40 CFR Part 191
Subparts B and C
Compliance Recertification Application 2026
for the
Waste Isolation Pilot Plant

Scope of Compliance Assessments
(40 CFR 194.54)

United States Department of Energy
Waste Isolation Pilot Plant

Carlsbad Field Office
Carlsbad, New Mexico

Compliance Recertification Application 2026
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ACRONYMS AND ABBREVIATIONS

CCA	Compliance Certification Application
CFR	Code of Federal Regulations
CRA	Compliance Recertification Application
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FEP	feature, event, and process
SO-C	screened-out consequence
PA	performance assessment
UP	undisturbed performance
WIPP	Waste Isolation Pilot Plant

54.0 SCOPE OF COMPLIANCE ASSESSMENTS (40 CFR 194.54)

54.1 Requirements

§ 194.54 Scope of Compliance Assessments

(a) Any compliance application shall contain compliance assessments required pursuant to this part. Compliance assessments shall include information which:

(1) Identifies potential processes, events, or sequences of processes and events that may occur over the regulatory time frame;

(2) Identifies the processes, events, or sequences of processes and events included in compliance assessment results provided in any compliance application; and

(3) Documents why any processes, events, or sequences of processes and events identified pursuant to paragraph (a)(1) of this section were not included in compliance assessment results provided in any compliance application.

(b) Compliance assessments of undisturbed performance shall include the effects on the disposal system of:

(1) Existing boreholes in the vicinity of the disposal system, with attention to the pathways they provide for migration of radionuclides from the site; and

(2) Any activities that occur in the vicinity of the disposal system prior to or soon after disposal. Such activities shall include, but shall not be limited to: Existing boreholes and the development of any existing leases that can be reasonably expected to be developed in the near future, including boreholes and leases that may be used for fluid injection activities.

54.2 Background

The individual and groundwater protection requirements of 40 Code of Federal Regulations (CFR) 191.15 and 40 CFR Part 191 Subpart C (U.S. EPA 1993) place limitations on both the potential radiation exposure of individuals and the possible levels of radioactive contamination of groundwater resulting from disposal of waste in the Waste Isolation Pilot Plant (WIPP). The criteria for compliance are provided in 40 CFR 194.51 through 194.55 (U.S. EPA 1996). The individual protection requirement focuses on the annual radiation dose of a maximally exposed person living on the surface just outside the Land Withdrawal Act boundary. In particular, 40 CFR 191.15 requires that the WIPP be constructed in such a manner as to provide a reasonable expectation that, for 10,000 years after waste disposal, undisturbed performance (UP) of the disposal system will not cause the annual committed effective dose equivalent (hereafter called "dose") to exceed 15 millirems (150 microsieverts) to any member of the public in the accessible environment. Part 191 Subpart C also requires that underground sources of drinking water be protected, at least to the extent prescribed by the National Primary Drinking Water Regulations of 40 CFR Part 141 (U.S. EPA 2003), as they existed on January 19, 1994 (per 40 CFR 191.24(a)(1)).

As with performance assessments (PAs), compliance assessments must consider features, events, and processes (FEPs) and the associated uncertainties. Performance assessments are

used to demonstrate compliance with the containment requirements of 40 CFR 191.13 (U.S. EPA 1993). Compliance assessments may be regarded as a "subset" of PAs as the latter incorporate FEPs related to undisturbed conditions that are necessary for the compliance assessment. Title 40 CFR 194.54 outlines the scope for assessing WIPP's compliance with the individual dose and groundwater protection requirements.

The U.S. Environmental Protection Agency (EPA) reviewed the U.S. Department of Energy's (DOE) compliance with the 40 CFR 194.54 criteria (U.S. EPA 2022a). The DOE reevaluated FEPs in the 2019 Compliance Recertification Application (CRA-2019), and the EPA determined that the CRA-2019 changes were necessary and appropriate (U.S. EPA 2022b). The EPA found that DOE's Appendix IGP-2019 provided the supplemental information needed to address the individual and groundwater protection requirements of 40 CFR 191 (U.S. EPA 2022a, Section 54).

The EPA received no public comments on the DOE's continued compliance with the scope of the compliance assessment requirements outlined in 40 CFR 194.54. Following its review, the EPA determined that the DOE continued to comply with the requirements of 40 CFR 194.54 (U.S. EPA 2022a).

Information and data from previous compliance certification and recertification applications, which form the basis of past DOE compliance positions, are found in the CRA-2019 (U.S. DOE 2019).

54.3 Changes or New Information Since the CRA-2019

There are no significant changes related to compliance with the 40 CFR 194.54 requirements since the CRA-2019.

One screening decision for the UP FEPs has changed for the CRA-2026. The FEP N71 "Microbes" was determined to be of low consequence, and therefore it was changed to screened-out consequence (SO-C) only, removing the reference to "UP-for colloidal effects and gas generation." The SO-C screening decision focuses solely on naturally occurring microbes, while gas generation due to microbial degradation is discussed in FEP W44, Degradation of Organic Material (Kirkes and McCormick 2023, Section 3).

Appendix IGP-2026, Section IGP-2.1 demonstrates that the DOE continues to consider existing boreholes and potential boreholes as required by 40 CFR 194.54(b)(1) and (b)(2). As such, FEP H36, "Borehole Induced Fluid Flow" is screened into the undisturbed performance scenario for the historic, current, and near-future time periods. The CRA-2026 PA analysis continues to confirm that the most plausible undisturbed transport pathway is through the anhydrite marker beds, as assumed in previous CRAs and the Compliance Certification Application (CCA) (Appendix IGP-2026, Section IGP-2.1). The DOE's approach to compliance assessments remains unchanged.

The DOE has not changed its dose calculation methodology. The DOE continues to assume a hypothetical borehole at the WIPP site boundary and still applies PA results in a bounding analysis (Appendix IGP-2026, Section IGP-2.2). The DOE continues to determine that the maximum release concentrations predicted for undisturbed conditions are lower than the CCA predictions; therefore, new bounding dose calculations were not needed for the CRA-2026 (Appendix IGP-2026, Section IGP-2.2). The DOE has also reconsidered certain parameters, such as average household water use and associated water-quantity determinations, based on information acquired since the CRA-2019 (Appendix IGP-2026, Sections IGP-3.1 and IGP-3.2). The new information provided by the DOE in Appendix IGP-2026 does not warrant changes to the original analyses; therefore the scope of the compliance assessment remains unchanged.

Based on this information, the DOE believes continued compliance with the requirements of 40 CFR 194.54 is demonstrated.

54.4 References

(*Indicates a reference that has not been previously submitted.)

Kirkes, R. and J. McCormick. 2023. Analysis Report for the Reassessment of Features, Events, and Processes for the 2024 Compliance Recertification Application. Revision 0. ERMS 580866. Carlsbad, NM: Sandia National Laboratories.*

U.S. Department of Energy. 2019. Title 40 CFR 191 Subparts B and C Compliance Recertification Application 2019 for the Waste Isolation Pilot Plant (March). Carlsbad, NM: Carlsbad Field Office. DOE/WIPP-2019-3609.*

U.S. Environmental Protection Agency (U.S. EPA). 1993. 40 CFR Part 191: Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes: Final Rule. *Federal Register*, vol. 58 (December 20, 1993): 66398–66416.

U.S. EPA. 1996. 40 CFR Part 194: Criteria for the Certification and Recertification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations: Final Rule. *Federal Register*, vol. 61 (February 9, 1996): 5223–5245.

U.S. EPA. 2003. 40 CFR Part 141: National Primary Drinking Water Regulations: Final Rule. *Federal Register*.

U.S EPA. 2022a. Section 54 Scope of Compliance Assessments. 2019 Compliance Recertification Application Review Document (CARD) (April) (pp. 77 through 78). Washington, DC: Office of Radiation and Indoor Air.*

U.S. EPA 2022b. Technical Support Document for Section 194.23, 194.32, and 194.54 Review of Changes to WIPP Performance Assessment Features Events, and Processes in the CRA-2019.

April 2022. Washington, DC: Office of Radiation and Indoor Air. EPA Docket FDMS Docket ID No. EPA-HQ-OAR-2019-0534.*