



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

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COMMISSIONER

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GOVERNOR

June 12, 2017

Via Electronic Mail to ClinchRiverESPEIS@nrc.gov

Attn: Patricia Vokoun, NRC Environmental Project Manager
Office of New Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Ms. Vokoun:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Nuclear Regulatory Commission (NRC) Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) related to the *Tennessee Valley Authority (TVA) early site permit (ESP) for the Clinch River Nuclear (CRN) Site* near Oak Ridge, Tennessee.¹ TDEC understands that the ESP application by TVA is an initial determination process for resolving safety and environmental siting issues for a potential future Small Modular Reactor (SMR) at the CRN Site, but does not authorize construction and operation of a nuclear power plant. Additionally, as a Federal agency, TVA is required to comply with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) independently of NRC requirements. The NRC expects to publish a draft EIS in June 2018. The proposed CRN Site, is located in Roane County, Tennessee, along the Clinch River, approximately 25 miles west-southwest of downtown Knoxville, Tennessee.

Water Resources

- Given the expected activity associated with this proposed project, the following TDEC permitting requirements are likely to apply.² The construction of a Small Modular Reactor (SMR) at the TVA CRN Site will require a construction storm water permit based on the land disturbance at the site being more than one acre.³ A National Pollutant Discharge Elimination

¹ For more information on the TVA CRN proposal, including the ESP Application (ML16144A086) please visit <https://www.nrc.gov/reactors/new-reactors/esp/clinch-river.html>. Specific information regarding the TVA CRN proposal as is discussed in TDEC's consolidated response is taken from the Part 3 – Environmental Report submitted as part of TVA's ESP to NRC. The Part 3 – Environmental Report can be found at <https://www.nrc.gov/docs/ML1614/ML16144A145.html>.

² As this is a scoping document for a forthcoming EIS, there is not sufficient information to address the requirements for the permits in more detail. There have not been any public water supply intakes, wells or springs identified that would be impacted from the proposed facility, but as additional details are provided more permitting requirements may be necessary.

³ For more information on NPDES Stormwater Construction Permitting please visit <http://www.tn.gov/environment/article/permit-water-npdes-stormwater-construction-permit>.

Permit (NPDES) permit will be required for the discharge from the facility into the Clinch River.⁴ An Aquatic Resource Alteration Permit (ARAP) will be required for the water withdrawal at the facility.⁵ This facility will also be required to have a Tennessee Storm Water Multi-Sector General Permit, which will include the barge loading and offloading facility.⁶

- The TVA CRN Site Part 3 – Environmental Report submitted to the NRC as part of the ESP Application notes that due to the interactions of the Watts Bar Dam, Melton Hill Dam and Fort Loudon Dam, that the river flow “can be upstream, downstream or quiescent, depending on the modes of operation” within the vicinity of the site. This could mean that for short periods of time, the intake at the CRN facility would be downstream of the NPDES discharge point for the facility. It is not clear what impact if any this flow reversal would have, but TDEC recommends that the forthcoming EIS consider this variable.
- Investigations by DOE and TDEC’s Division of Remediation (DoR) – Oak Ridge Office have shown that there is deep ground water flow that goes under the Clinch River from the Oak Ridge National Laboratory (ORNL).⁷ Migration of chlorinated solvents within the Conasauga Group formation, under the Clinch River along strike to the southwest, has resulted in contaminated private wells at Hoods Ridge. There is also suspected contamination from Oak Ridge Reservation in the Jones Island area across the Clinch River from Oak Ridge Reservation as well. TDEC recommends that any private well or spring use occurring in the area be investigated as a part of the EIS to address the unique geology and hydraulic connectivity of the site. TDEC also recommends that the extent of the existing ground water contamination, including pre-existing radiological constituents and volatile organic compounds in the groundwater, at the proposed CRN Site be determined by TVA and addressed in the forthcoming draft EIS.⁸

Solid Waste Management

- According to the TVA CRN ESP Application Part 3 – Environmental Report, the CRN Site SMR is expected to be a Small Quantity Generator (SQG) of Hazardous Waste and will also construct and operate an on-site landfill⁹ for construction/demolition wastes. Any nonradioactive

⁴ For more information on NPDES Discharge Permitting please visit <https://www.tn.gov/environment/article/permit-water-national-pollutant-discharge-elimination-system-npdes-permit>.

⁵ For more information on the ARAP program please visit <https://www.tn.gov/environment/article/permit-water-aquatic-resource-alteration-permit>.

⁶ For more information on the NPDES Industrial Stormwater General Permit program please visit <http://www.tn.gov/environment/article/permit-water-npdes-industrial-stormwater-general-permit>.

⁷ The proposed CRN Site is located in complex folded/faulted karst geology of the Valley and Ridge Province. The Copper Creek Thrust Fault cuts southwest/northeast across the “toe” of the boot-shaped site. A lesser unnamed thrust fault cuts across the northern portion of the site. Karst ground water flow does not behave as laminar flow and does not follow Darcy’s Law – interstitial porosity plays a very minor role but appears to be a significant focus in TVA’s investigations. The beds of the Chickamauga Group formations in the area are dipping at 30 plus degrees to the southeast. Ground water flow is going to generally be along strike of the beds to the southwest, as is evidenced from the offsite contamination from the Department of Energy (DOE) ORNL.

⁸ TVA notes in its CRN Site ESP Application Part 3 – Environmental Report that monitoring well OW-422L in the center of the CRN Site has petroleum-based contamination. This location is slightly more than ½ mile west of the area of Hoods Ridge where chlorinated solvent contamination has been identified from the DOE ORNL. The existence of pre-existing site contamination is an issue of concern for both TDEC Division of Remediation and Division of Water Resources.

⁹ If TVA wishes to construct and operate a solid waste disposal facility (i.e., construction/demolition landfill) at the CRN Site they will be required to obtain a landfill permit from the TDEC Division of Solid Waste Management. Information about the permitting process and required application materials can be found at <http://www.tn.gov/environment/article/permit-waste-landfill-permit>.

hazardous and nonhazardous wastes associated with the construction, operation, and decommissioning of the CRN facility as well as construction of an on-site landfill must be handled in accordance the state's Solid and Hazardous Waste Rules and Regulations.¹⁰ Furthermore, mixed wastes (e.g. containing low-level radioactive waste) with a hazardous component must be handled in accordance with the NRC requirements but also with the aforementioned Rules and Regulations. TDEC recommends that waste management considerations as specifically regulated by the Rules and Regulations of the state of Tennessee be incorporated in the forthcoming NRC EIS.

- Sections 3.6 and 5.5 of the Environmental Report describe the various hazardous and non-hazardous waste streams that are expected to be generated as well as their impacts and procedures for management (e.g. Spill/Discharge Response Program, TVA-approved vendors for transport and disposal, a Waste Minimization Plan). While this information is informative, TDEC recommends further discussion of specific hazardous and mixed waste management and monitoring practices, treatment methods, and storage areas for attaining compliance with the state and limiting adverse environmental impacts and irreversible environmental commitments during construction and operation of the facility and its offsite rail, barge terminal, and underground transmission line improvement projects in the forthcoming NRC EIS.

Air Pollution Control

- Should any land clearing activities or disposal of brush or trees/tree limbs occur, TDEC prefers that wood waste be disposed of by chipping, grinding, or composting rather than open burning. However, if open burning does occur during site preparation and construction, open burning regulations should be followed. TDEC recommends that detailed clearing activities, total amount of areas where soils are to be disturbed, and associated impacts be addressed in the draft EIS.¹¹
- Water cooling tower emissions are evaluated for permitting and have been permitted at other existing TVA nuclear plants. The water vapor itself is not a regulated emission, however the resultant particulates that arise from evaporation (minerals found in the local river water or streams) are considered to be potential emissions as are any algaecide or slime mold/fungus treatments added to the water to act as a biocide. Cooling towers are also associated with certain other potential pathogenic airborne illnesses including Legionnaire's disease and some amoebae considered harmful. The site may have air contaminant emissions from other onsite air emission sources that are required to have an air contaminant permit from the Division of Air Pollution Control. TDEC recommends that appropriate entities involved in the project review potentially applicable air permits as well as work with the Division of Air Pollution Control to ensure all emission sources are properly identified and permitted.¹²

¹⁰ Reference TDEC SWM Rule 0400 Chapter 11 for Solid Waste and Chapter 12 for Hazardous Waste <http://sos.tn.gov/effective-rules>.

¹¹ TDEC APC Rule 1200-3-4-.01 et seq., <http://sos.tn.gov/effective-rules>. Additional information on open burning in Tennessee is available at <https://tn.gov/environment/article/apc-open-burning> and <http://www.burnsafetn.org/>.

¹² For more information on TDEC Air Pollution Control permits please visit <https://www.tn.gov/environment/topic/permit-air>.

Archaeology

- TDEC concurs with the plan to conduct Phase I/II site evaluation of the property proposed for the TVA CRN Site. This archaeological evaluation will be determined if prehistoric and/or historic sites eligible for the National Register of Historic Places (NRHP) are located within the proposed property. If an archaeological site is determined eligible for inclusion on the NRHP, additional archaeological considerations will be necessary for the project to move forward.¹³

TDEC appreciates the opportunity to comment on this NOI from NRC to prepare an EIS for the TVA CRN Site. Please note that these comments are not indicative of approval or disapproval of the proposed action or its alternatives, nor should they be interpreted as an indication regarding future permitting decisions by TDEC. Please contact me should you have any questions regarding these comments.

Sincerely,



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Tennessee Department of Environment and Conservation
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cc: Barry Brawley, TDEC, DOR
Lacey Hardin, TDEC, APC
Lisa Hughey, TDEC, SWM
Tom Moss, TDEC, DWR
Mark Norton, TDEC, DOA

¹³ For more information on the Tennessee Division of Archeology please visit <https://www.tn.gov/environment/section/arch-archaeology>. If there are site specific archaeological questions please contact Jennifer Barnett at (615)687-4780 or Jennifer.Barnett@tn.gov.