PRELIMINARY FINAL TECHNICAL EVALUATION REPORT
PRELIMINARY FINAL LONG-TERM SURVEILLANCE PLAN FOR THE WESTERN NUCLEAR INC. SPLIT ROCK SITE
JEFFERY CITY, WYOMING

FACITITY NAME: **WESTERN NUCLEAR INC. SPLIT ROCK SITE, JEFFERY CITY, WYOMING**

REVIEWER(S): **DOMINICK ORLANDO, THOMAS LANCASTER**

DATE: **03/14/2022**

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the U.S. Department of Energy's (DOE's) Preliminary Final Long-term Surveillance Plan (PFLTSP) for the Western Nuclear, Inc. (WNI) Split Rock site in Jeffery City, Wyoming. After reviewing the PFLTSP for the Split Rock site, the NRC staff concludes that the PFLTSP satisfies the associated requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 40.28 and 10 CFR Part 40, Appendix A for the long-term surveillance and maintenance of the Split Rock tailings disposal site. In addition, the PFLTSP is consistent with the staff guidance for long-term surveillance and maintenance plans in NUREG-1620[1], Appendix D.[2] The NRC staff finds the PFLTSP acceptable.

Introduction

The NRC's regulations at 10 CFR 40.28(a) state a general license is issued for the custody of and long-term care, including the monitoring and maintenance, and emergency measures necessary to protect the public health and safety actions necessary to comply with standards for uranium or thorium mill tailings sites that were closed under Title II of the Uranium Mill Tailings Radiation Control Act (UMTRCA). The NRC's regulations at 10 CFR 40.28(b), provide that each Long-term Surveillance Plan (LTSP) must include the following information:

(1) A legal description of the disposal site to be transferred and licensed.
(2) A detailed description of the final conditions of the disposal site, including existing ground-water characterization.
(3) A description of the long-term surveillance program, including proposed inspection frequency and reporting to the Commission (as specified in Appendix A, Criterion 12 of 10 CFR Part 40); frequency and extent of ground-water monitoring, if required;

[1] NUREG-1620, "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978," Revision 1, ADAMS Accession No. ML032250190.
[2] Appendix D of NUREG-1620 is entitled "Guidance to the U.S. Nuclear Regulatory Commission Staff for Reviewing Long-term Surveillance Plans"

appropriate constituent limits for ground water; inspection personnel qualifications; inspection procedures; record keeping; and quality assurance procedures.

(4) The criteria for follow-up inspections in response observations from routine inspections or extreme natural events; and

(5) The criteria for instituting maintenance or emergency measures.

On November 16, 2021, the U.S. Department of Energy (DOE) submitted the cover letter for the PFLTSP for the Split Rock UMTRCA Title II Disposal Site to the NRC.[3] Due to the large size of the PFLTSP document, the DOE uploaded the Split Rock PFLTSP[4] associated with the cover letter to the electronic submittals system on the NRC's website on November 18, 2021. The DOE had submitted its initial draft LTSP by cover letter dated April 29, 2020.[5] The DOE submitted a revised draft LTSP to the NRC by e-mail dated September 21, 2020,[6] by e-mail dated October 15, 2020,[7] and by cover letter dated May 3, 2021.[8] These documents addressed and resolved issues the NRC staff had previously identified.

The DOE stated in its cover letter for the PFLTSP, that the final Long-term Surveillance Plan (LTSP) will be submitted to the NRC once real estate transaction and ownership information is secured and added to the final LTSP.

This preliminary final Technical Evaluation Report (TER) documents the NRC staff's review of the DOE's PFLTSP and finds the PFLTSP acceptable.

Review Approach

NRC staff prepared this preliminary final TER by assessing the Split Rock PFLTSP against associated criteria in 10 CFR 40.28 and 10 CFR Part 40, Appendix A, which are described in NRC's standard review plan in NUREG-1620, Revision 1, Appendix D.

Site Description/History

Legal Description and Ownership of the Land

The PFLTSP provides a legal description and ownership of the land that complies with the requirements in 10 CFR 40.28(b)(1) and is consistent with guidance in Section D2.2.1 of NUREG-1620. Section 2.1.1 and Appendix A of the PFLTSP describes the surface and subsurface ownership rights at the site. Ownership of the surface and subsurface varies across the site. A total of approximately 5,431 acres lies within the long-term surveillance boundary (LTSB). The types of land ownership anticipated to be transferred to DOE are as follows:

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[3] Agencywide Documents Access and Management System [ADAMS] Accession No. ML21323A182.

[4] ADAMS Accession No. ML21323A184.

[5] ADAMS Accession Nos. ML20140A363 (Cover Letter) and ML20140A364 (Draft Revised LTSP).

[6] ADAMS Accession Nos. ML20366A083 (E-mail Transmittal) and ML20366A084 (Draft Revised LTSP).

[7] ADAMS Accession Nos. ML20366A063 (E-mail Transmittal) and ML20366A061 (Draft Revised LTSP).

[8] ADAMS Accession Nos. ML21125A622 (Cover Letter) and ML21125A623 (Draft Revised LTSP).

- About 1,264 acres of WNI surface and WNI minerals rights (will transfer to DOE in fee).
- About 219 acres of WNI surface and State minerals rights (WNI surface rights will transfer to DOE in fee, and the State retains minerals rights).
- About 2,097 acres of WNI surface and U.S. Bureau of Land Management (BLM)-managed federal mineral rights (WNI surface rights will transfer to the DOE in fee, and the DOE is in discussions with the BLM on the transfer of mineral rights to the DOE and information will be provided for in the final LTSP).
- About 803 acres of BLM-managed federal surface rights and BLM-managed federal minerals rights (the DOE is in discussions with the BLM on the transfer of both surface and mineral rights to the DOE and this information will be provided for in the final LTSP).
- About 1,049 acres of institutional control areas: (1) approximately 255 acres of private land with groundwater restrictive covenants noted on deeds that will run with the land in perpetuity, and transfer to the DOE, and are durable and enforceable by the DOE; the surface rights will not transfer to the DOE; 38.4 acres of mineral rights remains in private ownership; the BLM manages the federal minerals rights on the remining property; the DOE is in discussions with the BLM on the transfer of both its surface and mineral rights to the DOE and this information will be provided for in the final LTSP, and (2) approximately 794 acres of private land with retention of the surface rights; and only subsurface rights that begin 7 feet below the ground/surface, which is generally the depth at which groundwater is first encountered, were obtained by WNI and will transfer to the DOE.

Institutional Controls (ICs) that employ restrictive covenants and deed annotations, and water use classifications were established by the licensee with the owners of three privately held properties that lie within the LTSB. These ICs, which are tied to the property, were previously approved by the NRC when it approved alternate concentration limits in September 2006,[9] and will transfer to the DOE, are of two types. First, is a restrictive covenant that prohibits human consumption or domestic use of groundwater within the site's LTSB (these are specifically for the McIntosh and Peterson properties). Second, is an IC on the ownership of the subsurface where groundwater occurs (i.e., deeper than 7 feet and specifically concerns the Claytor property). These ICs are presented in Appendix A of the PFLTSP.[10] The ICs are recorded on the property deeds for in the real property records of Freemont County, Wyoming, and automatically transfer to any future owner of the affected property, in perpetuity.

The NRC staff evaluated the description of ownership of the surface and subsurface of the site and ICs established for the property and concludes these are acceptable. As noted above, the NRC staff previously evaluated the institutional controls that have been developed for the surface and subsurface areas at the site not transferred to the Federal government and determined they are legal, durable, and enforceable and are adequate to prevent adverse

[9] ADAMS Accession No. ML062910216
[10] After the proposed real estate transactions are finalized and updated ownership information is available DOE will provide the updated information to the NRC staff in the final LTSP.

impacts to the tailings or site. The NRC staff concludes the land ownership description is acceptable. The NRC staff also reviewed the legal description and ownership of the land in the PFLTSP and finds it meets the requirements of 10 CFR 40.28(b)(1) and, therefore the legal description of the ownership of the land is satisfactory.

The NRC staff notes the description of the real estate in Appendix A of the PFLTSP contains pages left blank for the inclusion of updates to real estate transactions and ownership information that DOE commits to submitting in the final LTSP. The NRC staff will review the updates to real estate transaction and ownership information to be submitted as part of the final LTSP. The NRC staff will also review the land ownership description to verify that it is updated to state the final condition of the land ownership and continues to meet regulatory requirements.

Final Condition of the Disposal Site

The PFLTSP provides a description of final condition of the disposal site. Section 2.3.1 of the PFLTSP describes the final site closure conditions. Figures 2 and 4 are aerial views of the site, before and after reclamation. The regulations at 10 CFR 40.28(b)(2) require the description of the final site condition is adequate to provide future inspectors with a baseline to determine if changes at the site have occurred. Section D.2.2.2 of NUREG-1620 provides guidance on acceptance criteria that are acceptable to the NRC staff in assessing the final site condition.

In Section 2.4.1 of the PFLTSP, Figure 6 provides a site map and Figure 10 provides a cross section drawing of the disposal cell. The drawings provide an adequate level of detail to inform the reader of the location of site features, disposal cell liners, the placement of the tailings in the cell and radon and riprap covers. Therefore, the NRC staff has concluded that they are acceptable.

Section 2.4.1 of the PFLTSP describes the disposal cell design and Section 2.4.2 describes the storm water diversion system at the site. Figures 9, 11, and 12 are photographs of these features. The descriptions of the disposal cell design and diversion system are detailed enough and, allow inspectors to understand the features at the site and to have a baseline to determine if degradation of the features is occurring. Therefore, the NRC staff has concluded that the description of the disposal cell design is acceptable.

Figure 5 of the PFLTSP is a topographic map of the Split Rock site. The map is detailed enough to determine the elevations of the various features at the site and is, therefore, acceptable. Figures 1, 5, and 6 provide maps of the Split Rock site and vicinity. These maps adequately depict the location of the site and its proximity to other features near the site, as well as the final site configuration. Figures 2 and 4 of the PFLTSP are aerial views of the site before and after reclamation, Figure 9 is a photograph of the top of the disposal cell and Figures 11 and 12 are photographs of the diversion system for the site. The NRC staff has concluded that the vicinity maps, aerial views, and photographs are acceptable.

Section 2.3.2 of the PFLTSP describes the permanent site surveillance features which include 37 survey boundary monuments, 36 perimeter warning signs, an entrance warning sign, and a granite site marker. Figures 5 and 6 show the locations of perimeter signs and survey markers. Figure 7 shows the site marker and Figure 8 shows the warning signs at the Split Rock site.

The NRC staff finds information on these features to be consistent with standard practice, and therefore, concludes that the information on these features is acceptable.

Sections 2.5.3 to 2.5.6, 3.7.1, and Appendix E of the PFLTSP describe the groundwater characterization and groundwater monitoring network, which includes 11 monitoring wells and four surface water monitoring locations at the Sweetwater River along the north boundary of the site. Appendix E further describes the groundwater characterization in more detail and provides an evaluation of the groundwater and surface water monitoring data to quantify the rate and magnitude of change. The NRC staff concludes that the descriptions of the condition of the groundwater and surface water at the site, and the proposed groundwater and surface water monitoring program are of sufficient detail that future inspectors have a baseline to determine changes to the site and, therefore, is acceptable.

The NRC staff reviewed the description of the final site closure conditions in the PFLTSP and concludes the information is sufficiently detailed to provide future inspectors with a baseline to assess changes to the site that may require maintenance as required by 10 CFR 40.28(b)(2). Therefore, the NRC staff concludes that the discussion of the final site condition is adequate.

Long-Term Surveillance Program

The regulations at 10 CFR 40.28(b)(3) and 10 CFR Part 40, Appendix A, Criterion 12 require the PFLTSP provides a description of the surveillance program including: (1) frequency of inspection, (2) reporting to the Commission, (3) groundwater monitoring, (4) inspection personnel qualifications, (5) inspection procedures, (6) record keeping and quality assurance procedures. Section D2.2.3 of NUREG-1620 provides guidance on the detail that is acceptable to the NRC staff when assessing a long-term surveillance program. The NRC staff's evaluation of the DOE's surveillance program in the PFLTSP against the requirements of 10 CFR 40.28(b)(3) and 10 CFR Part 40, Appendix A, Criterion 12 is summarized below.

(1) Frequency of Inspection

Section 3.3 of the PFLTSP describes the site inspection program and Section 3.3.1 states that DOE will conduct inspections once each calendar year (once every 12 months if circumstances allow). If the inspection cannot be conducted, DOE will inform the NRC at least 30 days before the scheduled inspection date. An annual inspection meets the regulatory requirements in 10 CFR 40.28(b)(3) and 10 CFR Part 40, Appendix A, Criterion 12. Therefore, the NRC staff concludes the inspection frequency is acceptable.

(2) Reporting to the Commission

Section 3.4 of the PFLTSP discusses the requirements for reporting DOE's results of its annual inspection to the NRC within 90 days of the last UMTRCA Title II site inspection. The DOE plans to provide reports within 90 days meets the requirements of, and, therefore, the NRC staff has concluded that it is acceptable.

(3) Ground-Water Monitoring

Section 2.7.1 and Appendix E of the PFLTSP describes the plan for the long-term groundwater and surface water monitoring program for the Split Rock site. The purpose of the monitoring program is to ensure that the disposal cell performs as designed and that site-related contamination does not impact groundwater or surface water users outside of the LTSB adversely. The groundwater monitoring program for the northwest valley (NWV) of the site is designed to protect users of the Sweetwater River. The NWV monitoring program consists of four groundwater monitoring wells located between the disposal cell and the Sweetwater River located along the LTSB. The southwest valley (SWV) groundwater monitoring network consists of seven groundwater monitoring wells located between the disposal cell and two potential points of exposure, the Sweetwater River and groundwater supply wells around Jeffrey City, Wyoming. The monitoring program also includes four surface water monitoring points at the Sweetwater River. These sampling points include one monitoring point located upstream of the site, two points on the northern LTSB to monitor contaminant levels of discharge from the NWV groundwater contamination plume, and one monitoring point in a downstream sampling location. The downstream monitoring point will provide data on contamination of surface water leaving the site. The NRC staff finds the lateral locations of the groundwater monitoring wells were previously approved under the WNI license, and therefore, are acceptable. The locations of the surface water monitoring points are in locations near those of monitoring points previously approved under the WNI license, and are therefore, also acceptable.

As indicated in WNI's 1999 Site Ground Water Characterization and Evaluation[11], site-related groundwater contamination that exited in the NWV reached the Sweetwater River and continues to discharge into the Sweetwater River. The concentrations of the contaminants of concern (COC) measured at the river remain below applicable surface water protection standards.[12] The NRC staff reviewed groundwater data to assess the potential for future discharge to the Sweetwater River. The staff evaluated historical groundwater monitoring data that show groundwater concentrations of the COCs have been declining over time and expects concentrations to continue to decline in the future. Although negative impacts on the Sweetwater River are not anticipated, the NRC staff determined a groundwater monitoring program is necessary to track the COCs in the NWV plume and to demonstrate that concentrations of the COCs remain below applicable protection standards, while under custodial care of DOE.

According the PFLTSP, the screened depth of some groundwater monitoring wells may not be optimal for monitoring groundwater discharge to the Sweetwater River. The PFLTSP states,

> *The well screen depths may not be optimal for monitoring quality of groundwater discharge to the river, particularly at location WN-41B. This downgradient-most well in the NWV plume flowpath is a "sentinel well" for the river and is screened at a depth of 92.4 to 112.4 ft below land surface. Historical data show higher concentrations at this location at much shallower depths near the water table (SMI 1999b), which are more indicative of groundwater discharging to the river (see Appendix E for more detail). However, WN-41B is expected to capture a portion of the plume as it approaches the*

[11] SMI (Shepherd Miller Inc.), 1999. *Site Ground Water Characterization and Evaluation*, prepared for Western Nuclear Inc., Split Rock Project, Jeffrey City, Wyoming, December.

[12] The Sweetwater River is classified as a source for drinking water, thus is a Wyoming Class 2AB surface water, subject to the drinking water standards at 020-1 Wyo. R. Sections 1-4. The Wyoming drinking water standards adopt the standards of the Environmental Protection Agency.

Sweetwater River. Therefore, continued surface water monitoring is needed to verify that surface water quality is being maintained.

Despite the screened depth of WN-41B, the NRC staff finds that the screened depth of the point of compliance well (Well-5) in the NWV is satisfactory for monitoring groundwater quality at the shallower depths, where elevated concentrations of uranium were detected in 1999. WN-41B is expected to provide samples of a portion of the plume as it approaches the Sweetwater River. For these reasons, the NRC staff concludes the four monitoring wells in the NWV will: (1) be sufficient to track the movement of the NWV plume, and (2) provide an early warning of NWV groundwater contamination that could result in the surface water quality standards of the Sweetwater River to be exceeded. The NRC staff finds the surface water monitoring program described in the PFLTSP will ensure that surface water quality for the Sweetwater River is maintained.

Table 8 and Appendix E of the PFLTSP describe the monitoring frequency and how the groundwater and surface water are evaluated periodically in the monitoring program. The average linear groundwater flow velocity at the Split Rock Site is estimated to be 1 ft/day. The DOE will conduct annual groundwater and surface water monitoring for the first 5 years. The DOE will use the annual monitoring data to develop a baseline for the long-term monitoring program. The monitoring frequency will decrease to every 3 years after 5 years of annual monitoring. The long-term monitoring program will be reevaluated by the DOE every four monitoring events (12 years) to assess whether the long-term monitoring program can be discontinued. The DOE will submit monitoring evaluations as required by the NRC's regulations. In addition, the DOE commits to submitting proposed modifications to the long-term program to the NRC for concurrence prior to implementation. The NRC staff evaluated the frequency of groundwater and surface water monitoring and finds it sufficient to protect the public and environment at the point of exposure, and therefore, is acceptable.

The DOE's procedures for sampling and analysis of groundwater and surface water for long-term surveillance at the Split Rock site will adhere to the DOE's Sampling and Analysis Plan for DOE's Legacy Management Sites.[13] The DOE's sampling and analysis plan identifies procedures for site monitoring of groundwater and surface water sampling and analysis are in accordance with American Society for Testing and Materials (ASTM) standards. For these reasons, the NRC staff finds these groundwater and surface sampling and analysis procedures are acceptable.

Table 8 of the PFLTSP identifies the analytes that will be measured in samples obtained during the long-term groundwater and surface water monitoring. The analytes of concern (COCs) are nitrate, sulfate, selenium, and natural uranium, which were established by the DOE's evaluation of historical data provided in Appendix E of the PFLTSP. The NRC staff finds the measurement of these analytes provides reliable monitoring data because the analytes indicate the presence of tailings material and are not significantly affected by retardation reactions. The measurement of these analytes is an NRC-approved monitoring methodology described in Section 2.2.3 of NUREG-1620, and the staff finds this acceptable.

Table 9 of the PFLTSP provides the established alternate concentrations limits (ACLs) and Wyoming groundwater and surface water protection standards. The NRC staff evaluated the

[13] https://www.energy.gov/lm/articles/sampling-and-analysis-plan-us-department-energy-office-legacy-management-sites

DOE's plan to compare the ACLs for the site to the groundwater and surface water monitoring results and find it will provide an assessment of disposal cell performance and whether the protection standards at the point of exposure are being met. The NRC staff finds this monitoring and assessment process meets the regulatory requirements by following the NRC-approved procedures in Section 2.2.3 of NUREG-1620, and therefore, is acceptable.

In the event that standards for groundwater or surface water are exceeded, the DOE's PFLTSP calls for the NRC to be notified, and for the DOE to submit a proposed corrective action, which will be reviewed by the NRC. Specifically, in the event a surface water standard is exceeded, the DOE's plan states it will work with the NRC and the Wyoming Department of Environmental Quality (WDEQ) to determine what additional actions, if any, are warranted (based on the WDEQ Water Quality Division's evaluation of the designated local use of the Sweetwater River). Section 3.7.1 of the PFLTSP, states the results of the groundwater and surface water monitoring program will be included in the annual inspection and monitoring report submitted to NRC following the process described in Section 3.4. The DOE will submit groundwater monitoring results with a map that includes groundwater elevation data and hydrographs, and concentration versus time graphs for all monitoring constituents in all wells and at all surface water monitoring locations will be reported. The NRC staff evaluated the groundwater and surface water monitoring program provided in the PFLTSP and concludes that the plan for the long-term groundwater and surface water monitoring program for the Split Rock site is acceptable.

Section 3.8 of the PFLTSP describes how the institutional controls (ICs) at the Split Rock site will be monitored. Institutional controls were established by the licensee with the owners of three privately-held properties that lie within the LTSB, after unsuccessful attempts to acquire the land. These ICs, which are tied to the property through deed notations, were approved by NRC, and will be transferred to DOE. The ICs apply to the deeded property and automatically transfer to any future owner of the affected property. The groundwater restrictive covenants on the McIntosh and Peterson properties prohibit human consumption or domestic use of groundwater within the site's LTSB. The surface rights of these properties do not transfer to the DOE, but stay in private hands, subject to the ICs on the deeds. The subsurface mineral rights on 38.4 acres remain in private ownership. The BLM holds the remaining subsurface rights at this time, but disposition will be addressed in the final LTSP. The institutional controls for the Claytor property involve a quitclaim deed transferring ownership of subsurface rights to WNI of a portion of the subsurface where groundwater occurs, that is, deeper than 7 ft, which is the shallowest depth at which groundwater could be encountered. These institutional controls on subsurface rights will transfer to the DOE. The remainder of the surface and subsurface property within the site's LTSB is owned by the federal government or the State of Wyoming.

Due to commitments in the PFLTSP at Section 3.8, the DOE will be responsible for confirming the effectiveness of the groundwater ICs to provide protection from site-related groundwater contamination within the LTSB. Specifically, the DOE will contact current landowners and confirm they are aware of the ICs and documenting that groundwater is not being used for human consumption or domestic purposes for the duration of the DOE's custodial obligations. The DOE may determine that groundwater ICs are no longer be needed. However, termination of any established groundwater IC will only occur after concurrence by the NRC.

The PFLTSP states that beginning in 2025, and every 5 years thereafter, DOE will examine records at the Wyoming State Engineer's Office to identify any significant changes in water

demands near the site. The DOE will also confirm that drinking water wells have not been established within the site's LTSB.

The NRC staff reviewed the IC monitoring actions that the DOE will undertake as custodian of the Split Rock site and concludes the monitoring actions are adequate to ensure that the ICs remain in place and continue to function properly. Therefore, the NRC staff concludes that the DOE's IC monitoring program is acceptable.

(4) Inspection Personnel Qualifications

Section 3.3.4 of the PFLTSP discusses the qualifications of the individuals who will conduct inspections. Inspectors must be scientists and/or engineers with specific expertise to enable them to evaluate the site-specific conditions. Inspections will be performed by a minimum of two inspectors with experience in prior inspections and who have undergone annual training. The NRC staff determined the DOE's description is consistent with the inspection criteria listed in Section D.2.2.3(4) of NUREG-1620, which the staff has found meets the requirements of 10 CFR 40.28(b)(3) and 10 CFR Part 40, Appendix A, Criterion 12. Therefore, the NRC staff concludes that the DOE program will ensure site inspections are conducted by individuals with the necessary expertise and qualifications to evaluate the site.

(**5) Inspection Procedures**

Sections 3.3.2 and 3.3.3 of the PFLTSP discuss the DOE inspection procedures and Appendix C provides the inspection checklist that DOE will use in performing inspections. The DOE will perform inspections of the site to confirm the integrity of visible features and to determine the need, if any, for maintenance, additional inspections, or monitoring. The site is divided into inspection areas and a walkthrough inspection will be conducted, using the site inspection checklist. The primary purpose of the site inspection will be to look for evidence of degradation, such as cover cracking or settlement, wind or water erosion, structural discontinuity of the disposal cell, vegetation condition, and animal or human intrusions that could result in adverse impacts to the site. Evidence of modifying processes that could be detrimental to the performance of the disposal system will be evaluated. The inspectors will also check for unauthorized entry, surrounding land use and disturbance of site features and photographs of inspected areas will be taken. The NRC staff reviewed the DOE's descriptions of the site inspections, inspection procedures, and the site inspection checklist and finds these procedures are adequate to ensure that the DOE will be able to detect changes to the site in a timely manner and protect public health and safety. For these reasons, the NRC staff concludes that the DOE's inspection procedures meet the requirements of 10 CFR 40.28(b)(3) and 10 CFR Part 40, Appendix A, Criterion 12, and is acceptable.

(6) Recordkeeping and Quality Assurance Procedures

Section 3.9 of NUREG-1620 discusses DOE record retention and management and Section 3.10 discusses the quality assurance program. The DOE commits to maintain records important to the protection of public health and safety and the management of the site. The records will be managed in accordance with the DOE's records management requirements, specified in the Records and Information Management Transition Guidance. Additionally,

inactive records will be preserved in collections under the DOE's control. The NRC staff concludes that the DOE's records management is adequate. The DOE's quality assurance program guidance document, Guidance for Developing and Implementing Long-Term Surveillance Plans for UMTRCA Title I and Title II Disposal Sites, LMS/S00336, is dated November 2012. The NRC staff concludes that the quality assurance procedures are adequate and meet the requirements of 10 CFR 40.28(b)(3) and 10 CFR Part 40, Appendix A, Criterion 12.

Criteria for Follow-up Inspections

The regulations at 10 CFR 40.28(b)(4) require that criteria for conducting follow-up inspections made in response to unusual observations from routine inspections or extreme natural events and presents criteria for these inspections the NRC staff has found acceptable. The NRC staff evaluated the DOE's surveillance program in the PFLTSP.

Section 3.5.1 of the PFLTSP discusses the criteria for a follow-up inspection, Section 3.5.2 discusses the personnel that will conduct a follow-up inspection, and Section 3.5.3 discusses reporting the results of follow-up inspections. The PFLTSP outlines the circumstances when a follow-up inspection would be warranted, and how the DOE/LM will use a graded approach based on the urgency of the site-specific circumstance in deciding when to conduct the follow up inspection. The PFLTSP describes how DOE will respond to unusual damage or disruption that threatens or compromises site safety, security, or integrity, including the personnel that will be involved and how the DOE will report the situation to the NRC. The NRC staff's review of Sections 3.5.1 and 3.5.2 of the PFLTSP determined that the DOE's follow-up inspection program has processes in place to respond and evaluate situations where site integrity or safety are compromised. For these reasons, the NRC staff the follow-up inspection program, as described in the PFLTSP, is adequate.

Sections 3.6.5 of the PFLTSP discuss how DOE will respond to seismic events. The PFLTSP states that the DOE subscribes to the U.S. Geological Survey National Earthquake Information Center for seismic event notifications if a magnitude 3.0 or greater on the Richter scale, within 0.3 degree (about 20 miles [30 kilometers]) of the site or magnitude 5.0 or greater on the Richter scale, within 1.0 degree (about 70 miles [110 kilometers]) of the site.

The NRC staff reviewed the criteria and approaches the DOE will employ in follow-up inspections to address unusual observations from routine inspections and extreme natural events and determined this information meets the requirements of 10 CFR 40.28 and Appendix A, Criterion 12, and is consistent with guidance in Section D2.2.4 of NUREG-1620. For these reasons, the NRC staff concludes that the DOE has shown it will apply the criteria for follow-up inspections that are required of a long-term custodian, and therefore is adequate.

Criteria for Instituting Maintenance or Emergency Measures

Section 3.6.1 of the PFLTSP describes the routine maintenance measures that the DOE will undertake at the site, including repair and maintenance of site surveillance features. Section 3.6.2 of the PFLTSP states that emergency measures are the actions that the DOE will take in response to "unusual damage or disruption" that threatens or compromises site safety, security, or integrity. Section 3.6.3 outlines the graded approach that the DOE will use to determine the level of response to emergencies at the site. The NRC staff evaluated the approach described in the PFLTSP and finds maintenance and other emergency measures will be sufficient to maintain the integrity of the disposal site and to protect the health and safety, as required by 10 CFR 40.28 and 10 CFR Part 40, Appendix A, Criterion 12.

The NRC staff also reviewed the DOE's procedures for initiating maintenance or emergency measures in the PFLTSP. The staff determined the criteria the DOE proposes are consistent

with Section D2.2.5 of NUREG-1620 and were fully addressed. The NRC staff concludes that the criteria the DOE will use in determining when to initiate maintenance or emergency measures are adequate.

CONCLUSION

Based on NRC staff's review of the PFLTSP for the Split Rock site, the NRC staff concludes that the contents satisfy the associated requirements in 10 CFR 40.28 and 10 CFR Part 40, Appendix A, Criterion 12 and adopts the associated criteria in NUREG-1620 for the long-term surveillance and maintenance of the Split Rock tailings disposal site. The NRC staff finds that the DOE's PFLTSP meets the specific requirements in 10 CFR 40.28(b) to provide: (1) a legal description of the disposal site to be transferred and licensed; and (2) a detailed description of the final conditions of the disposal site, including existing ground-water characterization; and (3) a description of the long-term surveillance program, including proposed inspection frequency and reporting to the Commission (as specified in Appendix A, Criterion 12 of 10 CFR Part 40, frequency and extent of ground-water monitoring, appropriate constituent limits for ground water; inspection personnel qualifications, inspection procedures, record keeping, and quality assurance procedures; and (4) the criteria for follow-up inspections in response observations from routine inspections or extreme natural events; and (5) the criteria for instituting maintenance or emergency measures.

For these reasons, the NRC staff accepts the PFLTSP. After the LTSP is finalized and the proposed real estate instruments and real estate transactions are finalized and updated ownership information is submitted, the NRC staff will review the final LTSP.