

ERRATA SHEET

TENNESSEE VALLEY AUTHORITY

CLINCH RIVER NUCLEAR SITE ADVANCED NUCLEAR REACTOR TECHNOLOGY PARK

FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

SEPTEMBER 2022

The Clinch River Nuclear (CRN) Site Advanced Nuclear Reactor Technology Park Final Programmatic Environmental Impact Statement (FPEIS) was released on July 29, 2022. The Final PEIS included copies of all written comments that TVA received during the comment period between February 18, 2022, and April 4, 2022, (FPEIS Appendix D). On August 17, 2022, the United States Environmental Protection Agency (EPA) forwarded a comment letter on the Draft PEIS, dated April 4, 2022, which was not received by TVA during the Draft PEIS comment period. TVA conducted a search of its records to determine whether TVA had received the comment on April 4, 2022; no receipt of those comments could be identified.

TVA reviewed EPA's comment letter in the same manner as all comment letters contained in Appendix D of the PEIS. TVA determined that the responses to EPA's comments are minor and confined to either making factual corrections or explaining why EPA's comments do not warrant any further TVA response at this time, given the stage of the proposed action and the currently available information. Therefore, TVA has provided responses to these comments in an Errata addition to FPEIS Appendix D. Comments and TVA's responses are summarized below. The EPA letter is attached to the errata sheet, will be added to Appendix D of the FPEIS, posted on the TVA web site (at <https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/clinch-river-nuclear-site-advanced-nuclear-reactor-technology-park>), and will be distributed with future copies of the CRN FPEIS.

The EPA’s comment letter dated April 4, 2022, included the following recommendations:

Water Quality Standards

Comment 1: Section 3.3.1.1.3.1 Regional Water Quality Standards (WQS) describes “drinking water quality” as a water quality benchmark but should reference “domestic water supply” for consistency with Tennessee WQS. There is reference to “existing guidelines for drinking water, recreation, and the protection of aquatic life,” but this reference should be to “existing water quality standards” rather than guidelines, and it should be for domestic water supply, recreation, and the protection of aquatic life.

Response: TVA acknowledges this reference change. See Errata Table 1 below for text changes.

Comment 2: Explain the potential thermal discharge excursion of the state’s temperature standards beyond the mixing zones.

Response: As specific reactor technologies have not been selected for the Advanced Nuclear Technology Park, specific design details regarding thermal discharge are not yet available. Further detailed analyses regarding water quality will be conducted in future NEPA analyses and permitting related to construction and operation of specific nuclear reactors.

Comment 3: Figure 3-10 on page 88 for “Daily min” temperature should clearly state whether the red line is the maximum temperature.

Response: TVA recognizes that this figure incorrectly labeled the daily max temperature (the red line) as “Daily min” in the legend. TVA acknowledges that the red line is correctly revised as the daily max temperature. See Errata Table 1 below for text changes and revised Figure 3-10 following the table.

Comment 4: Provide an explanation of how reduction of flow could impact water quality, as well as water withdrawals and discharge impacts in the proposed segment of the Clinch River Arm.

Response: As indicated in Table 3-12 under the programmatic analysis, operational water use for the minimum monthly river flow during the period 2004 to 2013, which occurred during the historically low-flow conditions of 2008, average withdrawal and consumptive use would result in minor reductions (7.0 and 4.8 percent reductions, respectively) in Reservoir flow at the CRN Site. Notably however, flow reductions and their potential effect on water quality relate more to consumptive use and losses rather than intake flow as non-consumptive water use is returned to the Reservoir and is part of overall mixing. Reductions in flow from consumptive use (i.e., withdrawals that are not discharged) will, on average, be less than 1 percent of annual flow. Considerations regarding the effect of such a minor reduction in water flow associated with consumptive water use and its effect on water quality as part of mixing of the plant effluents is dependent upon the specific technology proposed to be deployed at the CRN Advanced Nuclear Technology Park. As the reduction will, on average, be less than 1 percent, the impacts on water quality are minimal. TVA will conduct more detailed reviews regarding the specific site development activities and the appropriate implications regarding

National Pollutant Discharge Elimination System (NPDES) permitting. Such analyses and permitting level details will be further described in a subsequent NEPA review, as appropriate.

Comment 5: To confirm that the discharge on p. 110 is minor, the source of water that will be used to dilute the discharge should be identified and its chemical quality described.

Response: The discharge will be conveyed to the Reservoir and diluted by the receiving water body, the Clinch River arm of the Watts Bar Reservoir. The water quality of the reservoir is summarized in Section 3.3.1.1.3. To promote mixing, the discharge will consist of a diffuser that will enhance the dilution of solutes within the discharge effluent in a manner that is consistent with TDEC NPDES permitting requirements.

Comment 6: Due to the high levels of contamination (mercury, PCB, and chlordane) in local sediments, it is especially important that every effort be made to prevent erosion and release of sediment to the waterbody, since disturbance and release of these sediments will have more water quality impacts.

Response: As described in Section 3.3.2.2.1.2, to mitigate and control activities involving the potential disturbance of contaminated sediments in the reservoir, TVA would invoke the 1991 Watts Bar Interagency Agreement, in partnership with the USACE, DOE, TDEC, and the EPA, to coordinate review of permitting and other use authorization activities which could result in the disturbance, re-suspension, removal, and/or disposal of contaminated sediments in the reservoir. The agreement, signed in 1991, defines how each agency coordinates with the others to review proposed activities to determine their potential to disturb contaminated sediments.

Total Maximum Daily Loads (TMDLs)

Comment 7: Provide a table that lists approved TMDLs and include a discussion of how TMDLs could affect the requirements for NPDES permitting.

Response: TVA has identified relevant 303(d)-listed waterbodies in the vicinity of the CRN Site in conjunction with the programmatic analysis. As TVA proceeds with further decision-making regarding particular actions for deployment of a specific technology at the CRN Advanced Nuclear Technology Park, TVA will conduct more detailed reviews on specific site development activities and the appropriate implications for permitting. As described in Section 3.3.2.2.1.3, TVA has identified NPDES permitting would be required for operations. In conjunction with that and based upon detailed designs and analyses regarding proposed site development, TVA will comply with all relevant permitting in consideration of TMDLs that are applicable to the receiving waterbody. Such analyses and permitting level details will be further described in a subsequent NEPA review, as appropriate.

Comment 8: Show or describe specifically where monitoring stations are located between the Melton Hill Dam and CRN.

Response: As indicated in Section 3.3.1.1.3.4 water quality monitoring during the preapplication monitoring program was conducted at a number of locations within the Reservoir between the CRN Site and Melton Hill Dam. Locations in the immediate

vicinity of the CRN Site include three upstream locations at Clinch River Mile (CRM) 18.5, 19.7, and 22.0, and one downstream location at CRM 15.5. Please see Figure 3-9 for CRM markers in the vicinity of the CRN Site.

Stormwater Discharge

Comment 9: Clarify conflicting statement on pages 104 and 107 pertaining to the thermal impacts from potential discharges.

Response: As stated on page 104, the “NPDES permit would also encompass requirements pursuant to Sections 316(a) and 316(b) of the CWA that provide protection to aquatic ecological communities by regulating thermal discharges and CWIS.” TVA agrees that the compliance of a thermal discharge may be accomplished by either meeting the thermal limits within the mixing zone or by obtaining a variance pursuant to Section 316(a). Based on the deployment of a specific technology at the CRN Advanced Nuclear Technology Park, TVA will conduct more detailed reviews regarding the thermal discharge and applicable permitting requirements in a subsequent NEPA analysis and in related NPDES permitting requirements. See Errata Table 1 below for text changes.

Comment 10: Page 108; second paragraph: The DPEIS should clarify that the ability to use the CWA 316(a) variance or a thermal mixing zone is based on a valid demonstration, subsequent approval of the state, and on the EPA’s review of the draft permit and supporting information.

Response: TVA has identified potential thermal impacts in conjunction with the programmatic analysis, FPEIS page 111. As TVA proceeds with further decision-making regarding particular actions involved with the deployment of a specific technology at the CRN Advanced Nuclear Technology Park, TVA will conduct more detailed reviews regarding the specific site development activities and the appropriate implications regarding permitting.

Comment 11: Include requirements pursuant to Section 316 (a) and (b) for numerical temperature at the point of discharge.

Response: See response to Comment 8 above. Additionally, note that Section 316(b) pertains to requirements associated with impingement and entrainment effects associated with the cooling water intake structure. As such there are no thermal temperature requirements associated with Section 316(b).

Wetlands and Streams

Comment 12: More information will be needed for the 404-permit application, including an Approved Jurisdictional Determination and the full analysis pertaining to the CWA 404(b)(1) Guidelines. We also recommend that the TVA work with the U.S. Army Corps of Engineers and TDEC to resolve any issues with CWA Section 404 permits, and that these issues be clearly addressed in the FPEIS.

Response: Comment noted. The PEIS notes that a CWA Section 404 Permit through the USACE would be required for disturbance, crossing, or filling of wetland areas or

jurisdictional waters. TVA has acknowledged in the PEIS that following selection of a technology, final site design, and prior to site development and permitting, the USACE would conduct a site visit and make a Jurisdictional Determination of all surface water and wetland features identified by TVA that could be impacted by the proposed action.

Comment 13: Alternative analysis – the comparison of alternatives needs to consider the effects of each alternative on wetlands and streams affected by each and justify the preferred alternative meets the USACE’s definition of “least environmentally damaging practicable alternative”.

Response: As the PEIS is a programmatic level document and does not evaluate the impacts of a specific reactor design, it does not address the specific permit requirements of Section 404 of the CWA, including the provisions of Section 404(b)(1) that require a “least environmentally damaging practicable alternative” analysis. Such an analysis will be addressed with the USACE during Section 404 permitting related to a specific reactor development at the CRN Site and would be addressed in a future NEPA evaluation as appropriate.

Comment 14: Avoidance and minimization – steps should be taken to minimize impacts, such as modifying the facility footprints or alternative locations for the access road where practicable.

Response: As noted in Section 3.5.2 of the PEIS, TVA would avoid and minimize impact to wetlands and other sensitive resources during the design phase when practicable. Impacts that are not avoidable would be subject to CWA permitting with the USACE and TDEC and associated compensatory mitigation, as appropriate.

Comment 15: Compensatory mitigation – there should be a discussion in the FPEIS on specific mitigation options (i.e., mitigation banks, in-lieu fee, permittee responsible) for wetland and stream types occurring in the project area.

Response: TVA has acknowledged in the PEIS that mitigation would be required for impacts to waters of the U.S (WOTUS). However, specific options for mitigation of WOTUS impacts will be evaluated and addressed by TVA during subsequent supplemental NEPA analyses related to construction of a specific nuclear technology at the CRN Site.

Tables and Figures

The U.S. EPA recommends that the table and figures referenced above (Tables 3-4, 3-6 and 3-7; Figure 3-10) and listed below be addressed in the FPEIS.

Comment 16: Two segments of the Clinch River just upstream of Melton Hill Reservoir (TN06010207019_1000 and TN06010207019_2000) have the potential to modify the temperature and flow of this segment. These segments have been assessed as impaired due to temperature and flow regime modification.

Response: TVA agrees that the water quality of the two segments upstream of Melton Hill Reservoir relate to the overall temperature and flow of this segment. These segments were not specifically included in this document as they are outside of the vicinity of the CRN site impacted environment. Instead, TVA relied upon

characterizations of water quality from the Reservoir downstream of Melton Hill Dam in its analysis, and as such has integrated the relevant effects of water quality characteristics upstream of Melton Hill Dam. The NPDES permitting process considers the impaired conditions of the receiving waterbody. As the upstream impaired waterbodies likely exert influence on the Reservoir at the CRN Site, the influence of these waterbodies will continue to be taken into consideration during the NPDES permitting process for the deployment of a particular reactor at the Nuclear Technology Park.

Comment 17: Note that the Poplar Creek Embayment (PCBs & Mercury from Contaminated Sediments) is listed in the table twice.

Response: TVA revised Table 3-6 to remove the duplicate entry for the Poplar Creek Embayment. Additionally, TVA revised the Poplar Creek Embayment and the Clinch River Arm of Watts Bar Reservoir entries to reflect “industrial point source discharge” in addition to “contaminated sediments”. See changes reflected in Errata Table 1 below.

Comment 18: Correct table 3-7 for pH, Nitrates, Copper, Antimony, Cadmium, and Selenium values.

Response: While other water quality criteria may be applicable, the values included in the Water Quality Criteria column of Table 3-7 reflect the drinking water quality criteria. A footnote has been added, and the narrative edited (see Errata Table 1 below) to reflect these changes. As such, no changes have been made to water quality criteria values for copper, antimony, cadmium, or selenium. TVA recognizes that other water quality criteria may be applicable and will take these criteria into consideration in the development of future documents. Additionally, the grammatical error for pH and the value for nitrite have been corrected.

Comment 19: Include a map of monitoring sites and 303(d) listed waters. Describe which parameters are monitored and at what frequency at the TDEC monitoring sites discussed in Section 3.3.1.1.3.3. and state whether they are the same as those monitored as part of the Vital Signs Monitoring Program.

Response: See response to comment 8. TVA water monitoring locations in the immediate vicinity of the CRN Site include three upstream locations at Clinch River Mile (CRM) 18.5, 19.7, and 22.0, and one downstream location at CRM 15.5. These are the same locations as those monitored as a part of TVA’s ongoing Vital Systems Monitoring Program. The 303(d) listed waters in the vicinity of the CRN Site are listed in Table 3-6.

Comment 20: Perennial streams and intermittent streams that are identified by a code should be cross-referenced to the Waterbody ID or a segment name on the 303(d)-list or in a TMDL.

Response: TVA agrees that in Table 3-4 perennial streams and intermittent streams are identified by a code that is not cross-referenced to the Waterbody ID or a segment name. However, TVA also notes that on page 75 of the DPEIS (Section 3.3.1.1.1.4) Table 3-4 is referenced along with Figure 3-9 which includes definitions for the code used in the table. None of the perennial or intermittent streams listed in Table 3-4 are included on the 303(d) list. We recognize that the Clinch River Arm of the Watts Bar Reservoir (Waterbody ID TN06010207001_1000) is included on the 303(d) list. We

further recognize the presence of tributaries to the Clinch River Arm of the Watts Bar Reservoir, such as Grassy Creek (Waterbody ID TN06010207001T_0300) are unlisted, but present in the area, however, these waterbodies were not included in Table 3-4.

Comment 21: Correctly label the daily max temperature as “Daily min” in the legend of Figure 3-10.

Response: TVA recognizes that this figure incorrectly labeled the daily max temperature (the red line) as “Daily min” in the legend. TVA acknowledges that the red line is correctly revised as the daily max temperature. See Revised Figure 3-10 below for text changes.

Air Quality

Comment 22: The EPA recommends that the FPEIS provide a more in-depth discussion on the NUREG 0654 requirements. We also recommend that the FPEIS add a footnote to Table 3-67, Liquid Effluent Doses, noting the appropriate dose standard or limits with regulation source, and add a footnote to Table 3-68, Gaseous Effluent Dose, noting the appropriate dose standard or limits with regulation source.

Response: The final Emergency Planning Zone (EPZ) size for the CRN Site has not yet been determined and could potentially differ from the generic 10-mile EPZ size addressed in the guidance presented in NUREG-0654. In its Early Site Permit Application (ESPA) for the CRN Site, TVA proposed a methodology and criteria for establishing an appropriate EPZ size for an SMR at the CRN Site, as well as exemptions from NRC regulations consistent with this site-specific EPZ size determination. In the associated ESP (ESP-006), issued by the U.S. Nuclear Regulatory commission (NRC), the NRC granted the requested exemptions based on the condition that a future applicant demonstrates that the criteria for the requested EPZ size are met. Therefore, a future licensing application referencing TVA’s ESP would include a proposed EPZ to the NRC with consideration given to the selected reactor technology. The NRC would then make a determination regarding the proposed EPZ size.

Regarding the recommendation to add footnotes to Table 3-67 and Table 3-68, the doses outlined in these tables summarize the impacts to individuals from radioactive effluents released during normal operations and are not related to accidents or emergency planning requirements. Table 3-69 of the PEIS summarizes estimated doses to the maximum exposed individual (MEI) and compares the doses to the “as low as is reasonably achievable” design objectives from 10 CFR Part 50, Appendix I to determine compliance with dose rates protective of the general public.

Climate Change

Comment 23: The EPA recommends including a more in-depth discussion in the FPEIS of potential climate change impacts that could affect the CRN Site and surrounding communities. The FPEIS should include a more in-depth discussion on the cumulative effects associated with severe weather events that could potentially impact local and down-stream communities, as well as preventive measures the TVA can introduce to mitigate potential impacts to these communities. Specifically, the EPA recommends that the NRC consider in its decision-making:

- (1) the ongoing and long-term risks posed by climate change where nuclear facilities and associated structures are placed, (i.e., floodplains), and
- (2) if such infrastructure is in areas with elevated risk of damage due to climate change, investments should be made to increase the resilience of the facility infrastructure.

The TVA should also consider requiring applicants to develop climate adaptation plans informed by the U.S. Fourth National Climate Assessment. Additionally, the EPA recommends that the TVA consider in the NEPA analysis potential climate impacts, including, but not limited to, drought, high intensity precipitation events, and increased fire risk.

Response: TVA considered potential impacts from construction and operation of the CRN Advanced Nuclear Technology Park on climate change in the PEIS. The PEIS states that the Atmospheric impacts of greenhouse gas (GHG) emissions from both construction and operations are relatively minor and not noticeable. However, TVA recognizes that U.S. Fourth National Climate Assessment encourages communities, governments, and businesses to work to reduce risks from and costs associated with climate change by taking action to lower GHG and implement adaptation strategies. On a broader level TVA maintains its Federal Sustainability Report and Implementation Plan (SRIP) in compliance with the applicable Executive Orders and regulations that establish and assess federal sustainability goals, including EO 14008 and the remaining sections of EO 13834. Through the SRIP and TVA's Sustainability Program, TVA integrates these goals into everyday business operations that include coordination with other federal and nonfederal partners to implement climate change strategies. TVA is also aware of EO 13690 Federal Flood Risk Management Standard which TVA will follow establishing a flood elevation to manage future flood risk.

Additionally, during the preparation of the Early Site Permit Application (ESPA), TVA considered the occurrence and probability of severe weather, including tornadoes, in the regional area near the CRN Site. While designs of selected reactor technologies that might be deployed at the CRN Site are not yet known, any selected design would be required to conform to NRC regulations for withstanding natural phenomenon including seismic hazards, severe weather events, extreme drought, intense precipitation and flooding and other factors to prevent undue risk to the health and safety of the public. The specific design basis and evaluation against these requirements would be provided in the site's Preliminary Safety Analysis Report (PSAR) which will be developed during a subsequent licensing action for a proposed plant.

The effects of climate change and severe weather will be addressed in a future NEPA review as appropriate once a specific technology is selected for evaluation.

Environmental Justice (EJ)

Comment 24: The EPA recommends that the FPEIS provide information about the implementation of community engagement activities targeted to potentially affected minority and low-income populations. This should include a discussion about efforts to meaningfully engage these populations early and often during the development of the PEIS and convene meetings that were local and convenient for the potentially affected communities with EJ concerns. The

Federal Interagency Working Group on Environmental Justice report, Promising Practices for EJ Methodologies in NEPA Reviews (also known as the Promising Practices Report) serves as a reference for identifying additional activities that should be considered for the discussion, such as the application of adaptive and innovative approaches to public outreach (i.e., disseminating relevant information) and participation (i.e., receiving community input).

Response: As part of the process of developing the PEIS for the CRN Site Advanced Nuclear Reactor Technology Park, TVA conducted a variety of public outreach efforts to reach all members of the public that included minority and low-income populations. Engagement activities included media releases, social media posts, virtual public meetings, and the use of a virtual public meeting room where interested parties could access project information and submit questions and comments. As specific nuclear technologies are determined for the site and supplemental NEPA analyses are conducted, TVA will conduct further meaningful engagement with potentially affected environmental justice communities. Construction of a specific nuclear reactor design by TVA would also require submission of an application to the NRC, which provides separate and additional outreach to environmental justice communities and opportunities for public comment and feedback.

Errata

In further response to EPA's comments on the DPEIS, the following changes to the FPEIS as listed in Table 1 are necessary.

Errata

In further response to EPA's comments on the Draft PEIS (DPEIS), the following changes to the FPEIS as listed in Table 1 are necessary.

Table 1. Errata for the Clinch River Nuclear Site Advanced Nuclear Technology Park PEIS

DPEIS Page/ FPEIS Page	Section	Paragraph	DPEIS Line/FPEIS Line	Delete:	Replace with or add:
11/11	1.8.2	1	2/3	No deletion.	"and on social media targeted to specific zip codes within Roane, Anderson, Knox, and Loudon Counties. "
81/85	3.3.1.1.3.1	2	2/2	"guidelines"	"water quality standards"
81/85	3.3.1.1.3.1	2	2/2	"drinking water"	domestic water supply
88/92	3.3.1.1.3.4			Figure 3-10	Revised Figure 3-10 (see figure below table)
104/108	3.3.2.2.1.2	Second bullet	4/4	"pursuant to Sections 316(a) and 316(b) of the CWA that provide protection to aquatic ecological communities by regulating thermal discharges and CWIS."	"for thermal compliance for the discharge and 316(b) of the CWA that provide protection to aquatic ecological communities by regulating thermal discharges and best technology available for the CWIS."
84/85	3.3.1.1.3.4	3	3/3	"most restrictive values for the applicable designated uses."	"criteria for the protection of the drinking water supply, where applicable."
82/86	Table 3-6	Row 1	Row 1 (Poplar Creek Embayment)	Duplicate "Poplar Creek" entry deleted.	No replacement.
82/86	Table 3-6	Row 2	Row 2 (Clinch River Arm of the Watts Bar Reservoir)	No deletion.	Add "industrial point source discharge" in potential source column.

DPEIS Page/ FPEIS Page	Section	Paragraph	DPEIS Line/FPEIS Line	Delete:	Replace with or add:
82/86	Table 3-6	Row 3	Row 3 (Poplar Creek Embayment)	No deletion.	Add “industrial point source discharge” in potential source column.
85/89	Table 3-7	Footnote (a)	Footnote (a)	“most restrictive for the applicable designated uses.”	“corresponding values for protection of domestic water supply.”
85/89	Table 3-7	pH	Far right column	No deletion.	Added decimal point to the following value: 6.7-8.1
85/89	Table 3-7	Nitrate/Nitrite	Water Quality Criteria	No deletion.	Added nitrite water quality criterion (1 mg/L)

Revised Figure 3-10

