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subject: Reassessment of MONPAR Analysis for Use in the 2026 Compliance Recertification Application

The Compliance Certification Application (CCA) (U.S. DOE 1996) contains an analysis which was used to fulfill the regulatory requirement at 40 CFR 194.42 for monitoring. The CCA analysis, which describes the Compliance Monitoring Program, was documented in CCA Appendix MON, Attachment MONPAR (termed the MONPAR analysis). Information from the MONPAR analysis was used to determine what Compliance Monitoring Parameters (COMPs) should be included in a monitoring program to address U.S. Environmental Protection Agency (EPA) requirements. The U.S. Department of Energy (DOE) is required by the Land Withdrawal Act (U.S. Congress 1996) to demonstrate continued compliance with the EPA's disposal standards. DOE is developing the fifth Compliance Recertification Application (CRA) to document WIPP's continued compliance with the EPA standards. A reassessment was made of MONPAR at the time of the first CRA (Kirkes and Wagner 2003). Reassessments were also made for the second, third, and fourth recertifications (Wagner 2008, Wagner 2013, and Wagner 2018). Similarly, a reassessment is required for the fifth recertification application.

The CRA-2026 is the fifth recertification application for the WIPP submitted by the DOE for EPA approval. A MONPAR reassessment was completed (Kicker 2023) in accordance with SP 9-8 (SNL 2020, Section 2.5). Based on the review of activities, conditions and experimental programs that occurred since the CRA-2019, the 2023 reassessment determined that the conclusions of the MONPAR analysis remain valid. The 2023 reassessment included changes from the Replacement Panels Planned Change Request (RPPCR) performance assessment (PA). Changes from the RPPCR PA to the CRA-2026 PA are documented in the

Analysis Plan for the 2026 WIPP Compliance Recertification Application Performance Assessment, AP-214 (Hansen et al. 2025) and include following:

1. The inventory for the final state repository will be based on the Full Repository Performance Assessment Inventory Report – 2024 (Van Soest 2025). An inventory for the interim state repository will be developed based on the Annual Transuranic Waste Inventory Report (ATWIR) – 2024 (U.S. DOE 2024).

2. The Salado flow and transport computational grid for the final state repository is adjusted primarily for consistency with repository design information. A Salado flow and transport computational grid for the interim state repository will be developed which represents a total of 12 waste panels, rather than 19 waste panels as in the PA for the RPPCR.

3. Repository parameters ABERM, VREPOS, AREA_CH, and FVW are updated to be consistent with the interim and final state repositories.

4. For anhydrite marker beds, the van Genuchten-Parker capillary pressure function (selected when parameter RELP_MOD=6) is modified to include a lower bound on capillary pressure.

5. The parameter DBRMINBV for the minimum brine volume for a direct brine release (DBR) release is updated for each repository, since this parameter depends on repository excavated volume.

6. Baseline solubilities for +III, +IV and +V actinides are updated in conjunction with the inventory for each repository.

7. Baseline solubility for +VI actinides is updated based on analysis by Los Alamos National Laboratory (LANL).

8. Uncertainties for baseline solubilities are updated to account for new information since the RPPCR.

9. Colloid concentration parameters are updated based on new analyses since the RPPCR.

10. The location of the Culebra Release Point 2 (CRP 2) that represents Panels 11, 12 and 13 in the RPPCR is adjusted to represent only the replacement Panels 11 and 12 for the interim state repository. The same CRP 2 location is used for Panels 11, 12 and 13 in the final state repository.

11. The drilling rate and frequencies of borehole plugging patterns are updated to account for new information since the RPPCR.

Changes listed above are discussed in more detail by Hansen et al. (2025).

As discussed in Kicker (2023), waste activity is currently a COMP, and inventory parameter changes do not impact the original MONPAR conclusions. The changes to the CRA-2026 PA include several PA implementation changes that have not impacted MONPAR conclusions because they do not affect COMPs directly.

Based on the Kicker (2023) reassessment and the review of subsequent changes in PA, this reassessment has determined that the conclusions of the MONPAR analysis remain valid and its conclusions continue to be adequate for inclusion in the CRA-2026.

References:

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