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Joan Claybrook, President

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Ms. Ellie Irons  
EIR Program Manager  
Office of Environmental Impact Review  
Department of Environmental Quality  
629 East Main Street, 6<sup>th</sup> Floor  
Richmond, Virginia 23219

Re: CZMA Consistency Determination for Dominion Nuclear North Anna

I hereby submit these comments on behalf of Public Citizen. They pertain to the lack of consistency with the Coastal Zone Management Act (CZMA) of Dominion's proposal to build two new nuclear reactors at North Anna.<sup>1</sup> After reviewing the Nuclear Regulatory Commission's (NRC) Draft and Supplemental Environmental Impact Statements, it is clear that Dominion's proposal will have negative impacts on already stressed local and regional water resources. As such effects are inconsistent with the CZMA, we strongly urge the Department of Environmental Quality (DEQ) to deny this consistency certification. Our concerns are detailed below.

### **Increased Evaporation**

Dominion's proposal to build two new reactors will further increase water evaporation from Lake Anna. Any significant increased evaporation from Lake Anna will have serious negative impacts and should not be allowed. The proposed third reactor would be responsible for most of this evaporation. Increased evaporation will lower lake and downstream water levels, threatening lake recreation, downstream fisheries, and drinking water supplies.

Dominion asserts that its newly proposed hybrid cooling tower for the proposed third reactor will significantly reduce this increased water evaporation, but this is not the case. While the hybrid cooling tower will address thermal impacts on the lake from the new reactors, it will equal or increase the amount of water lost to evaporation as compared to the initially proposed once-through cooling system. In 2005, EPA, counties surrounding the lake, and DEQ itself raised concerns about the once-through system because of the increased evaporation it would cause and the impacts on lake and downstream water levels.<sup>2</sup> These concerns should remain because the evaporation from the newly proposed hybrid cooling system is at best the same and potentially worse than the once-through system.

Specifically, according to NRC's Supplemental Draft Environmental Impact Statement (SDEIS), the maximum instantaneous evaporation rate from the newly proposed hybrid cooling system will be 37.2 cubic feet per second (cfs) for most of the year (EC mode) and 25.7 cfs in drought conditions (MWC mode).<sup>3</sup> Both rates are equal to or higher than the maximum evaporation rate for the originally proposed once-through system, which was 26 cfs.<sup>45</sup> NRC asserts that the actual evaporation rate for the new hybrid system will be lower than the above numbers, but it fails to explain its reasons for reaching this conclusion in the SDEIS. The lack of detailed explanation from the NRC is particularly significant

because as we noted the instantaneous evaporation rates for the proposed hybrid system are at or above the once-through system. We strongly urge DEQ to require an explanation from NRC regarding their conclusions and to independently investigate the reasonableness of their assumptions and calculations.

### **Lower Lake Levels and Decreased Downstream Flow**

Increased evaporation from Lake Anna will lower lake water levels. This could have serious impacts on boating, fishing, and swimming in the lake. Already in 2002 without the evaporation from any new reactors, the water level dropped to 245 feet during a drought, which is 5 feet lower than normal. Boats could not be launched from ramps on the lake, and the backyards of homes around the lake were mudflats. Additional evaporation will also affect the frequency of low flow periods in the North Anna River. The legal minimal flow rate of water that must be maintained over the North Anna dam (20cfs between the lake and the river) is only 5.4% of the natural flow. Additional reactors would increase the frequency and duration of these low flow periods, threatening the American shad and striped bass fisheries,<sup>6</sup> river recreation, and perhaps public drinking water.

As DEQ stated back in March 2005, “The addition of Unit 3 would significantly increase the frequency of drought flows downstream, and the duration of those droughts. [Specifically this addition] would increase the drought recurrence interval to every 2.6 years and more than double the total weeks of flows that are 20 cubic feet per second (cfs) or lower from 67 to 143.”<sup>7</sup> This concern still very much applies to the proposed hybrid system. In fact, in a letter to DEQ in June 2006, the Virginia Department of Conservation and Recreation says clearly, “We continue to be concerned about the affects water consumption at the project will have on downstream flow rates in the North Anna River during low flow periods.”<sup>8</sup>

NRC’s analysis of the impacts of the new reactors on downstream flow also has problems. In the SDEIS, Dominion’s modeling of the frequency of “20 cfs events” is mentioned briefly and followed by NRC’s own more extensive analysis. Yet when the two drastically differ, NRC fails to mention or explain the results and their conclusions. As a result, several state agencies are wrongly quoting Dominion’s findings that the new cooling design is a significant improvement over the once-through design in terms of limiting the total number of 20 cfs events.<sup>9</sup> This is incorrect according to NRC’s own analysis, which concludes the frequency of low flow periods will actually increase from 5.2% to 11% with the hybrid cooling system. This is a very similar increase to what would have been caused by the once-through system. We ask DEQ to investigate the reasons for NRC’s failure to address their differences with Dominion’s modeling, and for the DEQ to independently evaluate both set of assumptions and calculations for their reasonableness.

### **Continuing Problems with Hot Side of the Lake**

Although this does not relate directly to the building of new reactors, it is something that should be remedied before CZMA certification for any new reactors is given. The existing two reactors currently have significant thermal impacts on the south side of the lake, often referred to as the “hot side”. Dominion has taken no steps to reduce these impacts. In fact, Dominion claims that this area is its private “Waste Heat Treatment Facility” and that regulation and monitoring of water temperatures do not apply there. This is private misuse of a public resource. There is no reason for that part of the lake to be treated differently just because the company chooses to call it a waste treatment facility. Many residents live on the hot side of the lake, and temperatures have been regularly detected at 104° F, which is a risk to human health. DEQ should institute a system to monitor water temperature and water quality, and enforce regulations for the entire lake before any new reactor proposals are considered.

### **Waste and security ignored in the ESP process**

DEQ should also note that two additional nuclear reactors at North Anna will generate at least 40 more metric tons of highly radioactive waste per year, all of which will be stored on site for some time to come. No successful long-term solution for containing high-level nuclear waste exists, and the currently existing waste is already stored on the shores of Lake Anna. Yucca Mountain – the only proposed repository for

highly radioactive waste in the U.S. - continues to be mired in scientific problems related to its hydrological and geologic suitability and in regulatory and legal delays due to concerns regarding the standards that govern it. Many do not expect it to be licensed as a repository, and if it were, waste would not be moved from North Anna for at least several decades. Radioactive waste is not secure on-site, and is presently leaking and contaminating soil and ground water at several sites in the U.S. and Europe. Although DEQ is not specifically charged with dealing with this waste, it should be aware that NRC has essentially ignored the issue of waste management in the ESP process despite its potential impacts on the watershed of Lake Anna. By clinging to a “Waste Confidence Decision” not supported by sound science, NRC has attempted to limit both public and state review of the waste situation. If there is a problem in the future, this waste will have the potential to seriously affect central Virginia’s water and air – the resources DEQ is mandated to protect.

### **Conclusions and Recommendations**

DEQ should hold Dominion to the highest standards necessary to protect local water. Specifically, DEQ should require Dominion to use a dry cooling tower for the third reactor. A dry cooling tower system - as is already planned for the fourth reactor - would virtually eliminate both thermal and evaporative impacts from the project, and would not be an unreasonable burden on Dominion. Using highly conservative assumptions, our calculations show that the use of a dry cooling tower for the proposed third reactor at North Anna would cost Dominion around \$94.6 million per year in lost revenue from electricity sales.<sup>10</sup> This amount would be equal to just 0.5% of Dominion’s gross income in 2005,<sup>11</sup> and works out to just \$0.006 per liter or \$0.02 per gallon of water that would be saved as a result of switching to the dry cooling tower. By any measure, this cost to Dominion from switching to a dry cooling tower would be a reasonable and appropriate investment to protect central Virginia’s water resources from the negative impacts that would occur from the use of the proposed hybrid cooling tower.

Thank you for your consideration of these comments. We appreciate the public meeting held by DEQ on August 16<sup>th</sup>, and hope that DEQ will rigorously review Dominion's proposal and enforce the standards necessary to truly protect the health of Virginia’s environment and its people.

Sincerely,

Melissa Kemp  
Organizer  
Energy Program  
Public Citizen

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<sup>1</sup> Public Citizen is a national, non-profit, citizen advocacy organization based in Washington, DC. The Energy Program works closely with local, state-level, and national organizations on energy policy issues, and has about 2,000 members in Virginia.

<sup>2</sup> See for example the U.S. Environmental Protection Agency Comments on North Anna Draft Environmental Impact Statement from March 1, 2005 (<http://www.citizen.org/documents/EPAcommentsDEIS.pdf>), Spotsylvania County Resolution NO 2005-16 ([http://www.citizen.org/cmep/energy\\_enviro\\_nuclear/newnukes/northanna/articles.cfm?ID=13812](http://www.citizen.org/cmep/energy_enviro_nuclear/newnukes/northanna/articles.cfm?ID=13812)), and the Virginia DEQ Comments on the North Anna Draft Environmental Impact Statement from March 3, 2005 (<http://www.citizen.org/documents/VDEQcommentsDEIS.pdf>)

<sup>3</sup> Nuclear Regulatory Commission, Supplemental Draft Environmental Impact Statement (SDEIS) for North Anna, Supplement 1 NUREG-1811, 3-11, p. 76 of the pdf, <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1811/supplement1/sr1811s1.pdf>

<sup>4</sup> Nuclear Regulatory Commission, Draft Environmental Impact Statement for North Anna NUREG1811”, Section 5.3.1, p. 5-6, <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1811/sr1811.html>

<sup>5</sup> Cook, C.B., L.W. Vail and D.L. Ward, “Report on the North Anna Early Site Permit Water Budget Model for Lake Anna”, DOE Pacific National Laboratory, p 13, [http://www.pnl.gov/main/publications/external/technical\\_reports/PNNL-14944.pdf](http://www.pnl.gov/main/publications/external/technical_reports/PNNL-14944.pdf)

<sup>6</sup> Because fish require a certain amount of water in which to spawn, frequent low water levels could have a negative impact on these populations and the health of Virginia’s fisheries.

<sup>7</sup> “Virginia Department of Environmental Quality Comments on North Anna Draft Environmental Impact Statement”, March 3, 2005, <http://www.citizen.org/documents/VDEQcommentsDEIS.pdf>

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<sup>8</sup> Virginia Department of Conservation and Recreation letter to DEQ, “DEQ-06-079F: Nuclear Regulatory Commission – North Anna Early Site Permit Application”, June 27, 2006

<sup>9</sup> Dominion’s modeling showed an increase in low flows from 5.2% to 7.3% of the time.

<sup>10</sup> Our calculations are based on the following assumptions:

- a) The proposed third reactor is estimated to be 1200 MW and operate at 90% capacity
- b) It is estimated that it will require 10% of the plants electrical generation to operate the dry cooling tower (2592 MWh/day)
- c) The value of the electricity to Dominion estimated at 10 cents/kWh (the actual O&M costs to Dominion to generate this electricity would be 2-3 cents/kWh).
- d) The low and unexplained NRC evaporation rate for the proposed hybrid cooling tower, 19 cfs, is used (1641600 cfs evaporated/day) and for simplicity, it is assumed that dry cooling tower has no evaporation.

<sup>11</sup> Dominion’s gross income was \$18.04 billion in 2005. The company also reported 57.2 billion in assets.

<http://www.dom.com/investors/annual2005/csincome.pdf>