

Blue Ridge Environmental Defense League

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RE: Industrial Surface Water Withdrawal Permit No. 017-0191-11 Vogle Electric Generating Plant Units 3 and 4, Burke County, Georgia

On behalf of the Blue Ridge Environmental Defense League and its members in Georgia, I write regarding the proposed water withdrawal permit for Plant Vogle. As we will detail below, the proposed permit fails to meet requirements of the regulations contained in O.C.G.A. § 12-5-31, et seq., 40 CFR 122, 123, 124 and 125 and the Clean Water Act § 316(b).

Overview

Georgia Department of Natural Resources has announced its intent to issue a new Industrial Surface Water Withdrawal Permit for the Vogle Electric Generating Plant Units 3 and 4 (øVEGPö). On January 23, 2014 the Georgia Department of Natural Resources Environmental Protection Division (øEPDö) released in draft form Permit No. 017-0191-11 for water withdrawal from the Savannah River for the purposes of cooling and in-plant use. The draft permit sets water withdrawal limits of 74.0 million gallons per day maximum per 24 hours and 62.0 MGD monthly average. The Draft Vogle Surface Water permit EPD Recommendation, 7-24-2012, states that constant evaporative loss of water through the cooling towers is 30,000 GPM (gallons per minute), 43.2 MGD (million gallons per day) or 66.84 CFS (cubic feet per second).

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 öwaters of the United Statesö as rivers, tributaries, lakes, estuaries, coastal waters, and wetlands.¹ Section 316(b) of the Clean Water Act requires that the cooling water intake structures minimize adverse environmental impacts: 1) the impingement and mortality of organisms, primarily fish, on screens that protect the intake system, and 2) the entrainment and mortality of small organisms, primarily fish eggs and larvae, that pass through those screens and through the plant's entire cooling system.

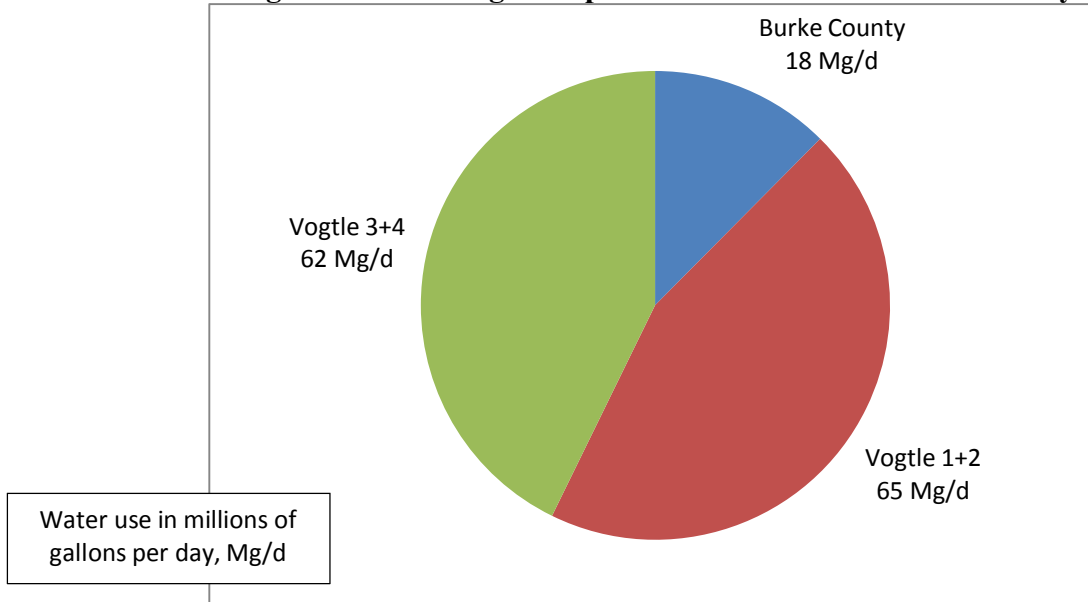
General Comments

If allowed to expand, Vogle would take seven times as much water as all of Burke County. Water reports for the US Geological Survey show Burke County's total water use is 83 million gallons per day. But most of the water in Burke County is used by Plant Vogle. Take

¹ 33 U.S.C. §1251 et seq. (1972)

out Vogtle and Burke County's water needs for public water supply, commercial, industrial, and agricultural uses combined average only 18 million gallons per day.² Figure 1 illustrates the combined impact of existing uses plus the proposed addition of the monthly average in the draft permit.

Figure 1. Plant Vogtle Impact on Water Use in Burke County



Among Georgia's 159 counties, Burke County ranks number 12 in highest total water use, just behind Dekalb County in Atlanta. But Dekalb County's population is 677,959 and Burke County's population is 23,299. What is the difference? Does a family in Atlanta use twenty-nine times more water than a Burke County family? No, the difference is that Burke County has a nuclear power plant. And now Southern Company wants to nearly double its water use by adding two more nuclear plants.

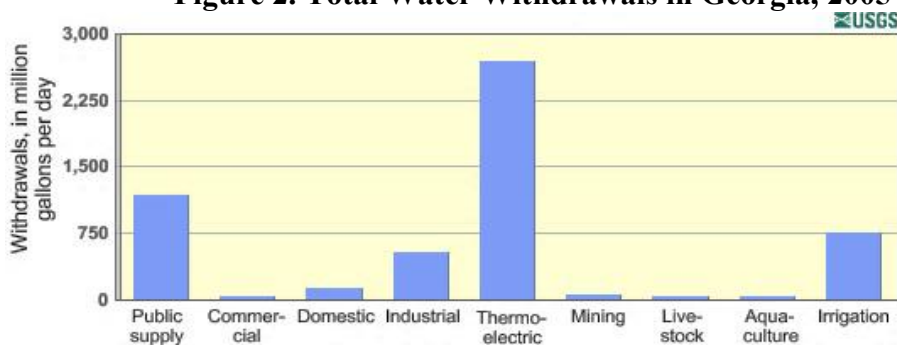
Burke County's situation is reflected across Georgia. The state's water use is approximately 5.5 billion gallons per day. See Figure 2.³ The US Geological Survey estimates that thermo-electric-power water use in Georgia is about 2.7 billion gallons per day. Statewide, half of all available water is used to generate electric power by coal and nuclear power plants, far more than what Atlanta, Augusta, Columbus, Savannah and 96 other cities use combined.

Climate change and population growth are inexorable; the generation of electricity by boiling water is not because alternatives are available and growing. Clearly, EPD must now assess the profligate use of water by thermoelectric power plants both coal and nuclear before issuing this permit.

² "Water Use in Georgia by County for 2005; and Water-Use Trends, 1980-2005," Julia L. Fanning and Victoria P. Trent, Georgia Environmental Protection Division, Atlanta, Georgia <http://pubs.usgs.gov/sir/2009/5002/>

³ *Id*

Figure 2. Total Water Withdrawals in Georgia, 2005



Specific Comments

Georgia EPD Numbers Don't Add Up

The EPD's draft permit does not properly account for water withdrawn from the Savannah River. The 74/62 MGD water withdrawal limits do not account for combined water volumes discharged to the river and evaporative losses detailed in federal and state documents for VEGP. The EPD draft permit states that evaporative loss, also known as consumptive use, is 30,000 GPM.⁴ The environmental impact statement of the US Nuclear Regulatory Commission determined that normal plant effluent discharges to the Savannah River would be 10,008 GPM and that the maximum would be 31,695 GPM.⁵ (These figures were used by the NRC to determine site suitability and plant safety.) Combining water discharged with evaporative loss gives the water intake necessary to operate the plant. The results are shown in Table 1.

Table 1. Cooling Water Use Compared to Permit Limits

	Normal	Maximum
Discharge (GPM)	10,008	31,695
Evaporative Loss (GPM)	30,000	30,000
Total (GPM)	40,008	61,695
Total (MGD)	57.6	88.8
Draft permit limits	62.0	74.0

As one can see, the permit's normal water withdrawal of 62 MGD is a mere 8% above the combined discharge and evaporative loss of 57.6 MGD, a slim margin, but that the permitted maximum withdrawal of 74 MGD is actually less than the combined total of 88.8 MGD necessary for plant cooling. The EPD must go back to the drawing board and redo its calculations of water intake and consumptive use.

Low Flow Endangers Downstream Potable Water Quality

The City of Savannah depends upon the river for its public water supply. During the NRC's development of an early site permit for Plant Vogtle, the city's water and Sewer director

⁴ EPD Recommendation Vogtle Surface Water permit, "Southern Nuclear Operating Co.'s Vogtle Electric Generating Plant Proposed Units 3&4, Savannah River Considerations," Draft 7-24-2012

⁵ Draft NUREG-1947, September 2010, Section 3.2.1 Plant Water Use at 3-4

stated that increasing consumptive use of water during low flow periods in the Savannah River Basin could threaten water quality:⁶

Low flows will also affect the river's ability to disperse contaminants present in the river. Savannah's water supply is already at risk due to operations of the Savannah River Plant and existing operations at Plant Vogtle. Concentration of these contaminants due to low flows places public safety at risk due to the unavailability of water treatment technology to address these problems.

Low flows, recorded at 3600 CFS, salt water intrusion, consumptive use and other factors could even shut down city water intakes on the river. We support the request for the development of a water supply and demand model for the Savannah River Basin that accounts for the length and severity of droughts and the increasing demand caused by population growth and economic development. EPD should complete this before approving the draft permit.

Worst-case Impacts Unsupported

The EPD's review of the draft permit states that "Under the worst case scenario, the Savannah River at the proposed Plant Vogtle will have a small dissolved oxygen (DO) decrease and a small temperature increase...." The EPD states that the impact of an evaporative loss of 66.8 CFS would be "small" and that the dissolved oxygen impact of 6% and would be mitigated.⁷ There is already a large amount of impairment of the river and the additional impacts are not small. Nevertheless, EPD recommends approval of the permit without a flow requirement. This omission must be corrected.

Low Flow Impacts Omitted

The EPD relies upon the existing upstream reservoirs and the river's status as a "highly regulated stream" to eliminate the 7Q10 and low stream flow requirement. Further, EPD fails to assess the impact of low flow, relying on monthly average lows.

EPD Permit fails to Comply with the Clean Water Act

The EPD considers a "very conservative low flow" of 3100 CFS to predict a "small DO decrease and small temp increase at the proposed Plant Vogtle site" and a return to ambient temperature and dissolved oxygen at the Clyo, Georgia gage.⁸ However, the reduction in DO and rise in temp would violate water quality criteria and the anti-degradation requirement of the Clean Water Act. State water quality law must be consistent with federal law; the Georgia program must comply with the federal Clean Water Act. The Georgia EPD cannot approve the draft permit as written.

⁶ "Comments on the Draft EIS for the Vogtle Early Site Permit," Harry Jue, City of Savannah Water and Sewer Director, November 26, 2007, <http://pbadupws.nrc.gov/docs/ML0736/ML073600854.pdf>

⁷ EPD Recommendation draft 7-24-2012 at 1

⁸ *Id.*, Attachment B

Hydrologic Conditions Require Anti-degradation Analysis

Reviewing the EPD's graph of hydrologic conditions under the conditions of a Thurmond Release, one can see that just below the Vogtle site temperature goes from about 8 to 30 degrees-C.⁹ This is not a "small increase" and could be in excess of state water quality criteria. Further, dissolve oxygen falls from about 11 to 6.5 mg/L, a large drop and not "small." Even if not in violation of WQC, it would be a significant change degrading water quality and must be considered in a full anti-degradation analysis before permitted.

Mitigation Measures Insufficient and Contrary to Law

The EPD water quality modeling analysis indicates up to an 8.1 degree-C increase temperature above ambient in winter months. The EPD review states, "The Savannah Harbor TMDL provides a 0.1 mg/L daily average DO assimilative capacity...when the Savannah Harbor DO is below 4 mg/L." If 0.1 mg/L is 6% of available assimilative, how can there be any available below 4 mg/L? How is a daily average DO assimilative capacity a total maximum daily load? Further, the review states, "the proposed Plant Vogtle will have to provide mitigation for this impact to the DO assimilative capacity."¹⁰ But EPA policy holds that an entire lake or reservoir cannot be encompassed by a mixing zone and typically prohibits them from river areas and critical habitat.

The draft Permit Condition 3 describes mitigation for lowering DO in the Savannah Harbor, building an oxygen injection station to inject 4,000 lbs/day of oxygen from April 15 through November 15. However, Permit Condition 4 has an escape clause, allowing the permittee to "seek modification of any condition in this Permit, including operation of the oxygen injection system."

Here we see that Southern Nuclear Operating Company would be permitted to do in-stream treatment to offset an impact that is not legitimate because the river is already impaired and not properly allocated in a final TMDL. That is, there may not be any "available" load to allocate. See 40 CFR 122.44(d)(1)(vii):

- (vii) When developing water quality based effluent limits under this paragraph the permitting authority shall ensure that:
 - (A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards; and
 - (B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7.

This violates the federal CWA regulation that prohibits in-stream treatment under most circumstances, such as the Speece Cones contemplated in the draft Permit. See 40 CFR 125.3 (f)

⁹ *Id.*, 2/21/2012, Clay Burdette, VogtleAtDischarge3100.pdf, Page 1

¹⁰ *Id.*, Attachment C

Further, there is no requirement to monitor the DO anywhere to see if the mitigation measures are having impact or if injection is working at all. And the Permittee may seek modification of any terms of the permit at any time.

Conclusion

EPD has not fully analyzed the potential impacts of Plant Vogtle water withdrawals on the Savannah River watershed, including:

- The impact of the reactors' thermal discharge on water that is already elevated in temperature and impacts on local and downstream ecosystems
- The impact of warmed water on power plant cooling needs and the loss of efficiency caused by a reduced effectiveness in condensation of steam
- The evaluation of the impact of warmer ambient water temperatures on total withdrawal, consumption and evaporation
- The impact on other facilities: the need to provide cool water to the two additional reactors at Plant Vogtle could negatively impact operations at upstream facilities.
- The potential for extended drought locally and in the region to exacerbate all of the issues identified above.

EPD's draft permit fails to fully address the host of issues associated with the problem of rising temperatures. Annual temperatures in the Southeast are increasing and are projected to continue to do so. Regarding climate change factors, the Union of Concerned Scientists advised:

It would be good science, to be looking at the new projections for changes in coastline, increased storms, changes in water levels, changes in flood patterns.¹¹

The EPD has not considered the potential for current and future climatological conditions to depart from the past. The Division must reconsider its business-as-usual approach towards the impacts of this power plant on water resources of the Savannah River.

Finally, the EPD's inclusion of mitigation in a water withdrawal permit is the wrong measure in the wrong place. Proper consideration of such measures is the province of NPDES waste water discharge permit, which for Vogtle Units 3 and 4 has been applied for but has yet to be released by EPD. We believe it would be unfair and contrary to the law if NPDES mitigation measures were allowed through the back door of a water *withdrawal* permit instead of a *discharge* permit, the proper place to consider chemical and thermal discharges to waters of the United States.

Respectfully,



Louis A. Zeller, Executive Director

¹¹ Comments/Suggestions from December 6, 2007 Meeting on Enhancing the Efficiency and Effectiveness of the NRC Environmental Review Process, Jon Block, Union of Concerned Scientists, Transcript at 90