

Environmental Alternatives

Discussions Related to TVA's Planned
Submittal of Information to Supplement its
May 12, 2016 Early Site Permit Application

Supplemental Item (SI) AltSit 1

SI AltSit 1. The screening process summarized in the ER and described in somewhat more detail in the Siting Study, progresses from the Region of Interest (ROI) through the assessment of Candidate Areas and Preliminary Potential Sites and declares that both exclusionary and acceptability criteria were applied. However, the ER and the Siting Study do not sufficiently define the actual criteria that were applied. Each exclusionary and avoidance criterion applied at each step of the screening process from ROI to candidate sites must be defined so that the screening results can be independently assessed such that the staff is able reach a conclusion on the reasonableness of the applicant's site selection process. To the maximum extent possible screening criteria should be objective and not subjective.

SI AltSit 1 (cont)

SI AltSit 1a. Exclusionary criterion that was derived from two of TVA's project objectives to narrow the ROI to areas in "close proximity" to TVA's six federal customers as preliminary Candidate areas should be defined. Include in this response how TVA has defined "close proximity." Clarify if and where more than one exclusionary criterion was applied during this step in the screening process.

SI AltSit 1 (cont)

SI AltSit 1b. The screening criteria that were derived from the ER Section 9.3.1 listed criteria for assessing “preliminary candidate area suitability” should be clearly defined:

- Sufficient acreage available to incrementally construct two or more SMRs.
- Proximity to a Federal installation.
- Proximity to a water source.
- Proximity to transmission lines.
- Proximity to existing transportation infrastructure.

These same criteria are not listed in the Siting Study for the evaluation of Candidate Areas. Clarify how, or if, they were applied in the siting study. If they were not applied, the screening criteria which were used to assess preliminary candidate area suitability should be clarified.

SI AltSit 1 (cont)

SI AltSit 1c. Define in detail the avoidance screening criteria that were derived from the safety conditions listed in ER Section 9.3.3 for Candidate Area evaluation and clarify how and why these differ from those listed previously in ER section 9.3.1 for the evaluation of Candidate Areas. Listed safety considerations included:

- Geology/Seismology
- Atmospheric Dispersion
- Exclusion Area and Low-Population Zone
- Population
- Emergency Planning
- Security Plans
- Hydrology
- Industrial, Military, and Transportation Facilities

SI AltSit 1 (cont)

SI AltSit 1d. Please provide the basis for the scoring of each of the Candidate Areas that resulted from the application of the one to three scaling of each of the criterion provided in the Siting Study Table 3.2-1. As written, the text of the Siting Study Section 3.0 speaks to the characteristics of each Candidate Area without providing the logic between such features and TVA's scoring values. Clarify how the application of scaled avoidance criterion resulted in the elimination of two of the six Candidate Areas. Also clarify the term "exclusionary criteria." The ER texts states that exclusionary criteria such as seismic exceedance were applied, although no such "exclusionary criterion" is listed.

SI AltSit 1 (cont)

SI AltSit 1e. Define the ER section 9.3.3.1 exclusionary and avoidance criteria that were applied in a two-step process to identify Preliminary Potential Sites within the four Candidate Areas. ER criteria are listed as:

- availability of land,
- proximity to a water source,
- proximity to sensitive resources such as wetlands and historic sites,
- proximity to transmission lines,
- proximity to existing transportation infrastructure,
- obvious topographic concerns

SI AltSit 1 (cont)

SI AltSit 1e. (cont) Additionally Section 4.0 the Siting Study lists a second set of undefined criteria that were applied to Preliminary Potential sites. These include:

- presence of wetlands
- known historic sites
- land cover
- existing land uses

Please define these criteria.

SI AltSit 1 (cont)

SI AltSit 1f. Provide sufficient information for each Preliminary Potential Site that was eliminated so that the rationale provided in Siting Study Table 4.0-1 for elimination of Preliminary Potential Sites can be independently confirmed. The Siting Study merely lists the undefined screening criteria and provides a table of results without identifying the characteristics of each site for each criterion. For example, since no sites were eliminated for the presence of wetlands or historic sites, does such imply that there are no such features present? Additionally, ORR site 1, and Redstone 16, 17, 18, and 19, and Columbus 24 were eliminated based on potential problems that might result from flooding. But no flooding criterion is listed in the ER or the Siting Study for the evaluation of Preliminary Potential Sites and mapping of flood zones for these sites is not provided.

SI AltSit 2

SI AltSit 2. The process for evaluation of Potential Sites includes for most criteria multiple bulleted “sub-criteria” which assess various aspects of the sites. Please explain why these sub-criteria were combined rather than scored separately. Also please explain how a site was scored if the scoring for the multiple sub-criteria had differing scoring values. Taking Hydrology as an example – a site could have no flood issues (score of 5), insufficient water (score of 1), but water of outstanding quality (score of 4 or 5). In such a case, what would be the score for Hydrology? Please also address why each sub-criterion element was not characterized and scored for each Potential Site. For example, distance from viable water is a sub-criterion of Hydrology, less than 1 mi to greater than 3 mi, however some Potential Site descriptions do not characterize or score the distance from the water sources.

SI AltSit 2 (cont)

SI AltSit 2. (cont) Additionally, some sub-criteria use qualitative terms such as small, moderate, or large, or marginally adequate vs adequate, instead of quantitative terms such as less than 1 mi or greater than 3 mi. Please provide the basis for such distinctions for evaluating the sites. For example, is a large potential for flooding 1 in 100 years, and moderate 1 in 500 years and a small potential 1 in 1000 years?

SI AltSit 3

SI AltSit 3. Some “scored” criteria used in evaluating the Potential Sites had been used previously as exclusionary criteria in identifying the Preliminary Potential Sites. For example:

- In the Siting Study Table 4.0-1, sites were eliminated for having less than 120 available acres, yet such a condition in a Potential Site is scored a “1” under Land Use for “insufficient total area available for siting the project”. Please clarify why, if the exclusionary criterion of 120 acres was applied universally during the screening of Preliminary Potential Sites, there could be any Potential Sites without sufficient area for the project?
- Also in the Siting Study Table 4.0-1, Preliminary Potential Sites were eliminated because of flooding concerns. However, such a condition is only a score of 1 for screening the Potential Sites. Why, if an exclusionary criterion of flooding potential was applied universally during the screening of Preliminary Potential Sites, could there be any Potential Sites with flooding potential?

SI AltSit 4

SI AltSit 4a. The cumulative impacts evaluations for the alternative sites in the ER are presented based on an almost exclusively qualitative basis. Very little data is used to back up the assertions and conclusions. For example, there is no quantitative information provided that summarizes and compares the environmental impacts (wetlands, floodplains, streams, sensitive land uses) of the candidate sites. There should be quantification (using reconnaissance level information) of impacts to resources such as aquatic ecology (i.e., streams, open waters) based on conceptual site boundaries, plant footprints (e.g., amount of dredging required for water intake/discharge facilities and barge docking facilities). As another example, there should be quantification of land use and terrestrial impacts that includes corridors for linear facilities (access roads, rail spur, water pipeline routes, transmission line corridor to nearest substation). Please provide a quantitative cumulative impact information commensurate with the level of knowledge and analyses for an alternative site.

SI AltSit 4 (cont)

SI AltSit 4b. The introductory text for cumulative impacts indicates that the cumulative impacts for CRN and the two ORR alternative sites would all be the same because they're located close together. But Table 9.3-2 indicates that the impacts of the project at the ORR 2 and 8 sites to, for example, Terrestrial Ecology are MODERATE, while the cumulative impacts are shown as SMALL. First, such a result doesn't make sense as a whole. The cumulative impacts cannot be less than the project's incremental impacts. There are similar issues related to cumulative impacts for land use, water use and quality, and aquatic, and historic and cultural. Second, there doesn't appear to be a basis to say all of these sites will have the same cumulative impacts. Please justify any assumptions regarding the equivalency of the cumulative impacts across the sites.

SI AltSit 4 (cont)

SI AltSit 4c. Another issue related to cumulative impacts is the discussion of multiple cumulative impacts for the same resource. For example, for surface water use there is a discussion of the “cumulative impacts” for Limestone County. But cumulative impacts relate to a resource (water) and not to a County. Please address cumulative impacts for each affected resource in terms of a single impact determination for the resource as a whole.

SI AltSit 5

SI AltSit 5. Proximity to wetlands was listed as a criterion for the evaluation of Preliminary Potential Sites, although it was not discussed at all under the Preliminary Potential Site evaluations in Section 4 of the Siting Study. Please address such an omission and clarify under what criterion wetland avoidance was assessed for the Potential Sites. If a plant is eventually licensed, the U.S. Army Corps of Engineers will require that wetlands be avoided if at all possible. Thus wetland avoidance is a key consideration in the screening process.

SI AltSit 6

SI AltSit 6. The basis for the selection of the Clinch River site is unclear. The first bullet in Section 9.3.6 of the ER states that none of the alternative sites is environmentally preferable. But there is no clear comparison of the sites in the ER. Table 9.3-6 presents what are referred to as “incremental cumulative impacts,” an undefined term that the staff does not recognize, especially because cumulative impacts are, by definition, not incremental. Please explain the contents of this table, including a discussion of why a plain reading of this table would indicate that the Redstone 12 site is environmentally preferable to the proposed site. In addition, provide the staff with a table and text that compares the cumulative impacts at the proposed and alternative sites and provides a basis for the selection of the proposed site.

SI AltSys 1

SI AltSys 1. ER 9.4.2.2.1 states that there are no viable alternatives for the general location of the proposed intake structure and that any alternative intake configurations would result in increased costs and environmental impacts. However, insufficient information is provided for the staff to use as a basis for the evaluation of alternate intake system impacts, or, a comparison of the impacts of alternate systems to the impacts of the proposed intake system. A more thorough description of alternatives is necessary (e.g., intake system alternatives consistent with NUREG-1555, Section 9.4.2, that may be feasible could include an intake on Melton Hill reservoir or the use of a Ranney well system) and an evaluation of environmental impacts, as compared to the impacts of the proposed intake.

SI AltSys 2

SI AltSys 2. ER 9.4.2.2.3 states that no alternative water sources were evaluated because the proposed supply is readily available and can be used without adverse impacts to other users. However, NUREG-1555, Section 9.4.2, directs that even when no adverse impacts have been identified for the proposed system, alternative circulating water systems must be evaluated in the depth necessary to judge their environmental equivalence. Examples of water supply alternatives consistent with NUREG-1555, Section 9.4.2, that may be feasible could include sources such as groundwater or the City of Oak Ridge. Compare the impacts of the alternative water supplies to the impacts of the proposed water supply.