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

April 19, 2013

Randy Thompson, Permit Engineer
SC DHEC/Bureau of Water
2600 Bull Street
Columbia, SC 29201
Randy.Thompson@dhec.sc.gov

RE: William S. Lee III Nuclear Station
Notice No. 13-031-H/March 4, 2013
Permit No. SC0049140

Dear Mr. Thompson:

On behalf of the Blue Ridge Environmental Defense League, our members and chapters in South Carolina, I write to provide further comments in addition to my oral remarks at the public hearing of April 4th in Gaffney. In sum, the permit should either be denied or suspended until critical engineering and environmental problems are resolved.

Background

The South Carolina Department of Health and Environmental Control has prepared a draft permit under Clean Water Act, Section 402, National Pollutant Discharge Elimination System for the William States Lee III nuclear power plant proposed by Duke Energy Carolinas. A permit for the Lee plant centers on toxic chemicals and heat; all are pollutants regulated under the federal Clean Water Act. The state may issue, deny, revoke, suspend or modify permits for the discharge of industrial waste.

Section 316(a) of the federal Clean Water Act regulates heated discharges into waters of the United States. Under Section 316(a), heated water is considered a pollutant, and facilities wishing to discharge into a water source must apply for a National Pollution Discharge Elimination System (NPDES) permit.

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 plantôs entire cooling system.

Both EPA and NRC have responsibilities pursuant to the National Environmental Policy Act regarding issuance of licenses to nuclear power plants. As you know, a state electing to administer its own permit program instead of the EPAôs for discharges into navigable waters within its jurisdiction must do so under state law or under an interstate compact. In any case, the federal law provides a floor below which no state administering such a program may go.

General Comment

SCDHECôs draft permit is premature. First, a mandatory environmental review is incomplete. The Nuclear Regulatory Commission states that the Phase 4 - Final EIS has not been issued to EPA and that the ñSchedule [is] Under Review.ò[1] Second, the concurrent plant safety reviewð which determines important structures, systems and components of the power plantð is also incomplete and no license has been issued. In other words, the physical and operational parameters of the two proposed nuclear power plants are uncertain. Therefore, SCDHEC cannot issue this permit until these matters are decided, engineering and environmental questions are settled, and the construction and operation license is finalized.

Specific Comments

The WS Lee plant would release large amounts of heated water and other pollutants into the Broad River. The permitted water discharge temperature could be as high as 91 degrees-F in the summer. Other pollutants listed in Duke Energyôs permit application include radionuclides, fluoride, phosphorus, nitrates, sulfates, aluminum, lead, arsenic, zinc, chromium, oil and grease and trace amounts of cadmium and mercury.[2] Annually, the permitted water pollutant totals would be:

Pollutant	Average emission rate	Annual pounds emitted
Sulfate	3677 lb/d[a]	1,342,105
Oil and grease	15 mg/l[b]	539,025
Nitrates	167 lb/d[a]	60,955
Aluminum	99 lb/d[a]	36,135
Zinc	1 mg/l[b]	35,935
Phosphorus	56 lb/d[a]	20,440
Fluoride	43 lb/d[a]	15,695
Chromium	0.2 mg/l[b]	7,186
Lead	0.5 lb/d[a]	182
Arsenic	0.5 lb/d[a]	182
Radionuclides	3.4 picocuries/liter[a]	56 millicuries

a. emission limits from permit application
b. emission limits from draft permit

Steam electric generating plants, both fossil-fuel and nuclear, are thermo-electric; that is, they generate heat to boil water to make steam to run a turbine attached to a generator. The problem for the plant operator and the permitting agency is that roughly two-thirds of the heat energy generated in this process is wasted, produces no power, and must be discarded. Duke Energyôs permit application states that each of the two proposed nuclear

[1] Application Review Schedule for the Combined License Application for William States Lee III Nuclear Station, Units 1 and 2, posted at http://www.nrc.gov/reactors/new-reactors/col/lee/review-schedule.html, page last updated/reviewed April 17, 2013
[2] WS Lee NPDES application, 8/15/11, EPA Form 2D, Page 3-5 of 30

reactors would have a thermal output of 3415 megawatts, but that the electric power output would be just 1199 megawatts, an efficiency of 35%.

The waste heat is discharged into the air via a cooling tower or to surface water by a pipe. Duke Energy plans to use mechanical draft wet cooling towers at the Lee Station. For cooling purposes, the Lee station would require the withdrawal of 35,030 gallons/minute from the Broad River. Of this, 71% would be consumptive use, water lost by evaporation and drift loss from the cooling towers. The remaining 29% would be returned to the river as heated water.[3] As illustrated in the map and table below, the discharge to the river would be at the Ninety-Nine Islands Dam.

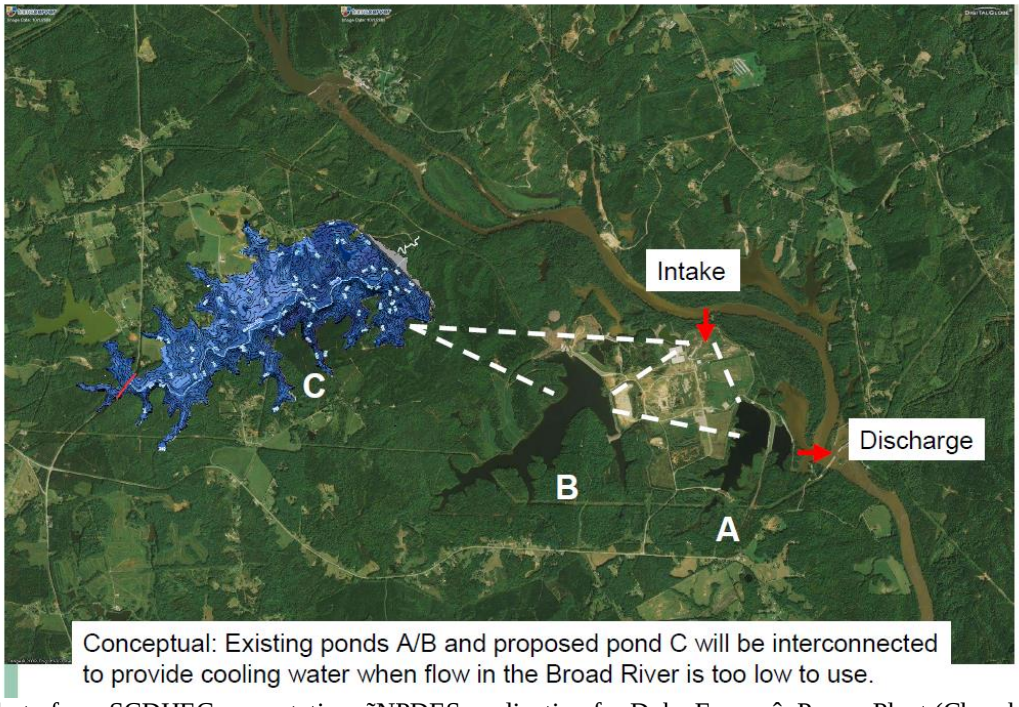

Photo from SCDHEC presentation, ñNPDES application for Duke Energyôs Power Plant (Cherokee County),ò Jeff deBessonet, Director, Water Facilities Permitting Division, November 2011

Lee Station Water Discharge Rates[4] (gallons per minute)

Outfall number	Operation	Average flow (gpm)
001a	Cooling tower blowdown	8087
001b	Wastewater treatment	1500*
001c	Liquid radwaste	30*
001	Combined discharge	8216

* Intermittent

Annual temperatures in the Southeast are increasing and are projected to continue to do so. U.S. Geological Society data show that thermoelectric power plants, nuclear and fossil-fuel, account for 41% of freshwater withdrawals nationwide. SCDHEC has not

[3] WS Lee NPDES application, 8/15/11, Geosyntec Consultants, Attachment B.1 Details of CFD Model, p.1
[4] WS Lee NPDES application, 8/15/11, EPA Form 2D, Page 1 of 30

fully analyzed the following potential impacts of elevated water temperatures in the Broad River and its watershed, including:

- The impact of pollution in water at warmer temperatures on the ecology of the site and downstream ï most chemical reactions are facilitated by elevated temperatures; a full analysis of the impact of reactor heat in hotter water on the other pollutants in the water from any source must be considered, including implications for the food chain
- The impact of the reactorsô 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 ï nuclear power reactors around the world have gone to low power or offline due to elevated cooling water temperatures and the loss of efficiency in power production due to loss of effective condensation of steam used to generate power
- The evaluation of the impact of warmer ambient water temperatures on total withdrawal, consumption and evaporation
- The impact on other facilities ï the need to provide cool water to the two William States Lee reactors could impact operations at upstream facilities. And heat generated at the Lee site would impact operations at downstream facilities.
- The impact of reactors going off-line during a heat wave; specifically, the loss of power during a heat wave on electric power customers
- The impact of reactors going off-line on regional grid stability
- The potential for extended drought locally and in the region to exacerbate all of the issues identified above.

SCDHEC has failed to account for these factors in its draft permit. Even Duke Energyôs analysis of flow-rates in the Broad River shows that there are serious potential problems with water supply:

> During the 1998-2002 drought, operations would have been curtailed for 42 days during June-September 2002, which was the worst year of the drought. Part of this outage would have coincided with the summer peak power demand.[5]

Dukeôs report reveals that based on historical data there are water supply uncertainties. Before approving the draft permit, SCDHEC must fully address a host of issues associated with the problem of rising temperatures, including the potential for current and future climatological conditions to depart from the past and concentration of pollutants in reduced volumes of river water. 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.[6]

People in South Carolina will be adversely impacted if a power plant is built which is

[5] William States Lee III Nuclear Station, Nuclear Regulatory Commission Environmental Report, Revision 0, Section 5.2.2.2 Potential Impacts on Water Use, page 5.2-9

[6] 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

vulnerable to reduced capacity and/or at risk from a major reactor accident caused by heat problems. Further, residents would be negatively affected if the Broad River and other water resources in the area are substantially reduced or compromised by the operation of Duke Energyôs WS Lee station.

SCDHECôs draft permit fails to fully address the host of issues associated with the problem of rising temperatures. The Bureau of Water has not considered the potential for current and future climatological conditions to depart from the past.

Conclusion

Plainly stated, the operation of two nuclear reactors at this location would endanger over a 2.3 million people in two states living within 50 miles of the plant including the cities of Gaffney, Spartanburg, Greenville, Rock Hill, Gastonia, Charlotte and Hickory.

> Whatever safety measures are in place can never be sufficient because these facilities are, after all, operated by human beings. We have persistently cautioned against the arrogant notion, promoted by those with a disproportionate confidence in technology, that humanity can completely control nuclear power.[7]

In light of events in Japan, SCDHEC must reconsider its business-as-usual approach towards the impacts of nuclear power plants. The permit should be denied or suspended until these matters are settled, engineering and environmental questions are answered, and the construction and operation license is finalized.

Respectfully submitted,

Louis A. Zeller, Executive Director

[7] GENSUIKIN 原水爆禁止日本国民会議 http://www.gensuikin.org/english/