

DRAFT
DOE Responses to
NRC Staff Comments on Western Nuclear Incorporated (WNI)
Split Rock Site Draft Long-Term Surveillance Plan

1) General Comments

- a) Within the Long-Term Surveillance Plan (LTSP), please include a groundwater contour map of the bounded site with recent groundwater elevation data. Additionally, within the LTSP's commitment for future submittals to the U.S. Nuclear Regulatory Commission (NRC), please state whether groundwater plume maps and a groundwater contour map will be included with future groundwater monitoring reports submitted to the NRC.

Plume contour maps for uranium, nitrate and sulfate, and a potentiometric surface map have been added to LTSP section E3.3 Selection of Hazardous Constituents and Indicator Parameters. These maps were obtained from licensee submittals 1999 Site Ground Water and Characterization and Evaluation (SGWCE) report and 2015 Assessment of Recent Groundwater and Surface Water Conditions. Water level trend graphs have also been added to LTSP section E3.3 Selection of Hazardous Constituents and Indicator Parameters. LTSP Section 3.7.1 Long-Term Groundwater and Surface Water Monitoring Program contains additional statements regarding inclusions in future inspection reports submitted to the NRC.

- b) Within an existing or additional map in the LTSP that displays the locations of all wells, please label the point of compliance monitoring wells and display the point of compliance trigger levels for each constituent selected for the long-term groundwater monitoring program and include. Please include a usable scale in all LTSP maps.

Point of compliance monitoring wells have been labelled in LTSP Figure 6 Site Map. Final ACL and trigger levels from the WNI material license are provided in LTSP tables 3, 4, E-7 and E-8. A map scale has been added to LTSP figures 5, 6, A-1, and E-1.

- c) Consistent with Appendix D of NUREG 1620, please provide calculations of the estimated contaminant plume velocities (i.e., not just groundwater velocities) for the contaminants of concern and use the estimated velocities to further justify the sampling frequency and the evaluation of the length of the time period for the long-term groundwater monitoring program.

As discussed during a March 8, 2021 teleconference between DOE and NRC regarding responses to NRC comments on the draft LTSP, LTSP section E3.5 Summary of Recommended Long-Term Monitoring Requirements has been modified. Information from the licensee's 2003 Supplemental Groundwater Modeling Report data has been added to further justify the monitoring program frequency in the SWV. Groundwater velocities continue to be used as a surrogate for plume velocities in the NWV with additional justification.

- d) It is unclear whether well 5 is included legend of Figure E-38 (Time-Concentration Plot of Uranium for NWV Wells) in the draft LTSP. Please correct this figure and other figures like it so they are legible.

All electronically transmitted LTSP versions reviewed by NRC have utilized image compression for email sharing purposes. The final LTSP will include full resolution figures.

2) Page E30

Page E-30 of the draft LTSP (Section 3.2) states “While [Alternate Concentration Limits (ACLs)] and surface water quality standards are expected to be met, uranium exceedances are possible under long-term management.” Apart from this statement, which appears to be the final conclusion on the matter, other descriptions in the LTSP of a potential exceedance of the uranium surface water standard at the Sweetwater River are inconsistent and either describe the potential exceedance as being either likely or unlikely. Within the LTSP, please clarify that the above-referenced quote is the LTSP’s final conclusion concerning the likelihood of exceedances of surface water quality standards at the Sweetwater River under long-term management. Additionally, based on all of the research and analysis provided in the LTSP, please provide a summary description of DOE’s basis (reasonable assurance) for the final conclusion that the uranium surface water quality standard at the Sweetwater River is expected to be met (i.e., to be unlikely) under long-term management.

A summary of conclusion statements from LTSP Appendix E has been assembled in Appendix E Section E3.2 Long-Term Monitoring Approach and Limitations.

3) Page 6

The LTSP states that land managed by the Bureau of Land Management will not be transferred before the license is terminated. While this is important information now, when the LTSP is accepted by NRC, either the land will have been transferred or other arrangements will have been made to ensure that the site will not be used in a way that could adversely impact the tailings. This statement should be deleted. When the final LTSP is ready for acceptance by NRC, the land ownership should be updated to state the final condition.

Statements from LTSP section 2.1.1 Site Ownership and Access have been modified.

4) Page 42 et al

The following statement appears on pages 42, E-29, E-35, and E-69: “**Additionally, [Wyoming Department of Environmental Quality (WDEQ)] communication states that, as the LQD found the ACL acceptable, if noncompliance were to occur, the LQD will actively advocate a solution with WQD, which would not impact DOE (WDEQ 2020).**” In addition, the following statements appear on page E-69: “**However, under UMTRCA, DOE, as the long-term custodian, is only ‘authorized to carry out monitoring, maintenance, and emergency measures’ and no other actions ‘unless expressly authorized by Congress’ (see UMTRCA, Section 104[f][2]). Therefore, potential response actions are limited. Results of the groundwater and surface water monitoring program will be included in the annual inspection and monitoring report.**” While these statements may be accurate (note that the citation to the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) refers to Title I sites

and Western Nuclear Incorporated (WNI) is a Title II site), they could be confusing given actions the Department of Energy (DOE), NRC, and WDEQ may take if exceedances of constituents of concern are observed at the site. Therefore, these statements should be deleted from the LTSP.

Additional clarification has been added to the LTSP reference to UMTRCA in LTSP section 3.7.1 Long-Term Groundwater and Surface Water Monitoring Program and LTSP section E3.1 Regulatory Considerations. Descriptions from WDEQ correspondence regarding response to measurement of uranium about surface water protection standards can be found in LTSP sections 3.7.1 Long-Term Groundwater and Surface Water Monitoring Program and E3.5 Summary of Recommended Long-term Monitoring Requirements.

5) Page 29 et seq.

On pages 29, E-16, and E-17, the LTSP refers to the 2016 NRC memorandum summarizing a meeting with WNI as the documentation that the institutional controls (ICs) at the site are adequate. The WDEQ made an independent evaluation of the ICs; as WDEQ is the licensing authority, the DOE should cite the WDEQ conclusion regarding the ICs as its primary rationale. The NRC's 2016 memorandum can be cited for additional support as needed.

References to the WDEQ CRR November 2020 Addendum on the Use of Institutional Controls has been added to LTSP sections 2.6 and E2.4 Institutional Controls.

6) Appendix E

Considering a component of groundwater flow from the source areas (e.g., tailings impoundment) is toward well SWAB-4 (LTSP Figures 14 and E-1 on page 24 and page E-3) and acknowledging that (1) "Well SWAB-4 is approximately 3000 ft downgradient of the tailings impoundment and provides an early detection point for monitoring any site-related contamination"; (2) the area of SWAB-4 is bounded by a granite outcrop to the east and land to the west where groundwater supply wells (e.g. irrigation and domestic wells) may be installed and used outside of the licensed site boundary in the future; and (3) "SWAB-22 is approximately 400 ft inside the LTSP, 2000 ft downgradient of well SWAB-4," please include well SWAB-4 in the long-term groundwater monitoring program. During the long-term surveillance period, this well would provide early detection of significant levels of contaminants of concern moving toward points of exposure and would contribute to the monitoring of natural attenuation as well.

Similarly, please include Well 1 and Well 4R in the long-term groundwater monitoring program. These wells are located immediately next to the unlined disposal cells and would provide important monitoring information to track cell performance. Additionally, please document the screened interval of Well 1 and Well 4R in the LTSP.

LTSP Section E3.4 Selection of Groundwater and Surface Water Monitoring Locations describes that Well-4R is located on the edge of the portion of the tailing impoundment that extends into the NWV. Well-4R is labeled in the SGWCE as a "tailings and source area well (above POC)" in Figure 7 and Table 9. The depth, completion interval, formation information, and other parameters are unknown for Well-4R because no construction or lithologic logs were available from the licensee. This well was

constructed prior to remediation as part of the corrective action program well network. The concentration for many of the site-related hazardous constituents at Well-4R is higher than any of the other wells in this flow regime, and the pH is also lower. This data is not surprising considering the proximity of the well to the tailings impoundment. Well-4R is strongly influenced by the seepage from the tailings impoundment. This can be seen as high variability in uranium concentration data over time in Figure E-38 Time-Concentration Plot of Uranium for NWV Wells and other time concentration plots in LTSP section E3.3 Selection of Hazardous Constituents and Indicator Parameters. Well-4R is therefore recommended for elimination from the long-term monitoring network.

As with Well-4R, proposal to eliminate Well-1 from the long-term monitoring program can be found in LTSP Section E3.4 Selection of Groundwater and Surface Water Monitoring Locations. Well-1 is located on the edge of the portion of the tailing impoundment that extends into the SWV. Well-1 is also directly upgradient of the remediated groundwater corrective action evaporation ponds. Again, no construction or lithologic logs are available for this well, so the depth, completion interval, and formation information are unknown. As with Well-4R, Well-1 was constructed prior to remediation. The concentration for some of the site-related hazardous constituents is also higher at this well than any of the other wells in this flow regime, and the pH is again lower. This data is also not surprising considering the proximity of this well to the tailings impoundment, and it appears that this location is strongly influence by the seepage from the tailings impoundment; however, the influence is not as strongly as Well-4R in the NWV, likely a result of the lower volume of tailings impoundment impacted groundwater that exits the SWV as compared to the NWV. Interpretation of monitoring results from Well-1 is ambiguous (as it is with Well-4R in the NWV). High temporal variability between concentration data points is observed in Figure E-39 Time-Concentration Plot of Uranium for SWV Wells and other time concentration plots in LTSP section E3.3 Selection of Hazardous Constituents and Indicator Parameters. It is therefore recommended that Well-1 be eliminated from the long-term monitoring network.

DOE has included SWAB-4 in the long-term monitoring network and has documented this recommendation in LTSP sections 3.7.1 Long-Term Groundwater and Surface Water Monitoring Program, Appendix C Initial Site Inspection Checklist, and E3.5 Summary of Recommended Long-Term Monitoring Requirements and Figure 6.