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ESSAY—THE TOXIC LEGACY OF COAL ASH ON SOUTHEASTERN RIVERS, WATERWAYS, AND RESERVOIRS

CALE JAFFE*

I want to begin by thanking the *William & Mary Environmental Law and Policy Review* and the Virginia Coastal Policy Clinic for putting together a fabulous symposium on the threats to water quality in Virginia.

I am the director of the Virginia Office of the Southern Environmental Law Center, a non-profit, environmental advocacy organization with offices in six states throughout the region. Our mission is to leverage the power of the law to protect the air you breathe, the water you drink, and the special places you love, throughout the Southeast. With the addition of our Nashville office in 2011, we now have ‘boots on the ground’ in Virginia, Tennessee, Georgia, Alabama, North Carolina, and South Carolina. Altogether, we have roughly sixty attorneys whose work is supported entirely through charitable donations. We do not charge the environmental and conservation organizations whom we represent for our services.

My talk focuses on what I have called the toxic legacy of coal ash pollution in the Southeastern United States, and my goal today is to give you all an insight into how we in the environmental community—by which I mean the waterkeepers and riverkeepers—are seeing this issue. I also hope to share with you the perspective of the impacted communities and families that live downstream of these coal ash lagoons.

The wake-up call for many of us in the environmental community was a horrific coal ash spill in December 2008 in Kingston, Tennessee.¹ As Nashville’s paper of record, *The Tennessean*, reported:

When a dike failed at TVA’s Kingston Fossil Plant, 5.4 million cubic yards of coal ash cascaded into the Emory and Clinch rivers and smothered some 300 acres of land. . . . The

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¹ Duane W. Gang, *Kingston Coal Ash Spill: 5 Years, \$1 Billion Cleanup Tab and No Regulations Later*, THE TENNESSEAN (Dec. 22, 2013), <http://archive.tennessean.com/article/20131222/NEWS21/312220053/Kingston-coal-ash-spill-5-years-1-billion-cleanup-tab-no-regulations-later> [<http://perma.cc/6RWC-6Q5S>].

material contains arsenic, selenium, mercury and other pollutants—all harmful to people and wildlife when found in high concentrations.²

Other reports on the spill observed that the Kingston spill was “100 times larger than the Exxon Valdez” disaster.³ Cleanup efforts took several years and were estimated to cost the Tennessee Valley Authority (“TVA”) approximately \$1.2 billion.⁴ More than 400 trainloads of coal ash were dredged out of the river and hauled away.⁵ Despite that immense expense and effort, roughly 500,000 cubic yards of ash remain unrecoverable.⁶

Five years after the Kingston tragedy, a second major coal ash disaster again brought this issue to the public’s attention. On February 2, 2014, 39,000 tons of toxic coal ash poured out of a Duke Energy coal ash lagoon and into the Dan River along the Virginia–North Carolina border.⁷ The spill continued unabated for at least six days while Duke Energy struggled to plug a leaking pipe.⁸ Ultimately, three pipes running underneath Duke Energy’s coal ash lagoons at Dan River were discovered to be leaking toxic pollutants.⁹ An analysis from the Virginia Department of Environmental Quality (“Virginia DEQ”) documented that coal ash from the spill reached at least eighty miles downstream, all the way to the Kerr Reservoir,¹⁰ a popular fishing and boating destination.¹¹ One study

² *Id.* See also U.S. FISH & WILDLIFE SERV., TENNESSEE VALLEY AUTHORITY KINGSTON FOSSIL PLANT COAL ASH RELEASE NATURAL RESOURCE DAMAGE ASSESSMENT (2015), https://www.fws.gov/cookeville/pdfs/TVA%20RCDF_Final_2015_0526.pdf [<https://perma.cc/CDD6-R8K9>].

³ 60 MINUTES, *Coal Ash: 130 Million Tons of Waste* (CBS television broadcast Oct. 4, 2009), <http://www.cbsnews.com/news/coal-ash-130-million-tons-of-waste-01-10-2009/> [<http://perma.cc/LB2E-BF8P>].

⁴ Gang, *supra* note 1.

⁵ *Id.*

⁶ *Id.*

⁷ EPA, *EPA’s Response to the Duke Energy Coal Ash Spill in Eden, NC*, <http://www2.epa.gov/dukeenergy-coalash> [<http://perma.cc/8NV9-2DLM>] (last updated June 8, 2015).

⁸ *Id.*

⁹ John Downey, *Third Pipe at Dan River Plant Leaking Coal Ash Toxins, EPA Says*, CHARLOTTE BUS. J. (Mar. 7, 2014), http://www.bizjournals.com/charlotte/blog/power_city/2014/03/third-pipe-at-dan-river-plant-leaking-coal-ash-epa.html [<http://perma.cc/XG99-QKGD>].

¹⁰ VA. STATE WATER CONTROL BD. & VA. WASTE MGMT. BD., ENVIRONMENT ACTION: ORDER BY CONSENT ISSUED TO DUKE ENERGY CAROLINAS 4 (Mar. 27, 2015), *available at* <http://www.deq.virginia.gov/Portals/0/DEQ/Enforcement/Public%20Notice%20RP%20Signed%20Orders/Duke%20Final.pdf> [<http://perma.cc/NF6Z-EUR8>].

¹¹ Va. Dept. of Game & Inland Fisheries, *Buggs Island Lake (Kerr Reservoir)*, <http://www.dgif.virginia.gov/fishing/waterbodies/display.asp?id=25> [<http://perma.cc/HVS5-9R5V>].

calculated that the “combined cost of ecological damage, recreational impacts, effects on human health and consumptive use, and esthetic value losses totals \$295,485,000.”¹²

The United States Department of Justice charged Duke Energy Carolinas, LLC, and a related company, Duke Energy Business Services, LLC, with four distinct crimes related to the Dan River spill.¹³ Duke Energy ultimately pled guilty to those crimes.¹⁴ Despite the guilty plea, the legacy of coal ash contamination persists in the Dan River. Duke Energy removed only a tiny fraction—less than ten percent—of the coal ash from the river before halting its cleanup efforts.¹⁵

The power company has responded to critics by attempting to paint coal ash as no more harmful than run-of-the-mill dirt.¹⁶ A handout from Duke Energy proclaims, “Did you know? Many of the same substances in ash are also found in soil and municipal solid waste.”¹⁷ Yet, as the television program *60 Minutes* reported, “concentrations of mercury, arsenic, lead and other toxic metals are considerably higher in coal ash than in ordinary soil.”¹⁸ An analysis conducted by a coalition of environmental organizations (using coal ash industry data) found that levels of arsenic and chromium in coal ash exceeded the United States Environmental Protection Agency’s soil screening levels for groundwater protection by more than 10,000 times.¹⁹ The criminal prosecution of Duke Energy is a vital reminder of the severity of this threat.

The catastrophic failures at Kingston and Dan River receive a lot of attention, as well they should. But the primary takeaway from today’s

¹² A. Dennis Lemly, *Damage Cost of the Dan River Coal Ash Spill*, 197 ENVTL. POLLUTION 55, 55 (2015).

¹³ See *United States v. Duke Energy Bus. Serv., LLC*, 1:15CR51-1 (E.D.N.C. 2015).

¹⁴ David Zucchini, *After Guilty Verdict, Fears and Questions Linger about Coal Ash*, L.A. TIMES (Mar. 17, 2015), <http://www.latimes.com/nation/la-na-duke-coal-ash-20150517-story.html> [<http://perma.cc/5NN8-D9R3>].

¹⁵ Zoë Schlanger, *With 92% of Coal Ash Still Coating North Carolina River Bed, Duke Energy Declares Cleanup Complete*, NEWSWEEK (July 21, 2014), <http://www.newsweek.com/92-coal-ash-still-coating-north-carolina-river-duke-energy-declares-cleanup-260084> [<http://perma.cc/VJ4G-9DXX>].

¹⁶ *Coal Ash: The Truth About Toxicity*, DUKE ENERGY, <https://www.duke-energy.com/pdfs/Coal-ash-toxicity.pdf> [<https://perma.cc/8DF7-JXTR>] (last visited Jan 22, 2016).

¹⁷ *Id.*

¹⁸ See 60 MINUTES, *supra* note 3.

¹⁹ *ACAA’s Junk Science Report Claims Coal Ash is Like “Common Dirt”: Report Ignores EPA Risk Screening, Exposure Pathways and Critical Data*, EARTH JUSTICE, <http://earthjustice.org/sites/default/files/ACAAREport.pdf> [<http://perma.cc/76CE-QNGE>] (last visited Jan. 22, 2016).

talk should be that the coal ash issue is about far more than that risk of catastrophic failure. Rather, the most jaw-dropping fact about coal ash contamination in the Southeast is the sheer number of intact coal ash lagoons that are persistently leaking contaminants into ground water or surface water.²⁰

Here is the gist of the problem. Coal-fired power plants, built alongside major rivers to draw water for use in steam-powered electricity generating units, have needed some place to store the millions of tons of coal ash created as a by-product from burning coal.²¹ The cheapest option—at least for the utilities if not for neighboring communities—was to sluice the ash from the plant to an adjacent pit.²² That option led to the creation of riverside coal ash lagoons with nothing more than simple, earthen berms separating the lagoons from the rivers.²³ Testing has shown that seeps in these berms are leaking arsenic, selenium, mercury, and other toxins into rivers, ground water, and drinking water supplies.²⁴ There are documented cases of coal ash residue from the lagoons polluting nearby drinking water wells²⁵ and contaminating fish.²⁶

²⁰ Emery P. Dalesio, *DENR: Duke Energy can't promise to move more coal ash pits*, VIRGINIAN-PILOT (Aug. 12, 2015), <http://hamptonroads.com/2015/08/denr-duke-energy-cant-promise-move-more-coal-ash-pits> [<http://perma.cc/C22J-8BCH>] (noting that “all 14” of Duke Energy’s North Carolina coal ash dumps are leaking).

²¹ EPA, *Coal Ash Basics*, <http://www2.epa.gov/coalash/coal-ash-basics> (last updated Mar. 11, 2015).

²² *As Coal Ash Problems Continue, DEQ in Position to Order Effective Cleanup*, EARTH JUSTICE (May 13, 2015), <http://earthjustice.org/news/press/2015/as-coal-ash-problems-continue-deq-in-position-to-order-effective-cleanup> [<http://perma.cc/6JYU-X848>].

²³ Jim Pierobon, *Risks of Utility Coal Ash Pit Accidents Growing Despite New Rule Starting December 19*, THE ENERGY FIX (Dec. 8, 2014), <http://www.theenergyfix.com/2014/12/08/risks-of-utilities-coal-ash-pit-accidents-growing-despite-new-rule-starting-december-19/#sthash.HNzIT8Js.dpbs> [<http://perma.cc/8XVL-CNEH>].

²⁴ *Id.*

²⁵ Bruce Henderson, *Most Wells Near Duke Energy Ash Ponds Contaminated*, CHARLOTTE OBSERVER (April 21, 2015), <http://www.charlotteobserver.com/news/local/article19153437.html> [<http://perma.cc/RC8G-Y7ZH>] (“Most of the private wells tested near Duke Energy’s North Carolina coal ash ponds show contaminants above state groundwater standards, state regulators said Tuesday. Of 117 test results mailed to power plant neighbors in recent days, 87 exceeded groundwater standards, the Department of Environment and Natural Resources said. . . . Previous testing documented groundwater contamination at all 14 of Duke’s coal-fired power plants in the state.”).

²⁶ A. Dennis Lemly, *Biological Assessment to Determine Impacts of Selenium Pollution From Coal Ash Wastewater Discharges on Fish Populations in Lake Sutton, NC*, S. ENVTL. L. CTR. (Nov. 5, 2013), <https://drive.google.com/file/d/0B1dk6uYv0lc2RktfRlhPM0ltTms/edit?pli=1> [<https://perma.cc/KB9K-W6UA>]. See also Press Release, S. Env'tl. L. Ctr., Duke Energy Coal Ash Pollution Deforms Fish in Sutton Lake (Dec. 3, 2013), <https://www.south>

State environmental officials in North Carolina have confirmed in court filings that pollution at a Duke Energy site near Asheville has exceeded groundwater standards, and that these exceedances “are violations” of North Carolina law.²⁷ What is more, North Carolina officials explained that these exceedances “pose[] a serious danger to the health, safety and welfare of the people of the State of North Carolina and serious harm to the water resources of the State.”²⁸

These are violations at a site where there has *not* been a catastrophic failure like we saw in Kingston, Tennessee, or on the Dan River. These are serious threats to “health, safety, and welfare” from seeps through an intact berm at a coal ash facility.²⁹ North Carolina officials have also affirmed that this same problem has been documented at several other sites throughout North Carolina.³⁰ That is, there are a myriad of seeps in coal ash impoundments that are steadily and continually leaking pollutants into Southeastern waters. This is no way to store industrial waste in our communities in the 21st century.

This is also not a problem that is confined to just one power company or just one state. An example in Virginia can be found at Possum Point on the Potomac River. Possum Point is the site of a power plant owned and operated by Dominion Virginia Power, roughly thirty miles south of Washington, D.C.³¹ The plant sits on a narrow peninsula jutting out between Quantico Creek and the main stem of the Potomac River.³² The plant burned coal from 1955 until 2003, but the oldest coal-fired units at Possum Point have now been retired and other coal-fired units have been converted to use natural gas.³³ No coal is currently burned at the facility.³⁴ Yet the toxic legacy of coal ash stored on the site persists.

ernenvironment.org/news-and-press/press-releases/duke-energy-coal-ash-pollution-deforms-fish-in-sutton-lake [http://perma.cc/6F9R-LK8S].

²⁷ Complaint and Motion for Injunctive Relief, *N.C. v. Carolina Power & Light Co.*, Case No. 13-CV-004061, General Court of Justice, Superior Court Division, Wake County, N.C. (filed Mar. 22, 2013).

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Duke Energy August 2013 Complaints and Motions for Injunctive Relief*, N.C. DEPT. OF ENVTL. QUALITY, DIV. OF WATER RES., http://portal.ncdenr.org/web/wq/hot-topics/duke_energy_aug2013injunctions [http://perma.cc/VL9M-8PA3] (last visited Jan 22, 2016).

³¹ *Possum Point Power Station*, DOMINION POWER, <https://www.dom.com/corporate/what-we-do/electricity/generation/fossil-fueled-power-stations/possum-point-power-station> [http://perma.cc/STT5-8U6P] (last visited Jan 22, 2016).

³² Letter from Greg Buppert et al., to Thomas F. Farrell II & Robert M. Blue (Sept. 17, 2014) (on file with author).

³³ *Id.*

³⁴ *Id.*

Two coal ash ponds, labeled ponds “D” and “E”, have been contaminating “groundwater connected to Quantico Creek . . . for at least ten years.”³⁵ The monitoring data show pollution of various metals from forty-six to 127 times Virginia’s groundwater standards.³⁶ The data from ponds D and E might lead a reasonable person to inquire about ponds A, B, and C. It turns out that these ponds received coal ash waste from the time the plant opened in 1955 until 1972.³⁷ These ponds are “unlined and uncapped,” and separated from Quantico Creek by a single, earthen berm.³⁸ Amazingly, an internal memorandum within Virginia DEQ lists ponds A, B, and C as “previously unaccounted for” until April 2014.³⁹ In other words, these ponds were not being monitored and not being maintained. They appear to have been forgotten about by state regulators. A recent investigation of these old, abandoned ponds uncovered “a direct discharge to Quantico Creek” from pond C and “a breach of the berm associated with Ash Pond A.”⁴⁰ After learning about the history of pollution at the site, Virginia State Senator Linda “Toddy” Puller and Delegate Scott A. Surovell wrote to the Governor and Dominion to express their concerns “about the impact these pollutants may be having on Quantico Creek, a popular recreational and commercial fishery and a tributary of the Potomac River”⁴¹ Dominion Power has now begun efforts to consolidate all of the coal ash from the five ponds into one pond.⁴² Conservation groups, however, have

³⁵ *Id.* See also Press Release, S. Env'tl. L. Ctr., Conservation Groups Uncover Decades of Coal Ash Pollution Into Potomac River from Dominion's Possum Point Power Plant (Sept. 17, 2014), <https://www.southernenvironment.org/news-and-press/press-releases/conservation-groups-uncover-decades-of-coal-ash-pollution-into-potomac-rive> [http://perma.cc/8A48-M5JT].

³⁶ See Letter from Greg Buppert et al., *supra* note 32; see also Press Release, S. Env'tl. L. Ctr., *supra* note 35.

³⁷ Memorandum from Dan Demers & Susan Mackert, Va. Dept. of Env'tl. Quality, N. Reg'l Office, to Tom Faha, Regional Director (April 16, 2014) (on file with author).

³⁸ See Letter from Greg Buppert et al., *supra* note 32; see also Press Release, S. Env'tl. L. Ctr., *supra* note 35.

³⁹ See Memorandum, *supra* note 37.

⁴⁰ *Id.*

⁴¹ Letter from Senator Linda Puller, Senator of Virginia's 36th Dist., & Delegate Scott A. Surovell, Delegate of Virginia's 44th Dist., to Molly Ward, Virginia Sec'y of Nat'l Res. (June 15, 2015), https://www.southernenvironment.org/uploads/words_docs/StateSenatorsLettertoDEQ_6-12-15.pdf [https://perma.cc/5K9B-9NFM].

⁴² Victoria St. Martin, *In Northern Va., Environmentalists Concerned About Disposal of Coal Ash*, WASH. POST (July 2, 2015), https://www.washingtonpost.com/local/dc-politics/in-northern-va-environmentalists-concerned-about-disposal-of-coal-ash/2015/07/02/d8e87e62-1b74-11e5-ab92-c75ae6ab94b5_story.html?hpid=z4 [http://perma.cc/C9GT-9W9K].

raised concerns that this consolidation plan will only create “a permanent pollution problem at this site.”⁴³

Dominion’s Chesapeake Energy Center provides another, striking example of the coal ash contamination problem in Virginia. Like Possum Point, the Chesapeake Energy Center’s coal ash lagoons sit on a narrow peninsula between two water bodies.⁴⁴ In Chesapeake’s case, the site, “consisting almost entirely of wetlands or marshy areas,” sits between the Southern Branch of the Elizabeth River and Deep Creek.⁴⁵ As at Possum Point, coal is no longer burned at Chesapeake; the plant was retired by Dominion in 2014.⁴⁶ Unlined pits were used to store coal ash, beginning in the 1950s and continuing for decades.⁴⁷ A civil complaint filed by the Southern Environmental Law Center on behalf of the Sierra Club documents that “[g]roundwater sampling from these monitoring wells indicates that Dominion’s coal ash disposal facilities leach pollutants directly into the groundwater, and have been doing so for at least two decades.”⁴⁸ In other words, contamination from coal ash that has been stored on the site remains a serious problem, even after the cessation of coal-burning operations.

The good news is that a straightforward solution to these problems is at hand; coal ash should be removed to dry, lined storage facilities away from our rivers and drinking water supplies. By removing the source of pollution, it is the only solution that will halt contamination at these sites, and it is a solution we are seeing carried out in South Carolina today. The Catawba Riverkeeper, represented by the Southern Environmental Law Center, initiated a lawsuit against South Carolina Electric and Gas (“SCE&G”) over groundwater contamination and arsenic pollution affecting the Wateree River, near Congaree National Park.⁴⁹ The power company

⁴³ *Dominion Doubles Down on Leaking Coal Ash Storage at Possum Point Power Station*, S. ENVTL. L. CTR. (July 6, 2015), <https://www.southernenvironment.org/news-and-press/news-feed/concerns-raised-about-long-term-storage-of-coal-ash-at-dominions-possum-poi> [<http://perma.cc/5A9E-SZYC>].

⁴⁴ Complaint, *Sierra Club v. Va. Elec. & Power Co.*, Case No. 2:15 cv 112, at 2 (E.D.Va. Mar. 19, 2015).

⁴⁵ *Id.* at 8.

⁴⁶ *Chesapeake Energy Center*, DOMINION POWER, <https://www.dom.com/corporate/what-we-do/electricity/generation/fossil-fueled-power-stations/chesapeake-energy-center> [<http://perma.cc/8G62-88YX>] (last visited Jan 22, 2016).

⁴⁷ Complaint, *Sierra Club*, No. 2:15 cv 112 at 9.

⁴⁸ *Id.* at 1, 13.

⁴⁹ *SCE&G and Catawba Riverkeeper Reach Settlement on Coal Ash Storage*, CATAWBA RIVERKEEPER FOUND. (Nov. 21, 2013), <http://www.catawbariverkeeper.org/issues/coal-ash>

stepped up and settled the lawsuit, agreeing to dredge and remove all of the coal ash from the site—approximately 2.4 million tons of material—to a lined landfill.⁵⁰ The settlement imposed a binding deadline of 2020 to complete the cleanup.⁵¹

The SCE&G settlement paved the way for a similarly positive result not far from Myrtle Beach, in Horry County, South Carolina.⁵² There, the state-owned utility, Santee Cooper, committed to “remove 1.3 million tons of coal ash from the banks of the Waccamaw River.”⁵³ A spokesperson for the power company described the restoration project as a “triple win”—good for the economy, good for ratepayers, and good for the environment.⁵⁴ Momentum is building for common-sense solutions. Duke Energy and the Southern Environmental Law Center have jointly secured court approval “to excavate coal ash at seven plants across North Carolina and rebury its landfills.”⁵⁵ This agreement covers half of all of the coal ash impoundments in North Carolina.⁵⁶

In short, this can be done the right way, and it *is* being done the right way at a few sites around the Southeast as we speak. Utilities can and must clean up their unlined, actively leaking, riverside coal ash lagoons. The communities near these sites and downstream of these sites will be safer once power companies take responsibility and take appropriate action.

-1/coal-ash-1/sce-g-and-catawba-riverkeeper-reach-settlement-on-coal-ash-storage/?searchterm=sce&g [http://perma.cc/JD2Z-KU66].

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² Robert Anderson, *Santee Cooper Agrees to Haul Coal Ash Away from Conway*, MYHORRYNEWS.COM (Nov. 21, 2013), http://www.myhorrynews.com/news/local/conway/article_eb3396ea-5228-11e3-840f-0019bb30f31a.html [http://perma.cc/JD2Z-KU66].

⁵³ *Id.*

⁵⁴ Press Release, Santee Cooper, *Santee Cooper Announces Plans to Recycle Ash for Beneficial Use* (Nov. 19, 2013), <https://www.santeecooper.com/about-santee-cooper/news-releases/news-items/santee-cooper-announces-plans-to-recycle-ash-for-beneficial-use.aspx> [http://perma.cc/EF37-8KCN].

⁵⁵ John Downey, *Judge shoots down state delay on Duke Energy coal-ash cleanup*, CHARLOTTE BUS. JOURNAL (Sept. 15, 2015), <http://www.bizjournals.com/charlotte/blog/energy/2015/09/judge-shoots-down-state-delay-on-duke-energy-coal.html?ana=yahoo> [http://perma.cc/9FFG-KJSU].

⁵⁶ *Judge won't let state block coal ash cleanup*, S. ENVTL. LAW CTR. (Sept. 15, 2015), <https://www.southernenvironment.org/news-and-press/news-feed/judge-wont-let-state-block-coal-ash-cleanup> [https://perma.cc/U3W6-YPVP].