

# Blue Ridge Environmental Defense League

www.BREDL.org PO Box 88 Glendale Springs, North Carolina 28629 BREDL@skybest.com (336) 982-2691

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Georgia Environmental Protection Division  
Wastewater Regulatory Program  
2 Martin Luther King Jr. Dr. SW, 1152 East Tower  
Atlanta, Georgia, 30334  
EPDcomments@dnr.ga.gov

**RE: Public Notice No. 2019-08ML, NPDES Permit No. GA0026786  
Vogtle Electric Generating Plant Units 1 and 2, Burke County, Georgia**

On behalf of the Blue Ridge Environmental Defense League, its chapter Concerned Citizens of Shell Bluff and our members throughout the State of in Georgia, I submit these comments regarding the National Pollutant Discharge Elimination System (NPDES) permit for the Vogtle Electric Generating Plant Units 1 and 2.

## **Background**

Southern Nuclear Operating Company has requested renewal of NPDES Permit No. GA0026786, for its Plant Vogtle Units 1&2. Plant Vogtle is a nuclear-powered electric generating station located at 782I River Road, Waynesboro, Georgia 30830 in Burke County. According to the notice, the permit is for a maximum of 152.8 MGD of cooling tower blowdown, low volume wastewater, sanitary wastewater, intake screen backwash, and stormwater discharged to the Savannah River from Outfalls 001, 011, and 013 and an Unnamed Tributary of Beaverdam Creek, Outfall 014.

Georgia EPD permit draft of 30 April 2019 indicates that the Division has recommended “reissuance with substantial modifications from previous permit.” It also indicates that issuance “requires EPA review” and is “designated as a Major facility.”<sup>1</sup> The Water Quality Improvement Act of 1970 introduced anti-degradation standards to maintain water quality. In 1977, the law was amended and became the Clean Water Act. The CWA defined “waters of the United States” as rivers, tributaries, lakes, estuaries, coastal waters, and wetlands.<sup>2</sup>

## **Apparent Violation**

During the recent permit period, Plant Vogtle was cited for a lapse in oversight which could have resulted in exposure of the general public to a leak of radioactive material.<sup>3</sup>

The performance deficiency was determined to be more than minor because it was associated with the Emergency Preparedness cornerstone attribute of Procedure Quality and adversely affected the cornerstone objective of ensuring that the licensee is capable

<sup>1</sup> Vogtle Electric Generating Plant, Units 1 & 2, NPDES Permit No. GA0026786, April 2019, Page 1

<sup>2</sup> 33 U.S.C. §1251 et seq. (1972)

<sup>3</sup> Vogtle Electric Generating Plant–NRC Inspection Report No. 05000424/2017503, 2/8/17, ML17040A346

of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency.

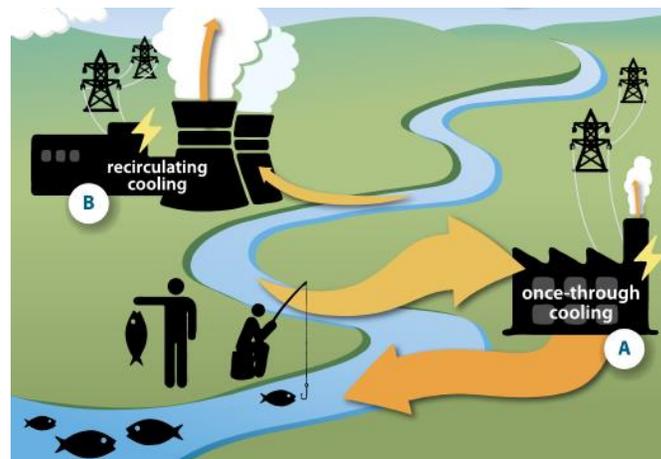
As a result, Plant Vogtle's operators ability to declare a Site Area Emergency and General Emergency based on effluent radiation monitor values was impaired, delaying emergency Protective Action Recommendations to the public. The errors affected the functioning of the plant vent radiation monitor and steam jet air ejector radiation monitor (Identification Nos. RE-12444E and RE-12839E). This lapse persisted for about two years and was only identified in response to NRC Requests for Additional Information.

### Water Intake Excessive

Cooling water systems data provided by Southern Nuclear Operating Company for Vogtle Units 1 & 2 state that the plant is operated continuously 365 days per year in a "closed loop circulating water system." The Design Intake Flow is 127 million gallons per day. The company claims an Actual Intake Flow of roughly 64 million gallons per day. Further, it states that the flow of make-up water withdrawn from the Savannah River is "about 4.4% of the cooling system circulating flow...demonstrating a 95% lower intake flow than that which would be necessary to operate the plant as a once-through cooling system."<sup>4</sup> However, this explanation avoids the fact that such closed-loop recirculating systems consume much more water, removing it permanently from the river. A comprehensive study of water demand by thermoelectric power plants revealed that:

How much water a power plant uses depends on which cooling technology it uses. Once-through cooling systems (A) withdraw large amounts of water, but return most of it—at a higher temperature—to the source. recirculating systems (B) take in much less water, but can consume twice as much of it or more, because they evaporate much of the water to condense the steam.<sup>5</sup>

See diagram below.



<sup>4</sup> Supporting Information Required Under the Clean Water Act Section 316(b), Vogtle Electric Generating Plant, NPDES No. GA0026786, September 2017, page 11

<sup>5</sup> *Freshwater Use by U.S. Power Plants: Electricity's Thirst for a Precious Resource*, Union of Concerned Scientists, November 2011, Page 9

## Waste Water Discharge Radioactive

The Vogtle NPDES Permit application describes the twelve “outfall” points from which water is discharged from the power plant to the Savannah River directly or through tributaries. Outfall Nos. 007 and 008 are “Units 1 and 2 Liquid Radwaste Systems Discharge.” From these points fluids contaminated with radioactive substances are released into the river up to a maximum of 200 gallons per minute from both units combined. The discharges are intermittent, 16 hours per month. No treatment is done. Reduction of instant radiation levels is permitted by the discharge of plant water up to 46,000 gallons per minute via Outfall 010, to “provide dilution water for radwaste discharges.”<sup>6</sup> The impact of these discharges have created a radioactive signpost which points to Vogtle.

The principal contractor at the Savannah River Site published annual reports which contain the following data.

**Tritium in River Water from Plant Vogtle<sup>7</sup>**

Year	Curies
2003	1900
2004	1200
2005	1860

The discharge of Tritium (Hydrogen-3, or H-3) in the form of radioactive water pollutes the Savannah River all the way to the ocean. Downstream drinking water wells are contaminated.

## Evidence Reveals Radionuclide Contamination is Widespread

The Georgia Environmental Protection Division has published reports on its radiation monitoring program.<sup>8</sup> Attached to these comments are the EPD test results for Vogtle from 1995 to 2002 which indicate the nuclear power plant is the source of a variety of radionuclides which contaminate sediment, river water, fish and drinking water.<sup>9</sup> The state’s test results reveal striking elevations of harmful radionuclides in several media expressed in multiples above background level radiation. The test results range from 2 times to 50 times above background level. *See Georgia Environmental Radiation Surveillance Reports 1995 – 2002, attached.*

Chronic exposure to fairly low-levels radiation can damage human health. Internal exposure to beta emitters via inhalation or ingestion can cause tissue damage and increase the risk of cancer. Gamma rays travel great distances and can penetrate most barriers. The solution to pollution is not dilution.

<sup>6</sup> Application for Permit to Discharge Wastewater, Consolidated Permits Program, Vogtle Electric Generating Plant, NPDES No. GA0026786, Application 9/28/2017, EPA Form 2C, Attachment 1, page 2

<sup>7</sup> Westinghouse Savannah River Company Environmental Reports: 2003, 2004, 2005, WSRC-TR-2004-00015, WSRC-TR-2005-00005, WSRC-TR-2006-00007

<sup>8</sup> The EPD program tested samples of air, surface water, groundwater, rain, sediments, fish, soil, vegetation, milk and agricultural crops near facilities which are known to emit ionizing radiation and compared these data to background levels.

<sup>9</sup> Environmental Radiation Surveillance Reports, 1995-1996, 1997-1999 and 2000-2002, published by the Georgia Department of Natural Resources Environmental Protection Division

## Consolidated Permits Program

State water quality regulation must be consistent with federal law; the Georgia program must comply with the federal Clean Water Act. EPA regulations and policy hold that an entire river, lake or reservoir cannot be encompassed by a mixing zone and typically prohibits them. Annual temperatures in the Southeast are increasing and are projected to continue to do so. Unresolved potential impacts of Plant Vogtle wastewater discharges into the Savannah River watershed include:

- The impact of the reactors' thermal discharge on water that is already elevated in temperature and impacts on local and downstream ecosystems
- The evaluation of the impact of warmer ambient water temperatures on total withdrawal, consumption and evaporation
- The ongoing impacts and imminent changes caused by global warming on the quantity and quality of water in the Savannah River watershed.

We maintain that the EPD's inclusion of mitigation in a water withdrawal permit was the wrong measure in the wrong place. It was unfair and contrary to the law for NPDES measures—accounting for chemical and thermal discharges to waters of the United States—to be allowed through the back door of a water withdrawal permit.

Thank you for the opportunity to comment on this permit.

Respectfully,

A handwritten signature in black ink that reads "Louis A. Zeller" followed by a horizontal line extending to the right.

Louis A. Zeller, Executive Director

**Attachment**

### Georgia Environmental Radiation Surveillance Reports 1995 – 2002

Year	Sample type	Radionuclides	Conclusions
1995-1996	sediment	Co-60, Co-58	Traces of Co-60 in sediment were measured at several SRS outfalls and at Plant Vogtle, which indicate that the Co-60 originated from several facilities. Traces of Co-58 in sediment were also measured near the Vogtle outfall. No measurable impact to drinking water or fish was detected.
1997-1999	River water downstream	H-3	Elevated tritium (5X to 11X Bkg) was detected in river water downstream at US301 bridge. H-3 concentrations ranged from 1000 pCi/L (average) to 2100 pCi/L (maximum). Based on periodic effluent reports, ~90% of the H-3 is believed to be from SRS, with ~10% from Vogtle. Although elevated, all results were equivalent to less than 11% of the Drinking Water Standard. Therefore, the H-3 did not pose a significant risk.
1997-1999	Drinking water	H-3	Elevated tritium (5X to 8X Bkg) was detected in downstream drinking water near Savannah, with concentrations ranging from 900 pCi/L (average) to 1700 pCi/L (maximum). Based on periodic effluent reports, ~90% of the H-3 is believed to be from SRS, with ~10% from Vogtle. Although elevated, all results were equivalent to less than 9% of the Drinking Water Standard and, therefore, the H-3 did not pose a significant risk.
1997-1999	Sediment	Co-60  Cs-137	Traces of Co-60 (approximately 20X Bkg) in sediment were measured at the Vogtle outfall (and at several SRS outfalls as well), indicating that the Co-60 originated from SRS and Vogtle. Concentrations ranged from 100 to 300 pCi/Kg. Co-60 was also detected up to 100 miles downstream (from SRS and Vogtle). No measurable impact to drinking water or fish was detected.  A trace of Cs-137 (approximately 2X Bkg) was detected at the Vogtle outfall. Concentrations ranged from 160 to 360 pCi/Kg. Relative to SRS's Cs-137 concentrations (20X to 50X Bkg), Vogtle's Cs-137 had no significant impact, and it could even be partially attributable to Cs-137 discharged by SRS upstream of Vogtle.
1997-1999	River water outfall	H-3	Elevated tritium (7X to 17X Bkg) in river water was detected below the Vogtle outfall. H-3 concentrations ranged from 1400 (average) to 3500 pCi/L. This is equivalent to 7%-18% of the reporting level, based on use as a drinking water supply (unlikely). A portion of the H-3 detected at Vogtle may have come from SRS, since 2 SRS outfalls are located upstream of Vogtle.
1997-1999	Drinking water	H-3	Elevated tritium (5X to 8X Bkg) was detected in downstream drinking water near Savannah, with concentrations ranging from 900 pCi/L (average) to 1700 pCi/L (maximum). Based on periodic effluent reports, ~90% of the H-3 is believed to be from SRS, with ~10% from Vogtle. Although elevated, all results were equivalent to less than 9% of the Drinking Water Standard and, therefore, the H-3 did not pose a significant risk.
1997-1999	Fish	Cs-137 (from SRS)	Elevated concentrations of Cs-137 in fish filets (15X to 45X Bkg) were detected downstream of Vogtle. Most of the Cs-137 in fish near Vogtle is attributed to SRS operations, as Four Mile Creek (a contaminated SRS outfall) is located just downstream of Vogtle. Concentrations ranged from 230 (average) to 870 pCi/Kg, with the maximum equivalent to 9% of the reporting level of 10 mRem/Tr CEDE. The average risk of cancer from eating Cs-137 in fish downstream of Vogtle was 1-in-1,000,000 for 30-year exposure.

1997-1999	fish	H-3	Elevated concentrations of H-3 in fish filets (7X to 17X Bkg) were detected downstream of Vogtle. A significant portion of the H-3 may come from SRS (upstream and from FMC). Concentrations ranged from 1000 (average) to 2500 pCi/Kg, with the maximum equivalent to 0.04% of the reporting level of 10 mRem/Yr CEDE. The average risk of cancer from eating H-3 in fish adjacent to SRS was 1-in-100,000,000 for 30 year exposure.
2000-2002	River Water Outfall	Tritium (H-3)	Elevated tritium (up to <b>50X</b> Bkg) in river water was detected below the Vogtle outfall. H-3 concentrations averaged 2,200 pCi/l (11% of MCL), with the highest concentration (11,000 pCi/l) associated with a chemistry problem in one of the reactors. This required a temporary shutdown and system cleanup near the end of 2002.
2000-2002	River Water Downstream of SRS and VEGP at US301	Tritium (H-3)	Elevated tritium (up to <b>16X</b> Bkg) was detected in river water downstream of SRS and VEGP at the US-301 Bridge. H-3 concentrations averaged 1000 pCi/l (5% MCL), with a maximum of 3,300 pCi/l (16% MCL). Approximately 90% of the H-3 is from SRS, with around 10% from Vogtle, based on available effluent reports. H-3 did not pose a significant risk based on measured concentrations.
2000-2002	Drinking Water	Tritium (H-3)	Elevated concentrations of tritium (up to <b>11X</b> Bkg) were detected in downstream drinking water from the Savannah I&D Water Plant. Concentrations averaged 800 pCi/l (4% MCL), with a maximum of 2,300 pCi/l (11% MCL). As noted above, most (~ 90%) of this H-3 is from SRS. H-3 did not pose a significant risk based on measured concentrations.
2000-2002	Sediment	Cs-137	Elevated Cs-137 (approximately <b>2X</b> Bkg) was detected at Vogtle one time, but the average concentration was statistically indistinguishable from the control concentration.
2000-2002	Sediment	Co-60	Elevated concentrations of Co-60 in sediment were measured at SRS - Steel Creek (up to <b>14X</b> Bkg) and below Plant Vogtle (up to <b>15X</b> Bkg), suggesting that Co-60 originated from both SRS and Vogtle. Co-60 was also detected up to 100 miles downstream (up to <b>22X</b> Bkg). Co-60 was not detected in drinking water or fish samples, indicating negligible impact to human populations.
2000-2002	Fish	H-3 and Cs-137	Elevated concentrations of Cs-137 and H-3 were also detected in fish samples near Plant Vogtle, which is located adjacent to SRS and Four-Mile Creek. The majority of Cs-137 activity detected in Vogtle fish is likely to be SRS-related, based on the upstream control samples. Vogtle-related activity was equivalent to less than 3% of the aquatic-pathway reporting level. The 30-year radiological cancer morbidity risk for fish consumed from this area was estimated to be between 1 and 2 out of 1,000,000.

Data in this table are from Environmental Radiation Surveillance Reports, 1995-1996, 1997-1999 and 2000-2002, published by the Georgia Department of Natural Resources Environmental Protection Division. The conclusions in column four are taken verbatim from the EPD report. The state's test results reveal striking elevations of harmful radionuclides in several media expressed in multiples above background level radiation (Bkg). The test results range from 2 times to 50 times above background level (2X to 50X Bkg). Elevated radiation levels are also expressed in picocuries per liter or picocuries per kilogram (pCi/L or pCi/Kg, respectively), depending on the sample type.