

SURVEYING THE THREAT OF GROUNDWATER CONTAMINATION FROM COAL ASH PONDS

ETHAN GOEMANN†

I. INTRODUCTION

On February 2, 2014, approximately 39,000 tons of coal ash spilled into the Dan River in North Carolina.¹ “The coal ash poured out of a broken pipe . . . turning [the river’s] water into dark muck. It took nearly a week to stem the spill, which sent millions of gallons of sludge from a retired power plant into a river that supplies drinking water to communities in North Carolina and neighboring Virginia.”² Afterward, surface water tests conducted by North Carolina state officials found levels of copper, aluminum, iron, and arsenic that all exceeded state standards.³ It will cost over \$300 million to clean this spill up.⁴

The Dan River spill made national headlines⁵ and forced the North Carolina government into action. In particular, it was the impetus for the North Carolina legislature passing Senate Bill 729, titled the Coal Ash Management Act of 2014 (CAMA).⁶ CAMA was

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† Duke University School of Law, J.D. expected 2016; Tulane University, B.A. 2013. Special thanks to Professor Jeremy Mullem for his guidance throughout the writing process, to Professor Ryke Longest for his mentorship, to the editors of the Duke Environmental Law & Policy Forum for their thoughtful edits, and to my family for their support.

1. Craig Jarvis, *Dan River Coal Ash Spill Damage Could Top \$300 Million*, NEWS & OBSERVER (Nov. 26, 2014, 6:43 AM), <http://www.newsobserver.com/news/politics-government/state-politics/article10148612.html>.

2. Catherine E. Shoichet, *Spill Spews Tons of Coal Ash into North Carolina River*, CNN U.S. (Feb. 9, 2014, 6:29 PM), <http://www.cnn.com/2014/02/09/us/north-carolina-coal-ash-spill/>.

3. *Id.*

4. Jarvis, *supra* note 1.

5. *E.g., id.*; Bruce Kennedy, *NC Coal Ash Spill Draws New Focus to Controversial Industrial Waste*, CBS MONEY WATCH (Feb. 5, 2014, 8:18 AM), <http://www.cbsnews.com/news/nc-spill-draws-new-focus-to-a-controversial-industrial-waste/>; Zoe Schlanger, *Questions About Water Safety After Massive N. Carolina Coal Ash Spill*, NEWSWEEK (Feb. 8, 2014, 9:06 AM), <http://www.newsweek.com/questions-about-water-safety-after-massive-n-carolina-coal-ash-spill-228537>.

6. Coal Ash Management Act of 2014, N.C. GEN. STAT. ANN. § 130A-309.200 (West

touted by House Speaker Thom Tillis as the first legislation in the United States to address the issue of coal ash.⁷ His comments echoed those of other CAMA supporters who called the bill “a ‘first in the nation’ bill that manages the removal of coal ash from 33 unlined pits” within the state.⁸

Coal ash ponds are not unique to North Carolina; utility companies around the nation use coal ash ponds and it is conceivable that “other states likely will consider and many may pass similar legislation” to CAMA.⁹ While CAMA has been held up as “what undoubtedly will become a model that other states will follow,”¹⁰ this remains to be seen. This paper attempts to help answer this question by analyzing the positive and negative steps taken in CAMA, and by contextualizing the new law in North Carolina’s broader scheme for groundwater contamination regulation.

Coal ash, or coal combustion waste, is the inorganic waste left after the coal combustion process and is comprised of fly ash, bottom ash, boiler slag, and flue gas desulfurization (FGD) sludge.¹¹ It contains chemicals that can cause cancer and organ damage, including arsenic, cadmium, hexavalent chromium, lead, mercury, and selenium.¹² If coal ash comes into contact with water, these hazardous

2014).

7. Bruce Henderson, *N.C. Legislators Reach Compromise on Coal-Ash Bill*, CHARLOTTE OBSERVER (Aug. 19, 2014, 7:26 AM), http://www.charlotteobserver.com/2014/08/19/5115948/legislators-revive-coal-ash-bill.html#.VOZITFPF_7c (“House Speaker Thom Tillis, a Mecklenburg County Republican, said the legislation ‘to clean up North Carolina’s decades-old coal ash problem will be the first in the nation to address this issue.’”).

8. Mark Binker, *General Assembly Sends Compromise Coal Ash Bill to the Governor*, WRAL.COM: NEWS (Aug. 20, 2014), <http://www.wral.com/general-assembly-sends-compromise-coal-ash-bill-to-the-governor/13908833/> (“‘No other state has undertaken what we’re undertaking today. We had no model to use and that’s the reason it’s taken the time it did,’ Rep. Chuck McGrady, R-Henderson, said. McGrady has been the lead negotiator for the House on the measure.”).

9. *Id.*

10. Benne Hutson et al., *North Carolina’s First-in-the-Nation Coal Ash Law Takes Effect*, MCGUIREWOODS (Sept. 22, 2014), <http://www.mcguirewoods.com/Client-Resources/Alerts/2014/9/North-Carolinas-First-in-the-Nation-Coal-Ash-Law.aspx>.

11. LINDA LUTHER, CONG. RESEARCH SERV., REGULATING COAL COMBUSTION WASTE DISPOSAL: ISSUES FOR CONGRESS 22 (2010), available at <http://fas.org/sgp/crs/misc/R41341.pdf> (citing ENVTL. PROT. AGENCY, WASTES - RESOURCE CONSERVATION - REDUCE, REUSE, RECYCLE - INDUSTRIAL MATERIALS RECYCLING, available at <http://www.epa.gov/osw/conserv/rrr/imr/ccps/index.htm>; RUSTU S. KALYONCU & DONALD W. OLSON, COAL COMBUSTION PRODUCTS (2013), available at <http://pubs.usgs.gov/fs/fs076-01/fs076-01.html>).

12. LISA EVANS ET AL., EARTHJUSTICE, STATE OF FAILURE: HOW STATES FAIL TO PROTECT OUR HEALTH AND DRINKING WATER FROM TOXIC COAL ASH 5 (2011), available at: http://earthjustice.org/sites/default/files/StateofFailure_2013-04-05.pdf (citing ENVTL. PROT.

chemicals can “leach out of the ash and contaminate drinking water.”¹³ These chemicals can then be absorbed by humans if they drink contaminated water. Additionally, fish who swim in water contaminated with coal ash can absorb these harmful chemicals, thereby endangering animals and humans who consume such fish.¹⁴ In 2010, the Environmental Protection Agency released a report that found exposure to coal ash causes 900 cancer cases per 100,000 exposed individuals.¹⁵ As a comparison, there are 100 cancer cases per 100,000 individuals who smoked a pack of cigarettes a day.¹⁶ Clearly, while coal ash ponds create a risk of large-scale disasters like the Dan River spill, the ponds also “put human health at risk . . . from gradual yet equally dangerous contamination as coal ash toxins seep into drinking water sources.”¹⁷

CAMA takes several important steps in addressing groundwater contamination emanating from coal ash ponds, and this holistic approach can indeed be a model for other states. However, there are two main gaps in CAMA’s regulatory framework that any states seeking to protect their groundwater from coal ash ponds should address in their bills. First, CAMA does not ensure that all North Carolina coal ash ponds will actually stop leeching contaminants into the surrounding groundwater after they close.¹⁸ Second, it relieves owners of coal ash ponds from their obligation to immediately remedy groundwater pollution from their ponds.¹⁹ Even before the Dan River spill cast national attention on coal ash, environmental groups were already concerned about the negative effects of leaking coal ash ponds on groundwater. For example, months before the Dan River spill, a suit was brought by several environmental groups

AGENCY, HUMAN AND ECOLOGICAL RISK ASSESSMENT OF COAL COMBUSTION WASTES (April 2010) (draft)).

13. *Id.*

14. Blake Korb, Comment, *Holding Our Breath: Waiting for the Federal Government to Recognize Coal Ash as a Hazardous Waste*, 45 J. MARSHALL L. REV. 1177, 1179 (2012) (citing BARBARA GOTTLIEB ET AL., COAL ASH: THE TOXIC THREAT TO OUR HEALTH AND ENVIRONMENT: A REPORT FROM PHYSICIANS FOR SOCIAL RESPONSIBILITY AND EARTHJUSTICE, 11–12 (2010), available at <http://www.psr.org/assets/pdfs/coal-ash.pdf>).

15. EVANS, *supra* note 12, at 6 (The EPA stated regulatory goal for cancer risk is 1 cancer case per 100,000 exposures. Coal ash exposure is a 2,000 times greater risk than this goal).

16. *Id.*

17. Press Release, Earth Justice & Sierra Club, Coal Ash: A National Problem Needs a National Solution (July 2009), available at <http://www.sierraclub.org/coal/downloads/2009-07-coal-ash.pdf>.

18. *See infra* Part V.B.1.

19. *See infra* Part V.B.2.

attempting to force Duke Energy—the owner of all thirty-three²⁰ coal ash ponds in North Carolina—to take corrective action on contaminants leaking into the groundwater from its coal ash ponds.²¹ In fact, it has been estimated that these coal ash ponds (all of which are unlined) had been polluting the groundwater in North Carolina for over half a century before CAMA was passed.²² Crucially, the risks could be “essentially eliminated” if the coal ash ponds had composite liners reinforcing their sides, instead of being left unlined.²³

CAMA was passed, first and foremost, in response to the Dan River spill, but also because of these broader groundwater pollution concerns.²⁴ Despite CAMA’s motivations, the legislation was strongly rebuked by the Southern Environmental Law Center (SELC) for actually hurting North Carolina’s pollution control mechanisms.²⁵ In a press statement, SELC stated:

All of Duke Energy’s coal ash disposal sites pollute groundwater, and existing law in North Carolina requires “immediate action to

20. This note will refer to the number of coal ash ponds in North Carolina presently as thirty-two, but when discussing past cases or using past quotes it will usually reference thirty-three coal ash ponds. This discrepancy is due to the fact that on October 1, 2014, Duke Energy revised its number of coal ash ponds from thirty-three to the current tally of thirty-two coal ash ponds. Taft Wireback, *Number of N.C. Coal Ash Ponds Drops by One, on Technicality*, NEWS & RECORD (Oct. 1, 2014, 3:51 PM), http://www.news-record.com/news/number-of-n-c-coal-ash-ponds-drops-by-one/article_4e0c6ef4-49a4-11e4-a9f9-0017a43b2370.html.

21. Request for Declaratory Ruling at 26, Cape Fear River Watch Before North Carolina Environmental Management Commission (filed Oct. 10, 2012) [hereinafter *Request*].

22. John Murawski, *NC Coal Ash Legislation Could be Approved Wednesday*, NEWS & OBSERVER, (Aug. 19, 2014, 3:01 PM), <http://www.newsobserver.com/news/local/article10035095.html>.

23. Luther, *supra* note 11, at 4. Duke Energy has calculated the cost of placing all of the coal ash in its thirty-two coal ash ponds in North Carolina in lined landfills at \$10 billion. John Downey, *Duke Energy Calculates Coal-Ash Costs at \$3.4 Billion – for Now*, CHARLOTTE BUS. J. (Nov. 6, 2014, 4:57 PM), <http://www.bizjournals.com/charlotte/blog/energy/2014/11/duke-energy-calculates-coalash-costs-at-3-4.html?page=all>.

24. Andrew Kenney, *NC Lawmakers pass Coal Ash Legislation; Adjourn Very Long Short Session*, NEWS & OBSERVER (Aug. 20, 2014, 11:24 AM), <http://www.newsobserver.com/news/politics-government/state-politics/article10035944.html>.

25. Press Release, Southern Environmental Law Center, *S729 Fails to Protect People from Duke Energy’s Coal Ash Pollution* (Aug. 19, 2014), available at <https://www.southernenvironment.org/news-and-press/press-releases/joint-press-statement-on-n.c.-coal-ash-bill-s729-s729-fails-to-protect-people-from-duke-energys-co> [hereinafter SELC, *S729 Fails to Protect*]. The Southern Environmental Law Center was not the only environmental activist group to speak out against CAMA. Amy Adams, the North Carolina campaign coordinator for Appalachian Voices derided the legislation saying: “A far cry from the historic bill lawmakers have touted, this plan chooses just four communities out of 14 across the state to receive cleanup The others, our lawmakers have decided, will have to wait for a commission of political appointees to decide their fate.” Binker, *supra* note 8.

eliminate the source of contamination” at these sites. Politicians inserted language into Senate Bill 729 [CAMA] that guts existing law and undermines citizens groups’ ongoing efforts to ensure real cleanup of these polluting sites under existing law.²⁶

This note argues that CAMA can serve as an effective model for other states to protect their groundwater from coal ash pond contamination threats, if steps are taken to close the holes in its protection requirements. Specifically, this note focuses on the groundwater protection provisions in CAMA, since 50% of the drinking water in the United States is derived from groundwater.²⁷ Groundwater usually does not require much treatment to be suitable to drink; thus it can be developed at a cheaper rate than surface water.²⁸ Nevertheless, contaminated groundwater can lead to disease outbreaks if it is part of the drinking water and left untreated.²⁹ Consequently, lowering the risk of contaminated groundwater due to coal ash pond leakage is an important issue for North Carolina.

This note begins by providing background information on the national issue of coal ash storage and resulting groundwater contamination in Part II. Part III details the North Carolina regulations for groundwater contamination that controlled coal ash ponds prior to CAMA’s passage. Part IV examines CAMA, focusing on the regulations that were enacted to protect groundwater from coal ash pond contamination. Part V proposes reforms to CAMA to ensure North Carolina’s groundwater is protected from coal ash ponds. Finally, this Note will assess whether CAMA—along with these suggested revisions—can serve as a model for other state legislatures looking to reform their coal ash regulations.

26. SELC, *S729 Fails to Protect*, *supra* note 25.

27. Jonathan R. Eaton, Note, *The Sieve of Groundwater Pollution: A Public Health Law Analysis*, 6 J. HEALTH & BIOMEDICAL L. 109, 109 (2010) (citing Stefano Burchi, *National Regulations for Groundwater: Options, Issues and Best Practices*, in GROUNDWATER: L. & POL’Y PERSPS. 55, 55 (Salman M. A. Salman ed., 1999)). Specifically, in North Carolina, 52% of the population’s drinking water supply depends on groundwater and there are 15,972 public supply wells serving North Carolina. NORTH CAROLINA GROUNDWATER ASSOCIATION, <http://www.ncgwa.org/>.

28. Eaton, *supra* note 27, at 110 (citing G. Howard et al., *Ground Water and Public Health*, in PROTECTING GROUNDWATER FOR HEALTH: MANAGING THE QUALITY OF DRINKING WATER SOURCES 3, 4–6 (Oliver Schmoll et al. eds., 2006)).

29. *Id.* at 7 (citing G. Howard et al., *Ground Water and Public Health*, in PROTECTING GROUNDWATER FOR HEALTH: MANAGING THE QUALITY OF DRINKING WATER SOURCES 3, 7 (Oliver Schmoll et al. eds., 2006)).

II. BACKGROUND

A. Coal Ash

Coal ash is the second largest industrial waste stream in the United States.³⁰ The amount of ash left behind after the coal-firing process can weigh as much as fifteen percent of the coal fired.³¹ As coal-fired electricity production has increased, coal ash production has increased as well, causing a “significant waste disposal problem.”³²

The waste disposal problem posed by coal ash storage is far from uniform, as the specific chemical composition of coal ash will “depend on the type and source of coal, the combustion technology used at the power plant, and the air pollution control technology used.”³³ This third factor—the use of air pollution control technology—is particularly worrisome because such technology is becoming more widely used at coal plants³⁴ and it increases coal ash waste volume and the amount of contaminants, including heavy metals, contained in the waste.³⁵ The air pollution controls have this effect because it reduces the pollutants that coal fired power plants emit into the air by transferring them to the plant’s residue, the coal ash.³⁶ A 2009 EPA report found coal ash “met the regulatory criteria for identifying and listing the waste as ‘hazardous’” under 40 C.F.R. § 261.11(a)(3).³⁷

Typically, coal ash is discarded by either putting it in landfills or

30. EVANS, *supra* note 12, at 3. “The EPA estimates that 140 million tons of coal ash are generated annually,” making it the second largest industrial waste stream in the United States, after mine wastes. PHYSICIANS FOR SOCIAL RESPONSIBILITY, COAL ASH: HAZARDOUS TO HUMAN HEALTH, *available at* <http://www.psr.org/assets/pdfs/coal-ash-hazardous-to-human-health.pdf>.

31. Steven T. Moon & Amanda B. Turner, *Coal Ash Law and Regulation in the United States: An Overview*, 18 SOUTHEASTERN ENVTL. L.J. 173, 174 (2010).

32. *Id.* (citing D.C. Adriano et al., *Utilization and Disposal of Fly Ash and Other Coal Ash Residues in Terrestrial Ecosystems: A Review*, 9 J. ENVTL. QUALITY 333, 333 (1980)).

33. LUTHER, *supra* note 11, at 7 (citing F. SANCHEZ ET AL., CHARACTERIZATION OF MERCURY-ENRICHED COAL COMBUSTION RESIDUES FROM ELECTRIC UTILITIES USING ENHANCED SORBENTS FOR MERCURY CONTROL (2006) *available at* <http://nepis.epa.gov/Adobe/PDF/P1006ATD.pdf>; D. KOSSON ET AL., CHARACTERIZATION OF COAL COMBUSTION RESIDUES FROM ELECTRIC UTILITIES – LEACHING AND CHARACTERIZATION DATA (2009) *available at* <http://nepis.epa.gov/Adobe/PDF/P1007JBD.pdf>).

34. *Id.*

35. *Id.* at 5.

36. *Id.* at 7.

37. *Id.* at 4 (“Factors required to be taken into consideration to make that determination include a waste’s toxicity, constituent concentration, potential for hazardous constituents to migrate, and plausible mismanagement of the waste.”).

mixing it with water and storing it in a man-made waste pond.³⁸ A wet coal ash disposal system is called a coal ash pond.³⁹ Waste is taken from a power plant to a surface impoundment pond where, eventually, the solid waste settles to the bottom.⁴⁰ This leaves the pond with relatively clear water on its surface.⁴¹ These ponds are not regulated under federal law.⁴² Currently, 107.9 million tons of coal ash is stored in North Carolina in thirty-two unlined coal ash ponds.⁴³

Nationwide, eighty million tons of coal ash is discarded each year.⁴⁴ There are approximately 629 coal ash ponds in use at 495 coal-fired power plants throughout the United States.⁴⁵ Where these ponds are unlined, it “presents substantial risks to human health and the environment from releases of toxic constituents (particularly arsenic and selenium) into surface and groundwater.”⁴⁶ In fact, the EPA has documented cases of unlined coal ash ponds causing surface and groundwater to exceed “health-based standards for contaminants like lead, arsenic, selenium, and chromium.”⁴⁷ Two hundred and seven coal ash ponds in thirty-seven different states were found to “ha[ve] already contaminated the water or air in violation of federal health standards.”⁴⁸

Moreover, years after the first disposal of coal ash into a coal ash pond, metals can continue to leach into surrounding groundwater.⁴⁹

38. Jessica Lienau, *Coal Ash Waste: A History of Legislative Inaction*, 14 PUB. INT. L. REP. 141, 142 (2009).

39. LUTHER, *supra* note 11, at 8.

40. *Id.*

41. *Id.*

42. *Id.* at 9.

43. Taft Wireback, *Duke Energy Ups Coal Ash Estimates*, NEWS & RECORD (Oct. 3, 2014, 5:00 AM), http://www.news-record.com/news/duke-energy-uos-coal-ash-estimates/article_32a86bc4-4aa1-11e4-9c08-001a4bcf6878.html.

44. Moon & Turner, *supra* note 31, at 175 (citing ENVTL. PROT. AGENCY, USING COAL ASH IN HIGHWAY CONSTRUCTION: A GUIDE TO BENEFITS AND IMPACTS 19 (2005), available at <http://nepis.epa.gov/Exe/ZyPDF.cgi/P100071H.PDF?Dockey=P100071H.PDF>).

45. LUTHER, *supra* note 11, at 8.

46. *Id.* at 4.

47. *Id.* The EPA uses a leach test, the Toxicity Characteristic Leaching Procedure, to test the leachate resulting from specific coal ash ponds to determine if it contains toxic chemicals. JEFFERY SANT & LISA EVANS, COAL ASH: SEVEN MYTHS THE UTILITY INDUSTRY WANTS YOU TO BELIEVE AND SEVEN FACTS YOU NEED TO KNOW (2011) available at <http://earthjustice.org/sites/default/files/CoalAshMythFactSheetMar2011.pdf>.

48. Brad Plumer, *Coal Ash is Spilling into North Carolina's River. Here's Why It's So Hard to Regulate*, THE WASHINGTON POST: WONKBLOG (Feb. 6, 2014), <http://www.washingtonpost.com/blogs/wonkblog/wp/2014/02/06/coal-ash-is-spilling-into-north-carolinas-river-heres-why-its-so-hard-to-regulate/>.

49. Moon & Turner, *supra* note 31, at 176–77 (citing TOM FITZGERALD, CURRENT ISSUES

Thankfully, these contamination risks are “essentially eliminated when the waste is disposed of in units with composite liners.”⁵⁰ Unfortunately, in the thirty-seven states that produce ninety-eight percent of the United States’ production of coal ash, only three require composite liners for all new coal ash ponds and none have retroactive liner requirements.⁵¹

Many states do not require all coal ash landfills and ponds to employ even the most basic safeguards required at household trash landfills. For example, states do not require coal ash landfills to have composite liners, groundwater monitoring, leachate collection systems, dust controls or financial assurance; nor do states require that coal ash ponds be operated to avoid catastrophic collapse.⁵²

B. Nationwide: Severe Lack of Regulation

Standards for coal ash ponds are voluntary and implemented state-by-state.⁵³ Generally, states use their authority to exempt coal ash from regulations for hazardous wastes.⁵⁴ Most states have not passed any regulations specifically for coal ash, therefore coal ash issues are evaluated on a case-by-case basis, often under state recycling laws and regulations.⁵⁵ One reason behind states’ hesitancy to create more stringent coal ash regulations is a fear of disadvantaging their own coal-fired power industry compared to those operating in states with more liberal regulations.⁵⁶ North Carolina fit the above description well prior to enacting CAMA, as it did not have specific regulations for coal ash and generic state groundwater pollution laws dictated issues over coal ash groundwater

IN THE REGULATION OF COAL ASH (2009) at 5–6 available at <http://www.flyash.info/2009/Fitzgerald-WOCA2009-plenary.pdf>).

50. LUTHER, *supra* note 11, at 4.

51. EVANS, *supra* note 12, at 3, 7–8 (The three states requiring composite liners for all new coal ash ponds are Louisiana, Pennsylvania, and West Virginia. The remaining forty-seven are Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.).

52. *Id.* at 3.

53. Moon & Turner, *supra* note 31, at 188.

54. *Id.* at 187.

55. *Id.* at 188.

56. *Id.* at 189.

contamination.⁵⁷

Perhaps predictably, this nationwide trend of limited regulation for coal ash storage has failed to prevent coal ash environmental disasters. In fact, the largest environmental disaster in United States history, by volume, was a coal ash spill.⁵⁸ This spill occurred on December 22, 2008, when a coal ash dam broke at the Tennessee Valley Authority Kingston Fossil Plant, releasing 1.1 billion gallons of coal ash.⁵⁹ The spill covered 300 acres of land with four to five feet of coal ash and destroyed three homes.⁶⁰ Cleanup costs for this spill are expected to reach \$1.2 billion and add “\$0.69 per month to the utility bills of nine million customers until 2024.”⁶¹ Other major coal ash spills include the 2005 Martins Creek, Pennsylvania spill in which 100 million gallons of coal ash was spilled; and the 2007 and 2008 Martinsville, Indiana spills, both of which released 30 million gallons of coal ash.⁶²

After the 2008 Kingston spill, national environmental groups went to Congress and the EPA demanding coal ash regulations that would offer greater protection.⁶³ EPA Administrator Lisa Jackson promised to reconsider the EPA’s reluctance to regulate coal ash disposal by the end of 2009; however, the EPA still does not regulate coal ash as a hazardous waste and did not enact any coal ash regulations until December 19, 2014.⁶⁴ Furthermore, six congressional hearings were held about the need to regulate coal ash. The 111th Congress did not enact any protective legislation.⁶⁵ The 112th

57. See Order on Petition for Judicial Review at *1-2, *Cape Fear River Watch v. North Carolina Environmental Management Commission* (2013) (No. 13 CVS 00093) [hereinafter *Order*] (Groundwater contamination from coal ash ponds in North Carolina “is governed by the EMC’s [Environmental Management Commission’s] 2L Rule, which established groundwater standards and procedures for ‘corrective action.’”).

58. EVANS ET AL., *supra* note 12, at 4.

59. *Id.*

60. Thomas O. McGarity & Rena I. Steinzor, *The End Game of Deregulation: Myopic Risk Management and the Next Catastrophe*, 23 DUKE ENVTL. L. & POL’Y F. 93, 93 (2012).

61. *Id.* at 94.

62. EVANS ET AL., *supra* note 12, at 5.

63. McGarity & Steinzor, *supra* note 60, at 95.

64. See *2014 Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities*, EPA, <http://www2.epa.gov/coalash/coal-ash-rule#rulehistory> (last visited Mar. 26, 2015) (“After extensive study and examination of all comments received during the rulemaking process, EPA established regulations under Subtitle D of RCRA.”). The Subtitle D regulations establish “national minimum criteria.” *Id.* The EPA requirements are not more thoroughly discussed in this article because they are looser regulations than CAMA and do not change CAMA’s effect.

65. H.R. 2273, 112th Cong. (2011); see also McGarity & Steinzor, *supra* note 61, at 96. It passed the House on a vote 267 for and 144 against but proceeded to die in the Senate. *H.R.*

Congress narrowly failed to pass legislation that would have taken away the EPA's authority to adopt strong regulations for coal ash.⁶⁶ An Earthjustice report issued in 2011 noted that, given the frequency of coal ash disasters and the lack of response by either the EPA or state legislatures, the "clock [was] ticking on the next multi-million-gallon spill."⁶⁷

Earthjustice's prediction was correct—the next major spill happened in 2014 on the Dan River in North Carolina.⁶⁸ However, unlike other states that took no action in the wake of their coal ash disasters, on September 20, 2014, the North Carolina state legislature did respond by passing CAMA.⁶⁹ This legislation gave North Carolina regulations specific to regulating the dangers of coal ash storage and management.

III. PRE-CAMA GROUNDWATER CONTAMINATION REGULATION IN NORTH CAROLINA

A. *The 2L Rule*

Before CAMA was passed in North Carolina, as discussed above, there were no regulations specific to coal ash. Thus, prior to CAMA's enactment, groundwater contamination caused by coal ash ponds was regulated under North Carolina's general groundwater protections rule: 15A N.C. Admin Code 2L .0101 ("the 2L rule").⁷⁰ The regulations under the 2L rule are "intended to maintain and

2273 (112th): *Coal Residuals Reuse and Management Act*, GOVTRACK, <https://www.govtrack.us/congress/bills/112/hr2273> (last visited Mar. 26, 2015).

66. *Id.*

67. EVANS ET AL., *supra* note 12, at 5.

68. Jarvis, *supra* note 1; *see also* Press Release, Catawba Riverkeeper, Catawba Riverkeeper Visits Duke Energy's Dan River Coal Ash Spill, Renews Call for Cleanup of Four Charlotte-area Coal Ash Ponds (February 4, 2014), *available at* <http://www.catawbariverkeeper.org/issues/coal-ash-1/CATAWBA%20RIVERKEEPER%20PICTURES%20AND%20PRESS%20RELEASE%20FOR%20DAN%20RIVER%20SPILL.pdf> (estimating the Dan River coal ash spill at 82,000 tons and 27 million gallons of contaminated water); Thomas Overton, *Duke Fined \$102.2 Million for Mishandling Coal Ash*, POWER (Feb. 24, 2015), <http://www.powermag.com/duke-fined-102-2-million-for-mishandling-coal-ash/> (coal ash spill resulted in release of 75,000 gallons of coal ash and 35 million gallons of contaminated water into Dan River).

69. Hutson et al., *supra* note 10.

70. Petition for Judicial Review at *1, *Cape Fear River Watch v. North Carolina Env'tl. Mgmt. Comm'n* (2013) (No. 13CVS00093) [hereinafter *Petition*]. "North Carolina regulates its groundwater through implementation and enforcement of its groundwater rules." *Catawba Riverkeeper Found. v. Duke Energy Carolinas, LLC*, No. 3:13-CV-00355-MOC, 2014 WL 340383, at *5 (W.D. N.C. January 30, 2014).

preserve the quality of the groundwaters, prevent and abate pollution and contamination of the waters of the state, protect public health, and permit management of the groundwaters for their best usage by the citizens of North Carolina.”⁷¹ The 2L rule protects groundwater quality by setting allowable limits for specific contaminants in groundwater and mandating corrective action to be taken if contamination exceeds this limit.⁷²

When any activity contaminates groundwater, the 2L rule establishes that corrective action must be taken.⁷³ However, this section mandates two different procedures for corrective action depending on whether or not the activity that degraded the groundwater was issued a permit by the North Carolina Environmental Management Commission (“EMC”), which is a part of the North Carolina Department of Environmental and Natural Resources.⁷⁴

Subsection (c) of this administrative code section regulates corrective action for unpermitted activities degrading groundwater.⁷⁵ The plain wording of the subsection “compel[s] *immediate* action” to eliminate the source of contamination stemming from unpermitted activities.⁷⁶ Subsection (c) requires the owner of the facility that contaminated the groundwater to:

- (1) immediately notify the Division of the activity that has resulted in the increase and the contaminant concentration levels;
- (2) take immediate action to eliminate the source or sources of contamination;
- (3) submit a report to the Director assessing the cause, significance and extent of the violation; and
- (4) implement an approved corrective action plan for restoration of groundwater quality in accordance with a schedule established by the Director, or his designee. In establishing a schedule the

71. 15A N.C. ADMIN. CODE 02L.0103(a) (2002).

72. Order, *supra* note 57, at 9.

73. *Id.* at 11. See generally 15A N.C. ADMIN. CODE 02L.0106 (2002) (setting forth statutory requirements for corrective action that must be taken when water is contaminated).

74. ADMIN. 02L.0106; N.C. GEN. STAT. §§143–215.1 (2014). It is important to note that “[f]or the purposes of determining whether an activity is conducted under the authority of a permit or not, 15A NCAC 02L.0106(e) deems any activity permitted prior to December 30, 1983 to be ‘not permitted.’” Order, *supra* note 57, at 9.

75. 15A N.C. ADMIN. CODE 02L.0106(c) (2002).

76. Order, *supra* note 57, at 10 (emphasis added).

Director, or his designee shall consider any reasonable schedule proposed by the person submitting the plan.⁷⁷

Permitted facilities do not require immediate action, since such facilities only require a “plan and proposed schedule for corrective action” that they must follow on a “reasonable schedule.”⁷⁸ This distinction between subsections shows a policy choice to require unpermitted and older facilities to act with more urgency when it is found they have contaminated the groundwater.⁷⁹

B. Cape Fear

There are thirty-two unlined coal ash ponds in North Carolina spread throughout fourteen different coal-powered power plants; all of which are operated and maintained by Duke Energy.⁸⁰ It is estimated that there are 107.9 million tons of coal ash spread throughout these thirty-two coal ash ponds.⁸¹ Before 2009, the North Carolina Department of Environment and Natural Resources (DENR) did not require groundwater monitoring and sampling around North Carolina’s coal ash ponds.⁸² Since groundwater monitoring first became required, groundwater samples from monitoring wells at fourteen different facilities have confirmed contamination that exceeds groundwater quality standards.⁸³ The contaminants found at these sites include arsenic, thallium, boron, sulfate, nickel, iron, chromium, manganese, and selenium.⁸⁴ Indeed, “[s]ampling from many of the monitoring wells confirm exceedences of groundwater standards for the same substance consistently over multiple sampling events across several years of monitoring.”⁸⁵

On October 10, 2012, Cape Fear River Watch, Sierra Club, Waterkeeper Alliance, and Western North Carolina Alliance

77. 15A N.C. ADMIN. CODE 02L.0106(c).

78. Order, *supra* note 57, at 10–11.

79. *Id.* at 11.

80. Wireback, *supra* note 43.

81. Taft Wireback, *Duke Revises Coal Ash Estimate*, WINSTON-SALEM J. (Oct. 2, 2014, 10:30 PM), http://www.journalnow.com/news/state_region/duke-revises-coal-ash-estimate/article_c303c756-bb9f-5930-988b-348f0a66479d.html. See generally N.C. GEN. STAT. § 143-215.1 (“Control of sources of water pollution; permits required” for information about how permits are issued).

82. See Order, *supra*, note 57, at 2 (December 2009 was the first time DENR requested permittees of coal ash lagoons to install groundwater monitoring wells at all fourteen facilities).

83. Petition, *supra* note 70, at 14.

84. *Id.*

85. *Id.*

petitioned the North Carolina Environmental Management Commission (EMC) for a declaratory ruling on the application of the 2L rule to these thirty-three Duke Energy unlined coal ash ponds across North Carolina responsible for contaminating the surrounding groundwater.⁸⁶ After the EMC issued an unfavorable ruling,⁸⁷ the petitioners sought judicial review in North Carolina Superior Court.⁸⁸

The culmination of this process was a March 6, 2014 order written by Judge Paul Ridgeway in *Cape Fear River Watch v. North Carolina Environmental Management Commission*. Judge Ridgeway ruled that the thirty-three⁸⁹ coal ash ponds operated by Duke Energy at its fourteen power plants were unpermitted under the 2L rule because they were issued permits before December 30, 1983.⁹⁰ Therefore, Duke Energy, as the owner of the ponds, was ordered to “take immediate action to eliminate sources of contamination that cause a concentration of a substance in excess of groundwater quality standards, in advance of their separate obligation to propose and implement a corrective action plan for the restoration of groundwater quality contaminated by those sources.”⁹¹ Additionally, closed and inactive unpermitted coal ash ponds were held to the same standard and Duke Energy was required to take the same corrective action measures.⁹² Six months later, the North Carolina legislature passed CAMA and drastically changed this corrective action requirement for groundwater-contaminating coal ash pond owners.

IV. THE NORTH CAROLINA RESPONSE: CAMA

The Coal Ash Management Act of 2014 amends various North Carolina General Statutes, which regulate the management and disposal of the coal ash created and stored in the State.⁹³ It creates a nine member Coal Ash Management Commission that has the power

86. Request, *supra* note 21, at *1.

87. The EMC ruled that operators of coal ash ponds where “their activity results in an increase in concentration of a substance in excess of groundwater quality standards, whether or not groundwater quality standards have been exceeded” and were permitted before December 30, 1983 did not have to take corrective action nor immediate action pursuant to 15A N.C. ADMIN. CODE 2L .0106(c) to eliminate the sources of that contamination. Order, *supra*, note 57, at 3.

88. Petition, *supra* note 70, at 1.

89. This note will refer to the number of coal ash ponds in North Carolina presently as thirty-two. See *supra* note 20.

90. Order, *supra*, note 57, at 16–17.

91. Order, *supra*, note 57, at 16.

92. *Id.* at 17.

93. See generally N.C. GEN. STAT. ANN. § 130A-309.200 (2014).

to review and approve classifications of coal ash ponds, closure plans for coal ash ponds, and any additional studies requested by the General Assembly.⁹⁴ The Commission can also make recommendations on coal ash statutes and rules.⁹⁵ Additionally, CAMA nullifies any local ordinance that places additional restrictions of conditions on the management of coal ash to ensure that the regulations for the management of coal ash are uniform throughout the State.⁹⁶ Furthermore, if the operator of coal ash activities feels that a local zoning or land-use ordinance does place additional restrictions, the owner may petition for the ordinance to be reviewed to ensure that it does not include different conditions for coal ash management.⁹⁷ Simply put, CAMA is meant to be the only regulations that are placed on North Carolina coal ash management and disposal.

A. Changes in the Management of Coal Ash Ponds Affecting Groundwater Protection

Almost immediately after CAMA passed on October 1, 2014, regulations restricting coal ash ponds and reducing their use brought significant change.⁹⁸ Eleven days after CAMA became law, expansion of existing and construction of new coal ash ponds was prohibited, as was the disposal of coal ash into coal ash ponds where the coal-fired generating units at the electric generating facility were no longer producing waste on site.⁹⁹ CAMA also requires DENR to classify all coal ash ponds, active or retired, as high-risk, intermediate-risk, or low-risk.¹⁰⁰ These classifications then determine when the coal ash pond must be closed.¹⁰¹ DENR will develop these classifications by considering any information “deemed relevant” including:

- (1) Any hazards to public health, safety, or welfare resulting from the impoundment.
- (2) The structural condition and hazard potential of the impoundment.

94. *Id.* § 130A-309.202(f).

95. *Id.*

96. *Id.* § 130A-309.205(a).

97. *Id.* § 130A-309.205(b).

98. *See id.* § 130A-309.208 (imposing regulations on the generation, disposal, and use of coal combustion residuals).

99. *Id.*

100. *Id.* § 130A-309.211(b).

101. *Id.* § 130A-309.212.

(3) The proximity of surface waters to the impoundment and whether any surface waters are contaminated or threatened by contamination as a result of the impoundment.

(4) Information concerning the horizontal and vertical extent of soil and groundwater contamination for all contaminants confirmed to be present in groundwater in exceedance of groundwater quality standards and all significant factors affecting contaminant transport.

(5) The location and nature of all receptors and significant exposure pathways.

(6) The geological and hydrogeological features influencing the movement and chemical and physical character of the contaminants.

(7) The amount and characteristics of coal combustion residuals in the impoundment.

(8) Whether the impoundment is located within an area subject to a 100-year flood.¹⁰²

This classification system can become a subjective process as DENR is also allowed to consider any factor it “deems relevant to the establishment of risk.”¹⁰³

DENR clearly has a great deal of discretion to decide on its proposed classification and there is little oversight after it issues its proposal. For the DENR classification to be finalized, the Department must issue a written declaration that describes its findings of fact that led to the classification.¹⁰⁴ Then, within a maximum of sixty days after the written declaration is issued, DENR must hold a public meeting in the counties where the coal ash pond is located.¹⁰⁵ For a minimum of twenty days after the meeting, DENR must solicit written comment.¹⁰⁶ Next, DENR has thirty days after the period for soliciting written comments to submit its classification proposal to the Coal Ash Management Commission.¹⁰⁷ The Commission can then evaluate the classification and DENR’s reasoning.¹⁰⁸ The Commission’s action on the proposal must include “findings in support of its determination.”¹⁰⁹

102. *Id.* § 130A-309.211(a).

103. *Id.*

104. *Id.* § 130A-309.211(b)(1).

105. *Id.* § 130A-309.211(b)(3).

106. *Id.* § 130A-309.211(b)(4).

107. *Id.* § 130A-309.211(c).

108. *Id.*

109. *Id.*

Alternatively, the Commission can choose not to respond for sixty days and the classification will be automatically approved.¹¹⁰ The fact that DENR's classifications can be automatically approved by the Coal Ash Management Commission is a significant loophole in CAMA's regulatory structure, as well as a tremendous gap in the Commission's oversight powers. It potentially allows DENR to get approval for their classification selection without the selection being adequately checked.

The regulations require that all high-risk ponds be closed December 31, 2019, four years after DENR must deliver the classifications.¹¹¹ Intermediate-risk ponds must be closed by December 31, 2024 and low-risk ponds must be closed by December 31, 2029.¹¹² All three of these deadlines may be extended by up to three years by the Coal Ash Commission.¹¹³ High-risk ponds must be dewatered if located above the seasonal high groundwater table and, if below, must be dewatered to the extent practical.¹¹⁴

CAMA lays out two methods for closing a high-risk pond.¹¹⁵ The first method is to convert the pond to an industrial landfill that has a cap and a composite liner.¹¹⁶ The second method is to return the pond to a "nonerosive and stable condition" and transfer the coal ash to a landfill, or recycle it in a structural fill or use it for another legal and beneficial purpose.¹¹⁷ Intermediate-risk impoundments must be dewatered and the owners can choose either method of closure provided for high-risk ponds.¹¹⁸

Low-risk ponds are provided with a third method for closure. Owners of such ponds must dewater in the same manner as the high-risk ponds and can choose to close them by either of the two methods through which high and intermediate-risk ponds are to be closed.¹¹⁹ In the alternative, low-risk ponds may also be closed by installing a cap system on the coal ash pond that does not include an industrial liner.¹²⁰

110. *Id.*

111. *Id.* § 130A-309.212(a)(1).

112. *Id.* §§ 130A-309.212(a)(2), (3).

113. *Id.* §§ 130A-309.213(a), (b).

114. *Id.* § 130A-309.212(a)(1).

115. *Id.*

116. *Id.* § 130A-309.212(a)(1)(a).

117. *Id.* § 130A-309.212(a)(1)(b).

118. *Id.* § 130A-309.212(a)(2).

119. *Id.* § 130A-309.212(a)(3).

120. *Id.* § 130A-309.212(a)(3)(b).

The fact that CAMA does not require a liner for the low-risk ponds is troubling because EPA risk assessments “have shown that CCW [coal combustion waste] disposal in unlined landfills and surface impoundments presents substantial risks to human health and the environment from releases of toxic constituents (particularly arsenic and selenium) into surface and groundwater.”¹²¹ These risks are eliminated when coal ash disposal ponds are properly lined and the liner integrity is maintained.¹²²

If a cap system is installed, the owner must also install a groundwater monitoring system and conduct post-closure care for thirty years, a time frame that DENR can increase or reduce.¹²³ Thus all coal ash ponds must be closed in North Carolina roughly fifteen years after CAMA was passed, with a possible extension of three years. However the integrity of the surrounding groundwater could still be compromised where coal ash ponds deemed low risk are closed using a cap system without providing a liner.¹²⁴

Additionally, as coal ash owners manage their coal ash ponds through their closure, CAMA introduces mandatory monitoring of groundwater around coal ash ponds.¹²⁵ It requires all owners of coal ash ponds to submit an annual Groundwater Protection and Restoration Report that “include[s] a summary of all groundwater monitoring, protection, and restoration activities . . . including the status of the . . . Groundwater Corrective Action Plan.”¹²⁶ Groundwater monitoring is a basic safeguard for coal ash ponds and CAMA makes North Carolina the third of the thirty-seven states that produce 98% of the United States’ production of coal ash to require it.¹²⁷

This monitoring also includes yearly inspections of coal ash ponds without a liner by DENR and mandatory weekly and post-

121. LUTHER, *supra* note 11, at 4.

122. *Id.*

123. N.C. GEN. STAT. ANN. § 130A-309.212(a)(3)(b) (“The Department upon a determination that a longer period is necessary to protect public health, safety, welfare; the environment; and natural resources, or decreased upon a determination that a shorter period is sufficient to protect public health, safety, welfare; the environment; and natural resources. The Department may require implementation of any other measure it deems necessary to protect public health, safety, and welfare; the environment; and natural resources, including imposition of institutional controls that are sufficient to protect public health, safety, and welfare; the environment; and natural resources.”)

124. *See id.* at §§ 130A-309.212, 130A-309.213.

125. *Id.* at § 130A-309.209(d).

126. *Id.*

127. EVANS, *supra* note 12, at 8. The other two states are Louisiana and Pennsylvania. *Id.*

storm inspections by the owner of the unlined coal ash pond.¹²⁸ Any deterioration found during these inspections must be reported to DENR.¹²⁹ If a professional engineer inspecting the pond finds that corrective action is necessary, corrective action is required.¹³⁰

CAMA also includes a separate “Drinking Water Supply” section that extends special protection to groundwater that supplies drinking water wells that could be affected by coal ash ponds.¹³¹ On October 1, 2014, coal ash pond owners had to submit a Drinking Water Supply Survey of all drinking wells within a half mile of the compliance boundary of the coal ash pond including “well locations, the nature of water uses, available well construction details, and information regarding ownership of the wells.”¹³² Then, by December 1, 2014, DENR had to identify which drinking supply wells could be reasonably predicted to suffer from groundwater contamination caused by the coal ash ponds. Those wells must be sampled at a frequency determined by DENR.¹³³

B. Corrective Action for Coal Ash Pond Groundwater Contamination

Additionally, CAMA mandates new corrective action guidelines where a coal ash pond contaminates the surrounding groundwater.¹³⁴ However, before determining the corrective actions for coal ash pond contaminated groundwater, surveying the groundwater around each coal ash pond involves several steps. By December 31, 2014, owners of coal ash ponds had to submit a Groundwater Assessment Plan for each coal ash pond, which includes “an assessment of the horizontal and vertical extent of soil and groundwater contamination for all contaminants confirmed to be present in groundwater in exceedance of groundwater quality standards.”¹³⁵ Within 180 days of DENR approving the Groundwater Assessment Plan, the owner must submit a Groundwater Assessment Report that describes any exceedance of groundwater quality standards that could be related to the coal ash pond.¹³⁶ At this point in the process, the owners of every coal ash

128. N.C. GEN. STAT. ANN. § 143-215.32(a1) (West 2014).

129. *Id.*

130. *Id.*

131. *Id.* § 130A-309.209(c).

132. *Id.*

133. *Id.*

134. *Id.* § 130A-309.209(b).

135. *Id.* § 130A-309.209(a)(1).

136. *Id.* § 130A-309.209(a)(4).

pond should have reported all degradation of groundwater that they have caused.

Next, within ninety days of submitting the Groundwater Assessment Plan, the owner must submit a Groundwater Corrective Action Plan to DENR for review and approval.¹³⁷ The Groundwater Corrective Action Plan is the owner's proposal for restoring the groundwater to the standards in the 2L rule.¹³⁸ Thirty days after the owner of the coal ash pond has received approval for the plan, the owner must begin implementing the plan to restore the groundwater.¹³⁹ Completing all of the above steps before initiating corrective action represents a sharp divergence from Judge Ridgeway's ruling requiring "immediate action to eliminate sources of contamination" for all thirty-two coal ash ponds in North Carolina.¹⁴⁰

Thus, these new corrective action guidelines modify the previous 2L Rule requirements by changing the timeframe for owners of coal ash ponds to take corrective action if it is found that a coal ash pond has contaminated the surrounding groundwater. The new corrective action for groundwater regulation in CAMA is much closer to the existing subsection (d) of 15A N.C. Admin. Code 02L .0106. That 2L Rule subsection details corrective action for permitted facilities, and so did not originally apply to the coal ash ponds in North Carolina, which were deemed unpermitted in *Cape Fear*.¹⁴¹

Rule 15A N.C. Admin. Code 02L .0106(d) does not require immediate action. Instead, it provides for owners of the activity causing groundwater contamination to:

assess the cause, significance and extent of the violation of standards and submit the results of the investigation, and a plan and proposed schedule for corrective action to the Director, or his designee. The permittee shall implement the plan as approved by and in accordance with a schedule established by the Director, or his designee. In establishing a schedule the Director, or his designee shall consider any reasonable schedule proposed by the permittee.¹⁴²

137. *Id.*

138. *Id.* § 130A-309.209(b)(1).

139. *Id.* § 130A-309.209(b)(3).

140. Order, *supra* note 57, at 16–17.

141. See 15A N.C. ADMIN. CODE § 02L.0106(d) (2002).

142. *Id.*

As such, the duration between the actual identification of groundwater contamination and the point in time when the owner of the coal ash pond is mandated to begin corrective action encompasses the time to submit the Groundwater Assessment Plan, plus the Groundwater Assessment Report, plus the Groundwater Corrective Action Plan, plus 30 days from DENR approval of that Plan.¹⁴³ This is not the immediate action that all thirty-two Duke Energy coal ash ponds were required to follow under the 2L Rule. The environment and groundwater will only become more contaminated during the additional time it takes to implement corrective action.¹⁴⁴ On the other hand, despite this seemingly extensive waiting period between identifying contamination and undertaking corrective measures, the new timeline is more definite than the vague “reasonable schedule” provided for permitted facilities under the 2L Rule.¹⁴⁵

Judge Ridgeway’s reasoning requiring immediate corrective action for pre-December 30, 1983 permitted coal ash ponds was premised on “a conscious policy decision of the drafters of the 2L Rule to impose a greater sense of urgency upon unpermitted facilities *and older facilities.*”¹⁴⁶ The North Carolina Legislature has now dispensed with this logic. This lack of urgency can also be seen in CAMA Section 12(a), a section that changes North Carolina General Statute 143-215.1(k) and echoes the changes for correction action regulations analyzed above.¹⁴⁷ The following language was added to this general statute for permitted disposal systems found to have polluted surrounding groundwater, regardless of the year the permit was issued:

to restore the groundwater quality by assessing the cause, significance, and extent of the violation of standards and submit the results of the investigation and a plan and proposed schedule for corrective action to the Director or the Director’s designee. The permittee shall implement the plan as approved by, and in accordance with, a schedule established by the Director or the Director’s designee. In establishing a schedule the Director or the Director’s designee shall consider any reasonable schedule

143. N.C. GEN. STAT. ANN. § 130A-309.209.

144. *See* Order, *supra* note 57.

145. 15A N.C. ADMIN. CODE 02L.0106(d)(2) (“The permittee shall implement the [corrective action] plan as approved by and in accordance with a schedule established by the Director, or his designee. In establishing a schedule the Director, or his designee shall consider any reasonable schedule proposed by the permittee”).

146. Order, *supra* note 57, at 11 (emphasis added).

147. N.C. GEN. STAT. ANN. § 143-215.1(k).

proposed by the permittee.¹⁴⁸

The language added is almost identical to the language quoted above from the 2L rule.¹⁴⁹ Now, if a disposal system has received a permit at any time and has contaminated the groundwater, the corrective actions that facility will have to undertake are the same corrective actions required for all post-December 30, 1983 permitted activities under the 2L Rule. The Legislature declared a policy shift in CAMA by stating its new preference for a longer time frame for corrective action for groundwater contamination for coal ash ponds and for all other disposal systems in the 2L Rule.

V. IMPROVING CAMA TO MAKE IT A MODEL FOR OTHER STATES

CAMA, with some corrections, could serve as a model for other states seeking to protect their groundwater from coal ash pond pollution. When the previous inaction from states and the EPA in the wake of similar coal ash disasters is contrasted with North Carolina's legislative response to the Dan River spill, CAMA is clearly a good step to take for states wishing to respond to the environmental issues threatening their water.¹⁵⁰ CAMA takes numerous positive steps to protect the groundwater of North Carolina from coal ash ponds. However, as mentioned earlier, there are two primary holes in CAMA that limit the effectiveness of its protective measures for groundwater. As such, modeling future legislation on CAMA requires remedying these two regulatory gaps in order to effectively protect groundwater from coal ash pond pollution.

A. CAMA's Successes

The positive steps taken by CAMA to protect groundwater include (1) limiting and then reducing the amount of coal ash deposited into ponds in North Carolina, and (2) increasing the groundwater monitoring around coal ash ponds. Furthermore, CAMA does not allow any new coal ash ponds to be constructed and

148. *Id.*

149. *See supra* text accompanying note 132.

150. *See* EVANS, *supra* note 12, at 5 (“Unfortunately, not nearly enough has been done to avert the next [coal ash] disaster. In the years following the Kingston spill, neither the EPA nor any state legislature has overhauled coal ash pond regulations. Hundreds of dangerous ponds remain virtually unregulated, and basic requirements for safe dam and pond management, such as routine inspections and emergency action plans are still not required at ash ponds across the U.S.”).

prohibits expansion of the existing thirty-two coal ash ponds.¹⁵¹ By stopping the construction and expansion of coal ash ponds, CAMA limits North Carolina's coal ash pond problem to its current thirty-two ponds.

Additionally, in fifteen years, with a maximum three-year extension, all coal ash ponds in North Carolina will be closed.¹⁵² By quickly restricting the management of coal ash ponds and eventually closing all ponds, CAMA strongly combats the threat of groundwater contamination by coal ash ponds. CAMA also requires that all coal ash ponds undergo annual monitoring and that this monitoring be more rigorous when the potential groundwater contamination could result in contaminated drinking water wells.¹⁵³ With the risk posed to humans and animals through groundwater contamination, this monitoring is crucial to identifying degradation and taking corrective action.¹⁵⁴ Since these coal ash ponds have contaminated the North Carolina groundwater for the past fifty years, monitoring them for any future transgressions is important to protecting this environmental concern.¹⁵⁵

B. CAMA's Shortcomings

1. Problems with Low-Risk Pond Closure Procedures

The first major hole in CAMA's groundwater protections is in its closure procedures. Closing high-risk and intermediate-risk coal ash ponds commendably requires liner usage so that those ponds' risks for water contamination will be "essentially eliminated."¹⁵⁶ But, the closure procedures for *low-risk* coal ash ponds provide an option that allows the owner of the pond to complete the closing of the pond *without* providing any lining for the coal ash pond.¹⁵⁷ Moreover, this option only provides groundwater monitoring for thirty years, a period that can be decreased through negotiation.¹⁵⁸ Yet, there are no coal ash ponds that are so low-risk that they can remain unlined and not contaminate groundwater.¹⁵⁹

151. N.C. GEN. STAT. ANN. § 130A-309.208.

152. *Id.* §§ 130A-309.212, 130A-309.213.

153. *Id.* §§ 130A-309.209(c), (d).

154. EVANS, *supra* note 12, at 4.

155. Murawski, *supra* note 22.

156. N.C. GEN. STAT. ANN. §§ 130A-309.212(a)(1), (2); Luther, *supra* note 11, at 4.

157. *Id.* § 130A-309.212(a)(3)(b).

158. *Id.*

159. *See generally* EVANS, *supra* note 12; LUTHER, *supra* note 11.

The easy solution to this problem is to simply eliminate the option to close the pond without providing lining. As mentioned previously, lining existing coal ash ponds is essential to eliminating the risk of contaminants in the coal ash leaking into the groundwater.¹⁶⁰ There is no reason to believe that any unlined coal ash pond operating in North Carolina would not include these contaminants or would not leak into the groundwater.¹⁶¹ If the third option was eliminated for low-risk coal ash ponds, no coal ash pond could be considered closed while coal ash remained in an unlined pond.

While other states using this as a model can easily close this loophole in their bills, in North Carolina this may not be politically feasible. While the bill was being debated, a significant impasse occurred specifically about whether to allow certain coal ash ponds to be capped without a lining.¹⁶² The cap without a liner system was ultimately allowed, because composite systems are expensive for the owners of the coal ash ponds and have a finite lifespan, thus requiring perpetual maintenance.¹⁶³ This third option for low-risk ponds was reached after a hard-fought compromise between the North Carolina House and Senate, and so modifications may be unlikely.¹⁶⁴

A more politically feasible move that could take North Carolina in the right direction would be to enhance the oversight of DENR's classification process. DENR is given significant discretion in how it classifies North Carolina's coal ash ponds, as it can base its decision on any factor that it deems relevant.¹⁶⁵ Additionally, the Coal Ash Management Commission only has sixty days to review DENR's

160. LUTHER, *supra* note 11, at 4. Ultimately, what “most determines the amount of leaching is not the coal, however, but the robustness of the storage site. The single most important factor is whether the disposal site is lined.” BARBARA GOTTLIEB ET AL., COAL ASH: THE TOXIC THREAT TO OUR HEALTH AND ENVIRONMENT: A REPORT FROM PHYSICIANS FOR SOCIAL RESPONSIBILITY AND EARTHJUSTICE 9 (2010), available at <http://www.psr.org/assets/pdfs/coal-ash.pdf>.

161. See Michael Biesecker, *Arsenic and Other Toxins Leaking Into Dan River From North Carolina Coal Ash Dump*, HUFFINGTON POST, (Feb. 19, 2014), http://www.huffingtonpost.com/2014/02/19/arsenic-dan-river_n_4814637.html.

162. See Michael Biesecker, *NC Lawmakers Reach Compromise on Coal Ash Measure*, WNCN, (Sept. 2, 2014), <http://www.wncn.com/story/26317107/tillis-nc-general-assembly-may-have-coal-ash-deal> (reporting that an earlier “impasse came down to a single provision in the voluminous bill defining which “low risk” ash dumps Duke would be allowed to cap with plastic sheeting and dirt. Environmentalists want all the ash dug up and moved to lined landfills away from rivers and lakes.”).

163. GOTTLIEB ET. AL., *supra* note 160, at 7.

164. *Id.*

165. N.C. GEN. STAT. ANN. § 130A-309.211(a).

decision, and if the Commission does not respond or is unable to respond within that time period, the classification automatically becomes official.¹⁶⁶

Objective criteria should be introduced to make DENR's decision-making more transparent. The Commission should be required to review the classification and issue a written determination that evaluates the coal ash pond under the agreed-upon objective criteria before any classification becomes official. With a more transparent classification process and required oversight, there is less chance of a dangerous coal ash pond receiving a low-risk classification.

2. Problems with the Corrective Action Timeline

The second regulatory oversight in CAMA's ground protection laws is its new corrective action procedures, which considerably delay the point at which coal ash pond owners will have to take corrective action on contaminated groundwater.¹⁶⁷ This delay period effectively overrules Judge Ridgeway's decision mandating that owners of any coal ash pond permitted before December 30, 1983 (which includes all thirty-two ponds in North Carolina) take immediate corrective action. Now, coal ash pond owners are subject to the complicated regulatory framework detailed above.¹⁶⁸ The amendment to the General Statute was clearly made with this effect in mind. As Representative McGrady said during a House Session, "[t]he Ridgeway decision in my opinion is too broad."¹⁶⁹

More effective groundwater protection should require a quicker response to contaminated groundwater because the contaminants that coal ash ponds can leak into the groundwater are dangerous.¹⁷⁰ Accordingly, once it is determined that a coal ash pond has

166. *Id.* § 130A-309.211(c).

167. *Id.* § 143-215.1(k).

168. *See Order, supra* note 57. Representative Pricey Harrison proposed an amendment to remove the language creating this hole. He spoke supporting this amendment at a House Session saying, "[w]hat this language does is it seems to undermine Judge Ridgeway's decision in March of this year. Which the State has the authority to . . . right now force the immediate cleanup of the source of contamination at these coal ash ponds . . . and the language in this bill . . . seems to undermine that ruling and it will allow the coal ash to stay in place near our drinking water sources indefinitely. I feel like this is a significant policy change." Representative Pricey Harrison, Audio Broadcast of House Session, at approximately 33:00 (July 3, 2014).

169. Representative Chuck McGrady, Audio Broadcast of House Session, at approximately 36:00 (July 3, 2014).

170. EVANS, *supra* note 11, at 3 (finding that coal ash contains arsenic, cadmium, hexavalent chromium, lead, mercury, and selenium).

contaminated groundwater, immediate action should be required along with the submission of a long-term Groundwater Corrective Action Assessment Plan. Coal ash pond contamination should be treated with the enhanced urgency that immediate action requires.¹⁷¹ Without immediate corrective action, contaminants will continue to leak into the groundwater throughout the time it takes for the plan to be developed and approved according to existing regulatory procedures.

Unfortunately, barely two months after CAMA became law there was already proof that this feared outcome was occurring.¹⁷² In November of 2014 conservation groups discovered toxic leaks from coal ash ponds going into the Yadkin River in North Carolina,¹⁷³ resulting in levels of cadmium eight times the state's maximum limit and levels of arsenic three times the state's maximum limit in the river.¹⁷⁴

VI. CONCLUSION

CAMA was a legislative response to an environmental disaster that occurred because dangerous coal ash ponds were not sufficiently regulated. But it goes beyond merely addressing concerns about the large-scale disaster risks from coal ash ponds. It also regulates against leaching or leaking toxic contaminants into the surrounding groundwater. Protecting groundwater should be a priority for every state since half of the drinking water in the United States is derived from groundwater.¹⁷⁵

With changes to low-risk pond closure procedures and to the corrective action timeline, CAMA presents a strong model for other states to follow to protect their groundwater from coal ash ponds. New legislation should not allow coal ash ponds to be considered closed while coal ash remains in unlined pits, and should require immediate action when contaminants are recorded exceeding their allowable limits in groundwater.

171. Order, *supra* note 57, at 11.

172. David Zucchini, *Conservation Groups say Duke Energy Plant Leaks Coal Ash into N.C. River*, LOS ANGELES TIMES, (Dec. 2, 2014), <http://www.latimes.com/nation/la-na-nc-coal-ash20141204-story.html>.

173. *Id.*

174. *Id.*

175. Eaton, *supra* note 27, at 109.