

June 9, 2004

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DOCKETED  
USNRC

June 15, 2004 (10:08AM)

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In the Matter of

Docket No. 52-008

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Dominion Nuclear North Anna, LLC

(Early Site Permit for North Anna ESP Site)

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**REPLY BY BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE,  
NUCLEAR INFORMATION AND RESOURCE SERVICE,  
AND PUBLIC CITIZEN TO DOMINION'S AND NRC STAFF'S  
RESPONSES TO CONTENTIONS REGARDING EARLY SITE PERMIT  
APPLICATION FOR SITE OF NORTH ANNA NUCLEAR POWER PLANT**

**I. INTRODUCTION**

Pursuant to the Atomic Safety and Licensing Board's ("ASLB's") Initial Prehearing Order of March 8, 2004, as modified by the ASLB's Order of June 3, 2004, Petitioners Blue Ridge Environmental Defense League ("BREDL"), Nuclear Information and Resource Service ("NIRS") and Public Citizen, hereby submit their reply to Dominion's Answer to Petitioners' Contentions (May 25, 2004) (hereinafter "Dominion's Answer"); NRC Staff's Answer to Contentions of Blue Ridge Environmental Defense League, Nuclear Information and Resource Service, and Public Citizen Regarding the Early Site Permit Application for the North Anna Nuclear Power Plant Site (May 28, 2004) (hereinafter "NRC Staff's Response"). As demonstrated below, neither Dominion Nuclear North Anna, L.L.C.'s ("Dominion") nor the U.S. Nuclear Regulatory Commission ("NRC" or "Commission") Staff succeeds in their efforts to demonstrate

that Petitioners' contentions are inadmissible. Accordingly, the ASLB should admit Petitioners' contentions and admit Petitioners as intervenors in this proceeding.

## **II. REPLY REGARDING CONTENTIONS**

### **2. Contentions Regarding Site Safety Analysis**

#### **Contention 2.1: Failure to provide adequate safety assessment of reactor interaction**

Contention 2.1 asserts that:

The ESP application for the North Anna site fails to comply with 10 C.F.R. § 52.17 because its safety assessment does not contain an adequate analysis and evaluation of the major structures, systems, and components of the facility that bear significantly on the acceptability of the site under the radiological consequences evaluation factors identified in 10 C.F.R. § 50.23(a)(1).<sup>1</sup> In particular, the safety assessment does not adequately take into account the potential effects on radiological accident consequences of co-locating new reactors with advanced designs next to an older reactor. The safety assessment should contain a comprehensive evaluation and analysis of the ways in which interaction of the old and new plants under accident conditions may exacerbate the consequences of a radiological accident. Without such an evaluation and analysis, the presiding officer cannot make a finding that, taking into consideration the site criteria in Part 100 of the regulations, the proposed reactors can be operated "without undue risk to the health and safety of the public." 10 C.F.R. § 52.21.

Contentions of Blue Ridge Environmental Defense League, Nuclear Information and Resource Service, and Public Citizen Regarding Early Site Permit Application for Site of North Anna Nuclear Power Plant at 2 (May 3, 2004) (hereinafter "Petitioners' Contentions"). Dominion and the NRC Staff oppose admission of the contention. Dominion's Response at 11-15, NRC Staff's Response at 11-18.

According to Dominion, Petitioners misinterpret 10 C.F.R. § 52.17(a)(1), which requires that an ESP application must contain:

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<sup>1</sup> The erroneous reference to 10 C.F.R. § 50.23(a)(1) should be changed to 10 C.F.R. § 50.34(a)(1).

a description and safety assessment of the site on which the facility is to be located. The assessment must contain an analysis and evaluation of the major structures, systems, and components of the facility that bear significantly on the acceptability of the site under the radiological consequence evaluation factors identified in § 50.34(a)(1) of this chapter. Site characteristics must comply with part 10 of this chapter.

Dominion's Response at 11-12. Dominion argues that Petitioners err in citing the requirements of 10 C.F.R. § 50.34(a)(1)(ii)(A) through (D) as relevant "radiological consequence evaluation factors." According to Dominion, the only radiological consequence evaluation factors in 10 C.F.R. § 50.34(a)(1)(ii) are found in subsections (D)(1) and (2), which Petitioners did not cite. These provisions set exposure limits for any individual located at the boundary of the exclusion area boundary ("EAB") and the low population zone ("LPZ"). In Dominion's view, the design of the proposed new reactors need only be evaluated insofar as it relates to Dominion's compliance with these dose limits. *Id.*

The regulations themselves do not support Dominion's argument. Nothing in the regulations states that the subsection (D)(1) and (2) contain the only radiological consequence evaluation factors in 10 C.F.R. § 50.34(a)(1). Moreover, the plain language of the portions of 10 C.F.R. § 50.34(a)(1) cited by Petitioners specifically references radiological consequences. For instance, subsection (ii) explicitly states that: "[i]t is expected that reactors will reflect through their design, construction and operation an extremely low probability for accidents that could result in the release of *significant quantities of radioactive fission products*." (emphasis added). In subsection (C), the rule also states that the NRC should evaluate the "extent to which the reactor incorporates unique, unusual or enhanced safety features having a significant bearing on the probability or *consequences of accidental releases of radioactive material*." (emphasis

added). In subsection (D), the rule specifies that “[s]pecial attention must be directed to plant design features intended to mitigate the *radiological consequences of accidents*.” (emphasis added). Dominion does not explain, and it is not apparent, why these provisions cannot be read to establish radiological consequence evaluation factors.

The NRC Staff argues that Section 52.17(a)(1) refers to only those radiological consequence evaluation factors that are found in Subpart B of Part 100 as well as 10 C.F.R. § 50.34(a)(1). NRC Staff Response at 6-7, 12. Because the only radiological consequence evaluation factors in Subpart B of Part 100 relate to dose consequences at the EAB and LBP boundary, the NRC Staff contends, no other factors apply. *Id.* If the Commission had intended to restrict the applicable 10 C.F.R. § 50.34(a)(1) criteria to the dose limits in § 50.34(a)(1)(D)(1) and (2), however, it presumably would have used the more explicit phrase “dose limits.” By using the more general phrase “radiological dose evaluation criteria,” the Commission appears to have intended a broader scope of relevant criteria.

Even if the NRC Staff were correct that the only relevant radiological consequence evaluation criteria are the ones that are found in both 10 C.F.R. § 50.34(a)(1) and Part 100, the Part 100 criteria do incorporate design considerations to the extent they require consideration of whether a plant design can accommodate “commonly occurring hazards,” and “whether the risk of other hazards is very low.” 10 C.F.R. 100.20(b). Thus, design considerations are not completely irrelevant, even under 10 C.F.R. Part 100. In fact, as the NRC Staff recognizes, the NRC achieved only a “partial decoupling” of siting and design issues in the 1996 amendments to Part 100. NRC Staff Response at 13.

The NRC Staff also mischaracterizes Petitioners' contention, by claiming that its subject is the design of the proposed reactors. NRC Staff's Response at 8, 12. The purpose of Contention 2.1 is to challenge the appropriateness of Dominion's proposal to site two new "advanced" reactors next to the two existing North Anna reactors. The contention does not seek to challenge the adequacy of the new reactor designs proposed by Dominion. While the design of the proposed reactors is not directly at issue, the nature of the design proposed by Dominion is relevant to the issue of siting: given that advanced reactors are not designed to withstand accidents of the severity that may occur at the current generation of nuclear power plants, it is relevant to question the safety of siting one or two advanced reactors next to two reactors of the current generation. *See* Petitioners' Contentions at 5.

Moreover, contrary to the NRC's arguments, the rulemaking histories of 10 C.F.R. Part 100, 10 C.F.R. § 52.17, and 10 C.F.R. § 50.34(a)(1) do not demonstrate that the Commission intended to preclude consideration of the impact of design issues on siting of new nuclear power plants. These rulemaking histories show that the Commission did not want to consider design issues at the early site permit stage. But they do not show that the Commission intended to completely exclude consideration of how the interaction between the design and the site might affect a siting decision. As discussed in the Staff's response at 13, the Commission did not completely decouple siting issues from design issues.

Dominion also relies for its argument on the NRC Staff's guidance document for processing of ESP applications, RS-002. As stated by Dominion, Section 15 of RS-002 states as follows:

Under 10 CFR 52.17(a)(1), "Content of Applications," early site permit (ESP) applications must contain an analysis and evaluation of the major structures, systems, and components of the facility that bear significantly on the acceptability of the site with respect to the radiological consequence evaluation factors identified in 10 CFR 50.34(a)(1). This review standard applies to postulated design basis accident (DBA) radiological consequences for the exclusion area boundary (EAB) and low population zone (LBP). Radiological consequences related to control room personnel will be evaluated as part of the combined license (COL) review.

RS-002, Processing Applications for Early Site Permits at 15.0-1 (Effective May 3, 2004). There is no indication in RS-002, however, that in promulgating this guidance the NRC Staff took into consideration the unique problem posed by the potential interaction between new advanced reactors and existing reactors of the current generation. Instead, the guidance seems to be concerned with radiological releases from the proposed reactor. Thus, it does not dispose of Petitioners' contention.

Dominion also argues that Contention 2.1 lacks specificity, because Petitioners do not demonstrate that a sufficiently protective control room could not be designed and built. Dominion's Response at 14. In making this argument, Dominion fails to acknowledge that the new reactors it proposes to build are based on generic pre-approved designs. The purpose of using these generic designs is to avoid the time-consuming process of devising specific designs for each reactor site. As stated in Petitioners' contention, these advanced reactor designs generally provide a lower level of protection from radiation releases. Dominion should address the implications of siting such advanced reactors next to reactors of the current generation, which pose a risk of

radiological releases that are greater than the advanced reactors are proposed to protect against.<sup>2</sup>

Both Dominion and the Staff argue that Petitioners have provided insufficient support for this contention. The NRC contends that Petitioners should have provided source terms for accidents at the existing reactors, and described design features of the control rooms of the proposed reactors. NRC Staff Response at 16. Petitioners respectfully submit that the basis they have provided is sufficient to support the contention. Petitioners have asserted, with the support of expert witness David A. Lochbaum, that the design basis accidents (“DBAs”) and source terms resulting from DBAs for the proposed reactors are significantly less severe than for the existing operating reactors; and that consequently, the new reactors are designed with fewer features to protect station workers from radiation released during accident conditions. Petitioners’ Contentions at 4-5. Significantly, neither Dominion nor the NRC Staff dispute the accuracy of these assertions, which are sufficiently specific and well-supported to demonstrate a genuine and material dispute with the applicant.<sup>3</sup>

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<sup>2</sup> Dominion’s argument that Petitioners’ concern can be resolved later by changing the design of the new reactors is undermined by statements by the NRC Staff. In opposing admission of another contention, the Staff argues that advanced reactor designs are approved in rulemakings, and that therefore challenges to those designs would constitute impermissible attacks on NRC regulations. NRC Staff Response at 20-21. While Dominion might have the discretion to apply for a change the design of a proposed advanced reactor, Petitioners would not have the right to raise design issues in any construction permit or operating license proceeding. Therefore, the suitability of the advanced reactor design to the site of an existing reactor should be addressed in this proceeding.

<sup>3</sup> Dominion also argues that the contention provides no expert support showing that the existing units would preclude safe operation of new units. Dominion’s Response at 14. Dominion argues that the Declaration of David A. Lochbaum, submitted by Petitioners in support of the contention, is insufficient because it contains “no specific factual declaration,” only the “unspecified ‘technical factual assertions’ in unspecified

The Staff also argues that Petitioners do not provide sufficiently specific support for their claim that electrical equipment at the new reactors may not be qualified to withstand levels of heat or radiation that may be generated by an accident at the existing plant. NRC Staff Response at 16. But the contention specifically states that the proposed new plant is within 570 feet of the Unit 1 containment building, and that a radiological release from Unit 1 could therefore impact the new facility. Petitioners' Contentions at 7, note 2. This assertion is specific, and is also supported by the Declaration of David A. Lochbaum. Therefore, Petitioners have provided a sufficiently specific and well-supported basis for this aspect of the contention.

**Contention 2.2: Failure to Evaluate Site Suitability for Below-Grade Placement of Reactor Containment**

Contention 2.2 asserts that:

[t]he Site Safety Analysis Report for the North Anna ESP is inadequate because it does not evaluate the suitability of the site to locate the reactor containment below grade-level. Below-grade construction is advisable and appropriate, if not necessary, in order to maintain an adequate level of security in the post-9/11 threat environment.

Petitioners' Contentions at 7. Dominion and the Staff oppose the admission of the contention, on the grounds that it seeks relief that is not authorized by NRC regulations, that it seeks to place impermissible limits on the plant parameters that an applicant can choose in an ESP application, and that the plant parameters envelope used in Dominion's application encompasses reactors with below-grade containments.

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contentions." *Id.* As discussed in Mr. Lochbaum's declaration, he participated in the preparation of Contention 2.1, and the technical assertions in the contention are based on his expert knowledge and best professional judgment. Mr. Lochbaum could have incorporated the entire contention into his declaration, but that would have been unnecessarily duplicative. The declaration satisfies the requirements of 10 C.F.R. § 2.309(f)(1)(v).



Dominion and Staff argue that there is no regulatory requirement to evaluate the suitability of a site for below-grade construction. Dominion Response at 16, NRC Response at 19. But NRC regulations do require that site characteristics “must be such that adequate security plans and measures can be developed.” 10 C.F.R. § 100.21(f). The question is whether the considerations required under this section reasonably encompass below-grade construction.

Dominion interprets 10 C.F.R. § 100.21(f) to require only consideration of whether the site is suitable for compliance with whatever the Commission’s existing security regulations might require. Dominion’s Response at 16-17. But the text of the regulation does not support their interpretation. It does not say that site characteristics must be such that the applicant will be able to comply with NRC security regulations. Instead, Section 100.21(f) is worded more broadly, to require consideration of whether “adequate security plans and measures can be developed.” As the Commission observed in *Duke Energy Corporation* (Catawba Nuclear Station, Units 1 and 2), CLI-04-06, \_\_ NRC \_\_ (February 18, 2004), the concept of what constitutes adequate security is subject to change, depending on the “updated assessments of the terrorist threat.” *Id.*, slip op. at 9. Thus, in CLI-04-06, the Commission stated that the security upgrades imposed on all reactor licensees in the spring of 2003 “do not impose immutable requirements.” *Id.*

For this reason, Contention 2.1 cannot be dismissed based the NRC’s 2002 determination that “the design basis threat does not include an attack employing a crashing aircraft.” See Dominion’s Response at 17, citing *Riverkeeper v. Collins*, 359 F.3d 156, 160 (2<sup>nd</sup> Cir. 2004). That determination is not “immutable.” CLI-04-06, slip

op. at 9. In fact, a month after the NRC Staff issued the Directors Decision that was appealed in *Riverkeeper*, the Commission announced that it was:

engaged in intensive research on facility vulnerabilities; it is considering additional or alternative means of protection; and it is looking in particular at the effects of suicidal crashes of large commercial airplanes.<sup>4</sup>

*Private Fuel Storage, L.L.C.*, (Independent Spent Fuel Storage Installation), CLI-02-25 (2002), 56 NRC 340, 356 (2002). As the Commission explained in a footnote:

The NRC, in conjunction with DOE laboratories, is continuing a major research and engineering effort to evaluate the vulnerabilities and potential effects of a large commercial aircraft impacting a nuclear power plant. This effort also includes consideration of possible additional preventive or mitigative measures to further protect health and safety in the event of a deliberate aircraft crash into a nuclear power plant or spent fuel storage facility. The final results from that analysis are not yet available. If the ongoing research and security review recommends any other security enhancements, the NRC will take the appropriate action.

*Id.*, 56 NRC at 356 note 65. Thus, the Commission's 2002 decision not to require protection of nuclear plants against airplane crashes is far from being set in stone.

Accordingly, in the face of the ongoing need to re-assess the terrorist threat and revised NRC regulatory requirements, and in light of the fact that it may be 20 years before any construction permit application is filed, it is appropriate to conduct a review of security-related site suitability issues that is adequate to encompass reasonably foreseeable design requirements related to security. Petitioners have raised a genuine dispute of material fact with Dominion regarding the question of whether site suitability for below-grade construction should be included in the evaluation.<sup>5</sup>

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<sup>4</sup> The decision on appeal in *Riverkeeper* was issued on November 18, 2002. See 359 F.3d at 161. CLI-02-25 was issued on December 18, 2002. See 56 NRC at 340.

<sup>5</sup> The NRC Staff argues that the letter from Edward Teller, cited by Petitioners in support of the prudence of below-grade containments, does not support the contention because Dr. Teller was concerned with the safety of reactors rather than their security.

Dominion argues that in fact, the foundation embedment for the plant parameters envelope, i.e., the depth from finished grade to the bottom of the basemat for the most deeply embedded power block structure, is 140 feet. Dominion's Response at 22. But Dominion does not cite to any evaluation of the suitability of the North Anna for such below-grade construction. Moreover, a January 24, 2003, memorandum from the NRC Staff indicates that Dominion's geological site investigation has been limited to investigating the suitability of the site for construction of cooling towers, not safety structures. Memorandum from Jerome J. Blake to James E. Lyons, re: Pre-Application Site Visit To North Anna Nuclear Station To Observe Early Site Permit (ESP) Pre-Application Subsurface Investigation Activities (Project No. 719), Attachment at 1 (ACN # ML030290387) (hereinafter "Blake Memorandum"). Dominion intends to postpone any additional subsurface investigation until it selects a specific reactor design and applies for a construction permit. *Id.* This limitation on Dominion's investigation is inconsistent with NRC guidance for site suitability investigations, which recommends that:

[t]he complexity of geologic conditions and foundation requirements should be considered in choosing the actual distribution, number and depth of borings and other excavations for a site. *The investigative effort should be greatest at the locations of safety-related structures* and in other areas according to their spatial and geological relations to the site. At least one continuously sampled boring should be used for each safety-related structure and the boring should extend to a depth sufficient to define the geological and hydrological characteristics of the foundations."

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NRC Staff's Response at 22. Dr. Teller's letter reflects his concern about unplanned radiological releases from nuclear plants. Clearly, a terrorist attack could cause such a release. His letter shows that below-grade construction of reactors was considered 50 years ago as one measure for limiting accidental radiological releases from nuclear plants. Thus, it supports the contention.

Regulatory Guide 1.132 "Site Investigations for Foundations of Nuclear Power Plants" Section 4.3.1 "Borings and Exploratory Excavations," Rev. 2 at 1.132-8 (October 2003). (ACN # ML032800710) (emphasis added).

Moreover, most of Dominion's boreholes for siting of the cooling towers went to 50-90 feet. *Id.*, Attachment at 2. Only one borehole went further, to 170 feet. Thus, it does not appear that Dominion has evaluated the North Anna site for below-grade construction of a new reactor.

Finally, Dominion's argument that Petitioners seek to "usurp" its choice of designs. Dominion's Response at 19-20. Petitioners simply seek an evaluation of the suitability of the North Anna site for construction and operation of the types of reactors being considered by Dominion. Dominion seems to presume that the suitability of a site to a given design may never be used by the NRC to limit the choice of designs that are appropriate for that site. If that were so, than a site suitability review would be completely unnecessary and irrelevant.

### **3. Environmental Contentions**

#### **Contention 3.1: Inadequate Discussion of Severe Accident Impacts**

In this contention, Petitioners contend that the ER's discussion of severe accidents is inadequate, because it relies on the findings and conclusions of NUREG-1437, Vol. 1, the Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants (1996) ("NUREG-1437"), without providing specific design information that would justify the applicability of the NUREG. The contention appears to have been mooted by Dominion's May 17, 2004, submittal of an RAI response that contains the type of information sought by the contention. See Dominion's Response at 27, citing letter from

E. Grecheck to NRC re: Dominion Nuclear North Anna, LLC, North Anna Early Site Permit Application, Response to Request for Additional Information Regarding Environmental Portion of ESP Application, Enclosure at 70-82 (May 17, 2004).

Therefore, Petitioners withdraw Contention 3.1, reserving the right to amend it within a reasonable time period to challenge the adequacy of the information submitted by Dominion.

**Contention 3.2.1: Failure to Evaluate Whether and in What Time Frame Spent Fuel Generated by Proposed Reactors Can Be Safely Disposed Of**

Contention 3.2 asserts that the ER for the North Anna ESP application is deficient because it fails to discuss the environmental implications of the lack of options for permanent disposal of the spent fuel that will be generated by the proposed new North Anna reactors. Petitioners' Contentions at 15. Both Dominion and the NRC Staff oppose admission of the contention.

Dominion and the Staff argue that the language and history of the Waste Confidence rulemaking show that the rulemaking's findings apply to spent fuel generated by any reactor, including advanced reactors. Dominion Response at 29, NRC Staff Response at 29. They quote 10 C.F.R. § 51.23, which states that if necessary, spent fuel in "any reactor" can be stored safely and without significant environmental impacts; and that sufficient repository capacity will be available within 30 years beyond the licensed life for operation of "any reactor" to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time.<sup>6</sup>

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<sup>6</sup> The Staff claims that Petitioners attack 10 C.F.R. § 51.23, and that such an attack is barred by operation of 10 C.F.R. § 2.335(a). NRC Staff Response at 28. The NRC Staff misconstrues the contention. Petitioners do not seek to attack the regulation. Rather,

Petitioners respectfully submit that Dominion and the NRC Staff are in error.

While they correctly state that the language of 10 C.F.R. § 51.23 itself is not qualified, the supporting Waste Confidence rulemaking history makes clear that the finding of no significant impact that is embodied in 10 C.F.R. § 51.23 is limited to the spent fuel generated by any *existing* reactor. In the 1984 Waste Confidence Rule, for example, the Commission stated that:

[i]n its Notice of Proposed Rulemaking, the Commission stated that the 'purpose of this proceeding is solely to assess generally the degree of assurance now available that radioactive waste can be safely disposed of, to determine when such disposal or off-site storage will be available, and to determine whether radioactive waste can be safely stored on-site *past the expiration of existing facility licenses until off-site disposal or storage is available.*'

Final Waste Confidence Rule, 49 Fed. Reg. 34,659 (August 31, 1984) (emphasis added).

Thus, Finding 2 stated that:

[t]he Commission finds reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the year 2007-09, and that sufficient repository capacity will be available within 30 years beyond expiration of *any* reactor operating license to dispose of *existing commercial high level radioactive waste and spent fuel* originating in such reactor and generated up to that time.

49 Fed. Reg. at 34,659-60 (emphasis added).

Consistent with this limitation, the Commission's evaluation of the adequacy of repository capacity to accommodate spent fuel and high-level commercial nuclear waste was limited to the waste generated by existing reactors. The Commission estimated the amount of spent fuel and other high-level waste that would be generated by the existing generation of nuclear power plants, and compared it to the capacity of two hypothetical repositories that could each hold 100,000 metric tons of high level waste. 49 Fed. Reg. at

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Petitioners seek to show that the factual finding of no significant impact codified by Section 51.23 is inapplicable to the proposed ESP application.

36,679.<sup>7</sup> Thus, in the 1984 rule, the phrase “any reactor” clearly meant any existing reactor.

In the 1990 update to the Waste Confidence Rule, the Commission noted several recent developments, including the fact that a number of licensees had requested license renewal. 55 Fed. Reg. at 38,506. Therefore, the Commission changed Finding 2 to address that development, among others:

[t]he Commission finds reasonable assurance that at least one mined geologic repository will be available within the first quarter of the twenty-first century, and that sufficient repository capacity will be available within 30 years beyond the licensed life for operation (*which may include the term of a revised or renewed license*) of any reactor to dispose of the commercial high-level radioactive waste and spent fuel originating in such reactor and generated up to that time.<sup>8</sup>

55 Fed. Reg. at 38,474 (emphasis added). In order to support Finding 2, the Commission evaluated repository capacity in light of anticipated reactor lifetime extensions and license renewals. 55 Fed. Reg. at 38,501. In light of the NWPAs’ capacity limit on the first repository of 70,000 MTHM, the Commission found that “two repositories will be needed to dispose of all the spent fuel and high-level waste from the current generation of

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<sup>7</sup> At that time, the siting of a second repository was required by the Nuclear Waste Policy Act (“NWPAs”) of 1982. See Waste Confidence Decision Review, 55 Fed. Reg. 38,474, 38,501 (September 18, 1990) (hereinafter “1990 Waste Confidence Review”). The NWPAs of 1982 also required DOE to nominate five sites considered suitable for repository development. 1984 Waste Confidence Rule, 40 Fed. Reg. at 34,678. In May 1986, however, DOE indefinitely postponed siting of a second repository, based on (1) “decreasing forecasts of spent fuel discharges,” and (2) “estimates that a second repository would not be needed as soon as originally supposed.” In 1987, Congress amended the NWPAs to terminate all site-specific activities related to a second repository unless specifically authorized by Congress. 1990 Waste Confidence Revision, 55 Fed. Reg. at 38,501.

<sup>8</sup> The 1990 version of Finding No. 2 also reflects the Commission’s decreased certainty regarding the timing of the opening of a second repository, in light of Congress’ decision to suspend the siting process for a second repository. 55 Fed. Reg. at 38,494. See also note 7, *supra*. In contrast to the 1984 finding that “one or more” repositories would be available between 2007-09, the 1990 finding states that “at least one” repository will be available in the first quarter of the 21<sup>st</sup> century.

reactors” unless Congress lifts the 70,000 MTHM limit. 55 Fed. Reg. at 38,502. *Id.* The Commission did not say that it anticipated receipt of applications for licensing of a new generation of reactors; nor did it evaluate the additional quantity of spent fuel and high-level waste that would be generated by a new generation of nuclear reactors.

Dominion and the NRC Staff attribute significance to a statement in the 1990 Waste Confidence Review that:

[t]he availability of a second repository would permit spent fuel to be shipped offsite well within 30 years after expiration of these reactors’ OLS. The same would be true of the spent fuel discharged from any new generation of reactor designs.

Dominion Response at 30, NRC Response at 30 note 33, citing 55 Fed. Reg. at 38,504.

This statement must be evaluated in the context in which it was made. With respect to Finding 2, the Commission posed the rhetorical question:

Is there sufficient uncertainty in total spent fuel projections (*e.g.*, from extension-of-life license amendments, renewal of operating licenses for an additional 20 to 30 years, or a new generation of reactor designs) that this Waste Confidence review should consider the institutional uncertainties arising from having to restart a second repository program?

55 Fed. Reg. at 38,501. In response to that question, the Commission engaged in a discussion of what would be the earliest date a second repository would be needed in order to accommodate the spent fuel and high-level waste generated by the current generation of nuclear power plants, including renewed licenses:

License renewals would have the effect of increasing requirements for spent fuel storage. The Commission understands that some utilities are currently planning to seek renewals for 30 years. Assuming for the sake of establishing a conservative upper bound that the Commission does grant 30-year license renewals, the total operating life of some reactors would be 70 years, so that the spent fuel initially generated in them would have to be stored for about 100 years if a repository were not available until 30 years after the expiration of their last OLS.



Even under the conservative bounding assumption of 30-year license renewals for all reactors, however, if a repository were available within the first quarter of the twenty-first century, the oldest spent fuel could be shipped off the sites of all currently operating reactors well before the spent fuel initially generated in them reached the age of 100 years. Thus, a second repository, or additional capacity at the first, would be needed only to accommodate the additional quantity of spent fuel generated during the later years of those reactors' operating lives. The availability of a second repository would permit spent fuel to be shipped offsite well within 30 years after expiration of these reactors' OLs. The same would be true of the spent fuel discharged from any new generation of reactor designs.

*In sum, although some uncertainty in total spent fuel projections does arise from such developments as utilities' planning renewal of OLs for an additional 20 to 30 years, the Commission believes that this Waste Confidence review need not at this time consider the institutional uncertainties arising from having to restart a second repository program. Even if work on the second repository program is not begun until 2010 as contemplated under current law, there is sufficient assurance that a second repository will be available in a timeframe that would not constrain the removal of spent fuel from any reactor within 30 years of its licensed life for operation.*

55 Fed. Reg. at 38,504 (emphasis added). Thus, the Commission's concern in this discussion was the earliest date when a second repository might be needed, not the capacity of the repositories to accommodate spent fuel or high level waste. The Commission mentioned spent fuel from advanced reactors as the most extreme example of a circumstance in which the timing of the availability of a second repository would come into play. The Commission did not provide any information or express any opinion regarding the capacity of a first or second repository to accommodate the spent fuel or high-level waste generated by a new generation of reactors. Nor did the Commission make any other mention of advanced reactors in the 1990 Federal Register notice.<sup>9</sup>

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<sup>9</sup> It should also be noted that if the combined capacity of a first or second repository is insufficient to accommodate advanced reactor spent fuel and high-level radioactive waste, then the timing of the availability of a second repository would be irrelevant. Similarly irrelevant would be the Commission's expression of confidence in the 1990 Waste Confidence Review that if the need for a second repository were established, Congress would provide "the needed institutional support and funding." See 55 Fed. Reg.

Accordingly, Dominion's and the Staff's arguments that the findings of the Waste Confidence Rule are broad enough to encompass fuel generated by advanced reactors finds no support in the history of the Waste Confidence Rulemaking. Neither the 1984 Waste Confidence Rule nor the 1990 Waste Confidence Decision Review contains any analysis of the capacity of a first or second repository to accommodate spent fuel or high level radioactive waste generated by a new generation of advanced reactors.<sup>10</sup>

In the absence of such an analysis, it must be concluded that the Waste Confidence rulemaking does not apply to this proceeding. Therefore, the NRC cannot rely on the finding embodied in 10 C.F.R. § 51.23 to preclude consideration of the environmental impacts of extended onsite storage of spent fuel and other high-level radioactive waste generated by the proposed North Anna advanced reactors. Under 10 C.F.R. §§ 51.45 and 52.18 and the applicable provisions of 10 C.F.R. Part 51, the NRC must evaluate the environmental impacts of extended spent fuel storage on the North Anna site. This is a site-related environmental impact and therefore must be evaluated at the ESP stage, rather than being postponed until the construction permit or operating license stage. The Commission may choose whether to evaluate the environmental impacts of extended spent fuel storage at the North Anna site in this licensing proceeding or in a generic rulemaking; but in order to comply with NEPA and the Commission's implementing regulations, it must do so before the North Anna ESP is issued. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989) (NEPA requires federal

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at 38,502. If the capacity of the first two repositories for advanced reactor spent fuel and high level waste cannot be established, then the Commission would need to evaluate the timing and feasibility of opening a third repository.

<sup>10</sup> The Commission issued a status report in 1999, but it did not change any of the findings of the 1990 review. Waste Confidence Decision Review, 64 Fed. Reg. 68,005 (December 16, 1999).

agencies to examine the environmental consequences of their actions *before* taking those actions, in order to ensure “that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast”).

**Contention 3.2.1: Even if the Waste Confidence Decision Applies to This Proceeding, It Should Be Reconsidered.**

In Contention 3.2.1, Petitioners assert that even if the Waste Confidence decision applies to this proceeding, it should be reconsidered, in light of significant and pertinent unexpected events that raise substantial doubt about its continued validity, *i.e.*, the increased threat of terrorist attacks against U.S. facilities. Petitioners’ Contentions at 20. Both Dominion and the Staff oppose admission of the contention. Dominion’s Response at 30-31.

Dominion and the Staff argues that Petitioners are mounting an impermissible challenge to an NRC regulation. Dominion’s Response at 33, NRC Staff’s Response at 31. Their characterization of Petitioners’ contention and the governing law is incorrect. Petitioners are invoking the Commission’s statement that it will undertake a comprehensive review of the Waste Confidence findings “if significant and pertinent unexpected events occur raising substantial doubt about the continuing validity of the Waste Confidence findings.” Petitioners’ Contentions at 21, citing Waste Confidence Decision Review: Status, 64 Fed. Reg. 68,005, 68,007 (December 6, 1999). The Commission’s statement is consistent with the requirement of the National Environmental Policy that where aspects of a proposed action are addressed by a previously prepared EIS, a new EIS must be issued if there remains “major federal

action” to occur, and if there is new information showing that the remaining action will affect the quality of the human environment “in a significant manner or to a significant extent not already considered.” *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989).

here aspects of a proposed action are addressed by a previously prepared EIS, a new EIS must be issued if there remains “major federal action” to occur, and if there is new information showing that the remaining action will affect the quality of the human environment “in a significant manner or to a significant extent not already considered.” *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989).

**Contention 3.3: Failure to Adequately Address Environmental Impacts of Proposed Reactors on Lake Anna**

Dominion correctly observes that Contention 3.3 is a “pointer” to the other contentions regarding the adequacy of Dominion’s ER to address the environmental impacts of the proposed reactors on Lake Anna. Dominion’s Response at 38. The contention provides a general framework for the sub-contentions which follow, by summarizing the contents of Contentions 3.3.1, 3.3.2, 3.3.3, and 3.3.4; citing the legal requirements supporting those contentions; and providing citations to the supporting references. Petitioners do not ask the ASLB to rule on Contention 3.3, but to consider the general legal requirements that it describes in evaluating the admissibility of the sub-contentions.

Dominion makes several criticisms of the information provided in Contention 3.3., none of which has merit. First, Dominion claims that the Declaration of Barry Sulkin, which Petitioners submitted in support of the Contentions 3.3.1, 3.3.2, 3.3.3, and

3.3.4, is “vague and conclusory, and provides no specific basis for any allegation.”

Dominion’s Response at 39. Dominion’s argument only makes sense if one reads Mr. Sulkin’s declaration in complete isolation from Petitioners’ contentions regarding the environmental impacts of the proposed new reactors on Lake Anna. His declaration must be read along with the contentions, however. The declaration makes clear that (a) Mr. Sulkin participated in the preparation of the contentions, and (b) the assertions of the contention are supported by his expert knowledge and opinion. The statements in the contentions themselves are not vague and conclusory, but quite specific as to the sources of information on which the contentions rely and the reasons for the opinions expressed therein.

Dominion also attacks the relevance of the comments by the U.S. Fish and Wildlife Services (“FWS”) and the Virginia Department of Environmental Quality (“VDEQ”) that are attached to Petitioners’ contentions. Dominion’s Response at 38. Dominion states, for example, that the FWS comments are on an “unrelated matter,” i.e., the relicensing of North Anna Units 1 and 2. *Id.* The FWS comments are relevant, however, because they relate to environmental impacts of the existing operation that will obviously increase with the addition of another power generating unit.

Similarly, Dominion describes the VDEQ comments on Dominion’s application for certification under the federal Coastal Zone Management program as “preliminary.” *Id.* The fact that Dominion withdrew the application does not render the comments of state reviewers preliminary. Moreover, nothing in VDEQ’s comments expresses such a qualification. The VDEQ’s February 10, 2004, letter to Dominion, acknowledging Dominion’s withdrawal of its certification application, states that:

The following summary of the comments submitted by reviewers is provided to inform Dominion Virginia Power Company ("Dominion"), as applicant, and the Nuclear Regulatory Commission ("NRC"), as federal licensing agency, of issues that may merit attention as the consistency certification is reconsidered and as the Draft Environmental Impact Statement is prepared.

Letter from Ellie L. Irons, VDEQ, to Pamela F. Faggert, Dominion, re: Federal Consistency Certification Under the Coastal Zone Management Act and the Virginia Coastal Resources Management Program: North Anna Early Site Permit Application, DEQ-03-223F (February 10, 2004) (hereinafter "VDEQ, letter to Dominion, February 10, 2004"), attached to Petitioners' Contentions as Exhibit 3.3-4. Moreover, none of the other VDEQ letters and memoranda that are attached to the February 10 letter, contains any statements that the views they present are "preliminary" or otherwise qualified. Thus, the VDEQ considered its comments to be relevant to NRC's review of the adequacy of Dominion's ER to comply with NEPA.

**Contention 3.3.1: Inadequate Discussion of Impacts on Water Quantity in Lake Anna and Downstream**

In Contention 3.3.1, Petitioners assert that the ER does not contain a complete or sufficient assessment of the adequacy of water supplies required for the operation of new units at the North Anna site, in that it does not sufficiently address the adequacy of water supplies in Lake Anna for the proposed new Units 3 and 4, fails to identify the supplementary external water source for Unit 4, and fails to account for the impact of an additional unit or units on the river flow downstream. According to Dominion, the "gravamen" of Contention 3.3.1 is "that Dominion's ER fails to identify the supplementary external water source for Unit 4." Dominion's Response at 39. Therefore, Dominion argues, the contention is moot, because Dominion has "committed

to a revised approach to Unit 4 heat dissipation using closed-cycle cooling with dry towers,” which “eliminates the use of Lake Anna as a source of make-up water for Unit 4.” Dominion’s Response at 41, citing letter from Eugene S. Grecheck, Dominion, to NRC (March 31, 2004). Dominion’s Response at 41.

Dominion’s characterization of Petitioners’ contention is incorrect. As described in the heading of subsection (b) and the first sentence of that subsection, Contention 3.3.1 challenges both (a) the inadequacy of the ER to address water supplies for Units 3 and 4, and (b) Dominion’s failure to identify a supplementary external water source for Unit 4. Petitioners’ Contentions at 28. Thus, the impacts on Lake Anna of using the lake to supply water for Unit 3 is an issue raised by the contention.

By itself, Unit 3 would pose an enormous additional stress on Lake Anna, and would require an unprecedented withdrawal of water from the lake. Unit 3 would require withdrawal of 1.14 million gallons per minute (“gpm”) (2.540 cubic feet per second) from the lake, in comparison with withdrawal of 31,418 gpm (70 cfs) by Unit 4. ER § 5.3.1. Moreover, in expressing concern about the impacts of a new reactor at the North Anna site, the VDEQ focused on only Unit 3, and assumed that Unit 4 was not a part of the proposal. As stated in the January 15, 2004, memorandum from Joseph P. Hassell to Ellie Irons, re: North Anna Early Site Permit Coastal Zone Consistency Determination, which is attached to Petitioners’ Contentions as Exhibit 3.3-6 (hereinafter “VDEQ, January 15, 2004 memo to Ellie Irons”), the issuance of a permit for an additional unit of the size of Unit 3:

would constitute the approval of the single largest consumptive withdrawal ever considered in the history of the Virginia Water Protection Permit Program. This consumptive withdrawal would be from a water body with an average annual flow of 370 cubic feet per second. The typical recommendation that we receive from

the Department of Game and Inland Fisheries is not to allow cumulative consumption use to exceed 10% of the river's flow. The lake's current evaporation rate and the existing two units already surpass that mark much of the time. Therefore granting of additional withdrawals, even with prescriptive conditions, can not be guaranteed.

For the above reason, the Office of Wetlands and Water Protection recommends that Dominion withdraw their request for Coastal Zone Management Program consistency at least until such time as a draft environmental impact statement is available. If Dominion does not withdraw the request, then we cannot agree with Dominion's certification that the proposed activity is in compliance with the enforceable policies of Virginia Coastal Zone Management Program, due to a lack of information to make that determination. Dominion could definitively resolve the issue by applying for a permit for the proposed withdrawal. VWP Permits for water withdrawals have long durations and are granted for up to a 15-year term.

*Id.* at 3 (emphasis added). See also VDEQ, February 10, 2004 letter to Dominion at 5:

"The addition of one or two new units to the North Anna Power Station would have significant impacts on downstream resources by reducing river flows and the frequency of higher flows." (emphasis added).

**a. Insufficiency of ER to address water supplies or identify supplementary external water source for Unit 4.**

Generally, Dominion argues that contrary to Petitioners' contention, the ER "provides the data and information necessary to assess water-related impacts as identified in NUREG-1555, Environmental Standard Review Plan." Dominion's Response at 39. In making this argument, Dominion fails to acknowledge the nature of the dispute between Dominion and Petitioners. Dominion argues that the data in the ER show that water removal from Lake Anna for a new reactor would have insignificant impacts. As Dominion states in its Response, the ER "concludes that the available water supply is adequate to meet the plant water needs for the existing units plus Unit 3 alone, or the existing units plus new Units 3 and 4 on a long-term average basis." Dominion's



Response at 39. In contrast, Petitioners have presented evidence that, whatever the “long-term average” impacts of Unit 3, the proposed removal of a large quantity of water from Lake Anna for a new reactor would have significant and adverse seasonal impacts on the environment. As stated in the contention, “[u]nder current operating conditions with the two existing units, it is apparent that there is already inadequate water in the system.” Petitioners’ Contentions at 31. Moreover, the addition of even one reactor is likely to create “nearly perennial conditions of severe degradation” downstream in the North Anna River, each fall. *Id.*, citing VDEQ January 15, 2004, memo to DEQ, page 4.<sup>11</sup> Thus, whether or not Dominion correctly states that water supplies are adequate on an “long-term average basis,” Petitioners have established that the addition of a new reactor will cause severe seasonal drought conditions that are not addressed in the ER.<sup>12</sup>

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<sup>11</sup> As explained in the January 15, 2004, memorandum:

A minimum release of 20-cfs equals 5.4% of the North Anna River’s mean annual flow at the dam. Donald Tennant, a U.S. Fish and Wildlife Service fishery biologist, devised a well known rating system based on percentages of mean annual flow. In the Tennant rating system, a streamflow of 0% to 10% of the mean annual flow is rated as ‘severe degradation.’ Unlike natural drought which is temporary, our concern is that with the addition of another unit, which is expected to increase the consumptive loss from the watershed by another 39 cfs, nearly perennial conditions of severe degradation will likely be created each fall.

*Id.* at 4.

<sup>12</sup> Several of Dominion’s arguments are based on the inappropriate averaging of data regarding the environmental impacts of water removal, which masks adverse seasonal conditions. Dominion argues, for example, that “minimum release requirements established by the State for lake elevations at or above 248 feet msl would be met.” Dominion’s Response at 40. As demonstrated in the contention, however, lake levels drop below 248 feet during drought conditions. Petitioners’ Contentions at 31. Thus, for example, during the 2002 drought, lake levels dropped to 245.1 ft msl. With an additional Unit 3, the level would have dropped 2.5 lower to 242.6 feet msl, which would have required the reactor to shut down. *Id.*, citing VDEQ, February 10, 2004 letter to Dominion, page 12.

**b. Failure to account for impacts on river flow downstream.**

Dominion argues that Petitioners have failed to support their claim that the ER does not adequately account for the impacts of reduced river flow downstream of the dam. Dominion's Response at 41. Dominion argues that because Petitioners do not controvert any of the factual information provided in the ER regarding downstream flows, they have not established a genuine dispute with Dominion regarding Unit 3's impact on downstream flow. *Id.* Again, Dominion fails to recognize that Petitioners have raised a material dispute with Dominion regarding the significance of the factual information provided in the ER. For instance, the ER recites statistics regarding the likely percentage of time that the level of Lake Anna will drop below 244 feet, but provides no analysis of the impacts on fish and other aquatic life in the lake. *See* ER Table 5.2-4 and Section 5.2.2. The table shows that the level of the lake may drop to 242.6 feet, in comparison with the current lowest level of 245.1 feet. Dominion does not attribute any significance to this information. Petitioners, in contrast, contend that the information shows that the environmental impacts of the proposed Unit 3 are significant, because the water in the lake could be reduced to 5.4 feet below the level at which the lake contingency plan goes into effect. This means that flow from the dam would be reduced to as low as 20 cfs at a greater frequency and duration per year (11.8% as compared to the current 5.3%), thus creating "severe degradation" conditions downstream. Petitioners' Contentions at 32. *See also* Petitioners Contentions at 30-31, and note 1, *supra*.

**Contention 3.3.2: Impacts on Fish and Other Aquatic Life in Lake Anna and Downstream**

In Contention 3.3.2, Petitioners argue that the ER does not adequately address the adverse impact of operating one or two additional reactors on the health of fish and other aquatic life in Lake Anna and the North Anna River, including increased water temperature, impingement, entrainment, and downstream flow rates. Petitioners also assert that the ER does not address conflicts between Dominion's proposals for water use and the requirements of the Clean Water Act ("CWA") and its implementing regulations; and that the ER does not address the cumulative impacts of proposed Units 3 and 4 on the already-stressed aquatic systems in Lake Anna and the North Anna River.

Dominion argues that "in essence," the contention amounts to a claim that the proposed additional thermal discharges are not permitted by Section 316(a) of the Clean Water Act, because the temperature increases would adversely affect striped bass. Dominion's Response at 43. According to Dominion, Petitioners' claim is invalid because the CWA protects only protects only "indigenous" fish, and striped bass are not indigenous to Lake Anna or the Lake Anna River. Dominion's Response at 43.

While thermal impacts of Unit 3 on striped bass may not constitute a violation of Section 136(a) of the Clean Water Act, Petitioners have nevertheless demonstrated that the ER has failed to address the significant thermal impacts of a new reactor on the striped bass population. The ER's first grave error is to depict the current striped bass population as "healthy" [ER § 2.4.2.2], when state regulators depict the fish's condition as "tenuous." Petitioners' Contentions at 34, citing VDEQ February 10, 2004, letter to Dominion, page 5. Similarly, while the ER states that thermal impacts on striped bass

would be “moderate” [ER § 5.3.2.2.2], the VDEQ states that even a small increase in reservoir temperature would likely have a “dramatic” effect. Petitioners’ Contentions at 35, citing Exhibit 3.3-5, letter from Gary Martel, Virginia Department of Game and Inland Fisheries, to Ellie Irons, VDEQ at 3 (January 27, 2004), (hereinafter “VDGIF, January 27, 2004, memo to Ellie Irons (VDEQ)”) Clearly, Petitioners have raised a genuine and material factual dispute with Dominion regarding the severity of the impacts of the proposed new nuclear plants on the striped bass population.

The NRC Staff argues that although Petitioners cite to the VDGIF for the proposition that a small increase in water temperature would have a “dramatic” effect, the Petitioners “do not challenge specific portions of the analysis supporting the Applicant’s conclusion with which they disagree.” NRC Staff’s Response at 38. Thus, according to the NRC Staff, Petitioners have not provided an adequate basis for a dispute with the information provided in the ER. *Id.* citing *Dominion Nuclear Connecticut, Inc.* (Millstone Power Station, Unit 2), LBP-03-12, 58 NRC 75, 81, *aff’d*, CLI-03-14, 58 NRC 207 (2003). The NRC Staff misses the point that the essential dispute between Petitioners and Dominion is not over the facts, but the significance of the facts. Dominion acknowledges thermal impacts on striped bass, but writes them off as only “moderate.” ER at 3-5-58. Thus, Dominion is equivocal about whether it should mitigate the impacts, stating only that the impacts “could warrant mitigation.” *Id.* Similarly, while Dominion acknowledges that striped bass sometimes cease feeding when confined in late summer to areas that provide only marginal habitat, it discounts the importance of these impacts on the ground that they are seasonal. *Id.* at 3-5-57-58. In contrast, Petitioners rely on their expert and on the opinions of Virginia environmental

regulators for the proposition that Dominion has ignored the qualitative significance of the thermal impacts that it describes.<sup>13</sup> Petitioners are entitled to rely on such a “concise statement of the alleged facts or expert opinions” and the “documents” on which they intend to rely to support their position. *See* 10 C.F.R. § 2.309(f)(1)(v).

The NRC acknowledges that NRC NEPA regulations require a discussion of compliance status with other agencies environmental regulations, including those arising out of the Clean Water Act. NRC’s Response at 39, citing 10 C.F.R. § 51.10(c). Nevertheless, the Staff asserts that the question of Dominion’s compliance with the CWA and its implementing regulations is irrelevant because “NRC has no jurisdiction over the regulation of nonradiological discharges.” This argument is baseless. NRC’s regulations for implementation of NEPA require the applicant to list “all” Federal permits, licensees, approvals and other entitlements that must be obtained in connection with the proposed action, and to describe the status of compliance with these requirements. 10 C.F.R. § 51.45(d). A Clean Water Act permit would fall into this category, even though the federal program is administered by the State. In addition, Section 51.45(d) requires an applicant to discuss:

the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations and thermal and other water pollution limitations or requirements

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<sup>13</sup> Although the ER does not say so explicitly, it appears that the reason Dominion considers thermal impacts on striped bass to be insignificant is because the fish can be restocked. ER at 3.5-57. Stocking is only one aspect of a healthy fishery, however. The purpose of stocking is to add young fish to a lake or river where they are not reproducing or reproducing in adequate numbers. If the fish do not grow and thrive in their habitat, stocking will have little positive effect. In this case, the North Anna Reservoir has been stocked with striped bass since the mid-1970’s. ER at 3.2-73. Thus, there has been an established striped bass fishery in the lake for over 25 years. If the striped bass habitat in the lake is stressed to the point at which the striped bass population is unable to thrive, then the issue should be addressed and evaluated in the ER.

which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection.

Thus, the requirement that an ER must discuss compliance with environmental laws and other applicable permitting requirements is not restricted to laws governing radiological impacts.

**a. Impingement and entrainment.**

Dominion disputes the admissibility of Petitioners' claim that Dominion has failed to provide an adequate discussion of impingement and entrainment impacts on fish. First, Dominion argues that Petitioners have not provided any support for their assertion that the ER is deficient because it fails to discuss the size and age distribution of the impinged fish. Dominion's Response at 46. *See also* NRC Staff's Response at 41. In making this argument, Dominion ignores Petitioners' statement at page 36 that information regarding the size and age distributions of the impinged fish "is important because these distributions affect the structure and viability of a population."

Dominion also argues that Petitioners "identify no other alleged deficiency in the detailed analysis of impacts of impingement in section 5.3.1.2 of the ER." Dominion's Response at 46. This argument is incorrect. As stated in the contention, Petitioners demonstrate that the Virginia Department of Game and Inland Fisheries has concluded that Dominion's current impingement measures are not sufficient to protect the Lake Anna fishery, and that even if Dominion were to improve its technology, the resource would not be fully protected. Petitioners' Contentions at 37-38, citing VDGIF, January

27, 2004 memo to Ellie Irons (VDEQ), pages 1 and 2.<sup>14</sup> The VDGIF's recommendation that Dominion should investigate other means for reducing impingement stands in sharp contrast to Dominion's conclusion in the ER that there is no need for mitigative measures because the fishery will bounce back by itself. Dominion's assertion that the fish population is "fecund" is also directly contradicted by Dominion's own statement that the striped bass population does not reproduce naturally in Lake Anna and is dependent on restocking. ER at 3.5-57.

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<sup>14</sup> In the VDGIF, January 27, 2004 memo to Ellie Irons (VDEQ), VDGIF states that:

Water withdrawal increases to accommodate a third and fourth nuclear unit present biological complications for fish populations through increased fish impingement and entrainment. Annual estimated fish impingement of six 'representative important species' with build-out (defined herein as the addition of a third 'once-through' and a fourth 'cooling tower' unit) is 426,887 fish including 4,441 striped bass, a leading Lake Anna sportfish stocked annually by DGIF. With the proposed intakes, the number of fish impinged would increase by 230% over current levels. Estimated impingement mortality of striped bass would nearly double as the result of build-out; however, the size and age distributions of impinged fish were not provided. The number of fish entrained is expected to increase in a similar fashion with an estimated 468,886,689 fish (from the applicant's six-species category) lost annually – including about 63% gizzard shad. Existing intake criteria at North Anna Power Station (velocity of 0.7 feet per second [FPS] and screen mesh of 9.5 mm) substantially exceed our current recommendations of 0.25 FPS and 1 mm mesh. Even our current recommendations are not expected to provide full resource protection but utilize current state-of-the art technology. The existing screen would be expected to only exclude compressed fish such as sunfish larger than 50 mm and elongated fish such as stripers and largemouth bass larger than 86 mm. Thus, it seems appropriate for the applicant to further investigate the addition of a submerged intake structure (curtain wall as detailed on page 3-5-38) to reduce fish impingement and entrainment and align intake criteria with current DGIF recommendations.

*Id.* at 1. Petitioners note that the ER's statistics for impingement by the existing units plus Unit 3 is 422,027 fish annually, based on six "representative important species." ER § 5.3.1.2.1. The ER states that Unit 4 with a cooling tower would add 4,860 impinged fish. *Id.* at 3-5-30. Thus, the degree of impingement added by a cooling system for Unit 4 would have been marginal.

Dominion also takes issue with Petitioners' reliance on the VDGIF's statement that even with improved technology, the fishery resource would not be expected to be fully protected. Dominion's Response at 47. According to Dominion, the VDGIF's statement does not show a conflict with Dominion, because Dominion's ER does not claim that the fish would be fully protected. *Id.* Dominion also asserts that it did what VDGIF recommended, which was to evaluate a curtain/wall and submerged intake. *Id.*, citing ER at 3-5-38.

Dominion takes VDGIF's comment out of context. The context of VDGIF's comment, which is quoted in footnote 14 above, demonstrates that VDGIF is concerned about the volume of fish that will be impinged or entrained if an additional reactor goes into operation at North Anna. VDGIF makes the point that the application of "current state-of-the-art technology" could reduce this number, but not to zero. Thus, VDGIF is concerned about the level of protection that will be provided to the fishery, even applying best available technology.<sup>15</sup> The fact that Dominion evaluated mitigative options in the ER does not excuse Dominion from making a full and fair evaluation of the significance of impacts of impingement and entrainment if an additional reactor is operated at North Anna. If Dominion does not take that initial step, then any evaluation of mitigative measures will fall short because it is not based on any valid assessment of the

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<sup>15</sup> The NRC Staff argues that VDGIF's statement does not show that VDGIF considers the impacts of impingement will be greater than "small." NRC Staff Response at 41-42. Petitioners respectfully submit that by reciting the statistics showing that impingement and mortality of striped bass would double, by discussing the inadequacy of both current and best available technologies to fully protect the fishery, and by recommending consideration of mitigative measures, the VDGIF clearly demonstrates that it considers the impacts of impingement to be significant. In fact, it is difficult to conceive why VDGIF would urge consideration of alternatives on Dominion if it did not consider that Dominion had a serious problem that should be addressed.



significance of the impacts that are to be mitigated or avoided. The effects of failing to acknowledge the significance of the impacts of impingement and entrainment on the discussion of mitigative measures can be seen in the ER at 3-5-38. There, Dominion makes a factual analysis of the effects of certain mitigative measures but fails to address the effectiveness or advisability of the measures in relation to the significance of the adverse impact. The reader is left to wonder whether Dominion has any intention of implementing the measures, or whether they are just being described to satisfy a reporting requirement.

Dominion incorrectly argues that Petitioners “identify no disagreement with the ER analysis of entrainment in section 5.3.1.2.3 of the ER.” Dominion’s Response at 47. Petitioners dispute the ER’s claim that in asserting that doubling the entrainment of fish larvae, a new reactor would have a “small” impact on the fishery community and would not require mitigation. Petitioners’ Contentions at 37. In support of their claim, Petitioners argue that a two-fold increase in larvae entrainment violates Section 316(b) of the Clean Water Act, which requires that cooling water intake structures must be located, designed, and built to reflect the “best available technology” for “minimizing adverse environmental impact.” Clearly, if one additional reactor doubles the entrainment caused by two existing units, this does not constitute minimization of adverse environmental impacts.

Dominion argues that the question of whether it meets the best available technology requirements of the CWA is irrelevant to this proceeding, which requires only a bounding analysis of the impacts of impingement and entrainment. Dominion’s Response at 48. This argument is defective in two respects. First, as discussed above, 10

C.F.R. § 51.45(d) requires an ER to discuss the status of an applicant's compliance with federal, state and local environmental laws. Second, Petitioners respectfully submit that if an applicant for a permit has not addressed or failed to comply with a federal environmental law for protection of the environment, the noncompliance constitutes persuasive evidence that the impacts of the proposed operation are significant because they exceed minimum legal requirements for protection of the environment.<sup>16</sup>

**b. Reduced stream flow.**

Dominion argues that Contention 3.3.2, as it pertains to downstream flow impacts, should not be admitted because it lacks any factual or legal basis. First, Dominion disputes Petitioners' claim that the current minimum flows from the dam are "inadequate for a healthy aquatic habitat." Dominion's Response at 50, citing Petitioners' Contentions at 39. According to Dominion, Petitioners' assertion is not supported by any statements in the January 15, 2004, VDEQ memorandum.<sup>17</sup>

Dominion's claim is absurd. At page 4, the January 15 memorandum explains that the

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<sup>16</sup> Dominion also argues that it should be assumed that it will meet the CWA requirements for control of impingement and entrainment. Dominion's Response at 49. If it could be assumed that Dominion would meet the requirements of the CWA, however, then it would not be necessary to address the status of compliance with the CWA under 10 C.F.R. § 51.45(d). By imposing the requirements of Section 51.45(d), the Commission made it clear that compliance with environmental laws could not be assumed in an ER.

<sup>17</sup> Dominion correctly points out that Petitioners misinterpreted the VDEQ's memo to Ellie Irons of January 15, 2004, by stating that the current evaporation rate and withdrawal for the existing two reactors reduce the flow of the North Anna River Downstream of the dam to 10% or less "much of the time." Dominion's Response at 50, citing Petitioners' Contentions at 39. In fact, VDEQ stated that consumptive use (plus evaporation) of the two existing reactors is greater than 10% of the river's flow much of the time. VDEQ, January 15, 2004, memo to Ellie Irons (VDEQ) at 3. Unit 3 would exacerbate this problem. Moreover, it should be noted that the addition of another reactor would reduce water levels downstream of the dam to 5.4% or less of mean annual flow (*i.e.*, a drought flow of 20 cfs) for 11.8% of the time, in comparison to 5.3% of the time with the two existing reactors. *Id.* at 3. *See also id.* at 4.

rating system used by the VDEQ to evaluate the adequacy of streamflow was devised by a U.S. Fish and Wildlife Service fishery biologist. Under this rating system, “a streamflow of 0% to 10% of the mean annual flow is rated as ‘severe degradation.’” *Id.* The memorandum also expresses concern about the “nearly perennial conditions of severe degradation” that are likely to be created each fall by the addition of another reactor. *Id.* Clearly, the rating system for streamflow is based on maintaining a healthy and viable habitat for wildlife, and failure to provide minimum streamflows threatens the health of that habitat.

Dominion also disputes Petitioners’ claim that adding an additional unit would have a potential impact on Spring spawning downriver. Dominion’s Response at 50. Dominion argues that Petitioners’ criticism relates to the construction of the dam many years ago, not to operation of a new nuclear power plant. *Id.* See also NRC Staff’s Response at 43. Dominion also argues that the “relatively small increase in consumptive use from Unit 3 of no more than 40 cfs” is “insignificant compared to the Spring spawning flows of 16,000 or 24,000 cfs discussed by FWS.” Dominion’s Response at 51.

Dominion argues that 40 cfs is “a small consumptive use” that “is insignificant compared to the Spring spawning flows of 16,000 or 24,000 cfs discussed by FWS.” Dominion’s Response at 51. Dominion also states that the greatest reduction in flow from the dam that might arise from operation of Unit 3 would likely occur in the Fall, not the Spring when most spawning occurs. *Id.*, citing ER at 3-5-13, Figure 5.2-2; Pet. Exh. 3.3-6; Pet. Exh. 3.3-4 at 13. However, according to Dominion’s water balance model with Unit 3, which included two drought years (1981 and 2002), the low flows can

continue over the winter. ER § 5.2.2.1.3. According to VDEQ, “[i]t is possible that the watershed and winter-time stream flows are large enough that the lake returns to a full condition each and every spring and the Julian date of annual maxima is not changed by the power plants, but the simulation modeling and range of variability analysis should be done to confirm this.” Pet. Exh. VDEQ, January 15, 2004, memo to Ellie Irons (VDEQ), page 4. Thus, Dominion does not provide a basis for dismissing Petitioners’ concern that reductions in flow of the North Anna River as a result of operation of a new reactor would affect spawning.

Dominion also disputes the relevance of Petitioners’ claim that the ER fails to address the question of aquatic species passage through the North Anna Dam. Dominion’s Response at 52. According to Dominion, any impacts from the presence of the dam “are not within the scope of the proceeding.” The continued existence of the dam, however, is justified by the presence of the nuclear power plant. *See* ER §§ 2.1.1.1 and 2.1.1.2, which state that (1) the lake was created by the dam and (2) that the lake “was created to serve the needs of the power station.” Presumably, a new reactor would continue to operate many years after the current reactors shut down. Thus, it is legitimate to question the impacts of the dam on aquatic species. Moreover, the ER must consider the cumulative impacts of the dam in combination with the impacts of the proposed new reactor. Therefore, the impacts of the dam on passage of aquatic species through the dam is a relevant issue.

### **Contention 3.3.3: Impacts on Public and Classified Uses of Lake Anna**

Contention 3.3.3 asserts that the ER does not contain a complete or adequate assessment of the potential impacts of the proposed expansion of the NAPS on water-

based recreational uses of Lake Anna and on homeowners who live around the lake.

Dominion opposes admissibility of the contention.

**a. Impacts of reduced lake levels on recreation.**

Dominion argues that Petitioners have failed to raise a “controversy” regarding the impacts of reduced Lake Anna levels on recreation, because the ER already acknowledges that drawdowns during drought years could adversely affect recreational use. Dominion’s Response at 53-54. Dominion also points to information in the ER that predicts lake levels as a function of time and indicates that the maximum annual drawdown typically occurs near the end of the water year in September. *Id.* Dominion fails, however, to cite any portion of the ER that evaluates the impacts of reduced lake levels on recreation, other than Dominion’s terse and equivocal statement in Section 5.2.2.2 that the additional drawdowns during drought “could adversely affect the recreational use in the North Anna Reservoir.” Instead, Dominion argues that such a discussion is unnecessary, given that low lake levels would occur during only 3% of the year. Dominion’s Response at 54. Given that the lake is a major recreational resource, Petitioners believe that Dominion should consider these impacts. *See* VDEQ, February 10, 2004 letter to Dominion at 11, noting that 43,000 anglers visit the lake each year, and that pleasure boating exceeds angler traffic by 10 to 15 times.

In their contention, Petitioners also argue that permitting use of public waters so as to adversely impact recreational uses is in conflict with the stated goals and policy of the Clean Water Act and associated state water laws. Petitioners’ Contentions at 42-43. Petitioners also assert that the ER fails to address the conflict between using Lake Anna for cooling and providing public access to the lake as a navigable waterway. *Id.* 43.

According to Dominion, the portion of Lake Anna that it calls the "Waste Heat Treatment Facility" is "a part of the NAPS facility," not a navigable waterway under the Clean Water Act. Instead, Dominion argues that it is exempt from the CWA's definition of navigable waters because it is a "treatment pond or lagoon." Dominion's Response at 54-55, citing 40 C.F.R. § 122.2 and letter from Richard N. Burton, Virginia, to Jack R. Berton, Lake Anna Civic Association (February 21, 1992).

The NRC Staff also disputes Petitioners' assertion that the portion of Lake Anna characterized by Dominion as the WHTF has been improperly "privatized" by Dominion. NRC Staff's Response at 45-46. The Staff contends that Lake Anna is a man-made reservoir that was created in 1971 by damming the North Anna River. *Id.* According to the Staff, Virginia Power owns the land, above and below the surface, around the lake, up to the 255-foot high-water mark above mean sea level. VEPCO has granted easements to landowners abutting Lake Anna, but has the right to deny access. *Id.*

Whether or not VEPCO owns the land beneath or around the WHTF, the water in the WHTF is a public resource. It does not spring from VEPCO's property, but flows into the WHTF (or "hot" side of the lake) from various tributaries that constitute public waterways. Thus, Dominion cannot claim exclusive rights to the portion of the lake known as the WHTF. Moreover, as a practical matter, Dominion has granted access to WHTF to members of the public, whose use of the WHTF will be adversely affected by the addition of a new reactor.

Dominion also argues that the purpose of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," and that "nothing in the CWA creates a public right of access to any body of water." Dominion's Response

at 55, citing 33 U.S.C. § 1251. Dominion also argues that the Clean Water Act and regulatory provisions cited by Petitioners do not protect all navigable waters for the public for “all legitimate uses.” Dominion’s Response at 55 note 49 quoting Petitioners’ Contentions at 43.

While the CWA may not create rights of access *per se*, its purposes do include protection of water quality for recreational purposes. Thus, the Congressional declaration of goals and policy in 33 U.S.C. § 1251(a)(2) provides that:

it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983.”

*Id.* (emphasis added). Moreover, Sections 303 and 402 of the CWA protect the nation’s navigable waters by establishing processes for the regulation of pollutants and permitting of discharges. 33 U.S.C. §§ 1313, 1342. Federal regulations further explain the purposes of the Act as follows:

A water quality standard (WQS) defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States and EPA adopt WQS to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act (CWA). *Serve the purposes of the Act* (as defined in sections 101(a)(2) and 303(c) of the Act) means that WQS should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value for public water supplies, propagation of fish, shellfish, wildlife, recreation in and on the water, and agricultural, industrial and other purposes including navigation.

40 C.F.R. § 130.3. Thus, purposes of the Clean Water Act and its implementing regulations include recreation and other public use of navigable waterways.

In addition, under Virginia state law, the waters of the state are declared a “natural resource,” to be used for “all purposes beneficial to the public.” Code of Virginia 6.2-

11(A) and (B). The right to use the water or to the flow of water “in or from any natural stream, lake or other watercourse” is “limited to such water as may reasonably be required for the beneficial use of the public to be served,” and may not extend to “waste or unreasonable use or unreasonable method of use.” *Id.*, Section (E). Dominion should be required to address the conflict between its proposed uses of Lake Anna and these statutes.

Finally, Dominion argues that whether there is any public right of access to the WHTF is an issue that is outside of the scope of this proceeding, “because it does not relate to any impact related to the construction or operation of new units.” Dominion’s Response at 56. *See also* NRC Staff’s Response at 46. As discussed above at 35, issues related to the WHTF should be addressed, because if built, the proposed new units are likely to outlast the existing units.

The NRC Staff argues that issues regarding compliance with the CWA fall beyond the scope of NRC’s jurisdiction. As discussed, *supra*, at 29, this argument has no merit.

#### **Contention 3.4: Failure to Provide Adequate Consideration of Alternatives for Cooling Units 3 and 4**

Contention 3.4 challenges the ER’s failure to consider alternatives to the use of Lake Anna water to cool Units 3 and 4. The NRC concedes the admissibility of Petitioners’ claim that the ER is deficient because it fails to address the no-action alternative. NRC Staff’s Response at 48. Dominion, however, disputes the admissibility of this aspect of the contention. Dominion’s Response at 57. According to Dominion, the no-action alternative “is akin to the consideration of need for power and alternative



energy sources in connection with the deployment of new plants,” and that therefore consideration should not be required. *Id.* Dominion argues that the exclusion of this issue at the ESP stage “is clearly appropriate,” because it addresses the question of whether a new nuclear plant should be built, rather than site suitability issues.

Dominion’s argument is defective in two respects. First, the question of whether the North Anna site can support the cooling needs of the proposed new reactors is directly related to site suitability. Second, the scope of the no-action alternative goes beyond the question of whether Units 3 and 4 should be built. No action alternatives that should also be considered include avoidance of using North Anna as a source of cooling water and/or heat sink if the reactors are built. In fact, Dominion has decided to implement this aspect of the no action alternative with respect to Unit 4.<sup>18</sup>

With respect to consideration of “action” alternatives, both Dominion and the Staff refer to a discussion of these alternatives in Section 9.4. Without conceding the adequacy of the discussion, Petitioners hereby withdraw that aspect of the contention.

### III. CONCLUSION

For the foregoing reasons, Dominion’s and the NRC Staff’s arguments against admission of Petitioners’ contentions are without merit. With the exception of Contention 3.1, which has been withdrawn, and a portion of Contention 3.4 related to consideration of action alternatives, the ASLB should admit Petitioners’ contentions.

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<sup>18</sup> In Table 9.4-1 of the ER, Dominion identifies an alternative of “natural draft cooling towers” that reduces dependence on Lake Anna somewhat, but is not equivalent, to the “dry towers” alternative it has decided to implement with respect to Unit 4. *See* letter from Eugene S. Grecheck, Dominion, to NRC (March 31, 2004), attached to Dominion’s Reply as Exhibit B. According to Dominion, the use of a dry tower “eliminates the need for obtaining make-up water from Lake Anna or from another external source.” *Id.* at 1. The heat sink for a dry tower also appears to be the atmosphere. *Id.*, Enclosure 2 at 1. In contrast, use of the natural draft cooling towers described in the ER would involve some water uptake and use of Lake Anna as a heat sink. ER at 3-9-24 and 3-9-25.

Respectfully submitted,



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June 9, 2004

## CERTIFICATE OF SERVICE

I hereby certify that on June 9, 2004, copies of the foregoing Reply by Blue Ridge Environmental Defense League, et al, to Dominion's and NRC Staff's Responses to Contentions Regarding Early Site Permit Application for Site of North Anna Nuclear Power Plant were served on the following by e-mail and/or first-class mail, as indicated below:

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