill at multiple sites is uncovered and threatens health and the environment.

From approximately 2004 to 2012, more than 2 million tons of coal ash from the AES-PR Guayama Power Plant was used as fill material in dozens of construction projects in Puerto Rico, including housing, commercial developments and road projects.[46] The coal ash from AES-PR, called "Agremax,"[47] is comprised of fly ash and bottom ash mixed with water. The vast majority of construction sites where AES-PR's CCR was disposed are directly above the South Coast Aquifer in the vicinity of public supply water wells and in proximity to the AES-PR plant in southeastern, Puerto Rico. AES often delivered the CCR free of charge to construction sites. Contractors paid a nominal charge of 0.15 cents per ton. In Puerto Rico, excess quantities of CCRs were often used to grade construction sites in flood-prone areas in order to raise ground elevations. In some cases, construction projects were filled with CCR below the aquifer water table.[48]

EPA has recognized that use of CCR near water bodies with low flow rates such as swamps or marshes may cause local environmental damages.[49] An AES document, created in 2005, in which the company attempted to promote the use of its CCR in Asuncion, Paraguay at an engineering conference, indicates that the AES CCR is sensitive to humidity and contains heavy metals that vary in each CCR sample.[50] The vast majority of CCR disposal sites in Puerto Rico are located in close proximity and just north of wetlands and mangrove forest systems such as the Jobos Bay National Estuarine Research Reserve, a National Oceanic and Atmospheric

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[46] *See* 84 Fed. Reg. at 21,328. EPA stated:

During the development of this final rule, EPA obtained information on a comparable situation in which large quantities of unencapsulated CCR were placed on the land in a manner that presented significant concerns. The AES coal-fired power plant in Puerto Rico lacked capacity to dispose of their CCR on-site, and off-site landfills in Puerto Rico were prohibited from accepting CCR. In lieu of transporting their CCR off of the island for disposal, AES created an aggregate (''AGREMAX'') with the CCR generated at their facility, and used the aggregate as fill in housing developments and in road projects. Over two million tons of this material was used between 2004 and 2012. *See also*, Earthjustice *et al*, Comments on the Proposed "Standards for the beneficial use of coal combustion waste," January 15, 2019, at 3-9 (attached) and Notice of Intent to Sue AES Corporation (and local affiliates) for Violations of the Resource Conservation and Recovery Act Involving Uncontrolled Disposal of Coal Ash Waste Generated at the AES Coal-fired Power Plant in Guayama, Puerto Rico**,** dated September 26, 2012, Attachment 1 of Earthjustice letter. *See also*, D.S. Kosson et al., *Characterization of Coal Combustion Residues from Electric Utilities - Leaching and Characterization Data*, at 18 (EPA-600/R-09/151) (Dec. 2009) (prepared for EPA, Office of Research & Dev., Nat'l Risk Mgmt. & Research Lab.), *available at* http://www.epa.gov/nrmrl/pubs/600r09151/600r09151.html.

[47] EPA considers "Agremax" a form of CCR. Barnes Johnson, EPA letter to Manuel Matta, President, AES-PR LP, (Dec. 22, 2016) (attached).

[48] *See* 80 Fed. Reg. at 21,329. EPA stated:

> [T]he available facts illustrate several of the significant concerns associated with unencapsulated uses. Specifically, the AGREMAX was applied without appropriate engineering controls and in volumes that far exceeded the amounts necessary for the engineering use of the materials. Inspections of some of the sites where the material had been placed showed use in residential areas, and to environmentally vulnerable areas, including areas close to wetlands and surface waters and over shallow, sole-source drinking water aquifers. In addition, some sites appeared to have been abandoned.

Consistent with the proposed rule, EPA does not consider the practices described in this section to be beneficial use, but rather waste management that would be subject to the requirements of the final rule. *See also id.* at 21,353.

[49] *See id.* at 21,363-65.

[50] Geannette M. Siberon, P.E., BS Che, Applied Energy Systems of Puerto Rico (2005) (attached).

Administration (NOAA) designated resource that is home to the second largest extension of mangrove forest in Puerto Rico.

EPA has also long recognized that unlined disposal sites over shallow ground water close to drinking water wells pose risks to human health and the environment. In every case where CCR has been used in Salinas, Puerto Rico, the residential and commercial projects are served from the underlying groundwater in the same vicinity. Puerto Rico's tropical climate, including its particularly heavy rainstorms during hurricane season, is not compatible with the use of CCR for structural fill even if compacted in layers and placed on a drainage layer. The high population density and reliance on groundwater augments the risk of human exposure to CCR contamination.

For example, AES' CCR has been used to form a storm water retention pond for a residential construction project in proximity to an irrigation canal and the South Coast Aquifer with no liner or groundwater monitoring. The CCR samples taken at the site indicate that the alpha radioisotopes reached 9.9 pCi/gm, nearly double the Applicable or Relevant and Appropriate Requirement (ARAR) standard. When the beta test result of 5.4 pCi/g is added, exposure to radiation from the CCR is three times the ARAR standard for surface soil. The CCR is currently exposed to wind and water erosion, because the CCR was used to create a storm water retention pond for a residential project of approximately 500 homes. Placement of CCR as fill also presents special risks in residential construction sites because of potential soil ingestion by children.

There is reason to believe that even relatively small amounts of CCR pose a significant risk to human health and the environment as is evident in the case of CCR contamination in the Dominican Republic.[51] Relatively small amounts of CCR may contain large amounts of arsenic, other toxic metals and radioactive isotopes.

The CCR used at multiple construction sites in Puerto Rico has also had adverse impacts on air quality because the CCR is either not covered or covered with a thin layer of dirt that quickly erodes, leaving the CCR dust particles to disperse in the air. EPA acknowledges that a fugitive dust screening assessment indicates that CCR poses risks of exceeding National Ambient Air Quality Standards.[52] At many construction sites where CCR was used, there is visible evidence of erosion of the thin layer of dirt placed above the CCR.[53] The Caribbean breezes mobilize the dirt and CCR into the air, exposing residents to CCR particulate matter. As noted by EPA, adverse health effects due to fugitive dust from CCR disposal has been demonstrated.[54] EPA also notes that CCR dust can be carried over long distances and settle on ground or water. Effects can include alteration by CCR of nutrient balance of coastal waters, depletion of soil nutrients, and damage to ecosystems and farms.[55]

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[51] *See* Earthjustice *et al*, Comments on the Proposed "Standards for the beneficial use of coal combustion waste," January 15, 2019, at 2-4 (attached).
[52] *See* 75 Fed. Reg. at 35,145.
[53] *See* V. Alvarado Guzman, Report on Coal Ash Sampling, March 2, 2019 (attached).
[54] *See* 75 Fed. Reg. at 35,215.
[55] *See id.*

In 2012, Vanderbilt University completed a study on the leaching potential of Agremax from the AES-PR plant in Guayama.[56] The study concluded that Agremax tends to leach high concentrations of arsenic, boron, chloride and chromium, and secondly fluoride, lithium, molybdenum, selenium, sulfate and thallium, depending on the pH of the medium. Regarding the relationship between liquids and solids, the leaching tendency of Agremax in the first instance is arsenic, boron, chloride, chromium, fluoride, lithium, molybdenum and secondly, aluminum nitrate, selenium, sulfate and thallium. The study concluded that significant levels of toxic metals can leach from Agremax under simulated field conditions. The selenium concentration in the L/S test reached 3.6 mg/L. This is approximately 720 times the National Recommended Water Quality criteria of 5 µg/L for chronic selenium concentrations. Likewise, chloride levels exceed the same criteria by a factor of 13 for the acute criterion and 50 for the chronic criterion. Lead levels exceeded the same criteria by a factor of 9 for the acute criterion and 250 for the chronic criterion. The chronic criteria of aluminum and cadmium were exceeded by factors of 7.5 and 25, respectively. The maximum sulfate concentration in the L/S test was 21,000 mg/L. Sulfate is considered a definitive stressor when it exceeds 290 mg/L. Therefore, the sulfate levels in the Agremax leachate reached 50 times the definitive stressor criterion. A boron concentration of 1 to 2 mg/L is toxic to vegetation. The boron concentration in the study reached 12 mg/L, 6 to 12 times the hazardous level.

The Guayama region where the CCR was placed is an environmental justice community with high percentages of residents of African descent. The area is the most contaminated region in Puerto Rico according to the Toxic Release Inventory. The Guayama region was known as the "hunger route"[57] and has among the highest poverty, unemployment and school dropout rates in Puerto Rico. The Guayama Region has seen the decrease of medical services available to the environmental justice community with the closure of two hospitals with only one hospital currently in operation. The disposal of CCR in the Guayama region impose disproportionate public health risks to this environmental justice community.

b. Bloomington, IN: Due to land use changes, CCR fill poses new health and environmental hazards.

In Bloomington, Indiana, a railroad company used CCR as part of the foundation bedding for the railroad right-of-way.[58] In the course of environmental investigations undertaken as part of a rails-to-trails project in Bloomington, Indiana, extensive arsenic and lead contamination was found in the right-of-way as a result of the use of coal ash and cinders as ballast for the rail bed.[59]

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[56] *See* A.C. Garrabrants et al., Leaching Behavior of "AGREMAX" Collected from a Coal-Fired Power Plant in Puerto Rico, EPA-600/R-12/724, December 2012 (attached); *see also,* D.S. Kosson *et al., Characterization of Coal Combustion Residues from Electric Utilities -Leaching and Characterization Data*, at 18 (EPA-600/R-09/151) (Dec. 2009) (prepared for EPA, Office of Research & Dev., Nat'l Risk Mgmt. & Research Lab.), *available at* http://www.epa.gov/nrmrl/pubs/600r09151/600r09151.html; S. Thorneloe *et al*, Evaluating the Fate of Metals in Air Pollution Control Residues from Coal-Fired Power Plants, 44(19) ENTL. SCI. & TECH. 7351, 7354-55 (2010).

[57] Salinas is one of the poorest municipalities in Puerto Rico with over 60% of its population living under the poverty line.

[58] Environmental Integrity Project, *Risky Business: Coal Ash Threatens America's Groundwater Resources at 19 More Sites*, at 11 (Dec. 12, 2011), *available at* https://www.environmentalintegrity.org/wp-content/uploads/2016/11/2011-12_Risky_Business.pdf.

[59] *Id*. at 11, A-22 to A-24.

Sampling conducted prior to the railway's conversion to a recreational trail along a 2.5-mile section of the former right of way found the following:

- Arsenic: 97.8% of 46 samples taken from cinders and ballast and soil samples to a depth of one foot in the northwest section of the trail exceeded the Indiana Department of Environmental Management's default closure levels (DCL) for both residential (3.9 mg/kg) and industrial (5.8 mg/kg) arsenic-contaminated soil. The highest concentration of arsenic in a sample, 347 mg/kg, was 88 times higher than the DCL for residential use and 60 times higher than the DCL for industrial use of soils. It was also almost 900 times the EPA screening level of 0.39 mg/kg for arsenic in residential soil in place at the time.

- Lead: Lead also exceeded the residential use DCL of 81 mg/kg in a majority of samples (62.5%). The highest lead concentration, 1,200 mg/kg, was 14.8 times higher than the DCL for residential use, 5.2 times higher than the DCL for industrial use of soils, and 3 times the EPA screening level of 400 mg/kg for residential soils.

This section of trail in Bloomington is currently used by hundreds to thousands of people every day. More than 5,000 cubic yards of contaminated soil were removed to minimize the potential for exposure to trail users.

The contamination of "rails-to-trails" is not limited to Bloomington, Indiana. In Milton, Delaware, a cleanup program preceding a trail extension uncovered CCR contaminants. According to the Delaware Department of Natural Resources and Environmental Control, the rail line property contained concentrations of polycyclic aromatic hydrocarbons, material commonly associated with coal, ash or slag, associated with the site's previous use as a railroad line.[60] The Delaware Department of Transportation agreed to clean up the rail bed before beginning work on the rails-to-trails extension.

Another recent example of a former CCR fill threatening recreational use of property occurred in Stonington, CT where a large deposition of CCR was discovered on a riverbank, which is the intended site of a school boat launch and park.[61] The Town of Stonington purchased the property two years ago for a proposed Boathouse Park, but discovered that the land is polluted with CCR.[62] The town documented the existence of the contamination in a grant request in 2016 to the state Department of Economic and Community Development's Office of Brownfield Remediation and Development, seeking $200,000 to, among other things, assess the extent of the contamination. The land intended for the park site is made up in part of coal slag and ash and heavy metals and polycyclic aromatic hydrocarbons, according to the Town.[63]

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[60] *See* R. Mavity, "DelDOT to clean up Rails to Trails rail bed," Cape Gazette, January 9, 2019, *available at* https://www.capegazette.com/article/deldot-clean-rails-trails-rail-bed/172097

[61] D. Collins, "Why is Stonington allowing teens to use a polluted brownfield?" The Day, November 22, 2018, *available at* https://www.theday.com/article/20181122/NWS05/181129806.

[62] *Id.*

[63] *Id.*

c. Edgecombe County, North Carolina: Extreme weather events hasten erosion of coal ash structural fills, and, in this instance, led to environmental injustice as African-American flood victims were placed in temporary trailers atop exposed coal ash fill.

Following the devastation that occurred in eastern North Carolina by Hurricane Floyd in 1999, a former CCR structural fill in Edgecombe County, NC was used as a temporary housing site for flood victims. The Fountain Industrial Structural Fill site was turned into a trailer park for about 370 families displaced by the disaster, housed in 207 travel trailers and 64 mobile homes.[64] A significant portion of the residents were from Princeville, a historic African-American community founded by emancipated enslaved people, which was devastated by flooding.[65] In 1989, ReUse Technology in cooperation with the Edgecombe County Development Corp. began placing CCR at the site from various Cogentrix plants. Following Hurricane Floyd in 1999, the soil covering the fill had eroded, leaving coal ash exposed.[66]

According to the NC Department of Waste Management, "coal ash has been exposed in some areas of the Fountain Trailer Park due to erosion and placement of temporary housing."[67] Coal ash was "evident around some of the trailers and mobile homes and large mounds of material, some covered with grass and others looking like fresh ash, were near a playground and a pond where some residents fished."[68]

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[64] NC Department of Environment and Natural Resources, Division of Waste Management (DWM) Comments; Comments on Alleged and Established Damage Cases in EPA's Region 4, Based on Testimonies at the Proposed CCR Management Rule Public Hearings (Knoxville, TN; Arlington, VA; Charlotte, NC; and Louisville, KY), August-October 2010, Testimony 15K 537 Rocky Mount, Edgecombe County, NC, *available at* https://docplayer.net/amp/16333319-Nc-department-of-environment-and-natural-resources-division-of-waste-management-dwm-comments.html

[65] S. Sturgis, When Recycling Goes Bad, Grist, May 27, 2010 at https://grist.org/article/dumpsites-in-disguise/; *see also* FEMAville: Rocky Mount's Temporary Housing Facility: Are its residents at risk? Aaron Pulver, Master's Thesis, submitted to University of North Carolina, Chapel Hill, School of Public Health, July 12, 2000, *available at:* https://grist.files.wordpress.com/2010/05/pulver_report_coal_ash.pdf; Citylab, Brentin Mock, Mapping Where Environmental Justice Is Most Threatened in the Carolinas (Sept. 21, 2018), https://www.citylab.com/equity/2018/09/mapping-where-environmental-justice-is-most-threatened-in-the-carolinas/570985/.

[66] *Id.*

[67] NC Department of Environment and Natural Resources, Division of Waste Management (DWM) Comments; Comments on Alleged and Established Damage Cases in EPA's Region 4, Based on Testimonies at the Proposed CCR Management Rule Public Hearings (Knoxville, TN; Arlington, VA; Charlotte, NC; and Louisville, KY), August-October 2010, Testimony 15K 537 Rocky Mount, Edgecombe County, NC, *available at* https://docplayer.net/amp/16333319-Nc-department-of-environment-and-natural-resources-division-of-waste-management-dwm-comments.html.

[68] Minkler, Meredith, Nina Wallerstein, Community-Based Participatory Research for Health: From Process to Outcomes, *available at*: https://books.google.com/books?id=1Wry09vE_HUC&pg=PT423&lpg=PT423&dq=Edgecombe+fema+trailer+park+built+on+coal+ash&source=bl&ots=tIkZ70QtTB&sig=ACfU3U3MDanhrVLqAcP896emqMsiUvtSqw&hl=en&sa=X&ved=2ahUKEwiswfD478TkAhVkdt8KHX_yBYMQ6AEwDXoECAkQAQ#v=onepage&q=Edgecombe%20fema%20trailer%20park%20built%20on%20coal%20ash&f=false.

The presence of the ash and the threat posed to the residents was not disclosed by local, state or federal officials. Little was known about the site, and public information was not available or initially offered by regulatory officials. A student at the University of North Carolina, School of Public Health, doggedly researched the site and sought public documents. It was eventually discovered from state documents that filling at the site occurred right up to the day of the hurricane. According to a history of the incident, "while the Edgecombe County development officer told [the student] a study of the land had been done prior to construction of the trailer park, she refused to release it to him -- as did the director of the N.C. Office of Temporary Housing. When [the student] finally managed to get a copy of the report, he discovered there had actually been no thorough testing of the site for possible health impacts before the placement of the trailers."[69]

In response to mounting worries about the site's safety to residents, especially children, State health department epidemiologists collected a small number of samples for testing. After comparing the samples with EPA's limits for metals in residential soil, the state found that one sample slightly exceeded the federal standards for arsenic and lead. In a press release following the testing, however, the NC Department of Health and Human Services concluded there was "no significant risk" to the residents and took no further measures.[70] After further research and a press conference, the NC State Health Department covered the exposed CCR with a layer of soil and found alternate housing for the residents. The Fountain Industrial Structural Fill site, nicknamed "Camp Depression," is a potent example of both environmental injustice[71] and the threat posed by structural fill sites with inadequate cover that are vulnerable to erosion in storm events. Furthermore, this example points to the difficulties encountered by the public in obtaining information concerning the extent of health hazards posed by fill sites.

d. Flood Plains: Storm events cause releases from coal ash sites, including structural fills, that are in vulnerable areas such as flood plains.

Climate change is causing more frequent and intense storms. For coal ash, this is a huge concern when it is placed in flood plains. Throughout North Carolina, for example, coal ash sites big and small threaten disaster each time a flood or hurricane strikes, as Hurricane Florence in 2018 and Hurricane Matthew in 2016. CCR from such flooding collects in the sediments of lakes and streambeds where heavy metals accumulate to dangerous levels, causing harm to the environment and human health.[72]

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[69] S. Sturgis, When Recycling Goes Bad, Grist, May 27, 2010, *available at* https://grist.org/article/dumpsites-in-disguise/.

[70] N.C. Department of Health and Human Services, Press Release, "Soil Tests Find No Problems at Fountain Trailer Park," August 1, 2000, *available at* https://grist.files.wordpress.com/2010/05/fountain_press_release.pdf.

[71] Minkler, Meredith, Nina Wallerstein, Community-Based Participatory Research for Health: From Process to Outcomes, *available at* https://books.google.com/books?id=1Wry09vE_HUC&pg=PT423&lpg=PT423&dq=Edgecombe+fema+trailer+park+built+on+coal+ash&source=bl&ots=tIkZ70QtTB&sig=ACfU3U3MDanhrVLqAcP896emqMsiUvtSqw&hl=en&sa=X&ved=2ahUKEwiswfD478TkAhVkdt8KHX_yBYMQ6AEwDXoECAkQAQ#v=onepage&q=Edgecombe%20fema%20trailer%20park%20built%20on%20coal%20ash&f=false.

[72] A. Vengosh, E.A. Cowan, R.M. Coyte, et al., Evidence for unmonitored coal ash spills in Sutton Lake, North Carolina: Implications for contamination of lake ecosystems, Science of the Total Environment, https://doi.org/

At Duke's Sutton Steam Plant in Wilmington, NC Hurricane Florence caused CCR to spill into Sutton Lake from the adjacent CCR storage sites.[73] The spill resulted in a significant enrichment of metals in Sutton Lake sediments, including those that cause adverse impacts to aquatic life, such as arsenic, selenium, copper, antimony, nickel, cadmium, vanadium and thallium. Levels of these metals in the lake sediment were similar to or even higher than those in stream sediments impacted by the 2008 Tennessee Valley Authority (TVA) in Kingston, Tennessee, and the 2014 Dan River, North Carolina coal ash spills, and the levels exceeded ecological screening standards for freshwater sediments. High levels of contaminants were also found in leachates extracted from Sutton Lake sediments and co-occurring pore water, reflecting their mobilization to the ambient environment from Florence and other past events.[74]

In Goldsboro, NC, at Duke Energy's H.F. Lee facility, which is located within the 100-year floodplain of the Neuse River,[75] an area containing one million tons of buried coal ash was completely submerged by floodwaters from Hurricane Matthew in 2016 and again by Hurricane Florence's floodwaters in 2018. Water samples around the site tested above the state standard for arsenic, with elevated levels of many other heavy metals present in the water.[76] After the flood, these toxins may have settled into the river sediment.

Duke Energy's sites are large-scale industrial coal ash pits, but floods threaten smaller sites equally, if not more, because they may lack effective flood control technology that can withstand a major storm event. In Chapel Hill, NC, a 4.5-acre coal ash dump on town property contains 60,000 cubic yards of coal ash, a portion of which lies in the flood plain of Bolin Creek; this portion of the coal ash dump flooded during Hurricane Florence. The flood waters rushed along the base of an eroding 40-foot high coal ash cliff.[77] It is not known how much coal ash was released into Bolin Creek or other downstream waters. Such coal ash releases are obviously a significant concern, and so is the risk such storm events pose to the structural stability of the coal ash cliff on the edge of the floodplain.

Strong storms also damage structural fill sites, which are rarely engineered to withstand such forces or rain, wind, and flowing water. For example, according to news reports,[78] 40,000

10.1016/j.scitotenv.2019.05.188 (attached).

[73] *Id.*

[74] *Id.*

[75] *See* Floodplain Map, Flood Risk Information System, https://fris.nc.gov/fris/Index.aspx?user=General%20Public&address=1199%20Black%20Jack%20Church%20Rd,%20Goldsboro,%20NC%2027530&ST=NC&ST=NC, last accessed Oct. 10, 2018 (showing flood information for Lee plant).

[76] *See* Waterkeeper Alliance, *Analysis Finds Toxic Levels of Arsenic in Neuse River Water Following H.F. Lee Coal Ash Spill*, Sept. 28, 2018, *available at* https://waterkeeper.org/analysis-finds-toxic-levels-of-arsenic-in-neuse-river-water-following-h-f-lee-coal-ash-spill/.

[77] *See* video of flooding at the base of the coal ash cliff after Hurricane Florence, posted at http://ash.bolincreek.org/more-info.

[78] Marvin Beach, WCCB, *Coal Ash Uncovered Near Lake Norman High School in Mooresville*, Oct. 24, 2018, *available at* https://www.wccbcharlotte.com/2018/10/24/coal-ash-uncovered-near-lake-norman-high-school-in-mooresville/; Kristin Leigh, WSOC, *9 Investigates: Coal Ash Site Exposed Near Lake Norman High* School, Oct. 24, 2018, *available at* https://www.wsoctv.com/news/local/9-investigates-coal-ash-site-exposed-near-lake-norman-

tons of coal ash was recently disturbed at a construction site in Mooresville, only 50 yards from a high school. In 2001, the ash had been used as structural fill and covered with soil pursuant to a plan approved by the North Carolina Department of Environmental Quality. Construction activities and rain from Hurricane Florence eroded the layer of soil covering the ash, causing the ash underneath to become exposed. If the coal ash at the site is not safely removed or contained, it will continue to contaminate a nearby stream and threaten the health of the children in the school next door.

C. CCR Managed in "Waste Piles" Has Caused Serious Harm to Human Health and the Environment.

Similar to coal ash landfills and large fill applications, CCR waste piles contaminate underlying groundwater with coal ash constituents. Monitoring data are not available for many coal ash piles, but groundwater monitoring data published by the AES-PR Guayama Power Plant in Puerto Rico reveals significant adverse impacts to groundwater from CCR disposal in the plant's waste pile.[79] In fact, AES-PR itself has admitted that its CCR waste pile contaminated groundwater above federal health standards (groundwater protection standards) for selenium, lithium and molybdenum.[80] As discussed in Section III, *infra*, several other CCR waste piles are also likely contributing substantially to groundwater contamination at facilities where they are operating. The AES-PR CCR waste pile in Guayama, however, represents a particularly clear example of harm to the environment.

In addition to groundwater contamination, fugitive dust emissions from the waste pile at the AES-PR Guayama plant have caused harm to human health. According to first-hand accounts of residents living near the power plant, the 120-foot CCR pile maintained by AES-PR has plagued nearby residents with fugitive dust for many years.[81] As described in the 2018 comments submitted by Comité Diálogo Ambiental, the CCR waste pile dwarfs all other structures at the plant and stands outside with no cover, totally exposed to the persistent Caribbean winds and tropical rainstorms.[82] Further, AES-PR itself provides documentation of fugitive dust problems at the Guayama plant, as noted in its annual inspection reports for 2017 and 2018.[83]

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high-school/858440521; Megan Suggs, Statesville Record & Landmark, *Coal Ash Disturbed Near Lake Norman High School*, Oct. 24, 2018, *available at* https://www.statesville.com/news/local/coal-ash-disturbed-near-lake-norman-high-school/article_35dc35d0-d7d0-11e8-a330-53ddc2f70d12.html; *see also* Megan Suggs, Mooresville Tribune, *Mooresville's 'Coal Ash Corridor' Is Largest Concentration In State*, Oct. 27, 2018, *available at* https://www.mooresvilletribune.com/news/local/mooresville-s-coal-ash-corridor-is-largest-concentration-in-state/article_decd08c2-da1e-11e8-96f2-f7d911d2c512.html.

[79] DNA-Environment, LLC, 2017 Annual Groundwater Monitoring Report, AES Puerto Rico L.P. (Jan. 2018), (attached), *available at* http://aespuertorico.com/wp-content/uploads/2018/02/2017_01_31_AES_Groundwater-Monitoring-and-Corrective-Action_Annual-Report.pdf. *See also* Mark Hutson, Geo-Hydro, Inc., Report on Document Review: AES Puerto Rico, Guayama, Puerto Rico (Nov. 20, 2018) (attached); Expert Report of Mark Hutson (Oct. 14, 2019) (attached).

[80] AES Puerto Rico, L.P. (AESPR)- Notice of Groundwater Protection Standard Exceedance, January 14, 2019, *available at* http://aespuertorico.com/wp-content/uploads/2019/03/AES-PR-SSL-notification.pdf, (attached).

[81] *See, e.g.*, the comment submitted by Comité Diálogo Ambiental, submitted to the EPA Docket ID EPA-HQ-OLEM-2017-0286, in April 2018 (attached).

[82] *Id.*

[83] AES Puerto Rico, CCR 2017 Inspection Report, July 13, 2017, *available at* http://aespuertorico.com/wp-content/uploads/2017/10/2017_Annual-Inspection-Report.pdf (attached). AES Puerto Rico, CCR 2018 Inspection

Fugitive dust emissions can have grave consequences for the local community. In July 2016, the University of Puerto Rico, Graduate School of Public Health conducted an epidemiological study of communities in Guayama, downwind from the AES plant. The research project emerged as a response to residents' claims of adverse environmental conditions present in their communities, in particular, the exposure to ash from the burning of coal, that were adversely affecting public health.[84] The epidemiological study concluded that the Guayama community suffers higher incidence of respiratory disease, cardiovascular disease, asthma, hives, spontaneous abortions, bronchitis than a community whose air and environment are not impacted by the power plant. The most relevant findings of the epidemiological study carried out in the communities of Guayama and Fajardo found: 1 of every 3 people in Guayama has been diagnosed with respiratory disease; 1 of every 4 people in Guayama has been diagnosed with cardiovascular disease; pediatric asthma is approximately 5 times greater in Guayama; Severe asthma in children is 6 times higher in Guayama; The prevalence of urticaria (hives) is 7 times higher in Guayama; The prevalence of spontaneous abortions is more than 6 times higher in Guayama; The probability of suffering from chronic bronchitis in the larger population of 45 years is 9 times higher in Guayama; The probability of suffering from pediatric asthma is approximately 6 times greater in Guayama. These results were confirmed in a subsequent study in 2018.[85]

Lastly, coal ash waste piles can harm the environment and human health through uncontrolled run-on and run-off from the CCR pile, which can result in coal ash releases to soil and nearby waterways. At the AES-PR waste pile, erosion rills have been observed on the steep sides of the CCR pile, particularly after storm events. This is a clear indication that the waste pile's exposure to tropical wind and rain has generated run-off, and such impacts may threaten the stability of the sides of the pile.

D. CCR Disposal and Use Pose a Disproportionate Threat to Low-Income Communities and Communities of Color.

EPA's promulgation of the first-ever coal ash disposal regulations is prompting many coal ash generators to seek unregulated – and cheap – placement and storage options for their coal ash, such as exempted "beneficial use" applications and under-regulated CCR storage piles. These practices are not only likely to disproportionately burden low-income communities and communities of color, but the Phase 2 Proposal would ensure that these practices will be less regulated and would allow more fill sites to avoid public reporting, and thus enforcement. This is unacceptable. Although citizen enforcement is an essential component of the 2015 CCR Rule, it depends on strong protections and robust information. The United States Commission on Civil Rights found:

Report, July 18, 2018, *available at* http://aespuertorico.com/wp-content/uploads/2019/02/4-CCR-Annual-Inspection-Report-2018.pdf (attached).

[84] Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública - Departamento de Bioestadística y Epidemiología, Estudio Epidemiológico en las Comunidades de Puente de Jobos y Miramar en Guayama y Santa Isidra y Rafael Bermúdez en Fajardo (2016 ppt) (attached).

[85] *Id.*; Luis A. Bonilla Soto, Prevalence of chronic diseases in the communities of Miramar and Puerto de Jobos in the municipality of Guayama: one investigation per survey (2018) (attached).

> EPA's [2015] Coal Ash Rule negatively impacts low-income and communities of color disproportionately, and places enforcement of the Rule back on the shoulders of the community. This system requires low-income and communities of color to collect complex data, fund litigation and navigate the federal court system - the very communities that the environmental justice principles were designed to protect.[86]

Low-income communities and communities of color have been adversely impacted by mismanagement of coal ash at reuse sites and in waste piles, and EPA's Phase 2 Proposal will further impact environmental justice communities. Communities need robust regulations to protect them from the serious harms caused by the placement of coal ash in unencapsulated fill projects and waste piles because the risk of harm from these practices is significant and the volume of coal ash that ends up in unencapsulated land applications is already very high, and will likely grow much higher as restrictions are lifted.

1. *CCR fill sites are disproportionately located in environmental justice communities.*

Although information about the full universe of "beneficial use" sites is very limited, two examples highlight the burden borne by environmental justice communities. First, an analysis of North Carolina state records – a state that requires some recordkeeping of beneficial ash use, *see* Section II – reveals that a majority of the large fill sites documented in the state are located (or at least proposed[87]) in low-income communities and communities of color. Second, the use of coal ash as fill in Puerto Rico has adversely impacted the poorest region of the island. The evidence available from North Carolina and Puerto Rico indicate the broader environmental justice problem of CCR fill sites nationwide.

a. Large Fill Sites in North Carolina Are Located Disproportionately in Environmental Justice Communities.

In North Carolina, Duke Energy and eight other power generators are producing coal ash.[88] The Department of Environmental Quality's ("NC DEQ") Division of Waste Management

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[86] U.S. Commission on Civil Rights, Environmental Justice: Examining the Environmental Protection Agency's Compliance and Enforcement of Title VI and Executive Order 12,898, at 6 (Sept. 2016).

[87] A review of the sites in North Carolina's Inventory of Structural Fill Projects Greater than 10,000 Cubic Yards (Aug. 26, 2019), https://files.nc.gov/ncdeq/Coal%20Ash/SF-Inventory-for-website-20190826.pdf, revealed that the status of fill is unconfirmed at some sites. For example, for EJ Bill Simpson Property, *id.* at 6 (Location ID "CCB0050"), an attorney representing the property owner stated that they are not aware "that any structural fill of any kind has been placed on this property during the ownership by Mr. Simpson/Cripple Creek" and that Mr. Simpson's office claims "it was never implemented." Letter from Clifton W. Homesley to Charles Gertsell at 1 (Oct. 26, 2010), https://edocs.deq.nc.gov/WasteManagement/0/edoc/99246/SW_F_CCB0050_10-26-2010_G_C.pdf?searchid=dbcdcb17-0d4e-4789-a8f7-545d0ca917c3.

[88] NC DEQ and Natural Resources and the Environmental Management Commission, 2015 Coal Combustion Products Study as required by the Coal Ash Management Act, at A-7 (May 13, 2015) ("NC DEQ 2015 Study"), https://files.nc.gov/ncdeq/Environmental%20Management%20Commission/EMC%20Meetings/2015_Jan_thru_Dec/3-MAY_2015/AttachA_to_AG15-18Final_CCProd_ReuseRprt2015May14.pdf.

("DWM") regulates the management of coal ash from coal-fired electric power plants that are used in structural fills.[89] These are regulated in accordance with the North Carolina Administrative Code, 15A NCAC 13B .1700, and by statute.[90] Unlike most states, since 1994, North Carolina has required a notice to the state prior to use of CCR as structural fill. Since January 4, 1994, for example, "persons proposing to use dry coal ash as structural fill material have been required to notify DWM in accordance with the rules in 13B at least sixty days before initiating construction."[91] In addition, in August 2014, the North Carolina General Assembly passed Senate Bill 729 into Session Law 2014-122 creating the State's first Coal Ash Management Act ("CAMA"), which includes provisions regarding structural fills and beneficial reuse. The law was later amended, with revised House Bill 630 being passed by the Assembly into Session Law 2016-95 in July 2016.[92]

As of 2015, the state had documented a total of 61 regulated structural fills that had been constructed, or at least proposed, in North Carolina, according to an inventory compiled by NC DEQ, as required by CAMA: "42 in the coastal plains; 36 in the piedmont; and 2 in the mountains." The proposed end uses for these structural fills included "roads, airport runways and hangers, industrial parks, warehouses, a museum, retail buildings, parking lots, an automobile dealership and lined landfills."[93]

Although state records are far from comprehensive or exhaustive,[94] there are currently 80 structural fills regulated under the North Carolina 13B rules, according to records available in the state's online database.[95] Fills under these rules "are unlined and without groundwater monitoring and an impervious cap."[96] The August 2019 inventory of structural fill projects greater than 10,000 cubic yards provides the locations of 50 structural fill sites defined as falling

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[89] "15A NCAC 13B .1700 defines 'Coal combustion by-products' as 'residuals, including fly ash, bottom ash, boiler slag and flue gas desulfurization residue produced by coal fired electrical or steam generation units.' 15A NCAC 02T .1200 is 'applicable to the treatment, storage, transportation, use, and disposal of CCPs that are defined as wastewater treatment residuals only.'" NC DEQ 2015 Study at A-3. The Division of Water Resources regulates the treatment, storage, transportation, and beneficial use of a subsection of coal ash. *Id.* at 10. The environmental justice analysis described in these comments only considers on 13B and CAMA structural fill sites as those are the ones with readily available location and fill information.

[90] NC DEQ, Power Plan Coal Combustion Residuals Fact Sheet (Jan. 24, 2017), https://files.nc.gov/ncdeq/Waste%20Management/DWM/SW/Coal%20Combustion/CoalAsh_OnePager_20170124.pdf.

[91] NC DEQ 2015 Study at A-3.

[92] NC DEQ, Power Plan Coal Combustion Residuals Fact Sheet (Jan. 24, 2017), https://files.nc.gov/ncdeq/Waste%20Management/DWM/SW/Coal%20Combustion/CoalAsh_OnePager_20170124.pdf.

[93] NC DEQ 2015 Study at A-9.

[94] *See, e.g.*, section B.2, *supra*, & 1993 Notice of violation, *available at* https://grist.files.wordpress.com/2010/05/alamac_violn_notice.pdf (violation does not appear in Laserfiche); "[T]here is no notification requirement if the amount of ash is less than 1,000 cubic yards. Nor do state records document all of the old 'legacy' sites — coal ash dumps from the 1950s, for example — when such activity was virtually unregulated." Lisa Sorg, NC Policy Watch, Do you live near a coal ash disposal site? (Sept. 4, 2018), http://www.ncpolicywatch.com/2018/09/04/do-you-live-near-a-coal-ash-disposal-site/.

[95] *See* "North Carolina CCR Structural Fill Sites_EJScreen.xlsx" (attached); *see also* North Carolina CCR Structural Fill Sites, Oct. 2019 Compilation (attached).

[96] *Id.*

within one of the following three categories: "pre-regulatory" to regulations NCAC 13B .1700; constructed according to regulations NCAC 13B .1700; and constructed according to CAMA.[97]

The risks and burdens associated with structural fills in North Carolina are disproportionately carried by communities of color and low-income communities. The location of fills with respect to low-income and minority populations can be determined by analyzing demographic data of areas surrounding the fills at these 50 structural fill sites.[98] In an analysis attached and summarized below, demographic estimates within 1-mile and 3-miles of each site were generated using the 2012 through 2016 American Community Survey from the United States Census Bureau, which are available in EJSCREEN's Standard Reports. EJSCREEN was designed by EPA as a tool to further its environmental justice policies and is a screening tool that helps identify areas that may warrant additional consideration, analysis, or outreach.[99]

Table 2. Structural Fill Sites and Environmental Justice

	Percent Minority Estimate		*Percent Low-Income Estimate*	
	Within 1-mile (n=49)	Within 3-miles (n=50)	Within 1-mile (n=49)	Within 3-miles (n=50)
Structural fill sites with percent estimate greater or equal to state average	59.2%	56.0%	55.1%	62%
Structural fill sites with percent estimate greater or equal to US average	59.2%	56.0%	61.2%	62%

The average percent of the population that is low-income, which is defined based on the number of individuals living in households where the household income is less than or equal to twice the federal poverty level, is 38 percent in North Carolina and 34 percent nationally.[100] Estimates of the low-income population within three miles of the structural fill sites in North

[97] NC DEQ Inventory of Structural Fill Projects Greater than 10,000 Cubic Yards (Aug. 26, 2019), https://files.nc.gov/ncdeq/Coal%20Ash/SF-Inventory-for-website-20190826.pdf.

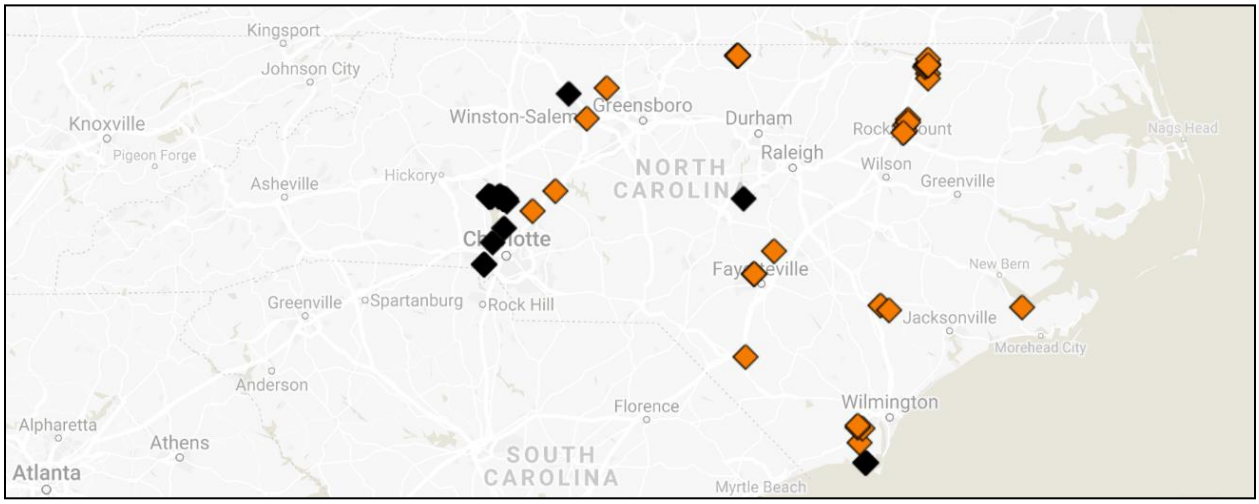
[98] As noted in the attachment, the analysis considers all sites listed in the "NCDEQ Inventory of Structural Fill Projects Greater than 10,000 Cubic Yards" (Aug. 26 2019), https://files.nc.gov/ncdeq/Coal%20Ash/SF-Inventory-for-website-20190826.pdf. Although they are largely identical, there a few minor differences in the latitudes and longitudes provided in the inventory document and the location data available in the Division of Waste Management (DWM) Site Locator Tool (last accessed July 30, 2019). This analysis relies on the Locator Tool data, as one issue was noted in the inventory location data: For Cherry Point Impact Berm (CCB0011), the latitude in the inventory is listed as 34.15833, East of North Carolina, instead of 34.915833, the latitude provided by the Locator Tool, which correctly falls in North Carolina. The differences between the inventory and Locator Tool data appear to be significant for one site, CCB0023. The site is defined as "2nd Coal Ash Structural Fill; Eastern Pride (Family Dollar Store and adjoining property)" in the inventory, and "Family Dollar Store #7138 CCB Structural Fill" in the database. However, both the 1-mile and 3-mile areas surrounding both locations provided are estimated to be above low-income and minority state and US averages, so the source used does not alter the conclusions of this analysis. For this site, the estimates are based on the inventory latitude and longitude instead of the Locator Tool latitude and longitude, as the inventory location provides the closest match to the address and nearest intersection listed for CCB0023.

[99] *See* EPA, Technical Guidance for Assessing Environmental Justice in Regulatory Analysis (June 2016), https://www.epa.gov/sites/production/files/2016-06/documents/ejtg_5_6_16_v5.1.pdf.

[100] *See* "North Carolina CCR Structural Fill Sites_EJScreen.xlsx" (attached).

Carolina are higher than the state average at 31 of the 50 sites, or 62 percent of sites, and within one mile, at 27 of 49 sites, or 55 percent of sites. Comparing estimates to the national average reveals similar trends. *See* Table 2 above. All site estimates are listed in "North Carolina Structural Fill_EJScreen.xlsx" (attached), and the sites with three-mile estimates above average are designated with orange markers in Figure 1 below.

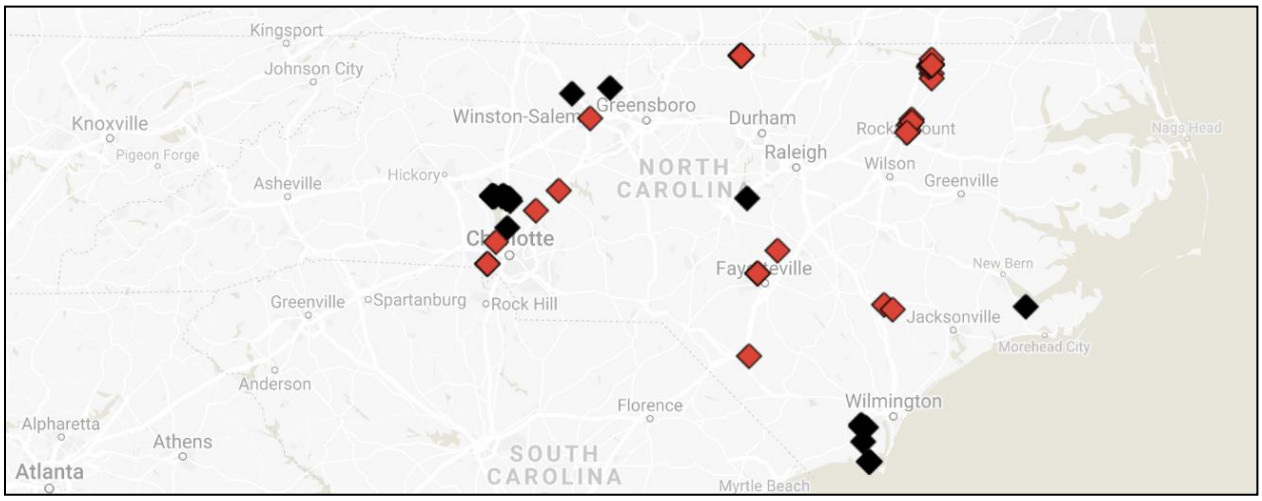
Figure 1. Structural fill projects greater than 10,000 cubic yards with 3-mile low-income population estimates above state average



Similarly, the average percent of the population that are people of color, or individuals listing their racial status as a race other than white alone and/or listing their ethnicity as Hispanic or Latino, is 36 percent in North Carolina and 38 percent nationally.[101]At 28 of the 50 structural fill sites, or 56 percent of sites, the estimates of the population of people of color within three miles are higher than the state average. At 29 of the 49 structural fill sites with available data, or 59 percent of sites, the estimates of the population of people of color within one mile are higher than the state average. Comparing estimates to the national average reveals similar trends. *See* Table 2 above. All site estimates are listed in "North Carolina Structural Fill_EJScreen.xlsx" (attached), and the sites with three-mile estimates above average are designated with red markers in Figure 2 below.

[101] *Id.*

Figure 2. Structural fill projects greater than 10,000 cubic yards with 3-mile minority population estimates above state average



b. CCR Fill Sites Are Likely To Be Disproportionately Located in Environmental Justice Communities Nationwide.

Studies have found that "areas with a larger proportion of minority populations, low-income populations, or indigenous peoples are more likely to have pollution emission sources such as a hazardous waste site, high traffic roadway, or industrial site."[102] In 2016, the U.S. Commission on Civil Rights highlighted the recommendation that "EPA should assist the North Carolina Department of Environmental Quality in proactively preventing low-income and minority communities from being disproportionally affected by coal ash disposal."[103]

Given the serious environmental consequences that have befallen low-income and minority communities that are host to so-called "beneficial" uses of coal ash it is imperative that

[102] *See, e.g.*, EPA, Technical Guidance for Assessing Environmental Justice in Regulatory Analysis (June 2016), https://www.epa.gov/sites/production/files/2016-06/documents/ejtg_5_6_16_v5.1.pdf.

[103] U.S. Commission on Civil Rights, Environmental Justice: Examining the Environmental Protection Agency's Compliance and Enforcement of Title VI and Executive Order 12,898, at 5 & Appendix C (Sept. 2016). The 2016 Report highlights the importance of environmental justice considerations in the context of waste issues. *See, e.g., id.* at 6 ("statistical research . . . suggests that companies tend to site facilities that can negatively impact human health in these communities because they lack the political clout and resources necessary to fight siting decisions" (citing Paul Mohai & Robin Saha, Which Came First, People or Pollution? Assessing the Disparate Siting and Post-Siting Demographic Change Hypotheses of Environmental Injustice, Environmental Research Letters, (Nov. 18, 2015)), 7 ("three-quarters of hazardous waste landfill sites in eight southeastern states were located in communities whose residents were primarily poor and African-American or Latino" (citing U.S. General Accounting Office, Siting Hazardous Waste Landfills and Their Correlation with Race and Economic Status of Surrounding Communities (June 1983)), 7-8 (citing United Church Of Christ, Commission for Racial Justice, Toxic Waste and Race: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites (1987)), 13 ("waste disposal sites often establish near communities with the least ability to resist, 'exploit[ing] communities with little economic or political power in peripheral rural areas,' and thereby 'deval[ue]' the health of low-income people" (quoting Alan Barton, Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility, by Dorceta E. Taylor, 55 Nat Resources J 236 (2014)).

the EPA make critical improvements to the coal ash regulatory framework in order to protect these communities.

2. *Use of CCR as fill has already harmed environmental justice communities.*

There is strong evidence that coal ash use applications designated as "beneficial" uses have already caused harm to communities throughout the United States, and much of this damage has occurred in minority and low-income communities. The attached chart titled "EPA-Confirmed Coal Ash Reuse Damage Cases and Environmental Justice Data" ("Environmental Justice Chart") provides a list of all of the fill sites EPA has confirmed as damage cases, meaning they have had documented releases of pollutants above health-based levels into the environment. *See* Section I.B.1 & Table 1, *supra*.

While this list does not represent the universe of beneficial use sites where degradation has occurred, this list encompasses all of the sites reviewed and confirmed by EPA to be "damage cases" where EPA's Compendium of Damage Cases included data attributing damage at the site to a fill site (as opposed to only landfills or surface impoundments).[104] The data in the damage case compendiums were limited to sites where a state required monitoring of groundwater, which occurred in a minority of states. As a result, there may be many more CCR fill damage sites in states where monitoring was not required or conducted, but EPA did not have data on these sites. Nor has EPA conducted an information collection request to compile a list of all structural fill sites to determine the extent of potential damage.

However, even with these limitations, the Environmental Justice Chart shows that the majority of CCR fill sites that EPA has confirmed to have caused damage are situated in environmental justice communities. A deeper look into some of these unencapsulated use sites shows the disproportionate environmental burdens that these communities have had to bear. *See, e.g.*, "EPA-Confirmed Damage from Coal Ash as Fill – Case summaries" addendum.

a. Nationwide examples of damage from unencapsulated land applications, including structural fills, demonstrates harm to low-income communities and communities of color.

In total, data show that over half of the sites that EPA has confirmed as coal ash damage cases at fill or reuse sites are located in environmental justice communities. The percentages highlighted in yellow on the Environmental Justice Chart indicate where the population surrounding a site had a higher minority or low-income percentage within one and three miles of the site than state averages.

The Chart highlights twelve damage cases involving coal ash placed as "fill" in locations of particular concern:

1) Town of Pines Groundwater Plume, IN

[104] For example, EPA's Damage Case Compendium states that the Don Frame Trucking Site in New York is an "Offsite Landfill with Preceding, Adjacent Structural Fill," but this site was excluded from the list because the text did not confirm whether damage was attributable to the structural fill. *See* Damage Case Compendium, Vol. 1, at 73.

2) Lansing Board of Light & Water, North Lansing Landfill, MI
3) Swift Creek Structural Fill (ReUse/Full Circle Solutions), NC
4) DOE Oak Ridge Y-12 Plant Chestnut Ridge Operable Unit 2, TN
5) Trans-Ash Coal Combustion Waste Fill, TN
6) WE Energies Oak Creek Power Plant Ravine Fill Collapse, WI
7) WEPCO Highway 59, WI
8) Joliet 9 Generating Station, IL
9) Powerton Plant, IL
10) K.R. Rezendes Ash Landfill (South Main Street Site), Freetown, MA
11) GenOn Portland Station Bangor Quarry Ash Disposal Site, PA
12) WE Energies Oak Creek Power Plant Early Ash Disposal Area Fill Sites, WI

Despite the grave threats CCR fill projects can pose to health and the environment, EPA's Phase 2 proposal fails to adequately regulate unencapsulated fill sites and to establish mechanisms to prevent future instances of harm to environmental justice communities.

b. North Carolina examples of damage from unencapsulated land applications, including structural fills, demonstrate disproportionate impact.

According to a 2010 study by the North Carolina Chapter of the Sierra Club,[105] sites in three counties were linked to contaminated groundwater or surface water.[106] According to a related investigation, "[t]he areas of North Carolina contaminated by coal ash fills are notable for being poor and having large African-American, Latino and Native American populations."[107] The investigation found that while the statewide poverty rate was 14.6 percent, the poverty rates for the counties with known damage cases from coal ash fills were much higher: 30.4 percent in Robeson, 26.6 percent in Northampton, and 15.5 percent in Nash County, according to Census Bureau data.[108] In addition, those counties' non-white populations were also greater than the state's 26.1 percent, at 64.2 percent in Robeson, 59.4 percent in Northampton, and 39.4 percent in Nash.[109]

In addition, the records of violations available in North Carolina's state database reveal that structural fill sites have caused harm in environmental justice communities.[110] Nine of the 13 sites, or 69 percent of the sites, reported to have triggered notices of violations according to North Carolina's available records are environmental justice communities.[111]

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[105] *See also* EPA-Confirmed Damage from Coal Ash as Fill – Case Summaries (Swift Creek Structural Fill (ReUse/Full Circle Solutions)).
[106] Sierra Club, North Carolina Chapter, Unlined Landfills? The Story of Coal Ash Waste in our Backyard, at 6 (Apr. 7, 2010), http://www.southeastcoalash.org/wp-content/uploads/2012/05/NC-Coal-Ash-Landfill-Report-2010.pdf.
[107] Sue Sturgis, Facing South, Dumpsites in Disguise (May 27, 2010), https://www.facingsouth.org/2010/05/dumpsites-in-disguise.html.
[108] *Id.*
[109] *Id.*
[110] *See* North Carolina CCR Structural Fill Sites, Oct. 2019 Compilation (attached); "NC DEQ Laserfiche_Fills (Organized 08-27-2019).xlsx" (attached).
[111] *See* North Carolina CCR Structural Fill Sites, Oct. 2019 Compilation, at Section I.A (attached).

3. *CCR waste piles are likely to disproportionately impact environmental justice communities.*

Although EPA has not provided information about the universe of coal ash waste piles, *see* Section III, a review of known and historic waste piles suggests that coal ash waste piles are disproportionately located in low-income communities. The attached "CCR Waste Piles & Environmental Justice Data" document includes information about 8 known existing or historic waste piles. Estimates of the low-income population within three miles of the 8 waste piles are higher than the state averages at 6 of waste piles, or 75 percent of the sites.

4. *Environmental justice communities are threatened by both CCR piles and the use of CCR as fill in Puerto Rico.*

As mentioned above in Section I.C., *supra*, and described in much more detail in Section III, *infra*, one of the largest CCR piles in the U.S. is located in one of the poorest regions of the U.S. in Guayama, Puerto Rico. In addition, there are over 50 known coal ash fill sites on the island, and *all of them* are located in areas where the poverty level is many times higher than the U.S. average,[112] and most of them are located in areas where the poverty level is higher the average poverty level for Puerto Rico. In addition, almost half of the fill sites are located in areas where the poverty level is *considerably higher* than the average in Puerto Rico.[113] This significant problem of environmental justice and coal ash in Puerto Rico is discussed in much greater detail in Section VIII, *infra*.

5. *EPA's finding that surface impoundments are disproportionately located in environmental justice communities further suggests that these communities are likely to be most affected by the use of CCR as fill.*

In 2015, EPA estimated that at least 1.5 million people of color live in the "catchment areas" of coal ash surface impoundments at 277 power plants throughout the United States.[114] In catchment areas[115] downstream of coal ash impoundments, residents are threatened by leaks, discharges and spills of toxic chemicals, as well as potentially deadly catastrophic failures. EPA found that the minority population in catchment areas is higher than both national and state averages.[116] EPA also estimates nearly 900,000 low-income residents live in catchment areas, which is also higher than state and national averages. In fact, more than 60 percent of the power plants operating coal ash impoundments are located in catchment areas where the percentage of

[112] *See* "Puerto Rico Structural Fill Locations-Poverty Data.xlsx" and *infra*.
[113] *Id.* (24 of 52 sites in areas with population below poverty level estimated at over 55%, compared to 44.4% Puerto Rico average).
[114] EPA, Regulatory Impact Analysis (RIA) for EPA's 2015 Coal Combustion Residuals (CCR) Final Rule, Docket ID No. EPA-HQ-RCRA-2009-0640-12034, at 8-10 ("RIA for 2015 Rule").
[115] EPA defines "catchment area" as the downstream area that receives surface water runoff and releases from CCR impoundments, and incurs risks from CCR impoundment discharges (*e.g.*, unintentional overflows, structural failures, and intentional periodic discharges). Catchment areas are measured in terms of runoff travel time. This analysis considers populations in all catchments within 24 hours of downstream travel time from the plant under mean surface water flow conditions, to estimate populations potentially affected by impoundment failures. *Id.* at 8-9.
[116] *Id.* at 8-12.

residents who live below the Federal Poverty Level exceeds statewide percentages.[117] In other words, the population living below the poverty level near these coal ash impoundments is about 40 percent larger than would be expected based on statewide averages, and the minority population is approximately 20 percent greater. According to a 2009 analysis, almost 70 percent of ash ponds in the United States are in areas where household income is lower than the national median.[118] Of the 181 ZIP codes nationally that contain coal ash ponds, 118 (65.19 percent) have above-average percentages of low-income families.[119]

EPA's promulgation of the first-ever coal ash disposal regulations is prompting many coal plants to seek unregulated – and cheap – placement and storage options for their coal ash, such as exempted "beneficial use" applications. Because the 2015 CCR Rule is spurring the closure of many coal ash impoundments,[120] communities near these plants are likely targets of "beneficial" use projects, since companies can save on transportation costs if ash is reused near the plant sites.[121] In other words, the pressure to create fill areas near impoundments is likely much greater than areas near landfills. As analyses conducted prior to the CCR Rule demonstrate, these areas are disproportionately low-income communities and communities of color. This imbalance suggests that the Phase 2 Proposal, which will result in "beneficial use" practices becoming less regulated and less subject to public reporting, and thus enforcement, is likely to disproportionately impact low-income communities and communities of color.

II. THE PROPOSED RULE GOVERNING BENEFICIAL USE OF CCR FAILS TO MEET THE PROTECTIVENESS STANDARD OF § 4004(a), IS ARBITRARY AND CAPRICIOUS, AND LACKS A RATIONAL BASIS.

A. All Unencapsulated CCR Fills Constitute Disposal and Must Be Regulated Accordingly.

EPA's proposed rule fails to meet the protectiveness standard set out at Section 4004(a) of RCRA because it would allow unencapsulated CCR to be placed in fills without liners or other

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[117] *Id.*

[118] Comments of Earthjustice *et al.*, Docket ID No. EPA-HQ-RCRA-2009-0640 (Nov. 19, 2010), *available at* https://earthjustice.org/sites/default/files/files/us_epa_proposal_disposal_coal_comb_residue_pdf_58002.pdf (citing U.S. Census Bureau, Census 2000 Summary File 3 (SF 3) - Sample Data, All 5-Digit ZIP Code Tabulation Areas (860)).

[119] *Id.* (citing U.S. Census Bureau, Census 2000 Summary File 3 (SF 3) - Sample Data, All 5-Digit ZIP Code Tabulation Areas (860), Table P76 "Family Income in 1999") ("'Low-income' defined as earning less than $20,000 annually. ZIP codes containing coal ash ponds compared to a national mean percent "low-income" of 12.61%, calculated based on the "Family Income in 1999" dataset; United States Environmental Protection Agency (U.S. EPA). Database of coal combustion waste surface impoundments (2009). Information collected by EPA from industry responses to Information Collection Request letters issued to the companies on March 9, 2009. Sufficient data to determine ZIP code Census Data was available for 511 of the nation's 584 known coal ash impoundments. Many impoundments are adjacent to one another surrounding generating facilities, and are listed with identical geographic coordinates in the EPA data—hence why only 181 ZIP codes contain 511 ash impoundments.")

[120] Numerous provisions of the 2015 CCR require the closure of CCR impoundments due to leaking of CCR constituents or violation of location restrictions. *See* § 257.101.

[121] A tragic example is the reuse of CCR that occurred at the Town of Pines Superfund Site, where coal ash reuse contaminated the town's drinking water. *See* https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0508071

environmental controls, and therefore does not ensure there will be "no reasonable probability of adverse effects to health or the environment from disposal of solid waste."[122] EPA fails to address the fact that unencapsulated fill sites are analogous to, and pose at least the same risks as, unlined landfills.

Using any volume of unencapsulated CCR as structural fill constitutes disposal. RCRA defines "disposal" as "the . . . placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters."[123] Placing unencapsulated CCR into or on the land or in water – as is done when unencapsulated CCR is used as fill – allows the constituents of that waste to enter the environment. For example, without a fully protective liner – and unencapsulated fill sites would not be required to have any liner at all – there is nothing stopping the toxic contaminants in CCR from leaching into groundwater.[124] Without a cover – and no cover over CCR fill is required – there is nothing preventing unencapsulated CCR placed as fill from blowing into the air and into peoples' lungs.[125] Without groundwater monitoring, which is not required at CCR fill sites, releases of CCR contaminants to groundwater will not be detected in a timely manner and will likely cause harm to the environment and potentially to human health.

The proposed rule likewise does not require any barrier to prevent rain or snow from soaking into CCR fill, which will result in contaminants leaching into groundwater indefinitely, nor does it contain any requirement to ensure barriers initially placed are intact years later.[126] The proposed rule also does not require any impermeable cap, without which damaging leachate will continue to flow unmitigated into the environment without end.[127] In short, any amount of unencapsulated CCR placed on the land or in water is likely to cause CCR constituents to enter the environment, be emitted into air, or be discharged into waters because there is nothing stopping them from doing so.

And when they do, it puts human health and the environment at risk. Even very small volumes of unencapsulated CCR can cause harm.[128] The disposal occurring at unencapsulated CCR fill sites is bolstered by EPA's own confirmation of documented damage, as detailed in Section I.B., *supra*. Placement of CCR in structural fills results in releases of CCR constituents and damage to health and the environment analogous to the damage caused by CCR disposal sites. In fact, one quarter of EPA's proven damage cases involved unencapsulated fill of CCRs.

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[122] 42 U.S.C. § 6944(a).
[123] 42 U.S.C. § 6903(3).
[124] *See* Expert Comment Report on EPA's Proposed Rule (August 14, 2019): Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles, Docket Number EPA-HQ-OLEM-2018-0524 (Oct. 15, 2019) ("Sahu Expert Report") (attached).
[125] *See id.*
[126] *See id.*; *see also* Mark A. Hutson, P.G., Responses to EPA Solicitation for Comments on Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles, at 11-12 (Oct. 14, 2019) ("Hutson Expert Report") (attached).
[127] Paul Mathewson, PhD, Wisconsin Coal Ash Landfill Groundwater Monitoring Data Analysis, A Review of the Impacts on Groundwater of 25 Coal Combustion Residuals Monofills (Oct. 14, 2019) ("Mathewson Expert Report") (attached).
[128] *See* Sahu Expert Report at 23. *See also* Hutson Expert Report (attached).

This is true despite the dearth of monitoring data from CCR fill sites. Most fill sites have not been required to monitor releases to the environment by state laws or by the federal CCR rule, nor they have been required to monitor for the full suite of CCR indicator pollutants. When monitoring exists for fill sites or when the coal ash itself is tested, nevertheless, data reveal that hazardous constituents are released to the environment. Thus placement of unencapsulated CCR on land meets the definition of "disposal" and must be subject to the same regulatory requirements as CCR disposal units. Consequently, EPA's failure to regulate unencapsulated CCR fill sites as disposal units violates the protectiveness standard of RCRA § 4004(a).

1. *The Phase 2 Proposal is arbitrary and capricious because EPA failed to explain its inconsistency with EPA's prior rulemaking.*

EPA's proposed Phase 2 changes to the 2015 CCR Rule's beneficial use provisions are arbitrary and capricious – and, thus, unlawful under the Administrative Procedure Act ("APA") – because EPA failed to adequately explain the inconsistency with its prior position. Under the APA, an "unexplained inconsistency" between agency actions is "a reason for holding an interpretation to be an arbitrary and capricious change."[129] In general, an agency that wishes to change a formal position "is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance."[130] This further justification is required not by the mere fact that there is a policy change, but because the agency is obligated to explain its reason for disregarding facts and circumstances underlying the prior decision.[131]

The 2015 CCR Rule provides that, absent a demonstration of protection of the environment, the placement of unencapsulated CCR on land in amounts equal to or greater than 12,400 tons does not qualify as a beneficial use and is, therefore, subject to requirements for CCR disposal—*e.g.*, location restrictions, design and operating criteria, groundwater monitoring, corrective action, closure and post-closure care, and recordkeeping.[132] EPA has failed to explain its abandonment of the 2015 CCR Rule's prohibition on the placement of unencapsulated CCR on land in amounts of 12,400 tons or more without a demonstration of environmental protection, leaving such placement completely unregulated in most circumstances, and that change is unsupported by the record.

2. *EPA must impose substantial additional safeguards on CCR fill projects.*

Removing the mass-based threshold does not ensure no reasonable probability of adverse impacts to health or the environment, as it would open the floodgates to enable large unencapsulated fill sites to completely evade not only the CCR Rule's requirements for disposal but also any requirements to perform a demonstration of safety. The consequence of EPA's proposed removal of the mass-based threshold would be to allow the placement of unlimited volumes of unencapsulated CCR, without any regulatory requirements, as long as the CCR was

[129] *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005).
[130] *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983).
[131] *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 516 (2009).
[132] 40 CFR 257.53; 257.60–107.

not placed in one of the six specific locations identified in EPA's proposed Criterion 4. Such a proposal is arbitrary and capricious and cannot meet the protectiveness standard of RCRA § 4004(a). Furthermore, even if EPA adopts criteria based on location restrictions as provided in this Phase 2 Proposal, those restrictions will not eliminate the potential harm caused by placement of large volumes of CCRs in unencapsulated fill sites.[133] Placement on the land of unencapsulated CCR must be prohibited as disposal – or the user must comply with all the protections, including location restrictions, engineering safeguards, and operational controls, required for new CCR landfills.

3. *The Phase 2 Proposal ignores evidence that "large-scale" fills present risks of harm and is therefore arbitrary, capricious, and in violation of RCRA's protectiveness standard.*

EPA's own record shows that placement of large quantities of coal ash without environmental controls will result in a "reasonable probability of adverse effects to health or the environment."[134] The current CCR Rule exempts from regulation practices that meet a four-prong definition of "beneficial use of CCR."[135] The fourth criterion of the beneficial use definition sets a mass-based threshold of 12,400 tons and requires that:

> [U]nencapsulated use of CCR involving placement on the land of 12,400 tons or more in non-roadway applications, the user must demonstrate and keep records, and provide such documentation upon request, that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use.[136]

EPA's Phase 2 Proposal contemplates removal of the mass-based threshold from the fourth criterion of the definition of beneficial use, which is the criterion that would trigger the user to have to make an environmental demonstration. Removing a mass-based threshold from the CCR Rule would violate RCRA's protectiveness standard because the evidence shows that large fills pose a "reasonable probability of adverse effects on health or the environment," including when such fills are placed in areas where an environmental demonstration would, under EPA's Phase 2 Proposal, not be required. Indeed, available evidence makes clear that an environmental demonstration does not suffice to protect health and environment. Rather, CCR fills must be prohibited outright or, at minimum, be subject to the safeguards imposed by the 2015 CCR Rule on new CCR landfills.

[133] *See* Sahu Expert Report (attached).
[134] 42 U.S.C. § 6944(a).
[135] 40 C.F.R. §§ 257.50(g), 257.53.
[136] 40 C.F.R. § 257.53.

a. EPA's findings from the 2015 final rulemaking indicate damage and risk are related to volume.

EPA previously concluded that size is an important factor in damage from fill sites. EPA links fills that are "large" to environmental risks regardless of whether there were also site-specific location-based risks, which supports the imposition of CCR landfill safeguards when large volumes of unencapsulated CCR are placed on the land.

i. 2015 Final Rule, Comments, and Response to Comments

EPA's 2015 CCR Rule acknowledged that the quantity of CCRs placed at an unencapsulated fill site is an important factor in protecting against risks to health and the environment when it established a size-based threshold of 12,400 tons, above which users must make a demonstration of environmental safety in order to claim the benefit of a complete exemption from the regulatory requirements for disposal sites. EPA clearly stated in its 2015 response to public comments that "CCRs can leach toxic metals at levels of concern, so depending on the characteristics of the CCR, *the amount of material placed*, how it is placed, and the site conditions, there is a potential for environmental concern."[137] It is based on this acknowledgment of the link between size and harm that EPA included a size-based threshold in the final rule. EPA stated in its response to comments that it "adopted criteria in the final rule to ensure that inappropriate uses that effectively are disposal will be regulated as disposal," giving as an example that "the final rule provides that the use of large volumes of CCRs in restructuring landscape that does not meet specific criteria will constitute disposal."[138]

The threshold selected by EPA was set based on the smallest landfill in EPA's risk assessment database as a proxy, generally, for risks posed by large volume fills. The threshold is geared at requiring the user of quantities above that amount to overcome a presumption that there would be disposal occurring at a site. EPA explained that, in deciding how to set a size threshold, it considered three datasets, namely: "(1) The size of the structural fills that have resulted in damage cases; (2) The distribution of landfill sizes, derived either from an EPA Office of Water's questionnaire or from the landfill size distribution used in the proposed rule; and (3) The size distribution for large scale fills that have been constructed in North Carolina."[139] As stated in its 2014 response to comments, "[f]ocusing on the risks of concern—that large scale fills were effectively operating as landfills," EPA selected a number that it believed corresponded to the "smallest size landfill in the risk assessment database."[140] As EPA explained:

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[137] EPA, Comment Summary and Response Document, Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities; Proposed Rule (Docket # EPA-HQ-RCRA-2009-0640), Vol. 12: Beneficial Use and Definition of CCR Landfill (only), at 10 (Dec. 2014) (emphasis added) (attached) [hereinafter Response to Comments, Vol. 12]. *See also* EPA, Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities; Proposed Rule, 75 Fed. Reg. 35,128, 35,163 (proposed June 21, 2010) (to be codified at 40 CFR Parts 257, 261, 264 et al.) (which included this exact quotation).

[138] Response to Comments, Vol. 12, at 17.

[139] *Id.* at 23.

[140][140] *Id.* at 23–24.

> EPA selected this threshold as the trigger for requiring an affirmative demonstration by the user that there will be no releases of concern as a consequence of the land application, *because the available evidence in the record (i.e., the 2014 risk assessment) demonstrates that at these volumes the potential risks are of such significance to warrant regulation*.[141]

EPA then stated that, "[b]ased on this evidence, the burden then shifts to the potential user to demonstrate that these potential risks do not exist at the particular site or have been adequately mitigated."[142] This statement evidences EPA's position that the placement at the 12,400-ton threshold was presumed to pose risks, because it explains that the demonstration is intended to be a mechanism to shift the burden onto the user to overcome the presumption that there will be disposal and a potential for harm at this size.

ii. Preamble to the 2010 Proposed Rule

The preamble to the 2010 proposed rule was replete with references to the correlation between the size of a coal ash unencapsulated fill site and its relative risk. In 2010, EPA stated unequivocally that large fill sites were disposal, stating, "CCRs in sand and gravel pits, quarries, and other large fill operations is not beneficial use, but disposal."[143] EPA further stated:

> [T]here are cases where large quantities of CCRs have been ''used'' indiscriminately as unencapsulated ''fill,'' *e.g.,* to fill sand and gravel pits or quarries, or as general fill (*e.g.,* Pines, Indiana and the Battlefield Golf Course in Chesapeake, Virginia). Although EPA does not consider these practices to be legitimate beneficial uses, others classify them as such. In any case, EPA has concluded that these practices raise significant environmental concerns.[144]

In fact, EPA found that "the amount of material placed can significantly impact whether placement of unencapsulated CCRs causes environmental risks."[145] EPA's preamble discussed damage that had occurred at large-scale fill sites. For example, EPA stated that "a number of proven damage cases involve the large-scale placement, akin to disposal, of CCRs, under the guise of 'beneficial use.' The 'beneficial use' in these cases involved the filling of old, unlined quarries or gravel pits, or the regrading of landscape with large quantities of CCRs."[146] The proposed rule's preamble further stated:

> EPA recognizes that seven proven damage cases involving the large-scale placement, akin to disposal, of CCRs has occurred under the guise of ''beneficial use''—the ''beneficial'' use being the filling up of old quarries or gravel pits, or the regrading of landscape with large quantities of CCRs. EPA did not consider this

[141] *Id.* at 24 (emphasis added).
[142] *Id.*
[143] 75 Fed. Reg. at 35,138.
[144] 75 Fed. Reg. at 35,155.(internal citation omitted).
[145] 75 Fed. Reg. at 35,164.
[146] 75 Fed. Reg. at 35,155.

type of use as a ‘‘beneficial’’ use in its May 2000 Regulatory Determination, and does not consider this type of use to be covered by the exclusion.[147]

4. *Fill sites smaller than EPA's 2015 CCR rule threshold pose risks to health and the environment.*

EPA adopted a mass-based threshold because of its recognition that CCR placed on land without a liner "can leach toxic metals at levels of concern," and that, "depending on the characteristics of the CCR, the amount of material placed, how it is placed, and the site conditions, there is a potential for environmental concern."[148]

Nevertheless, in selecting the 12,400-ton threshold, EPA soundly missed the mark. EPA's rulemaking record includes evidence of damage to health and the environment where *fewer* than 12,400 tons of were placed on land without a liner. For example, in Bloomington, Indiana, CCR contaminated soil with arsenic and lead at the former CSX Rail site where approximately 6,000 tons of CCR structural fill were placed.[149] At this site, coal ash used in rail bed construction contaminated soil with arsenic and lead at concentrations far above the "screening levels" that EPA and states use to determine whether cleanup is needed. Arsenic levels measured at a former CSX rail corridor in Indiana were as high as 347 milligrams per kilogram of soil (mg/kg) – almost nine hundred times the EPA screening level of 0.39 mg/kg for arsenic. Lead levels reached 1,200 mg/kg, or three times the screening level of 400 mg/kg.[150] In Pines, Indiana, CCR contaminated groundwater with boron, molybdenum, nitrate, and selenium near Columbia Avenue where approximately 6,667 tons of CCR was used as structural fill.[151] And in Indianapolis, Indiana, CCR contaminated groundwater with boron, cadmium, lead, and manganese at 56th Street bridge site where approximately 12,000 tons of CCR was used to construct an embankment.[152]

That contamination resulted from the depositing of CCR at the sites noted above is no surprise. While those structural fills involved fewer tons of CCR than are typically disposed of in a CCR landfill, whenever CCR is placed on land without a liner, groundwater quality is put at risk from CCR leachate.[153] As EPA has recognized, "structural fills can be similar to the landfills regulated in the final disposal rule."[154] According to EPA, when such landfills are unlined, the

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[147] 75 Fed. Reg. at 35,161.
[148] 75 Fed. Reg. 35,128, 35,163 (June 21, 2010).
[149] EIP, Risky Business: Coal Ash Threatens America's Groundwater Resources at 19 More Sites (Dec. 12, 2011), http://www.environmentalintegrity.org/documents/121311EIPThirdDamageReport.pdf; *see also* Comments of Earthjustice et al. in Response to Notice of Data Availability, at 21, Docket ID No. EPA-HQ-RCRA-2012-0028-0111 (Sept. 3, 2013).
[150] EIP, Risky Business Coal Ash Threatens America's Groundwater Resources at 19 More Sites Environmental Integrity Project, at 11 (Dec. 12, 2011), http://www.environmentalintegrity.org/documents/121311EIPThirdDamageReport.pdf.
[151] Id. (citing EPA, Damage Case Compendium, Technical Support Document, Vol. I: Proven Damage Cases, Docket ID No. EPA-HQ-RCRA-2009-0640-12118, at pages 17-25 and nn. 64 and 70).
[152] Comments of Citizens Coal Council on the Notice of Data Availability of August 3, 2013 on EPA's Proposed Coal Ash Rule, Docket ID No. EPA-HQ-RCRA-2012-0028-0093 (Sept. 3, 2013), 10-11.
[153] *See* Sahu Expert Report (attached).
[154] 80 Fed. Reg. at 21,353.

arsenic, cadmium, chromium, lead, mercury, and selenium that are present in CCR "have leached at levels of concern."[155] EPA's analysis of national CCR disposal practices at unlined landfills revealed significant cancer risks, while noting that risks at individual sites may be higher depending on site conditions, waste characteristics, and management practices.[156] Based on the similar risks associated with the disposal of CCR in unlined landfills and the use of CCR in structural fills, EPA concluded that "some proposed [structural fill] applications may need to install engineering features to meet the performance standard."[157]

5. *The smallest landfill in the risk assessment database is 5,500 tons.*

EPA now claims that its selection of the 12,400-ton threshold was based on erroneous information about a particular landfill (an alleged error brought to the Agency's attention by an industry lawyer) and, therefore, that such threshold should be removed.[158] Industry's justification does not hold up to scrutiny. As discussed below, Industry's assertion that EPA's 12,400-ton value in the 2015 rule was based on an incorrect assumption about the landfill database data is simply wrong; the smallest landfill in that database was, in fact, 5,500 tons. Thus, to the extent that EPA's size threshold is based on volume of the smallest CCR landfill, that threshold must be no more than 5,500 tons.[159]

6. *Industry's letter claiming EPA's 12,400-ton figure was too small was based on incorrect assumptions and inaccurate calculations.*

Industry's attempts to claim that the 12,400-ton threshold selected by EPA was not large enough were based on inaccurate assumptions and using the correct information would actually result in a threshold of 5,500 tons. The letter sent to EPA from industry asserting that the smallest landfill in the database is 74,800 tons is based on an assumption that does not prove out and should not be relied upon.[160] After the 2015 CCR Rule was finalized, Headwaters Resources, the largest manager and marketer of coal ash in reuse applications, sent a letter to EPA claiming the threshold selected by EPA should be multiplied by a factor of more than six due to a presumed error in units reported. However, Headwaters' assumptions and math were incorrect (or speculative at best).

Headwaters' assertion that EPA miscalculated 12,400 tons as the smallest landfill in its database as a result of misreported data is incorrect. In their letter, Headwaters Resources argued that EPA's calculation of 12,400 tons was "almost certainly" based on certain facilities' reporting of volumes in cubic yards rather than cubic feet.[161] Headwaters assumed this discrepancy existed because when one multiplies acreage data and height data from the 2013

[155] 80 Fed. Reg. at 21,311.
[156] 80 Fed. Reg. at 21,326 (risk of cancer estimated at 2×10^{-5} for exposure to trivalent arsenic).
[157] 80 Fed. Reg. at 21,353.
[158] 84 Fed. Reg. 40,356.
[159] Evidence to support this threshold, if upheld, would include the size of the smallest landfill in EPA's risk assessment database as well as state thresholds. *See Ii.*; 80 Fed. Reg. at 21,351-52.
[160] *See* Letter from Kenneth Kastner, Hogan Lovells US LLP, on behalf of Headwaters Resources, Inc., to EPA, Re: Computational Error Requiring Correction of Coal Combustion Residuals Rule (Apr. 1, 2015) (Document ID EPA-HQ-OLEM-2018-0524-0005). *See also* 84 Fed. Reg. at 40,356 & n.5.
[161] *Id.* at 2.

database derived from the results of a 2010 questionnaire, the multiplied volumes did not always line up with the reported "landfill volume." However, the reason the math did not line up was not because the units (cubic yards rather than cubic feet) were entered incorrectly, but because Headwaters Resources, when attempting to re-run the math, made an incorrect assumption that they could equate "landfill height" as reported in the 2010 questionnaire data with average landfill depth to calculate landfill volume.

Headwaters' contentions are based on data reported in a 2013 database (titled "Landfill_Dim") of 2010 questionnaire results, which, according to Headwaters, EPA used as the basis for the size threshold determination. The "Landfill_Dim" spreadsheet contains information gathered through a 2010 Questionnaire supplied to electric utilities, including "As Built," "Current," and "At Closure" values for landfill surface area, volume, and height. Headwaters claims that through discussions with EPA, it determined that Plant 8752, or the "Bangor" landfill was the basis for the 12,400-ton threshold determination.

First, it should be noted that while the letter refers to the "Bangor" landfill, the volume, surface area, and height numbers indicated by the letter actually correspond with a unit known as "Quarry 1." This unit is located at the same facility, the RRI Energy Inc. Portland Generating Station located in Mt. Bethel, PA, as another unit which is in fact called "Bangor landfill." Based on the numbers they applied, Headwaters is referring throughout its letter to "Quarry 1."

While there is no specific indication in the 2015 CCR Rule that "Quarry 1" is the basis for EPA's section of the 12,400-ton threshold, the numbers indicate that it likely was.[162] In the Response to Comments, EPA stated:

> Focusing on the risks of concern—that large scale fills were effectively operating as landfills--the Agency reviewed the database of landfills used in the 2014 risk assessment and has established a threshold limit that corresponds to the smallest size landfill in the risk assessment database. EPA selected this threshold as the trigger for requiring an affirmative demonstration by the user that there will be no releases of concern as a consequence of the land application, because the available

[162] EPA's calculations raise certain questions regarding which categories were used to determine the "smallest size landfill." The questions arise because "Quarry 1" is the smallest unit in terms of "WMU Capacity" reported in the Risk Assessment. "Quarry 1" is also the smallest unit in terms of "Ldfl_Vol As Built" and "Ldfl_Vol Current" as reported on the "Landfill_Dim" spreadsheet. However, "Quarry 1" is the second smallest unit in terms of "Ldfl_Vol At Closure" as reported on the "Landfill_Dim" spreadsheet. And sorted by "At Closure" capacity, the "Dry Fly Ash Stack" at the John Sevier facility (Oris Code 3405; Plant ID 8192) is actually the smallest facility reported in "Landfill_Dim." Note that while the "Landfill_Dim" spreadsheet reports three sets of values for each unit (dimensions "As built," "current" dimensions, and dimensions "at closure), the Risk Assessment only uses one of these values for each unit. The hierarchy of values used in the Risk Assessment is explained as follows: "Leaching from landfills was assumed to start at closure when the unit is filled to capacity with CCR waste. This point was chosen because EPACMTP requires a fixed WMU size, and the size at closure represents the largest possible footprint." Risk Assessment, at 4-7, Appendix A at A-3 ("Because the final capacity of a WMU was not always known, the capacity at closure was preferred when multiple values were available, followed by constructed capacity and current capacity as the best estimates for surface impoundment or landfill volume."). So, for closed units, the surface area and volume "At closure" were used; for facilities that are currently operating, the "As built" value was used; if neither was available, the "current" value was used.

evidence in the record (i.e., the 2014 risk assessment) demonstrates that at these volumes the potential risks are of such significance to warrant regulation.[163]

Assuming Headwaters is correct about the conversion rate employed by EPA (*i.e.*, 88 pounds of coal ash per cubic foot), the 12,400 threshold appears to reflect the 280,830 cubic foot volume reported in "Landfill_Dim" as the "As Built" volume of Quarry 1. Translating into coal ash storage capacity, this volume would hold 12,356.52 tons of coal ash (multiply 280,830 cubic feet by 88 to get pounds of coal ash, then divide by 2,000 to convert to tons), which was presumably rounded up to achieve 12,400 tons. The final rule does not explain why EPA would have used the "As Built" capacity, which is greater than the "Current" or "At Closure" capacity for "Quarry 1" as the lower bound for the beneficial use determination. "Quarry 1" closed in 1978,[164] so according to the explanation of the Risk Assessment, EPA should have used the "At Closure" value, at least in its Probabilistic Analysis in the Risk Assessment. The volume reported in the Risk Assessment for this unit matches the "Current"/ "At Closure" value reported in "Landfill_Dim," so it is not clear why EPA would have based the structural fill threshold on the larger "As Built" number reported in the "Landfill_Dim" spreadsheet.[165]

To simplify, the unit EPA selected as the "smallest" landfill, the Portland Generating Station's "Quarry 1" unit, had a reported "as built" volume of 280,830 cubic feet (which EPA used to calculate the 12,400-ton value). Using Headwaters' math, the volume of this unit ("Quarry 1") using "landfill height" data as a depth measurement to calculate volume actually would be 339,529 cubic yards.

Even if we were to indulge Headwaters' story that the operator used their calculation method but accidentally reported cubic yards instead of cubic feet, there is a 58,696 *cubic yard* discrepancy between that number and the reported volume of 280,830 cubic feet. Headwaters attempted to explain this vaguely, saying that the reported volume is "almost surely [] intended to be a cu. yard measurement *reduced somewhat* because a landfill will have sloped sides and is not a perfect cube."[166] But this is pure speculation. Nowhere in the letter does the landfill owner attest to the size of the existing landfill (which would have been a reasonable inclusion). None of the volumes reported in the 2013 database appear to be a straightforward product of the reported "height" and "surface area." The Questionnaire did not ask recipients to calculate volume in this manner (*i.e.*, by multiplying surface area by height, and then reducing by an arbitrary amount to account for the underground shape), but simply to report it. And, indeed, it is clear EPA *did not use*, and actually ignored, the landfill height values from the 2013 database for its depth value in the Risk Assessment (listed as "WMU Depth"). According to the Risk Assessment, "the survey data [derived from the 2010 Questionnaire] do not include total unit depth," so EPA calculated

[163] Response to Comments, Vol. 12, at 24.
[164] This file used to be available at http://water.epa.gov/scitech/wastetech/guide/steam-electric/questionnaire.cfm (*see* "Landfill_Info" spreadsheet in "Technical Questionnaire Database" Access file), but the document does not appear to be on this page.
[165] The coal ash tonnage equivalent of this lower volume would be 9,503.56 tons of coal ash (multiply 215,990 cubic feet by 88 pounds of coal ash per cubic foot, then divide by 2,000 pounds per ton, to achieve coal ash tonnage).
[166] *Id.*

average depth by dividing capacity by area.[167] If "landfill height" values were equal to landfill depth, then EPA would not have needed to calculate "Depth" in the Risk Assessment.

Consequently, Headwaters' claim of computational errors is purely speculative, not supported by record evidence, and should not be relied on by EPA. Further the data submitted by industry indicated a much smaller landfill. Specifically, the "at closure" value for the then-closing "Dry Fly Ash Stack" unit at the John Sevier facility was 5,500 tons.[168] .

7. *Damage cases on the record show evidence of damage to health and the environment well below 12,400 tons or even 5,500 tons.*

Several environmental groups argued in 2013 NODA comments that damage had occurred at smaller sites than 5,000 cubic yards, which converts to as little as 660 tons of coal ash, stating: "[A]t least one of the damage cases provided in Attachment 9, the Former CSX Rail Corridor in Bloomington, Indiana, documented contamination of soils with arsenic and lead when the exact quantity proposed by North Carolina – 5,000 cubic yards – was placed onsite."[169] As stated earlier, Environmental Integrity Project's investigation found that, at this site, coal ash used in rail bed construction contaminated soil with arsenic and lead at concentrations far above the "screening levels" that EPA and states use to determine whether cleanup is needed. Arsenic levels measured at the former CSX rail corridor were as high as 347 milligrams per kilogram of soil (mg/kg) – almost 236 times the EPA screening level of 0.68 mg/kg for arsenic. Lead levels reached 1,200 mg/kg, or three times the screening level of 400 mg/kg.[170]

Furthermore, there was additional evidence before EPA prior to the signing of the final rule of damage at structural fill sites smaller than the 12,400-ton threshold, that EPA had not yet evaluated. EPA stated that:

> In November 2014, EPA received reports alleging that extensive groundwater monitoring data collected by the Wisconsin Department of Natural Resources demonstrated a correlation between beneficial uses of unencapsulated CCR below these thresholds and contaminated drinking water wells in southeastern Wisconsin. Insufficient time was available to allow EPA to evaluate these reports as part of this rulemaking.[171]

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[167] 2014 Risk Assessment, at Appendix A, A-6.

[168] Closure of the "Dry Fly Ash Stack" unit at the John Sevier facility commenced before the Risk Assessment was completed (December 2014),and therefore EPA should have used the "at closure" (instead of the "as built") volume for this unit. Using this value to calculate size would result in a landfill size of about 5,500 tons. Consequently, as the smallest unit in the risk assessment database should have been established at about 5,500 tons.

[169] Earthjustice, Environmental Integrity Project, Sierra Club, and Natural Resources Defense Council, Comments in Response to August 2, 2013 Notice of Data Availability, at 21 (Sept. 3, 2013) (internal citation omitted) (attached).

[170] EIP, Risky Business Coal Ash Threatens America's Groundwater Resources at 19 More Sites Environmental Integrity Project, at 11 (Dec. 12, 2011), http://www.environmentalintegrity.org/documents/121311EIPThirdDamageReport.pdf. In addition, "North Carolina Documented Cases of Structural Fills Using Coal Ash as of January 2010" documents damage from several structural fills that are fairly small, including one fill with a quantity of 600 tons (Thomson Farm) (which roughly converts to 1,200 cubic yards for dry fly ash) and another with only 225 cubic yards of coal ash (Imperial Tobacco).

[171] 2015 CCR Rule, 80 Fed. Reg. at 21,351 n45.

RCRA tasks EPA with ensuring "no reasonable probability of adverse effects to health or the environment." EPA admitted in the 2015 Final Rule that there may be adverse effects to health or the environment at structural fill sites smaller than 12,400 tons, which is supported by the record.[172] In order to meet RCRA's protectiveness standard, EPA must not solely rely on a threshold tonnage that permits substantial volumes of unencapsulated CCR to be placed, without safeguards on the land, where leaching of harmful CCR constituents will occur.[173] EPA must apply at least the same safeguards as apply to new CCR landfills under the 2015 CCR Rule to unencapsultated CCR fill projects, as well as requiring environmental demonstrations.

B. EPA's Failure in the Phase 2 Proposal to Consider Record Evidence of Damage from Beneficial Use Sites Is Arbitrary, Capricious, Contrary to Law, and Violates the Protectiveness Standard Required by RCRA § 4004(a).

The evidence of damage from CCR fill sites and other unencapsulated placement of CCRs is vast, and EPA's failure to regulate all CCR fill sites with the same environmental protections afforded to disposal sites is contrary to the documented risks unencapsulated fill sites pose to health and the environment. The APA requires an agency to consider the evidence before it. Indeed, courts have held that "if the record reveals that the agency has failed to consider an important aspect of the problem or has offered an explanation for its decision that runs counter to the evidence before [it], we must find the agency in violation of the APA."[174] Furthermore, EPA is required by RCRA to promulgate regulations that ensure "no reasonable probability of adverse effects on health or the environment."[175] Given the extensive evidence of adverse effects on health and the environment from unencapsulated fills, EPA's proposal to allow unencapsulated CCR to be placed at fill sites without any required environmental controls (such as liners, cover, cap, groundwater monitoring, or others) except in limited circumstances where location restrictions are not met is arbitrary, capricious, contrary to law, in violation of RCRA, and contrary to the weight of the evidence.

1. *EPA's Phase 2 Proposal fails to consider the extensive damage CCR fill sites have caused to health and the environment.*

The evidence of harm at CCR structural fill and other unencapsulated use sites is extensive, and the evidence is underscored by the fact that *ten out of the forty EPA-confirmed CCR damage cases* that EPA deemed to be "proven" – meaning they had exceedances of health-based standards beyond the waste boundary or were the subject of a scientific or administrative finding of damage – were fill sites.[176] *See* Section I, *supra.* This fact makes clear not only that the evidence of harm from fill sites is extensive, but also that EPA has this knowledge and, further, that EPA did not consider this overwhelming evidence in its Phase 2 proposal. This is because, despite this evidence of harm, the Phase 2 Proposal would not only *not* regulate fill sites

[172] *Id*. at 21,348–49.
[173] *See* Sahu Expert Report (attached).
[174] *California v. FCC*, 39 F.3d 919, 925 (9th Cir. 1994) (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Auto Ins. Co.*, 463 U.S. 29, 43 (1983)).
[175] 42 U.S.C. § 6944(a).
[176] 80 Fed. Reg. 21,302, 21,452 (incorporating the definitions from EPA's 2010 regulatory proposal for CCR); *see* 75 Fed. Reg. 31,128, 35,141 (June 21, 2010).

as disposal sites but would, instead, greenlight the placement of CCRs in fill projects at unlimited quantities *without even having to make any environmental demonstration* as long as none of a short list of location restrictions is triggered. That this proposal is arbitrary, capricious, contrary to law, contrary to the weight of the evidence, and contrary to RCRA is plain.

2. *EPA's Phase 2 Proposal fails to consider the serious risks to health and the environment documented at unencapsulated fill sites in mines.*

Placement of CCRs in unencapsulated uses on the land is already commonly performed without any federal regulations, often under the guise of "beneficial use" in certain states like Pennsylvania, in the form of minefilling. Minefilling—the practice of unencapsulated placement CCRs in mines, has resulted in release of coal ash pollutants into the environment in areas already plagued by mining pollution.[177] Like unencapsulated fill with CCR at other sites, minefilling is an unencapsulated use that poses unacceptable human health and environmental risks. See the attached addendum, "Damage from CCR Placement in Mines."

Minefill sites are also poster children of environmental justice, as well. Mining communities where coal ash minefilling occurs are often low-income communities already saddled with health impacts from coal mining pollution.[178]

Despite the grave threats reuse projects can pose to health and the environment, EPA's Phase 2 Proposal fails to consider the extensive evidence of damage at CCR minefills, which is instructive of the dangers posed by unencapsulated CCR fill sites generally. EPA's final 2015 CCR Rule failed to regulate large unencapsulated fill sites and failed to even establish a specific framework to ensure that the safety demonstration that will apply to fill sites over 12,400 tons will be robust and adequate to prevent future instances of harm. EPA's proposed revisions to the final rule should take into account that potential releases of CCR constituents into the environment at unencapsulated fill sites will mimic releases at unlined disposal and minefill sites. Consequently, EPA's Phase 2 Proposal does not meet the protectiveness standard of RCRA or comply with the Administrative Procedure Act. In order to comply with these laws, EPA must fully regulate as disposal sites placement at all fill sites.

C. EPA's Failure to Consider Recent and Extensive Groundwater Monitoring Data for CCR Landfills in Developing the Phase 2 Proposal Is Arbitrary and Capricious.

1. *Unencapsulated coal ash fill is analogous to unlined coal ash landfills, although unencapsulated coal ash fill poses greater risks than landfills.*

Unencapsulated coal ash fill is analogous to unlined coal ash landfills. Both involve coal ash simply dumped on the ground, with no liner separating that ash from the underlying soil and groundwater.[179] To the extent there are any differences between the two, those differences

[179] *See* Sahu Expert Report, Hutson Expert Report and Mathewson Expert Report at 4.

involve protective safeguards such as daily cover and final caps and siting restrictions for unlined landfills – restrictions such as setbacks from water bodies or construction requirements – that render unlined coal ash landfills less likely to pose a danger than unencapsulated coal ash fill dumped without any such limitations.[180] In Wisconsin, for example, unlined landfills are generally not located upstream of drinking water wells, whereas unencapsulated use projects may be closer to such wells and pose a higher risk.[181]

EPA concedes the analogous nature of unlined landfills to unencapsulated ash fill. EPA recognizes the results of the 2014 Risk Assessment for unlined landfills as "relevant" to determining the risks from unencapsulated coal ash fill and looks to those results in evaluating the proposed rule.[182] Indeed, EPA recognizes that the risks identified in that Risk Assessment for landfills are not only "relevant to unencapsulated beneficial uses," but rather *underestimate* the risks posed by unencapsulated beneficial uses because such uses "are not subject to the same siting and construction requirements as the landfills modeled in the 2014 Risk Assessment."[183] EPA explains: "As a result, the unencapsulated beneficial uses of an equivalent size have the potential to be placed closer to receptors, in more permeable soils or in other areas that will tend to increase risk. Therefore the potential high-end risks associated with unencapsulated uses will tend to be higher than those modeled for landfills."[184]

2. *New data make clear that both lined and unlined CCR landfills are contaminating groundwater.*

To comply with the groundwater monitoring requirements of the 2015 CCR Rule, owners and operators of CCR landfills have amassed a vast trove of groundwater monitoring data from such landfills. These data overwhelmingly show that CCR landfills are a major source of dangerous groundwater contamination. In a review of the first national groundwater sampling results from coal ash landfills and impoundments that CCR unit owners/operators published in March 2018, Environmental Integrity Project and Earthjustice found that 76 percent of the 196 regulated landfills are leaching dangerous pollutants into groundwater at unsafe concentrations.[185] Among those landfills, nearly a third are contaminating groundwater with unsafe levels of arsenic; approximately one-third are contaminating groundwater with unsafe levels of cobalt and sulfate; and 43 percent are contaminating groundwater with unsafe concentrations of the neurotoxin lithium.[186] Concentrations of these pollutants in groundwater downgradient of CCR landfills reach sky-high levels, as shown in the table below, with toxins such as arsenic, cadmium, lead, mercury, and lithium exceeding safe levels many times over.

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[180] *See* Sahu Expert Report at 10; 84 Fed. Reg. at 40,356-57.
[181] *See* Mathewson Expert Report at 4.
[182] *See, e.g.*, 84 Fed Reg. at 40,356 ("To identify the *relevant* subset of model runs, EPA queried the risk assessment results for unlined landfills with no surface water interception and plumes that reached the receptor window within the 10,000-year evaluation window (*i.e.*, non-zero risk)") (emphasis added); *see also id*. at 40,360 (analyzing the risks posed by unencapsulated fill by comparing them to the 2014 Risk Assessment's modeling results for small landfills).
[183] 84 Fed. Reg. at 40,357.
[184] *Id*.
[185] *See* Coal's Poisonous Legacy at 11, 16.
[186] *Id*.

Moreover, this pollution is widespread: CCR landfills in 28 states and 1 federal territory have contaminated groundwater to levels exceeding federal health standards for multiple coal ash pollutants.[187]

Table 3. Highest Concentrations of Coal Ash Pollutants at CCR Landfills Alone[188]

State	CCR Landfill	Coal Ash Pollutant	Greatest exceedance over safe level
NY	Dunkirk Generation Station	Antimony	4x safe level
MI	Sibley Quarry, Trenton Power Plant	Arsenic	38x safe level
IA	Muscatine Power and Water	Barium	30x safe level
FL	Plant Crist	Boron	26x safe level
ND	Antelope Valley Station	Cadmium	100x safe level
MD	Brandywine Ash Management Facility	Cobalt	47x safe level
NE	Gerald Gentleman Plant	Lead	13x safe level[189]
UT	Hunter Power Plant	Lithium	228x safe level
NE	Nebraska City Generating Station	Mercury	21x safe level
MD	Brandywine Ash Management Facility	Molybdenum	111x safe level
OH	Richmond Mill, Inc.	Radium	15x safe level
MD	Brandywine Ash Management Facility	Selenium	9x safe level
UT	Hunter Power Plant	Sulfate	66x safe level

An independent analysis of 2016-2017 groundwater monitoring data from CCR landfills completed by Dr. Ranajit Sahu further supports the conclusion that those landfills are, in the vast majority of cases, leaking.[190] Dr. Sahu reviewed groundwater monitoring data from sites at which owners or operators reported *only* CCR landfills, with no CCR surface impoundments.[191] After excluding certain results, including those from "side-gradient" monitoring wells, results with laboratory qualifiers, and results with data below detection limits, Dr. Sahu found that "the vast majority of CCR landfills (91 percent) are leaking, regardless of whether or not a liner is

[187] Environmental Integrity Project and Earthjustice found unsafe concentrations of coal ash pollution at CCR landfills alone – that is, dump sites with only CCR landfills and no regulated CCR impoundments – in Arkansas, Arizona, Colorado, Delaware, Florida, Iowa, Illinois, Kentucky, Maryland, Michigan, Minnesota, Missouri, Mississippi, North Carolina, North Dakota, Nebraska, New Mexico, Nevada, New York, Ohio, Oklahoma, Pennsylvania, Puerto Rico, Tennessee, Texas, Utah, Virginia, West Virginia, and Wisconsin. *See* Coal's Poisonous Legacy, Appendix A. This list underrepresents the breadth of contamination from CCR landfills because it excludes sites with both CCR impoundments and CCR landfills, instead focusing only on those where only CCR landfills are located.

[188] All data from Coal's Poisonous Legacy, Appendix A. This table underrepresents the severity of pollution from CCR landfills because it excludes monitoring well networks that monitor both CCR impoundments and CCR landfills.

[189] EPA acknowledges concerns that there is no safe level of lead but set the groundwater protection standard for lead at .15 mg/L "based on the Action Level established under section 1412 of the Safe Drinking Water Act." Environmental Protection Agency, "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One)," 83 Fed. Reg. 36,435 at 33,444 (July 30, 2018).

[190] *See* Sahu Expert Report at 10-12.

[191] *See id*.

present."[192] To summarize, while the Environmental Integrity Project and Earthjustice report and Dr. Sahu analyzed the data using different methodologies, the results are mutually consistent and paint a very clear picture of the risks of currently operating coal ash landfills. Dr. Sahu found that 91 percent of landfills are leaking.

Groundwater data that owners/operators of CCR landfills published in March 2019 confirm that those landfills continue to leak dangerous concentrations of toxins into groundwater. For example, at the Dunkirk facility landfill in New York, groundwater monitoring from 2018 shows concentrations of antimony ten times EPA's groundwater protection standard and concentrations of thallium five times the groundwater protection standard.[193] At the Hayden plant landfill in Colorado, boron concentrations found in groundwater in 2018 reach 48 mg/L, [194] 12 times the level EPA would set as safe (4 mg/L) in the Phase 2 Proposal.[195] The neurotoxin lithium was found in groundwater at the Hunter CCR landfill in Utah at as high as 171 times the groundwater protection standard in June 2018.[196] And groundwater monitoring data from 2018 at the Brandywine landfill in Maryland continue to show astronomical levels of cobalt (up to 495 ug/L, about 83 times EPA's groundwater protection standard) and concentrations of selenium nearly 7 times the safe level.[197]

Importantly, the CCR landfills from which these data were gathered include both lined and unlined landfills; the CCR rule governs both.[198] Accordingly, the data underrepresent the risks posed by unencapsulated fill, which has no liner to separate it from groundwater or other adjacent sources of water.[199] The data further underrepresent the risks from unencapsulated coal ash fill because some of those landfills may have been subject to siting restrictions (for example, setbacks from surface water), construction methods and other factors that mitigate risk.[200]

3. *The Phase 2 Proposal for unencapsulated coal ash fill is arbitrary, capricious, and contrary to law in light of the groundwater data for CCR landfills.*

The only reasonable conclusion to draw from the overwhelmingly damning CCR landfill groundwater monitoring data, considered in light of the unlined nature of unencapsulated coal ash fill, is that unencapsulated coal ash fill presents a "reasonable probability of adverse effects

[192] *Id*. (concluding that 63 of 69 CCR landfills were leaking).
[193] *See* Dunkirk 2018 Groundwater Monitoring and Corrective Action Report at Table 2, page 1.
[194] *See* Hayden CCR landfill 2018 Groundwater Monitoring and Corrective Action report at pdf p. 22.
[195] *See* Phase 2 Proposal, 84 Fed. Reg. at 40,366.
[196] *See* Hunter Power Plant CCR Landfill 2018 Groundwater Monitoring and Corrective Action report at pdf p. 160.
[197] *See* 2019 Semi-Annual Monitoring Report, Brandywine Ash Management Facility, Brandywine, MD, at pdf pp. 44 and 62. Notably, the owners of the Brandywine landfill assert that the extremely high concentrations of boron, sulfate, chloride and other CCR contaminants stem not from the lined portion of the CCR landfill, but rather from an older, 81 acre unlined portion of the landfill – the portion most resembling unencapsulated coal ash fill. *See* 2018 Annual Groundwater Monitoring and Corrective Action Report, Brandywine Landfill, at pdf p. 16 and Appendices B and C.
[198] *See* 40 C.F.R. §§ 257.50-53.
[199] *See* Sahu Expert Report at 12-13.
[200] *See id*.; *see also* 84 Fed. Reg. at 40,357 (recognizing that "the potential high-end risks associated with unencapsulated uses will tend to be higher than those modeled for landfills.")

on health or the environment" and thus constitutes prohibited "open dumping" under RCRA.[201] This conclusion is strongly supported by the D.C. Circuit's 2018 decision in *Utility Solid Waste Activities Group v. Environmental Protection Agency* concerning the 2015 CCR Rule.[202] In *USWAG*, the D.C. Circuit held that the provisions of the 2015 CCR Rule that allowed unlined impoundments to continue operating until they were determined to leak were arbitrary, capricious, and contrary to law, in part because EPA concluded – even without extensive groundwater monitoring data – that "…putting Coal Residuals 'in unlined surface impoundments and landfills presents the greatest risks to human health and the environment.'"[203] In the D.C. Circuit's view, waiting for groundwater monitoring data to confirm those risks was unnecessary; EPA's Risk Assessment and other record data sufficed to demonstrate that such impoundments failed the protectiveness standard of RCRA § 4004(a).[204]

Here, the record of risks is even stronger. To begin with, EPA's 2014 Risk Assessment, which EPA relies on for the Phase 2 Proposal,[205] has not changed: it continues to show that "…putting Coal Residuals 'in *unlined* surface impoundments *and landfills* presents the greatest risks to human health and the environment.'"[206] In this instance, however, groundwater data are already available, and the data show that leaching of dangerous coal ash contaminants at levels injurious to health and the environment is widespread at CCR landfills.[207] The data confirm that such landfills – including both lined and unlined landfills all around the country – are leaking pollution into groundwater at alarming concentrations.[208] Accordingly, there can be no question that the even-more-risky practice of dumping coal ash as unencapsulated fill poses a "reasonable probability of adverse effects on health or the environment" and therefore fails RCRA's protectiveness standard.

4. *EPA acted arbitrarily and capriciously by entirely failing to consider groundwater data for CCR landfills in developing the Phase 2 Proposal.*

Notwithstanding EPA's recognition that unencapsulated CCR beneficial use fills are analogous to, if riskier than, unlined coal ash landfills, EPA *entirely fails* to consider the vast trove of groundwater data collected at CCR landfills since 2017 in developing the regulatory requirements for unencapsulated coal ash fill in the Phase 2 Proposal. Under the APA, this is a fatal flaw.[209]

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[201] *See* 42 U.S.C. § 6944(a); *id.* § 6903(14), (28).
[202] *See* 901 F.3d 414, 427-30 (D.C. Cir. 2018) (hereafter *USWAG v. EPA*).
[203] *Id*.
[204] *Id*.
[205] *See* 84 Fed. Reg. at, *e.g*., 40,356.
[206] *USWAG*, 901 F.3d at 427 (emphasis added).
[207] *See* Coal's Poisonous Legacy, Appendix A; Sahu Expert Report; 2017 and 2018 Annual Groundwater Monitoring and Corrective Action Reports (submitted to Docket ID No. EPA-HQ-OLEM-2018-0524 and available online).
[208] *See id*.
[209] *See, e.g., State Farm Mutual Auto Ins. Co.,* 463 U.S. at 43 ("if the record reveals that the agency has failed to consider an important aspect of the problem or has offered an explanation for its decision that runs counter to the evidence before [it], we must find the agency in violation of the APA").

At minimum, EPA must consider the groundwater monitoring data from CCR landfills in evaluating whether permitting the use of coal ash in unencapsulated fill projects, as specified in the Phase 2 Proposal, meets RCRA's mandates. Having conceded the relevance of CCR landfills to unencapsulated coal ash fill, EPA may not ignore the voluminous recent data revealing those landfills' harmful impact on the environment and threat to human health in revising and weakening the regulatory requirements for coal ash fill. Yet that is exactly what EPA does here.

EPA's disregard of the groundwater data is particularly egregious in light of the fact that EPA states that it has "reviewed" the annual reports that contain the relevant data.[210] EPA's "review" appears limited to the reports' formal features.[211] Nowhere in the Proposed Rule or its supporting documents does EPA discuss the groundwater data for any other purpose than the formatting requirements the Agency is proposing. Nowhere does EPA consider how the groundwater data for concededly "relevant" CCR landfills bear on the lawfulness of using unlimited volumes of CCR as unencapsulated fill. EPA fails entirely to evaluate whether unencapsulated fill projects can be safely sited in locations where new, lined CCR landfills are prohibited by the 2015 rule, including within five feet of the uppermost aquifer, in unstable areas, in flood plains, in wetlands, in seismic impact zones and in fault areas. Similarly, EPA does not consider the groundwater monitoring data when proposing that unencapsulated fill projects of unlimited size can be placed, without restrictions, near drinking water wells, water bodies, and private residences. EPA also fails to consider the long-term leaking at the nation's CCR landfills, which has been shown to continue at numerous sites for decades, whether or not a cap has been installed on the landfill.[212] EPA's failure to consider the groundwater data for CCR landfills in developing a regulatory proposal for unencapsulated coal ash fill is unreasonable, and any rule finalized without its consideration would be arbitrary, capricious, and contrary to law.[213]

D. EPA's Failure to Consider Damage Cases for CCR Landfills in Developing the Phase 2 Proposal Is Arbitrary, Capricious, and Contrary to Law.

In addition to the increasing body of groundwater monitoring data showing that CCR landfills contaminate groundwater at dangerous levels, EPA has voluminous records of confirmed "damage cases" concerning CCR landfills.[214] Those records, collected by EPA as part of the rulemaking for the 2015 CCR Rule, include detailed information about the harmful contamination that has been leaching out of CCR landfills around the country for decades. For example, in Indiana, an old unlined coal ash landfill at the massive Gibson plant leached out unsafe levels of arsenic, boron, manganese, and iron for years, contributing to the contamination

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[210] *See* 84 Fed. Reg. 40,365 ("The Agency *reviewed the annual* [groundwater monitoring and corrective action] *reports available on the CCR websites* and observed that some facilities provided groundwater monitoring data in formats that were clear and easy for the public to understand, while some did not") (emphasis added).
[211] *Id.*
[212] *See* Mathewson Expert Report.
[213] *See, e.g.*, *USWAG*, 901 F.3d at 430 (vacating the 2015 CCR Rule's provisions allowing unlined CCR impoundments to continue to operate before leaks are detected due, in part, to EPA's failure to even consider harms during the retrofit or closure process in promulgating those provisions); *Genuine Parts Co. v. Envt'l. Prot. Agency*, 890 F.3d 304, 314-15 (D.C. Cir. 2018) (EPA acted arbitrarily and capriciously by ignoring evidence in the record that counters its position); *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co*., 463 U.S. 29, 43 (1983).
[214] *See Damage Case Compendium* (attached).

of many nearby residential drinking water wells.[215] Groundwater monitoring downgradient of an unlined coal ash disposal area on Burton Island, Delaware, where coal ash from the Indian River coal plant was dumped for decades, revealed unsafe levels of arsenic, chromium, selenium and thallium.[216] And in Florida, an unlined flue gas desulfurization CCR landfill at Seminole Station leached dangerous contaminations of arsenic, lead, boron, aluminum, and sulfate – as well as elevated concentrations of chloride, iron, and total dissolved solids – into groundwater.[217]

These examples are just the tip of the iceberg. As EPA's confirmed damage cases show, unlined CCR landfills – which as explained herein are analogous to, although less risky than, unencapsulated coal ash fill[218] – time and time again have been established as a source of dangerous coal ash pollution in groundwater, surface water, and soil. These comments list the 54 damage cases in which CCR landfills were listed as sources of contamination.[219]

As with the ever-increasing groundwater monitoring data for CCR landfills, appropriate consideration of the myriad damage cases associated with CCR landfills would lead to the inescapable conclusion that the Phase 2 Proposal's scheme to deregulate unencapsulated coal ash fill fails RCRA's protectiveness standard.[220] Furthermore, EPA's failure to even mention, much less consider, the agency's voluminous damage cases from unlined CCR landfills in developing the Phase 2 Proposal for unencapsulated coal ash fill is unreasonable. Any regulation of unencapsulated coal ash fill finalized without consideration of those myriad damage cases would be arbitrary, capricious, and contrary to law.[221]

E. The Absence of State Regulations Protecting Against Harms Posed by Supposed Beneficial Use of CCR Necessitates a Strong Federal Rule that Prohibits Unsafe Use of CCR as Unencapsulated Fill.

While EPA identifies a few states that regulate the use of CCR as fill (*e.g.*, setback requirements, volume limitations), it ignores the overarching problem – that most states lack any law or regulation governing placement of unencapsulated CCR on land. Despite the risks to the environment and public health that result when CCR is used as fill, safeguards such as volume

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[215] *See Damage Case Compendium*, Volume I, PR03, pp. 11-17.
[216] *See Damage Case Compendium*, Volume IIb, Part One, PTb04, pp. 19-25.
[217] *See Damage Case Compendium*, Volume IIb, Part One, PTb07, pp. 40-43.
[218] *See e.g*. Sahu Expert Report at 10-13.
[219] *See* Damage Case Database (attached). *See also Damage Case Compendium*, Vols. I, IIa, and IIb (attached). Some damage cases describe contamination from CCR landfills but do not specify whether those landfills were lined. *See*, *e.g*., Urquhart Station, South Carolina, *Damage Case Compendium*, Vol. I, PR25; Clinch River, Virginia, *Id*. PR32; Marquette Board of Light & Power Pine Hill Landfill, Michigan, *Damage Case Compendium*: Vol. II(b), Part One: PTb25. At some sites, the landfills were "lined" with liners that do not meet the liner requirements for new landfills under the federal CCR Rule, *see* 40 C.F.R. 257.70(b)-(c), but may have provided more protection against leaks than is present for unencapsulated coal ash fill. Notwithstanding those protections, those landfills still leaked. *See*, *e.g*., Fern Valley Landfill, *Damage Case Compendium*, Vol. I, PR18. The evidence that insufficiently lined CCR landfills leak underscores the danger that more-risky unencapsulated coal ash fill poses to the environment. *See* Sahu Expert Report at 10-13.
[220] *See*, *e.g*., *USWAG*, 901 F.3d at 414, 427-30.
[221] *See*, *e.g*., *id*. at 430; *Genuine Parts Co.*, 890 F.3d at 314-15; *State Farm Mut. Auto Ins. Co*., 463 U.S. at 43.

limitations, location restrictions, setback requirements, and requirements for waste and site characterization and public notice are completely lacking in most states.

As discussed above, the use of CCR in structural fills presents risks of air and water contamination similar or ever more severe than those posed by the disposal of CCR in unlined landfills. Given the lack of state regulation, CCR has been widely used as a cheap alternative to clean fill and has resulted in severe harm to public health and the environment.[222] There is no effective state safety net. In order to meet RCRA's protectiveness standard, the federal rule must mandate adequate controls for CCR structural fills, consistent with the rules applicable to CCR landfills.

1. *Commenters' national survey of CCR beneficial reuse regulation reveals significant gaps in protections.*

An analysis of CCR use regulations nationwide reveals that a federal rule establishing protective standards for use of unencapsulated CCR is sorely needed. In the absence of a federal rule, Americans are subjected to a patchwork of mostly inadequate state rules. State regulation of CCR use ranges from a total absence of use restrictions, to a web of exemptions, to case-by-case individual permits; only a handful of states place restrictions on the use of CCR as structural fill. However, even states with some restrictions fail to establish the comprehensive set of safeguards necessary to protect human health and the environment.

In the preamble to the instant proposal, EPA refers to the status of CCR structural fill restrictions in a dozen states, including Alaska, Illinois, Kentucky, Maryland, New York, North Carolina, Pennsylvania, South Carolina, Virginia, West Virginia, Wisconsin and Wyoming.[223] EPA's brief discussion of state regulations, however, raises more questions than it answers. To fill these gaps, Commenters completed a detailed survey of CCR beneficial use regulations in all 50 states; the survey results are contained in the spreadsheet attached to these comments ("State Beneficial Use Survey"). The survey reveals extensive gaps in the regulation of CCR beneficial use as well as EPA's analysis of state regulatory schemes.

Commenters determined that nineteen states (38 percent) do not directly regulate CCR beneficial use, including: three states that appear to entirely lack any solid waste beneficial use requirements (Arizona, Hawaii, and Nevada); twelve states regulate beneficial use of waste materials, but exempt or do not specifically regulate CCRs (Arkansas, Connecticut, Massachusetts, Missouri, New Hampshire, New Mexico, Oregon, Rhode Island, South Dakota, Tennessee, Washington, and Wyoming); and four states that have adopted the federal coal ash beneficial use regulation (Alabama, Oklahoma, Vermont, Virginia).[224]

Four states have developed CCR beneficial use requirements with some accountability and mandates. Such programs were developed in Alaska in 2002, amended in 2017; in North

[222] *See* Section I, *supra*.
[223] 84 Fed. Reg. at 40,357.
[224] *See* State Beneficial Use Survey (attached).

Carolina in the 1990s and in 2014, amended in 2016;[225] in Pennsylvania in 2010; and in Wisconsin in 1996, amended in 2006.[226] Of these, EPA only cursorily considers borrowing a few specific setback criteria from North Carolina and Pennsylvania in the proposed rule. EPA failed to consider additional more stringent CCR beneficial use restrictions in Alaska, North Carolina, Wisconsin and Pennsylvania.

EPA, in its snapshot consideration of state criteria, relies on outdated analyses, citing the 2012 ASTSWMO study, which does not provide a detailed state-by-state comparison.[227] For the limited criteria that EPA suggests, including establishing setbacks from sensitive areas, EPA, with one exception, suggests adopting the most lenient standard set by the states it says it considered.[228]

EPA's overtly industry-friendly approach has much in common with the agency activities deemed inappropriate in 2011 by the EPA's Office of Inspector General (OIG). In March 2011, the OIG determined that EPA had promoted beneficial use of coal ash with incomplete risk information, and the OIG ordered the dismantling of a program boosting CCR use, including encouraging placement on land as fill.[229] In response to the OIG report, EPA was contrite and admitted it "agrees that protection of human health and the environment is a critical prerequisite to promoting the beneficial use of coal combustion residuals (CCR)."[230] Nevertheless, EPA's Phase 2 proposal would allow for the reckless use of CCR as fill, in direct opposition of the best available science and analytical data.

2. *EPA errs in assuming state laws governing CCR beneficial use will be more stringent than the federal CCR Rule.*

EPA contemplates in the proposed rule that states could enact more stringent laws regarding CCR beneficial use.[231] EPA says it is "selecting the least restrictive state requirement" as the federal baseline for its proposed criteria to "ensure that the federal provision is not inconsistent with existing state programs, as a regulated entity could always comply with both the EPA and the state provision, including any more stringent state requirement."[232] This reasoning turns the Agency's initial justification for regulating CCR – *i.e.*, the inadequate

[225] *See* Section I.D.1.a (referencing 15A NCAC 13B .1700, 15A NCAC 02T .1200, and CAMA).
[226] Chapter NR 538, Wis. Adm. Code (NR 538), was established as a result of 1996 Wisconsin Act 27 and more specifically Section 289.05(4), Wis. Stats., which directed the Department of Natural Resources (DNR) to develop rules with standards for the beneficial reuse of specific high-volume industrial wastes.
[227] 84 Fed. Reg. at 40,357.
[228] The only exception is, for establishing a minimum distance from the underlying aquifer, EPA Wisconsin's 5-foot rather than North Carolina's 4-foot setback.
[229] Office of Inspector Gen ., U .S. Envtl. Prot. Agency, Rep . No . 11-P-0173, EPA Promoted the Use of Coal Ash Products With Incomplete Risk Information 2 (2011), available at https://www.epa.gov/sites/production/files/2015-10/documents/20110323-11-p-0173.pdf.
[230] U.S. Envtl. Prot. Agency, Response to OIG Evaluation Report, EPA Promoted the Use of Coal Ash Products With Incomplete Risk Information, Jun. 16, 2011 at 1, available at https://www.epa.gov/sites/production/files/2015-10/documents/11-p-0173_agency_response.pdf
[231] 84 Fed. Reg. at 40,360.
[232] *See, e.g., id.*

patchwork of state regulation[233] – on its head. The 2015 Rule established national minimum criteria because of the failure of states to adequately regulate CCR.

Moreover, many states have statutes that prohibit or restrict state agencies from enacting regulations that are more stringent than federal rules. Thus, if EPA fails to promulgate protective regulation of CCR beneficial use, EPA's floor would act as a low and immovable ceiling in many states. For example, in December 2018, Michigan enacted legislation to prevent state agencies from setting more stringent standards than federal standards, unless Michigan law specifies otherwise, or the relevant agency director finds a clear and convincing need.[234] A Kentucky administrative rule, if promulgated pursuant to federal law or federal regulation, must be no more stringent than the federal law or regulation.[235] In Arizona, the governor's regulatory review council cannot approve any state agency rule that is more stringent than a federal law, absent statutory authority.[236]

Other states specifically limit stringency of environmental rules. South Dakota law broadly mandates that rules on environmental protection, mining, oil, gas and water cannot be more stringent "than any corresponding federal law, rule, or regulation governing an essentially similar subject or issue."[237] Indiana provides for legislators to review new environmental agency rules that are "more stringent than a restriction or requirement imposed under federal law" or apply "in a subject area in which federal law does not impose a restriction or requirement."[238] Idaho codified legislative intent to not impose requirements beyond the federal clean water act for surface water quality.[239]

In Ohio, before adopting or amending a rule containing a component "dealing with environmental protection," all state agencies must identify whether the rule would enable the state to administer and enforce a federal environmental law or participate in a federal environmental program, whether it is more stringent than the federal counterpart and, if so, the rationale.[240] The agency must consult with political organizations, environmental and business interests, and other impacted persons; and document the need, environmental consequences, and technological feasibility of the proposed rule or amendment. Ohio also requires its legislators, when sponsoring a bill that may have components dealing with environmental protection, to submit to the legislative committee a statement identifying federal requirements with which the bill is intended to comply.[241]

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[233] 80 Fed. Reg. at 21,322–25.
[234] Mich. Comp. Laws Ann. § 24.232 and § 24.245 (en. 1969; am. eff. 1-1-19).
[235] Ky. Rev. Stat. Ann. § 13A.120(a) (eff. 4-13-1984; am. eff. 7-15-2016) and § 13A.245 (eff. 7-15-1986, am. eff. 7-15-1996).
[236] Ariz. Rev. Stat. Ann. § 41-1052(D)(9) (2010).
[237] S.D. Cod. Laws § 1-40-4.1 (1992).
[238] Ind. Code § 13-14-1-11.7 (7-1-16, eff. 2-2017).
[239] Idaho Code Ann. § 39-3601 (en. 1995, am. 2001 and 2011).
[240] Ohio Rev. Code Ann. § 121.39 (eff 4-1-2002; am. eff. 8-18-2019).
[241] *Id.*

Thus if EPA chooses to make the least stringent state standard the controlling standard in the federal rule, it will be setting an arbitrary and capricious ceiling for some of the largest CCR-generating states in the nation (including Kentucky, Ohio, Indiana, Arizona and Michigan).

F. EPA's proposed location-based criteria for unencapsulated CCR placement are arbitrary and capricious and fail to ensure no reasonable probability of adverse effects on health or the environment as required by § 4004(a) of RCRA.

EPA is proposing to eliminate the mass-based numerical threshold established in the 2015 CCR rule and replace it with six specific location-based criteria that will trigger environmental demonstrations.[242] As discussed above, the mass-based threshold set by EPA in the 2015 CCR rule did not meet the protectiveness standard of RCRA § 4004(a). EPA's new proposal to apply the six location-based criteria also fails to meet the statutory standard because the present proposal stops short of establishing specific standards, enforceable prohibitions and restrictions equal to or more stringent than the requirements applicable to new CCR landfills. In addition, EPA's omission of several critical location criteria also renders the rule arbitrary and capricious and unable to meet the protectiveness standard, as explained in detail below. We reiterate that placement of unencapsulated CCR as fill constitutes disposal of a solid waste and must be regulated as such.

1. *EPA's proposed location-based criteria do not prohibit placement or impose meaningful restrictions on the placement of unencapsulated CCR in six locations where releases of CCR contaminants are likely, and thus the proposal cannot meet the protectiveness standard of RCRA § 4004(a) and is arbitrary and capricious.*

EPA's Phase 2 Proposal would add six location-based criteria, derived from criteria established in the 2015 CCR Rule, to the fourth criterion of its definition of beneficial use at § 257.53. These criteria would apply when unencapsulated CCR (of unlimited volume) is placed in the following six locations: (1) within 1.52 meters (five feet) of the upper limit of the uppermost aquifer; (2) in a wetland; (3) in an unstable area; (4) within a 100-year flood plain; (5) within 60 meters (200 feet) of a fault area; and (6) within a seismic impact zone.[243] According to the proposal, when such placement occurs, the user is required to demonstrate "that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use."[244]

[242] 84 Fed. Reg. at 40,358.
[243] 84 Fed. Reg. at 40,370.
[244] *Id.*

a. EPA's proposal for placement of unencapsulated CCR is far less stringent than standards applicable to both new and existing CCR landfills under the 2015 CCR Rule.

EPA's proposal would allow the placement of any volume of unencapsulated CCR in locations where the 2015 CCR Rule *prohibits* placement or establishes specific restrictions for *lined* CCR landfills.[245] EPA provides no rationale, however, for treating the placement of large volumes of unencapsulated CCR differently than it treats the construction or expansion of lined CCR landfills in those same areas. In the preamble to the 2015 CCR Rule, EPA states that it considers the threats posed by large structural fills to be similar to those posed by unlined CCR landfills, stating,

> structural fills can be larger applications and so may be required to demonstrate compliance with the environmental standards in the fourth criterion more frequently. In addition, *because structural fills can be similar to the landfills regulated in the final disposal rule*, some proposed applications may need to install engineering features to meet the performance standard.[246]

In fact, in the Phase 2 Proposal EPA admits, "[f]ill applications typically involve the placement of large amounts of CCR."[247] Despite these admissions, the restrictions that EPA proposes to apply to large structural fills in six sensitive areas fall far short of the locational restrictions placed on CCR landfills, both lined and unlined.

The proposal lacks a rational basis when one considers the many additional safeguards that EPA imposed in the 2015 CCR Rule on the construction, operation, maintenance and closure of CCR landfills. EPA requires that all new CCR landfills and expansions include multiple engineering safeguards that prevent, minimize, monitor or control the release of CCR constituents. Such engineering safeguards for CCR landfills and their lateral expansions include the installation of composite liners and leachate collection and removal systems,[248] fugitive dust controls,[249] and run-on and run-off control systems.[250] In addition, CCR landfills are subject to frequent mandatory inspections by their owner/operators, as well as the requirement that all deficiencies be remedied as soon as feasible.[251] Groundwater monitoring at all CCR landfills is mandatory, as is corrective action if exceedances of groundwater protection standards are discovered.[252] Upon closure of a CCR landfill, multiple requirements apply, including the installation of a low-permeability cap, deed notation, and post-closure monitoring and maintenance.[253] Lastly, numerous requirements pertain to recordkeeping, notification and posting

[245] *See* 40 C.F.R. §§ 257.60-64.
[246] 80 Fed. Reg. at 21,353, emphasis added.
[247] 84 Fed. Reg. at 40,359.
[248] 40 C.R.R. § 257.70.
[249] 40 C.F.R. § 257.80.
[250] 40 C.F.R. § 257.81.
[251] 40 C.F.R. § 257.84.
[252] 40 C.F.R. § 257.98.
[253] 40 C.F.R. §§ 257.101-102, 104.

of information on publicly accessible websites to ensure that compliance with the above requirements can be ascertained by regulatory agencies and the public.[254]

In stark contrast, the Phase 2 Proposal does not require any of the above engineering safeguards be installed on any CCR fill project, regardless of its volume or location. The proposed rule also lacks any specific operation and maintenance requirements when CCR is used for structural fill. Further, the proposal requires no notification, reporting, or public posting of information. Worst of all, the proposed rule does not require any groundwater monitoring or inspection of the CCR placed in the six sensitive areas, so releases of CCR to air and water, or structural failures of fill projects, are unlikely to be timely detected. Lastly, when releases of CCR contaminants do occur from CCR fill projects, and past experience has indicated that such releases will indeed occur,[255] there is nothing in EPA's proposal that requires corrective action and cleanup.

Whether the unencapsulated CCR placement is a 12-story CCR pile[256] or a 216-acre golf course sculpted from 1.5 million cubic yards of fly ash,[257] the Phase 2 Proposal would impose no specific requirements, despite the fact that these projects pose substantial risks.[258] In addition, EPA cannot, and has not, claimed that there are local, state or federal requirements governing the placement of unencapsulated CCR on land for non-roadway uses that would reduce risk from such projects.[259]

Thus EPA's proposal fails to ensure the reasonable probability of adverse effects to health and the environment, because it would not apply *any* of the prohibitions and conditions that apply to CCR landfills in the CCR Rule when such units are sited in the six sensitive locations. Under the proposal, structural fill projects, of any size, would be subject to none of the safeguards applicable to CCR landfills. Consequently, CCR fills, operated without liners, monitoring, leachate collection, dust control, run-on/run-off controls, inspections, certifications by professional engineers, and corrective action would pose risks to health and the environment that EPA deemed unacceptable from CCR landfills, even though the risks from unlined, unencapsulated placement projects are much greater. Yet EPA provides no rationale why unencapsulated CCR, placed directly on the land, with no mass-based volume limit, should not be subject to equal or greater restrictions than lined landfills when placed in the six sensitive locations singled out in the CCR Rule for greater protection. EPA's proposal is thus arbitrary and capricious and fails to meet the RCRA § 4004(a) protective standard.

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[254] 40 C.F.R. §§ 257.105-107.
[255] *See* Section I, *supra*.
[256] The CCR pile maintained by AES-PR in Guayama, Puerto Rico stands 120 feet high. *See, infra*, Section X.
[257] The Battlefield Golf Course, an EPA potential damage case, 80 Fed. Reg. at 21,328.
[258] *See* Hutson and Sahu Expert Reports (attached).
[259] *See* State Beneficial Use Survey (attached).

b. EPA's proposal to require CCR users in the six sensitive locations to complete environmental demonstrations cannot meet the RCRA protectiveness standard at § 4004(a).

As stated above, when unencapsulated CCR placement on land in one of the six specified locations occurs, the proposal requires the user to demonstrate "that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use."[260] EPA, however, did not include in the proposal any specific requirements pertaining to the environmental demonstrations in the six sensitive locations that could actually demonstrate the safety of placement in those areas.

In the preamble to the 2015 CCR Rule, EPA described elements that an environmental demonstration could include:

> EPA expects such determinations to take into account a wide variety of factors, including the hydraulic conductivity of the area, proximity of the material to water, and the likelihood of contact with water. EPA also expects that such determinations would take into account … the need for site characterization and characterization of the CCR.[261] A demonstration should consider the development of a conceptual model to assist in the determination of whether the environmental criteria contained in the definition of the term ''beneficial use of CCR'' can be demonstrated.[262] Numerous potential pathways exist and these should be evaluated as necessary depending on the potential application of the CCR. Potential exposure pathways include exposure to groundwater, surface water, air, and soils.[263] Generation of dust, leaching to groundwater and surface water, inhalation of mercury, and plant uptake are areas that need to be evaluated.[264] A complete evaluation of the types of releases, the types of exposure and the receptors that may be potentially affected by a potential application will need to be conducted. A screening comparison will need to be performed comparing the concentrations of individual constituents of potential concern to the following benchmarks: human soil ingestion, ecological soil, tap water ingestion, fish ingestion, surface water, sediment, and inhalation. As an example, a user could compare a mercury concentration to a human health screening benchmark with an inhalation value of 300 ng/m3.[265] Existing documents that can be used to gain an understanding of conceptual models, pathways and regulatory limits include: *Risk Assessment Guidance for Superfund, Exposure Factors Handbook, Volumes I, II and III, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Part A, Industrial Waste Management Model (IWEM) Technical Backgrounds Document, Exposure Factors Handbook, Human and Ecological Risk Assessment of Coal Combustion Wastes*.

[260] *Id.*
[261] 80 Fed. Reg. at 21,352.
[262] 80 Fed. Reg. at 21,354.
[263] *Id.*
[264] *Id.*
[265] *Id.*

> In addition, although it is not directly applicable, a potential user of unencapsulated CCR may find it useful to consult the previously mentioned ''*Coal Combustion Residual Beneficial Use Evaluation: Fly Ash Concrete and FGD Gypsum Wallboard''* and the ''*Methodology for Evaluating Encapsulated Beneficial Uses of Coal Combustion Residuals*'' to assist in the determination of whether the unencapsulated CCR is comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health- based benchmarks for human and ecological receptors during use.[266]

EPA anticipated that the completion of rigorous environmental demonstrations would prevent damage from unencapsulated CCR placement by encouraging the installation of engineering safeguards. EPA stated as much in the preamble to the 2015 Rule:

> As a consequence of this [environmental demonstration] requirement, EPA expects that *significant changes* may need to be made in order to proceed with a proposed [unencapsulated] use; for example, conducting the required assessment, may demonstrate that the only way to achieve the performance standard is to install engineering features, such a liner, as part of the proposed project.[267]

EPA, however, has never evaluated the adequacy of *any* environmental demonstrations conducted to date, nor has the agency tested its theory that the voluntary guidelines would spur "significant changes" in fill projects, including the installation of engineering controls. It is apparent that EPA has not examined or tracked any such demonstrations, because a FOIA submitted by Earthjustice to EPA on December 20, 2018 requesting all environmental demonstrations yielded none from the agency.[268] EPA, nonetheless, is relying heavily on the capacity of these demonstrations to provide critical protective measures.[269] EPA's failure to assess the adequacy of the demonstrations submitted since 2015 and its blind reliance on such demonstrations, in the absence of any other regulatory controls, is wildly irrational. There is absolutely nothing in the record that indicates these demonstrations are functioning as intended, and thus the proposal is arbitrary and capricious.

After discovering that EPA had in its possession no environmental demonstrations, Earthjustice acquired several demonstrations through direct requests to electric utility companies. An examination of three environmental demonstrations by a professional engineer reveals that EPA's 2015 guidelines were not followed. The demonstrations fell far short of the preamble guidance and EPA's expectations. None of the large-volume CCR fill sites installed the common-place safeguards required at all new CCR landfills, such as liners, leachate collection or

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[266] *Id.*
[267] 80 Fed. Reg. at 21,352 (emphasis added).
[268] *See* Mychal Ozaeta, *Freedom of Information Act Request Re: The Disposal of Coal Combustion Residuals from Electric Utilities,* submitted on behalf of Earthjustice, Waterkeeper Alliance, Inc., Environmental Integrity Project, Sierra Club, and Clean Water Action, December 20, 2018 (attached). EPA assigned this FOIA the tracking number EPA-HQ-2019-002341. The last response from EPA was received on Sept. 23, 2019. *See* https://foiaonline.gov/foiaonline/action/public/search/quickSearch?query=EPA-HQ-2019-002341.
[269] 80 Fed. Reg. at 21,352.

groundwater monitoring. In the attached report by Steven K. Campbell, PhD, PG, the significant flaws in the demonstrations are described.[270]

In sum, none of the three environmental demonstrations was substantially compliant with Criterion 4 of § 257.53. The Campbell Expert Report concludes:

(1) The quantity and quality of hydrogeological data provided in the environmental demonstrations range from almost none in two reports to completely absent in the third.
(2) The total volumes of CCRs placed were not disclosed in any of the demonstrations.
(3) The specific identities and exposure pathways of the CCRs were not disclosed or evaluated in two of the three demonstrations.
(4) Each environmental demonstration provided little or no reliable data to indicate that employing the CCRs was equivalent to utilizing native soil or another non-toxic fill material. Adverse impacts from the proposed uses of CCRs were either completely unquantified or the data were presented in a nontransparent manner that made it impossible to assess independently what degree of harm or risk is imposed on human health and the environment.

There is no reason to believe that additional demonstrations would be substantially different than the three deficient demonstrations reviewed by the expert.

EPA is relying on environmental demonstrations for which there are few clear requirements, in lieu of specific standards, such as those that apply to placement of CCR in landfills. Only the latter can result in the protective measures that EPA envisioned in the 2015 preamble. The environmental demonstrations summarized above illustrate that EPA erred in its reliance on the vague and self-implementing guidelines, which fail to define the content of the demonstrations. Irrationally, EPA again seeks to rely on such demonstrations, this time to protect health and the environment from the placement of unlimited volumes of unencapsulated CCR in six sensitive areas, where risks to health and the environment are particularly elevated. EPA cannot legally finalize this proposal without a record indicating that demonstrations have yielded the desired and necessary result. Consequently this proposal is arbitrary and capricious, and it fails to ensure no reasonable probability of adverse effects to health or the environment from unencapsulated CCR.

c. EPA's proposal is arbitrary and capricious and fails to meet the RCRA protectiveness standard because EPA does not require *all* CCR placement on the land to conduct environmental demonstrations.

As described above, EPA's Phase 2 Proposal would require users that place unencapsulated CCR on the land, in six specific locations only, to complete environmental demonstrations. This does not satisfy RCRA. In light of the already-clear danger of placing unencapsulated CCR on the land, RCRA's protectiveness standard demands nothing less than the

[270] Steven K. Campbell, Ph.D., P.G., Technical Memo Evaluating Aspects of Three Environmental Demonstrations for the Beneficial Reuse of Coal Combustion Residuals (CCRs), USA (Sept. 25, 2019) ("Campbell Expert Report") (attached).

prohibition of unencapsulated uses. To meet the RCRA protectiveness standard, EPA must require all users that place CCR on the land in any location to meet, at minimum, the standards applicable to new CCR landfills and to complete enhanced environmental demonstrations. The nature of the required demonstrations is described in detail in Section III, *infra*.

d. Because the proposal does not clearly identify the deadline by which a user must complete an environmental demonstration, it cannot ensure no reasonable probability of adverse effects in violation of RCRA § 4004(a).

Proposed criterion 4, which sets forth the requirement for the environmental demonstration, states that when unencapsulated use of CCR involves placement on the land in any of the six specific locations, "the user must demonstrate and keep records, and provide such documentation upon request."[271] The proposal does not say, however, exactly when the demonstration must be completed.

As discussed herein, unencapsulated placement of CCR as fill should be prohibited outright; no environmental demonstration alone can render it sufficiently safe. However, even if an environmental demonstration for unencapsulated placement of CCR could satisfy RCRA, it certainly could not do so unless it were a condition precedent to the placement of the unencapsulated CCR. Since EPA appears to intend that the inability to complete a successful demonstration will *prevent* the placement of unencapsulated CCR on the land, the demonstration necessarily must be required to be successfully completed *prior to placement* of CCR. Similarly, since EPA intends demonstrations to drive users to employ specific safeguards, such as liners, to prevent harm to health and the environment, it would be arbitrary and capricious to allow placement of CCR prior to completion of the demonstration. The proposal, however, does not establish a clear requirement to complete a successful environmental demonstration prior to placement of CCR. Thus, even if an environmental demonstration alone could suffice to meet RCRA's protectiveness standard (as discussed herein, it cannot), the proposal would be arbitrary, capricious, and in violation of RCRA § 4004(a) for failure to ensure no reasonable probability of adverse effects to health and the environment.

e. Because EPA does not require public notice of unencapsulated fill projects or specifically require the user to make environmental demonstrations publicly available, the proposal fails to meet the protective standard of RCRA § 4004(a).

It is critical that Criterion 4 provide sufficient public notice and transparency. As proposed, Criterion 4 does not require users to provide notice of CCR placement. The proposal also does not clearly require users to provide completed environmental demonstrations to the public even upon direct request. While the plain language of the criterion states that users must "provide such documentation upon request," it does not state to whom the documentation must be provided.

[271] 80 Fed. Reg. at 40,370.

This is not a hypothetical problem. Earthjustice requested demonstrations from several companies, and it received two letters that indicate that companies are narrowly interpreting the criterion's provisions to require users to provide documentation only to state, tribal and federal authorities upon their request.[272] Lack of notice and lack of access to environmental demonstrations prevent citizens from assessing compliance with the criterion's requirements, therefore making citizen suits – the primary and, so far, *only* mechanism used for enforcing the 2015 CCR rule requirements – effectively impossible with regard to these demonstrations. This lack of access, notice and transparency fails to ensure no reasonable probability of adverse effects to health and the environment as required by RCRA § 4004(a).

2. *Deficiencies in EPA's proposed location criteria: distance from the uppermost aquifer.*

The 2015 CCR Rule requires that CCR units be constructed with a base that is located no less than 1.52 meters (five feet) above the upper limit of the uppermost aquifer or the owner/operators must demonstrate that there will not be an intermittent, recurring, or sustained direct hydraulic connection between any portion of the base of the CCR unit and the uppermost aquifer due to normal fluctuations in groundwater elevations (including the seasonal high water table).[273] New CCR landfills and all lateral expansions of existing landfills cannot be constructed unless they meet the aquifer separation criteria.[274] EPA's Phase 2 Proposal, however, provides far less stringent standards for placement of unlimited volumes of unencapsulated CCR in or above aquifers than it requires for construction of lined landfills at the same site. It is, therefore, arbitrary, capricious, and contrary to RCRA § 4004(a).

a. EPA's proposal to allow placement of unencapsulated CCR within five feet of the upper limit of the uppermost aquifer is arbitrary and capricious and fails to meet the RCRA § 4004(a) protective standard.

As described in the subsection 1, above, the Phase 2 Proposal would require users to simply develop an environmental demonstration when placing unencapsulated ash within five feet of the uppermost aquifer. This proposal cannot meet the RCRA § 4004(a) protective standard. Placement of CCR near or in groundwater, particularly in unlined units, was the cause of the majority of damage cases cited by EPA.[275] In fact, EPA's rationale for the aquifer separation requirement in the 2015 rule specifically leads with an example of CCR "beneficial" use that caused severe groundwater (and drinking water) contamination *because of the placement of CCR in close proximity to groundwater*. In the preamble to the 2015 CCR Rule, EPA explained:

> In some recent damage cases, placement of large volumes of CCR into highly permeable strata in the disposal area promoted CCR-water interactions. For

[272] *See* Letter from Steven C. Whitworth, Senior Director, Environmental Policy and Analysis, Ameren to Lisa Evans, Earthjustice, July 31, 2019 (attached). *See also,* Letter from Ernest C. McLean III, Vice President & General Counsel, Boral Industries, Inc. to Lisa Evans, Earthjustice, August 29, 2019 (attached).
[273] 40 C.F.R. § 257.60(a).
[274] *Id*.
[275] *See* Section I, *supra*.

> example, from 1995 to 2006 in Anne Arundel County, Maryland 4.6 million tons of CCR were placed directly in two sand and gravel quarries without a geomembrane liner or leachate collection system. Rainwater infiltration into exposed CCR coupled with groundwater-CCR interactions and the transmissivity characteristics of local strata contributed to rapid migration of heavy metals, including antimony, arsenic, cadmium, nickel, and thallium to residential drinking water wells located near the mine pits and significant deterioration of water quality as a result of placement of CCR. … Placement of CCR into un-engineered, unlined units in permeable strata has plainly led to adverse impacts to groundwater.[276]

In fact, 11 of the 22 fill sites that EPA confirmed to be CCR damage cases involved placement of CCR within 5 feet of groundwater.[277] These include (with the proven damage cases in bold):

1. **Gambrills** ("The minimal separation between the base of the ash and groundwater table at the Turner Pit was less than 2 feet");
2. **Swift Creek Structural Fill** (placement one foot above groundwater);
3. **Trans-Ash** ("Due to previous gravel mining activities penetrating into groundwater, Trans-Ash was required to install a lining throughout the landfill (a 0.25" thick geosynthetic clay liner, GCL); however, Trans-Ash failed to do so, resulting in coal ash in direct contact with groundwater");
4. **Virginia Power (VEPCO) Yorktown Power Station Chisman Creek Disposal Site, Yorktown, Virginia Superfund Site (NPL) (**"shallow groundwater has been intercepted by the presence of the borrow pits and ponds");
5. **WEPCO Cedar-Sauk** (groundwater intercepted ash; "[c]omparison of mapped base of ash elevations to groundwater table elevation suggests that there are areas where base of ash is less than 5 feet above the water table");
6. **WEPCO Highway 59** (7,500 cubic yards of ash were placed below the water table);
7. **Hennepin** (EPA noted that depth to groundwater was less than 5 feet);
8. Powerton ("The water table at the site occasionally intercepted the ash along the down-gradient edge of the older landfill. The Plant is located in an area of Quaternary fuvioglacial deposits,162 which has a very high potential for aquifer recharge.");
9. Battlefield Golf Course ("The surficial aquifer is unconfined (i.e., under water table conditions), and the depth to groundwater in the site vicinity is generally less than 5 feet.");
10. WEPCO Port Washington Druecker (some ash is below the water table); and
11. Joliet 9 (CCR from Joliet 9 and Joliet 29 Stations has been placed in standing water in the bottom of the LSQ landfill for many years).

Because of this high risk of contaminating underlying groundwater, the CCR Rule *prohibits* the construction of *lined* and monitored CCR landfills within five feet of the uppermost aquifer. Based on ample evidence of past damage as well as the 2014 Risk Assessment, EPA determined that such placement leads to adverse impacts to groundwater. It follows logically that

[276] 80 Fed. Reg. at 21,362.
[277] *See* Damage Case Compendium, Vols. I, II.a, II.b, Pt. 1, and II.b., Pt. 2.

placement of unencapsulated CCR, *with no liner or other mandated safeguards*, must similarly be prohibited in the same vulnerable location.[278] Because EPA offers no rationale for requiring *fewer* safeguards for unencapsulated fill projects than for CCR landfills, the proposal is arbitrary and capricious and fails to meet the protectiveness standard of RCRA § 4004(a).

b. EPA must reject adoption of state requirements that are less stringent than the 2015 CCR Rule's aquifer protection standards.

In the Phase 2 Proposal, EPA models its location restriction on the prohibition contained in the 2015 CCR Rule. EPA asks, however, whether it should adopt location restrictions established by several states. Specifically, EPA asks, "whether North Carolina's 4 feet of the seasonal groundwater table, the 8-foot value in Pennsylvania's requirements or Wisconsin's criterion of 5-feet from the groundwater table is more appropriate."[279] Because EPA already considered *and rejected* the adoption of a less stringent aquifer separation requirement in the 2015 CCR Rule, the proposal's suggestion to now adopt such a standard is arbitrary and capricious and fails to meet the RCRA § 4004(a) protectiveness standard.

In the preamble to the 2015 CCR Rule, EPA explained that it considered less stringent aquifer separation standards, but after conducting research, the agency concluded that the five-foot requirement was necessary.[280] EPA also stated in 2015 that it reviewed other states' programs and found the five-foot separation requirement consistent with numerous state programs that "consider five feet between the base of the surface impoundment and the top of the uppermost aquifer to be the minimum distance that is protective of human health and the environment. These are California, Michigan, Nebraska, New York, West Virginia, and Wisconsin."[281] As part of the rationale, EPA considered the differing climatic and hydrogeologic conditions across the nation and determined that a five-foot separation was necessary to ensure protection.[282]

EPA provides no rationale as to why it is reexamining the aquifer separation standard it established just four years ago or why it can now choose a less stringent criterion for unencapsulated fill projects that contradicts the agency's recent research.[283] EPA puts forth no evidence to indicate that a smaller separation distance would be equally or even sufficiently protective of health and the environment. Consequently, the suggestion that the aquifer separation distance can be reduced, for example to North Carolina's four-foot separation

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[278] *See* Sahu Expert Report.
[279] 84 Fed. Reg. at 40,358.
[280] 80 Fed. Reg. at 21,362.
[281] *Id*.
[282] *Id.*
[283] As explained in Section II.A., *supra*, under the APA, an "unexplained inconsistency" between agency actions is "a reason for holding an interpretation to be an arbitrary and capricious change." *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005). In general, an agency that wishes to change a formal position "is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance." *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983).

requirement from the seasonal groundwater table, is arbitrary and capricious and would result in a regulation that fails to meet the RCRA protective standard. EPA also explained that it used a specific definition of "uppermost aquifer" in the CCR Rule instead of "groundwater table" to provide greater protection by accounting for large seasonable and manmade fluctuations in the water table observed by EPA.[284] Hence, moving to a standard that measures distance from "seasonal groundwater" would also represent an arbitrary and capricious rule, which would not meet the RCRA § 4004(a) protectiveness standard.

Commenters reiterate that placement of unencapsulated CCR on the land as a "beneficial use" should be prohibited, especially near groundwater. In the alternative, EPA must establish a separation distance from the uppermost aquifer that is at least as stringent as the 2015 standard for new CCR landfills. However, there are compelling reasons to adopt a more stringent standard (i.e., Pennsylvania's 8-foot separation requirement) for CCR fill projects.[285] Furthermore, even if EPA adopts the requirements and prohibitions applicable to new CCR landfills in the 2015 Rule and the more stringent Pennsylvania standard for separation from groundwater, EPA must also require an enhanced environmental demonstration[286] because there is no scientifically presumptive safe distance from groundwater and such determinations must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.[287]

3. *Deficiencies in EPA's proposed location criteria: placement in wetlands.*

a. EPA must prohibit placement of unencapsulated CCR in wetlands.

The 2015 CCR Rule prohibits placement of CCR units in wetlands except if the owner or operator makes a specific demonstration that the CCR unit meets a set of conditions that ensure that the unit will not degrade sensitive wetland ecosystems.[288] In addition, the rule adopts a regulatory presumption that a less damaging alternative to locating a disposal unit in a wetland exists, unless the owner or operator can demonstrate otherwise. Thus, when proposing to locate a new CCR landfill or lateral expansion in a wetland, owners and operators must be able to demonstrate that alternative sites are not available and that the impact to wetlands is unavoidable. If this presumption is not clearly rebutted, then the CCR unit may not be sited in a wetland location.

In the preamble to the 2015 CCR Rule, EPA explained why it is critical to prohibit construction of new CCR units and expansions in wetlands. EPA pointed to the "many benefits

[284] *Id.* EPA explained, "To account for the possibility of such large seasonal fluctuations, EPA is revising the definition of ''uppermost aquifer'' to specify that the measurement of the upper limit of the aquifer must be made at a point nearest to the natural ground surface to which the aquifer rises during the wet season. This definition of ''uppermost aquifer'' will encompass large seasonal variations and is a more appropriate parameter than ''seasonal high groundwater table'' as suggested by several commenters and the proposed ''natural water table'' because it is more clearly defined."
[285] *See* Sahu Expert Report at 9.
[286] As described in Section II.G, *infra*.
[287] *See* Sahu Expert Report.
[288] 40 C.F.R. § 257.61.

to society" provided by wetlands, including "improving water quality, providing essential breeding, rearing, and feeding grounds for fish and wildlife, reducing shoreline erosion, and absorbing flooding waters and pollution."[289] EPA also noted that wetlands are valuable as commercial source areas for timber, fish, and shellfish and critical for recreation, including hunting.[290] EPA observed that wetlands are highly susceptible to degradation from industrial pollution and construction, including CCR releases.[291] The record, according to EPA, contains a clear history of harm to wetlands from CCR, including 14 proven damage cases that involve releases of CCR to wetlands.[292] EPA, in fact, specifically raised "significant concerns associated with unencapsulated uses" near wetland areas when AES' CCR was placed in Puerto Rico in "areas close to wetlands."[293]

EPA further explained the harm that CCR fill can cause to wetland ecosystems, stating,

> When a wetland functions properly, it provides water quality protection, fish and wildlife habitat, natural floodwater storage, and reduction in the erosive potential of surface water. A degraded wetland is less able to effectively perform these functions. For this reason, wetland degradation is as big a problem as outright wetland loss, though often more difficult to identify and quantify. Any change in hydrology can significantly alter the soil chemistry and plant and animal communities. *The common hydrologic alterations that can lead to significant degradation in wetland areas include … [d]eposition of fill material …*"[294]

Also in the preamble, EPA pointed out specifically how CCR contaminants harm wetlands. EPA found:

> For the purposes of this rule, the primary pollutants of concern are CCR-bearing sediment and toxic metals. … A clear example of biologically significant degradation in wetlands is when these toxic metals accumulate in benthic and aquatic food chains as a result of uncontrolled runoff. Another is obrution (smothering) of benthic organisms from discharge(s) of CCR to surface water, thereby jeopardizing the continued existence of organisms or critical habitats within the wetland.[295]

EPA found, furthermore, that the cost of damage cases where wetlands were contaminated "could be considerable,"[296] even stating that, given the significant environmental

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[289] 80 Fed. Reg. at 21,363.
[290] *Id.*
[291] *Id.*
[292] *Id.*
[293] *Id.* at 21,329.
[294] *Id.* at 21,364 (emphasis added).
[295] *Id.*
[296] Additional evidence of the high cost of damage cases impacting wetlands is discussed in A. Dennis Lemly, Wildlife and the Coal Waste Policy Debate: Proposed Rules for Coal Waste Disposal Ignore Lessons from 45 Years of Wildlife Poisoning, Environ. Sci. Technol. 2012, 46, 8595−8600.

damage resulting from CCR releases to wetlands,[297] "discharges to wetlands of pollutants that can be reasonably avoided should be avoided."[298]

In the Phase 2 Proposal, however, EPA makes a completely unsupported reversal from this well-reasoned position. In its proposal, EPA does not prohibit the placement of unencapsulated CCR fill in wetlands, despite the clear harm that EPA previously identified from such placement. Instead, EPA is proposing to adopt a provision that when unencapsulated CCR is placed in a wetland, the user would complete an environmental demonstration "to assess potential environmental releases from the proposed CCR use."[299] This proposal to allow placement of unlimited volumes of CCR fill in wetlands, based on a user-generated demonstration that has no specific requirements relating to evaluating wetland impacts and needs not be certified by a qualified professional engineer, is wholly inconsistent with EPA's 2015 findings, as well as arbitrary and capricious and contrary to the RCRA protectiveness standard. Placement of unencapsulated CCR in or near wetlands is guaranteed to cause serious damage to the ecosystem, as EPA has warned.

In fact, EPA has confirmed that at least five CCR fill sites in close proximity to wetlands resulted in damage.[300] These include (with proven damage cases in bold):

1. **North Lansing** (less than 1,000 feet away from wetlands);
2. **WEPCO Cedar-Sauk** ("vegetation monitoring in a wetland immediately east of the fill area found stress characteristic of boron toxicity. Leaf tissue samples had boron concentrations of 300 to 1,600 ppm compared to 7 to 61 ppm in healthy plants from other areas of the site");
3. **Town of Pines** ("Citizens Coal Council and Labadie Environmental Organization claim that in a number of locations in the eastern portion of Pines and other locations beyond the contaminant plumes of the Yard 520 coal ash landfill . . . it was unregulated CCR fills that contaminated shallow groundwater with levels of boron and other CCR constituents clearly exceeding background concentrations. Specific examples cited are wells MW-106, MW-108, MW-111, and MW-115. In MW-111, *located in a wetland about 3,500*

[297] *See, e.g.*, Hopkins, et al., Reproduction, Embryonic Development, and Maternal Transfer of Contaminants in the Amphibian Gastrophryne carolinensis, Environmental Health Perspectives, Vol. 114 (5): 661-66 (May 2006) (attached); Rowe, et al., Ecotoxicological Implications of Aquatic Disposal of Coal Combustion Residues in the United States: A Review, Environmental Monitoring and Assessment 80: 207-76 (2002) (attached); Rowe, et al., Failed Recruitment of Southern Toads (Bufo terrestris) in a Trace Element-Contaminated Breeding Habitat: Direct and Indirect Effects That May Lead to a Local Population Sink, Arch. Environ. Contam. Toxicol. 40, 399-405 (2001) (attached); Lemly, Guidelines for Evaluating Selenium Data from Aquatic Monitoring and Assessment Studies, Environmental Monitoring and Assessment 28: 83-100 (1993) (attached); Sorensen, et al., Selenium Accumulation and Cytotoxicity in Teleosts Following Chronic, Environmental Exposure, Bull. Environm. Contam. Toxicol. 29, 688-96 (1982) (attached); Sorenson, Selenium accumulation, reproductive status, and histopathological changes in environmentally exposed redear sunfish, Arch. Toxicol. 61: 324-29 (1988) (attached); Benson, et al. Heavy Metal Tolerance and Metallothionein Induction in Fathead Minnows: Results from Field and Laboratory Investigations, Environmental Toxicology and Chemistry, Vol. 4, 209-17 (1985) (attached); Coutant, et al., Chemistry and biological hazard of a coal ash seepage stream, Journal WPCF, 747-53 (Apr. 1978) (attached). *See also* EPA Damage Case Compendiums.

[298] 80 Fed. Reg. at 21,365.

[299] 84 Fed. Reg. at 40,359.

[300] *See* Damage Case Compendium, Vols. I, IIa., II.b., Pt. 1, and II.b., Pt. 2.

feet east of Yard 520 landfill, five of eight samples exceeded the Child One- and Ten-day Health Advisories for boron of 3.0 mg/L") (emphasis added);

4. Dynergy Midwest Hennepin Power Station ("There appeared to be a pronounced gradient toward the southwest, towards the Donnelley Wildlife Management Area, where surface water elevations are managed. Wells PZ-32 and PZ-33 are in this area and are therefore down-gradient of the impoundment; however, in 2001 ash indicator parameter concentrations in these wells were – and still are - low, *probably because it was discharging to the Donnelley Area wetlands between the impoundment and these wells*") (emphasis added); and
5. Lemberger Landfill (wetlands noted to be within 100 feet of the fill site).

Consequently, this rule cannot meet the RCRA protectiveness standard as it cannot ensure no reasonable probability of effects on health or the environment, as required by RCRA § 4004(a).

b. EPA must establish a protective setback for placement of CCR near wetlands.

In addition to a prohibition on placement of CCR in wetlands equivalent or more stringent than the 2015 CCR Rule provision applicable to new CCR landfills, EPA must establish a minimum setback distance from wetlands for all CCR fill applications. EPA suggests adopting standards set by states and provides examples of setbacks in two states, North Carolina and Pennsylvania. At the very least, EPA must choose the most protective requirement, which is Pennsylvania's 100-foot setback distance from wetlands and 300-feet from an exceptional value wetland.[301]

[301] *See* 025 Pa. Code § 105.17(1). An exceptional value wetland is defined by the Commonwealth of Pennsylvania as wetlands that exhibit one or more of the following characteristics:
(i) Wetlands which serve as habitat for fauna or flora listed as ''threatened'' or ''endangered'' under the Endangered Species Act of 1973 (7 U.S.C.A. § 136; 16 U.S.C.A. §§ 4601-9, 460k-1, 668dd, 715i, 715a, 1362, 1371, 1372, 1402 and 1531–1543), the Wild Resource Conservation Act (32 P. S. §§ 5301–5314), 30 Pa.C.S. (relating to the Fish and Boat Code) or 34 Pa.C.S. (relating to the Game and Wildlife Code).
(ii) Wetlands that are hydrologically connected to or located within 1/2-mile of wetlands identified under subparagraph (i) and that maintain the habitat of the threatened or endangered species within the wetland identified under subparagraph (i).
(iii) Wetlands that are located in or along the floodplain of the reach of a wild trout stream or waters listed as exceptional value under Chapter 93 (relating to water quality standards) and the floodplain of streams tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C.A. §§ 1271–1287) or designated as wild or scenic under the Pennsylvania Scenic Rivers Act (32 P. S. §§ 820.21–820.29).
(iv) Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking water supply.
(v) Wetlands located in areas designated by the Department as ''natural'' or ''wild'' areas within State forest or park lands, wetlands located in areas designated as Federal wilderness areas under the Wilderness Act (16 U.S.C.A. §§ 1131–1136) or the Federal Eastern Wilderness Act of 1975 (16 U.S.C.A. § 1132) or wetlands located in areas designated as National natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935 (16 U.S.C.A. §§ 461–467).

In the preamble to the Phase 2 proposal, EPA fails to cite five additional states that prohibit the deposition of CCR in wetlands and that establish minimum setback requirements for CCR fills. The five other states that EPA does not cite include Florida (structural fill must be at least 15 feet from a wetland),[302] Iowa (a structural fill cannot be placed in a waterway or wetland or any waters of the state),[303] Kentucky (unless permission has been obtained from the appropriate regulatory agency, the use cannot be within 100 feet of wetlands),[304] South Dakota (no land application within a wetland),[305] and Wisconsin (an industrial byproduct may not be stored, handled or beneficially used in a manner that will cause a significant adverse impact on wetlands.[306] As evidenced by regulations in at least eight states, prohibitions against CCR placement in wetlands and mandated setbacks from wetlands provide some protection, albeit inadequate protection on its own, from adverse effects. Commenters reiterate that placement of unencapsulated CCR on the land for "beneficial use" must be prohibited, especially in or near wetlands. In the alternative, in addition to establishment of a numerical setback from wetlands and the application of the requirements and prohibition applicable to new CCR landfills in the 2015 Rule, EPA must require an enhanced environmental demonstration[307] for all projects near wetlands, because there is no scientifically presumptive safe distance from wetlands, and determinations for placement of unencapsulated CCR must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.[308]

4. *Deficiencies in EPA's proposed location criteria: unstable areas.*

a. EPA must prohibit placement of unencapsulated CCR in unstable areas

Pursuant to § 257.64(a) of the CCR Rule, new and existing CCR landfills, new and existing CCR surface impoundments and all lateral expansions are *prohibited* from sites classified as unstable areas unless the owner or operator makes a demonstration, certified by a qualified professional engineer, that engineering measures have been incorporated into the CCR unit's design to ensure that the structural components will not be disrupted. EPA provided strong reasons for the strict prohibition, as well as for the application of this prohibition to both new and existing CCR landfills and surface impoundments. In short, construction and operation of CCR units in unstable areas can leave to catastrophic failures of the units. Releases of CCR into complex karst hydrogeology can result in contaminant flow "along paths and networks that are discreet and tortuous" and where recovery is impossible.[309] EPA recognized that "rapid sinkhole formation that occurs in some karst terraces can pose a serious threat to human health and the

[302] Fl. Stat. § 403.7047(1)(a)(2) (2013).
[303] Iowa Admin. Code 567-108.6(1)(d) (2016).
[304] 401 Ky. Admin. Regs. 45:060.
[305] State of South Dakota, Department of Environment and Natural Resources Waste Management Program, SD EForm 1609 V5, *Initial Application to Store and/or Land Apply Solid Waste or Initial Request for Authorization Under the General Permit to Store and/or Land Apply Solid Waste* (GPLA 17-36).
[306] Wis. Adm. Code § NR 538.04.
[307] As described in Section II.G, *infra*.
[308] *See generally* Sahu Expert Report; *see also id.* at 9 and 23.
[309] 80 Fed. Reg. at 21,368.

environment by damaging the structural integrity of dams, liners, caps, run-on/run-off control systems, and other engineered structures."[310]

EPA further described the vulnerability of CCR units in unstable areas:

> Liners and leachate collection systems require a firm, secure foundation to maintain their integrity, and may be disrupted as a result of uneven settlement induced by hydrocompaction. Similarly, sudden differential movement resulting from CCR placement and the consequent exceedance of the weight-bearing strength of subsurface materials in unstable areas can destroy liners and damage the unit's structural integrity, resulting in catastrophic release of CCR.[311]

In fact, several of EPA's confirmed CCR damage cases at fill sites were located at unstable areas, including the following:

1. WEPCO Cedar-Sauk Landfill ("The sand and gravel mining operation removed the unconsolidated material over the underlying Silurian dolostone of the Niagaran Series, considered a regional aquifer that is used by private water supply wells in the Town. This allowed waste to be placed directly on the *fractured and dissolved dolostone knob beneath the landfill*") (emphasis added)[312];
2. Lemberger landfill ("The upper part of the bedrock is more weathered and fractured, and fracture frequency decreases with depth. The horizontal and vertical fractures provide significant migration pathways.")[313]; and
3. Oak Creek Structural Fill Sites ("the aquifer is a fractured system where groundwater will often not follow a hydraulic-gradient based flow direction").[314]

Since EPA has determined that large CCR fill projects pose threats similar to CCR landfills, it stands to reason that a strict prohibition against placement in unstable areas is similarly required for CCR fill projects. In fact, this prohibition for CCR fills is arguably even more important due to the absence of a liner that could reduce or slow the release of CCR in the event of settlement or movement.

EPA, however, is proposing a provision that falls far short of a prohibition and that ignores the very substantial risks of placement of unencapsulated CCR in unstable areas. EPA is proposing that when unencapsulated CCR is placed in an unstable area, an environmental demonstration would be triggered. Yet, the demonstration required by the instant proposal is not equivalent to the engineering demonstration required by § 257.64 of the CCR Rule. Specifically, § 257.64(a) requires a demonstration that "recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of

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[310] 75 Fed. Reg. at 35,201. *See also*, EPA's proven damage case at Georgia Power's Plant Bowen. EPA Damage Case Database and Damage Case Compendium Vol. I (attached).
[311] 80 Fed. Reg. at 21,367.
[312] Damage Case Compendium, Vol. I.
[313] Damage Case Compendium, Vol. IIa.
[314] Damage Case Compendium, Vol. IIb, Pt. 2.

the structural components of the CCR unit will not be disrupted."[315] This demonstration must be certified by a professional engineer.[316] In contrast, the demonstration required by the Phase 2 proposal would not need to be certified by a professional engineer, and the proposal does not explicitly require the critical engineering analysis.

Furthermore, the proposal does not even require a user to perform any specific analysis to determine if the area to be filled is an unstable area. In contrast, § 257.64(b) requires that all owners or operators of CCR units "extensively evaluate the adequacy of the subsurface foundation support for the structural components" of all CCR units. Specifically, § 257.64 requires the owner or operator to consider all of the following factors, at a minimum, when determining whether an area is unstable: (1) On-site or local soil conditions that may result in significant differential settling; (2) On-site or local geologic or geomorphologic features; and (3) On-site or local human-made features or events (both surface and subsurface).[317] Existing CCR units for which a demonstration cannot be made must be closed.[318]

Because EPA's proposal requiring CCR users in unstable areas to complete an ill-defined demonstration, without a mandate for certification by a qualified engineer, is not even as protective as the requirements for new landfills, it is arbitrary, capricious, and contrary to the RCRA § 4004(a) protectiveness standard. The only way to satisfy that protectiveness standard is to prohibit the placement of unencapsulated ash in unstable areas (and, as explained herein, everywhere).

b. EPA must establish a protective setback for placement of CCR near unstable areas.

In addition to a prohibition on placement of CCR fill applications in unstable areas equivalent or more stringent than § 257.64, EPA must establish a protective setback from such areas. Looking to state requirements that restrict CCR placement in unstable areas, EPA cites Pennsylvania, which requires CCR to be placed at least 100 feet from sinkholes or any area draining to a sinkhole and 25 feet from bedrock outcrops.[319] Commenters have found only one other state that requires a setback for unstable areas: Iowa requires that CCR not be placed closer than 200 feet to a sinkhole.[320] Commenters reiterate first that unencapsulated placement of CCR on land be prohibited. In the alternative, EPA must adopt a protective setback requirement at least as protective as the most protective state (Iowa). In addition, even if EPA adopts the requirements and prohibitions applicable to new CCR landfills in the 2015 Rule and the more stringent standard for setbacks from unstable areas, EPA must also require an enhanced environmental demonstration[321] because there is no scientifically presumptive safe distance from unstable areas, and determinations for placement of unencapsulated CCR must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.[322]

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[315] 40 C.F.R. § 257.64(a).
[316] 40 C.F.R. § 257.64(c).
[317] 40 C.F.R. § 257.64(b).
[318] 40 C.F.R. § 257.64(d)(4).
[319] 25 Pa. Code §§ 290.102(g)(3)-(4) and 103(d)(4) (2010).
[320] Iowa Admin. Code 567-108.6(1).
[321] As described in Section II.G, *infra.*
[322] *See generally* Sahu Expert Report; *see also id.* at 9.

5. *Deficiencies in EPA's proposed location criteria: placement in a flood plain.*

a. EPA must prohibit placement of unencapsulated CCR in a flood plain.

Under existing regulations, EPA restricts siting of disposal units in the 100-year flood plain.[323] Section 257.3-1 states, "facilities or practices in floodplains shall not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a hazard to human life, wildlife, or land or water resources." "Washout" is defined in § 257.3-1 to mean "the carrying away of solid waste by waters of the base flood."

Placement of unencapsulated CCR in the flood plains, in structural fills or waste piles, would be subject to washout in the event of flooding. Even more than CCR landfills and coal ash ponds, deposits of unencapsulated CCR are susceptible to washout, because, as EPA admits, they are often placed in large quantities at the surface of the land, without sufficient cover or any structure to protect the CCR from flood waters. As was documented following Hurricane Florence in North Carolina, flooding inundated CCR impoundments and caused the washout of CCR.[324] As storms grow stronger as a result of climate change, it is likely that more washouts will occur with greater frequency and severity.[325] Therefore, to meet the protective standard of RCRA § 4004(a), EPA must prohibit the placement of unencapsulated CCR in or near the flood plains.

In fact, several of EPA's confirmed CCR damage cases at fill sites were located in close proximity to surface waters, which may indicate that they are within the flood plains of these waterways. For example:

1. **North Lansing** (less than 5,000 feet away from the Grand River)
2. **Virginia Power (VEPCO) Yorktown Power Station Chisman Creek Disposal Site, Yorktown, Virginia Superfund Site (NPL)** ("The site [includes] the upper tidal portion of the Chisman Creek estuary. Chisman Creek discharges into the Chesapeake Bay.");
3. **WEPCO Cedar-Sauk** ("Mole's Creek is considered a groundwater discharge point for shallow groundwater that flows from the landfill area"; "the boron and sulfate plume, delineated by boron concentrations greater than 1 mg/L and sulfate concentrations greater than 100 mg/L, extended to a creek roughly 600 feet east of the ash fill area");
4. **Oak Creek Structural Fill Ravine Collapse** (coal ash released into Lake Michigan; distance to surface water not specified);
5. **Hennepin** (on the South Bank of the Illinois River);

[323] 40 C.F.R. § 257.3–1.
[324] *See* A. Vengosh, E.A. Cowan, R.M. Coyte, et al., Evidence for unmonitored coal ash spills in Sutton Lake, North Carolina: Implications for contamination of lake ecosystems, Science of the Total Environment, 10.1016/j.scitotenv.2019.05.188 (attached).
[325] *See* Z. Coleman, "The toxic waste threat that climate change is making worse," *Politico*, Aug. 26, 2019, *available at* https://www.politico.com/story/2019/08/26/toxic-waste-climate-change-worse-1672998.

6. Powerton ("The disposal site consisted of two adjacent landfills located on the bank of Lost Creek")
7. K.R. Rezendes (adjacent to Assonet Bay; "Board of Health…approved a request for expansion within 250 feet of Assonet Bay in 1993")
8. Miamiview ("Located on the floodplain of the Great Miami River in a former (1962/63) sand and gravel quarry as part of a reclamation project");
9. Battlefield Golf Course ("the site is located within the Coastal Plain physiographic province of southeast Virginia");
10. Lemberger Landfill (The Branch River, which drains into Lake Michigan, is located about 3,000 feet west of LL (also described as ½ mile away));
11. WEPCO Port Washington Druecker (the site borders on the west Sauk Creek, designated an Area of Special Natural Resource Interest)
12. Joliet 9 (leachate discharges to the Des Plaines River, but distance is not specified in Compendium);
13. George Neal Station North Landfill (located on the outside of a meander bend on the Missouri River's floodplain)
14. George Neal Station South Landfill (three quarters of a mile from the Missouri River); and
15. Oak Creek Structural Fill Sites (The South Oak Creek power plant, a base load facility, occupies over 400 acres (1.6 km2) of land on the border of Milwaukee and Racine counties **on Lake Michigan** in Oak Creek, Wisconsin).

EPA notes that two states (North Carolina and Pennsylvania) prohibit the placement of CCR within a 100-year flood plain. Additional states, not cited by EPA, have also established prohibitions and setbacks. EPA failed to note that four other states specifically restrict placement of CCR in flood plains. Iowa restricts beneficial use of CCR within a 100-year flood plain unless in accordance with local/department regulations.[326] In Kentucky, unless permission has been obtained from the appropriate regulatory agency, CCR use cannot be within 300 feet of floodplains.[327] In Ohio, CCR cannot be placed for beneficial use in a floodplain.[328] Wisconsin notes, in its beneficial use regulations, that placement of materials in a flood plain is regulated separately for obstruction of flood flows, an increase in regional flood event, or an adverse effect upon a drainage course.[329] Commenters reiterate that placement of unencapsulated CCR on the land for "beneficial use" should be prohibited, especially in or near flood plains. In the alternative, EPA must adopt a standard at least as stringent as the most protective state regulation. Furthermore, even if EPA adopts the requirements applicable to new CCR landfills and the prohibitions on placement within flood plains and stringent setbacks, EPA must also require an enhanced environmental demonstration[330] because there is no scientifically presumptive safe distance from flood plains, and determinations of unencapsulated CCR placement on land must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.[331]

[326] Iowa Admin. Code 567-108.6(1).
[327] 401 Ky. Admin. Regs. 45:060.
[328] Ohio 3745-599-370(A)(1)(d) (2017).
[329] Wis. Adm. Code § NR 538.04, regulatory note.
[330] *See* Section II.G, *infra.*
[331] *See generally* Sahu Expert Report; *see also id.* at 9 and 23.

b. EPA's proposal to allow placement of unencapsulated CCR in flood plains is arbitrary and capricious and fails to meet the RCRA § 4004(a) protectiveness standard.

In lieu of a prohibition, EPA's proposal simply requires the user to complete a demonstration when unencapsulated CCR is placed for beneficial use in the 100-year flood plain. The Phase 2 Proposal, however, contains no specific requirements defining how a user must demonstrate that CCR placement in the flood plain will prevent a reasonable probability of adverse effect on health and the environment. As described above, the absence of regulations mandating the content of environmental demonstrations has resulted in demonstrations that fail to follow the recommendations in the 2015 preamble and fail to demonstrate that the placement of CCR will cause no greater harm than use of non-toxic materials. Section II.F.1.b, *supra,* provides more details concerning the gross deficiencies of EPA's current environmental demonstration requirement.[332]

EPA cannot promulgate this rule in a vacuum. It is the agency's responsibility to evaluate whether users have completed thorough and effective demonstrations sufficient to avoid a reasonable probability of harm. If EPA had examined even one demonstration, it would be obvious that the completion of a demonstration fails to guarantee safe CCR placement. Therefore, since the EPA ignores evidence of past grossly inadequate demonstrations, the proposal is arbitrary and capricious. Because the completion of a demonstration will not prevent washouts and the accumulation of harmful toxins in waterbodies, sediment, pore water and aquatic life, the proposal is arbitrary and capricious and cannot meet the protectiveness standard of RCRA § 4004(a).

6. *EPA must prohibit placement of unencapsulated CCR in a fault area.*

The CCR Rule prohibits the location of CCR units within 200 feet of a fault that has had displacement in Holocene time, unless the owner or operator demonstrates that an alternate setback distance of less than 200 feet will prevent damage to the structural integrity of the unit.[333] EPA is proposing to adopt a provision that when unencapsulated CCR is placed for beneficial use within 200 feet of a fault and within a seismic impact zone that the environmental demonstration would be triggered. EPA claims that simply requiring an environmental demonstration is reasonable "to assess any environmental releases resulting from the shifting of the placed CCR and potential failure of any engineering controls (*e.g.*, tears in the liners), if employed, that could cause contaminants to leach into the groundwater from the seismic activity."[334]

For all the reasons previously stated, placement of unencapsulated CCR on the land as fill poses greater risk than a lined CCR landfill, particularly when large volumes of CCR are used. Therefore the rules governing placement of CCR fills must be at least as restrictive as the rule

[332] *See* Sahu Expert Report.
[333] 40 C.F.R. § 257.62
[334] 84 Fed. Reg. at 40,359-60.

pertaining to new lined landfills and their expansions.[335] Because this proposal does not prohibit placement of unencapsulated CCR within 200 feet from a fault area, or require the certification of a qualified professional engineer stating that an alternative setback distance of less than 200 feet will prevent damage to the structural integrity of the CCR unit,[336] the proposal is arbitrary and capricious and fails to meet the protectiveness standard of RCRA § 4004(a). Failure to prohibit such placement is not only inconsistent with the current CCR disposal regulations, it is contrary to the statute. Commenters reiterate that placement of unencapsulated CCR on the land for "beneficial use" must be prohibited, especially near a fault area. In the alternative, even if EPA adopts the requirements and prohibitions applicable to new CCR landfills in the 2015 Rule, EPA must also require an enhanced environmental demonstration[337] because there is no scientifically presumptive safe distance from a fault area, and determinations for CCR placement must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.[338]

7. *EPA must prohibit placement of unencapsulated CCR in a seismic zone.*

EPA is proposing to adopt a provision that when unencapsulated CCR is placed for beneficial use within a seismic impact zone, the environmental demonstration would be triggered. EPA admits that fill applications typically involve the placement of large amounts of CCR and in some situations may require the use of engineering controls, such as liners.[339] As with landfills, large-scale fill applications located in seismic areas can encounter structural stability problems (*i.e.*, the placed CCR shifts and engineering controls, such as liners, tear and fail). EPA claims that requiring an environmental demonstration when CCR is placed within a seismic zone is "reasonable" in order to assess any environmental releases resulting from a probable earthquake that may cause the placed CCR to shift and the "potential failure of any engineering controls (*e.g.*, tears in the liners), if employed, that could cause contaminants to leach into the groundwater from the seismic activity."[340]

This proposal is arbitrary and capricious and fails the protectiveness standard of RCRA § 4004(a) because the there are no clear requirements mandating a full and adequate consideration of the impacts of an earthquake on a CCR fill project. In addition, unlike the 2015 CCR Rule requirements applicable to CCR landfills in seismic zones, the proposal fails to require a certification from a qualitied professional engineer attesting to the safety of the placement of CCR in a seismic zone. EPA offers absolutely no rationale why a CCR placement project should not be required to meet standards as stringent as those applicable to CCR landfills, which present lower risks to health and environment. These deficiencies, particularly in light of the industry's history of inadequate demonstrations and the high risk posed by large-volume placement projects in seismic zones, render the proposal arbitrary and capricious and in violation of RCRA's protectiveness standard in § 4004(a). Commenters reiterate that placement of unencapsulated CCR on the land for "beneficial use" must be prohibited, especially in or near seismic zones. In

[335] 40 C.F.R. § 257.62.
[336] 40 C.F.R. § 257.62(a).
[337] *See* Section G, *infra*
[338] *See* Sahu Expert Report.
[339] 84 Fed. Reg. at 40,359.
[340] 84 Fed. Reg. at 40,259-60.

the alternative, even if EPA adopts the requirements and prohibitions applicable to new CCR landfills in the 2015 Rule, EPA must also require an enhanced environmental demonstration[341] because there is no scientifically presumptive safe distance from seismic zones, and determinations for the placement of unencapsulated CCR must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics. [342]

8. *EPA must establish a setback for CCR placement projects from water bodies that meets the protectiveness standard of RCRA § 4004(a).*

In the Phase 2 Proposal, EPA considers establishing a criterion for distance of CCR placement from a water body, largely based on state beneficial use program provisions. EPA is suggesting that when unencapsulated CCR is placed at a site for beneficial use within 50 feet from a water body, which it defines as "perennial and intermittent streams and rivers,"[343] an environmental demonstration under the existing regulation would be triggered.

The agency states that its proposed 50-feet criterion "generally would be consistent with the approach" taken by North Carolina, which limits placement of CCR in fill applications with a setback of 50 feet from a water body, and Pennsylvania, which limits placement of CCR in fill applications with a setback of 100 feet from a water body, and 300 feet from an exceptional value or high-quality water body.[344] EPA states that its proposed value, which represents the *least restrictive* state requirement, will ensure that the "federal provision is not inconsistent with existing state programs, as a regulated entity could always comply with both the EPA and the state provision, including any more stringent state requirement."[345]

Consistency with an existing state requirement, however, cannot be the basis for EPA rulemaking. EPA must establish a criterion for protection of water bodies from CCR releases that meets the protectiveness standard of § 4004(a) of RCRA. Ease of compliance with overlapping state regulations cannot be a determining factor for establishing such criteria, and reliance on this factor would render the rule arbitrary and capricious and unable to meet the RCRA protectiveness standard.

Further, EPA ignores the fact that other states have relevant restrictions that exceed the setback requirements established in North Carolina.[346] Kentucky mandates that CCR use not be within 100 feet of existing streams, unless the appropriate regulatory agency gives permission.[347] South Carolina bars land application – the addition of ash to concrete and use of solid waste for structural fill – within 100 feet of surface water.[348]

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[341] *See* Section G, *infra*.
[342] *See* Sahu Expert Report.
[343] 84 Fed. Reg. at 40,360.
[344] *Id*.
[345] *Id*.
[346] *See generally*, State Beneficial Use Survey (attached).
[347] 401 Ky. Admin. Regs. 45:060.
[348] S.C. Code Ann. Regs. 61-107.15(I)(C)(10).

Damage to surface waters from CCR constituents is well documented in scientific literature. [349] In order to ensure no reasonable probability of adverse effects on health and environment, EPA must prohibit the use of unencapsulated CCR as fill unless such placement, at a minimum, is in compliance with all landfill disposal requirements of the 2015 CCR Rule *and* is subject to effective setbacks from waterbodies with which failure to comply would prohibit placement.[350]

In fact, several of EPA's confirmed CCR damage cases at fill sites were located in close proximity to surface waters. For example:

1. North Lansing (less than 5,000 feet away from the Grand River)
2. Virginia Power (VEPCO) Yorktown Power Station Chisman Creek Disposal Site, Yorktown, Virginia Superfund Site (NPL) ("The site [includes] the upper tidal portion of the Chisman Creek estuary. Chisman Creek discharges into the Chesapeake Bay.");
3. WEPCO Cedar-Sauk ("Mole's Creek is considered a groundwater discharge point for shallow groundwater that flows from the landfill area"; "the boron and sulfate plume, delineated by boron concentrations greater than 1 mg/L and sulfate concentrations greater than 100 mg/L, extended to a creek roughly 600 feet east of the ash fill area");
4. Oak Creek Structural Fill Ravine Collapse (coal ash released into Lake Michigan; distance to surface water not specified);
5. Hennepin (on the South Bank of the Illinois River);
6. Powerton ("The disposal site consisted of two adjacent landfills located on the bank of Lost Creek")
7. K.R. Rezendes (adjacent to Assonet Bay; "Board of Health…approved a request for expansion within 250 feet of Assonet Bay in 1993")
8. Miamiview ("Located on the floodplain of the Great Miami River in a former (1962/63) sand and gravel quarry as part of a reclamation project");

[349] Numerous scientific studies confirm deleterious impacts to aquatic life from contamination of surface waters by CCR constituents. *See, e.g.*, Lemly, An urgent need for an EPA standard for disposal of coal ash, Environmental Pollution 191: 253-55 (2014) (attached); Laura Ruhl, Avner Vengosh, *et al*, "The Impact of Coal Combustion Residue Effluent on Water Resources: A North Carolina Example, Environmental," Science & Technology (Sept. 30, 2012) (attached); Laura Ruhl, Avner Vengosh, *et al*, "Environmental Impacts of the Coal Ash Spill in Kingston, Tennessee, An 18-Month Survey, *Environ. Sci. Technol.* **2010,** *44,* 9272–9278 (attached); Lemly, Guidelines for Evaluating Selenium Data from Aquatic Monitoring and Assessment Studies, Environmental Monitoring and Assessment 28: 83-100 (1993) (attached); Rowe, et al., Ecotoxicological Implications of Aquatic Disposal of Coal Combustion Residues in the United States: A Review, Environmental Monitoring and Assessment 80: 207-76 (2002) (attached); Hopkins, et al., Reproduction, Embryonic Development, and Maternal Transfer of Contaminants in the Amphibian Gastrophryne carolinensis, Environmental Health Perspectives, Vol. 114 (5): 661-66 (May 2006) (attached); Rowe, et al., Failed Recruitment of Southern Toads (Bufo terrestris) in a Trace Element-Contaminated Breeding Habitat: Direct and Indirect Effects That May Lead to a Local Population Sink, Arch. Environ. Contam. Toxicol. 40, 399-405 (2001) (attached); Sorensen, et al., Selenium Accumulation and Cytotoxicity in Teleosts Following Chronic, Environmental Exposure, Bull. Environm. Contam. Toxicol. 29, 688-96 (1982) (attached); Sorenson, Selenium accumulation, reproductive status, and histopathological changes in environmentally exposed redear sunfish, Arch. Toxicol. 61: 324-29 (1988) (attached); Benson, et al. Heavy Metal Tolerance and Metallothionein Induction in Fathead Minnows: Results from Field and Laboratory Investigations, Environmental Toxicology and Chemistry, Vol. 4, 209-17 (1985) (attached); Coutant, et al., Chemistry and biological hazard of a coal ash seepage stream, Journal WPCF, 747-53 (Apr. 1978) (attached). *See also* EPA Damage Case Compendiums.

[350] *See* Sahu Expert Report at 9.

9. Battlefield Golf Course ("the site is located within the Coastal Plain physiographic province of southeast Virginia");
10. Lemberger Landfill (The Branch River, which drains into Lake Michigan, is located about 3,000 feet west of LL (also described as ½ mile away));
11. WEPCO Port Washington Druecker (the site borders on the west Sauk Creek, designated an Area of Special Natural Resource Interest)
12. Joliet 9 (leachate discharges to the Des Plaines River, but distance is not specified in Compendium);
13. George Neal Station North Landfill (located on the outside of a meander bend on the Missouri River's floodplain)
14. George Neal Station South Landfill (three quarters of a mile from the Missouri River); and
15. Oak Creek Structural Fill Sites (The South Oak Creek power plant, a base load facility, occupies over 400 acres (1.6 km2) of land on the border of Milwaukee and Racine counties on Lake Michigan in Oak Creek, Wisconsin).

Commenters reiterate that placement of unencapsulated CCR on the land for "beneficial use" should be prohibited, especially near surface water. In the alternative, in addition to application of all requirements for new CCR landfills to CCR fill projects and establishment of setback distances from waterbodies, EPA must require an enhanced environmental demonstration[351] because there is no scientifically presumptive safe distance from water bodies that will be safe for all sites, and determinations for the placement of unencapsulated CCR must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.[352]

9. *EPA must establish a setback for CCR placement projects from water supply wells that meets the protectiveness standard of RCRA § 4004(a).*

In its Phase 2 Proposal, EPA considers establishing criteria for a minimum setback from a water supply well for unencapsulated CCR placement. EPA proposes that when unencapsulated CCR is placed at a site for beneficial use within 200 feet from a water supply well, an environmental demonstration would be triggered to assess the risks to potential receptors, "to ensure consistency with existing state programs."[353] EPA admits that this value represents the least restrictive state requirement and again cites a need to ensure that the federal provision is not inconsistent with existing State programs, so that "a regulated entity could always comply with both the EPA and the State provision, including any more stringent state requirement."[354] As stated above, consistency with the least restrictive state regulation must not be the determinative factor in establishing subtitle D criteria. Reliance on this factor will cause the rule to be arbitrary and capricious as well as violate the protectiveness standard of RCRA § 4004(a).

[351] *See* Section II.G, *infra*.
[352] *See* Sahu Expert Report.
[353] 84 Fed. Reg. at 40,360.
[354] *Id*.

EPA cites three states that require a minimum setback for CCR fill placement from water supply wells: Wisconsin (200 feet from residential wells for fills greater than 5,000 cubic yards),[355] North Carolina (300 horizontal feet from a well)[356] and Pennsylvania (300 feet from a residential well).[357] However, these states *prohibit* CCR fills closer than the required limit, rather than allowing exceptions based on an environmental demonstration.

Additional states, not cited by EPA, also *ban placement* of CCR within a set distance of water supply wells.[358] For instance, Florida bans CCR placement at least 100 feet from any well used for agriculture or drinking water, Iowa bans placement at least 200 feet from a well that is being used or could be used for human or livestock water consumption. In Maine the use of ash as flowable fill must be 100 feet from drinking water supplies.[359] Ohio requires a setback of at least 500 feet from a well that provides potable drinking water for humans/livestock and prohibits placement in a drinking water source protection area. South Carolina requires 100 feet from drinking water wells.[360] Wisconsin requires a setback of at least 200 feet from residential wells for fills greater than 5,000 cubic yards. Only Kentucky allows an exception for permission from the appropriate regulatory agency, if the CCR proposed placement is within 300 feet of existing drinking water wells.[361]

Commenters reiterate that placement of unencapsulated CCR on the land for "beneficial use" should be prohibited, especially where groundwater is used or may be used as a source of drinking water. In the alternative, in order to ensure no reasonable probability of adverse effects on health and environment, EPA must establish effective setbacks from water supply wells for CCR placement projects and *prohibit placement* of CCR within that distance.[362] In addition to application of all requirements applicable to new CCR landfills and establishment of setback distances from waterbodies, EPA must require an enhanced environmental demonstration[363] because there is no scientifically presumptive safe distance from water bodies that will be safe for all sites, and determinations for the placement of unencapsulated CCR must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.

10. *EPA must establish a setback for CCR placement projects from residential properties compliant with the protectiveness standard of RCRA § 4004(a).*

Commenters reiterate that placement of unencapsulated CCR on the land for "beneficial use" should be prohibited, especially near residential properties or any buildings frequented by sensitive populations, such as children, the elderly or the infirm. Such buildings include school, hospitals, day care centers, etc., where such populations are taught, treated or housed. In the alternative, EPA must establish a strict minimum setback from such properties for

[355] Wis. Adm. Code § NR 538.12.
[356] N.C. G.S. § 130A-309.220(c).
[357] 25 Pa. Code §§ 290.102(g)(2) and 290.103(d)(3)
[358] *See generally*, State Beneficial Use Survey (attached).
[359] 06-096 CMR Ch. 418, § 7(D)(1).
[360] 61-107.15S.C. Code Ann. Regs. 61-107.15(I)(C)(10).
[361] 401 Ky. Admin. Regs. 45:060.
[362] *See generally* Sahu Expert Report; *see id. at* 9 and 23.
[363] *See* Section II.G, *supra.*

unencapsulated CCR land placement. Four of the states reviewed by EPA impose restrictions on proximity to residences. North Carolina requires a minimum setback distance of 300 feet from any private dwelling or 50 feet from any property boundary.[364] Pennsylvania requires that coal ash beneficially used as a soil substitute or soil additive not be within 300 feet from an occupied dwelling, unless the current owner has provided a written waiver consenting to the activities closer than 300 feet.[365] Wisconsin prohibits specific CCR beneficial uses of greater than 5,000 cubic yards in a "residential area," defined as properties that are zoned as residential, in areas planned for residential zoning under a master plan approved or adopted by a local municipal authority, or in an area within 100 feet of a human residence.[366] Lastly, South Carolina limits the land application of coal ash to 100 feet from a dwelling.[367]

Placement of coal ash in close proximity to residential dwellings poses a reasonable probability of adverse effects to health via inhalation, direct contact and ingestion, in addition to any groundwater or surface water impacts that may occur.[368] Toxic metals in coal ash frequently exceed the levels established by EPA for safe residential soil, particularly for children. To determine the safety of soils, EPA uses regional screening levels (RSLs), which are based on toxicity data and exposure information.[369] The agency uses these RSLs to "screen" waste sites and identify areas and contaminants that need further investigation and remediation under EPA's CERCLA and RCRA programs.

The level of arsenic in CCR often exceeds its RSL by orders of magnitude. Soil contamination in the Town of Pines, Indiana is an illustrative example. Use of coal ash as fill throughout the town contaminated drinking water and soil and led to an ongoing Superfund cleanup.[370] For example, arsenic in soil contaminated by the placement of coal ash at a playground in Town of Pines reached 450 mg/kg in surface soil.[371] The RSL for arsenic for residential soil ranges from 0.68 mg/kg (cancer risk) to 39 mg/kg (child non-cancer risk from ingestion).[372] In addition, the Remedial Investigation Report for the Town of Pines documented that arsenic and hexavalent chromium were found in most of the CCR samples analyzed "at levels above the human health risk-based comparison levels."[373] Thallium was also detected

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[364] N.C. G.S. § 130A-309.220(c).
[365] 25 Pa. Code § 290.103(d)(5).
[366] Wis. Adm. Code § NR 538.03(6).
[367] 61-107.15S.C. Code Ann. Regs. 61-107.15(I)(C)(10).
[368] *See* Ash in Lungs (attached); B. Gottlieb *et al*, Coal Ash: The Toxic Threat to Our Health and Environment, *available at* https://www.psr.org/wp-content/uploads/2018/05/coal-ash.pdf (attached); s*ee also* Testimony of Susan Wind, EPA Public Hearing on Phase 2 Proposal, Oct. 2, 2019 (attached).
[369] EPA, Regional Screening Levels (RSLs) - Generic Tables, available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.
[370] *See* EPA, Superfund Site: Town of Pines Groundwater Plume, Town of Pines, IN, available at https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0508071.
[371] *See* Table 1, Analytical Results for Inorganics, Property 34, Town Hall Property, Supplemental Soil Characterization, Pines Area of Investigation at 5-6 (attached).
[372] *See* EPA, Regional Screening Level (RSL) Resident Soil Table (TR=1E-06, HQ=1) April 2019, available at https://semspub.epa.gov/work/HQ/199436.pdf (attached).
[373] *See* Remedial Investigation Report Pines Area of Investigation AOC II Docket No. V-W-'04-C-784, at 4-10 – 4-11 (Mar. 5, 2010) (attached), https://response.epa.gov/sites/11098/files/Remedial%20Investigation%20Report%20for%20the%20Pines%20Area%20of%20Investigation.pdf.

above the human health risk-based comparison levels.[374] In addition, soil sampling in the Town of Pines lead to discovery of soil containing arsenic up to 888 kg/mg, which is more than 1300 times the EPA's safe level for residential soil.[375]

EPA has known for decades that coal ash contains toxic metals at levels that exceed safe levels for residential and industrial soils. In its 1999 *Report to Congress on Remaining Wastes from Fossil Fuel Combustion*, EPA included a "Technical Background Document for the Report to Congress on Remaining Wastes from Fossil Fuel Combustion: Waste Characterization" that contained total concentration data for fly ash, bottom ash, boiler slag and FGD sludge.[376] The data show that the median levels of several toxic metals, including, arsenic, cobalt, and hexavalent chromium, exceed their respective RSLs for residential soils.[377] If one looks at the maximum concentration data of the coal ashes, antimony, lead, thallium, and vanadium similarly exceeded screening levels for residential soils.[378] It is highly likely that levels of metals in CCR have increased since this testing occurred, as the data reported in the 1999 Report to Congress dates back to 1983 and 1993, and coal-fired power plants currently capture more metals at the stack pursuant to Clean Air Act requirements.[379]

For this reason, CCR placed on land must be prohibited near residential structures. The prohibition must extend to schools[380] and health care facilities where risk of injury to children and sensitive populations through direct contact, inhalation and ingestion is elevated. Because EPA ignores these documented risks to human health and the environment, EPA's Phase 2 Proposal is arbitrary and capricious and fails to meet the protective standard of RCRA § 4004(a). Lastly, in addition to the application of all requirements applicable to new CCR landfills and the establishment of setback distances from residences, schools and health care facilities (and similar properties), EPA must require an enhanced environmental demonstration[381] because there is no scientifically presumptive safe distance that will be safe for all sites, and environmental determinations for the placement of unencapsulated CCR must be completed on a case-by-case basis through a detailed evaluation of waste and site characteristics.[382]

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[374] *Id.*

[375] Table 1 Validated Inorganics Results Supplemental Soil Characterization Pines Area of Investigation, available at https://response.epa.gov/sites/11098/files/Supplemental%20Soil%20Characterization%20Validated%20Inorganics%20Results.pdf (attached).

[376] US EPA, Report to Congress on Remaining Wastes from Fossil Fuel Combustion, Technical Background Document For The Report To Congress On Remaining Wastes From Fossil Fuel Combustion: Waste Characterization, March 15, 1999 (attached).

[377] *Id.* at 2-2 to 2-6.

[378] *Id.*

[379] *See* Thorneloe *et al*, supra (attached). *See also*, S. Thorneloe et al, Evaluating the Fate of Metals in Air Pollution Control Residues from Coal-Fired Power Plants, 44(19) ENTL. SCI. & TECH. 7351, 7354-55 (2010).

[380] *See* Testimony of Dr. Mark Schiowitz, EPA Public Hearing on Phase 2 Proposal, Oct. 2, 2019, Arlington, VA.

[381] *See* Section G, infra.

[382] *See* Sahu Expert Report.

11. *The Phase 2 Proposal's fugitive dust protections for beneficial use of CCR fail to meet the protectiveness standard of RCRA § 4004(a).*

The Phase 2 Proposal's minimal protections against fugitive dust pollution from unencapsulated CCR fill do not meet the protectiveness standard of RCRA § 4004(a). Under EPA's new proposal, users of unencapsulated CCR must complete an "environmental demonstration" in just six circumstances.[383] Specifically, users must make the demonstration for "non-roadway applications" of unencapsulated CCR when "unencapsulated use of CCR involves the placement on the land. . . (a) Within 1.52 meters (five feet) of the upper limit of the uppermost aquifer; (b) in a wetland; (c) in an unstable area; (d) within a 100-year flood plain; (e) within 60 meters (200 feet) of a fault zone; (f) or within a seismic impact zone…."[384] In those circumstances, the user:

> must demonstrate and keep records, and provide documentation upon request, that environmental releases to groundwater, surface water, soil and air are comparable or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use.[385]

This proposal falls far short of protecting against air pollution. It fails to meet RCRA's protectiveness standard by providing zero protections against fugitive dust for any and all uses of unencapsulated CCR placed on the land that do not fit into the six limited categories triggering a demonstration. Even in the limited circumstances where the Phase 2 Proposal would require an environmental demonstration, it likewise fails to provide adequate protections against CCR dust pollution to satisfy RCRA § 4004(a).

The critical flaw underlying the Phase 2 Proposal's shortcomings with regard to fugitive dust pollution from unencapsulated CCR is that EPA simply ignores abundant data on the severe harms caused by coal ash fugitive dust. Specifically, EPA's proposed rule ignores: (a) The voluminous data the agency itself has gathered on the breadth and severity of fugitive dust pollution from unencapsulated fill sites, including many of EPA's confirmed "damage cases" associated with dust; (b) EPA's 2009 Inhalation Screening Assessment and its 2014 Risk Assessment, which identifies serious non-cancer and ambient air quality risks from fugitive CCR dust; and (c) the increasing body of evidence of the harm that CCR fugitive dust causes to human health and the environment. By failing to take that damning data into account, EPA has created a rule that, if finalized, would be arbitrary, capricious, and contrary to law.

[383] *See* 84 Fed. Reg. 40,358-61.
[384] *Id*. at 40,370; proposed 40 C.F.R. § 257.53(4).
[385] *Id*.

a. CCR fugitive dust has major adverse health impacts.

EPA has long recognized that inhalation of CCR poses grave hazards to human health.[386] When coal ash is disposed or placed on the ground, dust can be emitted into the air by loading and unloading, transport, and wind if not properly managed. Once in the air, fugitive dust can migrate off-site. As a result, workers and nearby residents can be exposed to significant amounts of CCR dust. Breathing in that dust puts people at risk in numerous ways, through:

- Exposure to course particulate matter (PM 10)and respiration of small particulates (PM 2.5) that lodge in the lung;[387]
- Inhalation of radioactive particles;[388]
- Uptake of heavy metals, including mercury;[389]
- Inhalation of silica, and
- Exposure to hydrogen sulfide.[390]

Both coarse and small particulates have been linked to heart disease, cancer, respiratory diseases and stroke.[391] Coal ash contains significant amounts of silica, in both crystalline and amorphous form. Respirable crystalline silica in coal ash can lodge in the lungs and cause silicosis, or scarring of the lung tissue, which can result in a disabling and sometimes fatal lung disease.[392] Chronic silicosis can occur after many years of mild overexposure to silica. While the

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[386] *See* 75 Fed. Reg. 35,128 (June 21, 2010) at 35,171 ("Air emissions from CCR disposal and storage sites can originate from waste unloading operations, spreading and compacting operations, the re- suspension of particulates from vehicular traffic, and from wind erosion. Air inhalation exposures may cause adverse human health effects, either due to inhalation of small-diameter (less than 10 microns) ''respirable'' particulate matter that causes adverse effects (PM10 and smaller particles which penetrate to and potentially deposit in the thoracic regions of the respiratory tract), which particles are associated with a host of cardio and pulmonary mortality and morbidity effects."); US EPA, Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills (May 2010), Docket ID No. EPA-HQ-RCRA-2009-0640-0142, and US EPA, Damage Case Reports; EPA, Damage Case Compendium; EPA, Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills (May 2010), Docket ID No. EPA-HQ-RCRA-2009-0640-0142.

[387] Ash in Lungs at 13-15 (2014).

[388] *Id.* at 5. Burning coal concentrates the radionuclides approximately three to ten times the levels found in the initial coal seams. The radioactive metals stay with the coal ash when the carbon is burned off. *See Figure 1.* Graph from Radioactive Elements in Coal and Fly Ash: Abundance, Forms, and Environmental Significance. U.S. Geological Survey Fact Sheet FS-163-97. October 1997. *See also,* Ruhl et al., The environmental effects of the Tennessee Valley Authority (TVA) coal ash spill in Kingston, TN (2009; 2010); Lauer et al., Naturally Occurring Radioactive Materials in Coals and Coal Combustion Residuals in the United States (2015) (attached).

[389] *Id.* at 6. Implementation of the federal Clean Air Mercury Rule significantly increases the mercury content in fly ash because the mercury capture required by the rule will result in more mercury ending up in the solid waste created by coal burning. According to EPA testing of fly ash at plants that had mercury controls, the mercury in ash increased by a median factor of 8.5, and in one case, by a factor of 70. *See also*, U.S. Environmental Protection Agency, National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry, Federal Register, Vol 71, No. 244, December 20, 2006.

[390] *Id.*

[391] *See* Air particulate matter and cardiovascular disease: the epidemiological, biomedical and clinical evidence, J Thorac Dis. 2016 Jan; 8(1): E8–E19, *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4740122/. *See also,* US EPA, Linking Air Pollution and Heart Disease, *available at* https://www.epa.gov/sciencematters/linking-air-pollution-and-heart-disease.

[392] *See* Ash in Lungs.

damage may at first go undetected, irreversible damage can occur to the lungs from chronic exposure. Such exposure can result in fever, shortness of breath, loss of appetite and cyanosis (blue skin). In addition, the International Agency for Research on Cancer has determined that silica causes lung cancer in humans. Inhalation of coal ash also poses significant health threats because of the toxic metals present in the ash, such as arsenic, chromium (including the highly toxic and carcinogenic chromium VI), lead, manganese, mercury, radium and others. When inhaled, these toxic metals can cause a wide array of serious health impacts, ranging from cancer to neurological damage.

EPA has been aware of the severe harms fugitive coal ash dust can cause for many years. Ten years ago, EPA developed a screening assessment acknowledging significant potential harm from fugitive dust. EPA found that when coal ash blows from dry storage sites, particulate matter can readily exceed the national ambient air quality standards (NAAQS) for levels of particulate matter in the air.[393] EPA concluded "there is not only a possibility, but a strong likelihood that dry-handling [of coal ash] would lead to the NAAQS being exceeded absent fugitive dust controls."[394] In its 2014 Risk Assessment, EPA reiterated that conclusion, recognizing that uncontrolled fugitive CCR dust would exceed the 24-hour NAAQS for PM2.5 (fine particulate matter) under the scenario modeled.[395] Moreover, EPA acknowledged that acute inhalation of fugitive CCR dust, without appropriate controls, could result in dangerously high non-cancer risk due to arsenic exposure.[396]

Finally, in 2014, as part of the record for its 2015 CCR Rule, EPA completed a damage case report specific to fugitive CCR dust impacts, listing 27 sites.[397] EPA's fugitive dust damage case compendium makes abundantly clear that the agency recognized the harms from, and need to regulate, CCR dust. It states:

> Evidence of fugitive dust impact throughout the life cycle management of coal combustion residuals (CCR) has been available even prior to the publication of the proposed CCR rule in June 2010. Since the proposed rule was issued, a great deal of additional evidence has surfaced. This evidence, combined with the results of air quality risk screening conducted by EPA that demonstrated human health risk associated with CCR fugitive dust was instrumental in EPA's decision to regulate air quality issues associated with CCR management.[398]

Reports out of the Dominican Republic underscore the severity of injury that coal ash dust can cause. In the early 2000s, coal ash generated at AES' coal-burning power plant in Guayama, Puerto Rico, was dumped on a beach in the Dominican Republic, where it was alleged to have been left for years.[399] Reports of rampant, severe harm – babies born with severe birth

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[393] *See* Fugitive Dust Screening Assessment.
[394] *Id*.
[395] *Id*. at 3-9 – 3-10.
[396] 2014 Risk Assessment at 3-6 – 3-8.
[397] EPA, Damage Cases: Fugitive Dust Impact, Docket ID No. EPA-HQ-RCRA-2009-0640-11992 (Dec. 18, 2014).
[398] *Id*. at 0.
[399] *See* Centro de Periodismo Investigativo, "Arroyo Barril: Coal Ash and Death Remain 15 Years Later," Dec. 20, 2018 (hereafter "Arroyo Barril"), *available at* http://periodismoinvestigativo.com/2018/12/arroyo-barril-coal-ash-

defects, ectopic pregnancies, and the illness and death of Dominicans who worked on the coal ash operations there – followed soon thereafter.[400] Several years later, both the Dominican Republic itself as well as a several local citizens sued AES for the harms caused by the coal ash dumped on the beach.[401] AES settled both complaints,[402] but reports of harm from local residents who inhaled the coal ash continue.[403]

Injuries to cleanup workers in Tennessee also provide devastating confirmation of the harms of coal ash dust. In the decade following the multi-year cleanup of the 5.4 million-ton coal ash spill at the Kingston TVA Fossil Plant in Harriman, Tennessee, at least 40 cleanup workers died and over 400 have reported being sickened by the inhalation of coal ash, all with ailments known to be caused by long-term exposure to arsenic, radium and other toxins and metals found in coal ash, according to a lawsuit filed after the spill.[404] Seventy-three plaintiffs, comprising sick workers and families of deceased workers, sued in federal district court and won a jury verdict in November 2018 that found the cleanup contractor failed to exercise reasonable care to protect the health of cleanup workers. The jury also found that exposure to toxic heavy metals and radiation in coal ash could be responsible for the workers' illnesses, including skin rashes, lung disease and cancer.[405]

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and-death-remain-15-years-later/; *see also Dominican Republic v. AES Corporation*, 466 F.Supp.2d 680 (E.D. Va. 2006) (granting in part and denying in part motion to dismiss).

400 *See id.*; see also Facing South, "Lawsuit accuses Virginia power company of poisoning Dominican community with toxic coal ash" (Nov. 10, 2009), *available at* https://www.facingsouth.org/2009/11/lawsuit-accuses-virginia-power-company-of-poisoning-dominican-community-with-toxic-coal-ash.

401 *See id*.

402 *See* The Real News Network, "Toxic Coal Ash Afflicts Puerto Rico and the Dominican Republic," dated Apr. 1, 2019, *available at* https://therealnews.com/stories/toxic-coal-ash-afflicts-puerto-rico-and-the-dominican-republic; Dominican Today, "AES settles Dominican Republic toxic waste dump case: Bloomberg," dated Apr. 5, 2016, *available at* https://dominicantoday.com/dr/local/2016/04/05/aes-settles-dominican-republic-toxic-waste-dump-case-bloomberg/.

403 *See* "Arroyo Barril."

404 *See* Jamie Satterfield, *Judge rejects TVA contractor's ask for a new trial over coal ash contamination lawsuit,* Knox News, March 1, 2019 *available at* https://www.knoxnews.com/story/news/crime/2019/03/01/judge-says-evidence-backs-jury-verdict-kingston-coal-ash-contamination/3017696002/. *See also,* Jamie Satterfield, *Sickened Kingston coal ash workers left with faulty, manipulated test results*, Knox News, Sept. 2, 1018, Knox News, https://www.knoxnews.com/story/news/crime/2018/09/02/kingston-coal-ash-spill-faulty-manipulated-testing/1126963002/. *See also,* https://www.knoxnews.com/story/news/crime/2017/08/23/epa-bowed-tva-contractor-worker-safety- standards-nations-largest-coal-ash-disaster-records-say/574855001/; https://www.knoxnews.com/story/news/crime/2017/08/11/kingston-coal-ash-spill-cleanup-probe-spurs- more-complaints-disease-death/551596001/; https://www.knoxnews.com/story/news/crime/2018/03/28/tva-coal-ash-spill-cleanup-roane-county- lawsuits-dead-dying-workers/458342002/; https://www.mensjournal.com/features/coal-disaster-killing-scores-rural-americans; https://abcnews.go.com/Health/wireStory/tva-backlash-grows-coal-ash-spill-workers-fall-65234169; Sworn Declaration of R. Doug Hudgens, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv-00462-TAV-HBG, Doc. 129-7 (E.D. Tenn. Oct. 28, 2017); Affidavit of Dan. R. Gouge, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv-00462-TAV-HBG, Doc. Doc. 129-5 (E.D. Tenn. Oct. 28, 2017); Kingston Ash Release Response Project, Jan. 2013 Rev. 06, at Table 4-2: Fly Ash Constituent Information, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv- 00462-TAV-HBG, Doc. 129-1 (E.D. Tenn. Oct. 28, 2017.

405 *Id.*

b. Use of CCR as fill has caused severe air pollution

While coal ash outright dumped on the land and spilled, dried-out coal ash have been a source of significant harmful CCR dust pollution, the use of coal ash as structural fill has likewise been a major source of harmful air pollution. Landfill employees and workers handling coal ash in "beneficial use" operations (e.g., at structural fills and minefills) often experience harmful exposure to airborne ash. Workers at the Arrowhead Landfill in Uniontown, Alabama, which received more than 4 million tons of coal ash from the cleanup of the TVA Kingston spill in 2009–2010, reported significant injuries to health.[406] A construction manager overseeing the use of coal ash as fill in the construction of a golf course also claimed serious injury due to inhalation of fly ash.[407] Finally, as noted elsewhere in these comments, EPA's confirmed "fugitive dust damage cases" include seven structural fill sites.[408]

The evidence makes clear that use of unencapsulated ash as fill produces harmful fugitive dust that must be properly controlled to prevent serious harm to human health. As discussed herein, EPA does not propose any such controls and thus does not satisfy RCRA § 4004(a).

c. The Phase 2 Proposal fails to meet RCRA § 4004(a).

Notwithstanding the vast, overwhelming evidence that unencapsulated coal ash fill is a major source of fugitive CCR dust pollution and the ever-increasing evidence of severe harm to human health caused by exposure to that dust pollution, EPA proposes to *require no dust pollution controls* whatsoever for the use of unencapsulated CCR placed on the land. That alone renders the Phase 2 Proposal arbitrary, capricious, and contrary to RCRA.

The proposal's mandate that users of unencapsulated CCR must, in limited circumstances, "demonstrate and keep records, and provide documentation upon request, that environmental releases to. . . air are comparable or lower than those from analogous products made without CCR, or that environmental releases to . . . air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use,"[409] does not save it.

First, there is no indication that *any* of the circumstances in which EPA proposes to require preparation of an "environmental demonstration" – involving the records and documentation quoted above – are aimed at protecting against the well-documented harms of fugitive CCR dust pollution. Indeed, the word "dust" does not appear at all in the section of the Phase 2 Proposal preamble addressing beneficial use of unencapsulated CCR.[410] EPA

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[406] Holly Haworth, Oxford American, Something Inside of Us, Issue 82, Nov. 11, 2013, available at http://www. oxfordamerican.org/articles/2013/nov/11/something- inside-us/.
[407] *See* Marjon Rostami, Norfolk Virginian-Pilot, "Chesapeake fly ash suit against Dominion refiled," February 22, 2012, available at http://hamptonroads. com/2012/02/chesapeake-fly-ash-suit-against- dominion-refiled, describing lawsuit by construction manager at the Battlefield Golf Course who alleges his cancer is attributable to arsenic exposure.
[408] EPA, Damage Cases: Fugitive Dust Impact, Docket ID No. EPA-HQ-RCRA-2009-0640-11992 (Dec. 18, 2014).
[409] 84 Fed. Reg. 40,370; proposed 40 C.F.R. 257.53(4).
[409] 84 Fed. Reg. at 40,370.
[410] *Id*. at 40,358 – 361.

acknowledges that unencapsulated fill uses "are not subject to the same siting and constructions requirements as the landfills modeled in the 2014 Risk Assessment" and thus "have the potential to be placed closer to receptors." Yet nowhere in the Phase 2 Proposal does EPA discuss, much less require, an "environmental demonstration" at sites where fugitive CCR dust from unencapsulated fill might affect residences, schools, or other nearby receptors.

Second, even if EPA did require "environmental demonstrations" in areas of heightened risk of exposure to fugitive CCR dust pollution, such demonstrations would not satisfy RCRA's protectiveness standard. There are well-known, time-tested methods available to control dust pollution and prevent endangerment of human health and the environment. Those include (1) applying continuous chemical treatment to unencapsulated CCR; (2) watering to reduce emissions from vehicle traffic near unencapsulated CCR; (3) stabilizing and covering unencapsulated CCR on a daily basis; (4) minimizing the "drop distance" during loading, unloading, and movement of CCR into and around unencapsulated CCR fill, including drop distance from trucks, conveyers, or loaders; (6) keeping two feet of "freeboard" on trucks during transport of unencapsulated CCR; (7) covering all trucks, conveyors, and other equipment used to move CCR into and around fill areas; and (8) installing wheel washers on trucks to avoid tracking dust offsite.[411] The "environmental demonstration" called for in the Phase 2 Proposal does not require users of unencapsulated ash to employ *any* of those methods.

Third, the evidence is already abundant that unencapsulated fill – even in small quantities – can generate harmful quantities of dust that, if left uncontrolled, pose significant risks to human health. RCRA is a preventative statute: waste disposal that presents a "reasonable probability of adverse effects on health or the environment" is prohibited.[412] No demonstration could undermine the conclusion that unencapsulated CCR, without adequate controls for dust pollution, creates the proscribed "reasonable probability of adverse effects on health." Because the Phase 2 proposals' mandate for an environmental demonstration neither requires nor ensures installation and operation of any – much less adequate – dust controls, it fails to meet RCRA's protectiveness standard.[413]

Finally, even if environmental demonstrations were clear and prescriptive regarding how dust pollution would be controlled,, those demonstrations would need to be both promptly available to the public and sufficiently detailed in order to meaningfully prevent pollution and thereby meet RCRA 4004(a). This is because, without clear standards for precisely what supporting evidence must be provided to make such a demonstration, and without an explicit deadline by which time it needs to be "provide[d] upon request," users might interpret the Phase II Proposal as an opportunity to set out vague, unsupported, conclusory statements that it only provides at its convenience. Such vague, conclusory statements would severely hinder citizen enforcement of such demonstrations and, in doing so, leave RCRA 4004(a) unmet.[414]

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[411] *See* expert report of Mark Hutson at 2; *id*. at Appendix A, Pless Environmental, 2010 at 28-29.
[412] *See* 42 U.S.C. § 6944(a); *id.* § 6903(14), (28).
[413] *See Utility Solid Waste Activities Group v. Envtl. Prot. Agency*, 901 F.3d 414, 427-30 (D.C. Cir. 2018) (hereafter *USWAG v. EPA*).
[414] *See, e.g., McEvoy v. IEI Barge Servs., Inc.*, 622 F.3d 671, 674 (7th Cir. 2010) ("Setting standards is just the first step; without effective enforcement those standards would be so many words on a piece of paper.").

Under 4004(a), the CCR rule must ensure there is "no reasonable probability of adverse effects on health or the environment." 42 U.S.C. § 6944(a). When issuing the 2015 CCR Rule, EPA determined that the rule would not satisfy the statutory standard unless it included provisions that would enable enforcement by citizens and states. 80 Fed. Reg. at 21,338 (("[T]he Agency cannot conclude that the regulations promulgated in this rule will ensure that there is no reasonable probability of adverse effects on health or the environment unless there is a mechanism for states and citizens, as the entities responsible for enforcing the rule, to effectively monitor or oversee its implementation."); *id*. at 21,426-27 ("EPA believes that it cannot conclude that the RCRA subtitle D regulations will ensure that there is no reasonable probability of adverse effects on health or the environment, unless there are mechanisms for states and citizens to monitor the situation . . . so they can determine when intervention is appropriate.").[415]

In states without approved CCR programs – which, right now, is *every* state except Oklahoma– nothing has changed that alters that conclusion. Such states are in precisely the same circumstances that they were in when EPA adopted the 2015 CCR Rule: there is no permitting authority oversight, and the only mechanism to ensure the RCRA 4004(a) standard is met is after-the-fact enforcement. Citizen suits remain one of the only mechanisms for enforcement – likely the primary one.[416] Thus, a rule that severely hindered citizen enforcement by failing to specify precisely what needs to be shown for an "environmental demonstration" to suffice, would fail to meet RCRA's protectiveness standard and thus be contrary to law.

G. EPA Must Require Detailed Environmental Demonstrations at Every Site Where Unencapsulated CCR Is Placed on the Land.

Considering the substantial evidence of damage posed by placing unencapsulated CCRs on the land as well as the evidence that both lined and unlined CCR landfills leak dangerous quantities of CCR contaminants, EPA should simply prohibit the use of unencapsulated CCR as fill. Alternatively, EPA must regulate such fill projects as disposal sites and require all the safeguards applicable to new CCR landfills under the 2015 CCR Rule. In addition, EPA must require any unencapsulated CCR placement on the land that is not a fill project, of any size and in any location, to perform an environmental demonstration of safety that meets the required standards described below.

[415] *See also id*. at 21,339 ("[A] key component of EPA's support for determining that the rule achieves the statutory standard is the existence of a mechanism for states and citizens to monitor the situation, such as when groundwater monitoring shows evidence of potential contamination, so that they can determine when intervention is appropriate. The existence of effective oversight measures provides critical support for the statutory finding").
[416] EPA now has enforcement authority in such states, in addition to citizens. *See* 42 U.S.C. § 6945(d)(4)(A) (authorizing EPA to "use the authority provided by sections 3007 and 3008" to enforce the federal criteria); *id*. § 6927 (granting EPA inspection authority); *id*. § 6928 (authorizing EPA to issue orders "for any past or current violation" of RCRA). However, notwithstanding having this authority since 2016, EPA has not once exercised it, nor is there any indication that it plans to do so. And even if it did, EPA has an obligation to ensure that citizen enforcement is not so burdensome for citizens as to render Congress' citizen suit provision meaningless. *See Nat. Res. Def. Council, Inc.*, 822 F.2d at 131.

1. *EPA must require every CCR placement project on the land to perform and publicly release an environmental demonstration of safety, regardless of size and location.*

Releases of CCR pollutants from unencapsulated sites are similar to releases from CCR disposal units, and thus such sites must be regulated as disposal units. In addition to regulating these sites as disposal units, an environmental demonstration must be required at any intended CCR unencapsulated placement site to ensure that the protectiveness standard of RCRA § 4004(a) will be met. To this end, EPA must promulgate regulations that define the content of environmental demonstrations to ensure that meaningful waste and site characterizations are completed.

The environmental demonstrations must contain several required components, which are detailed at length in the Sahu Expert Report.[417] Specifically, these include a Phase I Site Characterization that analyzes and includes: existing conditions, a detailed map, climate and meteorology, hydrology, water balance, water use analysis, geology and hydrogeology, and geologic hazards, and a Phase II Site Characterization that analyzes and includes: surface investigations, subsurface investigations, soil and groundwater quality testing, as well as waste characterization utilizing the LEAF test.[418] The importance of EPA requiring some of these factors is discussed below; further information is provided in the Sahu Expert Report, which is being submitted with these comments and incorporated here by reference.

2. *Every environmental demonstration must include characterization of the material and site and use the most updated CCR leaching tests.*

EPA must require that CCR users at every site, regardless of size, make an environmental demonstration of safety that meets specific criteria to ensure protection of health and the environment. Specifically, EPA must require those proposing to place coal ash on the land to conduct a leach test using accurate, up-to-date methods to ensure that the CCR does not exceed certain toxicity levels for coal ash pollutants. In addition, annual retesting of material prior to and during placement must also be required to ensure that the CCR has not increased in toxicity and/or leachability.

1. Every environmental determination must require characterization of waste material.

Each environmental demonstration must be required to characterize waste material prior to and during placement to ensure that the CCRs do not pose risks to health or the environment. This characterization must include an analysis of the constituents in the CCRs intended for placement and the anticipated leachability of those constituents in the environment.

The constituents evaluated should include, at a minimum, all constituents contained in EPA's appendices III and IV to the 2015 CCR Rule.[419] The waste characterization should require

[417] *See* Sahu Expert Report, Section D.
[418] *Id*.
[419] *See* 40 C.F.R. § 257, Appendices III, IV.

a minimum number of representative samples to accurately characterize the waste, specify a recent time frame for selection of each sample, and should include a certification that the laboratory conducting the chemical analysis is an EPA-certified laboratory. For example, Pennsylvania's regulations for beneficial use of coal ash require waste characterization, and its requirements state that the waste characterization must include:

- "A detailed chemical analysis on at least four representative samples spaced throughout a 2 to 6-month sampling period within the last year that fully characterizes the composition of the coal ash;"
- Chemical analysis that includes total concentrations of CCR pollutants that are specified by name, as well as leachable concentrations of CCR pollutants that are specified by name, in addition to pH;
- The specific methods for testing these pollutant and leachable concentrations; and
- Proof that the laboratory is state-certified, among other requirements.[420]

EPA must require waste characterization to be performed at least annually or upon the user's intent to accept any new source of CCR.

2. Characterization of the waste must require the use of the most accurate leach test for CCRs, which is currently the LEAF methodology.

EPA must require every prospective user of CCRs in unencapsulated placement sites to perform a waste characterization based on the most up-to-date, accurate leach test for CCRs. Currently, the Leaching Environmental Assessment Framework ("LEAF")[421] is the most accurate leachability protocol for CCRs and should be used in the environmental demonstration. EPA itself has recognized the value of using the LEAF methodology, because the test utilizes four different leachability tests to determine leachability under various conditions. As EPA's website explains, LEAF "consists of four leaching methods, data management tools, and scenario assessment approaches designed to work individually or to be integrated to provide a description of the release of inorganic constituents of potential concern (COPCs) for a wide range of solid materials."[422]

The four test methods that comprise the LEAF test have received EPA approval in October 2012 (Methods 1313 and 1316) and January 2013 (Methods 1314 and 1315).[423] Given EPA's approval and the superior ability of the LEAF test to characterize leachability, the use of a single-point extraction test, such as the Toxicity Characteristic Leaching Procedure ("TCLP")

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[420] 25 Pa. Code § 290.201.
[421] Susan Thorneloe, U.S. EPA, Office of Research and Development, "Use of Leaching Environmental Assessment Framework for future fly ash management decisions," presented at Workshop on Environmental Aspects of Coal Ash Uses, Tel Aviv, Israel (May 13, 2013) (attached).
[422] EPA, "Leaching Environmental Assessment Framework (LEAF) Methods and Guidance," https://www.epa.gov/hw-sw846/leaching-environmental-assessment-framework-leaf-methods-and-guidance#LEAF%20Methods (last accessed Nov. 10, 2019).
[423] *See* EPA, The SW-846 Compendium, https://www.epa.gov/hw-sw846/sw-846-compendium (last visited Oct. 15, 2019).

and Synthetic Precipitation Leaching Procedure ("SPLP"), should not be permitted. Use of short-term leach tests are clearly contrary to science, as determined by the National Academy of Science,[424] the EPA Science Advisory Board,[425] and EPA's Office of Research and Development.[426] Consequently, there is no reason whatsoever for EPA to allow TCLP or any other single-point extraction test when determining the capacity of CCR to leach hazardous contaminants, and allowance of such tests in an environmental demonstration would be contrary to scientific evidence and would fail to meet the RCRA protectiveness standard.

Furthermore, EPA has endorsed the usefulness of the LEAF approach specifically for evaluating beneficial uses of certain "non-hazardous secondary materials."[427] However, given the toxicity of CCRs and the potential for variability in constituent concentrations among different sources and types of CCRs, the framework may need to be further refined in recognition of these inherent limitations to ensure identification of CCR that would be inappropriate for use in CCR placement projects.

3. Any waste characterization that exceeds health-based limits must be deemed a failure to make the environmental demonstration.

Any waste characterization of CCRs that reveals that leachable concentrations of constituents in the waste would exceed health-based standards must result in that waste being prohibited from being placed in an unencapsulated placement application of any size or in any location. Health-based standards include federal maximum contaminant levels ("MCLs")[428] and regional screening levels ("RSLs"),[429] groundwater protection standards ("GWPS") established pursuant to the 2015 CCR Rule based upon Appendix IV pollutants,[430] or State health-based limits. Note that, where the waste characterization reveals that multiple contaminants that cause the same types of health impacts – for example, carcinogens or neurotoxins – are found together, the health standard for those contaminants should be that noted in EPA's RSL's that address cumulative impacts (the "HQ=0.1" risk values).

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[424] Nat'l Research Council, Nat'l Academies, Managing Coal Combustion Residues in Mines (2006), *available at* http://books.nap.edu/catalog.php?record_id=11592#toc at 123-129.
[425] Letter from EPA, Science Advisory Board, to Carol Browner, Administrator, EPA, Re: "Waste Leachability: The Need for Review of Current Agency Procedures" (Feb. 26, 1999) (emphasis in original), *available at* www.yosemite.epa.gov/sab/sabproduct.nsf/.../$File/eecm9902.pdf.
[426] EPA, Office of Research and Development, *Characterization of Coal Combustion Residues from Electric Utilities—Leaching and Characterization Data* (EPA/600/R-09/151) at ii (Dec. 2009), *available at* http://www.epa.gov/nrmrl/pubs/ 600r09151/600r09151.html (citing EPA, *Characterization of Mercury- Enriched Coal Combustion Residuals from Electric Utilities Using Enhanced Sorbents for Mercury Control* (EPA–600/ R–06/008) (Feb. 2006), *available at* http://www.epa.gov/ORD/NRMRL/pubs/600r06008/600r06008.pdf; *and* EPA, *Characterization of Coal Combustion Residuals from Electric Utilities Using Wet Scrubbers for Multi-Pollutant Control* (EPA–600/ R–08/077) (July 2008), *available at* http://www.epa.gov/nrmrl/pubs/600r08077/600r08077.pdf
[427] *See id.*
[428] *See* 40 C.F.R. § 141.
[429] *See* EPA, "Regional Screening Levels," https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (last accessed Nov. 10, 2019).
[430] *See* 40 C.F.R. § 257.95(d)(2), (h).

Pennsylvania requires coal ash to be certified prior to eligibility for beneficial use, and its regulatory requirements include the following "[m]aximum acceptable leachate levels for certification" (among several others)[431]:

- "For metals and other cations other than selenium, 25 times the waste classification standard for a contaminant;"
- "For selenium, 10 times the waste classification standard;"
- "For nonmetals and anions other than sulfate and fluoride, the waste classification standard for a contaminant;"
- "For sulfate, 10 times the waste classification standard;" and that
- "The pH of coal ash must be 7.0 or above."

EPA's regulations for environmental demonstrations for unencapsulated fill sites must, likewise, clearly state that health-based exceedances of any constituent monitored would make the CCR ineligible for placement and would therefore render the user unable to make the required environmental demonstration.

4. Every environmental determination must require site characterization.

In addition to the waste itself being characterized to ascertain constituent types, concentrations, and potential leachability into the environment, the intended placement site itself must also be thoroughly characterized in every environmental demonstration to determine suitability as a fill or placement site and to determine the potential for release of pollutants based on site characteristics.[432] Site characterization must include investigation of: the existing (baseline) quality of ground water; the location of groundwater; groundwater flow pathways; hydrology; hydrogeology; the potential for CCRs to react with minerals or groundwater; existing (baseline) surface water quality; the potential for CCRs to enter surface waters; the potential for CCRs to become airborne; potential environmental and human receptors; cumulative impacts of other wastes or environmental contaminants on site; and many other potential considerations depending on site conditions.[433]

Without a detailed and accurate site assessment and characterization of the geologic, hydrologic, chemical, and other components of a disposal site, the risks to environmental or human receptors cannot be ascertained, avoided, or mitigated.

5. Federal agencies and states have noted the importance of waste characterization for beneficial use in unencapsulated placement.

EPA, the National Academy of Sciences, and states have found that it is important for users to perform waste characterizations prior to placement of CCRs at unencapsulated fill sites.

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[431] *See* 25 Pa. Code § 290.201.
[432] *See* Sahu Expert Report at 15-20.
[433] *Id.*

For example, the National Academy of Sciences ("NAS") determined conclusively that CCRs must be subject to waste and site characterization to determine fitness for placement or to determine additional controls needed to minimize risk for placement in mines, which are similar to unencapsulated fills generally. The NAS stated:

> Many CCRs are not suitable for secondary uses and must be disposed in landfills, impoundments, or mines. In cases where placement in a mine site during reclamation is determined to be a viable option, an integrated process of CCR characterization, site characterization, management of placement activities, and post-placement monitoring *is required*.[434]

The NAS report further concluded that "*the full characterization of possible risks should not be cut short in the name of beneficial use.*"[435] The NAS report continued, stating:

> Characterization of the CCR material and the mine placement site is essential to engineering design, permitting decisions, reclamation management, and the development of monitoring programs. Successful predictions of CCR behavior in the mine environment require a thorough understanding of the complex physical and biogeochemical processes, associated primarily with subsurface flow, that control the release and transport of CCR-derived constituents. The mobility of CCR-derived constituents varies widely in the mine environment depending on the physical and chemical characteristics of the CCRs and geologic materials, and the pH, oxidation reduction potential, and chemical composition of the water encountered at a mine site. All of these factors must be considered in characterizing the mine site disposal option.[436]

EPA cited to the NAS report in the 2015 CCR, and specifically noted the importance of waste and site characterization, stating:

> The [NAS] report concluded that the "placement of CCR in mines as part of coal mine reclamation may be an appropriate option for the disposal of this material. In such situations, however, *an integrated process of CCR characterization, site characterization, management and engineering design of placement activities, and design and implementation of monitoring is required to reduce the risk of contamination moving from the mine site to the ambient environment*." The NRC report recommended that enforceable federal standards be established for the disposal of CCR in minefills to ensure that states have specific authority and that states implement adequate safeguards.[437]

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[434] Committee on Mine Placement of Coal Combustion Wastes, National Research Council, National Academies of Sciences, Managing Coal Combustion Residues in Mines, at 4, *available at* http://www.nap.edu/catalog/11592.html (emphasis added). The NAS added that, "The volume of CCR material to be used and the relative risk that emerges from the site and material characterization should help determine the level of additional effort that will be required to manage and monitor the mine site." *Id.*

[435] *Id.* (emphasis in original).

[436] *Id.* at 5–6.

[437] 2015 CCR Rule, 80 Fed. Reg. at 21,341 (citing the NAS Minefill Report) (emphasis added).

Given that minefilling *is* placement of CCRs in an unencapsulated fill site, the same characterization requirements should apply, likewise, to any proposed placement at an unencapsulated fill site.

In addition, ASTSWMO's 2006 Beneficial Use Survey Report surveyed states, who chose "test data on the chemical and physical characteristics of the waste" to be the most important factor in "making beneficial use determinations."[438] The report says:

> The States were also asked to rank the list of 10 factors in the order of first, second and third levels of importance. Summing these rankings together (i.e., adding the first, second and third scores for each factor giving a total score for each factor) lead to the following top five factors:
>
> 1st test data on the chemical and physical characteristics of the wastes;
> 2nd benefit assessment based on suitable physical, chemical or agronomic properties of the wastes;
> 3rd specific numeric thresholds, standards or guidelines used in the evaluations;
> 4th special conditions that limit use; and
> 5th human health risk evaluations.[439]

The agreement among agencies, states, and the environmental community underscores the need for proper waste characterization prior to any unencapsulated fill of CCRs.

ii. The demonstrations must be submitted to EPA prior to placement and must be placed on the user's publicly accessible internet site.

For any intended unencapsulated CCR placement site where an environmental demonstration of safety must be performed, the potential user must be required to notify EPA and submit the complete environmental demonstration and all supporting documentation supporting the environmental demonstration to EPA prior to placement.

In addition, EPA must require this same information to be placed on a publicly accessible internet site. The site should either be EPA's own website or should be available easily via EPA's website for members of the public to access it.

Some states have already incorporated notification requirements into their regulations for CCR fills. For example, Pennsylvania requires extensive notification to the Department of Environmental Protection at least 60 days prior to placement in a structural fill,[440] requires public

[438] Association of State and Territorial Solid Waste Management Officials ("ASTSWMO"), Beneficial Use Task Force of the Materials Management Subcommittee, Beneficial Use of Coal Combustion Residuals Survey Report, at 7–8 (Sept. 2012) (EPA Doc. No. EPA-HQ-OLEM-2018-0524-0007).
[439] *Id.*
[440] *See* 25 Pa. Code § 290.102. This section applies to "Use as structural fill" and requires that:

notice for all structural fills above a certain size and some below that size, and requires notification to DEP within 72 hours of "any evidence that the material does not meet the chemical standards or physical property requirements in" Pennsylvania's regulations related to coal ash certification using waste characterization.[441]

The ability of EPA's proposed rule to meet the RCRA protectiveness standard of "no reasonable probability of adverse effects on health or the environment" hinges upon whether the public is aware of potential risks to health or the environment. EPA's 2015 CCR Rule includes critical and necessary recordkeeping, public notification, and internet site requirements for CCR disposal sites,[442] and the same notification requirements must apply to every environmental demonstration for every potential fill and placement site.

H. Applicability and Timing of Criterion 4 Must Meet the Protectiveness Standard of RCRA § 4004(a).

EPA proposes that all beneficial use applications or projects not completed before the effective date of a final rule would be subject to the revised beneficial use criteria.[443] EPA states that this is consistent with what the Agency required in the 2015 final rule in terms of the applicability of the beneficial use definition.[444] Commenters agree that if the final rule imposes new responsibilities on users of CCR for land placement, all projects not competed before the effective date should be subject to the revised criteria. In addition, if a project was required to complete an environmental demonstration under the existing rule, this demonstration must be completed and made available to the public upon request. In other words, if Criterion 4 is

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(a) At least 60 days before using coal ash as structural fill, the person proposing the use shall submit a written proposal to the Department. The written proposal must contain, at a minimum, the following information:
(1) A description of the nature, purpose and location of the project, including a topographic map showing the project and available soils maps of the area of the project.
(2) The estimated beginning and ending dates for the project.
(3) Construction plans for the structural fill, including a stability analysis when necessary, which shall be prepared by a licensed professional engineer in accordance with sound engineering practices and which shall be signed and sealed by the engineer.
(4) An estimate of the volume of coal ash to be used for the project.
(5) A total chemical and leaching analysis under § 290.201(a)(1) and (2) (relating to coal ash certification) for the coal ash to be used in the project. If the coal ash was generated at a facility for which the Department has previously approved a chemical and leaching analysis and the analysis is not older than 1 year, the person may submit a copy of the analysis that was approved.
(6) A signed statement by the owner of the land on which the structural fill is to be placed, acknowledging and consenting to the beneficial use of coal ash as structural fill.
(7) The statement by the landowner in paragraph (6) shall be a recordable document for any project, or set of contiguous projects involving placement of more than 10,000 tons of coal ash per acre or more than 100,000 tons of coal ash in total per project. Prior to beneficial use of more than 10,000 tons of coal ash per acre or more than 100,000 tons of coal ash in total per project under this section, the statement by the landowner shall be recorded at the office of the recorder of deeds in the county in which the proposed coal ash beneficial use will take place.

[441] 25 Pa. Code § 290.102(i).
[442] *See* 40 C.F.R. §§ 257.105–07.
[443] 84 Fed. Reg. at 40,361.
[444] *Id.*

promulgated as proposed, then land placement projects that are ongoing as of the effective date of the new rule must continue to be subject to compliance with the environmental demonstration requirement, if the volume of CCR used is 12,400 tons or more. In addition, notice of all land placement projects should be provided for all projects initiated after the effective date of the 2015 CCR rule, including posting of all environmental demonstrations on a publicly available internet site.

III. THE PROPOSED RULE GOVERNING CCR WASTE PILES FAILS TO MEET THE PROTECTIVENESS STANDARD OF RCRA § 4004(A), IS ARBITRARY AND CAPRICIOUS, AND WITHOUT A RATIONAL BASIS.

In the Phase 2 Proposal, EPA exempts CCR waste piles whose owners claim that storage is "temporary" from the full suite of protective requirements pertaining to operation, maintenance, cleanup, reporting, closure and post-closure, which are currently applicable to CCR waste piles under the 2015 CCR Rule.[445] As explained in detail below, EPA creates a new category of CCR waste piles, called "CCR storage piles," which relies on a vague definition of "temporary accumulation" that in practice can apply to most, if not all, CCR waste piles, both on and off power plant sites. By creating a new definition of CCR piles, EPA replaces the substantive safeguards of the 2015 CCR Rule with unclear provisions that are inadequate to protect health and the environment from the dangerous storage and disposal practice of stacking industrial waste in open piles on the ground. EPA fails to provide a rational basis for this radical removal of safeguards and neglects entirely to consider the clear harm caused by CCR waste piles to health and the environment. Because EPA provides no justification for removing the Rule's reasonable and effective safeguards in the face of abundant evidence of damage to environment and health, this proposal fails to meet the protectiveness standard of § 4004(a) and is arbitrary and capricious and without a rational basis.

A. EPA Provides No Rational Justification for the Removal of the CCR Waste Pile Safeguards Established in the 2015 CCR Rule.

In its brief preamble discussion for this significant change in regulatory standards, EPA simply states that it is acting in response to rulemaking petitions filed in May 2017 by AES Puerto Rico LP (AES-PR) and the Utility Solid Waste Activities Group (USWAG), shortly after President Trump took office.[446] In response to those industry petitions, EPA states,

> it has reconsidered its current approach of distinguishing between on-site and off-site piles; and is proposing to replace it with a single regulatory mechanism applicable to all temporary placement of CCR on the land, whether the CCR is on-site or off-site, and whether the CCR is subsequently destined for disposal or beneficial use.[447]

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[445] *See* 40 C.F.R. § 257.53 (defining CCR landfill to include CCR piles: "*CCR landfill or landfill* means an area of land or an excavation that receives CCR and which is not a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground or surface coal mine, or a cave. For purposes of this subpart, a CCR landfill also includes sand and gravel pits and quarries that receive CCR, *CCR piles*, and any practice that does not meet the definition of a beneficial use of CCR." (emphasis added)).

[446] 84 Fed. Reg. at 40,362.

[447] *Id*.

EPA, however, never explains why it made this radical change, other than because AES-PR and USWAG asked them to do it. This is clearly insufficient, as this removal of safeguards represents a 180-degree shift from the rationale provided in 2015, which concluded that strict protective standards were necessary to prevent the reasonable probability of adverse effects on health and the environment from CCR piles.

1. *The Phase 2 Proposal directly contradicts EPA's findings supporting the 2015 Rule pertaining to CCR waste piles.*

In 2015, EPA explained with abundant clarity why it defined CCR waste piles as "CCR landfills" and why it applied the same protective measures to waste piles as it applied to CCR landfills. In the preamble to the 2015 CCR Rule, EPA stated:

> Waste piles, including those used to temporarily store or manage CCR on-site prior to disposal in a CCR landfill or subsequent beneficial use, have been retained within the definition of a CCR landfill. *In making this determination the Agency was strongly influenced by the similarities in the potential risks posed by both waste piles and CCR landfills to human health, groundwater resources, or the air if improperly managed.*[448]

EPA specifically highlighted the similarities of waste piles and landfills, noting that both expose CCR to elements that cause the release of CCR and CCR constituents. EPA wrote,

> Both CCR piles and CCR landfills are subject to external factors such as rain and wind, which can adversely affect human health and the environment. For example, uncontrolled run-on and run-off can result in ponding of water in and around the unit resulting in increased leachate which has the potential to affect groundwater. Similarly, absent dust control measures, such as the conditioning of CCR, both CCR landfills and CCR piles have the potential to generate significant amount of fugitive dust.[449]

In fact, EPA was particularly concerned about the impact of CCR blowing from piles, since piles do not maintain the same degree of cover as CCR landfills and their above-ground, vertical construction exposes CCR to increased levels of wind at higher velocities. EPA explained,

> Indeed, CCR piles are generally more susceptible to the creation of fugitive dusts. And contrary to the commenters' contention about the absence of damage cases, the single most frequent issue presented during the public hearings was the allegation by individual citizens of damage caused by fugitive dusts from neighboring CCR facilities. Moreover, the same pollution control measures, such as liners, leachate collection systems, and groundwater monitoring, will address the

[448] 74 Fed. Reg. at 21,356 (emphasis added).
[449] *Id.*

> potential adverse effects from both of these units. As such, the Agency sees no reason to treat piles and landfills differently.[450]

Lastly, EPA also clearly set out the statutory authority for regulating CCR waste piles in the CCR Rule's preamble. EPA wrote,

> EPA also disagrees that the inclusion of CCR piles would capture on-going or short-term CCR management activities that do not constitute disposal. Irrespective of whether the facility is using the pile as ''temporary storage'' or ultimately intends to direct the CCR to beneficial use, *by placing the CCR on the land with no containment or other method of preventing environmental exposures, the facility is engaging in an activity that clearly falls within the statutory definition of disposal.* See 42 U.S.C. 6903(3) (''placing of solid waste . . . on any land, so that such solid waste . . . or any constituent thereof may enter the environment.'')[451]

In support of the Phase 2 Proposal, EPA provides no evidence that the risk posed by CCR waste piles has diminished since the promulgation of the 2015 CCR Rule. EPA provides no information on the number or nature of CCR piles currently operating under the CCR Rule, nor does it quantify the damage presently occurring from those piles. In fact, the EPA proposal lacks any mention of the CCR piles operated by any utility whatsoever.[452] Since 2015, nevertheless, ample evidence has become publicly available, as described below, that indicates CCR waste piles continue to pose very significant risks and are currently causing substantial harm. It is alarming that EPA ignores these publicly accessible data, some of which were specifically presented to and discussed with them during an in-person meeting with senior officials of EPA's Office of Land and Emergency Response on April 17, 2019.[453] Because EPA presents no rationale for the proposed change, and because this change directly contradicts both EPA's previous findings and the evidence now available to EPA, the proposal is arbitrary and capricious.

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[450] *Id.*

[451] *Id.*

[452] EPA discusses in the preamble, in general terms, the CCR piles potentially utilized by off-site commercial users of CCR, including concrete, cement and wallboard manufacturers and construction companies. EPA, however, does not investigate health or environmental concerns related to these sites, despite the fact that evidence exists, at minimum for the latter category of users, that harm has occurred to health and the environment from the use of CCR in construction.

[453] On April 17, 2019, experts and impacted residents of Puerto Rico, as well as representatives from environmental groups met with senior officials of the EPA's Office of Land and Emergency Management (OLEM) to discuss the harm caused by the CCR waste pile operated by AES-PR at its Guayama coal plant and well as AES coal ash placed in the guise of beneficial use in southeastern Puerto Rico. Numerous EPA staff from EPA headquarters and EPA Region 2 attended, both in person and over the phone. Among those present representing EPA in person in the meeting was the acting Assistant Administrator, Barry Breen; the soon-to-be Acting Administrator, Peter Wright; and senior management officials Barnes Johnson and Betsy Devlin.

2. *EPA's proposed definition of "CCR storage pile" contradicts previous findings concerning the risk posed by significant and persistent volumes of unencapsulated CCR.*

While the proposed rule abandons protective requirements for "temporary" CCR storage, EPA does indicate in the preamble to the proposed rule that it still believes "[w]hen *significant and persistent volumes* of unencapsulated CCR are present, similarities exist in the potential risks posed to human health, groundwater resources, or the air between the placement of CCR in piles and placement in CCR landfills, if inappropriately managed."[454] EPA even states that that the same control measures, which are applied by the 2015 CCR Rule, namely, liners, leachate collection systems, and groundwater monitoring, "would appropriately control releases and address the potential adverse effects from … piles of *significant and persistent volumes*."[455] However, EPA's proposed definition of "temporary accumulation," which forms the basis for the definition of "CCR storage piles," does not place a limit on the volume of CCR stored or the duration of the storage. Consequently, CCR storage piles that contain "significant and persistent volumes" of CCR could be included in the universe of CCR storage piles and would thus escape the technical control measures that EPA still acknowledges are necessary and appropriate.

As stated earlier, such changes are unlawful under the Administrative Procedure Act because EPA has failed to explain the inconsistency with its prior position. Under the APA, an "unexplained inconsistency" between agency actions is "a reason for holding an interpretation to be an arbitrary and capricious change."[456] EPA "is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance."[457] This further justification is required not by the mere fact that there is a policy change, but because the agency is obligated to explain its reason for disregarding facts and circumstances underlying the prior decision.[458] EPA has failed to explain its abandonment of the 2015 CCR Rule's imposition of landfill protections on CCR piles, and this change is completely unsupported by the record. For that reason, the proposal fails to meet the protectiveness standard of RCRA § 4004(a) and is arbitrary and capricious.

B. The Definition of "Temporary Accumulation" Includes Waste Piles of Substantial Size that Remain in Place for Significant Periods of Time.

EPA's proposed definition of a CCR storage pile relies on the proposed definition of "temporary accumulation." The definition of "temporary accumulation," however, does not place any limit on the length of time considered "temporary," nor does it establish an upper limit on the amount of CCR that can be accumulated.[459] Consequently, the definition would allow piles of substantial amounts of waste that are present for long periods of times to be considered "temporary accumulation."

EPA's proposed definition of "temporary accumulation" is as follows, in full:

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[454] 84 Fed. Reg. at 40,363 (emphasis added).
[455] *Id.* (Emphasis added.)
[456] *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005).
[457] *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983).
[458] *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 516 (2009).
[459] 84 Fed. Reg. at 40,371.

> *Temporary accumulation* means an accumulation on the land that is neither permanent nor indefinite. To demonstrate that the accumulation on the land is temporary, all CCR must be removed from the pile at the site. The entity engaged in the activity must have a record in place, such as a contract, purchase order, facility operation and maintenance, or fugitive dust control plan, documenting that all of the CCR in the pile will be completely removed according to a specific timeline.[460]

While EPA requires that all CCR must eventually be removed from the pile, EPA does not define a specific duration during which this must occur. The definition only states that the period not be "indefinite."[461] EPA thus leaves open whether this period is 90 days (the maximum time allowed for temporary accumulation for hazardous waste without a permit under 40 C.F.R. § 262.17) or 90 years, or more. EPA's definition of "temporary accumulation" allows owner/operators to store CCR in piles for *any length of time.* Accordingly, as a cursory search of English dictionaries makes clear, the definition does not ensure that the accumulations are, in fact, temporary.[462] The only requirement EPA proposes with regard to the length of time a CCR pile may be in place is that the entity managing the pile has a "record in place" that "document[s] that all of the CCR will be completely removed according to a specific timeline."[463] The "temporary accumulation" definition indicates that the company's own "operation and maintenance" plan or "fugitive dust control plan" will suffice for such documentation.

Leaving aside the question of why a fugitive dust control plan is relevant and would include documentation of a specific time period for removal of a CCR pile, it is evident that EPA has established an illegally low bar. A company need only specify a time (e.g., 90 years) in an operation and maintenance "plan," indicating when CCR will be removed. This information does not have to be supported by any firm commitments (e.g., transportation and disposal contracts), nor does it have to certified by the owner of the entity storing the waste in a document attesting to its accuracy. No records documenting storage capacity or accumulation times are required, nor manifests recording off-site transport. Neither does EPA require that the removal be certified by a qualified independent professional engineer. In fact, EPA's proposal does not even require a closure plan or impose requirements that ensure that complete removal of the CCR actually takes place. These requirements are tenets of the closure requirements under the 2015 CCR Rule for CCR landfills and piles that close by removal.[464] Furthermore, EPA sets no limit on the amount of waste that can be accumulated on the site, as long as it is eventually completely removed.

EPA's failure to place time and volume limits on "temporary accumulation" allows unlimited volumes of CCR to be placed in a waste pile for considerable periods of time. The definition does nothing to guard against EPA's legitimate concern that when "significant and

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[460] *Id.*
[461] *Id.*
[462] *See, e.g.,* Merriam Webster online dictionary, defining temporary as "lasting for a limited time," https://www.merriam-webster.com/dictionary/temporary; Oxford English dictionary online, defining temporary as "Lasting for only a limited period of time; not permanent," https://www.lexico.com/en/definition/temporary.
[463] *Id.*
[464] *See* 40 C.F.R. § 257.102(c).

persistent" volumes of CCR are present in a pile, the pile poses similar risks to human health, groundwater resources, soil and the air as CCR landfills.[465] EPA states that its new definitions of "CCR storage pile" and "temporary accumulation" "effectively limit the amount of unencapsulated CCR that will be placed and persist in one location."[466] But the plain language indicates that this is simply not the case. Consequently, EPA has no rational basis to maintain that its failure to impose the same set of technical requirements applied to CCR landfills on CCR storage piles will have no reasonable probability of adverse effects on health or the environment, because these CCR storage piles may contain, for long periods of time, significant volumes of CCR.

Thus, the present proposal fails to meet the protectiveness standard of § 4004(a) of RCRA due to the absence of these essential protective requirements. The lack of safeguards at CCR piles of persistent and significant volume will most certainly, and by EPA's own admission, fail to ensure no reasonable probability of adverse effects on health or the environment. Furthermore, EPA's failure to examine the record of damage from currently operating CCR piles and to explain how the lack of volume restrictions and limits on storage duration render the rule arbitrary and capricious and without a rational basis.

Lastly, this is not a hypothetical problem. It is important to mention that "temporary" CCR piles of considerable volume and storage duration are presently occurring onsite at coal plants according to inspection and closure reports posted by owners and operators on their publicly accessible compliance websites.[467] Commenters present more detailed descriptions of harm from these CCR piles to health and the environment below, and in the Hutson Expert Report (attached). Here it is important to note the scale and duration of current CCR storage in waste piles at three facilities reporting under the CCR Rule:[468]

(1) AES-PR CCR Temporary Storage Area at AES-PR Power Plant, Guayama, Puerto Rico: AES-PR has maintained an extremely large CCR pile since approximately 2005. According to AES' inspection reports posted in 2016, 2017 and 2018, the volume of the CCR pile maintained at the power plant site and regulated under the CCR rule was 240,000, 430,000 and 400,000 tons, respectively.[469] The height of the pile in 2018 is approximately 120 feet. Air pollution and groundwater contamination from the pile is documented by AES and others.[470]

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[465] 84 Fed. Reg. at 40,363.
[466] *Id.*
[467] *See* US EPA, List of Publicly Accessible Internet Sites Hosting Compliance Data and Information Required by the Disposal of Coal Combustion Residuals Rule, *available at* https://www.epa.gov/coalash/list-publicly-accessible-internet-sites-hosting-compliance-data-and-information-required.
[468] A complete assessment of all waste piles currently operating in the U.S. was not conducted by commenters due to the short period of time provided by EPA for commenting on this proposal.
[469] *See* AES-PR, CCR 2016 Inspection Report, *available at* http://aespuertorico.com/wp-content/uploads/2016/09/Annual-Inspection-Report.pdf (attached); CCR 2017 Inspection Report, *available at* http://aespuertorico.com/wp-content/uploads/2017/10/2017_Annual-Inspection-Report.pdf (attached); and CCR 2018 Inspection Report, *available at* http://aespuertorico.com/wp-content/uploads/2019/02/4-CCR-Annual-Inspection-Report-2018.pdf (attached). Note that the 2016 Inspection Report indicates two CCR piles containing 120,000 tons each. AES considered one pile exempt from the CCR Rule.
[470] *See infra* and expert report by Mark Hutson (attached); *see also* comments of Comité Diálogo Ambiental,

(2) Southwest Electric Power Company, H.W. Pirkey Power Station, Hallsville, TX. The facility operates a FGD Stack Out Pad Area to collect and temporarily store CCR materials. Inspection reports posted on the facility website reported the storage of the following quantities of CCR in the Stack Out area: in 2015: 5,000 to 628,200 cubic yards; in 2016, 30,000 to 582,000 cubic yards; in 2017: 10,000 to 400,000 cubic yards; and in 2018: 500 to 400,000 cubic yards.[471] The facility's closure plan states that all CCR will be removed from the site at a later date.[472]

(3) TVA Paradise Fossil Plant, Muhlenberg County, Kentucky, Structural Fill Project (April 22, 2019).[473] A report entitled, "CCR Beneficial Use Demonstration Report – Fly Ash," obtained from TVA describes a large CCR fill project comprised of approximately 600,000 cubic yards of CCR material (fly ash) that will be placed on top of 70 acres of the 114-acre Peabody Ash Pond[474] as "closure subgrade."[475] TVA states that the staging area for the project will cover 20 acres, and the material "will be staged for between 12 and 24 months."[476] The fill covers an area of shallow groundwater whose uppermost limit may be within five feet of the placement. TVA has indicated that the Peabody Ash Pond does not meet the 5-foot separation requirement of the CCR Rule.[477] The Peabody Ash Pond is immediately adjacent to a creek.[478] The large volume of CCR placed at the staging area (see reference to additional volumes to be placed in the staging area below), the proximity to groundwater and surface water, and the duration of placement indicate that adverse impacts could occur from the temporary piles.

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submitted to the EPA Docket ID: EPA-HQ-OLEM-2017-0286, in April 2018 (attached); Earthjustice et al, Comments on the Proposed "Standards for the beneficial use of coal combustion waste" (Jan. 15, 2019) (attached).

[471] *See* SWEPCO, H.W. Pirkey Power Station, Annual Inspection Landfill Reports, 2015, 2016, 2017 and 2018, *available at*: https://www.aep.com/Assets/docs/requiredpostings/ccr/2016/PK-LF-AnnEngIns-011816.pdf (attached), https://www.aep.com/Assets/docs/requiredpostings/ccr/2017/PK-FGDSA-AnnEngIns-011017.pdf (attached), https://www.aep.com/Assets/docs/requiredpostings/ccr/2018/AnnualEngineeringReport/PK-FGDSA-AnnEngIns-011018.pdf (attached), and https://www.aep.com/Assets/docs/requiredpostings/ccr/2019/1-21-2019/PK-FGDSA-CertifiedEngineeringRpt-011019.pdf, respectively. *See also*, H.W. Pirkey Closure Plan dated September 28, 2016, available at https://www.aep.com/Assets/docs/requiredpostings/ccr/2016/Closure/PK-FGDSA-Closure-101616.pdf (attached).

[472] *Id.*

[473] AECOM, CCR Beneficial Use Demonstration Report – Fly Ash, prepared for TVA Paradise Fossil Plant, Muhlenberg County, Kentucky, April 22, 2019 (attached).

[474] AECOM, History of Construction for Coal Combustion Residuals: Existing Surface Impoundment, Tennessee Valley Authority – Peabody Ash Pond, Paradise Fossil Plant, Drakesboro, KY *available at* https://ccr.tva.gov/Plants/PAF/Surface%20Impoundment%20-%20Peabody%20Ash%20Pond/Design%20Criteria/History%20of%20Construction/257-73(c)_History%20of%20Construction_PAF_Peabody%20Ash%20Pond.pdf

[475] *Id.* at 2-1.

[476] *Id.* at 1-3.

[477] *See* AECOM, Placement Above the Uppermost Aquifer Peabody Ash Pond EPA Final CCR Rule TVA Paradise Fossil Plant Drakesboro, Kentucky, October 15, 2018, *available at* https://ccr.tva.gov/Plants/PAF/Surface%20Impoundment%20-%20Peabody%20Ash%20Pond/Location%20Restrictions/Placement%20Above%20the%20Uppermost%20Aquifer/257-60_Aquifer_PAF%20_Peabody%20Ash%20Pond.pdf (attached).

[478] AECOM, CCR Beneficial Use Demonstration Report – Fly Ash, prepared for TVA Paradise Fossil Plant, Muhlenberg County, Kentucky, April 22, 2019 at 3-2.

(4) TVA Paradise Fossil Plant, Muhlenberg County, Kentucky, Structural Fill Project (January 24, 2019). In conjunction with the placement of fly ash on top of 70 acres of the Peabody Ash Pond, as described above, TVA is placing a large (greater than 12,400 tons), but unspecified volume of FGD sludge in the same area, which will also function as closure subgrade.[479] TVA similarly indicates that the FGD sludge will be placed there for "between 12 and 24 months."[480] The storage of FGD sludge raises concerns identical to those described above for the fly ash piles.

Furthermore, it is noteworthy that the high-volume waste piles maintained by TVA at the Paradise Plant, described above, represents a common practice at coal plants, where a large volume of CCR is being used for structural fill in ash pond closures. Using CCR as fill in this manner has become a common practice at utility sites, involving millions of tons of CCR each year. The latest data available from the American Coal Ash Association (ACAA) indicate that more than 4.6 million tons of CCR was used in 2017 in "CCR Pond Closure Activities."[481] This is the fifth largest type of CCR use tracked by the ACAA, and it is the fastest growing use of CCR.[482] From 2016 to 2017, use of CCR in pond closure activities increased more than tenfold, according to the ACAA.[483] EPA, however, intentionally chose not to look at temporary storage piles located at power plant sites.[484] Ignoring such a large volume use of CCR, with its likely generation of large, "temporary" CCR piles, is arbitrary and capricious.

C. The Control Standards Set Forth in the Definition of "CCR Storage Pile" Are Inadequate to Prevent Harmful Releases to Air, Water, and Soil, and Thus the Proposal Fails to Meet the Protectiveness Standard of RCRA § 4004(A).

As stated above, EPA explains in its preamble to the proposed rule that the control measures included in the definition of "CCR storage pile" are not intended to prevent dangerous releases from "significant and persistent volumes of unencapsulated CCR" placed on the ground. *Id.* EPA has intended the minimal standards of the "CCR storage pile" definition to apply only to low volumes of CCR that are stored for short periods in a single location. As explained in the previous section, this is a critical failing of the proposal since the definitions do not exclude piles of significant and persistent volumes from being captured under the definition of CCR storage pile.

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[479] AECOM, CCR Beneficial Use Demonstration Report, prepared for TVA Paradise Fossil Plant, Muhlenberg County, Kentucky, January 24, 2019 (attached).
[480] *Id*. at 1-2.
[481] American Coal Ash Association, 2017 Coal Combustion Product Production and Use Survey Report, *available at* https://www.acaa-usa.org/Portals/9/Files/PDFs/2017-Survey-Results.pdf (attached).
[482] *Id*.
[483] American Coal Ash Association, 2017 Coal Combustion Product Production and Use Survey Report, *available at* https://www.acaa-usa.org/Portals/9/Files/PDFs/2016-Survey-Results.pdf.
[484] US EPA, Economic Analysis: Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles, July 2019, Docket ID No. EPA-HQ-OLEM-2018-0524-0017 at 2-1.

Even for lower volumes and shorter duration storage of CCR in piles, the definition of "CCR storage pile" requires too little of owner/operators of CCR piles and consequently fails to meet the RCRA § 4004(a) protectiveness standard. In its entirety, the definition reads:

> *CCR storage pile* means any temporary accumulation of solid, non-flowing CCR placed on the land that is designed and managed to control releases of CCR to the environment. CCR contained in an enclosed structure is not a CCR storage pile. Examples of control measures to control releases from CCR storage piles include: Periodic wetting, application of surfactants, tarps or wind barriers to suppress dust; tarps or berms for preventing contact with precipitation and controlling run-on/ runoff; and impervious storage pads or geomembrane liners for soil and groundwater protection.[485]

The proposed definition contains no specific design or management requirements. The definition does not define "releases," nor does it define "environment."

While the proposed definition provides some "examples of control measures," no specific measure is mandated by the rule. The paucity of listed control measures illustrates the low bar set by EPA. To "suppress dust," the examples provided include "periodic wetting, application of surfactants, tarps or wind barriers." Because EPA uses the word "or," the use of just one of these measures might be interpreted to be sufficient to meet the design and management standard. Similarly, to protect the pile from precipitation and to control run-on/runoff, the examples suggest "tarps *or* berms." Yet there are many situations where use of a single control measure would be ineffective to control releases. And lastly for "soil and groundwater protection," EPA simply provides the examples of "impervious storage pads or geomembrane liners." No definition or engineering specification of such pads or liners is provided.

In addition, in stark contrast to the standards established in the 2015 CCR Rule for other CCR units, EPA requires no qualified independent professional engineer to attest to the effectiveness of the chosen design and management standards. In 2015, however, EPA, concluded that certifications of independent professional engineers were essential in the CCR Rule because of the self-implementing nature of the rule.[486] For example, the 2015 CCR Rule

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[485] 84 Fed. Reg. at 40,370.

[486] *See* 80 Fed. Reg.at 21,331. EPA explained the rationale behind requiring the certifications of independent professional engineers in the preamble to the 2015 CCR Rule:
In an effort to ensure that the proposed RCRA subtitle D requirements would achieve the statutory standard of ''*no reasonable probability of adverse effects on health and the environment*'' in the absence of guaranteed regulatory oversight, EPA also proposed to require facilities to obtain third party certifications and to provide enhanced state and public notifications of actions taken to comply with the regulatory requirements. Specifically, EPA proposed that certain technical demonstrations made by the owner or operator be certified by an independent registered professional engineer or hydrologist, in order to provide verification and otherwise ensure that the provisions of the rule were properly applied. EPA also provided a regulatory definition of the term, ''independent registered professional engineer or hydrologist,'' to identify the minimum qualifications necessary to make these certifications. While EPA acknowledged that relying upon a third party certification was not the same as relying upon a state or federal regulatory authority and was not expected to provide the same level of independence as a state permit program, the availability of meaningful third party (*i.e.*, independent) verification provided critical support that the rule would achieve the statutory standard, as it would provide at least some degree of control over a facility's

contains scores of provisions that require an independent qualified professional engineer to determine and certify that the protective measures required for operation, maintenance, monitoring, cleanup, closure and post-closure are sufficient to protect health and the environment.[487] Lastly, these self-implementing control measures will be nearly impossible to enforce by citizens and states because there are no requirements to provide notice that a CCR storage pile exists and no requirement to post compliance documents on a publicly accessible website.

The deficiencies of the proposed definition become more glaring when considered in light of the additional risks that CCR piles pose beyond those of CCR landfills, particularly with regard to fugitive dust.[488] CCR piles have significantly greater exposed surface area than do CCR landfills, and as a result are more vulnerable to wind, rain, and other elements.[489] Consequently, they are at greater risk of wind erosion – i.e., wind blowing the small, light CCR particles, particularly fly ash particles – off the piles and into surrounding waterways and neighborhoods.[490] Even if the proposed definition ensured CCR piles were truly short term, temporary piles, this risk would remain present. Strong gusts of wind and powerful storms, such as those that have repeatedly hit the area near AES's massive CCR pile in Guayama, Puerto Rico, can come on quickly and wildly blow dust piles, regardless of whether those piles have been present for 90 days or 90 years.[491]

This risk is nothing to brush off. As discussed in greater detail below, the severe health risks that exposure to fugitive dust from CCR operations poses are not new information.[492] Ten years ago, EPA developed a screening assessment acknowledging significant potential harm from fugitive dust. EPA found that when coal ash blows from dry storage sites, particulate matter can readily exceed the national ambient air quality standards (NAAQS) for levels of particulate matter in the air.[493] EPA concluded "there is not only a possibility, but a strong likelihood that dry-handling [of coal ash] would lead to the NAAQS being exceeded absent fugitive dust controls."[494] In its 2014 Risk Assessment, EPA reiterated that conclusion, recognizing that uncontrolled fugitive CCR dust would exceed the 24-hour NAAQS for PM2.5 (fine particulate matter) under the scenario modeled.[495] Moreover, EPA acknowledged that acute inhalation of

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discretion in implementing the rule.
80 Fed. Reg. at 21,331.

[487] *See, for example,* for location restrictions, design criteria and operating criteria, 40 C.F.R. §§ 257.60(b), 257.61(b), 257.62(b), 257.63(b), 257.64(c), 257.70(c)(2), 257.70(e), 257.71(b), 257.72(c) and (d), 257.73, 257.74, 257.80, 257.81, 257.82, 257.83, 257.84, etc.

[488] *See* expert report of Mark Hutson at, *e.g.*, 2 ("CCR that is dropped onto an uncontained pile is subject to higher wind erosion and resultant transport as particular matter than is a similar volume of CCR placed in an impoundment or landfill because of increased surface area and impinging wind velocity")

[489] *See id*.; *see also id*., Appendix A, Pless Environmental, 2010.

[490] *See id*.

[491] *See id*. at , *e.g.*, 4-5.

[492] *See id*., Appendix A, Pless Environmental, 2010, at 25-28; EPA, Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills, [draft], (Sept. 2009) (Docket ID No. EPA-HQ-RCRA-2009-0640-0142) ("Fugitive Dust Screening Assessment"); see Risk Assessment.

[493] *See* Fugitive Dust Screening Assessment.

[494] *Id*.

[495] *Id*. at 3-9 – 3-10.

fugitive CCR dust, without appropriate controls, could result in dangerously high non-cancer risk due to arsenic exposure.[496]

Sadly, recent events have confirmed the devastating harm to human health that CCR dust exposure can cause. One painful example, discussed in detail below, is that of workers hired to clean up the CCR resulting from the catastrophic failure of an impoundment at Tennessee Valley Authority's Kingston Fossil Plant. Many of those workers are now suffering from debilitating, too-often fatal conditions associated with their exposure to CCR dust.

Proven methods exist to control dust pollution and prevent endangerment of human health and the environment. Those include: (1) applying continuous chemical treatment to CCR piles; (2) watering to reduce emissions from vehicle traffic near CCR piles; (3) stabilizing and covering CCR piles on a daily basis; (4) placing windbreaks upwind of storage piles; (5) minimizing the "drop distance" during loading, unloading, and movement of CCR into and around CCR piles, including drop distance from trucks, conveyers, or loaders; (6) keeping two feet of "freeboard" on trucks during transport; (7) covering all trucks, conveyors, and other equipment used to move CCR into and around piles; and (8) installing wheel washers on trucks to avoid tracking dust offsite.[497]

Additional protections are also essential. Following widespread public concern about fugitive dust pollution from "petcoke" (petroleum coke) and manganese, and after extensive review and comment, the City of Chicago recently issued fugitive dust regulations for bulk storage of materials including petcoke and manganese.[498] Petcoke is generally heavier than CCR (in particular fly ash) and is thus less likely to be windborne than CCR. Nonetheless, the Chicago Department of Public Health found numerous fugitive dust protections to be necessary to protect public health. Those protections include, among other things: requiring all coke and coal piles be enclosed; mandating fenceline air monitoring to ensure dangerous volumes of dust are not moving offsite; imposing a readily-enforceable visible emissions and opacity limit to further ensure dust is not blown into offsite communities; requiring development of site-specific, enforceable fugitive dust plan; requiring regular inspections, testing, and maintenance of fugitive dust controls; requiring wind speed and direction monitoring and restricting loading/unloading operations during high wind events; pile height limits, and more.[499]

Daily cover or the equivalent is also essential for CCR piles. Analysis submitted in Appendix A to the expert report of Mark Hutson makes clear that daily cover is an essential component of fugitive dust control for exposed ash, such as coal ash in waste piles.[500] Daily cover also limits the infiltration of precipitation through the ash, reducing the leaching of toxic chemicals into the soil and groundwater.[501] Nevertheless, neither the "environmental demonstration" called for by the Phase 2 Proposal nor any other provision of that proposal requires such daily cover.

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[496] 2014 Risk Assessment at 3-6 – 3-8.
[497] *See* expert report of Mark Hutson at 2; *id*. at Appendix A, Pless Environmental, 2010 at 28-29.
[498] *See* City of Chicago Department of Public Health, Rules for Control of Emissions From Handling and Storing Bulk Materials (effective Jan. 25, 2019) ("CDPH Bulk Materials Regulations").
[499] *See* CDPH Bulk Materials Regulations.
[500] *See*, *e.g*., Hutson Report, Appendix A at 2, 22.
[501] *See e.g*., Sahu Expert Report at 6.

As noted above, EPA does not specifically mandate the use of *any* of those measures. In the face of the clear evidence of harm resulting from inadequately controlled CCR dust, a final rule that fails to require these well-understood and necessary dust control measures at CCR piles would not meet RCRA § 4004(a)'s protectiveness standard.

EPA's preamble for the Phase 2 Proposal provides no rational basis and cannot save this fatally flawed proposal. EPA states in the preamble that if control measures are not used or are inadequate for prevailing conditions, the entity managing the pile will not have met the requirement to control releases, and the accumulation of CCR will be considered to be disposal.[502] But EPA undermines its own statement by pointing to examples that explicitly describe the failure of control measures by the owner/operator, namely, visible dust leaving the pile, uncontrolled run-on/runoff, and ponding of water at the bottom of the waste pile, while stopping short of identifying these dangerous conditions as actual failures to control releases. EPA states instead that these flagrant examples of lack of adequate design and management simply "point to an issue with the choice of control measures."[503] If these occurrences, which constitute violation of the operation of a waste pile under the 2015 CCR Rule and represent concrete evidence of releases to the environment of CCR, are not examples of an actionable absence of required control measures under the proposed definition of CCR storage pile, then the definition fails to establish standards that prevent disposal of CCR and thus fails to meet the protectiveness standard of RCRA § 4004(a).

In addition, EPA states in the preamble that the design and management measures referenced in the definition of CCR storage pile do not need to include measures that will control releases under conditions of extreme weather or other unusual circumstances (which may, for example, include the occurrence of a seismic event, sinkhole, hurricane, etc.). EPA states, "[m]eeting the requirement to control releases would mean having to account for *normal* conditions and operating procedures."[504] While logic dictates that the storage of toxic, friable, dusty and soluble CCR in an open condition on the ground necessitates control measures that take into account unusual or extreme weather occurrences and site characteristics, this is clearly not what EPA has proposed. Thus the absence of clear, effective and enforceable control standards that apply to all weather and site conditions fails to meet the protectiveness standard of RCRA § 4004(a), regardless of the size of the pile or the length of time CCR will reside there.

Lastly, EPA attempts to cure the absence of specific control measures in its proposed definition of CCR storage pile by stating in the preamble that "one way for the entities engaged in the activity to meet the requirement is by designing and managing piles such that the releases are consistent with the terms of federal, state or local regulations for surface water, groundwater, soil or air protection."[505] EPA states that such examples of federal, state, or local regulations include:

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[502] 84 Fed. Reg. at 40,363.
[503] 84 Fed. Reg. at 40,363.
[504] *Id.* (emphasis added)
[505] *Id*.

> stormwater discharge permits for construction sites; nation-wide effluent limits for relevant industry sectors (*e.g.*, cement, concrete and gypsum facilities, and power plants); states' groundwater protection plans; and states' requirements for implementing control measures to prevent releases from storage piles of CCR.[506]

The above-cited regulations have significant gaps in coverage for CCR piles. One glaring and fatal deficiency is that none of the regulatory schemes provides nationwide protection of groundwater and air quality from CCR constituents, although EPA identified this threat as one of the primary reasons for regulating CCR piles.

EPA references Clean Water Act requirements to control stormwater discharges from industrial and construction activities as among the existing controls that would control releases from CCR storage piles.[507] These requirements are primarily designed to reduce (or, in some cases, eliminate) discharges of pollutants to surface waters from contaminated stormwater runoff.[508] EPA permits adopted to implement these requirements, such as the Construction General Permit referenced in the proposed rule require facilities to implement best management practices such as sediment and erosion controls.[509]

Although these best management practices can be effective to reduce discharges of pollutants through surface water runoff, they are neither designed to prevent nor effective at preventing other forms of releases – and in particular releases to groundwater. As EPA itself notes in the proposal, the 2015 CCR Rule required CCR landfills to employ liners, leachate collection systems, and groundwater monitoring to appropriately control such releases.[510] Surface water runoff controls do not in any way address releases to groundwater or adequately substitute for the 2015 CCR Rule's protections against releases from landfills.

The purported reliance on states' requirements to control releases from CCR waste piles is also particularly misplaced. Based on our review of state regulations, nearly three-quarters of the states (36) have no regulatory requirements at all for CCR waste piles.[511] As a result, the federal regulations governing waste piles are the only requirements that apply in these states.

The remaining one-quarter of states (14) impose control requirements on CCR storage piles, but there is no guarantee that they will not amend or weaken their rules in the future. For example, six states apply requirements that parallel or mirror the current federal rules in

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[506] *Id*.
[507] *See* 80 Fed. Reg. at 43,364.
[508] *See, e.g.*, 40 C.F.R. §§ 122.26(b)(14)-(50), 411.30.
[509] *See* 80 Fed. Reg. at 43,364,
[510] *See* 84 Fed. Reg. at 40,363.
[511] Thirty-one of these states have not adopted any CCR-specific waste management rules and have no generic waste pile rules that would apply to CCR piles. They are Arizona, Arkansas, California, Colorado, Connecticut, Florida, Hawaii, Idaho, Indiana, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Mississippi, Montana, Nevada, New Mexico, New York, North Carolina, Ohio, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Wisconsin, and Wyoming. The other five states have adopted CCR-specific regulations, but their regulations do not include requirements that apply to CCR storage piles. They are Delaware, Iowa, Missouri, Nebraska, and West Virginia.

mandating that all CCR waste piles, regardless of the piles' duration, meet the same requirements as permanent CCR landfills.[512] It is possible, if not likely, that some or all of these states might simply revise their rules in parallel to whatever changes EPA makes to the federal CCR rules.

Even if the few states with applicable waste pile rules do not amend them, the current rules in most of those states are already insufficiently protective to prevent damage from CCR waste piles. Four states require waste storage piles (CCR or otherwise) to meet the state's regulatory requirements for permanent landfills, but only if the pile is in place for more than a certain period of time. That time period ranges by state from 60 days to one year.[513] One other state requires waste piles (CCR or otherwise) to meet regulatory requirements that are different from the rules for permanent landfills, but again, only if the pile is in place for longer than a minimum time threshold of 3 months.[514] As a result, in these five states, operators of CCR waste piles can avoid having to comply with environmentally protective regulatory standards by claiming that the pile has been or will be in place for less than the applicable time period qualifying the pile for exemption. Compliance with these time limits is easily evaded. For example, Michigan's rules allow low-hazard industrial waste, including CCR, to be stored in an uncontained waste pile for up to 60 days prior to disposal without having to comply with the hydrogeological report, groundwater monitoring, and groundwater performance standards that apply to landfills.[515] However, state guidance documents make clear that "up to 60 days" does not actually mean that the pile must be cleared of waste every 60 days:

> "Since new waste may be generated during this 60-day period, R 299.4129(2)(c) effectively allows a pile of low-hazard industrial waste to be *maintained continuously*, provided the volume of the pile does not exceed the amount of waste generated over 60 days. To be able to show this exemption is being met, owners or operators of a facility storing the low-hazard waste must be able to demonstrate that the waste pile does not contain more waste than the amount generated in the last 60 days, for example by keeping records of when and how much waste is added to the pile and when, where, and how much waste is sent for disposal."[516]

This example demonstrates the inadequacy of state waste pile rules that allow perpetual piles to be exempted from regulation under the fiction that they do not remain in place permanently.

In the final three states, all "temporary" waste piles (CCR or otherwise) must meet regulatory standards that are different from the requirements for landfills, with no minimum duration that exempts them from these requirements.[517] However, both in these states and the

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[512] These states are Alabama (ADEM Admin. Code r. 335-13-15-.02(12)), Alaska (18 AAC 60.990(29)), Georgia (Ga Comp. R. & Regs. 391-3-4-.01(9)), Oklahoma (Okla. Admin. Code 252:517-1-3), Utah (U.A.C. R315-319-53(a)(12)), and Virginia (9 VAC 20-81-10).
[513] These states are Illinois (35 Ill. Adm. Code 810.103), Michigan (Mich. Admin. Code R 299.4129), New Jersey (N.J.A.C. 7:26–1.4), and Pennsylvania (25 Pa. Code §§ 287.1, 299.113).
[514] This state is North Dakota (NDAC 33-20-04.1-07).
[515] Mich. Admin. Code R 299.4129(2)(c).
[516] Michigan Dep't of Environmental Quality, "Waste Pile Closure" at 3-4 (2000, revised 2002, reformatted 2012), available at https://www.michigan.gov/documents/deq/deq-owmrp-policy-115-20_408157_7.pdf (emphasis added).
[517] These states are Maryland (COMAR 26.04.10.05), New Hampshire (N.H. Code Admin. R. Env-Sw 902.02(a)),

five states that do exempt "short-duration" piles, the states' rules for storage piles are typically less stringent than the states' rules for permanent landfills and are too weak to prevent the waste piles from causing environmental damage. For example, Maryland requires permanent CCR landfills to be lined and to meet locational site criteria, requirements that do not apply to CCR storage piles.[518] Altogether, this patchwork of state regulations fails to provide a backstop that could prevent a reasonable probability of effects on health and the environment if EPA weakens the federal rules for CCR waste piles.

With the above statement regarding existing federal, state and local regulations, the Trump EPA takes us full circle. The administration forgets that the record and preamble for the 2015 CCR Rule, in line with the findings of our own state regulatory review, demonstrated that adequate controls for CCR disposal and storage does *not* exist in federal, state and local law.[519] Going back even further, EPA almost twenty years ago declared in its *Regulatory Determination on Wastes from the Combustion of Fossil Fuels; Final Rule* that the absence of both state and federal regulations pertaining to CCR disposal necessitated federal regulation of the waste by EPA.[520] In response to this long acknowledged and well-documented gap in regulations. EPA established the technical control requirements contained in the 2015 CCR Rule.

With no supporting evidence, the Trump EPA now states that somehow federal, state and local regulations do exist to protect air, surface water, groundwater and soil from releases from CCR piles. EPA's failure to demonstrate that such controls exist for such units nationwide, under the variety of contexts where CCR piles are found, renders EPA's proposal arbitrary and capricious and without rational basis. The absence of such protections, demonstrated after significant investigation by the EPA just five years ago, causes this proposal to fail to meet the standard set out in RCRA § 4004(a) to protect health and the environment.

Lastly, EPA also defends its proposal, which stops short of requiring *any* specific controls for CCR waste piles, by stating that "[t]his flexibility also ensures that EPA's requirements do not contradict any state or local requirements for the use of prescribed controls."[521] This statement indicates EPA's fundamental misunderstanding of its statutory duty under RCRA § 4004(a) to promulgate regulations that establish criteria sufficient to prevent the "reasonable probability of adverse effects on health or the environment from disposal of solid waste."[522] EPA cannot prioritize providing flexibility to industry to follow local or state requirements in lieu of establishing federal regulations that guarantee the protection of health and the environment. EPA must establish controls sufficient to meet the statutory protectiveness standard, regardless of existing state and local requirements.

In sum, as explained above, the definitions of "CCR storage pile" and "temporary accumulation" allow substantial volumes of CCR to be placed on the land for long periods of time. Such placement, without specific and technical controls, as required by the 2015 Rule, will

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and Washington (WAC 173-350-320).

[518] COMAR 26.04.10.04(C)(1) (referencing COMAR 26.04.07.19), COMAR 26.04.10.05.

[519] *See* 80 Fed. Reg. at 21,322-5 (finding significant gaps in regulation of CCRs).

[520] US EPA, Regulatory Determination on Wastes from the Combustion of Fossil Fuels; Final Rule (May 22, 2000), 65 Fed. Reg. 32,214.

[521] 84 Fed. Reg. at 40,363.

[522] 42 U.S.C. § 6944(a).

result in releases to air, water and soil. Dangerous releases can occur from even brief periods of placement of small quantities of CCR under certain conditions. For example, under conditions of wind and precipitation releases can occur quickly after placement. Further, placement of CCR piles at vulnerable sites, in areas of shallow groundwater, near sensitive ecological systems, in wetlands, near waterbodies or near residences can quickly cause releases that harm health and the environment. EPA's failure to require effective control of these releases renders the proposal unable to meet the protectiveness standard of RCRA § 4004(a) and arbitrary and capricious and without a rational basis.

D. CCR Waste Piles Pose Significant Threats to Human Health and the Environment and Have Caused Substantial Damage.

In its proposal, EPA never addresses the ample evidence in the record indicating the harm caused by CCR piles operating currently under the CCR rule. Adverse impacts of piles on air and water are no longer hypothetical, as EPA has for years required inspections of piles and groundwater monitoring. The assumption that CCR piles pose risks similar to CCR landfills is proven, although a closer examination reveals that CCR waste piles can pose risks even greater than CCR landfills do. The Hutson Expert Report details several examples of air and water contamination currently occurring from CCR piles. This section also describes some of the damage that has occurred from CCR waste piles and addresses the substantial continuing risk posed by CCR piles.

1. *CCR piles cause significant groundwater contamination.*

a. AES-PR's CCR waste pile is causing groundwater contamination at the Guayama Power Plant.

Groundwater monitoring data published by the AES-PR Guayama Power Plant reveals significant adverse impacts to groundwater quality from CCR disposal in the plant's CCR waste pile.[523] The attached letter dated November 20, 2018 contains the expert opinion of Mark Hutson, P.G., who examined the data published by AES-PR and describes the documented harm to groundwater from the CCR waste pile at the Guayama plant.[524] In fact, AES-PR itself has admitted that its CCR waste pile contaminated groundwater above federal health standards (groundwater protection standards). AES published a notification that groundwater contamination at its site requires enhanced monitoring pursuant to the CCR Rule, 40 C.F.R. § 257.95, and that such enhanced monitoring was commenced on July 16, 2018.[525] Following this notification, AES-PR posted a notification on January 14, 2019, as required by 40 C.F.R. § 257.95(g), that the following Appendix IV constituents, selenium, lithium and molybdenum, were detected at levels above the applicable groundwater protection standards during assessment

[523] DNA-Environment, LLC, 2017 Annual Groundwater Monitoring Report, AES Puerto Rico L.P. (Jan. 2018), attached, *available at* http://aespuertorico.com/wp-content/uploads/2018/02/2017_01_31_AES_Groundwater-Monitoring-and-Corrective-Action_Annual-Report.pdf.
[524] Mark Hutson, Geo-Hydro, Inc., Report on Document Review: AES Puerto Rico, Guayama, Puerto Rico (Nov. 20, 2018) (attached).
[525] AES Puerto Rico, L.P. (AESPR) – Notice of Establishment of an Assessment Monitoring Program, *available at* http://aespuertorico.com/wp-content/uploads/2018/09/Assessment-Monitoring-Notification.pdf (attached).

monitoring at the CCR waste pile.[526] Subsequent to this notification, on April 15, 2019, AES-PR posted a "Notice of Initiation of Assessment of Corrective Measures" pursuant to 40 C.F.R. § 257.96(a), indicating an assessment of corrective measures was initiated for its CCR waste pile.[527] Further, AES-PR has not published an alternative source determination demonstrating that the groundwater has been contaminated with coal ash constituents by any source other than the CCR waste pile. AES-PR has not yet published the assessment of corrective measures required by 40 C.F.R. § 257.96.

EPA does not mention the groundwater contamination caused by this CCR waste pile or any other CCR waste pile currently operating under the CCR Rule. As discussed below, several other CCR waste piles are likely contributing substantially to groundwater contamination at facilities where they are operating. The AES-PR CCR waste pile represents a particularly clear example of harm to the environment, because the power plant does not operate any other CCR waste units that could be causing the exceedances found in the groundwater. EPA's failure to examine the record and explain how health and the environment will be protected under the proposed CCR storage pile standards renders the proposal arbitrary and capricious and without a rational basis.

b. CCR piles pose a substantial threat to groundwater quality.

As described in detail in the expert report by Mark Hutson, P.G.,[528] piles of CCR have the potential to adversely impact environmental quality similarly to the well documented impacts from CCR landfills and impoundments. Precipitation that falls on the pile can cause erosion of CCR sediments, which can then be transported to adjacent areas. Liquid precipitation can infiltrate into the waste causing generation of leachate. Leachate can run-off and transport contaminants off-site or can infiltrate into underlying soils and/or groundwater unless the site is adequately lined. Failure to isolate coal ash waste in piles from water results in leaching of contaminants, i.e. formation of leachate. If released to soils, groundwater, or surface water, coal ash leachate impairs and degrades soil and/or water quality and the environment.

2. *Fugitive dust from CCR piles significantly harms air quality and human health.*

a. EPA does not consider documented evidence of CCR piles causing harm to human health.

Fugitive dust emissions from the waste pile at the AES-PR Guayama plant have caused harm to human health. According to first-hand accounts of residents living near the power plant, the 120-foot CCR pile maintained by AES-PR has plagued nearby residents with fugitive dust

[526] AES Puerto Rico, L.P. (AESPR)- Notice of Groundwater Protection Standard Exceedance, January 14, 2019, *available at* http://aespuertorico.com/wp-content/uploads/2019/03/AES-PR-SSL-notification.pdf (attached).
[527] AES Puerto Rico, L.P. (AESPR)- Notice of Initiation of Assessment of Corrective Measures, April 15, 2019, available at http://aespuertorico.com/wp-content/uploads/2019/06/Initiation-of-Corrective-Measures-Assessment-Notification.pdf (attached).
[528] Hutson Expert Report (attached).

for many years.[529] As described in the 2018 comments submitted by Comité Diálogo Ambiental, the CCR waste pile dwarfs all other structures at the plant and stands outside with no cover, totally exposed to the persistent Caribbean winds and tropical rainstorms.[530]

AES-PR itself provides documentation of fugitive dust problems at its Guayama plant. As noted in the 2017 annual inspection report of the CCR pile posted by AES-PR, "fugitive dust caused by wind was observed on the west slope of the Stockpile at the time of inspection," despite the "calm wind" and sunny weather on the day of the inspection. In addition, the 2017 inspection notes that the water truck, that was supposed to suppress dust, was "not operational."[531] According to Comité Diálogo Ambiental, nearby communities have observed that AES uses a sprinkler system sporadically but not enough to control fugitive dust emissions. AES' 2018 annual inspection report of the waste pile similarly notes that despite "calm" wind conditions, fugitive dust was again observed and that the pile's "water hoses and spray nozzle system were not operational at the time."[532]

In July 2016, the University of Puerto Rico, Graduate School of Public Health conducted an epidemiological study of communities in Guayama, downwind from the AES plant and other industrial facilities. The research project emerged as a response to residents' claims of environmental conditions present in their communities, in particular, the exposure to ash from the burning of coal to generate electric power, that were adversely affecting public health.[533] The purpose of the study was to determine if the prevalence of respiratory and skin diseases were higher in the communities in Guayama, in comparison to communities in Fajardo, which is not proximate to sources of coal ash or coal burning. Information was collected on sociodemographic characteristics, housing, vulnerability factors to environmental pollution, perception of environmental pollution, reproductive health and respiratory, skin, cardiovascular diseases and cancer.

The most relevant findings of the epidemiological study carried out in the communities of Guayama and Fajardo are as follows:

- More than two thirds of the population of Guayama considers environmental pollution and poor or bad air quality as severe;
- 1 of every 3 people in Guayama has been diagnosed with respiratory disease;
- 1 of every 4 people in Guayama has been diagnosed with cardiovascular disease;
- Pediatric asthma is approximately 5 times greater in Guayama;
- Severe asthma in children is 6 times higher in Guayama;
- The prevalence of urticaria (hives) is 7 times higher in Guayama;
- The prevalence of spontaneous abortions is more than 6 times higher in Guayama;

[529] *See, for example*, the comment submitted by Comité Diálogo Ambiental, submitted to the EPA Docket ID: EPA-HQ-OLEM-2017-0286, in April 2018 (attached).
[530] *Id*.
[531] AES Puerto Rico, CCR 2017 Inspection Report, July 13, 2017, *available at* http://aespuertorico.com/wp-content/uploads/2017/10/2017_Annual-Inspection-Report.pdf (attached).
[532] AES Puerto Rico, CCR 2018 Inspection Report, July 18, 2018, *available at* http://aespuertorico.com/wp-content/uploads/2019/02/4-CCR-Annual-Inspection-Report-2018.pdf (attached).
[533] Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública - Departamento de Bioestadística y Epidemiología, Estudio Epidemiológico en las Comunidades de Puente de Jobos y Miramar en Guayama y Santa Isidra y Rafael Bermúdez en Fajardo.

- The probability of suffering from chronic bronchitis in the larger population of 45 years is 9 times higher in Guayama; and
- The probability of suffering from pediatric asthma is approximately 6 times greater in Guayama.

In addition to the immense CCR pile in Guayama, Puerto Rico, AES maintains another smaller CCR waste pile at its Hawaii coal-fire power plant in Oahu, Hawaii. This waste pile has also generated fugitive dust that adversely impacted nearby workers in the industrial park where the power plant is located. According to a 2017 newspaper report, dust clouds were generated during moving of the ash, and employees of nearby businesses complained that the dust makes them cough constantly and gets into their workplace and cakes onto their cars.[534] Under its permit with the state, AES Hawaii is allowed to stockpile up to 37,000 tons of ash on its property. One resident has filed a complaint with the Hawaii Health Department. AES maintains that this pile is not subject to the CCR Rule.

EPA has considered none of this evidence of harm, despite the briefing of senior EPA officials by experts and impacted residents of Puerto Rico on April 17, 2019, as previously described. There is no mention of health impacts from CCR piles in the EPA's instant proposal, and the proposed regulations are inadequate to prevent such harm from occurring. Consequently EPA's proposal fails to meet the protectiveness standard of RCRA § 4004(a) and is arbitrary and capricious.

b. CCR fugitive dust has major adverse health impacts.

EPA has long recognized that inhalation of CCR poses grave hazards to human health.[535] When coal ash is disposed or placed on the ground, dust can be emitted into the air by loading and unloading, transport, and wind if not properly managed. Once in the air, fugitive dust can migrate off-site. As a result, workers and nearby residents can be exposed to significant amounts of coarse particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$). Both have been linked to heart disease, cancer, respiratory diseases and stroke.[536]

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[534] Daysog, R (2017), 'Power plant's ash dust triggers environmental concerns', *Hawaii News Now*, 12 July, *available at* https://www.hawaiinewsnow.com/story/34241823/aes-power-plants-ash-dust-triggers-environmental-concerns/

[535] *See* 75 Fed. Reg. 35,128, 35,171 (June 21, 2010) ("Air emissions from CCR disposal and storage sites can originate from waste unloading operations, spreading and compacting operations, the re- suspension of particulates from vehicular traffic, and from wind erosion. Air inhalation exposures may cause adverse human health effects, either due to inhalation of small-diameter (less than 10 microns) ''respirable'' particulate matter that causes adverse effects (PM10 and smaller particles which penetrate to and potentially deposit in the thoracic regions of the respiratory tract), which particles are associated with a host of cardio and pulmonary mortality and morbidity effects."); *see also* US EPA, Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills (May 2010), Docket ID No. EPA-HQ-RCRA-2009-0640-0142, attached, and US EPA, Damage Case Reports; EPA, Damage Case Compendium; EPA, Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills (May 2010), Docket ID No. EPA-HQ-RCRA-2009-0640-0142 (attached).

[536] Air particulate matter and cardiovascular disease: the epidemiological, biomedical and clinical evidence, J Thorac Dis. 2016 Jan; 8(1): E8–E19, *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4740122/; *see also*, US EPA, Linking Air Pollution and Heart Disease at https://www.epa.gov/sciencematters/linking-air-pollution-and-

Coal ash also contains significant amounts of silica, in both crystalline and amorphous form. Respirable crystalline silica in coal ash can lodge in the lungs and cause silicosis, or scarring of the lung tissue, which can result in a disabling and sometimes fatal lung disease.[537] Chronic silicosis can occur after many years of mild overexposure to silica. While the damage may at first go undetected, irreversible damage can occur to the lungs from chronic exposure. Such exposure can result in fever, shortness of breath, loss of appetite and cyanosis (blue skin). In addition, the International Agency for Research on Cancer has determined that silica causes lung cancer in humans. Inhalation of coal ash also poses significant health threats because of the toxic metals present in the ash, such as arsenic, chromium (including the highly toxic and carcinogenic chromium VI), lead, manganese, mercury, radium and others. When inhaled, these toxic metals can cause a wide array of serious health impacts, ranging from cancer to neurological damage.

In the decade following the multi-year cleanup of the 5.4 million-ton coal ash spill at the Kingston TVA Fossil Plant in Harriman, Tennessee, at least 40 cleanup workers died and over 400 have reported being sickened by the inhalation of coal ash, all with ailments known to be caused by long-term exposure to arsenic, radium and other toxins and metals found in coal ash, according to a lawsuit filed after the spill.[538] Seventy-three plaintiffs, comprising sick workers and families of deceased workers, sued in federal district court and won a jury verdict in November 2018 that found the cleanup contractor failed to exercise reasonable care to protect the health of cleanup workers. The jury also found that exposure to toxic heavy metals and radiation in coal ash could be responsible for the workers' illnesses, including skin rashes, lung disease and cancer.[539] The findings of epidemiologist, Paul D. Terry, PhD, University of Tennessee, which were presented at the trial, concluded that an excessive number of certain diseases was found among the cleanup workers in comparison to the reported incidence rates of those same diseases in the general population.[540] The expert connected the diseases prevalent in the workers

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heart-disease.

[537] *See* Ash in Lungs.

[538] *See* Jamie Satterfield, *Judge rejects TVA contractor's ask for a new trial over coal ash contamination lawsuit*, Knox News, March 1, 2019 *available at* https://www.knoxnews.com/story/news/crime/2019/03/01/judge-says-evidence-backs-jury-verdict-kingston-coal-ash-contamination/3017696002/. *See also,* Jamie Satterfield, *Sickened Kingston coal ash workers left with faulty, manipulated test results*, Knox News, Sept. 2, 1018, Knox News, https://www.knoxnews.com/story/news/crime/2018/09/02/kingston-coal-ash-spill-faulty-manipulated-testing/1126963002/. *See also*, https://www.knoxnews.com/story/news/crime/2017/08/23/epa-bowed-tva-contractor-worker-safety- standards-nations-largest-coal-ash-disaster-records-say/574855001/; https://www.knoxnews.com/story/news/crime/2017/08/11/kingston-coal-ash-spill-cleanup-probe-spurs- more-complaints-disease-death/551596001/; https://www.knoxnews.com/story/news/crime/2018/03/28/tva-coal-ash-spill-cleanup-roane-county- lawsuits-dead-dying-workers/458342002/; https://www.mensjournal.com/features/coal-disaster-killing-scores-rural-americans; https://abcnews.go.com/Health/wireStory/tva-backlash-grows-coal-ash-spill-workers-fall-65234169; Sworn Declaration of R. Doug Hudgens, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv-00462-TAV-HBG, Doc. 129-7 (E.D. Tenn. Oct. 28, 2017); Affidavit of Dan. R. Gouge, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv-00462-TAV-HBG, Doc. Doc. 129-5 (E.D. Tenn. Oct. 28, 2017); Kingston Ash Release Response Project, Jan. 2013 Rev. 06, at Table 4-2: Fly Ash Constituent Information, Vanguilder v. Jacobs Engineering Group, Inc., No. 3:15-cv- 00462-TAV-HBG, Doc. 129-1 (E.D. Tenn. Oct. 28, 2017.

[539] *Id.*

[540] No. 3:15-cv-00462-TAV-HBG, Transcript of Trial: Oct. 24, 2018 (E.D. Tenn. filed Nov. 8, 2018) (attached).

with the hazardous constituents found in the coal ash to which they were exposed via inhalation and dermal contact, as follows:

- Lead in fly ash can cause hypertension (high blood pressure).
- Arsenic, cadmium, and PM 2.5 in fly ash can cause coronary artery disease (heart disease, arterio-sclerosis, heart attack).
- Arsenic, cadmium, chromium, and PM 2.5 in fly ash can cause lung cancer.
- Ionizing radiation in fly ash can cause leukemia and hematologic malignancies (diseases of the blood).
- Arsenic in fly ash can cause skin cancer.
- Chromium and nickel in fly ash can cause allergic contact dermatitis (skin allergy).
- Arsenic and lead in fly ash can cause peripheral neuropathy (loss of function of extremities, feet, hands, fingers).
- Chromium, PM 2.5, nickel and vanadium in fly ash can cause asthma.
- Cadmium and PM 2.5 in fly ash can cause chronic obstructive pulmonary disease (emphysema).
- PM 2.5 and other fly ash constituents can cause adverse respiratory conditions, including cough, sore throat, dyspnea on exertion, chest pain or discomfort, bronchitis, and emphysema.

In sum, the disposal and placement of CCR generates harmful fugitive dust that must be adequately controlled to prevent serious harm to human health. EPA has not considered such impacts or proposed such controls for CCR piles.

E. EPA's Proposal to Manage Releases Retroactively Violates the Protectiveness Standard of RCRA § 4004(a).

EPA requests comment on whether it is acceptable to manage releases from CCR piles retroactively.[541] EPA posits, for example, that there may be "situations in which CCR will only enter the topmost layer of soil over the time the CCR is in place at the site, in which retroactive management of these releases combined with an active management of releases to air and water, could avoid all reasonable probability of adverse effects on human health and the environment."[542] EPA further suggests that placement of CCR at a construction site, "which typically occurs over a brief, one-time period, is precisely one such situation in which releases to soil and groundwater can retroactively be managed by removing the CCR and the contaminated soil beneath it, at the completion of the project."[543]

As a threshold matter, this retroactive approach is fundamentally and legally incompatible with the explicit statutory objective of RCRA. One of the primary objectives of EPA under RCRA, set forth in § 1003(a)(5), is to promote the protection of health and environment by requiring that waste "be properly managed in the first instance thereby reducing the need for corrective action at a future date."[544] The retroactive approach suggested by the

[541] 84 Fed. Reg. at 40,364.
[542] *Id.*
[543] *Id.*
[544] 42 U.S.C. § 6902(a)(5).

Trump EPA would intentionally substitute proper management of hazardous substances with the speculative assumption that effective corrective action could take place at some later date. EPA knows better.[545] There is no guarantee that once CCR contaminants are placed on the ground that effective cleanup can and will occur.[546] Groundwater may be contaminated and ingested, contaminants may be taken up by plants and such constituents may enter the ecosystem and food chain, runoff may occur, resulting in surface water contamination, and on and on.

Even if the duration of CCR placement is brief, some migration is certain to occur.[547] Furthermore, there is no guarantee that there will be an entity physically able and financially willing to perform cleanup after the fact. A rule that ensures the control of hazardous substances in the first instance to avoid the need for subsequent corrective action is the statutory objective of RCRA.

Secondly, even if one was to ignore this statutory objective, the specific directive of RCRA § 4004(a) prevents such a radical, dangerous, and illegal approach. Section 4004(a) of RCRA requires EPA to establish criteria to prevent the *reasonable probability* of adverse effects on health and the environment. The statute thus not only requires the prevention of adverse impacts, it requires the prevention of the very possibility of harm, if that possibility is reasonably probable to occur.[548] Certainly it is reasonably probable that placement of CCR on land, with no controls, will cause adverse effects to health or the environment. *See* Hutson Expert Report. Therefore this cannot be permitted under RCRA – even if there is an after-the-fact requirement to perform cleanup.

As pointed out earlier in these comments, EPA has itself recently justified the regulation of short-term CCR piles by stating that these piles, absent specific controls that prevent the release of CCR constituents, are solid waste disposal sites. Specifically, EPA wrote in the preamble to the 2015 CCR rule,

> Irrespective of whether the facility is using the pile as ''temporary storage'' or ultimately intends to direct the CCR to beneficial use, *by placing the CCR on the land with no containment or other method of preventing environmental exposures, the facility is engaging in an activity that clearly falls within the statutory definition of disposal*. See 42 U.S.C. 6903(3) (''placing of solid waste . . . on any land, so that such solid waste . . . or any constituent thereof may enter the environment.'').[549]

Consequently, EPA's proposed "retroactive" approach is arbitrary and capricious and contrary to law and must be abandoned.

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[545] *USWAG* at 422, stating, "The EPA has acknowledged that it "will not always be possible" to restore groundwater or surface water to background conditions after a contamination event.
[546] *See* Hutson Expert Report.
[547] *Id*.
[548] *See Envtl. Def. Fund. v. EPA*, 852 F.2d 1309, 1310 (D.C. Cir. 1988) (Subtitle D requires EPA to ensure "no possibility of danger to health or environment" for solid waste disposal sites).
[549] 74 Fed. Reg. at 21,356 (emphasis added).

F. EPA's Definition of an Enclosed Structure Is Arbitrary and Capricious and Fails to Meet the Protectiveness Standard of RCRA § 4004(a).

In the Phase 2 Proposal, EPA defines an enclosed structure by identifying certain basic structural properties and design and operational elements. Entities containing CCR within such structures would not be subject to the definition of CCR storage pile or CCR landfill requirements in the part 257 regulations.[550] EPA states that it modeled the proposed definition after the requirements in 40 C.F.R. § 264.1100 for units in which hazardous wastes are stored or treated and which are not subject to the definition of land disposal. EPA, however, omits many critical elements from its proposed truncated definition of "enclosed structure." Consequently its proposal is arbitrary and capricious and fails to meet the RCRA § 4004(a) protectiveness standard.

1. *EPA's definition of enclosed structure fails to require structural elements necessary to control fugitive dust from CCR.*

EPA is proposing to omit the requirement that both the ''no visible fugitive emissions'' standard and *Method 22— Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares in 40 CFR part 60, appendix A* be met.[551] In lieu of these straightforward standards, EPA is proposing to include in the design and operational elements of an enclosed structure a performance standard stating that enclosed structures must be designed and operated to prevent the release of fugitive dust emissions through openings, including doors, windows and vents.[552]

In its entirety, the section of the definition of "enclosed structure" pertaining to fugitive dust, requires that the structure:

> Is designed and operated to ensure containment and prevent fugitive dust emissions from openings, such as doors, windows and vents, and the tracking of CCR from the structure by personnel or equipment.[553]

The proposed language fails to meet the RCRA § 4004(a) standard. It suffers from myriad deficiencies, including but not limited to the following:

(1) Cracks should also be included as a type of opening through which fugitive dust emissions must be prevented, as required in § 264.1101;
(2) The state of no visible emissions must be maintained effectively at all times during routine operating and maintenance conditions, including when vehicles and personnel are entering and exiting the unit, as required in § 264.1101.
(3) An independent qualified professional engineer must certify that the enclosure meets the design and control standards.

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[550] 84 Fed. Reg. 40,364-5 and definition of "enclosed structure" at 84 Fed. Reg. 40,370-1.
[551] 84 Fed. Reg. at 40,364-65.
[552] *Id.*
[553] *Id*.

(4) Clear, readily-enforceable measures must be specified. For example, like regulations developed for enclosed bulk materials piles in Chicago, the proposed language should include explicit mandates for loading or unloading to take place within the enclosure, truck washing, rumble strips, dust monitoring, recordkeeping, spill cleanup, fugitive dust plans, and covering of trucks transporting CCR to the enclosure, among other measures.[554]

2. *EPA's proposed definition of enclosed structure fails to meet the protectiveness standard of RCRA § 4004(a) because it cannot guarantee containment of the waste and prevention of releases to the environment.*

EPA prescribes containment walls in its definition of "enclosed structure," but EPA omits obvious and essential elements of the structure that must be present to prevent contact with wind, water and prevent releases to groundwater. For example, EPA does not require a ceiling or cover, nor does EPA require impermeable flooring. These omissions are inconsistent with § 264.1101, which requires a containment building to be "completely enclosed with a floor, walls, and a roof to prevent exposure to the elements, (e.g., precipitation, wind, run-on), and to assure containment of managed wastes."[555] The same must apply to CCR containment, as CCR contains many of the same hazardous substances as hazardous waste.[556]

Secondly, EPA does not specify that the enclosed structure is only intended for dry CCR. If this is not specified as a condition, then EPA must include requirements sufficient to protect against releases from the storage of CCR containing free liquids (FGD sludge, for example). Requirements appropriate to storage of sludges are set out in § 264.1101(b) and must be incorporated in the EPA's definition for CCR storage. These requirements are:

> (b) For a containment building used to manage hazardous wastes containing free liquids or treated with free liquids (the presence of which is determined by the paint filter test, a visual examination, or other appropriate means), the owner or operator must include:
> (1) A primary barrier designed and constructed of materials to prevent the migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface).
> (2) A liquid collection and removal system to minimize the accumulation of liquid on the primary barrier of the containment building:
> (i) The primary barrier must be sloped to drain liquids to the associated collection system; and
> (ii) Liquids and waste must be collected and removed to minimize hydraulic head on the containment system at the earliest practicable time.
> (3) A secondary containment system including a secondary barrier designed and constructed to prevent migration of hazardous constituents into the barrier, and a leak detection system that is capable of detecting failure of the primary barrier and

[554] *See* CDPH Bulk Materials Regulations.
[555] 40 C.F.R. § 264.1101(a)(1).
[556] 75 Fed. Reg. 35,128 (June 21, 2010) at , 35,137-142.

collecting accumulated hazardous wastes and liquids at the earliest practicable time.
(i) The requirements of the leak detection component of the secondary containment system are satisfied by installation of a system that is, at a minimum:
(A) Constructed with a bottom slope of 1 percent or more; and
(B) Constructed of a granular drainage material with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m^2/sec or more.
(ii) If treatment is to be conducted in the building, an area in which such treatment will be conducted must be designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building.
(iii) The secondary containment system must be constructed of materials that are chemically resistant to the waste and liquids managed in the containment building and of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any equipment used in the containment building. (Containment buildings can serve as secondary containment systems for tanks placed within the building under certain conditions. A containment building can serve as an external liner system for a tank, provided it meets the requirements of §264.193(e)(1). In addition, the containment building must meet the requirements of §264.193(b) and §§264.193(c) (1) and (2) to be considered an acceptable secondary containment system for a tank.)[557]

As with other technical requirements in the CCR Rule, an independent qualified professional engineer must certify compliance with the above requirements.

3. *EPA's proposed definition of enclosed structure fails to meet the protectiveness standard of § 4004(a) because it does not require inspection and maintenance of the enclosed structure.*

Unlike § 264.1101, EPA omits a requirement that owners and operators maintain, inspect and repair structures to prevent releases. In order to meet the statutory standard, EPA must include such provisions in the definition of enclosed structure. The relevant requirements of § 264.1101(c) are as follows:

Owners or operators of all containment buildings must:
(1) Use controls and practices to ensure containment of the hazardous waste within the unit; and, at a minimum:
(i) Maintain the primary barrier to be free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier;
(ii) Maintain the level of the stored/treated hazardous waste within the containment walls of the unit so that the height of any containment wall is not exceeded;
(iii) Take measures to prevent the tracking of hazardous waste out of the unit by personnel or by equipment used in handling the waste. An area must be designated

[557] 40 C.F.R. § 264.1101(b).

to decontaminate equipment and any rinsate must be collected and properly managed; and

(iv) Take measures to control fugitive dust emissions such that any openings (doors, windows, vents, cracks, etc.) exhibit no visible emissions (see 40 CFR part 60, appendix A, Method 22—Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares). In addition, all associated particulate collection devices (e.g., fabric filter, electrostatic precipitator) must be operated and maintained with sound air pollution control practices (see 40 CFR part 60 subpart 292 for guidance). This state of no visible emissions must be maintained effectively at all times during routine operating and maintenance conditions, including when vehicles and personnel are entering and exiting the unit.

(2) Obtain and keep on-site a certification by a qualified Professional Engineer that the containment building design meets the requirements of paragraphs (a), (b), and (c) of this section.

(3) Throughout the active life of the containment building, if the owner or operator detects a condition that could lead to or has caused a release of hazardous waste, the owner or operator must repair the condition promptly, in accordance with the following procedures.

(i) Upon detection of a condition that has led to a release of hazardous waste (e.g., upon detection of leakage from the primary barrier) the owner or operator must:

(A) Enter a record of the discovery in the facility operating record;

(B) Immediately remove the portion of the containment building affected by the condition from service;

(C) Determine what steps must be taken to repair the containment building, remove any leakage from the secondary collection system, and establish a schedule for accomplishing the cleanup and repairs; and

(D) Within 7 days after the discovery of the condition, notify the Regional Administrator of the condition, and within 14 working days, provide a written notice to the Regional Administrator with a description of the steps taken to repair the containment building, and the schedule for accomplishing the work.

(ii) The Regional Administrator will review the information submitted, make a determination regarding whether the containment building must be removed from service completely or partially until repairs and cleanup are complete, and notify the owner or operator of the determination and the underlying rationale in writing.

(iii) Upon completing all repairs and cleanup the owner or operator must notify the Regional Administrator in writing and provide a verification, signed by a qualified, registered professional engineer, that the repairs and cleanup have been completed according to the written plan submitted in accordance with paragraph (c)(3)(i)(D) of this section.

(4) Inspect and record in the facility operating record, at least once every seven days, data gathered from monitoring and leak detection equipment as well as the containment building and the area immediately surrounding the containment building to detect signs of releases of hazardous waste.

(d) For a containment building that contains both areas with and without secondary containment, the owner or operator must:

> (1) Design and operate each area in accordance with the requirements enumerated in paragraphs (a) through (c) of this section;
> (2) Take measures to prevent the release of liquids or wet materials into areas without secondary containment; and
> (3) Maintain in the facility's operating log a written description of the operating procedures used to maintain the integrity of areas without secondary containment.[558]

These requirements require tailoring for CCR containment, as well as recordkeeping, notification and posting requirements consistent with §§ 257.105, 257.106 and 257.107. In addition, the certification of professional engineers must be required. All of the above requirements must be tailored and added to the definition of enclosed structure to meet the protectiveness standard of § 4004(a) of RCRA.

IV. EPA'S PROPOSED GROUNDWATER PROTECTION STANDARD FOR BORON VIOLATES RCRA BY FAILING TO PREVENT THE "REASONABLE PROBABILITY OF ADVERSE EFFECTS ON HEALTH OR THE ENVIRONMENT."

As EPA notes, boron is a particularly important pollutant in the context of coal ash:

> [B]oron is one of the nine constituents determined to present unacceptable risks under the range of scenarios modeled. Of these constituents, boron is the only one associated with risks to both human and ecological receptors. Specifically, the 2014 risk assessment shows that boron can pose developmental risk to humans when released to groundwater and can result in stunted growth, phytotoxicity, or death to aquatic biota and plants when released to surfacewater bodies. . . . Boron is a [contaminant of concern] in more damage cases (approximately 50 percent of the total) than any Appendix IV constituent with the exception of arsenic. The damage cases reflect a range of waste types disposed in both surface impoundments and landfills. These damage cases corroborate the [risk assessment] and also capture other risk scenarios that were not modeled in the [risk assessment], such as units that intersect with the groundwater table.[559]

In short, boron is a leading coal ash risk driver.

Furthermore, boron plays an important role in the early detection of and protection against coal ash pollution because it is highly mobile and serves as a coal ash tracer.

Given the serious risks posed by boron, it is critically important that EPA get the science right. In this case, getting the science right means taking a different approach with boron than it did with cobalt, lithium and molybdenum. For those three pollutants, EPA used its Regional

[558] 40 C.F.R. § 1101(c).
[559] 83 Fed. Reg. 11,589.

Screening Levels as groundwater protection standards.[560] This approach will not be adequately protective for boron. RCRA requires EPA to ensure that "there is no reasonable probability of adverse effects on health or the environment."[561] In order to fulfil this statutory mandate, and specifically to ensure that there are no adverse impacts to children or the environment, EPA must select a groundwater protection standard no greater than 1.6 milligrams per liter (mg/L). Indeed, it should select a lower, more protective standard as many states have done.

A. The Proposed Boron Standard is Based on an Outdated Toxicity Assessment, and More Recent EPA Assessments Support a Lower Standard.

EPA proposes to adopt 4 mg/L as the groundwater protection standard for boron.[562] This standard is based on the EPA Regional Screening Level for tap water exposure to boron, which is also 4 mg/L.[563] The Regional Screening Level is itself derived from the EPA Reference Dose for boron, 0.2 mg/kg-d.[564] The EPA reference dose for boron, which is based on decreased fetal weight in experimental animals exposed in utero, was last updated in 2004.[565]

In 2008, EPA published a "Drinking Water Health Advisory" for boron.[566] In that document, EPA explains that health advisories are "concentrations of drinking water contaminants at which adverse health effects are not expected to occur."[567] The document actually presents several distinct advisories, including short-term child health advisories (for one-day and ten-day exposure periods), "longer-term" child and adult health advisories (for seven-year exposure periods), and a "lifetime" health advisory. These are summarized very briefly below.

- Short-term child health advisory: 2.5 mg/L, based on the risk of testicular damage.[568]
- Longer-term child health advisory: 1.6 mg/L, also based on the risk of testicular damage.
- Longer-term adult health advisory: 5.2 mg/L, based on decreased fetal weight.
- Lifetime health advisory: 5.4 mg/L, based on decreased fetal weight.

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[560] 83 Fed. Reg. 36,444.
[561] 42 U.S.C. § 6944(a).
[562] 84 Fed. Reg. 40366.
[563] U.S. EPA, Regional Screening Levels (RSLs) – Generic Tables as of May 2019, https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (last visited August 28, 2019).
[564] *Id*.; 84 Fed. Reg. 40366 ("EPA used the same toxicity values (reference doses) that were used in the risk assessment supporting the 2015 CCR Rule").
[565] U.S. EPA, Integrated Risk Information System (IRIS), Boron and Compounds, https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0410_summary.pdf#nameddest=rfd (last visited August 28, 2019) (hereinafter "IRIS Boron Summary").
[566] U.S. EPA, Drinking Water Health Advisory for Boron, Document Number 822-R-08-013 (May, 2008) (hereinafter "Boron Health Advisory").
[567] *Id*. at 1.
[568] As is often the case, the short-term child health advisory is based on experimental studies on animals. Id. at 29-30. This is also true of the EPA reference dose. IRIS Boron Summary at 2. With regard to the child health advisories and the underlying risk – testicular damage – EPA notes that that there are "compelling lines of evidence to suggest that the testicular morphological effects reported in [rats] are applicable [to] children." Boron Health Advisory at 30.

Of these various health advisories, the only one that could protect children exposed to boron in drinking water for more than 10 days is the longer-term child health advisory of 1.6 mg/L. This is the concentration at which, under EPA's analysis, "adverse health effects" – in this case testicular damage – "are not anticipated to occur."[569] As discussed below, many states have established even stronger protections. Conversely, children exposed to boron concentrations greater than 1.6 mg/L face an increased and unacceptable risk of testicular damage. EPA states, in the proposal, that it has "established this [groundwater protection standard] at the concentration to which the human population could be exposed to [sic] on a daily basis without appreciable risk of deleterious effects over a lifetime."[570] This statement is clearly false. According to EPA's health advisory, daily exposure to 4 mg/L of boron in drinking water would present a significant risk to children's health over a period of seven or more years.

By setting a groundwater protection standard at 4 mg/L, when the Agency has elsewhere established a child health advisory of 1.6 mg/L, EPA would be allowing an unacceptable risk to continue. This fails EPA's statutory mandate to ensure that "there is no reasonable probability of adverse effects on health or the environment."[571] At the very least, EPA must set the standard at 1.6 mg/L, but to truly protect children and human health generally, an even lower standard is required.

B. The Proposed Boron Standard is Higher (Less Protective) than Many State and International Boron Standards.

In its 2008 drinking water advisory document, EPA stated that "[t]he state drinking water guidelines are as follows," and proceeded to list standards that ranged from 0.6 to 1 mg/L.[572] That was over ten years ago, and many state drinking water guidelines have been updated since then. Today, states continue to have boron standards and guidelines that are much more protective than EPA's proposed standard. For example:

- **California**'s State Notification Level for boron is 1 mg/L.[573]
- **Florida**'s most recent Health Advisory Level for boron is 0.6 mg/L,[574] although the state health department also posted a draft Health Advisory Level of 1.4 mg/L in 2018.[575]
- The **Illinois** Class I Groundwater Quality Standard for boron is 2 mg/L,[576] while the Illinois water quality standard for public water supplies is 1 mg/L.[577]

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[569] Boron Health Advisory at 1.
[570] *Id*.
[571] 42 U.S.C. § 6944(a).
[572] *Id* at 37.
[573] California State Water Resources Control Board, Division of Water Quality, Groundwater Information Sheet for Boron, https://www.waterboards.ca.gov/water_issues/programs/gama/docs/coc_boron.pdf.
[574] Florida Department of Health and Environmental Health, Bureau of Health, Water Programs; Maximum Contaminant Levels and Health Advisory Levels (Aug. 4, 2016), http://www.floridahealth.gov/Environmental-Health/drinking-water/_documents/hal-list.pdf.
[575] Florida Department of Health, Bureau of Environmental Health, Drinking Water Health Advisory Levels (Mar. 23, 2018), http://www.floridahealth.gov/environmental-health/drinking-water/_documents/hal-list-draft.pdf.
[576] 35 Ill. Admin. Code 620.410(a).
[577] 35 Ill. Admin. Code 302.304.

- **Maine** periodically publishes Maximum Exposure Guidelines (MEGs) for private well water and defines MEGs as "concentrations of chemicals in drinking water below which there are minimal risks of adverse health effects from lifetime ingestion."[578] The MEGs were most recently updated in 2016. The current MEG for boron is 1 mg/L.[579]
- The **Minnesota** Department of Health publishes risk assessment advice "guidance values" to "protect people who are most vulnerable to the potentially harmful effects of a contaminant."[580] In October 2017, MDH published a guidance value of 0.5 mg/L.
- **North Carolina**'s groundwater quality standard for boron is 0.7 mg/L.[581]
- In 2019, **Vermont** revised its groundwater protection standard for boron to 0.87 mg/L.[582]
- **Wisconsin** currently has a Preventive Action Limit for boron of 0.2 mg/L, and an Enforcement Standard of 1 mg/L.[583] In 2019, the Wisconsin Department of Health Services proposed that these levels be raised to 0.4 and 2 mg/L, respectively, based on EPA's longer-term child health advisory.[584]

In addition, in 2011 the World Health Organization published a guideline value for boron of 2.4 mg/L to protect against decreased fetal weight, replacing an earlier provisional guideline value of 0.5 mg/L.[585]

To summarize, these state guidelines and standards range from less than 1 mg/L to no more than 2 mg/L, and the World Health Organization's guideline value is 2.4 mg/L. EPA's proposed groundwater standard of 4 mg/L would fail to protect against levels of boron that many state agencies and the World Health Organization deem unsafe.

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[578] *See, e.g.*, Maine Center for Disease Control and Prevention, Maximum Exposure Guideline for Radon in Drinking Water (Oct. 2, 2006), https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/wells/documents/radonmeg.pdf.

[579] Maine Center for Disease Control and Prevention, Maximum Exposure Guidelines (MEGs) for Drinking Water (Dec. 31, 2016), https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/wells/documents/megtable2016.pdf

[580] Minnesota Department of Public Health, Boron and Drinking Water, https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/boroninfo.pdf.

[581] 15A N.C. Admin. Code 2L.0202

[582] Vt. Admin. Code 16-3-502 APPENDIX 1; from as early as 2005, and through January 2019, Vermont's groundwater protection standard for boron was 0.6 mg/L. Older versions of Vermont's groundwater protection standards can be found at https://dec.vermont.gov/water/groundwater.

[583] Wis. Admin. Code NR § 140.10

[584] Wisconsin Department of Health Services, Recommended Public Health Groundwater Enforcement Standards, Scientific Support Documents for Cycle 10 Substances at 244 (June 2019), https://www.dhs.wisconsin.gov/publications/p02434v.pdf.

[585] World Health Organization, Guidelines for Drinking-water Quality, Fourth Edition Incorporating the First Addendum at 323 (2017), *available at* https://apps.who.int/iris/bitstream/handle/10665/254637/9789241549950-eng.pdf;jsessionid=44E37196D5E8B8C6929F9A160AC645FC?sequence=1; World Health Organization, Histories of Guideline Development for the Fourth Edition [Boron], *available at* https://www.who.int/water_sanitation_health/water-quality/guidelines/chemicals/boron-history.pdf?ua=1.

C. Groundwater Monitoring Data From Coal Plants Show Widespread Boron Contamination at Levels Below The Proposed Groundwater Protection Standard but Above EPA's Child Health Advisory.

In March 2019, the Environmental Integrity Project and Earthjustice released an analysis of all of the baseline groundwater monitoring data posted online in early 2018 pursuant to the CCR rule.[586] That report, and the underlying database of groundwater monitoring data from 265 coal plants and offsite coal ash landfills, can be found on the Environmental Integrity Project website.[587] The database has also been provided to EPA. In that report, the authors determined that 128 sites (48 percent of the sites that had reported data up to that point) had one or more downgradient wells with mean boron concentrations that exceed both (a) the EPA 10-day child health advisory of 3 mg/L, and (b) the highest upgradient mean boron concentration for the relevant disposal unit.[588] In other words, roughly half of the sites in the national database show boron levels that are "elevated" (above background levels) and "unsafe" (exceeding the 10-day child health advisory).

The boron data can be analyzed in other useful ways, as shown in the following table:

Category	**Analysis of downgradient wells[589]**	**Number of sites**	**Fraction of total (265)**
Elevated	Mean boron concentration in one or more wells exceeds background[590]	227	86%
	Minimum boron concentration in one or more wells exceeds background[591]	211	80%
Unsafe	Mean boron concentration in one or more wells exceeds 4 mg/L	106	40%
	Mean boron concentration in one or more wells exceeds 1.6 mg/L	175	66%
Elevated and unsafe	Mean boron concentration in one or more wells exceeds both background and 4 mg/L	100	38%

[586] Coal's Poisonous Legacy.
[587] http://www.environmentalintegrity.org/coal-ash-groundwater-contamination/.
[588] Coal's Poisonous Legacy at 15, Table 1.
[589] Here "downgradient" includes all wells designated as something other than "upgradient" (e.g., "compliance," "crossgradient," etc.).
[590] In this analysis, the mean boron concentration in each non-upgradient well was compared to the single highest upgradient boron reading for the relevant disposal unit. For example, the mean boron concentration in each of the seven downgradient wells at the Brandywine coal ash landfill in Maryland was compared to the highest boron level recorded in any of the four wells upgradient of that landfill (0.137 mg/L). This identifies wells with boron levels that are likely to be statistically significantly elevated above background.
[591] In this analysis, the minimum boron concentration in each non-upgradient well was compared to the upgradient maximum. This identifies wells with boron levels that are always higher than background, with no overlap.

	Mean boron concentration in one or more wells exceeds both background and 1.6 mg/L	163	62%

Over 80 percent of the sites in the database have elevated boron levels (though not always in excess of health-based standards). Of particular relevance to the Phase 2 Proposal, 163 sites (62 percent) show levels of boron in downgradient wells that are (a) elevated above background and (b) greater than the 1.6-mg/L long-term child health advisory. These are the sites that pose a theoretical risk to children's health, and the sites where a groundwater protection standard of 1.6 mg/L would lead to corrective action. By contrast, the number of sites with boron concentrations greater than the proposed standard of 4 mg/L is only 100 (38 percent). In other words, of the 163 sites with boron levels greater than 1.6 mg/L, only 100 (61 percent) would be potentially subject to corrective action using EPA's proposed standard. At the other 63 sites, even though boron levels are unsafe for children according to EPA's own health advisory, there would be no regulatory cleanup requirement.

In short, EPA's proposed groundwater protection standard would fail to meet the statutory mandate by allowing unsafe levels of boron to persist at dozens of sites across the country.

D. EPA Has Failed to Show How The Proposed Boron Standard Would Protect Against Unacceptable Ecological Risks.

According to EPA, boron is a constituent of concern because of unacceptable risks to both human health and ecological receptors (plants and wildlife):

> [B]oron is one of the nine constituents determined to present unacceptable risks under the range of scenarios modeled. Of these constituents, boron is the only one associated with risks to both human and ecological receptors. Specifically, the 2014 risk assessment shows that boron can pose developmental risk to humans when released to groundwater and can result in stunted growth, phytotoxicity, or death to aquatic biota and plants when released to surface water bodies.[592]

Yet EPA's proposed groundwater protection standard is based exclusively on human health risks.[593] Specifically, EPA based the proposed standard on a reference dose, which is a human toxicity value.[594] According to EPA, "[t]his means that EPA has established this [groundwater protection standard] at the concentration to which the human population could be exposed to [sic] on a daily basis without appreciable risk of deleterious effects over a lifetime."[595] This says nothing about the extent to which boron may present an environmental risk.

[592] 83 Fed. Reg. at 11,589 (emphasis added).
[593] 84 Fed. Reg. at 40,366.
[594] *Id*.
[595] *Id*.

In its 2014 risk assessment, EPA used a series of "surface water benchmarks" to evaluate ecological risk. These benchmarks "were selected to protect animals in water bodies that may be exposed through direct contact with surface water or through ingestion of other biota that live in the water body."[596] The benchmark that EPA selected for boron was 1.1 mg/L.[597] This is of course less than EPA's proposed groundwater protection standard of 4 mg/L. Groundwater is frequently diluted when it enters a surface water body, such that groundwater with a boron concentration of 4 mg/L will lead to a surface water concentration much less than 4 mg/L. But not always. In some cases, most or all of the flow in a stream will come from groundwater, through above-ground seeps and/or through below-ground baseflow. In these cases, there will be little or no dilution, and a groundwater concentration of 4 mg/L will result in a surface water concentration that exceeds the ecological benchmark of 1.1 mg/L. In other words, EPA's proposed groundwater protection standard would not protect against unacceptable ecological risk.

This is not a hypothetical or theoretical concern, as the following example demonstrates. At the Brandywine Landfill in Brandywine, Maryland, contaminated groundwater flows into local surface water, including two tributaries along the eastern and southern edges of the landfill.[598] These tributaries show surface water concentrations of boron that regularly exceed EPA's surface water benchmark of 1.1 mg/L, with concentrations as high as 3.8 mg/L.[599] Groundwater in the monitoring wells closest to each surface water sampling location has boron concentrations of 4 mg/L or less.[600] In this case, a groundwater protection standard of 4 mg/L would not be protective of aquatic life in the adjacent tributaries.

The Brandywine site has been better characterized than most, but it is representative of a fairly common scenario. Wherever a stream is fed mainly by local groundwater, without significant dilution, a groundwater protection standard of 4 mg/L will not ensure that surface water concentrations remain below 1.1 mg/L. EPA's proposed standard for boron therefore fails to ensure that "there is no reasonable probability of adverse effects on health or the environment."[601]

Finally, boron's high mobility and role as a conservative tracer for coal ash pollution supports establishing a much lower groundwater protection standard than 4 mg/L. Boron is a

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[596] U.S. EPA, Human and Ecological Risk Assessment of Coal Combustion Residuals at E-10 (Dec. 2014).
[597] *Id*. at E-11.
[598] Geosyntec Consultants, Inc., Nature and Extent of Contamination Study, Final Report, Brandywine Ash Management Facility at 4-7 (June 2018) (attached) ("Groundwater beneath the site discharges to nearby surface water, specifically the South Swale (to the southwest and west), the Mataponi Creek (to the north and northwest), the Unnamed Tributary (to the east and northeast), and Kevin's Creek (to the east)").
[599] *Id*. at Table 3-6b. This is true even after excluding samples flagged as being potentially affected by the discharge of coal ash wastewater through permitted outfalls. Monitoring location SW05, in the "unnamed tributary," shows boron concentrations ranging between 0.9 and 1.5 mg/L (excluding flagged data). Monitoring location SW06, further downstream in the same "unnamed tributary," shows boron concentrations ranging between 1.8 and 3.8 mg/L (again excluding flagged data). Monitoring location SW15, on the "south unnamed tributary reach," which was only sampled twice, shows boron concentrations of 1.3 and 1.7 mg/L.
[600] *See id*. at Table 3-5c, results for monitoring wells B13 and B28 (near surface water sampling location SW05), B18 and B36 (closest to location SW06), and B11 (near location SW15).
[601] 42 U.S.C. § 6944(a).

leading indicator of the spread of coal ash pollution in groundwater.[602] Therefore, a low, protective standard for boron allows owners, regulators, and the public to not just detect but also respond to coal ash pollution earlier and more effectively. It protects not only against the health and ecological risks boron itself poses but of the broader suite of coal ash contaminants.

V. EPA'S PROPOSED RULES GOVERNING TRANSPARENCY OF REPORTS AND PUBLIC POSTING ARE INSUFFICIENT TO MEET EPA'S PROTECTIVENESS MANDATE.

EPA structured the CCR Rule as a self-implementing rule that relies primarily on citizen suits for enforcement.[603] The rule assumes that members of the public, or state agencies, are able to track facilities' compliance with the rule and take enforcement action based on the reporting information hosted on the facilities' CCR websites. Although citizen enforcement is a powerful tool, and necessary when federal or state agencies cannot or will not act, this places an immense burden on the public that is compounded by facilities' failures to diligently post CCR Rule reporting information in a uniform, accessible, and consistent manner. EPA has identified a few of the current reporting practices by facilities that make it unnecessarily difficult for the public to find CCR websites, access and analyze reporting documents, and contact the facility regarding issues with the CCR websites. However, there are other gaps in the current rule that EPA has not addressed, as we discuss below.

As EPA has recognized, the CCR Rule only meets the Agency's RCRA § 4004(a) mandate if implementation is transparent:

> [T]he Agency cannot conclude that the regulations promulgated in this rule will ensure there is no reasonable probability of adverse effects on health or the environment unless there is a mechanism for states and citizens, as the entities responsible for enforcing the rule, to effectively monitor or oversee its implementation.[604]

If owners and operators are permitted to withhold key information from the public, state agencies, and/or EPA, it increases the likelihood of noncompliance and creates a "reasonable probability of adverse effects on health or the environment," in violation of RCRA's protectiveness mandate.[605]

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[602] *See, e.g.*, 83 Fed. Reg. 11,589 (Mar. 15, 2018).
[603] *See generally* Letter from Barnes Johnson, Director, Office of Resource Conservation and Recovery, EPA, re: Publicly Accessible Internet Site Requirements for Coal Combustion Residual Facilities (May 7, 2019) (attached).
[604] 80 Fed. Reg. at 21,338 ("As stated in the proposal and reiterated here, the Agency cannot conclude that the regulations promulgated in this rule will ensure there is no reasonable probability of adverse effects on health or the environment unless there is a mechanism for states and citizens, as the entities responsible for enforcing the rule, to effectively monitor or oversee its implementation. Mandated documentation and transparency of the owner or operator's actions to comply with the rule provides this mechanism, and will help to minimize the potential for abuse."); *see also* 84 Fed. Reg. at 40,366 ("The EPA believes that a required standardized format would increase transparency and enable the general public, as well as federal, state, and local officials, to more easily understand the groundwater monitoring data and thus plan for and evaluate the appropriate next steps to protect public health and the environment.").
[605] 42 U.S.C. § 6944(a).

A. EPA Should Amend the CCR Rule to Ensure that the Public Consistently Has Access to the Correct URL for Facilities' CCR Websites via EPA's CCR Website.

As the CCR websites are vital to tracking CCR rule compliance, it is vital that the public has consistent access to the correct website addresses via EPA's CCR website. Therefore, EPA should amend the CCR rule to require facilities to notify EPA within fourteen days of a URL change, and require EPA to make the necessary changes within fourteen days of receiving notification of a URL change.

1. *EPA should finalize language requiring that facilities notify EPA within 14 days of changing their CCR website URL.*

EPA is correct that the changing URLs of CCR websites can present an impediment to tracking facility compliance with the CCR rule. While tracking CCR rule reporting, Earthjustice documented 11 websites that had an address change between April 27, 2018, and September 10, 2019.[606] Often these website address changes are triggered as a result of a change of ownership of the facility, which has significant legal implications for facility compliance. As EPA's CCR website can be the most reliable way for the public to find CCR reporting information for facilities and to determine the entity responsible for compliance, EPA should require facilities to notify the agency within 14 days of a URL change for a CCR website.

2. *EPA should amend the CCR Rule to include a requirement that the agency update EPA's CCR website within 14 days of receiving a notification from a facility of a URL change for its CCR website.*

Notification of EPA by facilities of a URL change for a website will only benefit the public if the agency updates the EPA CCR website in a timely manner. EPA should commit to updating its website within 14 days of receiving notification of a URL change for a CCR website. Therefore, EPA should amend § 257.107 to include a provision that commits the agency to making the necessary updates to the agency website within 14 days of receiving notification from a facility that a CCR website's URL has changed.

B. EPA Should Finalize Amendments to the CCR Rule that Prevent Companies from Restricting or Complicating Access to CCR Reporting Information.

EPA proposes to amend § 257.107 to include: "The website must ensure that all information required to be posted is immediately available to anyone visiting the site, without requiring any prerequisite, such as registration or a requirement to submit a document request. All required information must be clearly identifiable and must be able to be printed and downloaded by anyone accessing the site." This requirement is intended to prevent the practices of requiring registration for access to documents or preventing the downloading of documents. While only a handful of companies have engaged in these practices,[607] these present significant

[606] *See, e.g.*, Enhancing Public Access to Information, at 5, examples 4 through 14 (Sept. 30, 2019) (attached).
[607] *See, e.g., id.* at 2-4, 6-7.

barriers to the public's access to information and the public's ability to enforce the requirements of the CCR Rule.

1. *EPA should prevent companies from requiring members of the public to complete a registration form, submit a request, or otherwise provide any information, in order to access CCR Rule compliance documents.*

EPA is correct that some facilities have required prerequisites to access reporting information on the CCR websites. For example, as of September 10, 2019, the Near Field Facility and Salt River Project CCR websites both require users to create an account to access any CCR reporting information.[608] Similarly, as of September 10, 2019, the Power South Energy Cooperative CCR website required the user to fill out a "download request form," including providing name and email, for every document that the user wants to access.[609]

Requiring the public to share personal information in the form of a registration requirement or document request in order to access reporting information can act as a significant deterrent to public participation and enforcement, as some members of the public may be wary of sharing personal information with the facility. This practice may effectively deter those members of the public most vulnerable to harm from coal ash sites – those who live in communities near the sites where the facilities may have a significant level of influence and employees who fear retaliation for efforts to seek information. Furthermore, not having the information readily accessible to all gives facilities the power to restrict access to the reporting information based on the personal information collected in the registration. There is no legitimate reason to structure the CCR website in this manner, as evidenced by the fact that only a few facilities have implemented these hurdles. Therefore, EPA is correct in seeking to prevent facilities from structuring their CCR website in a way that requires any prerequisite before information can be accessed.

2. *EPA should require all information on CCR websites to be immediately downloadable.*

EPA is correct that some facilities have structured their CCR websites so that the information is not downloadable. For example, the City of Independence, Missouri's CCR website for the Blue Valley Generating Station uses "Flipsnack," an online platform that only allows documents to be viewed, not downloaded. The website tells members of the public to complete an open records request in order to obtain copies of the documents.[610] There is no legitimate reason to structure the CCR website in a way that prevents documents from being immediately downloaded. EPA is correct in amending the rule to add language clarifying that the documents "must be able to be printed and downloaded by anyone accessing the site."[611] However, just to prevent any further attempts to dissuade or delay access, EPA could provide further clarity by including "immediately" in this amended language, to clarify that information

[608] *Id.* at 2-3, examples 1 & 2 (websites hosting compliance information related to Prairie State Generating Company, LLC, Coronado Generating Station, and Navajo Generating Station CCR units).
[609] *Id.* at 4, example 3 (website hosting compliance information related to the Charles R. Lowman Power Plant CCR units).
[610] *See id.* at 6, example 15.
[611] 84 Fed. Reg. at 40,371.

must be posted in such a way that it is *"immediately* able to be printed and downloaded by anyone accessing the site."

3. *EPA should require that all reporting documents posted on the CCR website be available in searchable format.*

Frequently, facilities post CCR Rule reporting documents as non-searchable PDFs.[612] This format can make it extremely difficult to find specific information within the often very lengthy and complicated documents,[613] creating an additional hurdle for members of the public who wish to evaluate facility compliance. There is no legitimate reason for facilities to post documents in this format other than to make it more difficult to find information and potential violations. Therefore, EPA should amend the rule to specify that all documents be posted in searchable format to make the reporting information more transparent.

C. EPA Should Amend the CCR Rule to Require that Facilities Provide a Responsive Point of Contact to Address Questions Related to the CCR Website and Reporting Documents.

Currently, if a member of the public encounters difficulties in accessing reporting information, or spots potential issues, inconsistencies, or missing information, there is often no clear way to get clarification from the facility. In some cases, the failure to post a document can either be a signal that the facility did not need to take a certain action, or it can be a failure to post and therefore a violation. With no point of contact, it can be nearly impossible to gather further information to assess whether a violation has occurred. While it is important to have a clear point of contact, ideally in the form of an email, it is also important that the owner or operator of the facility is required to provide a timely response.

1. *EPA should require facilities to prominently post a contact email address on each CCR website to enable the public to contact owner/operators regarding issues of information accessibility.*

EPA is correct that when there are issues with a publicly accessible CCR website, "it can be difficult to reach the appropriate contact at the facility who has knowledge of the information

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[612] *See, e.g., id.* at 7, example 16. PDFs created directly from word processing files are generally text-searchable, and PDFs created from scanned documents can be converted to a text-searchable format by using optical character recognition tools. It is widely recognized that text-searchable PDFs are more user friendly. *See, e.g.*, U.S. District Court, District of Minnesota, "PDF Troubleshooting Tips and Tricks," https://www.mnd.uscourts.gov/cmecf/PDF-tips-and-tricks.shtml ("The court prefers that word processing be converted to PDF rather than printed to hardcopy and scanned. Converted PDFs have searchable text, which is useful to the court and other users."); U.S. Court of Appeals for the Second Circuit, "Making a PDF Text-Searchable," http://www.ca2.uscourts.gov/clerk/case_filing/electronic_filing/how_to_use_cmecf/text_searchable_pdfs.html (referencing Local Rules); Federal Maritime Commission, Notice of proposed rulemaking; extension of comment period, 84 Fed. Reg. 50,369 (Sept. 25, 2019) ("Comments should be attached to the email as a Microsoft Word or text-searchable PDF document.").

[613] *See, e.g.*, Earthjustice et al. Comments, Docket ID No. EPA-HQ-OLEM-2017-0286-2136, at 223 (Apr. 30, 2018) ("For a single utility, Duke Energy, the new data encompass more than 25,000 pages.").

posted to the CCR website."[614] In May 2019, Earthjustice identified 166 known unique CCR website URLs and looked at the first 32 websites alphabetically. Of these 32 websites, 8 did not list any readily available contact information. Only 9 websites included a readily available email address, and 11 of the websites without email addresses included an electronic contact form. Only 10 websites included an easily accessible phone number, and 8 websites listed an easily accessible physical address. One website was not functional at the time this review was done.[615]

The lack of clear and consistent contact information presents significant challenges to efforts to review reporting information. For example, in June 2019, Earthjustice attempted to contact 12 owners/operators requesting documentation demonstrating CCR Rule "beneficial use" compliance. For most owners/operators, it was difficult or impossible to find contact information regarding CCR Rule compliance, and as a result the letters were largely addressed to the CEOs of the facilities, where that information was available. Identifying a point of contact is further complicated by the fact that CCR Rule reporting is often contracted out to companies other than the owner/operator and that corporate ownership and structures are frequently changing.

All CCR websites should include a clear means by which to contact the company responsible for CCR reporting. This would benefit members of the public who want to ensure compliance and are seeking clarifying information about reporting documents or are encountering difficulties with the website. It also would benefit the facilities, as questions will be sent to the correct contact from the beginning, and will allow facilities to act quickly to remedy issues with the website.

Requiring owner/operators to post a contact email address rather than, or in addition to, a contact form could be advantageous for three reasons. Adding a contact email to the existing CCR websites is a relatively easy change and does not require building out a contact form webpage. Additionally, the contact forms could be designed in a way that is needlessly complicated, require unnecessary personal information, or otherwise impede the ability of the public to ask questions. A contact email also easily allows for the sharing of documents in the form of attachments, which may sometimes be necessary in order to explain or demonstrate the issue that is being raised. Therefore, EPA should amend § 257.107 of the CCR rule to include: "Each CCR website should prominently feature a contact email address to which questions regarding the website can be directed."

2. *EPA should require facilities to respond to questions submitted via the contact email within 30 days of receiving the question.*

Providing the public with a means to contact the company responsible for a CCR website is only helpful if the company responds in a timely manner. In the case of Earthjustice's attempt to contact facilities, of the twelve owners and operators contacted, only seven responded by September 30, 2019, over 90 days after the letters were sent. EPA should take steps to ensure that questions submitted to the contact email address are monitored and responded to within a timely manner. Therefore, EPA should amend § 257.107 for the CCR rule to include: "Questions

[614] 84 Fed. Reg. at 40,367.
[615] Enhancing Public Access to Information, at 8-13.

submitted via the contact email address must be substantively responded to within 30 days of receipt."

D. EPA Should Amend the CCR Rule to Require Archiving of Previously Posted Documents on the Website.

The CCR rule requires that reporting information be kept on the website for at least five years.[616] However, facilities occasionally delete reporting documents to replace them with updated or corrected versions. One reason this may occur is because the owner/operator amends a written closure plan pursuant to § 257.102(b)(3) of the CCR Rule. For example, DTE Electrical Company recently replaced its closure plan with a revised written closure plan for a Monroe Power Plant CCR unit, noting where revisions were generally made, but not providing any redlines or detailed version history.[617] The current regulations do not clarify the procedure for amending and replacing documents, which means that sometimes documents are removed from the CCR website and replaced.

To avoid the confusion that the removal and replacement of documents can cause, all documents posted to the CCR website should remain on the website for five years, even if there is an update or correction to a document, or the document is no longer relevant. Any documents that would have been deleted should be housed in an "Archive" section of the CCR website or be labeled as "archived." EPA should amend the CCR Rule to state that all documents posted on a CCR website must remain available to the public for at least five years and that all documents posted on the CCR website that are no longer current or relevant for any reason should be clearly marked as "archived" documents. This requirement to have all documents, including "archived documents" available for five years should apply regardless of changes in the unit status, facility ownership, or the CCR website URL.

E. EPA Should Amend §§ 257.95(g)(3)(ii) and 257.107(h) to Require Alternate Source Demonstrations and Supporting Reports Be Posted on the CCR Website.

Currently, under § 257.95(g)(3) of the CCR Rule, if an owner/operator can demonstrate via an "Alternate Source Demonstration" ("ASD") that a finding of constituents listed in appendix IV at statistically significant levels exceeding the groundwater protection standards is caused by a source other than the CCR unit, the owner/operator does not need to initiate an assessment of corrective actions. This ASD is not required to be posted to the CCR website other than in the annual groundwater monitoring and corrective action report, which means that the public may not have access to it until the annual report is posted. This can entail substantial delay and is a significant impediment to the public's ability to monitor compliance with the CCR Rule's groundwater contamination corrective action requirements. As EPA observed in the 2015

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[616] 40 C.F.R. § 257.107(c).

[617] DTE Electric Company, Monroe Power Plant, Closure Plan for Inactive Bottom Ash Impoundment per 40 CFR 257.102(b), Rev. 1 (Aug. 30, 2019) (attached), https://newlook.dteenergy.com/wps/wcm/connect/2d500fbd-ff22-42f2-9724-e74d2213d22d/Bottom+Ash+Impoundment+CP.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=2d500fbd-ff22-42f2-9724-e74d2213d22d.

Rule, public access to "information necessary to determine whether enforcement is warranted"[618] is critical to meeting the Agency's statutory mandate.

An owner/operator is required to post a notification that there has been an appendix IV constituent exceedance of groundwater protection standards, as well as that an assessment of corrective measures has been initiated, but not that an ASD has been completed.[619] Therefore, the reporting information on a CCR website may indicate an exceedance that could require an assessment of corrective action, but no further notifications are posted, despite the passage of the regulatory deadline to post a notification of initiation of corrective action. This could either indicate that the owner/operator is failing to comply with the rule or it could mean that an ASD has been completed. It is essential that this situation be clarified so the public is informed in a timely manner of any critical violations of corrective action requirements.

For example: according to a notice dated November 13, 2018, Alabama Power Company found that arsenic, an appendix IV constituent, was detected at statistically significant levels above the applicable groundwater protection standard during assessment monitoring at Plant Gorgas' Bottom Ash Landfill.[620] Alabama Power Company followed up on this finding by providing notice than an assessment of corrective measures was initiated on February 12, 2019.[621] According to the CCR Rule, an assessment of corrective measures must be completed within 90 days of initiation, with an extension of no longer than 60 days.[622] In addition, the rule provides an additional 30 days for posting.[623] Therefore, a completed assessment of corrective measures should have been available online no later than 180 days from assessment initiation, or by August 11, 2019, for Plant Gorgas' Bottom Ash Landfill. However, as of October 1, 2019, the Alabama Power Company website does not have a readily available assessment of corrective measures report or other notice updating the public about the unit's compliance status. Alabama Power Company may have completed an ASD it deems sufficient to exempt the unit from the corrective measure requirement. However, because there is currently no posting requirement for ASDs other than a requirement to include them in annual groundwater reports per § 257.95(g)(3), the public is in the dark about the unit's compliance status. The public posting of Alabama Power Company's next annual groundwater report is not due until March 2020. In the case of Plant Gorgas, the uncertainty started after Alabama Power provided notice that an

[618] 80 Fed. Reg. at 21,339.
[619] 40 C.F.R. § 257.107(h)(6)-(7).
[620] Alabama Power Company, Notice of Groundwater Protection Standard Exceedance, Plant Gorgas Bottom Ash Landfill (Nov. 13, 2018) (attached) https://www.alabamapower.com/content/dam/alabamapower/Our%20Company/How%20We%20Operate/ccr/plant-gorgas/bottom-ash-landfill/groundwater-monitoring-and-corrective-action/Notice%20of%20Groundwater%20Protection%20Standard%20Exceedance%20-%20Gorgas%20Bottom%20Ash%20Landfill.pdf.
[621] Alabama Power Company, Notice of Assessment of Corrective Measures, Plant Gorgas Bottom Ash Landfill (Feb. 12, 2019) (attached), https://www.alabamapower.com/content/dam/alabamapower/Our%20Company/How%20We%20Operate/ccr/plant-gorgas/bottom-ash-landfill/groundwater-monitoring-and-corrective-action/Notice%20of%20Assessment%20of%20Corrective%20Measures%20-%20Plant%20Gorgas%20Bottom%20Ash%20Landfill.pdf.
[622] 40 C.F.R. § 257.96(a).
[623] *Id.* §§ 257.96(d), 257.105(h)(10), 257.107(h)(8).

assessment of corrective measures was initiated, and this uncertainty will continue for more than six months.

Other situations similar to this can happen at other stages in the monitoring and corrective action scheme because of the current ASD posting requirements. For example, for 20 units, owners and operators posted notices of detecting constituents at statistically significant levels above the applicable groundwater protection standards in early 2019, and have not followed up with any additional notices, demonstrations, or assessments since.[624] This silence may be eventually explained by potential ASD claims, but there is no clear way for a member of the public or enforcement agency to know without substantial delay.

It is also crucial that the full ASD and supporting reports be expeditiously posted on the CCR website. For example, in an undated posting, Mississippi Power Company provided notice that on or about July 12, 2019, the company "completed an Alternate Source Demonstration (ASD) that demonstrates that statistically significant levels of a constituent detected during assessment monitoring were caused by a source other than Plant Daniel Ash Pond B" and that "[t]he ASD and accompanying P.E. certification will be included in the next annual groundwater report for Ash Pond B."[625] The notice is helpful to give some indication as to why assessment of corrective action has not been initiated, but it does not provide "information necessary to determine whether enforcement is warranted,"[626] which is critical to meeting the Agency's statutory mandate under RCRA § 4004(a).

The CCR Rule should be amended to prevent this confusion and circumvention of the intent of the rule. In order to track CCR Rule compliance, the public must have access to the full ASD as soon as it is completed, and regulations must require any demonstrations and supporting documents be expeditiously posted online in the same way other documents are made available.

Any document placed in the operating record by owners and operators is of critical importance for the public, state agencies, and/or EPA, and EPA must remedy this transparency oversight. Requiring owners/operators to notify the public of the completion of an ASD by posting it and supporting reports on the CCR website within 30 days would also avoid needless information requests to owner/operators about potential non-compliance. Therefore, EPA should amend § 257.95(g)(3)(ii) to require that the ASD be placed in the operating record upon completion and amend § 257.107(h) to require that the ASD and supporting reports be posted on the CCR website within 30 days of being added to the operating record.

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[624] Earthjustice, Enhancing Public Access to Information, at 17-18; *see also* https://earthjustice.org/features/map-coal-ash-contaminated-sites.

[625] Mississippi Power, Plant Daniel - Ash Pond B, No Further Action on the Assessment of Corrective Measures due to Alternative Source Demonstration (undated) (attached), https://www.mississippipower.com/content/dam/mississippi-power/pdfs/company/plant-daniel-ash-pond-b/groundwater/GULFLIB-191405-v3-Plant_Daniel_ASD_-_Memo_for_Operating_Record.pdf.

[626] 80 Fed. Reg. at 21,339.

F. EPA Should Amend the CCR Rule to Improve the Public's Access to Information On And Distributed At Public Meetings on the Assessment of Corrective Measures Held Pursuant to § 257.96.

Section 257.96(e) of the CCR Rule requires owners/operators to hold a public meeting with interested and affected parties to discuss the results of an assessment of corrective measures for an exceedance of groundwater protection standards. However, § 257.107 does not require owners/operators to post a notification of this public meeting on its CCR website, does not specify the format of the meetings, or require owners/operators to post materials shared at the meeting on the CCR website. Currently the public is not receiving notice of such meetings or is receiving notice with insufficient lead time to meaningfully engage in the process. Some meetings are structured in a way that does not share meaningful information or allow for the public to fully engage. If a meeting is missed, the public has no access to critical information shared at that meeting. Requiring owners/operators to post notifications of public meetings well in advance of a meeting, including requirements for the structure and content of the meetings, and requiring owners/operators to post any materials shared at the meeting would further the intent of § 257.96(e) to promote transparency and public engagement.

1. *EPA should require owners/operators to post notifications on the CCR website of public meetings on the assessment of corrective measures held pursuant to § 257.96 at least 60 days prior to the meeting.*

Section 257.107 does not require owners/operators to post a notification of a public meeting held pursuant to § 257.96(e). Without a notification on the CCR website, the avenue by which the CCR Rule requires owners/operators to share all other information, it is difficult, if not impossible, for interested and affected parties to become aware of the public meeting. This lack of a CCR website posting requirement therefore undermines the very purpose of requiring a public meeting. The impact this has on quelling public participation and transparency is not just theoretical – recent news coverage of a public meeting held pursuant to § 257.96 raised concerns about the inadequate public notice of the meetings.[627] To promote public engagement and fulfill the intent of § 257.96(e), EPA must amend § 257.107 to require owners/operators to post a notification on the CCR website in the same format that all other notifications are posted, in addition to other necessary channels, of any public meetings being held at least 60 days in advance of the meeting.

[627] *See, e.g.*, Advocate-Messenger, Julia Pease, Public meeting failed to address concerns about lake pollution (Sept. 13, 2019), ("We only found out about [the meeting] through a contact with the Lake's Conservation League. Notice was in the Harrodsburg paper, but nothing was sent to The Advocate-Messenger, which has done extensive coverage of issues on the lake, including coal ash."), https://www.amnews.com/2019/09/13/public-meeting-failed-to-address-concerns-about-lake-pollution/.

2. *EPA should specify that all public meetings held pursuant to § 257.96 must include providing the attendees with the corrective measures assessment, a presentation explaining the assessment and its results, and an opportunity for all interested attendees to publicly comment on the assessment.*

Section 257.96(e) of the CCR Rule does not specify how the public meetings with interested and affected parties should be structured or what information should be available at the meeting. This has led to owners/operators not providing meeting attendees with necessary materials, such as copies of the corrective measures assessment, and holding meetings in formats that do not help the public to understand and engage in the decision-making process. Therefore, § 257.96(e) of the CCR rule should be amended to specify that the owner/operator should offer a copy of the corrective measures assessment to all meeting attendees, and should include a presentation explaining the requirements of the CCR rule regarding groundwater, how the assessment of corrective measures was undertaken, and what the results were. The CCR rule should also specify that public meeting should be formatted as open forums in which all attendees are not only able to ask questions and make comments, but also hear all questions and comments posed by other attendees. These requirements would help ensure that the public meetings held pursuant to § 257.96(e) of the CCR rule actually fulfill the intended goal of transparency and public participation.

3. *EPA should require owners/operators to post any materials disseminated at public meetings on the assessment of corrective measures held pursuant to § 257.96 in the operating record and on the CCR website within 30 days of holding the public meeting.*

Section 257.107 also does not require owners/operators to post on the CCR website any of the materials that are distributed to the public or presented to the public at these meetings. Section 257.105(h)(11) requires that owners/operators post a documentation of having a held a public meeting pursuant to § 257.96(e) in the operating record but does not require that any documents shared or presentations given at the public meeting be included in this documentation. Amending the CCR Rule to require owners/operators post any materials shared at the public meeting in the operating record and on their CCR websites would place a minimal burden on the owners/operators, as it would be a matter of simply posting already existing information that has been created with the intent of sharing it publicly. It would also provide valuable information to members of the public who could not attend the meeting. Therefore, EPA should amend § 257.105 to require owners/operators to post any materials made available at the meeting to the operating record, and amend § 257.107 to require owners/operators to post any materials made available at the meeting on the CCR website within 30 days of the meeting so that all members of the public can have access to the information.

G. EPA Must Adopt and Augment the Groundwater Monitoring Data Summary Requirements Discussed in the Proposal to Satisfy the RCRA Protectiveness Standard.

1. *Commenters support the proposed changes to § 257.90(e), but further changes are necessary.*

Commenters fully support the proposed changes to § 257.90(e). Proper oversight and enforcement of the CCR Rule can only happen if owners and operators include the following information in annual groundwater monitoring and corrective action reports:

- A clear summary of the status of groundwater monitoring and corrective action;
- Each statistically significant increase over background levels (for appendix III constituents) or groundwater protection standards (for appendix IV constituents);
- Where applicable, the dates when assessment monitoring was initiated, when an assessment of corrective measures was initiated, when an assessment of corrective measures was completed, and when a remedy was selected.

However, the changes above are insufficient. One problem that Commenters frequently encounter is inappropriate statistical analysis, as the following section illustrates. The public (or state or federal agencies) cannot rely on the statistical conclusions of owners and operators that may be reaching those conclusions using flawed methods. Instead, it is critical that the public and state and federal agencies have access to clear summaries of <u>all</u> of the groundwater monitoring data – not just the data associated with statistically significant increases.

2. *EPA must require that groundwater monitoring data be presented in a standardized format.*

EPA solicits comment on whether the agency should "amend § 257.90 to require that the groundwater monitoring analytical results and related information be presented in a standardized format such as multiple tables and included in the annual report."[628]

EPA must finalize this amendment, for the reasons provided immediately above: Commenters have seen time and time again that owners and operators cannot be trusted to properly analyze groundwater monitoring data. Access to the full data – without having to wade through thousands of pages of laboratory reports – provides the public and state and federal agencies with an opportunity to independently evaluate the data. According to the preamble to the Phase 2 Proposal,

> EPA believes that a required standardized format would increase transparency and enable the general public, as well as federal, state, and local officials, to more easily understand the groundwater monitoring data and thus plan for and evaluate the appropriate next steps to protect public health and the environment.[629]

[628] 84 Fed. Reg. at 40,365-66.
[629] *Id.* at 40,366.

Commenters strongly agree, and this is why EPA's RCRA § 4004(a) mandate requires full transparency.

EPA helpfully provided examples of groundwater summary tables that might serve as templates for standardization.[630] The three examples provided by EPA are generally good, in that they include:

- Monitoring well names
- Sampling dates
- Monitoring results, including measurement units
- For nondetects, the relevant detection limit
- Data qualifiers, including descriptions of what each data qualifier means

However, EPA must require a few additional elements, some of which the agency listed in the preamble to the proposed rule:

- The tables should be machine-readable. Ideally, owners and operators would provide summary data in spreadsheet form. Short of that, owners and operators should provide tables in searchable, machine-readable pdf documents that can be quickly converted to spreadsheet form.[631]
- In either the groundwater data table or in a separate, accompanying table, owners and operators should provide the following additional information:
    - Whether each well is upgradient, downgradient, sidegradient, or something else;[632]
    - The location of each well described by "latitude and longitude in decimal degrees;"[633] and
    - "Groundwater elevation including well depth to groundwater and total depth of groundwater."[634]

H. EPA Must Clarify its Requirements for Monitoring and Statistical Analysis.

In the 2015 CCR Rule, EPA observed that transparency and public access to "information necessary to determine whether enforcement is warranted" is critical to meeting the Agency's statutory mandate.[635] EPA's discussion bears repeating at some length:

> As repeatedly discussed throughout this preamble, under section 4004(a) EPA must be able to demonstrate, based on the record available at the time the rule is promulgated that the final rule provisions will achieve the statutory standard. EPA

[630] *Id*. at 40,366 n.23; Memorandum from Michelle Long to EPA Docket No. EPA-HQ-OLEM-2018-0524, re: Annual Groundwater Monitoring Report Data Examples, Docket ID EPA-HQ-OLEM-2018-0524-0013 (July 1, 2019).
[631] In the Annual Groundwater Monitoring Report Data Examples, Docket ID EPA-HQ-OLEM-2018-0524-0013, example 2 is the only text-searchable example.
[632] 84 Fed. Reg. at 40,365.
[633] *Id*.
[634] *Id*.
[635] 80 Fed. Reg. at 21,339.

> explained in the proposal that a key component of EPA's support for determining that the rule achieves the statutory standard is the existence of a mechanism for states and citizens to monitor the situation, such as when groundwater monitoring shows evidence of potential contamination, so that they can determine when intervention is appropriate. The existence of effective oversight measures provides critical support for the statutory finding, particularly with respect to some of the more flexible alternatives EPA has adopted in certain of the technical standards in response to commenters' requests for greater flexibility. These ''transparency'' requirements serve as a key component by ensuring that the entities primarily responsible for enforcing the requirements have access to the information necessary to determine whether enforcement is warranted.[636]

In other words, if the rule does not effectively compel the availability of necessary information, then EPA has not met its statutory mandate.

The "information necessary to determine whether enforcement is warranted" is not simply raw data. The entities responsible for enforcement cannot determine whether enforcement is warranted unless owners and operators are generating and sharing the right kinds of data, and conducting the appropriate statistical analyses. As described below, there are at least two key ways in which owners and operators are not generating or sharing the right kinds of information. In order to meet its statutory mandate, EPA must require owners and operators to: (a) measure each constituent with a suitable laboratory method; and (b) analyze groundwater data on an interwell basis.

1. *EPA must instruct owners and operators to use laboratory methods sensitive enough to detect constituents at or below their respective groundwater protection standards.*

Groundwater monitoring programs frequently use inadequate laboratory methods. Some of the Commenters highlighted this problem in a 2019 report and described an example of a site that was analyzing lithium with a reporting limit of 0.2 mg/L.[637] Another example is the 2018 groundwater monitoring report for the City Water, Light and Power ("CWLP") ash ponds in Springfield, Illinois. The report consistently identifies antimony, arsenic, cobalt, lead, and thallium results as "<0.025" mg/L.[638] The presumptive groundwater protection standards for all of these constituents are lower than 0.025 mg/L. And in fact, the CWLP report notes that for many of the results that "the reporting limits was [sic] higher than the comparison value."[639] This is wildly inappropriate, and such reports defeat the intent of the rule. Where detection limits (or reporting limits, as the case may be) are greater than comparison values, the analysis fails to demonstrate whether the data are above or below the comparison values.

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[636] *Id.* (emphasis added).
[637] Coal's Poisonous Legacy.
[638] Andrews Engineering, Annual Groundwater Monitoring and Corrective Action Report, Year Ending December 31, 2018 at Table 1 (Jan. 2019) (attached).
[639] *Id*. at table 1 & n.1.

Groundwater monitoring data are only useful if the laboratory methods are sensitive enough to detect levels of each constituent at or below their respective groundwater protection standard. The CCR Rule requires "monitoring results that provide an accurate representation of groundwater quality,"[640] and also requires "sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents and other monitoring parameters in groundwater samples."[641] The CCR Rule also requires comparisons of groundwater monitoring data to groundwater protection standards.[642] These requirements collectively mean that owners and operators have to use sufficiently sensitive laboratory methods. In other words, EPA has already created the requirement, but it must clarify the requirement to ensure compliance.

EPA must clarify that all groundwater monitoring programs shall use laboratory methods sensitive enough to detect each constituent at levels at or below its groundwater protection standard.

2. *EPA must instruct owners and operators to analyze groundwater data on an inter-well basis.*

In March 2019, the Environmental Integrity Project and Earthjustice notified EPA that many owners and operators were improperly analyzing groundwater data on an intra-well basis.[643] In summary, intra-well analyses are improper because they say nothing about spatial differences in groundwater quality and cannot detect spatial evidence of groundwater contamination. The CCR Rule requires spatial comparisons between unaffected background wells and potentially impacted wells downgradient of ash disposal areas. Since the CCR Rule requires spatial comparisons, it requires inter-well comparisons. The following paragraphs explain this problem in more detail, as does the attached EIP Letter.

The CCR Rule requires groundwater monitoring near certain CCR units and prescribes methods for collecting and analyzing groundwater quality data.[644] Among other things, the rule requires each owner or operator to sample groundwater from "background" wells, which "represent the quality of background groundwater that has not been affected by leakage from a CCR unit,"[645] and to compare groundwater from downgradient wells to these background wells.[646] This "inter-well" analysis between or among wells is designed to detect spatial differences in contamination.

This can be contrasted with an "intra-well" analysis, which compares each well to itself over time. An intra-well analysis can detect temporal trends – concentrations that increase or decrease over time in a well – but says nothing about spatial patterns between and among wells.

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[640] 40 C.F.R. § 257.93(a).
[641] *Id.* § 257.93(b).
[642] *Id.* § 257.95.
[643] Letter from Abel Russ, Environmental Integrity Project, to EPA, re: Inappropriate use of intra-well statistical analysis in groundwater monitoring pursuant to the CCR rule (Mar. 13, 2019) ("EIP Letter") (attached).
[644] 40 C.F.R. §§ 257.90-.98.
[645] *Id.* at § 257.91(a)(1).
[646] *Id*. at §§ 257.94-.95.

Intra-well analyses alone are plainly inconsistent with the CCR Rule, for the simple reason that they do not compare downgradient groundwater to "background" wells.

To take a hypothetical example, consider an existing CCR unit with one upgradient well and three downgradient wells. The mean boron concentration in the upgradient well is 0.5 mg/L. One of the downgradient wells has a mean boron concentration of 5.0 mg/L. A boron concentration that high would suggest that the groundwater has "been affected by leakage from a CCR unit,"[647] and so the CCR Rule prohibits the use of that well to characterize background for purposes of analysis. Yet an intra-well analysis would do just that, by comparing groundwater from that well to itself over time. So intra-well analyses violate the plain language of the CCR Rule.

Moreover, intra-well analyses conducted in isolation undermine the purpose of the rule. To continue with the above example, if the boron concentration in a downgradient well remained at or close to 5.0 mg/L over time, that would indicate chronic, constant leakage from the CCR unit, a situation that the CCR Rule is intended to remedy.[648] Yet an intra-well analysis – which only flags significant changes over time – would never find a "statistically significant increase" in detection monitoring and would never trigger assessment monitoring, if the boron concentration never deviated significantly from 5.0 mg/L.

When owners and operators fail to conduct the required inter-well statistical analysis, they fail to generate the "information necessary to determine whether enforcement is warranted."[649] The letter provides a specific detailed example of a site where an inter-well analysis would have shown statistically significant evidence of contamination, but instead the owner used an intra-well analysis and found no evidence of contamination.[650]

Another useful example is the Lower Colorado River Authority's ("LCRA") Fayette Power Project in La Grange, Texas. The 2018 groundwater monitoring report for the Fayette plant is attached to these comments. LCRA began its groundwater monitoring program using, appropriately, inter-well comparisons.[651] When the inter-well comparisons produced several statistically significant increases ("SSIs"),[652] LCRA switched to intra-well comparisons, and the SSIs vanished.[653]

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[647] *Id.* § 257.91(a)(1).
[648] *See, e.g.*, 80 Fed. Reg. at 21,339 ("The objective of a groundwater monitoring system is to intercept groundwater to determine whether the groundwater has been contaminated by the CCR unit. Early contaminant detection is important to allow sufficient time for corrective measures to be developed and implemented before sensitive receptors are significantly affected.").
[649] 80 Fed. Reg. at 21,339.
[650] EIP Letter at 2-4.
[651] Lower Colorado River Authority, Coal Combustion Residual Landfill Annual Groundwater Monitoring Report, Calendar Year 2018, at 2-3 (Jan. 31, 2019) (attached).
[652] *Id*.; *see also id*., Appendix B, Statistical Analysis of Initial Detection Monitoring Appendix III Constituent Data, AMEC Foster Wheeler Environmental and Infrastructure, Inc., at 6-7 (Jan. 14, 2018) (describing "initial exceedances" for boron, chloride, pH, and TDS, and "SSIs" for calcium and sulfate).
[653] *Id*., Appendix F, Statistical Analysis Updates of Detection Monitoring Appendix III Constituent Data, AMEC Foster Wheeler Environmental and Infrastructure, Inc. (Apr. 13, 2018). LCRA compounds the problem by adopting a process of recalculating intra-well prediction limits each time new data are added to the database. *Id*., Appendix F

In these cases, and many cases like it, enforcement is thwarted by a lack of required information. This is a widespread problem. The EIP Letter provided a partial list of 55 coal ash disposal areas using inappropriate intra-well analyses. The true number of disposal areas using intra-well analyses is likely much larger, and includes sites that, like the Fayette plant described above, have switched from inter-well to intra-well analyses.

As EPA notes, the agency only meets its statutory mandate if "entities primarily responsible for enforcing the requirements have access to the information necessary to determine whether enforcement is warranted," and this information includes "evidence of potential contamination."[654] By using inappropriate intra-well comparisons, owners and operators are frustrating the language and the intent of the CCR Rule and undermining EPA's ability to carry out its mandate. EPA must clarify that the CCR Rule requires inter-well comparisons.

VI. ALL UNENCAPSULATED PLACEMENT OF CCR ON THE LAND MUST BE REGULATED AT LEAST AS STRINGENTLY AS CCR LANDFILLS AND MUST BE EXCLUDED FROM THE DEFINITION OF "BENEFICIAL USE OF CCR."

Given the risks posed by unencapsulated placement of CCR on the land, EPA should not have included any unencapsulated placement in the definition of "beneficial use of CCR."[655] Indeed, EPA's failure to regulate all unencapsulated CCR applications as disposal sites subject to the full requirements that apply to CCR landfills was arbitrary, capricious, contrary to the weight of the evidence, and in violation of the protectiveness standard of RCRA § 4004(a). The overwhelming risks posed by unencapsulated placement of CCR on the land, as evidenced by damage at CCR fill sites, minefills, and damage at CCR disposal sites, makes clear that no CCR should be placed on the land – either as fill or as "reuse" – without having to meet all of the landfill requirements of the 2015 CCR Rule and complete an environmental demonstration for that use.

EPA has never determined that placement in any unencapsulated use is safe. To the contrary, EPA has affirmatively concluded that two encapsulated uses of CCR, namely fly ash as a replacement for Portland cement in concrete and FGD gypsum as a replacement for mined gypsum in wallboard are both "appropriate beneficial uses" that EPA "continues to support."[656] In stark contrast, EPA, while releasing a methodology for evaluating beneficial uses at unencapsulated fill sites, has not performed the evaluation on any unencapsulated use site and EPA admits publicly that it has run its model or ever made a determination that any unencapsulated use is safe.[657] Notwithstanding this admission, EPA's Phase 2 Proposal would

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at 4. This will very likely have the result of obscuring any increases in contamination: If data increase gradually, such that each monitoring result is incrementally higher than average but not above the prediction limit, the prediction limit will drift upward over time, and the increasing trend will never be statistically identified.

[654] 80 Fed. Reg. at 21,339.

[655] This includes all unencapsulated fills, including fills in roadway applications, which should be required to use controls including, at a minimum separation from groundwater and paving.

[656] *See, e.g.*, EPA, "Frequent Questions about the Beneficial Use of Coal Ash," https://www.epa.gov/coalash/frequent-questions-about-beneficial-use-coal-ash (last accessed Nov. 15, 2019).

[657] *Id.* (noting that EPA is first now evaluating agricultural uses but "[o]nce this evaluation is completed, EPA has no further plans to evaluate additional beneficial uses of secondary materials.").

allow CCR to be placed in unencapsulated uses by any user who claims to have met EPA's definition of beneficial use, without any environmental controls such as liners, groundwater monitoring, leachate collection, dust monitoring, etc., except that unencapsulated placement on the land in non-roadway applications might have to perform an environmental demonstration if they specifically planned to place the ash in an unsafe location mentioned in the rule. This flies in the face of reason. All unencapsulated uses should be prohibited from inclusion in the definition of "beneficial use of CCR" given that the risks are high, damage has been proven, and not even EPA has been able to make a showing that unencapsulated uses are safe.

A. CCRs Used in Agricultural Applications Should Be Regulated as Disposal.

Agricultural application of CCR is an unencapsulated use of CCR that can leach toxic pollutants into soils and crops and must be excluded from the definition of "beneficial use of CCR." Agricultural applications of CCR, including for nutrient addition and soil modification or stabilization, place the toxic constituents commonly found in CCRs in direct contact with soil, potentially allowing these constituents to be taken up by crops, leach into groundwater, expose farmworkers to dangerous toxins, be released into the air as toxic fugitive dust, or travel as runoff into nearby surface waters, posing danger to human health and the environment.

EPA does currently state that is it now evaluating "in collaboration with the U.S. Department of Agriculture, . . . the use of flue gas desulfurization gypsum as an agricultural amendment." EPA's failure to prohibit the unencapsulated use of CCR in agricultural applications, such as on crops *prior* to verifying safety fails to meet the protectiveness standard of RCRA § 4004(a).

Despite a dearth of EPA studies, the risks of CCR placement in agricultural uses, and specifically that pollutants leach from CCR used to amend soils into soils and are taken up by crops grown in that soil, are documented. For example, researchers studying the effects of growing crops with coal ash constituting 5 to 20% of soil weight showed that the more CCR was applied, the more arsenic and titanium were absorbed by crops, with basil and zucchini exceeding toxic levels at above 6 parts per million.[658]

EPA has acknowledged for decades that CCR placed in agricultural uses is "considered the most likely [use] to raise concerns from a human health and environmental point of view."[659] EPA was particularly concerned that the use of "excess quantities" of FGD gypsum in agricultural applications should not be deemed to meet the definition of "beneficial use" and should be regulated like a landfill.[660] EPA also fails to acknowledge the changing nature of CCR, as more coal plants employ Dry Sorbent Injection (DSI) technology, their waste products are increasing in toxicity, resulting in leachate containing more arsenic and selenium.[661]

If, however, unencapsulated uses of CCRs are not subject to the notification and reporting, groundwater monitoring, and other requirements of the CCR rule, and are not – even

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[658] Matthew Cimitile, "Is Coal Ash in Soil a Good Idea?" *Scientific American* (Feb. 6, 2009), *available at* http://www.scientificamerican.com/article.cfm?id=coal-ash-in-soil.

[659] EPA, Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities; Proposed Rule, 75 Fed. Reg. 35,128, 35,154 (proposed June 21, 2010) (to be codified at 40 CFR Parts 257, 261, 264 et al.) (hereinafter 2010 Proposed Rule).

[660] *Id*.

[661] *See* Sahu Expert Report at 4-6.

under the Phase 2 Proposal – required to undertake an environmental demonstration in most locations, it is difficult for the user or the public to know what an excess quantity would be, what the risks would be, and what quantities would be or have been placed. Even with EPA's current definition of "beneficial use of CCR," the third prong of which requires that CCR not be used in "excess quantities," such a standard is practically impossible to enforce as the user would not be reporting or required to keep records regarding quantities, even if there were a numeric standard keyed to the meaning of "excess quantities," which there is not. The user would be its own gatekeeper with regard to safety in many instances.

EPA must prohibit agricultural applications of CCR from the definition of beneficial use of CCR and must regulate all unencapsulated uses as disposal.

VII. CCR PLACED IN IMPOUNDMENTS TO "CLOSE" CCR SURFACE IMPOUNDMENTS IS DISPOSAL AND MUST BE REGULATED AS DISPOSAL.

The use of coal ash for closing CCR units is significant and increasing rapidly. In 2016, slightly less than 450,000 short tons of coal ash was used for CCR Pond Closure Activities.[662] In the span of only a year, use of coal ash for CCR Pond Closure Activities increased more than ten-fold, to approximately 4.5 million short tons.[663] In 2017, the use of coal ash for CCR Pond Closure Activities was the fifth-largest category of use reported by the American Coal Ash Association.[664] This "use" should be seen for what it is – disposal on the cheap, in units that would not otherwise be eligible for disposal.

Despite the enormous quantities of coal ash being used in pond closure, EPA completely ignored the impacts of its proposal on this entire category. In evaluating the impacts of revising the 12,400-ton threshold for when unencapsulated beneficial use requires an environmental demonstration, EPA declined to consider the unencapsulated use of coal ash in closing CCR units such as coal ash surface impoundments. Specifically, on page 2-13 of the Economic Analysis, EPA includes a table of categories of beneficial use, and states whether that category of use will be affected by the proposed changes to the 12,400 ton-threshold. In the column labeled "Does criterion 4 revision apply?", EPA states for "CCR Pond Closure Activities": "No—placement is not 'on the land.'"[665]

EPA's position is unlawful in two ways. First, EPA's position that the placement of coal ash in an impoundment that is closing constitutes beneficial use, rather than disposal, is contrary to the 2015 CCR Rule and inconsistent with EPA's prior interpretation of the Rule. Second, even if the use of coal ash in the closure of a CCR impoundment were considered beneficial use—which it is not—such use would be subject to criterion four, because the placement of coal ash in CCR units is disposal on the land.

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[662] American Coal Ash Association, 2016 Coal Combustion Product (CCP) production & Use Survey Report, Attached.
[663] American Coal Ash Association, 2017 Coal Combustion Product (CCP) production & Use Survey Report, Attached.
[664] *Id*.
[665] Economic Analysis at 2-13.

A. Placement of Coal Ash in a CCR Surface Impoundment, for the Purpose of Closing the Impoundment, Qualifies as "Disposal" under the 2015 CCR Rule.

EPA's new interpretation, that the use of coal ash for closing CCR impoundments is beneficial use, is contrary to the plain meaning of the 2015 CCR Rule. Under the 2015 CCR, "disposal" is defined to include the "deposit" or "placing" of a material "on any land or water so that such solid waste, or constituents thereof, may enter the environment."[666] Under this definition, a utility's act of putting coal ash on the site of a formerly active CCR impoundment qualifies as disposal because it is the deposit or placing of coal ash such that it may enter the environment. "Disposal" is defined to exclude "beneficial use," which means the use of CCR that meets four criteria, including that the CCR "must provide a functional benefit" and "must substitute for the use of a virgin material."[667] CCR must also not be used in "excess quantities."[668] Lastly, when unencapsulated CCR is placed of 12,400 tons or more, environmental releases to groundwater, surface water, soil and air must be comparable to or lower than those from analogous non-CCR products or environmental releases must be at or below relevant regulatory and health-based benchmarks.[669].

The placement of coal ash in a surface impoundment, for the purpose of closing the impoundment, does not qualify as beneficial use. First, placement of CCR in surface impoundments is likely to be in "excess quantities" and to result in environmental releases that both exceed releases from non-toxic materials and that exceed regulatory and health-based benchmarks. Thus, it simply does not meet the "beneficial use" standards.

Rather, the practice of adding coal ash to an inactive ash pond during closure is better described as an "overfill." The 2015 CCR Rule defines "overfills" as landfills built on top of existing impoundments (or landfills),[670] and expressly treats overfills as new landfills. The rule also requires complete closure of the underlying unit before overfilling.[671] 80 Fed. Reg. 21,373 – part of the preamble of the final rule – explains what EPA had in mind:

> In essence, EPA is retaining the approach from the proposal that overfills will need to comply with both the requirements applicable to the closure of surface impoundments or landfills, and with all of the technical requirements applicable to new landfills. Thus, overfills cannot be constructed unless the underlying foundation—i.e., the existing CCR surface impoundment has first been dewatered, capped, and completely closed. And because overfills are considered to be ''new CCR landfills,'' the design and construction of such units must comply with the technical requirements that address foundation settlement, overall and side slope

[666] 40 C.F.R § 257.53.
[667] *Id.*
[668] *Id.*
[669] *Id.*
[670] "*Overfill* means a new CCR landfill constructed over a closed CCR surface impoundment." 40 CFR § 257.53 [definitions].
[671] "Prior to construction of an overfill the underlying surface impoundment must meet the requirements of § 257.102(d)." 40 CFR § 157.70(2) [design criteria for new landfills].

> stability, side slope and subgrade reinforcement, and leachate collection and groundwater monitoring system requirements, which will all need to be evaluated independent of the underlying CCR unit to ensure that the overfill design is environmentally protective.[672]

Critically, EPA has for decades taken the position that coal ash used in closure of impoundments is not "beneficial use." EPA explained in the preamble to the 2015 CCR Rule that it:

> recognize[d] that several proven damage cases involving the large-scale placement, akin to disposal, of CCR have occurred under the guise of ''beneficial use''— the ''beneficial'' use being the filling up of old quarries or gravel pits, ***or the re-grading of landscape with large quantities of CCR***. EPA did not consider this type of use as a ''beneficial'' use in its May 2000 Regulatory Determination, and still does not consider this type of use to be covered by the exclusion.[673]

EPA reaffirmed the position that coal ash used for closure of CCR impoundments is disposal, rather than, beneficial use, as recently as 2016. In a 2016 letter to a utility, EPA confronted a situation in which a utility was placing additional coal ash in a landfill, ostensibly to use the coal ash as fill material to close the landfill. The utility took the position that this use qualified as beneficial use under the 2015 CCR Rule. Both EPA and the relevant state agency disagreed and classified such use of coal ash as disposal, not beneficial use. EPA noted its agreement with the State of Minnesota's determination that "the use of CCR to facilitate closure" of a CCR landfill was "'ongoing utilization of the Taconite Harbor Energy Center landfill for disposal of a permitted industrial solid waste."[674]

Regardless of whether it should be considered an "overfill," or simply disposal, EPA's position has clearly been that the use of coal ash in pond closure is not a beneficial use. EPA's new interpretation is directly contrary to that longstanding interpretation. An agency can change its interpretation of a statute or regulation only if it displays awareness that it is changing its position and provides a rational explanation for the new position.[675] EPA's change in position fails both prongs of this test. First, EPA does not acknowledge its prior interpretation and its change of position. Second, EPA provides no rationale for interpreting the 2015 CCR Rule's definition of "beneficial use" to encompass the use of coal ash to close a CCR unit.

B. Placement of Coal Ash in a CCR Surface Impoundment, for the Purpose of Closing the Impoundment, is Placement on the Land."

Even if the placement of coal ash as fill material in a coal ash surface impoundment, for the purpose of closing the impoundment, were considered beneficial use (which it is not), such

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[672] 80 Fed. Reg. at 21,373.
[673] 80 Fed. Reg. at 21,330 (emphasis added)
[674] Letter from Barnes Johnson, Director, Office of Resource Conservation and Recovery to Mr. Kurt Anderson, Director, Environmental and Land Management, ALLETE Minnesota Power at 2 (Dec. 22, 2016), Attached.
[675] *See Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2125-26 (2016) ("[T]he agency must at least 'display awareness that it is changing position' and 'show that there are good reasons for the new policy.'" (quoting *FCC v. Fox Television Stations*, 556 U.S. 502, 515 (2009))).

use is "placement on the land" and requires an environmental demonstration for quantities exceeding 12,400 tons.[676] Yet EPA takes the contrary position in the Economic Analysis, stating that such use is not "placement on the land," and therefore the proposed revisions to the 12,400 ton threshold would not affect any uses of coal ash for Pond Closure Activities.[677] EPA's position is inconsistent with the plain language of the 2015 CCR Rule, and EPA's failure to consider the impacts of the proposal on Pond Closure Activities is arbitrary and capricious.

The 2015 CCR Rule does not contain a definition for "placement on the land." In the absence of a definition, we look to the plain meaning of the phrase "placement on the land." The first part of the phrase requires "placement." When a utility puts coal ash in the site of a surface impoundment that has been dewatered, this action is "placement" of coal ash at a location. The second part of the phrase is "on the land." In general, unlined surface impoundments are constructed by excavating soil, and sometimes by also compacting soil or clay at the bottom of the impoundment. After an impoundment has been dewatered, it consists of coal ash and other materials, including any clay or soil liners that may have been constructed when the surface impoundment was built. Given that unlined surface impoundments are generally nothing more than excavated pits in the ground, placement of coal ash in a dewatered impoundment qualifies as placement on the land.

Utilities such as Duke Energy and the Tennessee Valley Authority ("TVA") have made environmental demonstrations under 40 C.F.R. § 257.53 for the use of coal ash as structural fill for closing CCR surface impoundments. These demonstrations specifically describe the use of coal ash for "structural fill."[678] In the preamble to the 2015 CCR Rule, EPA noted that structural fill was the category of beneficial use for which environmental demonstrations under 40 C.F.R. § 257.53 would likely be required most frequently.[679] EPA has failed to provide any rational explanation for deviating from its prior conclusion that the beneficial use of coal ash as structural fill, in quantities greater than 12,400 tons, would require an environmental demonstration under 40 C.F.R. § 257.53.

In addition, EPA's classification of coal ash when used for Pond Closure Activities as not representing "placement on the land" is inconsistent with EPA's treatment of other categories of beneficial use that it considers to represent placement on the land. In the Economic Analysis, EPA lists seven categories of beneficial use that are potentially affected by the revision of the 12,400 ton threshold: flowable fill; structural fill; soil modification/stabilization; mineral filler in asphalt; agriculture; aggregate; and oil and gas field services.[680] It is unclear how these categories of use can represent "placement on the land," while using coal ash to close a surface impoundment does not represent "placement on the land." For example, EPA states that both the structural fill and mineral filler in asphalt categories involve highway construction.[681] Presumably, the coal ash used in these highway construction is sometimes placed on, or mixed

[676] *See* 40 C.F.R. § 257.53.
[677] Economic Analysis at 2-13.
[678] *See* Letter from Cardno ATC to Scott R. Alexander, attorney for Duke Energy at 1 (Oct 16, 2015), Attached; AECOM, Combustion Product Disposal Program, TVA Paradise Fossil Plant, CCR Beneficial Use Demonstration Report—Fly Ash at p. 1-2 (Apr. 22, 2019), Attached.
[679] 74 Fed. Reg. at 21,353.
[680] Economic Analysis at 2-16 (Exhibit 2-5).
[681] *Id.*

with, materials other than uncompacted dirt; for example, the coal ash presumably is sometimes placed on compacted clay or soil, or placed on top of old asphalt, crushed stone or other road base material. For purposes of determining what is "placement on the land," it is unclear how this is any different than placing coal ash on top of a compacted clay or soil liner in a surface impoundment, or on top of preexisting coal ash. Thus, EPA's classification of the use of coal ash for Pond Closure Activities as not representing "placement on the land" is arbitrary and inconsistent with its classification of other categories of use of coal ash.

Moreover, EPA's determination that the use of coal ash for Pond Closure Activities does not constitute "placement on the land" is inconsistent with the determinations for at least five separate coal ash units made by two utilities. Both Duke Energy and TVA have concluded that use of coal ash for closing a CCR impoundment required an environmental demonstration under 40 C.F.R. § 257.53 because it was beneficial use that involved placement on the land. The record contains no acknowledgment that utilities have interpreted the 2015 CCR Rule in this manner, nor does the record explain why such an interpretation is incorrect.

To be clear, we are emphatically *not* suggesting that a private company's interpretation of a federal regulation is controlling. However, "reasonable regulation ordinarily requires paying attention to the advantages and the disadvantages of agency decisions."[682] Here, utilities have been interpreting the 2015 CCR Rule to require an environmental demonstration under 40 C.F.R. § 257.53 for the use of more than 12,400 tons of coal ash in Pond Closure Activities. Yet EPA states that the proposed rule would not impact Pond Closure Activities,[683] despite the evidence that utilities have in fact been making such demonstrations for the use of coal ash in Pond Closure Activities. At a minimum, EPA is obligated to acknowledge this real-world evidence and explain why the existing 2015 CCR Rule does not require the environmental demonstrations that utilities have been producing for the use of coal ash in Pond Closure Activities.

Furthermore, as explained above, there is no plausible interpretation of the 2015 CCR Rule that would conclude that the use of coal ash for Pond Closure Activities is not "placement on the land." As a result of EPA's unlawful interpretation of the 2015 CCR Rule, EPA has ignored a relevant aspect of the problem, namely, how its proposed revisions would affect the requirement to make an environmental demonstration under 40 C.F.R. § 257.53 before using coal ash for Pond Closure Activities. EPA's failure to consider the impact of the proposal on this category of coal ash use renders the rule arbitrary and capricious.

[682] *Michigan v. EPA*, 135 S. Ct. 2699, 2707 (2015).
[683] Economic Analysis at 2-13.

VIII. THE EPA'S FAILURE TO ASSESS THE DISPROPORTIONATE IMPACT OF THE PROPOSED REVISION OF REQUIREMENTS APPLICABLE TO CCR PILES AND FILL SITES IN PUERTO RICO ON THE BASIS OF NATIONAL ORIGIN AND INCOME VIOLATES THE ENVIRONMENT JUSTICE EXECUTIVE ORDER 12,898.

Under Executive Order 12,898 (the "EJ Executive Order"), "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands."[684] This obligation was recently affirmed in *Standing Rock Sioux Tribe, et al., v. U.S. Army Corps of Engineers*, 255 F. Supp. 3d 101, 141 (D.D.C. 2017) (cursory environmental justice analysis insufficient to discharge environmental justice responsibilities under NEPA), and has been applied by the U.S. Environmental Appeals Board.[685] Specifically, "[t]he purpose of an environmental justice analysis is to determine whether a project will have a disproportionately adverse effect on minority and low income populations."[686]

In this case, EPA's treatment of its obligation under the EJ Executive Order was cursory and wholly deficient. Despite the clear acknowledgement that the Phase 2 Proposal was developed in response to petitions from AES Puerto Rico LP[687] and USWAG,[688] and with knowledge that this revision would particularly affect the Guayama, Salinas, and Arroyo communities in Puerto Rico, EPA provided only a conclusory dismissal of any impact without identifying the affected communities, or analyzing whether potential impacts fell disproportionately on the basis of race, national origin, or income.[689]

EPA guidance states, "[i]n determining whether potential [environmental justice] concerns may be at issue in regulatory actions, some level of analysis is needed, be it qualitative, quantitative, or some combination of both."[690] EPA's failure to take even minimal steps to

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[684] Executive Order 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Fed. Reg. 7629 (Feb. 16, 1994).
[685] *See, e.g., In re Shell Gulf of Mexico, Inc., Shell Offshore, Inc.*, OCS Appeal Nos. 10-01 through 10-04, 15 E.A.D., 2010 EPA App. (EAB 2010) (EPA agency order) (finding insufficient assessment of disproportionate impact).
[686] *Allen v. Nat'l Institutes of Health*, 974 F.Supp.2d 18, 47 (D. Mass. 2013) (quoting *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 541 (8th Cir. 2003)).
[687] AES Puerto Rico LP's Petition for Rulemaking to Reconsider Provisions of the Coal Combustion Residuals Rule, 80 Fed. Reg. 21,302 (Apr. 17, 2015), and Request to Hold in Abeyance Challenge to the Coal Combustion Residuals Rule, No. 15-1219, et al. (D.C. Cir.), Docket ID No. EPA-HQ-OLEM-2017-0286-2228 (May 31, 2017); *see also* Docket ID No. EPA-HQ-OLEM-2017-0286-0002.
[688] Utility Solid Waste Activities Group Petition for Rulemaking to Reconsider Provisions of the Coal Combustion Residuals Rule, 80 Fed. Reg. 21,302 (April 17, 2015), and Request to Hold in Abeyance Challenge to Coal Combustion Residual Rule, No. 15-1219, et al. (D.C. Cir.) (May 12, 2017); *see also* Docket ID No. EPA-HQ-OLEM-2017-0286-0002.
[689] 84 Fed. Reg. at 40,361.
[690] EPA, Guidance on Considering Environmental Justice During Development of a Regulatory Action, 15 (May 2015).

identify environmental justice concerns and assess disproportionate impacts here – all the more glaring where the rule will affect a Spanish-speaking population in Puerto Rico – is a departure from policy and practice.[691] Indeed, EPA's cursory treatment of the environmental justice impacts of the proposed rule stands in contrast to its analysis of its proposed rule for the disposal of coal combustion residuals under the EJ Executive Order in 2010.[692]

Contrary to the requirements of the EJ Executive Order and EPA's own policy, EPA fails to identify the affected community, determine whether there are disproportionate impacts of the proposed rule on minority and low-income populations, and to consider how to address any disparate impacts identified despite the fact that the Proposed Rule, and particularly Section IV, the Proposal to Revise the Beneficial Use Criteria and Section V, the Proposal to Revise Requirements Applicable to Piles, will have a significant impact on the predominantly Spanish-speaking and low-income communities of Guayama, Salinas, and Arroyo, Puerto Rico.

According to EPA guidance, regulatory actions may involve a potential EJ concern if they could create new disproportionate impacts or exacerbate existing disproportionate impacts on minority populations, low-income populations, and/or indigenous peoples.[693] The potential impact of the proposed rule and, particularly its impact on coal ash waste piles and beneficial use of coal ash as fill, is clear,[694] and new evidence supports concerns raised during earlier stages of rulemaking.

Moreover, these adverse impacts will, in fact, fall disproportionately on the predominantly Spanish-speaking, low-income communities of Guayama, Salinas, and Arroyo, Puerto Rico. First, one of the largest coal ash waste piles in the U.S. is located in Guayama.[695] The numbers are stark: 98.9% of the population of Guayama is Hispanic or Latino, compared to the national average of 18.3%.[696] The median household income in Guayama from 2013-2017 was $15,296, compared to the national average of $57,652.[697] Moreover, the percent of persons

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[691] *See, e.g.*, EPA, "Cover Memo for Guidance on Considering Environmental Justice in a Regulatory Action," 4-6 (May 29, 2015) (examples of environmental justice considerations in the development of major EPA rules, including the Definition of Solid Waste, Mercury and Air Toxics Standard, the National Ambient Air Quality Standard for Particulate Matter, the Petroleum Refinery Residual Risk & Technology Review, Revisions to Agricultural Worker Protection Standards, Implementation of Lead Renovation Repair and Painting Program, and Unregulated Contaminant Monitoring Regulation (UCMR 3) for Public Water Systems Final Rule).

[692] *See* 80 Fed. Reg. at 21,467 (including comparison of demographic compositions of populations within one mile of landfills with composition of population as a whole). *But see* Earthjustice, *et al.*, Comments, EPA-HQ-RCRA-2009-0640 (Nov. 19, 2010) (critique of sufficiency of EJ analyses in development of coal combustion residuals rule), *available at* https://earthjustice.org/sites/default/files/files/us_epa_proposal_disposal_coal_comb_residue_pdf_58002.pdf.

[693] EPA, Guidance on Considering Environmental Justice During Development of a Regulatory Action, at 10.

[694] *See* Hutson Expert Report (attached); Earthjustice et al, Comments on the Proposed "Standards for the beneficial use of coal combustion waste" (Jan. 15, 2019) (attached).

[695] U.S. Census, Guayama Municipio, Puerto Rico, *available at* https://www.census.gov/quickfacts/fact/table/guayamamunicipiopuertorico/PST045218 (last visited Oct. 11, 2019) (data for Guayama municipality, including Jobos).

[696] *Id.*

[697] *Id.* A number of different criteria or factors can be considered in determining whether a community is low-income. EPA, Guidance on Considering Environmental Justice During Development of a Regulatory Action, at 6.

in poverty is 55.1%, compared to the national average of 11.8%.[698] This is consistent with the national pattern: it is not unusual for coal ash disposal sites to be placed in low-income communities and communities of color. *See* section X. Although EPA has not released a list of locations of waste piles and has failed to identify the communities in close proximity to waste piles implicated by the proposed revision to the rule, data on the population near known waste piles confirms that most of the piles (six of the known eight sites, per table 4) are in low-income communities.

Table 4. Known CCR Waste Piles & Environmental Justice Data[699]

Name of Site with Waste Pile (Existing or Historic)	Operator	State	% Low-Income Population Estimate within 3 miles
Healy Power Plant	GVEA	AK	*27%
Lewis & Clark Station	Montana-Dakota Utilities Co.	MT	29%
AES Puerto Rico	AES Puerto Rico	PR	*79%
H.W. Pirkey Power Plant	American Electric Power	TX	35%
Big Stone Plant	Otter Tail Power Company	SD	*33%
Prairie Creek Generating Station	Interstate Power and Light Company	IA	*38%
Powerton Generating Station	NRG	IL	*34%
Paradise Fossil Plant	Tennessee Valley Authority	KY	*41%

* Estimates with an asterisk are above the state average for each respective state.[700]

Second, coal ash fill sites in Puerto Rico are also concentrated in communities that are among the island's most low-income communities. EPA has not released a list of locations of coal ash fill sites and has failed to identify the communities in close proximity to coal ash fill implicated by the proposed revision to the rule. However, data on the populations near known fill sites in Puerto Rico confirm that fill sites disproportionately impact low-income communities. Of the 53 fill sites identified and documented in Puerto Rico to date, at least 43 sites, or 88 percent, are in the municipalities of Guayama, Salinas, and Arroyo, as summarized in Table 5.[701]

[698] U.S. Census, QuickFacts: Guayama Municipio, Puerto Rico, *available at* https://www.census.gov/quickfacts/fact/table/guayamamunicipiopuertorico/PST045218 (last visited Oct. 11, 2019) (data for Guayama municipality, including Jobos).
[699] *See also* CCR Waste Piles & Environmental Justice Data (Oct. 2019) (attached).
[700] *See* https://ejscreen.epa.gov/mapper/ (2019) (based on estimates of percentage of population below 200% of the poverty level).
[701] Notice of Intent to Sue AES Corporation (and local affiliates) for Violations of the Resource Conservation and Recovery Act Involving Uncontrolled Disposal of Coal Ash Waste Generated at the AES Coal-fired Power Plant in Guayama, Puerto Rico, at 6 & Appendix A (Sept. 26, 2012) (attached) ("Appendix A to this letter provides the approximate co-ordinates of known location of 36 places where the Waste that has been disposed to date. Appendix A also includes photographs of some of these sites. Appendix B provides maps showing those locations."); V. Alvarado Guzman, Report on Coal Ash Sampling (Mar. 2, 2019) (attached) ("Of 36 previously identified sites, the amount increased to 49. Of these, 18 showed exposed ashes."); Altol Chemical Environmental Laboratory, Inc., Muestras Cenizas de Carbon, Custody Numbers 102551, 102521, and 100959 (Oct. 9, 2019) (attached) (defined as sites 51, 52, and 53 in these Comments).

Table 5. Count of Coal Ash Fill Sites Identified in each Municipality[702]

Municipality	Site ID Numbers in Municipality	Total # of CCR Fill Sites Identified in Municipality
Arroyo	Sites 33-35, 49	4
Caguas	Sites 51-53	3
Guayama	Sites 1-3, 7-8, 23-32	15
Salinas	Sites 4-6, 9-22, 37-40, 42-45, 47-48, 50	28
Santa Isabel	Sites 36, 46	2
Unknown	Site 41	1

The municipalities facing the adverse impacts of coal ash fill sites are predominantly low-income, Spanish-speaking municipalities. As outlined in Table 6, all 52 sites with known locations are in municipalities with median household incomes approximately 2 to 4 times below the national average, and percent persons in poverty approximately 3 to 5 above the national average.[703] In addition, 49 of the 52 sites with known locations, or 94 percent of sites, are in a municipality with more people living in poverty than the Puerto Rico average and a lower median household income than the Puerto Rico average.

Table 6. Comparison of Municipality, Puerto Rico, and National Demographics

Municipality	Median Household Income ($)	Per capita income in past 12 months ($)	Percent Persons in Poverty
Arroyo	$15,689	$7,639	56.7%
Caguas	$24,229	$13,904	37.7%
Guayama	$15,296	$9,813	55.1%
Salinas	$16,246	$8,738	53.6%
Santa Isabel	$16,816	$10,478	49.1%
Puerto Rico Average	$19,775	$12,081	43.1%
USA Average	$57,652	$31,177	11.8%

Data estimates for census tracts, or smaller subsections of each municipality, confirm that Puerto Rico's known structural fill sites disproportionately impact some of the poorest communities on the island. Even though the larger municipality of Caguas has a lower population living below poverty than the Puerto Rico average, all the municipalities in Puerto Rico listed fall more than half below the national average overall. Furthermore, the three known coal ash fill sites in Caguas are in a census tract within the municipality estimated to have a percent population below poverty greater than the Puerto Rico average. These three sites are pictured in the top right map excerpt in Figure 3 below. Table 7 summarizes the number of fill sites classified in each of the four poverty categories displayed on the map.

[702] *Id.*; *see also* "Puerto Rico Structural Fill Locations-Poverty Data.xlsx" (attached) (County FIPS codes: 015 (Arroyo), 025 (Caguas), 057 (Guayama), 123 (Salinas), and 133 (Santa Isabel)).
[703] U.S. Census, Guayama Municipio, Puerto Rico, *at* https://www.census.gov/quickfacts/fact/table/guayamamunicipiopuertorico/PST045218 (last visited Oct. 11, 2019).

Figure 3. Puerto Rico – CCR Fill Sites, Waste Pile, and Percent Population Below Poverty Estimates[704]

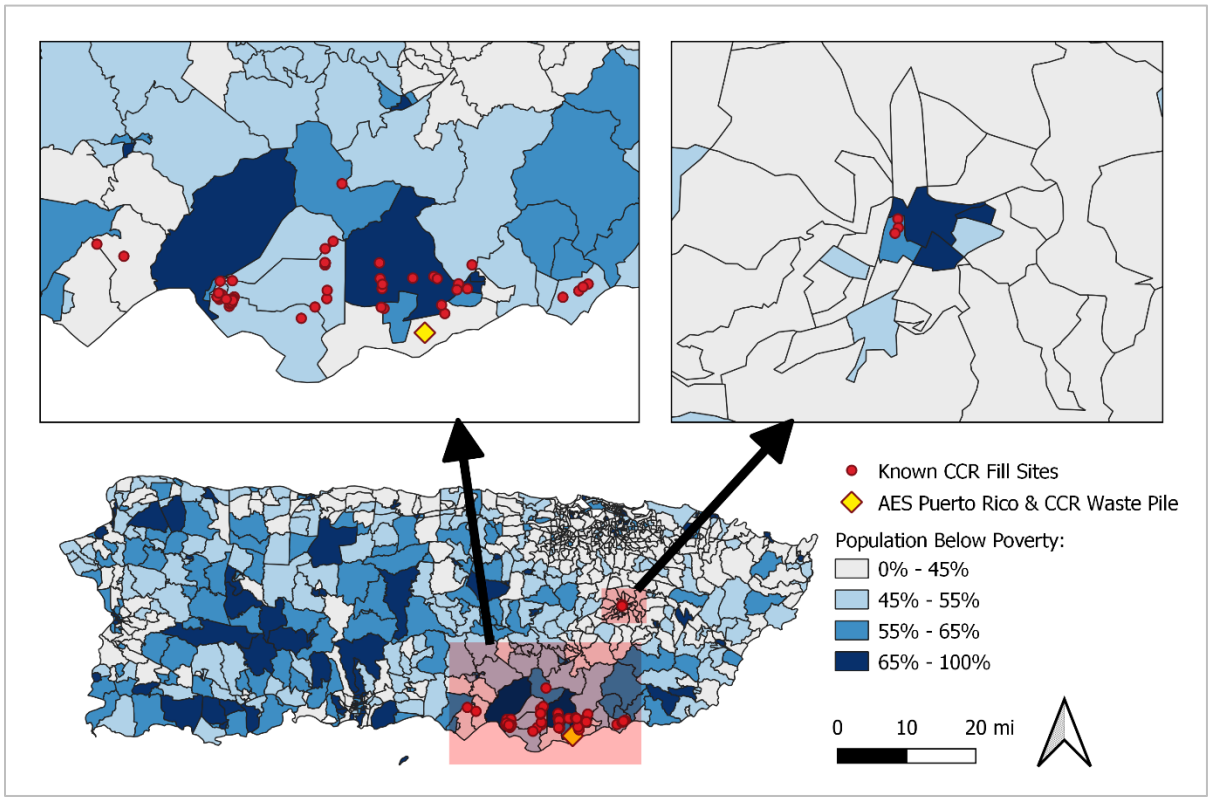

Table 7. Coal Ash Fill Sites in Puerto Rico & Census Tract Poverty Estimates[705]

Percent Population Below Poverty Estimate	Total # of CCR Fill Sites
0% - 45%	3
45% - 55%	25
55% - 65%	12
65% - 100%	12

Indeed, in 2016, the United States Commission on Civil Rights found that "communities that live downstream from coal ash impoundments tend to have a higher than average minority and low-income population."[706] EPA's failure to conduct a meaningful analysis of whether the proposed rule creates new disproportionate impacts or exacerbates existing disproportionate

[704] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, Table S1701 - Poverty Status in the Past 12 Months (Puerto Rico Census Tracts). Note: The state and national average estimates provided in QuickFacts and in Table S1701 - Poverty Status in the Past 12 Months differ slightly. Table S1701 lists the Puerto Rico percent persons in poverty as 44.4%, and the national percent as 14.6%.
[705] *Id.*; *see also* "Puerto Rico Structural Fill Locations-Poverty Data.xlsx" (attached).
[706] U.S. Commission on Civil Rights, 2016 Environmental Justice: Examining the Environmental Protection Agency's Compliance and Enforcement of Title VI and Executive Order 12,898 (2016).

impacts on minority or low-income populations, therefore, is not in conformity with its obligations under the EJ Executive Order.

IX. EPA'S FAILURE TO PROVIDE LINGUISTICALLY ACCESSIBLE INFORMATION IN SPANISH VIOLATES EXECUTIVE ORDER 13,166.

Executive Order 13,166 requires EPA to make its services accessible to people who are Limited English Proficient ("LEP").[707] Specifically, the LEP Executive Order requires that "each Federal agency shall examine the services it provides and develop and *implement* a system by which LEP persons can meaningfully access those services consistent with, and without unduly burdening, the fundamental mission of the agency."[708] Despite knowledge that at least three of the key communities affected by the proposed rule are predominantly Spanish speaking,[709] EPA failed to provide accessible and appropriate translation of the proposed rule and vital documents in Spanish in violation of the Executive Order.

Specifically, the LEP Executive Order requires federal agencies to examine their programs, identify any need for ensuring accessibility for populations that are LEP, and develop and implement systems to ensure "meaningful access."[710] Federal agencies shall "work to ensure" that recipients of federal funds "provide meaningful access to their LEP applicants and beneficiaries."[711] EPA itself has repeatedly reaffirmed its intent "to ensure that the Agency takes reasonable steps to provide LEP individuals with meaningful access to all of its programs, activities and services,"[712] and has recognized that it is the "responsibility of EPA to take reasonable steps to ensure that communications between the EPA and the LEP individual are not impaired as a result of the individual's limited English proficiency."[713] Among other things, EPA

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[707] Executive Order No. 13,166, 65 Fed. Reg. 50,121 (Aug. 11, 2000) (hereinafter LEP Executive Order); *see also ProEnglish v. Bush*, 70 Fed.Appx. 84 (4th Cir. 2003) (upholding dismissal of challenges to the LEP Executive Order and guidance to give effect to the Executive Order by the Department of Justice and the U.S. Department of Health & Human Services); *Colwell v. U.S. Department of Health and Human Services*, 2005 WL 8162379 (S.D. Cal. 2005) (dismissal of challenge to Health & Human Services guidance), *aff'd*, 558 F.3d 1112 (9th Cir. 2009).
[708] *Id.* (emphasis added); *see Pereira v. United States Department of Justice*, 62 Bankr. Ct. Dec. 147, 2016 WL 2745850, *2 (S.D.N.Y. 2016) (LEP Executive Order requires federal agencies "to develop and implement systems to provided needed services to persons with limited English proficiency) (upholding suspension of trustee in bankruptcy context in part on basis of failure to comply with language access plan promulgated pursuant to the LEP Executive Order).
[709] *See, e.g.*, Lisa Evans, et al., Letter to Peter Wright, EPA, "Docket number EPA-HQ-OLEM-2018-0524: Request for translation of proposed rule and associated written documents and renewed request for a public hearing in Guayama, Puerto Rico and an extension of the comment period," 2 (Aug. 8, 2019) ("Much of the impacted population in Southeastern Puerto Rico speak and read solely Spanish."). Notably, as recently as 2017, the EPA issued a notice inviting public comments on a corrective measures action affecting the residents of Guayama and the surrounding area in both English and Spanish. EPA, *Aviso Público Agencia Federal de Protección Ambiental Solicitud de Comentarios Sobre Las Medidas Correctivas Propuestas Bajo la ley de Conservación y Recuperación de Recursos* (2017), *available at* https://www.epa.gov/sites/production/files/2018-04/documents/final-public_notice_cms_chevron-phillips-spanish.pdf (last visited Oct. 11, 2019).
[710] Department of Justice, "Overview of Executive Order," *at* https://www.justice.gov/crt/executive-order-13166 (last visited Oct. 12, 2019).
[711] *Id*.
[712] EPA Order 1000.32, Compliance with Executive Order 13166: Improving Access to Services for Persons Who Are Limited English Proficient, 1 (approved July 28, 2011; admin. update Feb. 10, 2017).
[713] *Id*.

guidance calls on the agency to implement methods for determining whether individuals who are LEP require language assistance and to "take reasonable steps to ensure that vital documents… are translated into the most frequently encountered languages."[714] This obligation explicitly applies to vital documents published in the Federal Register.[715] According to EPA, the LEP Executive Order "provides an explanation of how the EPA and its HQ and regional program offices can assess the need to provide oral and written services in languages other than English, which " involves balancing four factors.[716] These include: (1) "the number or proportion of LEP individuals in the eligible service population;" (2) "the frequency with which LEP individuals come in contact with the program;" (3) "the importance of the service provided by the program;" and (4) "the resources available to the EPA."[717] Ultimately, "EPA must provide meaningful access to any LEP individual."[718] In the notice and comment process for the promulgation of the proposed rule, EPA has utterly failed to assess the number or proportion of LEP individuals affected by the rule or, more generally, the application of the factors to its obligation to provide translation services.

Where, as here, EPA's action has national application but there is a population that is "likely to be directly affected," EPA's guidance states that EPA should ensure that vital documents are translated.[719] Critically, although EPA reserved discretion to determine whether a complete translation of vital information is necessary "or whether translation of vital information contained within the document provides adequate notice of the document's content," EPA guidance makes clear that "[a]t a minimum," EPA must provide "an accurate oral interpretation by a qualified interpreter of the important information in the English version until a written translation can be provided."[720] EPA has neither made available "an accurate oral interpretation" nor a written translation of the proposed rule in time for people who are LEP to comment on the rule in a timely manner.[721] Neither has EPA made basic information about the substance of the proposed rule nor other vital documents available in Spanish.

EPA defines "vital documents" as

> [p]aper or electronic material that is critical for access to the Agency's programs, activities, or services, or contains information about procedures or processes required by law. Classification of a document as `vital' depends upon the importance of the program, information, encounter, or service involved, and the

[714] *Id*. at 2.
[715] *Id.* at 12.
[716] *Id*. at 3.
[717] *Id*.
[718] *Id.*
[719] *Id.* at 11 (regarding documents intended for a broad audience, EPA "should ensure that the documents it consider 'vital' are translated where a significant percentage of the population is … likely to be directly affected… are LEP.").
[720] *Id.* at 12-13.
[721] Although EPA was aware of the need for Spanish translation services at the public hearing held in Washington D.C. for the Spanish-speaking Puerto Rican residents who attended that hearing, it failed to offer any translation of EPA staff members' opening remarks at the hearing. That failure was repeated during EPA's "virtual public hearing" held on October 10th.

consequence to the LEP individual if the information in question is not provided accurately or in a timely manner.[722]

At a minimum, notice of opportunities to comment and the content of the proposed rule itself are vital to the opportunity for residents of Guayama, who are living in close proximity to a waste pile and have expressed significant concerns about the impact of the facility's handling of coal ash on their health and welfare,[723] to participate in opportunities for comment.

EPA has, in fact, previously provided translation of vital documents in the rulemaking process. For example, EPA posted substantial information about the proposed Definition of Waters of the United States ("Aguas de los Estados Unidos"), in Spanish on its website,[724] including notice about the steps in the rulemaking process and opportunities to participate,[725] frequently asked questions,[726] links to additional information, indicating whether material was in English, and contact information for more information in Spanish.[727]

Similarly, EPA published substantial information on "Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency," another proposed rule,[728] in Spanish, Chinese, Korean, Russian, Tagalog, and Vietnamese,[729] including a fact sheet in the form of a power point with key information about the proposed rule[730] and frequently asked questions.[731] As the screen shot below demonstrates, each update on EPA's

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[722] *Id.* at 4.

[723] *See, e.g.*, Lisa Evans, et al., Letter to Peter Wright, EPA, "Request for a 120-Day Comment Period for Phase 2 Coal Combustion Residuals Proposal and for a Public Hearing in Guayama, Puerto Rico," 2 (July 15, 2019) ("The adverse impacts of [coal ash waste piles and the use of coal ash as fill] are currently felt most directly by communities in and around Guayama, Puerto Rico, where the largest coal ash waste pile is located….") (attached); Lisa Evans, *et al.*, Letter to Peter Wright, EPA, "Docket number EPA-HQ-OLEM-2018-0524: Request for translation of proposed rule and associated written documents and renewed request for a public hearing in Guayama, Puerto Rico and an extension of the comment period," 1-2 (August 8, 2019) ("The nine-story coal ash waste pile [in Guayama] has caused substantial air and water pollution that has harmed the health of the nearby community. EPA's proposed rule will exempt the toxic coal ash pile from protective requirements….") (attached).

[724] EPA, *Proceso normativo de las Aguas de los Estados Unidos (WOTUS)*, 2017, *available at* https://espanol.epa.gov/espanol/proceso-normativo-de-las-aguas-de-los-estados-unidos-wotus (last visited Oct. 11, 2019).

[725] EPA, *Proceso de dictar. Normas*, *available at* https://espanol.epa.gov/espanol/proceso-de-dictar-normas (last visited Oct. 13, 2019).

[726] EPA, *Preguntas frecuentes sobre la propuesta norma de las Aguas de EE. UU*, *available at* https://espanol.epa.gov/espanol/preguntas-frecuentes-sobre-la-propuesta-norma-de-las-aguas-de-ee-uu (last visited Oct. 13, 2019).

[727] EPA, *Proceso normativo de las Aguas de los Estados Unidos (WOTUS)* ("Contáctenos para realizar preguntas, proporcionar comentarios o informar sobre un problema.") (last visited Oct. 13, 2019).

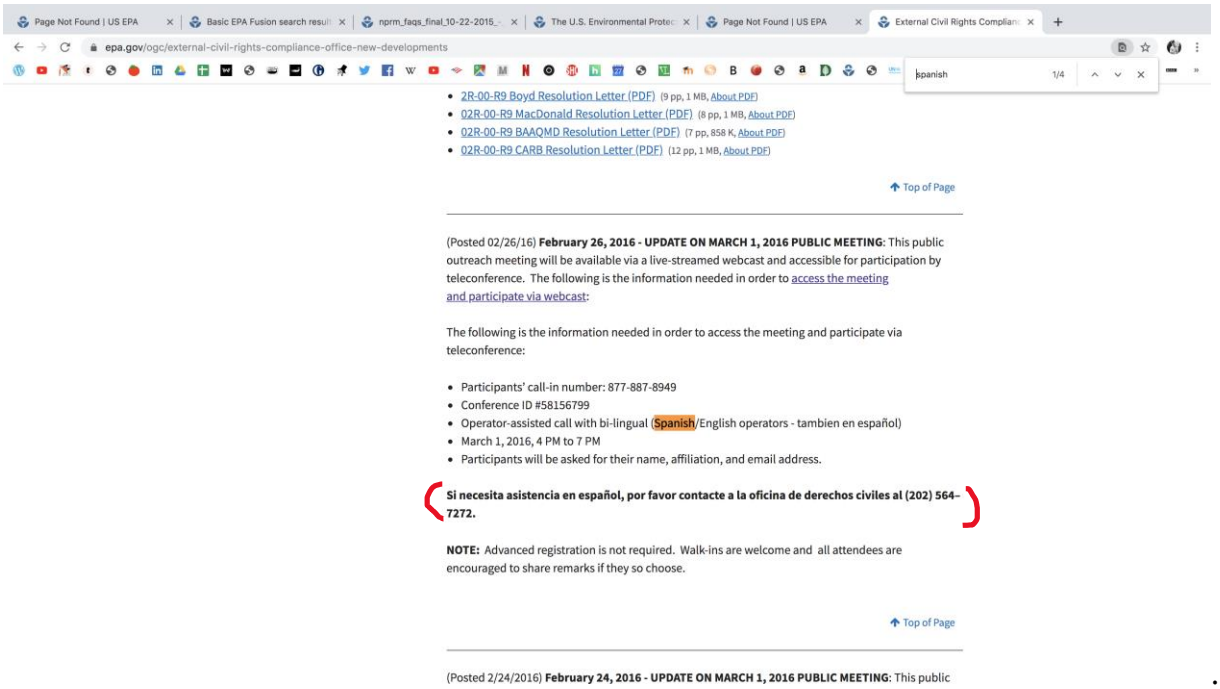
[728] EPA, *Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency*, EPA-HQ-OA-2013-0031, 80 Fed. Reg. 77,284 (Dec. 14, 2015).

[729] EPA, Notice of Proposed Rulemaking (NPRM) Translation in Several Languages (2015), *available at* https://www.epa.gov/ogc/external-civil-rights-compliance-office-new-developments (last visited Oct. 13, 2019).

[730] EPA, *Aviso de Reglamentación Propuesta (NPRM, por sus siglas en inglés) del la Agencia de Protección Ambiental de EE. UU. Para modificar sus normativas de no discriminación*, *available at* https://www.epa.gov/sites/production/files/2015-12/documents/nprm_powerpoint_final_10-23-15_-_spa.pdf.

[731] EPA, *Preguntas Frecuentes Sobre el Aviso de Reglamentación Propuesta Sobre la Normativa de no Discriminación de los Derechos Civiles*, October 22, 2015, *available at*

public outreach and opportunities to comment on the rule contained language in Spanish on how to obtain additional information, stating specifically, "Si necesita asistencia en español, por favor contacte a la oficina de derechos civiles al (202) 564-7272."[732]

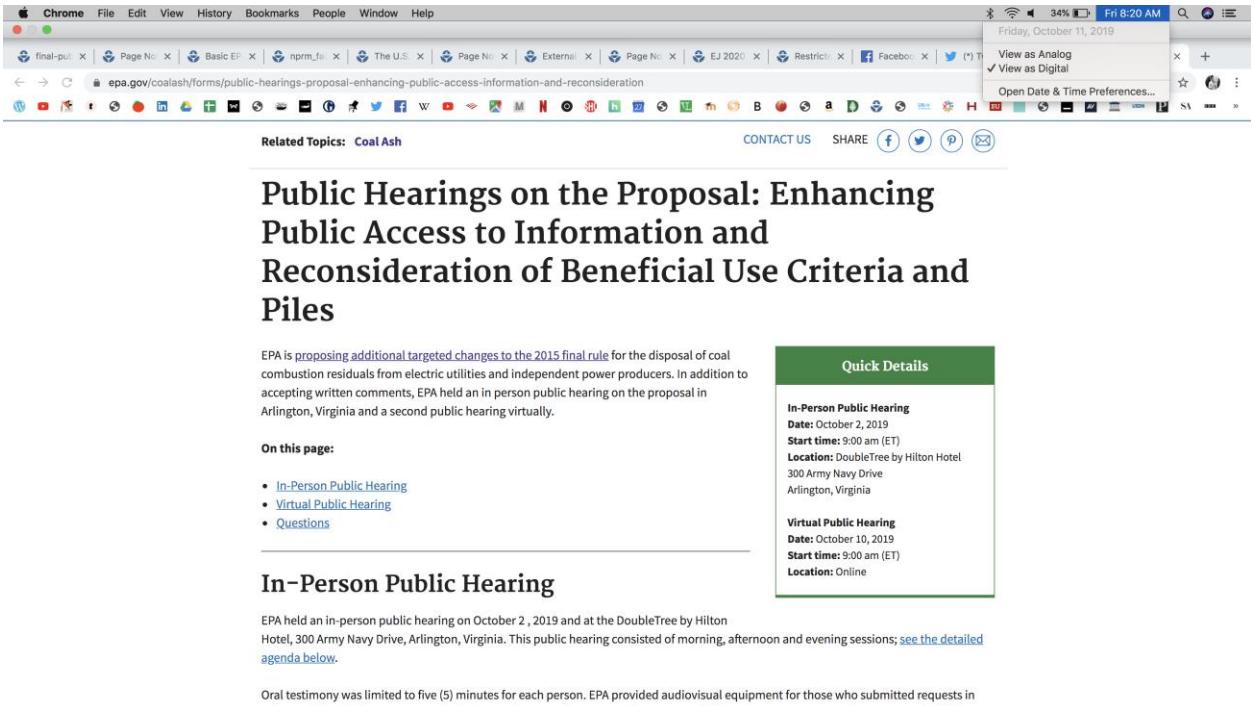


By contrast, EPA's online notifications regarding hearings and opportunities to comment on the proposed changes in the coal combustion rule contain no information in Spanish:[733]

https://www.epa.gov/sites/production/files/2015-12/documents/nprm_faqs_final_10-22-2015_-_spa.pdf (last visited Oct. 11, 2019).

[732] EPA, *External Civil Rights Compliance Office - New Developments!* (2019), *available at* https://www.epa.gov/ogc/external-civil-rights-compliance-office-new-developments (last visited Oct. 11, 2019) (highlighting added).

[733] EPA, *Public Hearings on the Proposal: Enhancing Public Access to Information and Reconsideration of Beneficial Use Criteria and Piles* (2019), *available at* https://www.epa.gov/coalash/forms/public-hearings-proposal-enhancing-public-access-information-and-reconsideration (last visited Oct. 13, 2019).



In considering its obligation to take reasonable steps to ensure meaningful access to people who are LEP, EPA instructs recipients of federal funds to consider the language needs of people "in communities in close proximity to a plant or facility that is permitted or regulated," as well as "persons subject to, or affected by environmental protection," among other things.[734] Although EPA failed to provide a list of waste piles or coal ash fill sites that would be affected by the rule or analyze the language needs of the communities living in proximity to the piles and fill sites, residents of Guayama, Salinas, and Arroyo have repeatedly contacted EPA and identified the need for language assistance in Spanish.[735] In fact, the need is evident: of the approximately 39,521 residents of Guayama, more than 95% speak languages other than English at home,[736] and the whole community can be characterized as linguistically isolated.[737] Indeed,

[734] EPA, *Guidance to Environmental Protection Agency Financial Assistance Recipients Regarding Title VI Prohibition Against National Origin Discrimination Affecting Limited English Proficient Persons*, 69 Fed. Reg. 35,602, 35,606 (June 25, 2004).

[735] *See, e.g.*, Lisa Evans, et al., Letter to Peter Wright, EPA, "Docket number EPA-HQ-OLEM-2018-0524: Request for translation of proposed rule and associated written documents and renewed request for a public hearing in Guayama, Puerto Rico and an extension of the comment period" (Aug. 8, 2019). While EPA provided a Spanish language interpreter at the October 2, 2019 hearing on the rule, *see* EPA, Public Hearing on EPA's Proposed Action Regarding Enhancing Public Access to Information and Reconsideration of Beneficial Use Criteria and Piles (Oct. 2, 2019), *EPA-HQ-OLEM-2018-0524-0049 spanish hearing.pdf*, to the knowledge of signatories EPA has published no notices of opportunities for participation or substantive information about the proposed rule in Spanish nor even sent a response to the August 8 request for translation. Providing an interpreter does not extinguish the obligation to make written materials accessible. Moreover, EPA failed even to provide notice to potential participants who are LEP that the interpreter will be available at the hearing.

[736] U.S. Census Bureau, QuickFacts: Guayama Municipio, Puerto Rico, *available at* https://www.census.gov/quickfacts/fact/table/guayamamunicipiopuertorico/PST045218 (95.8 % of persons age 5 years or older speak languages other than English at home) (last visited Oct. 11, 2019).

[737] *See* EPA, *EJSCREEN Environmental Justice Mapping and Screening Tool: EJ SCREEN Technical*

more than 91 percent of the population speak English less than "very well."[738] 95.5% of citizens 18 years or older speak Spanish.[739] Moreover, linguistic barriers are exacerbated by poverty status: the per capita income in Guayama is $9,813 and the median household income is $15,296.[740] The language and income demographics are very similar in Salinas and Arroyo, as well as in the other municipalities with known coal ash fill sites. For example, the percent of the population that speaks a language other than English at home is 95.4% for Arroyo, 93.4% for Caguas, 95.4% for Salinas, and 96.4% for Santa Isabel, all comparable to Guayama's 95.8% figure and significantly higher than the 21.3% national average.[741]

EPA's failure to make information about the proposed rule and, particularly, the Proposals to Revise Requirements Applicable to Beneficial Use and Piles, available in Spanish is in violation of the mandates of the LEP Executive Order, a departure from agency norms, and ultimately fails to address recognized barriers to meaningful participation in the rulemaking process for persons who are LEP.

X. EPA'S FAILURE TO PROVIDE LINGUISTICALLY APPROPRIATE INFORMATION AND TO MEANINGFULLY ENGAGE THE AFFECTED COMMUNITY VIOLATES EXECUTIVE ORDER 12,898 AND RAISES PROCEDURAL DUE PROCESS CONCERNS.

The EJ Executive Order requires each federal agency to develop environmental justice strategies to "ensure greater public participation" in "rulemakings related to human health or the environment."[742] Agencies must also, specifically, "work to ensure that public documents, notices, and hearings related to human health or the environment are concise, understandable, and readily accessible to the public."[743] EPA's *Guidance on Considering Environmental Justice During Development of a Regulatory Action* published pursuant to the Executive Order sets forth procedures for rule-writers "to ensure there are sufficient opportunities for meaningful involvement during the development of the action[744] and establishes guidance, specifically, on "meaningful involvement":[745]

Documentation (Aug. 2017), at 20 (last visited Oct. 11, 2019) (linguistic isolation defined as "[a] household in which all members age 14 years and over speak a non-English language and also speak English less than 'very well'"), *available at* https://www.epa.gov/sites/production/files/2017-09/documents/2017_ejscreen_technical_document.pdf.

[738] U.S. Census Bureau, *Languages Spoken at Home: 2013-2017 American Community Survey 5-Year Estimates, available at* https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/ (last visited Oct. 11, 2019).

[739] *Id.*

[740] United States Census Bureau, QuickFacts: Guayama Municipio, Puerto Rico, *available at* https://www.census.gov/quickfacts/fact/table/guayamamunicipiopuertorico/PST045218.

[741] *See, e.g.*, United States Census Bureau, QuickFacts, Puerto Rico Counties, https://www.census.gov/quickfacts/PR (last visited Oct. 14, 2019).

[742] Executive Order 12898, *Sec. 1-103.*

[743] *Id.*, Sec. 5-5(c).

[744] EPA, Guidance on Considering Environmental Justice During Development of a Regulatory Action, at 10.

[745] *Id.* at 32.

> Meaningful involvement means that: (1) potentially affected populations have an appropriate opportunity to participate in decisions about a proposed activity (i.e., rulemaking) that may affect their environment and/or health; (2) the populations' contributions can influence the EPA's rulemaking decisions; (3) the concerns of all participants involved will be considered in the decision-making process; and (4) the EPA will seek out and facilitate the involvement of populations potentially affected by the EPA's rulemaking process.

EPA has recognized that providing meaningful involvement for populations, such as in those in Guayama, Salinas, and Arroyo, that have historically been underrepresented in decision-making and "that have a wide range of educational levels, literacy, or proficiency in English," the agency must make additional targeted efforts to ensure outreach is effective, materials are accessible, and that community members have the capacity to participate effectively.[746] The proposed rule clearly implicates environmental justice concerns, which should have triggered EPA action to ensure that potentially affected populations would have opportunities to meaningfully participate in the rulemaking process. Not only did EPA ignore its own information on best practices, but it failed to meet minimum standards. EPA's failure to provide linguistically appropriate information and opportunities for meaningful participation violates the EJ Executive Order, is a departure from EPA policies and norms, and raises due process concerns.[747]

As discussed in these comments, residents of Guayama, Salinas, and Arroyo have repeatedly requested that EPA provide linguistically appropriate materials, hold a public hearing in Guayama, and extend the public comment period to afford "impacted and injured communities in Puerto Rico the opportunity to exercise their right of public participation in the rulemaking process."[748] As a July 15, 2019 letter explained, a public hearing in Puerto Rico, near the site of the waste pile, would provide a meaningful opportunity for low-income community members who will be affected by the rule to participate:

> The adverse impacts [of coal ash waste piles and the use of coal ash as fill] are currently felt most directly by communities in and around Guayama, Puerto Rico, where the largest coal ash waste pile is located and where coal ash fill projects are rampant. The residents of southeastern Puerto Rico can speak directly to the harm caused by coal ash waste piles to their air, water and health. These residents can also speak to the harm caused by coal ash fill projects that contaminate their soil and air and pose hazards of direct exposure to their children. The communities that are most directly harmed by coal ash waste piles and fill projects in Puerto Rico, however, are low-income communities, and their members are unable to travel to the Washington, D.C. area for a public hearing. In the interest of fairness and to promote meaningful public participation, a public hearing must be held in Puerto Rico.[749]

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[746] *Id.* at 33-35.

[747] The absence of appropriate notice or meaningful opportunity to be heard raise procedural due process concerns for Guayama property owners and others with a cognizable property right implicated by the proposed rule. *See generally Progressive Credit Union v. City of New York*, 889 F. 3d 40, 51-52 (2d Cir. 2018) (discussing procedural due process claim in rulemaking context).

[748] *See, e.g.*, Lisa Evans, et al., Letter to Peter Wright, EPA, 1 (Aug. 8, 2019).

[749] *See* Lisa Evans, et al., Letter to Peter Wright, EPA (July 15, 2019).

Rather than responding to the request, providing vital materials in Spanish, holding a hearing near the impacted community, or extending the deadline to ensure opportunities for meaningful involvement, EPA went forward with its single in-person public hearing on October 2, 2019 in Arlington, Virginia and scheduled a virtual public hearing on October 10 – in disregard of the possibility of barriers of access to online participation, and, again, with no notice in Spanish. EPA presented basic information about the proposed rulemaking at both events, but at neither event did the agency present *any* information in Spanish. Few residents of the affected communities in Puerto Rico could attend the hearing in Arlington, and, in sum, EPA's steps fall far short of what is required to ensure public participation in rulemakings related to human health or the environment.

XI. EPA'S FAILURE TO PROVIDE LINGUISTICALLY APPROPRIATE INFORMATION AND TO MEANINGFULLY ENGAGE THE AFFECTED COMMUNITY ALSO VIOLATES RCRA SECTION 7004(B).

For similar reasons, EPA's failure to make information about the Phase 2 Proposal – and in particular the proposed rule itself – available in Spanish violates § 7004(B) of RCRA. This provision requires that "[p]ublic participation in the development, revision, implementation, and enforcement of any regulation, guidelines, information, or program under this chapter shall be provided for, encouraged, and assisted by the Administrator."[750] Courts have interpreted the nearly identical provision of the Clean Water Act, 33 U.S.C. § 1251(e), as a clear, broad mandate for public participation.[751]

Here, EPA has affirmatively failed to ensure that public participation on the Phase 2 Proposal has been provided for, encouraged, and assisted. As noted above, EPA knew that one of the primary locations that would be impacted by the Phase 2 Proposal was Guayama, Puerto Rico – a 98.9% Hispanic or Latino community. EPA knew this for multiple reasons, not the least of which is that (as described in more detail above) members of that community visited EPA's offices in April 2019 and described the impacts that the Phase 2 Proposal could have on their community to EPA leadership firsthand in a meeting in which Spanish translators were necessary.[752] Before EPA even published the Phase 2 Proposal in pre-publication form, Earthjustice and 76 other public interest groups, including 38 groups with membership in Puerto Rico, specifically requested that Spanish-language translations of key documents be made publicly available, that EPA hold a public hearing in Guayama, and that the comment period be extended to ensure that residents of Guayama have a meaningful opportunity to participate.[753] Moreover, shortly before the Phase 2 Proposal was published in the Federal Register, Earthjustice and 42 other public interest groups, again including 38 groups with primary

[750] 42 U.S.C. § 6974(b)(1).
[751] *See Waterkeeper Alliance, Inc.*, 399 F.3d at 503 (reasoning that, as manifested by 33 U.S.C. § 1251(e), "Congress clearly intended to guarantee the public a meaningful role in the implementation of the Clean Water Act.").
[752] *See also* Lisa Evans, et al., Letter to Peter Wright, EPA (July 15, 2019) (describing April 2019 meeting) (attached).
[753] *Id.*

membership in Puerto Rico, reiterated these requests to EPA.[754] EPA never formally responded to either request and, as discussed above, provided no materials whatsoever in Spanish.

The inadequacy of the public participation process for the Phase 2 Proposal is further demonstrated by EPA's holding of only a single in-person[755] public hearing in the Washington, D.C. metro area and its rejection of stakeholders' requests for an additional public hearing in Puerto Rico. Federal law refers to the holding of "public hearings" – plural – as opposed to a "public hearing."[756] Such multiple hearings are also necessary to provide for, encourage, and assist many interested individuals with the opportunity to share their comments or provide their input on the many broad changes proposed by this proposed rule. For all of the reasons already set forth in this section, meaningful public participation for a rule of this magnitude warranted additional hearings, particularly in Guayama or another location in Puerto Rico where that disparately-impacted community would have an opportunity to participate meaningfully in this rulemaking process.

XII. THE PROPOSED RULE VIOLATES EXECUTIVE ORDER 13045 ON PROTECTING CHILDREN FROM ENVIRONMENTAL HEALTH AND SAFETY RISKS

Executive Order 13045 provides that:

> to the extent permitted by law and appropriate, and consistent with the agency's mission, each Federal agency . . . (a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

E.O. 13045, § 1-101, 62 Fed. Reg. 19,885 (Apr. 21, 1997). The proposed rule does not ensure that the standards for coal ash address the disproportionate risks to children resulting from the improper disposal of coal ash.

EPA's current proposal does nothing to address these risks to children's health. To the contrary, as described in these comments, the proposed rule would exacerbate the environmental health risks to children by weakening many of the core elements of the CCR Rule.

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[754] *See* Lisa Evans, et al., Letter to Peter Wright, EPA, 1 (Aug. 8, 2019) (attached).

[755] Although EPA did hold a "virtual" public hearing in addition to the Washington DC-area public hearing, that does not come close to curing the problem. EPA provided no Spanish-language notice of that "virtual" public hearing whatsoever, effectively nullifying the possibility that Spanish speakers would learn about, therefore testify in, that "hearing." Moreover, as discussed herein, much of the affected population in Puerto Rico lives in poverty and lacks access to computers. As such, they would have no way to take part in any "virtual" public hearing even if they were aware of it.

[756] *See* 42 U.S.C. §§ 6907(a), 6944(a).

XIII. BY FAILING TO CONSULT WITH TRIBAL GOVERNMENTS, EPA HAS VIOLATED EXECUTIVE ORDER 13175 AND EPA'S POLICY FOR IMPLEMENTING THE ORDER.

Pursuant to Executive Order 13175, it is federal policy "to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications."[757] A 2009 presidential memorandum reaffirmed the principles in Executive Order 13175, namely, that "consultation is a critical ingredient of a sound and productive Federal-tribal relationship."[758] To implement Executive Order 13175, EPA's policy is to "ensure[] the close involvement of tribal governments and gives special consideration to their interests whenever EPA's actions may affect . . . tribal interests."[759]

EPA's failure to consult with tribal governments regarding the Phase 2 Proposal is contrary to both the plain language of Executive Order 13175 and EPA's own policy for implementing the Order. The Order directs federal agencies such as EPA to consult with tribal officials regarding "the development of Federal policies that have tribal implications." During the rulemaking for the 2015 CCR Rule, EPA concluded that "this action may have tribal implications."[760] That was the right conclusion, given that three large coal plants subject to the CCR Rule are located on tribal lands.[761] Given that the CCR Rule had tribal implications, "EPA consulted with tribal officials early in the process of developing this regulation to permit them to have meaningful and timely input into its development."[762]

EPA admits that three plants subject to the requirements of the 2015 CCR Rule are located on tribal lands.[763] As described in detail in these comments, the Phase 2 Proposal weakens the 2015 CCR Rule in ways that threaten health and the environment. In an abrupt about face, however, the agency now claims that the proposal "does not have tribal implications" because none of the coal plants located on tribal lands is owned by tribal governments.[764] EPA's change in position is inconsistent with the plain language of the Executive Order and EPA's policy for implementing the Order, is arbitrary and capricious, and reflects a blatant disregard of the interests of tribal interests that are implicated by this proposal.

EPA's own policy supports the conclusion that consultation is required here. According to EPA policy, the agency should involve tribal governments in the development of a rule that "may affect . . . tribal interests."[765] "EPA takes an expansive view of the need for consultation in line with the 1984 Policy's directive to consider tribal interests whenever EPA takes an action

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[757] E.O. 13175, Consultation and Coordination With Indian Tribal Governments, 65 Fed. Reg. 67,249, 67,249 (Nov. 6, 2000).
[758] Presidential Memorandum on Tribal Consultation, 74 Fed. Reg. 57,881, 57,881 (Nov. 5, 2009).
[759] U.S. Envtl. Prot. Agency, EPA Policy on Consultation and Cooperation with Indian Tribes at 4 (2011).
[760] 80 Fed. Reg. at 21,465.
[761] *See id*.; *see also* 84 Fed. Reg. at 40,369.
[762] 80 Fed. Reg. at 21,465.
[763] 84 Fed. Reg. at 40,369. EPA notes, "The Navajo Generating Station and the Four Corners Power Plant are on lands belonging to the Navajo Nation, while the Bonanza Power Plant is located on the Uintah and Ouray Reservation of the Ute Indian Tribe."
[764] 84 Fed. Reg. at 40,369.
[765] EPA Policy on Consultation and Cooperation with Indian Tribes at 4 (2011).

that "may affect" tribal interests."[766] Here, EPA's Phase 2 Proposal would change the requirements regarding disposal and use of coal ash on tribal lands in ways that are likely to adversely impact tribal interests in the health of tribal members and the quality of their environment, including surface water, groundwater, soil and air. Some of these proposed changes would impact monitoring of groundwater at CCR piles, cleanup of contaminated groundwater from CCR waste piles, inspection and control of fugitive dust at CCR piles, and requirements applicable to large CCR fill projects. Thus, EPA's own policy statement requires the agency to consult with tribal governments "early enough to allow tribes the opportunity to provide meaningful input that can be considered prior to EPA deciding whether, how, or when to act on the matter under consideration."[767]

There is no question that rules regulating the disposal of CCR have real-life implications for the tribes that reside in the vicinity of CCR units. For example, it is well-documented that families of the Navajo Nation are impacted by fugitive dust from the CCR units at the Four Corners Power Plant.[768] Tribal members have frequently reported clouds of toxic dust rising from the plant's half-dozen coal ash ponds and a landfill that rises 110-feet above the desert floor.[769] Exposure to the dust has been associated with health problems, including asthma and other respiratory ailments, as well as higher-than-normal rates of cancer among Navajo residents.[770] Moreover, the coal ash, which is deposited by the wind over hundreds of acres, jeopardizes the Navajo people's ability to practice traditional healings that are embedded in their culture.[771]

Navajo families are affected also by the leakage of pollutants from the coal ash landfill at the Navajo Generating Station.[772] Leachate from the landfill has formed a man-made aquifer that contains concentrations of heavy metals, sulfate and total dissolved solids, some in excess of federal water-quality standards.[773] For example, sampling in October 2015 demonstrated selenium levels four times greater than federal water quality standard.[774] Fractures present in the Carmel Formation, where this new aquifer is located, act as preferred pathways for downward migration of contaminated groundwater to enter and contaminate the larger groundwater system of the region.[775] However, the contamination may be difficult to detect due to the slow rate of migration.[776] The contamination may also be difficult to clean up because fractured-rock aquifers are notoriously difficult to characterize, monitor, and remediate once they become contaminated.[777]

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[766] *Id.* at 2.
[767] *Id.* at 7.
[768] Ash in Lungs at 13-15.
[769] *Id.*
[770] *Id.*; *see also* Damage Cases: Fugitive Dust Impact at 45-46.
[771] Ash in Lungs at 13-15.
[772] *See* Groundwater Management Associates, Evaluation and Professional Opinions Regarding Geologic and Hydrogeologic Aspects of the 2016 Draft Environmental Statement As It Pertains to Scheduled Facility Closure in 2019 or Extending Operation Until 2044 (June 5, 2017) (attached).
[773] *Id.* at 1.
[774] *Id.*
[775] *Id.* at 1-2.
[776] *Id.* at 2.
[777] *Id.*

In addition to the Navajo Nation and Ute Indian Tribe, it is also necessary for EPA to consult with the Moapa Band of Paiutes, whose tribal lands are approximately 300 yards from the coal ash impoundments and landfills for the Reid Gardner power plant.[778] Members of the Moapa describe a coal ash "sandstorm" that blows from the plant's coal ash landfill and evaporation ponds, as well as from uncovered trucks carrying coal ash.[779] They report health problems resulting from the exposure to the blowing ash, including burning skin, sore throats, hyperthyroidism, heart problems, and asthma.[780] On bad days, residents stay inside.[781] The toxic dust prevents use of tribal lands for traditional activities, and members are concerned that their soil and water are poisoned by pollutants from the ash.[782] In 2015, NV Energy, the owner and operator of the coal ash disposal site at Reid Gardner, settled a lawsuit filed by the Moapa alleging that improper and illegal disposal of coal ash had harmed the health of Moapa members and damaged tribal lands.[783] Although the Reid Gardner plant is no longer operating, disposal and closure activities onsite are continuing. As a result of remediation activities, it is possible that CCR waste piles will be employed and unencapsulated fill projects occur. Therefore, the Phase 2 Proposal has the potential to have a substantial direct effect on the Moapa and their tribal lands that should have triggered consultation under E.O. 13175.

In sum, as described elsewhere in these comments, the proposal would weaken critical safeguards in the CCR Rule for the disposal of coal ash. As a result, the proposal would increase the health risks for tribal members living near CCR disposal units and CCR placement projects, as well as increase the risk of environmental damage on tribal lands near CCR units and fill projects. The Phase 2 Proposal therefore has "tribal implications" within the meaning of Executive Order 13175, and "may affect . . . tribal interests" within the meaning of EPA's policy statement. EPA's failure to consult with affected tribes therefore violates Executive Order 13175 and EPA policy. To remedy its noncompliance with the Executive Order, EPA must initiate consultation with tribes whose lands are the site of or near coal ash disposal units – i.e., the Navajo Nation, Ute Indian Tribe, and Moapa Band of Paiutes at a minimum - and then re-propose for public review and comment a rule based on the input of the tribes.

XIV. THE ENDANGERED SPECIES ACT REQUIRES EPA TO CONSULT WITH THE FISH AND WILDLIFE SERVICE AND THE NATIONAL MARINE FISHERIES SERVICE BEFORE FINALIZING ANY RULE.

Prior to issuing any final rule based on the 2018 Proposal, EPA must first consult with the Fish and Wildlife Service ("FWS") and the National Marine Fisheries Service ("NMFS") under Section 7 of the Endangered Species Act ("ESA") regarding the new rule's effects on threatened and endangered species.

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[778] *See* https://earthjustice.org/video/an-ill-wind-the-secret-threat-of-coal-ash.
[779] Ash in Lungs at 12-13; EPA, Damage Cases: Fugitive Dust Impact, Docket ID No. EPA-HQ-RCRA-2009-0640-11992, at 47-51 (Dec. 18, 2014) (hereinafter "Damage Cases: Fugitive Dust Impact").
[780] Ash in Lungs at 12-13; *see also* Damage Cases: Fugitive Dust Impact at 50.
[781] Ash in Lungs at 12-13; Damage Cases: Fugitive Dust Impact at 50.
[782] Ash in Lungs at 12-13; Damage Cases: Fugitive Dust Impact at 50.
[783] *See* Order Granting Joint Motion to Approve Settlement, Case No. 2:13-cv-01417 (D. Nev. Oct. 14, 2015); *see also* https://www.reviewjournal.com/news/nv-energy-tribe-settle-suit-over-coal-fired-power- plant/.

Under the ESA, federal agencies must, in consultation with FWS and/or NMFS, ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of designated critical habitat.[784] An agency proposing an action must first determine whether the action "may affect" species listed as threatened or endangered under the ESA.[785] "The 'may affect' threshold for triggering the consultation duty under section 7(a)(2) is low." [786]

If the action "may affect" listed species or designated critical habitat, the action agency must pursue either formal or informal consultation. Informal consultation is "an optional process that includes all discussions, correspondence, etc., between the Service and the Federal agency . . . designed to assist the [action agency] in determining whether formal consultation . . . is required."[787] "If during informal consultation it is determined by the [action agency], with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated, and no further action is necessary." [788]

If an action agency chooses to forego informal consultation, or the informal consultation concludes that the proposed action is likely to adversely affect listed species or critical habitat, the agency must participate in "formal consultation."[789] Formal consultation entails the formulation of a Biological Opinion ("BiOp") by either FWS or NMFS. In a BiOp, the FWS or NMFS determines whether the proposed action, taken together with all other relevant impacts on the species – including both those included in the environmental baseline as well as cumulative impacts – is likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat.[790]

If the BiOp determines that the proposed actions are likely to jeopardize the continued existence of listed species or critical habitats, the FWS or NMFS may not

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[784] 16 U.S.C. § 1536(a)(2).
[785] 50 C.F.R. § 402.14.
[786] *Nat'l Parks Conservation Ass'n v. Jewell*, 62 F. Supp. 3d 7, 12-13 (D.D.C. 2014); *see also Karuk Tribe of Cal. v. U.S. Forest Serv.*, 681 F.3d 1006, 1027 (9th Cir. 2012) (en banc) ("[A]ctions that have any chance of affecting listed species or critical habitat— even if it is later determined that the actions are 'not likely' to do so—require at least some consultation under the ESA.").
[787] 50 C.F.R. § 402.13(a).
[788] *Id.*; *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1034 (D.C. Cir. 2008) ("If an agency determines that an action "may affect" endangered or threatened species or critical habitats, the agency must initiate formal consultation with the [FWS], at least unless preparation of a biological assessment or participation in informal consultation indicates that a proposed action is 'not likely' to have an adverse affect.").
[789] 50 C.F.R. § 402.14.
[790] *Id.* § 402.14(h)(3).414. If it is determined that a "take," 16 U.S.C. §§ 1538(a)(1)(B), 1532(19), 50 C.F.R. § 17.3, may occur incidental to the proposed action, but that the action and associated incidental take will not violate the Section 7 jeopardy standard, then FWS or NMFS includes an incidental take statement with the BiOp. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i)(1)(i-v). The incidental take statement specifies the predicted impact to the species, the reasonable and prudent measures that FWS or NMFS determines necessary to minimize take, and the terms and conditions required to implement the reasonable and prudent measures. Id. If the action complies with the terms and conditions of the incidental take statement, ESA Section 7(o)(2) exempts the incidental taking from the prohibitions contained in ESA Section 9. 16 U.S.C. § 1536(o)(2).

approve them.[791] Alternatively, if the BiOp concludes that an action will likely result in at most a limited take that is incidental to the project, FWS or NMFS prepares an Incidental Take Statement (ITS) identifying reasonable and prudent measures that are necessary or appropriate to minimize the impact on species likely to be incidentally affected.[792] Notably, if the action agency were then to authorize take of protected species by way of incorporating the ITS's terms and conditions into that authorization, such authorization constitutes "federal action" triggering National Environmental Policy Act ("NEPA") review.[793]

Here, issuing a final rule based on the Phase 2 Proposal is likely to adversely affect, and at a bare minimum may affect, threatened and endangered species, and therefore EPA must initiate informal or formal consultation under ESA Section 7. The baseline for evaluating the effects of this proposal includes the improvements to human health and environmental protection that would be expected under the 2015 CCR Rule.[794] EPA's Phase 2 Proposal would weaken the CCR Rule in several critical respects that would, among other things, increase the likelihood and severity of groundwater contamination; and delay, weaken or eliminate corrective action and responses to groundwater and non-groundwater releases. The increase in coal ash contamination that would likely result from finalizing the Phase 2 Proposal may affect, and is likely to adversely affect, listed species and critical habitat.[795]

Under the ESA's implementing regulations, the action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."[796] EPA has acknowledged that the agency did not consider impacts to managed lands and critical habitats nor did it explicitly evaluate direct risks to threatened and endangered species in its ecological risk assessment.[797]

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[791] 16 U.S.C. § 1536(a)(2), (b)(4); *see also Sierra Club v. U.S. Army Corps of Eng'rs*, 803 F.3d 31, 41 (D.C. Cir. 2015).

[792] 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i), (iv). If FWS or NMFS issues an ITS, the choice falls to the action agency that consulted with FWS/NMFS under Section 7 to determine whether and how to proceed with the proposed action (including permitting private activity) in light of the ITS issued by the Service – but the action agency and private party (if any) must comply with the terms of the ITS if they wish to be insulated from ESA liability for any (otherwise unlawful) take of protected species incidental to the carrying out of the proposed action. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.15(a).

[793] *Sierra Club*, 803 F.3d at 45; see 40 C.F.R. § 1508.18(b)(4).

[794] Under the ESA's implementing regulations, the "environmental baseline" is defined to include "the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process." 50 C.F.R. § 402.02.

[795] As discussed elsewhere in these comments, the Economic Analysis (EA) prepared by EPA in connection with the Phase 2 Proposal fails entirely to address any diminution in benefits to human health and the environment that would otherwise be provided by the 2015 CCR Rule. *See, supra*, Section X. Because the EA's analysis of the impacts of the Phase 2 Proposal is fatally flawed, it cannot be relied upon by EPA to justify its failure to engage in consultation required under ESA Section 7.

[796] 50 C.F.R. § 402.02.

[797] *See* EPA, Human and Ecological Risk Assessment of Coal Combustion Residuals at 5-44 (Dec. 2014), Docket ID No. EPA-HQ-RCRA-2009-0640-11993 (attached).

EPA has previously noted that managed lands, critical habitats, or threatened and endangered species were located within a five-kilometer radius of CCR sites at between 12 and 32 percent of facilities.[798] Coal ash contamination and damage has been documented at sites in close vicinity to threatened or endangered species.[799] Additionally, approximately 45 percent of the Nation's threatened and endangered species directly depend on aquatic and wetland habitats.[800] Furthermore, EPA has acknowledged that many pollutants present in coal ash wastewaters can harm, and even kill, fish and other wildlife.[801]

In addition, ESA-listed species and critical habitats have been specifically identified in the vicinity of one of more CCR waste piles that would be impacted by the provisions of the Phase 2 proposal. As described in Section X, the requirements imposed on the AES-PR CCR waste pile in Guayama, Puerto Rico may significantly change if EPA finalizes the Phase 2 Proposal. If the proposal is finalized, AES-PR may no longer have to complete remedial actions to restore the groundwater contaminated by CCR to original conditions, as currently required by § 257.96. The discharge of CCR-contaminated groundwater to Jobos Bay, Salinas Puerto Rico may adversely impact the following listed species.[802]

[798] *See* EPA, Report to Congress - Wastes from the Combustion of Coal by Electric Utility Power Plants at Exhibit 5-27, p. 5-92 (1988), https://www.epa.gov/sites/production/files/2015-08/documents/coal-rtc.pdf (attached).
[799] *See* Environmental Integrity Project and Earthjustice, Out of Control: Mounting Damages from Coal Ash Waste Sites (Feb. 24, 2010) (hereinafter "Out of Control") (attached) and Environmental Integrity Project and Earthjustice, "In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans And Their Environment (Aug. 26, 2010), https://www.environmentalintegrity.org/wp-content/uploads/2016/11/2010-08_In_Harms_Way.pdf (attached).
[800] Risk Assessment for 2015 Rule at 5-44.
[801] *See, e.g.*, EPA, Benefit and Cost Analysis for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category at 5-1 (Sept. 2015), Doc. No. EPA-821-R-15-005, Docket ID No. EPA-HQ- OW-2009-0819-5856 ("Final Benefit & Cost Analysis").
[802] National Marine Fisheries Service, Biological Opinion for the Construction and Operation of Aguirre Offshore GasPort and installation of a natural gas pipeline from the new offshore gasport to the existing Aguirre power plant facility, Jobos Bay, Salinas, Puerto Rico. NMFS Consultation Number: SER-2016-17799 (Sep. 24, 2018) (attached).

ESA-Listed Species	ESA Listing Status of the Species
South Atlantic Distinct Population Segment (DPS) of green sea turtle	Threatened
North Atlantic DPS of the green sea turtle	Threatened
Leatherback sea turtle	Endangered
Hawksbill sea turtle	Endangered
Elkhorn coral	Threatened
Staghorn coral	Threatened
Lobed star coral	Threatened
Mountainous star coral	Threatened
Rough cactus coral	Threatened
Pillar coral	Threatened
Blue whale	Endangered
Fin whale	Endangered
Sei whale	Endangered
Sperm whale	Endangered
Scalloped hammerhead shark, Central and Southwest Atlantic DPA	Threatened
Gian manta ray	Threatened

In addition, Jobos Bay includes critical habitats for elkhorn and staghorn coral, which may be adversely impacted by CCR contaminants.[803]

EPA cannot avoid its ESA Section 7 obligations on the grounds that its decisions concerning the disposal of CCR are somehow "non-discretionary," and thus exempt from these requirements.[804] "When an agency, acting in furtherance of a broad Congressional mandate, chooses a course of action which is not specifically mandated by Congress and which is not specifically necessitated by the broad mandate, that action is, by definition, discretionary and is thus subject to Section 7 consultation."[805] Furthermore, "an agency cannot escape its obligation to comply with the ESA merely because it is bound to comply with another statute that has consistent, complementary objectives."[806] EPA's obligations under RCRA regarding solid waste management, and specifically, EPA's duty to issue minimum criteria for the safe disposal of CCR, are discretionary. As a result, EPA possesses discretion to account for the Phase 2 Proposal's effects on threatened or endangered species.

In sum, EPA's proposal would remove or weaken critical safeguards in the CCR Rule that protect listed species, and thus the proposed action may affect listed species within the

[803] *Id.*
[804] *See* 50 C.F.R. § 402.03 ("Section 7 and the requirements of this part apply to all actions in which there is discretionary Federal involvement or control.").
[805] *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv*., 524 F.3d 917, 929 (9th Cir. 2008).
[806] *Karuk Tribe of California v. U.S. Forest Serv*., 681 F.3d 1006, 1024 (9th Cir. 2012) (quoting *Wash. Toxics Coal. v. EPA*, 413 F.3d 1024, 1032 (9th Cir. 2005)).

meaning of 50 C.F.R. § 402.14. As a result, EPA must initiate consultation with FWS and NMFS under ESA Section 7 prior to finalizing any rule.[807]

XV. EPA'S ECONOMIC ANALYSIS FAILS TO CONSIDER RISKS TO PUBLIC HEALTH AND THE ENVIRONMENT FROM ITS PHASE 2 PROPOSAL.

The Phase 2 Proposal's Economic Analysis ("EA") failed to consider the increased costs that will be borne in the form of increased health risks and increased costs of environmental contamination and clean up as a result of its Phase 2 Proposal, which represents a regulatory rollback of the 2015 CCR Rule. EPA's Phase 2 Proposal would significantly weaken EPA's 2015 CCR Rule, and the significant increased costs to health and the environment that would result need to be accounted for in this analysis.

A. The Phase 2 Proposal Would Increase Risks and Reduce Benefits.

The Phase 2 Proposal proposes regulatory weakening of the 2015 rule in ways that will increase the risks to health and the environment.

First, the Phase 2 Proposal would weaken the regulations for CCR piles by removing the requirement that non-containerized CCR piles on-site at an electric generating facility or independent power producing facility would have to comply with landfill disposal regulations. Instead, the CCR piles at these sites would, under the Phase 2 Proposal, be able to escape landfill disposal regulations, which require extensive and specific requirements, with deadlines for compliance, for liners, groundwater monitoring, location restrictions, etc., and be considered a "CCR storage pile" that as long as the placement was a "temporary accumulation," which and "designed and managed to control releases of CCR to the environment."[808]

However, "temporary accumulation," is only very vaguely defined as "neither permanent nor indefinite," and that the entity engaged in the activity has to have a record that all of the CCR will be removed "according to a specific timeline."[809] EPA is does not require any federal, state, or other approval of such uses, however, meaning an entity could, for example, have a contract in place to remove the CCR from the pile within 200 years, which it could present as a "specific

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[807] *See generally Nat'l Parks Conservation Ass'n*, 62 F. Supp. 3d at 17 (finding that a 2008 rule revising standards for coal mining near streams may affect listed species where there was "clear evidence that habitats within stream buffer zones are home to threatened and endangered species and that mining operations affect the environment, water quality, and all living biota").

[808] 84 Fed. Reg. at 40,370 ("*CCR storage pile* means any temporary accumulation of solid, nonflowing CCR placed on the land that is designed and managed to control releases of CCR to the environment. CCR contained in an enclosed structure is not a CCR storage pile. Examples of control measures to control releases from CCR storage piles include: Periodic wetting, application of surfactants, tarps or wind barriers to suppress dust; tarps or berms for preventing contact with precipitation and controlling run-on/runoff; and impervious storage pads or geomembrane liners for soil and groundwater protection.").

[809] 84 Fed. Reg. at 40,371 ("*Temporary accumulation* means an accumulation on the land that is neither permanent nor indefinite. To demonstrate that the accumulation on the land is temporary, all CCR must be removed from the pile at the site. The entity engaged in the activity must have a record in place, such as a contract, purchase order, facility operation and maintenance, or fugitive dust control plan, documenting that all of the CCR in the pile will be completely removed according to a specific timeline.").

timeline" despite the timeline being very long and clearly contrary to the plain meaning of "temporary."

Similarly, EPA's Phase 2 Proposal's definition of "CCR storage pile," does not require all of the regulatory controls that would be required at a landfill disposal site; it merely requires that the CCR accumulation is "designed and managed to control releases of CCR to the environment," and then provides examples of "control measures" such as "[p]eriodic wetting," "tarps," and "geomembrane liners."[810] These examples of "control measures," however, are not required, and the definition is so vague as to allow a user to in theory apply tarps and periodic wetting without a liner and claim they have met the control measures requirement. In fact, even application of *all* of the examples of control measures that are listed in the proposed definition of "CCR storage pile," would be significantly weaker than the 2015 CCR Rule's landfill requirements, which, for example, impose extensive requirements and deadlines regarding groundwater monitoring, closure plans, location restrictions, or other key safeguards that are not even listed as "example" control measures. As such, the Phase 2 Proposal will enable significantly weaker environmental controls at CCR piles than the 2015 CCR Rule, and placement in "CCR storage piles" per the Phase 2 Proposal will, with fewer safeguards, increase the risks of human and environmental receptors suffering deleterious effects due to releases of CCRs from such piles.

Similarly, EPA's Phase 2 Proposal would result in greater health and environmental risks due to CCR being allowed to be placed in *unlimited quantities* without even having to make an environmental demonstration and without any environmental safeguards like liners, groundwater monitoring, etc., as long as several location restrictions are met that cannot, alone, ensure safety to health and the environment. The Phase 2 Proposal would revise the fourth criterion of the definition of "Beneficial use of CCR" so that a user of unencapsulated placement of CCRs on the land in non-roadway applications above 12,400 tons would not have to make an environmental demonstration of safety unless the placement was also: within five feet of the upper limit of the uppermost aquifer, "in a wetland," "in an unstable area," "within a 100-year flood plain," within 200 feet of a fault area, or "within a seismic impact zone."[811] This means, for example, the Phase 2 Proposal could allow a complete exemption from the CCR rule's disposal requirements for an unencapsulated CCR fill that met the first three criteria of EPA's definition of beneficial use[812] only even if the site was six feet from the uppermost aquifer and even if the site was intended to be filled with 10 million tons of CCR or more. EPA's EA fails to consider the increased risks to health or the environment that this massive change would pose, and fails to consider the extremely high benefits that would result from regulating all unencapsulated CCR fill sites as

[810] *Id.* at 40,370.

[811] *Id.* (revision the definition of "beneficial use of CCRs" so that the fourth prong would read: "(4) When unencapsulated use of CCR involves the placement on the land inthe following areas: (a) Within 1.52 meters (five feet) of the upper limit of the uppermost aquifer; (b) in a wetland; (c) in an unstable area (d) within a 100-year flood plain; (e) within 60 meters (200 feet) of a fault area; (f) or within a seismic impact zone in non-roadway applications, the user must demonstrate and keep records, and provide such documentation upon request, that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use.").

[812] *See* 40 C.F.R. § 257.53.

landfills due to the reduction in documented cases of damage to health and the environment that such regulatory would cause.

B. EPA's EA Fails to Account for Increased Health and Environmental Costs and Reduced Benefits from the Phase 2 Proposal.

1. *EPA's EA failed to consider the reduced benefits that would result from its reductions in health and environmental protections.*

EPA's EA for the Phase 2 Proposal fails to consider the increased costs and reduced benefits of the rule resulting from the increased risks to health and the environment that would result from the proposed changes.

In fact, the EA does not have any line items for increased or decreased costs due to increased or decreased risks of cancer or other health ailments commonly associated with CCR constituents, nor for increased or decreased costs due to decreased or increased risks of environmental contamination and resulting cleanups.[813]

In stark contrast, the Regulatory Impact Analysis ("RIA for 2015 Rule") for the 2015 CCR Rule considered, and monetized, a number of health and environmental impacts from changes in regulatory requirements, with monetized benefits including three primary areas of health and environmental protection and several smaller areas.[814] For example, EPA considered and monetized the benefits of:

- Reduced releases from disposal units, including reduced future cleanup costs, reduced future legal fees, and reduced natural resource damages;
- Reduced groundwater contamination, including avoided future groundwater remediation costs, reduced legal fees, and reduced groundwater natural resource damages;
- Reduced incidence of cancer from eating fish contaminated by CCR;
- Reduced IQ losses from children's consumption of lead and mercury in contaminated fish, and reduced need for compensatory education for affected children;
- Improved recreation, improved recreation, aesthetic, and ecological health benefits from water quality improvements;
- Protection of threatened and endangered species, which are at risk from water pollution caused by CCR disposal unit releases; and
- Improved air quality from reduced power plant coal combustion, among other benefits.

The RIA for the 2015 Rule also considered and acknowledged important benefits that could not be monetized, including:

- Human health benefits from reduced hazards of recreational water use and fish consumption (beyond the small categories that could be monetized);

[813] *See* EPA, Economic Analysis, Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles (July 2019) (EPA Doc. No. EPA-HQ-OLEM-2018-0524-0017) [hereinafter EA].
[814] EPA, Regulatory Impact Analysis (RIA) for EPA's 2015 Coal Combustion Residuals (CCR) Final Rule, Docket ID No. EPA-HQ-RCRA-2009-0640-12034, at 8-10 ("RIA for 2015 Rule").

- Reduced fear, stress, and anxiety for people living near CCR impoundments;
- Reduced dust nuisance from fugitive CCR dust;
- Avoided sediment contamination, from reduced deposition of toxic pollutants;
- Reduced water treatment costs;
- Improved commercial fisheries yields and reduced fish mortality;
- Increased water-based recreation due to water quality improvements; and
- Increased property values near CCR facilities.[815]

These are important benefits, all resulting from regulations that reduce human and ecological exposure to the toxins in CCRs. The EA for the Phase 2 Proposal fails to demonstrate that these benefits would be retained as a result of the proposed changes and appears to have failed to have even considered any of these lost benefits as a result of EPA's proposed changes. Consequently, the costs of the Phase 2 Proposal would likely increase beyond the benefits if these lost benefits were considered in the analysis, and the EA does not demonstrate that the benefits of the proposed changes in the Phase 2 Proposal would outweigh the costs when considering lost benefits.

2. *The Phase 2 Proposal's EA fails to consider the increased health and environmental costs due to de-regulating CCR waste piles.*

EPA's EA does not consider increased health and environmental costs caused by reducing regulatory requirements for CCR waste piles. For example, EPA's EA fails to consider the monetary impacts that will result from the Phase 2 Proposal's definitional changes that would allow for CCR stored in certain piles that would have previously been subject to all regulatory requirements for disposal in CCR landfills to suddenly be able to get away with only having to apply a couple of "environmental measures" that are not specified, enumerated, tracked by regulatory agencies, or mandated. In addition, the EA does not consider the increased risks posed by the failure of the "temporary" definition to require that the placement is actually temporary, as removal within a "specific timeline" in the definition of "temporary accumulate" could allow all applicable facilities to meet this standard with a contract that has a "specific timeline" that is unreasonably long and contrary to the straight face interpretation of temporary, such as 5, 10, 50, or 100 years, or more.

EPA's failure to consider these impacts renders the EA incomplete and inaccurate.

3. *The Phase 2 Proposal's EA fails to consider the increased health and environmental costs due to allowing unlimited quantities of unencapsulated CCRs in fills.*

EPA's EA also failed to consider the increased health and environmental costs of allowing unlimited quantities of unencapsulated CCRs to be placed in fills on the land without any required environmental control measures that are required for CCR disposal sites. For example, EPA's EPA fails to consider or quantify the economic impacts that would arise as a result of a user to, under the Phase 2 Proposal, potentially place millions of tons of CCR at a site that is, for example, just over 5 feet from the uppermost aquifer, or just next to (but not "in") a

[815] *Id.*

wetland, without having to even make and environmental demonstration of safety and without having to employ controls such as geomembrane liners, groundwater monitoring, etc. EPA's failure to consider these risks undercounts the expense of this rule and sharply underestimates the costs of the proposed regulatory changes.

4. *The Phase 2 Proposal's EA fails to consider the benefits of regulating all CCR in unencapsulated fill sites as disposal.*

EPA's EA also failed to consider the large monetary benefits that would result from requiring all unencapsulated fill of CCRs on the land to be regulated as disposal sites. Given the similar risks presented by unencapsulated fill sites and the fact that such sites constitute one quarter of all EPA-confirmed "proven" CCR damage cases, the EA should have considered that any change to the definition of beneficial use that would best reduced the high risks of environmental releases would have the highest benefits. EPA's failure to do so renders the EA incomplete.

For an additional analysis of EPA's EA and the shortcomings thereof, see the comments of the Institute for Policy Integrity.

XVI. EPA MUST PROHIBIT THE USE OF UNENCAPSULATED CCR AS FILL OR SUBJECT THE PLACEMENT TO GREATER PROTECTIONS THAN NEW CCR LANDFILLS AND MUST MAINTAIN LANDFILL STANDARDS FOR CCR PILES TO MEET THE PROTECTIVENESS STANDARD OF RCRA § 4004(A).

Throughout these comments, we have stated that EPA must prohibit the use of unencapsulated CCR as fill or subject its placement to the full suite of protections required by the CCR Rule for new CCR landfills, as well as require rigorous environmental demonstrations. For all the reasons previously stated in these comments, including the high risk of harm to health and the environment from the release of CCR and its toxic constituents, the use of unencapsulated CCR should be banned. An additional compelling reason is that CCR beneficial use projects are fundamentally different than CCR landfills in terms of ownership, oversight, number and duration of use, and these differences warrant its prohibition, or at the very least, much greater regulation.

As explained throughout these comments, any placement of CCR on land – even placement that includes liners and cover – requires the certainty of expert long-term monitoring and maintenance to ensure the buried ash is not leaking, disturbed, uncovered or abandoned. But CCR fill projects are primarily located on property that is not contiguous to the power plant site, on property that is not owned by the utility and often on property not owned by the entity placing the toxic material. The owner of the fill site is therefore much less likely than a coal plant owner to be knowledgeable about short-term and long-term maintenance of coal ash sites, including implementing proper engineering safeguards to prevent air and water contamination.

Moreover, landowners on whose property coal ash has been placed may be poorly equipped, both technically and financially, to carry out the challenges of long-term monitoring, maintenance and cleanup of coal ash disposal sites. As a result, landowners themselves, as well

as the surrounding community, may be harmed by the presence of the hazardous substance. To make matters worse, individual landowners are often the custodians of substantial volumes of toxic materials, as the coal ash use records in North Carolina revealed. Mismanagement has resulted in significant harm to human health and the environment, as evidenced by the many fill sites where covers have eroded, and which have been abandoned and forgotten. These dangerous occurrences were previously discussed in these comments, for example, in Town of Pines, Indiana; southeastern Puerto Rico; and North Carolina.

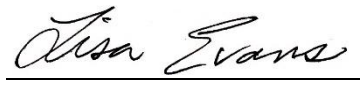
Second, coal ash fill sites are currently widely distributed in the U.S. and much more numerous than coal ash landfills. According to the American Coal Ash Association, 180 million tons of coal ash has been used for structural fill since 1980. Regulatory oversight of these disposal sites would be exceedingly difficult for local, state and federal agencies. The placement of hazardous substances as fill, however, should be of significant interest to environmental agencies and such oversight is necessary to ensure long-term protection. EPA, nevertheless, evinces no concern whatsoever for the resources this oversight may entail for local and state governments. In the end, individual communities are likely to pay with their health and pocketbooks.

Lastly, the longevity of coal ash fill sites is radically different than a typical coal ash landfill. The land occupied by coal ash landfills ordinarily does not undergo radical change over time. The landfill may become the foundation for a new waste unit, or it may serve as a green space once disposal has ended, but it is relatively rare that the land is used for a radically different purpose. This is not the case with coal ash fill projects. It is not unusual for additional construction to occur where fill has been placed, which can create a hazardous situation if the toxic waste is not properly handled during the new construction. Thus at fill sites there are substantial opportunities over time for uncovering, dispersing and mishandling the hazardous substance, long after the coal ash has been placed. All of these instances create potential risk of injury to health and the environment in the vicinity of the fill project.

EPA must treat the placement of coal ash on land, in any volume or location, as the dangerous deposition of a hazardous substance, known to have a high likelihood of creating highly toxic air and water pollution and presenting substantial risk of direct contact and ingestion. Furthermore, coal ash fills present significant risks to aquatic life, birds, wildlife and other living organisms wherever it is disposed. For this reason, coal ash should only be disposed in secure, engineered landfills or reused in safer encapsulated products, like concrete.

In the face of overwhelming evidence of the harm caused by coal ash, EPA's present proposal to lift restrictions on unencapsulated placement of coal ash on land is offered in deliberate and conscious disregard of the health of all Americans and the safety of their water, air and environment. EPA's companion proposal to lift the restrictions on coal ash waste piles is equally outrageous, unsupported by evidence, and extremely dangerous. As explained at length in these comments, the Phase 2 Proposal falls grievously short of satisfying RCRA's protectiveness standard, and EPA presents no rational justification for this significant lifting of protections for coal ash piles and unencapsulated fill. The Trump proposal is therefore arbitrary, capricious, and contrary to law.

Respectfully submitted,



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EPA-HQ-OLEM-2018-0524

List of Documents Accompanying Comments
Submitted by Earthjustice *et al.* on October 15, 2019.

Submitted via regulations.gov:

1) Steven K. Campbell, Ph.D., P.G., Technical Memo Evaluating Aspects of Three Environmental Demonstrations for the Beneficial Reuse of Coal Combustion Residuals (CCRs), USA (Sept. 25, 2019) ("Campbell Expert Report")

2) Expert Comment Report on EPA's Proposed Rule (August 14, 2019): Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles, Docket Number EPA-HQ-OLEM-2018-0524 (Oct. 15, 2019) ("Sahu Expert Report")

3) Mark A. Hutson, P.G., Responses to EPA Solicitation for Comments on Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles (Oct. 14, 2019) ("Hutson Expert Report")

4) Paul Mathewson, Ph.D, Wisconsin Coal Ash Landfill Groundwater Monitoring Data Analysis, A Review of the Impacts on Groundwater of 25 Coal Combustion Residuals Monofills (Oct. 14, 2019) ("Mathewson Expert Report")

5) EPA-Confirmed Damage from Coal Ash as Fill – Case Summaries (Oct. 15, 2019)

6) Damage from CCR Placement in Mines (Oct. 15, 2019)

7) EPA-Confirmed Coal Ash Reuse Damage Cases and Environmental Justice Data (Sept. 2019) ("Environmental Justice Chart")

    a) EPA-Confirmed Coal Ash Reuse Damage Cases and Environmental Justice (Sept. 2019).xlsx

8) CCR Waste Piles & Environmental Justice Data (Oct. 2019)

9) State Beneficial Use Survey (Oct. 2019).xlsx

10) ACAA Prod-Util Estimates_1966-2017.xlsx

11) North Carolina CCR Structural Fill Sites_EJScreen.xlsx

12) North Carolina CCR Structural Fill Sites, Violations Compilation (Oct. 2019)

13) NC DEQ Laserfiche_Fills (Organized 08-27-2019).xlsx

14) NC DEQ Inventory of Structural Fill Projects Greater than 10,000 Cubic Yards (Aug. 26, 2019), https://files.nc.gov/ncdeq/Coal%20Ash/SF-Inventory-for-website-20190826.pdf

15) Enhancing Public Access to Information – Examples (Sept. 30, 2019)

16) Letter from Lisa Evans, Earthjustice, et al, to Joseph Pizarchik, OSMRE, Re: Petition for Rulemaking Under the Surface Mining Control and Reclamation Act, 30 U.S.C. § 1211(g) (Nov. 6, 2015)

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Studies

Earthjustice *et al.* submitted the following attachments to Docket No. EPA-HQ-OLEM-2018-0524 via compact disk:

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Attachments Exceeding 10 MB

Earthjustice *et al.* submitted the following attachments to Docket No. EPA-HQ-OLEM-2018-0524 via compact disk:

1+) Geosyntec Consultants, Inc., Nature and Extent of Contamination Study, Final Report, Brandywine Ash Management Facility (June 2018)

2+) AECOM, History of Construction for Coal Combustion Residuals: Existing Surface Impoundment, Tennessee Valley Authority – Peabody Ash Pond, Paradise Fossil Plant, Drakesboro, KY (Oct. 12, 2016), https://ccr.tva.gov/Plants/PAF/Surface%20Impoundment%20-%20Peabody%20Ash%20Pond/Design%20Criteria/History%20of%20Construction/257-73(c)_History%20of%20Construction_PAF_Peabody%20Ash%20Pond.pdf

3+) 2019 Semi-Annual Monitoring Report, Brandywine Ash Management Facility, Brandywine, MD

4+) AECOM, CCR Beneficial Use Demonstration Report – Fly Ash, prepared for TVA Paradise Fossil Plant, Muhlenberg County, Kentucky (Apr. 22, 2019)

5+) EPA, Human and Ecological Risk Assessment of Coal Combustion Residuals (Dec. 2014), Docket ID No. EPA-HQ-RCRA-2009-0640-11993 ("Risk Assessment for 2015 Rule")

2017 and 2018 Annual Groundwater Monitoring and Corrective Action Reports

Earthjustice *et al.* submitted all Annual Groundwater Monitoring and Corrective Action reports posted online (2017 & 2018) pursuant to the CCR Rule as of October 2019 to Docket No. EPA-HQ-OLEM-2018-0524 via USB flash drives. The document set includes reports referenced in the Comments, such as:

- 2018Annual Groundwater Monitoring and Corrective Action Report, Brandywine Landfill
- Dunkirk 2018 Groundwater Monitoring and Corrective Action Report
- Hayden CCR Landfill 2018 Groundwater Monitoring and Corrective Action Report
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- Andrews Engineering, City Water, Light and Power, Annual Groundwater Monitoring and Corrective Action Report, Year Ending December 31, 2018 (Jan. 2019)

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- DNA-Environment, LLC, 2017 Annual Groundwater Monitoring Report, AES Puerto Rico L.P. (Jan. 2018)