PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: June 30, 2026
Status: Posted
Posted: July 09, 2026
Tracking No. mr2-44ip-fzl4
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0211
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Anonymous

Submitter Information

Name: Anonymous Anonymous

General Comment

I recommend we quickly enf the trump republican nuclear ambitions, for obvious safety reasons. trump and the republicans could not even fix a pool. The blunder in Veneaula and Iran demonstrate their incompetence.
The ilegal and inflationary tariffs demonstrate their corruption
We need to protect ourselves from nuclear disasters and the republican incompetence

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 20, 61, 73, and 150

[NRC–2011–0012, NRC–2015–0003, and NRC–2017–0081]

RIN 3150–AI92

Integrated Low-Level Radioactive Waste Disposal

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule and draft guidance; public meeting; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations that govern the land disposal of low-level radioactive waste to expand regulatory coverage to include certain transuranic wastes. The rule also introduces a new risk-informed framework for low-level waste disposal in which sites can develop waste acceptance criteria based on site-specific characteristics rather than using prescriptive limits. The proposed rule would allow for a graded approach: facilities that do not plan to accept significant quantities of long-lived radionuclides or Greater-Than-Class C waste will only need to meet a streamlined set of requirements, while those managing these waste streams must conduct technical assessments to ensure long-term safety. The proposed rule would also introduce new options for disposal of higher concentrations of waste, providing new alternatives for safe low-level waste management. These innovations support public health and environmental protection, as well as safe disposal of low-level radioactive waste, encourage operational efficiency, and offer greater flexibility for both current and future disposal facilities. In addition, the NRC is issuing draft implementing guidance for public comment.

DATES: Comments must be submitted electronically using *https://www.regulations.gov* no later than 11:59 p.m. eastern time on August 17, 2026.

ADDRESSES: Submit your comments, identified by Docket ID NRC–2011–0012, at *https://www.regulations.gov.* If your material cannot be submitted using *https://www.regulations.gov,* call or email the individuals listed in the **FOR FURTHER INFORMATION CONTACT** section of this document for alternate instructions.

Do not include any personally identifiable information (such as name, address, or other contact information) or confidential business information that you do not want publicly disclosed. All comments are public records; they are publicly displayed exactly as received, and will not be deleted, modified, or redacted. Comments may be submitted anonymously.

Follow the search instructions on *https://www.regulations.gov* to view public comments.

You can read a plain language description of this proposed rule at *https://www.regulations.gov/docket/NRC-2011-0012.* For additional direction on obtaining information and submitting comments, see ''Obtaining Information and Submitting Comments'' in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: George Tartal, Office of Nuclear Material Safety and Safeguards, telephone: 301–415–0016, email: *George.Tartal@nrc.gov;* and Priya Yadav, Office of Nuclear Material Safety and Safeguards, telephone: 301–415–6667, email: *Priya.Yadav@nrc.gov.* Both are staff of the U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

SUPPLEMENTARY INFORMATION:

Executive Summary

A. Need for the Regulatory Action

The NRC is proposing to amend its regulations in part 61 of title 10 of the *Code of Federal Regulations* (10 CFR), ''Licensing Requirements for Land Disposal of Radioactive Waste,'' to require, for existing low-level waste (LLW) disposal facilities that accept LLW containing significant quantities of long-lived radionuclides and future applications for disposal of LLW (including Greater-Than-Class C (GTCC) waste), new and revised site-specific technical analyses. Currently, many GTCC waste streams are stranded at operating reactors, sealed-source facilities, and Department of Energy (DOE) facilities. As explained in the technical analysis supporting this rule, some of those GTCC waste streams may present radiological hazards that could be appropriate for land disposal. However, the NRC's current regulations in part 61 are insufficiently flexible to accommodate land disposal of those waste streams, absent a special finding from the Commission. This rule would modernize the NRC's regulations by permitting disposal of these waste streams in land disposal facilities, provided the applicant makes an appropriate safety case. This modernization will not only provide greater flexibility for addressing existing GTCC waste streams but would also widen the scope of disposal options for waste streams from emerging technologies.

Providing this flexibility for future waste streams is part of a coherent Federal effort. While the DOE builds the industrial base for the nuclear lifecycle, through programs such as the Nuclear Lifecycle Innovation Campuses that would provide an integrated approach to managing the nuclear fuel cycle, the NRC's efforts to modernize waste disposal will provide a clear licensing pathway for the back end of the fuel cycle. In concert, these activities will help reestablish the United States as a global nuclear energy leader with technically sound life cycle management approaches for all nuclear waste except spent nuclear fuel and high-level radioactive waste. However, while this rulemaking provides more flexible disposal options for waste classified as GTCC, it does not alter legal requirements or policies to dispose of high-level radioactive waste or spent fuel in a geological repository including the Nuclear Waste Policy Act, 42 U.S.C. 10101, *et seq.* Specifically, this proposed rule would not redefine what constitutes high-level radioactive waste.

The rule revisions would also permit the development of site-specific waste acceptance criteria (WAC) based on the results of these analyses. These amendments are needed to ensure that LLW streams that are significantly different from those considered during the development of the current regulations (*e.g.,* significant quantities of depleted uranium) can be disposed of safely in the near surface and meet the performance objectives for land disposal of LLW. These amendments would also allow the use of site-specific information to demonstrate compliance with performance objectives that are designed to protect public health and safety and the environment. The NRC is also proposing to consolidate and integrate criteria for NRC licensing of the disposal of GTCC waste streams that meet the regulatory requirements for land disposal. The NRC is also proposing editorial changes within 10 CFR part 61 and conforming changes to regulations in 10 CFR parts 20, 73, and 150. The proposed revisions improve alignment of NRC requirements with current health and safety standards.

This proposed rule would affect existing LLW facility licensees and future applicants to varying degrees. All future license applicants that are regulated by the NRC or by an Agreement State would be required to meet the revised regulations, subject to compatibility categories assigned to each NRC regulation for Agreement State equivalent regulatory frameworks.

Any currently licensed LLW site that plans to apply to NRC for a license to dispose of GTCC waste or plans to accept significant quantities of long-lived radionuclides after the effective date of this rule or after the effective date of equivalent Agreement State regulations, would be required to meet the revised regulations.

Currently operating LLW facilities that do not plan to apply to NRC for a license to dispose of GTCC waste or plan to accept significant quantities of long-lived radionuclides after the effective date of this rulemaking would not be required to adopt substantially new or revised requirements. Some existing requirements that apply to these facilities would be clarified.

Finally, the NRC has developed a draft guidance document for comment, NUREG–2175, Revision 1, ''Guidance for Conducting Technical Analyses for 10 CFR part 61.'' This document provides guidance on the development of information and analyses submitted by licensees or license applicants to demonstrate that they meet the new regulatory requirements.

B. Major Changes

- Existing LLW facility licensees that do not accept significant quantities of long-lived radionuclides under Agreement State licenses: These facilities need not comply with the new proposed requirements in §§ 61.10(c), 61.13(a) through (e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), 61.50(a) and (b) and 61.58 and may instead continue to meet the existing part 61 requirements, which would be retained in §§ 61.13(f), 61.41(c), 61.42(c), and 61.50(c).
- Existing LLW facility licensees that do not apply to the NRC for a license to accept GTCC waste: These facilities need not comply with the requirements in §§ 61.10(c), 61.13(a) through (e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), 61.50(a) and (b) and 61.58 and may instead continue to meet existing part 61 requirements which would be retained in §§ 61.13(f), 61.41(c), 61.42(c) and 61.50(c).
- Existing LLW disposal facilities that do plan to accept GTCC waste or significant quantities of long-lived radionuclides: These facilities must comply with the new proposed technical analysis, intruder assessment, and other revised requirements.
- Introduction of site-specific and generic WAC: Allows facilities to develop waste acceptance criteria tailored to their site-specific technical analyses, or to use generic criteria based on existing LLW classification requirements (§ 61.58). This flexibility supports safe and efficient disposal practices.
- Specification of compliance periods: Specification of a 1,000-year compliance period for sites that do not contain significant quantities of long-lived radionuclides or a 10,000-year compliance period for sites that are planning to accept significant quantities of long-lived radionuclides (§§ 61.2, 61.41(a), and 61.42(a)).
- Requirements for performance period analyses: Requires additional, potentially more qualitative analyses for post-closure periods beyond 10,000 years if significant quantities of long-lived radionuclides are disposed (§ 61.13(e)), to ensure long-term safety.
- New provisions for near-surface and specialized land disposal facilities: Introduces requirements for disposal of GTCC waste containing certain concentrations of radionuclides (§§ 61.13 and 61.52) at both near-surface and specialized land disposal facilities.
- Establishment of thresholds for radionuclide concentrations: Specification of thresholds for radionuclide concentrations above which GTCC waste is generally not acceptable for near-surface disposal, and for any type of land disposal. This ensures only suitable waste is managed at each facility type (§ 61.55).
- Clarification of NRC regulatory authority over GTCC waste: Provides that regulation of GTCC waste disposal is not an area of regulation that can be relinquished to Agreement States. As such, the NRC would retain authority over GTCC waste disposal.
- Technical analyses for GTCC waste: Requires operational safety assessment and analyses for demonstration of additional waste characteristic requirements to demonstrate safe disposal of GTCC waste (§§ 61.13(c) and 61.56).
- Criticality safety: Clarifies that requirements for avoiding accidental criticality during storage of special nuclear material (SNM) prior to disposal and waste emplacement for disposal do not apply for radioactive waste that meets the exemption requirements under 10 CFR 71.15(c) as non-fissile material (§ 61.16(b)) and requires that the near-surface disposal of GTCC waste streams containing SNM in quantities subject to 10 CFR 70.24 include design features to limit the reconcentration of fissile material following disposal (§ 61.16(b)(3)).
- Physical protection: Clarifies the applicable physical protection requirements for LLW containing dilute concentrations of SNM of low strategic significance or a Category III quantity of SNM (§ 73.67).
- ''As low as is reasonably achievable'' (ALARA) requirements: Replaces the ''as low as is reasonably achievable'' requirements in the performance objectives for protection of the general population from releases of radioactivity and protection of individuals during operations in §§ 61.41 and 61.43, respectively, with references to dose limits in 10 CFR part 20. Other requirements in the proposed rule continue to reflect a graded approach to dose management for part 61.

C. Costs and Benefits

The NRC prepared a draft regulatory analysis to determine the expected quantitative costs and benefits of this proposed rule and associated guidance as well as qualitative factors to be considered in the NRC's rulemaking decision. The conclusion from the 30-year analysis is that this rule and associated guidance would result in net cost savings to the industry, Agreement States, and the NRC of $39.4 million using a 7-percent discount rate and $69.9 million using a 3-percent discount rate. The net annualized cost savings at a 7-percent discount rate are approximately $3.17 million per year, and $3.57 million per year at a 3-percent discount rate.

The draft regulatory analysis also includes a qualitative analysis of the direct and indirect benefits from risks that could be avoided if the NRC adopts the rule. The principal qualitative benefits of the proposed rule include: (1) ensuring that LLW streams that are significantly different from those considered during the development of the current regulations (*e.g.,* significant quantities of depleted uranium, blended LLW, and GTCC waste streams) can be disposed of safely and meet the performance objectives for land disposal of LLW; (2) facilitating the use of site-specific information and up-to-date dosimetry methodology in site-specific technical analyses to ensure public health and safety is protected; and (3) promoting a risk-informed regulatory framework that specifies what requirements need to be met and provides licensees or applicants flexibility regarding what information or approach they use to satisfy those requirements.

For more information, please refer to the draft regulatory analysis cited in the Availability of Documents section of this proposed rule.

Table of Contents

I. Obtaining Information and Submitting Comments
A. Obtaining Information

B. Submitting Comments
II. Executive Order 14300: Ordering the Reform of the Nuclear Regulatory Commission
III. Background
A. Existing Regulatory Framework
B. Previous Rulemaking Activities
C. Integration of the Rulemakings
D. Public Interactions During Proposed Rule Development
IV. Discussion
A. Objectives of This Proposed Rule
B. Applicability and NRC Authority Over GTCC Disposal
C. Technical Areas With Proposed Revisions to Requirements
V. Specific Request for Comment
VI. Regulatory Flexibility Certification
VII. Regulatory Analysis
VIII. Backfitting and Issue Finality
IX. Cumulative Effects of Regulation
X. Plain Writing
XI. National Environmental Policy Act
A. Introduction
B. Environmental Impact of the Proposed Agency Action
C. Summary of the Environmental Impacts of the Proposed Agency Action
D. Environmental Impacts of the Alternative to the Proposed Agency Action
E. Agencies and Persons Consulted
F. Draft Finding of No Significant Impact
XII. Paperwork Reduction Act
XIII. Executive Orders
A. Executive Order 12866: Regulatory Planning and Review (as Amended by Executive Order 14215, Ensuring Accountability for All Agencies)
B. Executive Order 14154: Unleashing American Energy
C. Executive Order 14192: Unleashing Prosperity Through Deregulation
D. Executive Order 14270: Zero-Based Regulatory Budgeting To Unleash American Energy
E. Executive Order 14294: Fighting Overcriminalization in Federal Regulations
XIV. Criminal Penalties
XV. Coordination With NRC Agreement States
XVI. Compatibility of Agreement State Regulations
XVII. Voluntary Consensus Standards
XVIII. Availability of Guidance
XIX. Public Meeting
XX. Availability of Documents

I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID NRC–2011–0012 when contacting the NRC about the availability of information for this action. You may obtain publicly available information related to this action by any of the following methods:

- *Federal Rulemaking Website:* Go to *https://www.regulations.gov* and search for Docket ID NRC–2011–0012.
- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly available documents online in the ADAMS Public Documents collection at *https://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''Begin ADAMS Public Search.'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, at 301–415–4737, or by email to *PDR.Resource@nrc.gov.* For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the ''Availability of Documents'' section.
- *NRC's PDR:* The PDR, where you may examine and order copies of publicly available documents, is open by appointment. To make an appointment to visit the PDR, please send an email to *PDR.Resource@nrc.gov* or call 1–800–397–4209 or 301–415–4737, between 8 a.m. and 4 p.m. eastern time, Monday through Friday, except Federal holidays.
- *Public Meeting:* The NRC may conduct a public meeting to describe the proposed amendments and answer questions from the public on the proposed rule. If the NRC determines it will hold a public meeting, the NRC will publish a notice of the location, time, and agenda of the meeting on the NRC's public meeting website within 10 calendar days of the meeting. Stakeholders should monitor the NRC's public meeting website for information about the public meeting at: *https://www.nrc.gov/public-involve/public-meetings/index.cfm.*

B. Submitting Comments

Comments must be submitted electronically using *https://www.regulations.gov* no later than 11:59 p.m. eastern time on August 17, 2026. Please include Docket ID NRC–2011–0012 in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at *https://www.regulations.gov* as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

II. Executive Order 14300: Ordering the Reform of the Nuclear Regulatory Commission

On May 23, 2025, President Donald J. Trump signed Executive Order (E.O.) 14300, ''Ordering the Reform of the Nuclear Regulatory Commission.'' Section 5, ''Reforming and Modernizing the NRC's Regulations,'' requires the NRC to undertake a review and wholesale revision of its regulations and guidance documents as guided by the policies set forth in section 2 of the E.O. This rulemaking addresses section 5 of the E.O., focusing on the regulations in part 61 of title 10 of the *Code of Federal Regulations* (10 CFR). The proposed rule would introduce a new risk-informed framework for low-level waste disposal that would allow greater regulatory certainty on a disposal pathway for GTCC waste. These proposed revisions support public health and environmental protection, as well as safe disposal of LLW, encourage operational efficiency, and offer greater flexibility for both current and future disposal facilities.

III. Background

A. Existing Regulatory Framework

NRC Regulation of Low-Level Waste (LLW)

The NRC's licensing requirements for the land disposal of LLW can be found in 10 CFR part 61. The NRC originally promulgated 10 CFR part 61 on December 27, 1982 (47 FR 57446).

The purpose of LLW disposal is to isolate and contain the waste while it remains hazardous. The LLW disposal requirements emphasize a diversity of systems to achieve safety from the disposal of commercial LLW, including site selection, land disposal facility design and operation, LLW characteristics, and site closure. To limit reliance on institutional controls, part 61 emphasizes passive features (*e.g.,* site stability, favorable site characteristics, and low-population density) rather than active systems to limit contact with and releases of LLW to the environment. Some examples include requiring that the disposal site design complement and improve upon the ability of the site's natural characteristics to ensure the performance objectives (*i.e.,* a part of the regulatory safety standards for protecting the public and workers) will be met; imposing concentration limits on waste that presents a higher hazard through the waste classification requirements, which categorize LLW by its radioactive content and hazard level

(Class A, B, C, and Greater-Than-Class C (GTCC)); requiring the segregation of unstable waste from waste that must be stable for proper disposal; imposing requirements on waste form and packaging characteristics; and requiring the use of intrusion barriers for wastes that will not decay to levels that represent an acceptable impact should an inadvertent intruder contact the waste within 100 years.

The current regulations in 10 CFR part 61 cover all phases of near-surface commercial LLW disposal from site selection through facility design, licensing, operations, site closure, postclosure stabilization, and the end of active institutional controls. Under the existing regulatory framework, near-surface disposal refers to the placement of radioactive waste in engineered facilities located generally within the upper 30 meters of the earth's surface, as specified in NRC regulations at § 61.2, ''Definitions.'' To grant a license, the NRC must conclude that there is reasonable assurance that the performance objectives in subpart C of part 61 will be met. To demonstrate that an applicant will meet these performance objectives, 10 CFR part 61 applicants need to prepare the analyses required by § 61.13, ''Technical analyses.''

Some radioactive material added to the AEA definition of byproduct material by Section 651(e) of the Energy Policy Act of 2005 has special status relating to its disposal at NRC or Agreement State licensed LLW disposal facilities. These ''11e.(3) and (4) byproduct materials'' include certain discrete sources of radium-226 (11e.(3)(A)), radioactive material resulting from operation of an accelerator (11e.(3)(B)), and certain other ''discrete source[s] of naturally occurring radioactive material, other than source material'' (11e.(4)). Pursuant to AEA Sections 81b. and c., 11e.(3) and (4) byproduct materials intended for disposal are not considered LLW under the Low- Level Waste Policy Act but may nevertheless be disposed of at near-surface LLW disposal facilities. In addition, AEA Section 81c. ensures that 11e.(3) and (4) byproduct material may also be disposed of at hazardous waste facilities.

To demonstrate that the general population is protected from releases of radioactivity, licensees and applicants are currently required to prepare an analysis of exposure pathways leading to potential radiological doses to the general population. The original 10 CFR part 61 did not impose a specific performance timeframe for use in the analysis to protect the general population, and Agreement States that currently regulate the existing land disposal facilities differ in the analysis timeframes they require.

The existing framework also requires that licensees demonstrate that potential inadvertent intruders into the LLW disposal site will be protected. Inadvertent intruders might occupy the disposal site after closure of the land disposal facility and may not be aware of the radiation hazard from the buried LLW. Disposal site landowners or custodial agents are required to carry out an institutional control program that ensures that no such occupation or improper use of the site occurs. However, the NRC only permits licensees to take credit for institutional controls in their technical analyses for up to 100 years following closure and transfer of control of the disposal site to the owner, even if a longer institutional control program is required by an Agreement State regulator. Under the existing regulations, protection of inadvertent intruders is demonstrated by compliance with the LLW classification (§ 61.55, ''Waste classification'') and segregation requirements (§ 61.52, ''Land disposal facility operation and disposal site closure''), and by providing adequate barriers to inadvertent intrusion.

The NRC developed the LLW classification requirements as part of the original 10 CFR part 61 rulemaking. Explicit dose limits for an inadvertent intruder were not provided in the original 10 CFR part 61 because an inadvertent intruder dose assessment was not required, but the LLW classification concentration limits for radionuclides, in tables 1 and 2 of § 61.55, were based on a range of critical organ doses, including an annual whole-body dose of 5 milliSievert (mSv) (500 millirems (mrem)) to a hypothetical inadvertent intruder. The LLW classification tables were developed assuming that only a fraction of the LLW being disposed would approach the LLW classification limits. The analysis used to develop the 10 CFR part 61 LLW classification system is conservative in nature. Nonetheless, in a theoretical scenario under the current regulations, if an inadvertent intruder is exposed to a large volume of disposed LLW near or at the classification limits, protection of an inadvertent intruder may not be assured. To address this issue, for licensees that do not meet the criteria in § 61.1(b), the new inadvertent intruder assessment would require licensees to analyze the LLW disposed at each site in accordance with the site-specific waste acceptance criteria (WAC) to demonstrate that the annual limit of 5 mSv (500 mrem) total effective dose or total effective dose equivalent to the inadvertent intruder is not exceeded.

Low-Level Radioactive Waste Classification System

The NRC developed 10 CFR part 61 based on assumptions regarding the types of LLW likely to go into a commercial land disposal facility at the time the original rule was promulgated in 1982. These assumptions were based on a survey of LLW generators, and the results were published in NUREG–0945, Volumes 1 through 3, ''Final Environmental Impact Statement on 10 CFR part 61, 'Licensing Requirements for Land Disposal of Radioactive Waste.''' The results of this survey ultimately formed the regulatory basis for the source terms used in the analysis to define the allowable isotopic concentration limits in tables 1 and 2 of § 61.55 that established three classes of LLW (Class A, Class B, Class C) and criteria for GTCC. Table 1 of § 61.55 provides limiting concentrations for long-lived radionuclides, and table 2 of § 61.55 provides limiting concentrations for short-lived radionuclides. Class A LLW is the least hazardous to the inadvertent intruder and requires the fewest controls, while Class C LLW is more hazardous and requires additional controls. As the LLW class increases in hazard, greater controls (*e.g.,* protection for a longer period of time or greater burial depth) are required to reduce the risk from disposal of the LLW. For example, Class C LLW may require either greater burial depth (*e.g.,* 5 meters (m) (16 feet (ft))) or an engineered barrier that will deter inadvertent intrusion for 500 years.

As part of the original 10 CFR part 61 rulemaking, the NRC considered inadvertent intrusion receptor scenarios and the physical stability and isotopic concentration of the LLW. These isotopic concentration limits were based on the NRC's understanding of the characteristics and volumes of commercial LLW reasonably expected for commercial disposal through the year 2000, as well as the disposal methods likely to be used.

In the statement of considerations for the final rule for the original 10 CFR part 61, the Commission noted (1) waste that is stable for a long period helps to ensure the long-term stability of the site after the site is closed and helps to assure against water infiltration caused by failure of the disposal covers and, with the improved leaching properties implicit in a stable waste form, minimizes the potential for radionuclide migration in groundwater, and (2)

stability also plays an important role in protecting an inadvertent intruder, since the stable waste form is recognizable for a long period of time and minimizes any effects from dispersion of the waste upon intrusion.

The Commission also noted that to the extent practicable, wasteforms or containers should be designed to maintain gross physical properties and identity over 300 years, approximately the time required for Class B waste to decay to acceptable levels.

Finally, appendix G to 10 CFR part 20, ''Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests,'' imposes manifest requirements on shipments of LLW consigned for disposal. Manifests for LLW shipments must identify the LLW classification and provide a certification that the LLW is properly classified, described, packaged, marked, and labeled.

The Role of Agreement States in the Regulation of LLW Disposal

Section 274b. of the AEA, ''Cooperation with States'' authorizes the NRC to enter into an agreement with a State whereby the NRC discontinues its regulatory authority over certain material, and the State assumes that authority (therefore becoming an ''Agreement State''). Agreement States can assume authority from the NRC for one or more of the following categories of materials within the State: (1) byproduct materials; (2) source materials; and (3) special nuclear material (SNM) in quantities not sufficient to form a critical mass.

Currently, there are four operating LLW disposal facilities for Class A, B, and C waste, and all are located in and licensed by Agreement States: EnergySolutions in Clive, Utah; U.S. Ecology, Inc. in Richland, Washington; Waste Control Specialists LLC in Andrews, Texas; and Energy Solutions in Barnwell, South Carolina. In accordance with Section 274 of the AEA, the NRC has found these Agreement States' regulatory programs are adequate to protect public health and safety and compatible with the NRC's program. These Agreement States have also adopted regulations equivalent to 10 CFR part 61. Even Agreement States without a LLW disposal facility are required to adopt equivalent requirements of those sections of 10 CFR part 61 that have basic radiation protection and transboundary implications because LLW is generated in all States.

Regulation of GTCC Waste

The NRC previously established three classes of LLW (Class A, Class B, Class C). The current regulation at § 61.55(a)(2)(iv) was promulgated May 25, 1989 (54 FR 22578) and prescribes that GTCC waste must be disposed of in a geologic repository as defined in 10 CFR part 60 or part 63 unless proposals for disposal of such waste in a disposal site licensed pursuant to part 61 are approved by the Commission. As presented within the 2019 draft regulatory basis, the NRC has determined that most GTCC waste streams are potentially suitable for near-surface disposal.

Section 3(b)(1) of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRPAA) (42 U.S.C. 2021) designates the disposal of certain federally owned or generated LLW and all GTCC waste (as defined by the version of 10 CFR 61.55 in effect on January 26, 1983) as a Federal responsibility. Section 3(b)(3) of the LLRWPAA required the Department of Energy (DOE) to submit to Congress a comprehensive report with recommendations ensuring the safe disposal of all GTCC waste no later than 1 year after its enactment. In February 1987, the DOE completed this action by issuing a report to Congress entitled, ''Recommendations for Management Greater-Than-Class C Low-Level Radioactive Waste, DOE/NE–0077.'' In the 1987 report, DOE acknowledged its responsibility for the disposal of commercially generated GTCC waste, as described in section 3(b)(1)(D) of the LLRWPAA.

On February 25, 2016, the DOE issued its ''Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste'' (FEIS). In the FEIS, the DOE stated that its preferred alternative for the disposal of GTCC waste is disposal in the DOE's Waste Isolation Pilot Plant (WIPP) geologic repository near Carlsbad, New Mexico, and/or land disposal at generic commercial facilities. Currently, WIPP is authorized to accept only defense generated transuranic (TRU) waste pursuant to the Waste Isolation Pilot Plant Land Withdrawal Act. Unless there is a legislative change, GTCC waste disposal at WIPP is not an option. The NRC has no regulatory role over LLW disposal at WIPP.

In a March 2016 **Federal Register** notice, the DOE announced the availability of the FEIS. The DOE's proposed action was to construct and operate a new facility or facilities, or use an existing facility or facilities, for the disposal of GTCC LLW and GTCC-like waste. The DOE defines GTCC-like waste as radioactive waste that is owned or generated by the DOE (including LLW and non-defense generated TRU waste), has no identified path to disposal, and has characteristics similar to those of GTCC LLW waste suggesting that a common disposal approach may be appropriate. Though the 2016 FEIS analyzed generic commercial facilities, it did not analyze a specific commercial facility because, while there was interest from vendors, no vendors provided specific information on disposal locations and methods. In its November 2017 report to Congress, the DOE affirmed that its preferred alternative for the disposal of GTCC and GTCC-like waste is land disposal at generic commercial facilities and/or the WIPP geologic repository. In October 2018, DOE published ''Environmental Assessment for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste at Waste Control Specialists, Andrews County, Texas,'' in which it evaluated its proposal to dispose of the entire GTCC LLW and GTCC-like waste inventory detailed in the 2016 FEIS in the Waste Control Specialists' Federal Waste Facility situated in Texas.

Accordingly, this proposed rule would address land disposal requirements for GTCC waste. GTCC-like waste would need to meet NRC requirements when an NRC licensee assumes responsibility for management of the material under its NRC license, which typically would occur when the licensee accepts the shipment of material for disposal. At that point in time, NRC regulations would apply and, if the material meets the criteria for GTCC waste, it would be subject to the requirements for GTCC waste disposal. Therefore, in this rulemaking, the NRC does not distinguish between GTCC and GTCC-like waste.

B. Previous Rulemaking Activities

This proposed rule was predated by two Commission-directed activities related to 10 CFR part 61: low-level radioactive waste disposal and disposal of GTCC and transuranic waste.

i. Low-Level Radioactive Waste Disposal

On July 18, 2013, the NRC staff submitted SECY–13–0075, ''Proposed Rule: Low-Level Radioactive Waste Disposal (10 CFR part 61) (RIN–3150–AI92),'' to the Commission with a proposed rule to amend 10 CFR part 61. The NRC staff explained that the potential for LLW streams to differ significantly in quantity and

concentration from that initially considered by the 10 CFR part 61 regulations warranted an update to the overall regulatory framework to ensure the protection of the public health and safety. These waste streams include depleted uranium and blended LLW streams (*e.g.,* blending of some types of Class B and C wastes with Class A wastes to produce a Class A mixture that can be disposed of at LLW facilities licensed to dispose of Class A waste) in quantities greater than previously expected. In addition, new technologies, such as advanced reactors, might result in the generation of different LLW streams that have not previously been considered.

In SRM–SECY–13–0075, dated February 12, 2014, the Commission approved publication of that proposed rule. The NRC published the proposed rule in the **Federal Register** on March 26, 2015 (80 FR 16081) for public comment. The comments represented a wide variety of viewpoints. As a result of the comments, the NRC staff made significant changes in the draft final rule. The NRC staff also had numerous interactions with the Advisory Committee on Reactor Safeguards (ACRS), Radiation Protection and Nuclear Materials Subcommittee and full committee, before and after publication of the proposed rule. Summaries and transcripts of these meetings can be found at the ACRS website, *https://www.nrc.gov/reading-rm/doc-collections/acrs/agenda/index.html.*

In SECY–16–0106, ''Final Rule: Low-Level Radioactive Waste Disposal (10 CFR part 61) (RIN 3150–AI92),'' dated September 15, 2016, the NRC staff submitted a draft final 10 CFR part 61 rule to the Commission. Enclosure 1 to SECY–16–0106 contains NRC responses to the public comments received on that proposed rule. In SRM–SECY–16–0106, dated September 8, 2017, the Commission directed the staff to revise the draft final rule and to publish it as a supplemental proposed rule for public comment. The proposed rule was merged into a parallel rulemaking effort, as explained in Section III.B.iii of this proposed rule.

ii. Disposal of Greater-Than-Class C and Transuranic Waste Regulatory Basis

In September 2014, the Commission directed the staff to provide a historical perspective on GTCC waste disposal in SRM–M140918, ''Staff Requirements—Briefing on Management of Low-Level Waste, High-Level Waste, and Spent Nuclear Fuel.'' Following the September 2014 Commission direction, on January 30, 2015, the Texas Commission on Environmental Quality (TCEQ) submitted a letter to the NRC staff regarding whether the State of Texas had authority to regulate the disposal of GTCC waste. In response to the Commission's direction and TCEQ's letter, the staff submitted SECY–15–0094, dated July 17, 2015, to provide the Commission with a historical perspective on the disposal of GTCC waste and to seek Commission approval of the staff's recommendation to allow the State of Texas to license the disposal of GTCC waste.

In SRM–SECY–15–0094, dated December 22, 2015, the Commission directed the NRC staff to prepare a regulatory basis for the disposal of GTCC waste through means other than deep geologic disposal, including near-surface disposal, and to provide the regulatory basis to the Commission for information within 6 months of completing the 10 CFR part 61 rule. The Commission further directed that the regulatory basis should analyze whether, in accordance with Section 274c.(4) of the AEA, the disposal of GTCC waste presents a hazard such that the NRC should retain authority over its disposal. The Commission directed that, if the staff concluded that some or all GTCC waste is potentially suitable for near-surface disposal, the staff should then proceed to develop a proposed rule to include disposal criteria for licensing the disposal of such waste under 10 CFR part 61. The Commission also affirmed that the case-by-case review contemplated in 10 CFR 61.55(a)(2)(iv) is available to parties who seek to dispose of GTCC waste in the near term. In addition, the Commission approved the staff's recommendation to address transuranic waste disposal in the definition of ''waste'' in 10 CFR 61.2.

On October 23, 2018, in SRM–M181011, the Commission directed staff to decouple, to the extent practicable, the issuance of the draft GTCC waste regulatory basis directed in SRM–SECY–15–0094 from Commission action on the 10 CFR part 61 rulemaking to allow for earlier public engagement on staff's analysis of potential regulatory barriers to the disposal of GTCC waste.

A draft regulatory basis, ''Disposal of Greater-than-Class C (GTCC) and Transuranic Waste,'' was issued for public comment on July 22, 2019 (84 FR 35037). The NRC staff concluded in its regulatory basis that most of the GTCC waste streams were potentially suitable for near-surface disposal (*i.e.,* approximately 80 percent of the total volume of all GTCC waste analyzed at that time), provided appropriate controls are implemented and a sufficient site-specific analysis is conducted to ensure protection to inadvertent intruders and offsite individuals. Site-specific analyses and refinement in the waste stream inventories could also result in a differing quantity of GTCC waste identified in the DOE FEIS potentially acceptable for near-surface disposal than was determined in NRC's generic analysis.

Additionally, in the 2019 regulatory basis the NRC staff determined that most GTCC waste identified in the DOE FEIS could be safely regulated by an Agreement State (*i.e.,* approximately 75 percent of the total volume of all GTCC waste). However, the NRC has re-examined the prior conclusion and determined that in accordance with Section 3(b) of the LLRWPAA, disposal of GTCC waste must remain within the NRC's exclusive authority. This reexamination of NRC's retention of authority over disposal of GTCC is discussed in further detail in section IV.B of this proposed rule.

The public comment documents on the regulatory basis are available for review in *https://www.regulations.gov* under Docket ID NRC–2017–0081. As stated in the **Federal Register** notice that issued the regulatory basis, the NRC did not provide formal written responses to each of the comments received on the draft regulatory basis. However, the NRC reviewed the comments in each submission, grouped the comments by category, and developed a summary of and responses to the comments. A brief overview of the categorization of the comments on the GTCC regulatory basis and how they informed the proposed rule follows.

The NRC received over 70 individual comment submissions from members of the public, environmental groups, industry stakeholders, a Tribal nation, various State agencies, and the DOE, and approximately 7,000 form letters from environmental groups. Specific concerns included: the role of generic versus site-specific analyses in determining the safety of near-surface disposal of GTCC waste; the compliance period for long-lived radioactive waste; the role of Agreement States in the licensing of disposal of GTCC waste; protection of the inadvertent intruder; and characteristics of GTCC waste that could impact operational safety (*e.g.,* criticality controls). This proposed rule and the document summarizing the responses to comments provides further discussion of these concerns and describes the proposed regulatory requirements that address these concerns, and in certain cases identifies where additional guidance has been developed by the NRC.

C. Integration of the Rulemakings

On October 21, 2020, the NRC staff submitted SECY–20–0098, ''Path Forward and Recommendations for Certain Low-Level Radioactive Waste Disposal Rulemakings,'' to the Commission. In the paper, the staff recommended that the two Commission-directed rulemaking activities that could result in amendments to 10 CFR part 61 (Low-Level Radioactive Waste Disposal draft final rule and the GTCC waste draft regulatory basis) be consolidated and integrated into one proposed rule based on overlapping technical requirements, expected cost savings, consideration of stakeholder input, and efficiencies. In SRM–SECY–20–0098, ''Staff Requirements—SECY–20–0098—Path Forward and Recommendations for Certain Low-Level Radioactive Waste Disposal Rulemakings,'' dated April 5, 2022, the Commission approved the staff's recommendation to issue a new proposed rule that consolidates and integrates criteria for licensing and disposal of GTCC waste and 10 CFR part 61 rulemaking activities.

On May 29, 2024, the NRC staff submitted to the Commission SECY–24–0045, ''Proposed Rule: Integrated Low-Level Radioactive Waste Disposal (RIN 3150–AI92; NRC–2011–0012).'' On September 11, 2025, the Commission approved the staff's request to withdraw SECY–24–0045 and other rulemaking papers because they were in the scope of rules to be issued pursuant to Executive Order 14300, ''Ordering the Reform of the Nuclear Regulatory Commission'' (''Staff Requirements—SECY–24–0045—Withdrawal of Rulemaking Plan and Proposed Rules (SECY–21–0067, SECY–210110, SECY–23–0062, SECY–24–0045)'').

D. Public Interactions During Proposed Rule Development

The NRC conducted several outreach activities with stakeholders during the development of the proposed rule. These activities included holding public meetings to share preliminary proposed rule concepts and to receive public feedback. These interactions also included discussions on the draft proposed rule guidance. The public feedback received was considered during the development of this proposed rule. The following table provides a list of the recent stakeholder interactions conducted during the proposed rule development.

BILLING CODE 7590–01–P

Recent Stakeholder Interactions on Low-Level Radioactive Waste

Meeting	Date(s)	Location
National Conference of Radiation Control Program Directors (CRCPD)	May 16 -19, 2022	Tucson, AZ
LLW Forum Fall Meeting	October 12, 2022	Baltimore, MD
Agreement State LLW Workshop	October 19, 2022	Salt Lake City, UT
Fuel Facilities Stakeholder Fall Meeting	October 19, 2022	Rockville, MD
Waste Management Symposium Meeting	February 26-March 2, 2023	Phoenix, AZ
NRC Regulatory Information Conference	March 14-16, 2023	Rockville, MD
Organization of Agreement States (OAS) /CRCPD Monthly Call	monthly	virtual
LLW Forum Spring Meeting	March 22-23 2023	Charleston, SC
Fuel Facilities Stakeholder Spring Meeting	May 3, 2023	Rockville, MD
CRCPD National Conference on Radiation Control	May 11, 2023	Houston, TX
Integrated LLW Rulemaking Public Meeting	May 17, 2023	virtual
State Liaison Officers Annual Conference	June 8, 2023	Rockville, MD
Performance and Risk Assessment Community of Practice Webinar	July 13, 2023	virtual
Oregon Health Authority Radiation Protection Services meeting with Oregon Dept. of Energy	July 17, 2023	virtual
EPRI International Low- and Intermediate-Level Waste Conference	July 26-28, 2023	Nashville, TN
OAS Annual Meeting	August 7-10, 2023	Seattle, WA
LLW Forum Fall Meeting	October 3-4, 2023	Salt Lake City, UT
International Conference on the Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability	November 6-10, 2023	Vienna, Austria
Advisory Committee on Reactor Safeguards Subcommittee Meeting	December 6, 2023	Rockville, MD and virtual
Integrated LLW Rulemaking Public Meeting	January 23, 2024	virtual
Advisory Committee on Reactor Safeguards Full Committee Meeting	February 7, 2024	Rockville, MD and virtual
Waste Management Symposium Meeting	March 10-14, 2024	Phoenix, AZ
LLW Forum Spring Meeting	April 3-4, 2024	Orlando, FL
Waste Management Symposium Meeting	March 9-13, 2026	Phoenix, AZ
LLW Forum Spring Meeting	April 8-9, 2026	San Diego, CA
Integrated LLW Rulemaking Public Meeting	TBD	Rockville, MD and virtual

BILLING CODE 7590–01–C

IV. Discussion

A. Objectives of This Proposed Rule

This proposed rule would amend 10 CFR part 61 for existing low-level waste disposal facilities that accept LLW containing significant quantities of long-lived radionuclides and future applications for disposal of LLW, including GTCC wastes. It would require new and revised site-specific technical analyses and other requirements and would permit the development of site-specific WAC based on the results of these analyses. These amendments will also better align the requirements with current health and safety standards by allowing the application of new dosimetry models (*e.g.,* as used in 10 CFR part 20). Additionally, this proposed rule will amend 10 CFR part 61 to provide specific regulatory requirements for the land disposal of GTCC waste streams, including radiological protection requirements to protect individuals during the facility's operational period and after the closure of the disposal facility, inadvertent intruders, and offsite individuals. This proposed rule will also amend 10 CFR parts 20 and 61 to revise the definition of ''waste'' such that LLW that is acceptable for disposal under 10 CFR part 61 no longer excludes ''transuranic waste.'' Lastly, this proposed rule will (1) amend 10 CFR part 150 to allow contaminated equipment or waste incidental to reprocessing that has been evaluated and approved as material to be disposed at a near-surface land disposal facility, and (2) amend 10 CFR part 73 to exempt certain waste material at a near-surface disposal facility from the requirements for physical protection of SNM of low strategic significance.

B. Applicability and NRC Authority Over GTCC Disposal

This proposed rule will apply to existing and future LLW disposal facilities that are regulated by the NRC or an Agreement State. Currently licensed LLW sites that do not plan to accept GTCC waste or significant quantities of long-lived radionuclides after the effective date of this rulemaking will not be required to comply with new regulations under a new provision in 10 CFR part 61.

i. Application of New Requirements for Existing Licensees

The current regulation in 10 CFR 61.1(a) includes a statement that the applicability of requirements in 10 CFR part 61 to existing LLW facility licensees on the effective date of the rule will be determined on a case-by-case basis and implemented through license conditions or orders. The NRC proposes to delete this statement, and as directed in SRM–SECY–16–0106, revise the existing language in 10 CFR 61.1 to add a new paragraph (b) to allow currently licensed LLW facilities that do not plan to accept significant quantities of long-lived radionuclides and do not plan to apply to the NRC for a license to dispose of GTCC waste after the effective date of this rulemaking to continue to meet the original 10 CFR part 61 requirements for §§ 61.13, 61.41, 61.42, and 61.50 that are found in revised sections §§ 61.13(f), 61.41(c), 61.42(c), and 61.50(c). Licensees that meet the § 61.1(b) criteria could continue their current waste acceptance practices and would not be required to comply with new proposed requirements in §§ 61.10(c), 61.13(a) through 61.13(e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), 61.50(a) and (b), and 61.58. Significant quantities of long-lived radionuclides are defined in the proposed rule to mean an amount (volume or mass) and concentration that could, if released, result in the performance objectives of the proposed rule not being met. Some GTCC waste includes significant quantities of long-lived radionuclides.

All LLW disposal facilities licensed after the effective date of this rulemaking will be required to meet the new requirements in §§ 61.10(c), 61.13(a) through 61.13(e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), 61.50(a) and (b), and 61.58, regardless of the quantities of long-lived radionuclides that they plan to accept for disposal and regardless of whether they apply to the NRC for a license to dispose of GTCC waste. LLW land disposal facilities already licensed prior to the effective date of this rulemaking that plan to accept significant quantities of long-lived radionuclides or plan to apply to the NRC for a license to dispose of GTCC after the effective date of this rulemaking will continue to be required to meet the current 10 CFR part 61 requirements until: (1) licensed to allow the disposal of significant quantities of long-lived radionuclides, (2) licensed to dispose of GTCC, or (3) application for license renewal (§ 61.27), site closure (§ 61.28), or updates required under § 61.24(l).

ii. NRC Authority Over GTCC Waste

As discussed above, in 2020, the Commission directed the consolidated rulemaking to provide for ''Agreement State licensing of those GTCC waste streams that meet the regulatory requirements for near-surface disposal and do not present a hazard such that the NRC should retain disposal authority.'' At the time, the Commission determined that the better interpretation of LLRWPAA was that authority to license a disposal facility for GTCC waste can be relinquished to Agreement States.

Upon reexamination of the LLRWPAA, the Commission now finds the plain language reading of the LLRWPAA, where the Federal Government must retain sole authority over the regulation of GTCC waste, to be the better interpretation. Section 3 of the LLRWPAA states: (1) the Federal Government is responsible for GTCC waste disposal; and (2) the NRC must license any facility for the disposal of GTCC waste resulting from NRC-licensed activities. Section 3(a)(1) delineates the waste streams that are the States' responsibility, while Section 3(b)(1) lists the specific waste streams that are the Federal Government's responsibility—and Section 3(b)(1) includes GTCC waste. Crucially, Section 3(b)(2) specifically states that the NRC shall license any facility for GTCC waste disposal. The entirety of Section 3, and, in particular, the language in Section 3(b)(2), indicate that licensing of disposal facilities for GTCC waste must be done by the NRC and not Agreement States.

Therefore, consistent with the best reading of LLRWPAA, this proposed rule would retain NRC sole authority over licensing GTCC waste disposal facilities.

C. Technical Areas With Proposed Revisions to Requirements

This proposed rule would amend requirements in several technical areas. First, the definition of LLW, which applies to all existing and future licensees, will now include TRU.

Next are several technical topics that most directly apply to those facilities that do not meet the criteria in proposed 10 CFR 61.1(b)—*i.e.,* they are licensed after the effective date of this rulemaking, they plan to accept significant quantities of long-lived radionuclides, or they plan to apply to NRC for a license to dispose of GTCC waste. These topics include:

- Site-Specific, Graded Approach to Compliance Period;
- New and Revised Technical Analyses, including a performance assessment (§ 61.13(a)), an inadvertent intruder assessment (§ 61.13(b)), an operational safety assessment (§ 61.13(c)), a site stability assessment (§ 61.13(d)), and performance period analyses (§ 61.13(e));
- Revised Performance Objectives (§§ 61.41 through 61.44);

- Flexibility for Facilities to Develop Site-Specific Waste Acceptance Criteria (§ 61.58); and
- Safety Case for new applications, including defense-in-depth (§§ 61.10 and 61.23).

With respect to technical areas that address GTCC waste disposal, this proposed rule offers several new provisions, including:

- Safety Criteria and Limits for Licensing Land Disposal of GTCC Waste;
- Disposal Depth;
- Physical Protection of LLW Including GTCC Waste; and
- Criticality Safety of LLW Including GTCC Waste.

Lastly, this proposed rule discusses Agreement State licensing of LLW disposal and includes revisions related to the replacement of references to ALARA with references to 10 CFR 20.1101(b).

i. Inclusion of Transuranic Waste in the Definition of LLW

The NRC proposes to revise the definition of LLW to address transuranic waste, as directed in SRM–SECY–15–0094, and in accordance with revisions in the definition resulting from the Low-Level Radioactive Waste Policy Amendments Act of 1985. Specifically, the NRC proposes to delete the term ''transuranic waste'' from the second sentence of the ''waste'' definition paragraph in 10 CFR 20.1003 and 10 CFR 61.2, which currently excludes transuranic waste from what constitutes LLW. This change would apply to all existing and future licensees. In the current regulation, transuranic waste is excluded from the definition of LLW while transuranic radionuclides are not. It is typical for LLW to contain transuranic radionuclides in limited concentrations, and up to 100 nanocuries per gram (nCi/g) of transuranic radionuclides is permitted for disposal within the 10 CFR 61.55 limits. The proposed revision to the definition of LLW would allow the safety and suitability of the disposal of waste containing higher concentrations of transuranic radionuclides to be assessed with site-specific technical analyses. The definition of ''waste'' in 10 CFR 20.1003 and 10 CFR 61.2 is also revised consistent with Section 3(f) of the American Medical Isotopes Production Act of 2011, which provides that notwithstanding section 2 of the Nuclear Waste Policy Act of 1982 (42 U.S.C. 10101), radioactive material resulting from the production of medical isotopes that has been permanently removed from a reactor or subcritical assembly and for which there is no further use shall be considered low-level radioactive waste if the material is acceptable under Federal requirements for disposal as low-level radioactive waste.

ii. Site-Specific, Graded Approach to Compliance Period

Consistent with SRM–SECY–20–0098, in this proposed rule the NRC considered establishing a site-specific, graded approach based on when the peak dose is projected to occur or establishing a longer compliance period for disposal sites containing significant quantities of long-lived radionuclides. This proposed rule would implement a site-specific, graded approach for the compliance period:

1. For currently licensed land disposal facilities that meet the § 61.1(b) criteria, these licensees would not be required to meet the revised requirements (*e.g.,* proposed revisions to § 61.10(c), which includes a new requirement for a safety case and § 61.50(a) and (b) revised disposal site suitability requirements).

2. For land disposal sites, either current licensees or future applicants that plan to dispose of LLW with significant quantities of long-lived radionuclides that are not GTCC waste, after the effective date of this rulemaking would be required to complete a performance assessment using a compliance period of 10,000 years and an annual dose limit of 0.25 mSv (25 mrem) for the protection of the general population from releases of radioactivity. Similarly, licensees or applicants would be required to complete an inadvertent intruder assessment with an annual dose limit of 5 mSv (500 mrem) for the 10,000-year compliance period. These licensees or applicants would also have to complete performance period analyses to understand and effectively manage future doses resulting from the disposal of the long-lived radionuclides beyond 10,000 years.

3. Future applicants that plan to dispose of GTCC waste with significant quantities of long-lived radionuclides after the effective date of this rulemaking would also be required to use a 10,000-year compliance period, an annual dose limit of 0.25 mSv (25 mrem) for the protection of the general population, and an annual dose limit of 5 mSv (500 mrem) for the protection of an inadvertent intruder. A more detailed description of the requirements for GTCC waste is provided in Section IV.C.vii of this proposed rule.

The current regulations in 10 CFR part 61 do not provide a specific time period to demonstrate compliance with the performance objectives. The original regulatory basis for 10 CFR part 61 and the related guidance in NUREG–1573, ''A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities: Recommendations of NRC's Performance Assessment Working Group,'' recognized the need to use an analysis timeframe commensurate with the persistence of the hazard of the source. In selecting an analysis timeframe, the general practice is to consider the characteristics of the LLW, the analysis framework (*e.g.,* assumed scenarios, receptors, and pathways), societal uncertainties, and uncertainty in predicting the behavior of natural systems over time. Typically, both technical factors (*e.g.,* the characteristics and persistence of the radiological hazard attributed to the LLW) and socioeconomic factors are considered. The purpose of analyzing a land disposal facility is to provide reasonable assurance that adequate protection of public health and safety will be achieved while the hazard exists. To achieve that purpose, the analyses must demonstrate acceptable performance of the land disposal facility.

The NRC evaluated approaches used by other countries and international agencies for managing the radiological risks from the disposal of LLW containing long-lived radionuclides. Many approaches evaluated are similar to the NRC approach. For example, some organizations impose a requirement to identify impacts from the disposal of LLW containing long-lived radionuclides using technical analyses. Results of those analyses are used to impose appropriate restrictions on LLW disposal, if necessary. Similarly, almost every country that the NRC considered places restrictions on how much LLW can be disposed of in the near-surface environment. The NRC also limits LLW disposal amounts, but uses a performance-based approach by requiring licensees to demonstrate that someone who lives near the site will not receive a dose exceeding the regulatory limit. In contrast, some countries do not allow near-surface disposal of LLW containing long-lived radionuclides; however, the NRC has not found that approach to be necessary to ensure safety. Like the NRC's existing regulatory framework, most countries place explicit numerical limits on concentrations of LLW containing long-lived alpha-emitting radionuclides. These concentration limits are commonly set by regulators based on generic technical analyses or policy decisions rather than on the results of

site-specific technical analyses. Technical analyses are performed, but only for LLW that satisfies the generic limits. This approach is very similar to what was done for the initial development of the original 10 CFR part 61. The original requirements in 10 CFR part 61 supplemented technical analyses with LLW concentration limits and other disposal requirements, such as minimum disposal depth for certain types of LLW. However, the drawback of that approach is that regulating multiple land disposal facilities using generic technical analyses results in potentially overly conservative limits because the concentration limits for all facilities are based on the most limiting conditions across the various sites to provide reasonable assurance of adequate protection of public health and safety. Therefore, the NRC is adopting a more risk-informed approach by providing greater flexibility to use site-specific considerations (*e.g.,* greater depth to disposal, more robust wasteforms, greater distance to groundwater) as the basis for waste acceptance criteria.

Other countries have used regulatory approaches that vary considerably in the methodology used to achieve protection of future generations from the disposal of LLW. However, countries and international safety organizations consistently apply limiting conditions on the near-surface disposal of LLW (*e.g.,* they prohibit disposal, or they impose concentration limits, or disposal depth requirements, or flux limits, or they require development of long-term analyses). Consequently, very limited amounts and concentrations of uranium-bearing wastes have been disposed internationally. Technical analyses are used by licensees, applicants, and regulators domestically and internationally to understand how a land disposal facility, together with the general environment, may perform and include the potential impacts of uncertainties on public health and safety. There are many sources of uncertainty associated with projecting the future radiological risks from disposal of LLW which include, but are not limited to, natural, engineered, and societal factors. The NRC's selection of analyses timeframes for the evaluation of the disposal of LLW in this proposed rule considers the different sources of uncertainty and how the uncertainties may impact projected future radiological risk.

One of the factors underlying this rulemaking is the unique radiological characteristics of depleted uranium when compared to traditional LLW. Depleted uranium is very long-lived, and there is a substantial quantity of depleted uranium that is being considered for disposal in commercial land disposal facilities. In addition, the hazard of depleted uranium increases over very long periods of time because of the slow decay of uranium and the in-growth of progeny. The time at which the concentration of radionuclides in the LLW is within one order of magnitude of the peak concentration is sensitive to the assumed isotopic mass fractions in the initial LLW. For depleted uranium, this time is approximately 10,000 years or longer. Accordingly, a compliance period of 1,000 years is not likely to sufficiently capture the decay and ingrowth characteristics of significant quantities of depleted uranium. Therefore, land disposal facilities that dispose of significant quantities of depleted uranium (or other long-lived radionuclides) would be required to use a compliance period of 10,000 years.

Further, the NRC's approach to analysis timeframes is suitable because, in addition to the 10,000-year compliance period, licensees must also complete performance period analyses for depleted uranium and other long-lived radionuclides to understand and effectively manage future doses resulting from the disposal of the long-lived radionuclides after 10,000 years. This proposed rule balances differing views associated with how impacts over very long time periods should be evaluated by having a maximum 10,000-year compliance period, followed by performance period analyses beyond 10,000 years, when significant quantities of long-lived radionuclides would be disposed.

This approach provides reasonable assurance that public health and safety are protected and only imposes a regulatory burden upon licensees or applicants when it is necessary due to the risks associated with the LLW that is accepted for disposal. An applicant wishing to use a 1,000-year compliance period would demonstrate that the LLW to be accepted for disposal will not contain significant quantities of long-lived radionuclides such that the disposal would require a 10,000-year compliance period. An evaluation of the inventory can be used to demonstrate that the performance objectives would not be exceeded. Licensees or applicants may use the draft guidance in NUREG–2175, Revision 1, to determine significant quantities of long-lived radionuclides for their specific land disposal facilities.

iii. New and Revised Technical Analyses

This proposed rule would require a new applicant and licensees that do not meet the criteria in § 61.1(b) to prepare technical analyses consistent with §§ 61.13(a) through (e) to demonstrate that their land disposal facilities and design meet the performance objectives. Existing licensees that meet the criteria in § 61.1(b) may instead comply with proposed § 61.13(f), which retains the requirements in current 10 CFR 61.13(a) through (d). The current regulations already require technical analyses; however, the NRC is amending 10 CFR 61.13 to provide additional details for analyses requirements (revising certain technical analyses) as well as requiring new analyses.

Under this proposed rule, except for licensees that meet the criteria in § 61.1(b), licensees or applicants would be required to prepare the following as part of their technical analyses: (a) a revised analysis, called a performance assessment, to demonstrate the protection of the general population from releases of radioactivity (§ 61.41); (b) a new analysis,[1] called an inadvertent intruder assessment, to demonstrate the protection of inadvertent intruders (§ 61.42); (c) an operational safety assessment to demonstrate the protection of individuals during operations (§ 61.43); (d) performance period analyses for licensees or applicants using the 10,000-year compliance period to evaluate how the disposal system may mitigate the long-term risk from disposal of significant quantities of long-lived radionuclides in the LLW inventory (§§ 61.41(b) and 61.42(b)); and (e) a site stability assessment to demonstrate the stability of the site after closure (§ 61.44).

Consistent with the current requirements in §§ 61.27 and 61.28, existing licensees would be required to update their current technical analyses upon the next license renewal and site closure. Licensees would also be required to update their technical analyses before receiving new waste streams not analyzed in their current technical analyses, and as otherwise required by Agreement State regulations.

For all the required updates during license renewal, site closure, or before receiving new waste streams, existing licensees who meet the criteria in 10

[1] The inadvertent intruder assessment analysis is new only from the standpoint that it was not required in the original regulations. This analysis has been performed for some U.S.-operating facilities and for many international facilities.

CFR 61.1(b) may choose to comply with the original part 61 regulations for technical analyses, which would be retained in 10 CFR 61.13(f), that generally require: (1) demonstrating protection of the general population from releases of radioactivity, (2) analyses of the protection of individuals from inadvertent intrusion, (3) analyses of the protection of individuals during operations, and (4) analyses of the long-term stability of the disposal site (*i.e.,* current §§ 61.13(a) through (d)). These licensees may also continue to use the timeframes in their analyses deemed acceptable by the appropriate regulator prior to the revisions to 10 CFR part 61 in the proposed rule.

For required updates prior to site closure, as set forth in the proposed 10 CFR 61.28, revisions to the technical analyses at site closure must consider the waste disposed of during operations and reflect significant changes to the human activities occurring in and around the site. The proposed rule would also require that an application for site closure must include the total volume and mass of waste that was disposed of as well as the total radioactivity in curies of each radionuclide that was disposed of. The NRC has developed draft guidance in NUREG–2175, Revision 1, that would facilitate the development of information and analyses to support licensees in addressing the regulatory requirements.

Under the proposed rule, the licensee would be required to operate the land disposal facility in a manner consistent with the technical analyses. In addition, as set forth in the proposed 10 CFR 61.24(l), new applicants and licensees that do not meet the criteria in § 61.1(b) would evaluate whether updates to the technical analyses are warranted if significant changes have occurred at the site or before receiving new waste streams not analyzed in the most recent approved technical analyses. The required analyses are set forth and described as follows:

1. Performance Assessment

Compliance with the first performance objective of subpart C of 10 CFR part 61, which provides protection of the general population from releases of radioactivity, would continue to be demonstrated with a technical analysis. The NRC proposes to rename this analysis in current § 61.13(a) as a ''performance assessment.'' Under the proposed rule, an applicant or licensee not meeting the criteria in § 61.1(b) would conduct a performance assessment to demonstrate the protection of the general population from releases of radioactivity, thereby meeting the performance objective set forth in § 61.41(a). A performance assessment would evaluate the projected behavior of an LLW disposal site and the uncertainties in its projected behavior. The performance assessment would include the specific characteristics of the disposal site (*e.g.,* hydrology, meteorology, geochemistry, biology, geomorphology) and degradation, deterioration, or alteration processes of the engineered barriers (including the waste form and container) and its natural system. The performance assessment would also identify interactions between the disposal site characteristics and engineered barriers that might affect the performance of the LLW disposal site. The performance assessment would examine the effects of these processes and interactions on the ability of the LLW disposal site to limit releases and would calculate the projected annual dose to a member of the public for comparison with the appropriate performance objective. The results of a performance assessment would assist in providing reasonable assurance that the general population is adequately protected from releases of radioactivity. The NRC proposes to revise its regulations to require licensees that do not meet the criteria in § 61.1(b) to complete a performance assessment to demonstrate compliance with the public dose limit of 0.25 mSv (25 mrem) required in 10 CFR 61.41(a) for the duration of the compliance period.

With the exception of existing licensees that meet the criteria in § 61.1(b), the dose limit would apply to a compliance period of 1,000 years after closure, or 10,000 years after closure if there are significant quantities of long-lived radionuclides in the LLW that will be disposed of after the effective date of this rulemaking. The licensee or applicant would provide a technical rationale to its regulator to support the decision to use a 1,000-year compliance period. Should a 10,000-year compliance period be necessary, the licensee or applicant would also be required to conduct performance period analyses beyond 10,000 years to demonstrate that releases from the disposal site are effectively managed. Draft guidance is provided in NUREG–2175, Revision 1, that can be used to help determine what is a significant quantity of long-lived radionuclides.

Under the proposed rule, a licensee or applicant must evaluate: the interactions between the disposal site and engineered barriers that might affect performance of the disposal site; radionuclide transport characteristics of the waste; features, events, and processes that might affect demonstrating compliance with § 61.41(a); contaminant transport pathways and processes in environmental media; and uncertainties and variability in the projected performance of the disposal site and surrounding environment. In the performance assessment, a licensee or applicant would be required to use a dose methodology consistent with the dose methodology specified in the standards for radiation protection set forth in part 20 of this chapter. The weighting factors used in the calculation of the dose would be required to be consistent with the methodology used to perform the calculation.

2. Inadvertent Intruder Assessment

In 10 CFR part 61, the NRC recognizes that it is possible, though unlikely, that an inadvertent intruder might occupy a disposal site in the future and engage in normal activities without knowing that they are receiving radiation exposure from buried LLW. Therefore, the second performance objective in subpart C of 10 CFR part 61 is the protection of inadvertent intruders. The current regulations have a performance objective and related technical analysis requirements to demonstrate protection of individuals from inadvertent intrusion. Licensees who meet the requirements of 10 CFR 61.1(b) have the option of using those existing technical requirements, which are retained in the proposed 10 CFR 61.13(f).

This proposed rule would add a requirement in 10 CFR 61.13 for licensees that do not meet the criteria in § 61.1(b) to conduct a site-specific inadvertent intruder assessment to demonstrate compliance with § 61.42(a) and (b). The inadvertent intruder assessment would quantitatively estimate the radiological exposure of an inadvertent intruder at a LLW disposal site who is unknowingly exposed to radiation from the LLW following an assumed loss of institutional controls after the end of the active institutional control period. The results of the inadvertent intruder assessment would be compared to the performance objective in § 61.42(a). The inadvertent intruder assessment would assume that an inadvertent intruder occupies the disposal site and engages in agricultural and residential activities and other reasonably foreseeable pursuits that are consistent with the activities occurring in and around the site at the time of development of the inadvertent intruder assessment; identify barriers to inadvertent intrusion that inhibit contact with the waste or limit radiation

exposure from the waste and provide a basis for the barriers degree of effectiveness; and account for uncertainties and variability in the projected performance of the disposal site and surrounding environment. For near-surface disposal facilities, the inadvertent intrusion assessment would include the projected dose for an individual who inadvertently disrupts or contacts the waste. For waste disposal in a specialized land disposal facility, the inadvertent intruder assessment must also demonstrate that the engineered barriers and natural features ensure that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. Therefore, for a specialized land disposal facility, the inadvertent intruder assessment would not include the projected dose from direct contact with the waste but would include the projected dose from onsite exposure to released radioactivity (*e.g.* from contaminated groundwater pumped onsite). More information on new requirements for specialized land disposal facilities is provided in Section IV.C.vii of this proposed rule.

For new licensees and existing licensees that do not meet the requirements of 10 CFR 61.1(b), the NRC is proposing that licensees perform a site-specific inadvertent intrusion assessment with a 5 mSv/yr (500 mrem/yr) dose limit. Existing licensees that meet the criteria in § 61.1(b) would have the option to use the existing technical analysis requirements, which are retained in § 61.13(f).

For the licensees that perform a site-specific intruder assessment (*i.e.,* licensees that do not meet the criteria for § 61.1(b)), the NRC is also proposing an inadvertent intruder annual dose limit of 5 mSv (500 mrem) for the compliance period in the 10 CFR 61.42(a) performance objective, consistent with the critical organ dose limits used to develop the LLW classification tables in the original 10 CFR part 61. The regulatory basis for the current 10 CFR part 61 assumed that inadvertent intrusion occurred following a cessation of an active institutional control period administered by the landowner or custodial agent. Institutional control of the disposal site was expected to occur beyond the active institutional control period; however, control becomes increasingly difficult to assure for longer periods of time and therefore it could not be relied upon to provide adequate assurance of public safety. Therefore, an inadvertent intruder was assumed to occupy the LLW disposal site and engage in normal activities, such as agriculture or dwelling construction. The analysis in the regulatory basis assumed that the inadvertent intruder directly contacted the disposed LLW and was exposed to radionuclides through inhalation of contaminated air, direct radiation, ingestion of contaminated food and water, and inadvertent ingestion of soil. The NRC based the LLW classification tables in the current § 61.55 on radionuclide concentrations that would yield an annual dose comparable to 5 mSv (500 mrem) and adjustments to those values based on expectations about the composition of waste streams, among other factors.

The annual dose limits used to develop the LLW classification tables were selected from a range of values that were consistent with exposure guidelines of different orders of magnitude that were applicable at that time. In NUREG–0945, the NRC selected a range of critical organ dose limits, including a whole-body annual dose of 5 mSv (500 mrem) considering safety, costs, disposal efficiency, and the potential for increased disposal of waste containing long-lived radionuclides that could increase the hazard for long time periods. The NRC reaffirmed the foregoing selection in its denial of a petition for rulemaking PRM–61–2, ''New England Coalition on Nuclear Pollution, Inc.; Denial of Petition for Rulemaking,'' dated March 29, 1994, and continues to believe that an annual dose limit of 5 mSv (500 mrem) total effective dose or total effective dose equivalent provides an acceptable level of protection to an inadvertent intruder.

Given the uncertainty in predicting human behavior into the distant future and to limit associated speculation, the proposed inadvertent intruder assessment assumes an inadvertent intruder occupies the disposal site and engages in activities and other reasonably foreseeable pursuits consistent with expected activities in and around the disposal site at the time of the assessment and that might unknowingly expose the person to radiation emitted or released from the waste in the disposal units. The NRC has prepared draft guidance in NUREG–2175, Revision 1, for the inadvertent intruder assessment that describes approaches that the NRC staff would find acceptable for determining reasonably foreseeable inadvertent intruder activities that are consistent with activities in and around the land disposal facility. The draft guidance also describes how licensees or applicants could take credit for physical characteristics (*e.g.,* water quality) and societal information (*e.g.,* land use patterns) related to the land disposal facility to limit speculation about the types of activities in which an inadvertent intruder might engage. The NRC is not proposing that licensees or applicants should assume that contact with the LLW by an inadvertent intruder is certain to occur. A 5 mSv (500 mrem) dose limit for the inadvertent intruder, compared to a 0.25 mSv (25 mrem) annual dose limit for the public during the compliance period in § 61.41(a), provides a dose limit that considers both the health risk to the inadvertent intruder and the likelihood of the inadvertent intruder receptor scenario. Furthermore, as in the current regulations, engineered barriers and disposal practices, such as greater disposal depth, could be considered in the inadvertent intruder assessment. For example, if the disposal site implements a protective cover of at least 5-m (16-ft) thickness, it would not be reasonable to consider a receptor scenario in which (1) a residential dwelling foundation is excavated below 5 m (16 ft) and (2) waste is exhumed from a disposal unit if it is not normal to construct foundations in the surrounding area to that depth.

In summary, the NRC proposes new regulations in 10 CFR 61.13(b) that would specify that licensees that do not meet the criteria in § 61.1(b) must conduct an inadvertent intruder assessment to demonstrate compliance with the inadvertent intruder dose limit of 5 mSv (500 mrem) in the proposed 10 CFR 61.42(a) for the duration of the compliance period. The dose limit would apply to a compliance period of 1,000 years after closure or 10,000 years after closure if there are significant quantities of long-lived radionuclides in the LLW that will be disposed after the effective date of this rulemaking. Should a 10,000-year compliance period be necessary, the licensee or applicant would then be required to conduct performance period analyses beyond 10,000 years, to characterize inadvertent intruder exposures.

3. Operational Safety Assessment

Because GTCC waste may require additional operational safety procedures and specialized handling, the NRC proposes to add requirements to the analyses of the protection of individuals during operations in 10 CFR 61.13(c). Under the proposed rule, licensees that do not meet the criteria in § 61.1(b) would conduct an operational safety assessment to demonstrate that exposures to individuals during operation will be controlled to meet the

requirements of 10 CFR part 20, thereby meeting the performance objective set forth in § 61.43.

The operational safety assessment would be required to include analyses of expected exposures due to routine operations and likely accidents during handling, storage, and disposal of waste. These analyses could be qualitative and could credit administrative controls and procedures. Operational safety assessments involving GTCC waste would also be required to include quantitative analyses of expected exposures due to unlikely accidents (including fire, handling events, and other credible accidents) and the identification of safety features to prevent and mitigate accidents. Draft NUREG–2175, Revision 1 includes guidance on performing operational safety assessments for GTCC waste.

Licensees or applicants for licenses to operate LLW disposal facilities handling and disposing of Class A, B, and C wastes would complete operational safety assessments through mostly qualitative analyses using management controls such as operational procedures, training and qualifications, radiological protection systems, monitoring, and inspection. Existing LLW disposal facilities have been very successful using management controls to provide a high-level of protection to workers and the public during operations. Licensees of disposal facilities or applicants requesting NRC authorization for handling and disposing of GTCC wastes would likely use similar approaches to satisfying operational safety requirements but would need to complete a quantitative operational safety assessment. Under the proposed rule, an operational safety assessment should be more detailed and comprehensive as the level of hazard posed by the waste increases.

4. Site Stability Assessment

The current regulations in § 61.50 require that LLW disposal sites not be susceptible to erosion, flooding, seismic activity, or other disruptive events or processes to such a degree or frequency that compliance with the 10 CFR part 61 performance objectives cannot be demonstrated with reasonable assurance. Under the current and proposed rule, all applicants and licensees must demonstrate that the § 61.44 performance objective for the stability at the disposal site after closure will be met. For licensees that do not meet the criteria in § 61.1(b), this proposed rule would provide more details in 10 CFR 61.13(d) and would require that the site stability assessment must demonstrate that long-term stability of the disposal site can be ensured and that there will not be a need for ongoing active maintenance following site closure, thereby meeting the performance objective set forth in § 61.44 of this part.

The NRC has developed draft guidance stating that the site stability assessment should focus on stability of the wasteform, stability of the engineered land disposal facility, and geomorphic stability of the disposal site. For disposal of traditional LLW (*i.e.,* the range and type of LLW that was analyzed for preparation of the current 10 CFR part 61), site stability assessments would likely focus on the wasteform and engineered features. For disposal of LLW containing significant quantities of long-lived radionuclides, the focus would likely be on the engineered land disposal facility and geomorphic stability of the disposal site. The extent of the site stability assessments would be strongly influenced by the radiological characteristics of waste to be disposed. Under the proposed rule, stability of wasteforms, disposal units, engineered barriers (such as cover systems), disposal site, land disposal facility, and the general environment may all be within the scope of the site stability assessment.

5. Performance Period Analyses

A long-term analysis (*e.g.,* longer than 10,000 years) was not considered necessary in current 10 CFR part 61 because of the waste streams being disposed at that time. The original regulatory system was designed to ensure that the short- and long-term impacts were limited by regulatory requirements such as the LLW classification system and based upon waste inventories expected to be disposed of at that time.

As set forth in the proposed § 61.13(e), licensees that do not meet the criteria in § 61.1(b) and applicants that plan to dispose of LLW containing significant quantities of long-lived radionuclides would be required to prepare long-term analyses, termed ''performance period analyses,'' that assess how the land disposal facility and site characteristics limit the potential long-term radiological impacts, consistent with available data and current scientific understanding. The performance period analyses would be required only when a compliance period of 10,000 years is used by the applicant or licensee. The proposed requirement for the performance period analyses is not a dose limit, but rather a requirement that releases of radioactivity from the disposal site and exposures to the inadvertent intruder must be effectively managed during the performance period. The NRC considered a variety of requirements for performance period analyses. The requirement for effective management of doses was selected because it allows socioeconomic information to be considered in a risk-informed manner. Considering the timeframes involved, uncertainties may be considerable and therefore the precision typically assigned to a dose limit is not warranted. Although a dose limit is not prescribed, doses or concentrations and fluxes of radionuclides in the environment may be calculated, as they are commonly used in comparing alternative approaches. Acceptable approaches to performing the analyses for the performance period are described in draft guidance NUREG–2175, Revision 1.

In the performance period analyses, a licensee would be required to identify and describe the features of the design and site characteristics that will demonstrate that the performance objectives set forth in the proposed §§ 61.41(b) and 61.42(b) will be met. These analyses would also help determine whether additional measures are needed at a disposal site to ensure the protection of the general population and the inadvertent intruder from disposal of LLW containing long-lived radionuclides. The performance period analyses would determine whether new or additional limitations are needed for the disposal of some LLW streams at certain land disposal facilities.

No ending time for the performance period analyses is specified in this proposed rule. Several different factors influenced this decision. First, the analyses may demonstrate the time when the peak impact is likely to occur such that further calculation beyond when peak dose occurs is unnecessary. Because long-term impacts are driven by site-specific characteristics and the LLW that is disposed, the timing of peak impacts may differ substantially at each land disposal facility. A licensee must demonstrate that releases are effectively managed, ensuring that facilities and disposal units are not under-designed. Second, the analyses that are developed for the performance period may differ from traditional projections of long-term radiological doses. Performance period analyses may demonstrate that the performance period requirements have been satisfied irrespective of peak radiological impacts. There is uncertainty in the projected radiological risk to future populations from LLW disposal that may be based on different assumptions about the behavior and

characteristics of future society. Because of this uncertainty, this proposed rule focuses on a demonstration of how the natural and engineered barriers of the disposal system could limit future releases of material rather than the exact radiological impact to an individual or group.

iv. Revised Performance Objectives

The NRC is proposing revisions to the performance objectives found in §§ 61.41 through 61.44. The performance objectives at § 61.41, ''Protection of the general population from releases of radioactivity,'' and § 61.42, ''Protection of individuals from inadvertent intrusion,'' would be divided into two sections, (a) and (b), that distinguish between demonstrating meeting the dose limits for the compliance period and effectively managing releases of radioactivity from the land disposal site or exposures to the inadvertent intruder during the performance period. Both §§ 61.41 and 61.42 also would include an item (c), that maintains the current 10 CFR part 61 regulations that licensees who meet the criteria in § 61.1(b) would be required to comply with (instead of (a) and (b)).

The current performance objective at § 61.41 requires that concentrations of radioactive material that may be released from the disposal site to groundwater, surface water, air, soil, plants, or animals must not result in an annual dose exceeding an equivalent of 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ of any member of the public. In this proposed rule, consistent with the direction provided in Staff Requirements—COMWDM–11–0002/COMGEA–11–0002—Revision To 10 CFR part 61 (January 19, 2012), the NRC is proposing to move the current regulation's whole body and organ dose limits to § 61.41(c) for licensees that meet the criteria in § 61.1(b) and add an annual dose of 0.25 mSv (25 mrem) in § 61.41(a) that would require all other applicants and licensees to use a dose methodology consistent with the dose methodology specified in the standards for radiation protection set forth in part 20 of this chapter. The weighting factors used in the calculation of the dose would be required to be consistent with the methodology used to perform the calculation.

The current performance objective at § 61.42 requires the design, operation, and closure of the land disposal facility must ensure protection of an inadvertent intruder into the disposal site who occupies the site or contacts the waste at any time after active institutional controls over the disposal site are removed. In this proposed rule, the NRC is proposing a new inadvertent intruder annual dose limit of 5 mSv (500 mrem) for the compliance period in the 10 CFR 61.42 performance objective, which is comparable to the dose limits used to develop the LLW classification tables in the original 10 CFR part 61. The dose limit would be imposed in § 61.42(a), which would not apply to licensees who meet the criteria in § 61.1(b). These licensees would instead comply with the current regulations that are maintained in § 61.42(c).

The current performance objective at § 61.43, ''Protection of individuals during operations'' requires that operations at the land disposal facility must be conducted in compliance with the standards for radiation protection set out in part 20 of this chapter, except for releases of radioactivity in effluents from the land disposal facility governed by § 61.41 of this part. In this proposed rule, the NRC is proposing to revise the performance objective at § 61.43 to specify an annual dose limit (rather than referencing § 61.41) and add that compliance with this section must be demonstrated through the operational safety assessment.

The current performance objective at § 61.44, ''Stability of the disposal site after closure,'' requires that the disposal facility be sited, designed, used, operated, and closed to achieve long-term stability of the disposal site and to eliminate to the extent practicable the need for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required. In this proposed rule, the NRC is proposing to revise the performance objective at § 61.44 to indicate that compliance with this section must be demonstrated through the site stability assessment. The land disposal facility would be required to be sited, designed, used, operated, and closed to achieve long-term stability of the disposal site. The NRC is not proposing to specify that stability of the disposal site must be demonstrated for the compliance period, because instability is only significant if it translates to health and safety impacts and stakeholders provided input that such a demonstration out to potentially 10,000 years is difficult to support with modeling tools currently available. Compliance with the 10 CFR 61.44 performance objective would require demonstration of long-term stability to the degree it is important to continue to isolate and contain the LLW. Some instability may be tolerable. Site stability would be required to be evaluated for the compliance period, but that demonstration could transition from justifying that adequate dimensional stability will be achieved early in the compliance period to demonstrating that expected instability later in the compliance period would not compromise compliance with §§ 61.41 and 61.42.

v. Flexibility for Facilities To Develop Site-Specific Waste Acceptance Criteria

The NRC is proposing to amend 10 CFR 61.58 to require land disposal facility licensees that do not meet the § 61.1(b) criteria to implement WAC approved by the Commission (or Agreement State regulator) that provide reasonable assurance that the performance objectives of subpart C of 10 CFR part 61 will be met. The revisions would provide a risk informed approach to establishing waste acceptance criteria rather than relying on prescriptive, conservative limits. The proposed revisions include a minimum set of requirements for determining waste that is acceptable for disposal. The proposed revisions (*e.g.,* site-specific WAC, waste characterization, waste certification) would ensure that the type of information included in the WAC is adequate to characterize the waste and certify its acceptability for disposal.

The NRC's current waste acceptance requirements can be found in subpart D of 10 CFR part 61 and specify technical requirements for land disposal facilities for commercial LLW. The NRC is not proposing to revise the general organization of these requirements. The technical requirements specify the classes and characteristics of LLW that are acceptable for near-surface disposal, as well as other requirements. Section 61.55 defines the classes of LLW that are generally acceptable for near-surface disposal (*i.e.,* the LLW classification system). Section 61.56 defines the minimum characteristics for all classes of LLW and characteristics intended to provide stability of certain LLW (*i.e.,* Class B, Class C, and GTCC LLW). Additionally, § 61.52(a) specifies requirements for near-surface disposal facility operation, including segregation and intruder barrier requirements for various classes of LLW. In the current regulations, § 61.58 allows the NRC to authorize other provisions for the classification and characteristics of waste. The NRC is proposing that the new waste acceptance requirements replace the requirements permitting alternative classification and characteristics in the current § 61.58, and the alternative classification and characteristics provision in the current

§ 61.58 would be retained and moved to new § 61.55(c). Requests for alternative classification and characteristics could still be made through § 61.6, ''Exemptions.''

Differences between actual site conditions and practices at land disposal facilities and the generic assumptions used to develop the LLW classification system may result in the radionuclide concentration limits being overly restrictive. If radionuclide concentration limits are overly restrictive based on actual site characteristics, facility design, and operational practices, the LLW classification system would ensure the safe disposal of LLW, but it could impose unnecessary regulatory burdens on licensees and LLW generators. In addition, wastes may be proposed for disposal that are significantly different from those analyzed to develop the generic concentration limits found in the current regulation. The addition of the proposed requirement for an inadvertent intruder assessment would require that these significantly different wastes are analyzed to ensure that the 10 CFR part 61 performance objectives would be met prior to being accepted for disposal. The flexibility for licensees to develop site-specific WAC would provide assurance that public health and safety will be protected, while offering flexibility for facilities with strong site characteristics, design, and operational practices. This flexibility is constrained for existing Agreement State licensees by the requirement that waste with radionuclide concentrations in excess of the Class C limits codified at 42 U.S.C. 2021c(b)(1)(D) on a sum-of-fractions basis must be disposed of in a site licensed by the Commission.

This proposed rule would revise 10 CFR 61.58 to require that WAC may be either generic WAC, based on the concentration limits in § 61.55 and the waste characteristics in 10 CFR 61.56, or site-specific WAC based on the results of the technical analyses described in § 61.13. Because licensees other than those meeting the § 61.1(b) criteria would be required to develop WAC for the acceptability of LLW for disposal, this proposed rule also would revise appendix G to 10 CFR part 20 to conform to the new requirements for LLW acceptance. Waste generators would continue to comply with LLW manifesting requirements in appendix G to 10 CFR part 20 and should continue to classify LLW for shipment in accordance with the waste class as prescribed in 10 CFR 61.55 (Class A, B, C, or GTCC), such that there are no changes to current LLW shipment and transportation practices and Department of Transportation regulations.

vi. Safety Case

Licensees are responsible for demonstrating that their land disposal facilities are constructed, operated, and closed safely. To this end, 10 CFR part 61 establishes the requirements that licensees must meet to operate a land disposal facility. While the NRC concluded that the requirements specified in § 61.10, ''Content of applications,'' through § 61.16, ''Other information,'' together with the performance objectives of subpart C and the technical requirements of subpart D, ensure that a licensee or an applicant demonstrates the safety of a proposed land disposal facility, the current regulations do not require the development of a ''safety case.'' As directed by the Commission in SRM–SECY–13–0075, and to better align with international practice and provide greater transparency of safety decisions with stakeholders, the NRC is proposing to add a requirement for a safety case for new applicants and licensees that do not meet the criteria in § 61.1(b). A safety case is a high-level evaluation of the information and analyses that support the licensee's or applicant's demonstration that the land disposal facility will be constructed and operated safely. The safety case, which would be a component of an application, would provide a summary of the safety basis that the disposal site will be capable of isolating waste and limiting releases to the environment; describe the strength and reliability of the technical analyses described in § 61.13; and include consideration of defense-in-depth protections and safety relevant aspects of the site, the facility design, and the managerial, engineering, regulatory, and institutional controls.

The purpose of a safety case is to inform the decision whether to grant a license for a land disposal facility and provide a summary of the safety basis that the land disposal facility will be designed, constructed, operated, and closed safely. As such, the NRC is proposing to amend § 61.10 to require that an application must include the safety case. This proposed rule would also amend 10 CFR 61.23 to require that the safety case is adequate to support the decision to issue a license.

The primary components of the safety case are the results of the § 61.13 analyses. The NRC envisions that the safety case for a land disposal facility would evolve over time as new information is gained during the various phases of the facility's development and operation (*e.g.,* site-specific information on types, forms, and activities of LLW disposed at the site; hydrology; geography). Therefore, the NRC proposes to require the safety case be updated at license renewal if new information that could significantly impact safety of the facility is acquired. The NRC is also proposing to amend 10 CFR 61.28 to require that the application for site closure of a licensed land disposal facility include a final revision to the safety case. This requirement does not apply to licensees who meet the criteria in § 61.1(b).

The defense-in-depth principle has served as a cornerstone of the NRC's regulatory framework for nuclear reactors, and it provides an important tool for making regulatory decisions in the face of significant uncertainties. The NRC has applied the concept of defense-in-depth throughout its regulations to ensure the safety of licensed facilities through requirements for multiple, independent layers of defense, and, where possible, redundant safety systems. Traditionally, the reliance on independence and redundancy of barriers has been used to provide assurance of safety when reliable, quantitative assessments of barrier reliability are unavailable. The NRC maintains, as it has in other regulations for disposal (such as for high-level radioactive waste), that the application of the defense-in-depth concept to a LLW land disposal facility is appropriate and reasonable.

Licensees applying defense-in-depth protections for land disposal facilities need to recognize differences between operating facilities and closed land disposal facilities. While waste is being disposed, and before a land disposal facility is closed, defense-in-depth protections provide for active and passive safety systems commensurate with the hazard and complexity of the activities. Licensees applying defense-in-depth principles for regulation of land disposal facility performance for long time periods following site closure, however, must account for the difference between an operating land disposal facility with active safety systems and the potential for active control and intervention (*i.e.,* taking action to address) and a closed land disposal facility, which relies upon passive barriers. A closed disposal site is a passive system, and assessment of its safety over long timeframes is best evaluated through consideration of the relative likelihood of threats to its integrity and performance. With respect to the long-term performance of the disposal site, and in particular for the disposal of long-lived radionuclides, defense-in-depth is provided through

the diversity and capabilities of the components and attributes of the disposal site (*e.g.,* wasteform, container, engineered features, depth of the disposal unit below the land surface, hydrologic and geochemical characteristics).

Diversity in the capabilities of the components and attributes of the disposal site and its design increases the resilience of the disposal site to contend with unanticipated degradation or external challenges. This diversity also compensates, in part, for uncertainties in the long-term estimation of performance of the disposal site. The NRC continues to hold that each layer of defense must make a definite contribution to the isolation of the waste, so that the NRC can find with reasonable assurance that no single layer of defense will be relied upon exclusively to achieve the overall safety objectives over the compliance period. Disposal of LLW is predicated on the expectation that attributes of the disposal site, in combination with engineered features, will minimize the migration of radionuclides away from the disposal site. However, the capabilities of site characteristics and engineered features are subject to many uncertainties. Engineered features generally are considered more durable over short time periods as compared to periods longer than a few hundred years when uncertainties in degradation rates and natural events may be more significant. The NRC expects that licensees will rely on both the natural site characteristics and the engineered features, in combination, to provide defense-in-depth protections and reasonable assurance that the overall performance of the disposal site will be adequate over long time periods.

Defense-in-depth includes, but is not limited to, the use of siting, wasteforms and radionuclide content, engineered features, and geologic features of the land disposal facility to enhance the waste isolation resiliency of the disposal site. In addition, defense-in-depth is used to mitigate the effects of large uncertainties identified during the development of the technical analyses. Therefore, NRC is proposing that licensees or applicants, as part of the safety case specified at § 61.10(c), describe the defense-in-depth protections that enhance the resiliency of the facility in complying with the performance objectives specified at §§ 61.41 and 61.43.

vii. Safety Criteria and Limits for Licensing Land Disposal of GTCC Waste

The proposed rule introduces new provisions for specialized land disposal facilities, which are designed to safely dispose of waste streams with radionuclide concentrations exceeding the limits for near-surface disposal. These facilities must demonstrate, through a combination of engineered barriers and natural features, that inadvertent intruders will not disrupt or contact emplaced waste during the compliance period. The rule specifies technical requirements, including minimum disposal depths and performance objectives, to ensure long-term safety and environmental protection for these higher-risk waste streams. This approach provides additional disposal options for GTCC waste and supports a risk-informed, performance-based regulatory framework for low-level radioactive waste management.

The classification scheme for low-level radioactive wastes at 10 CFR part 61 is predicated on radiological risk, with Class A posing the lowest and GTCC posing the greatest risks. Commensurate with these risks, the regulations at 10 CFR part 61 provide for graded approaches for disposal of the different waste classes to ensure adequate protection of the health and safety of the public, inadvertent intruders, and workers.

For disposal of Class A, B, and C wastes, the NRC's existing regulations include requirements for disposal that align with the waste classes. For protection of inadvertent intruders, the NRC evaluated a variety of potential exposure pathways and receptors and developed limiting concentrations, as well as other requirements, to provide protection. Class A waste was assumed to be disposed with no intruder barriers and be disturbed by excavation for construction of a home after 100 years of institutional control. Class B waste is required to be disposed in a stable wasteform, which was also assumed to provide a recognizable wasteform and therefore limited the assumed exposure time to a short ''discovery'' scenario after 100 years of institutional control. Class C waste is required to be disposed of at a depth of at least 5 m or with a 500-year intruder barrier, which was assumed to provide an additional 400 years for radioactive decay after the end of institutional controls before intrusion could occur. The importance of disposal depth for Class C and GTCC waste was, and still is, that at a sufficient depth the exposure of inadvertent intruders would be via drilling to acquire resources rather than excavation of a foundation for construction of a home. Drilling typically results in disturbance of a much smaller volume of buried waste. Even if waste is disposed deeply at a facility, the concentrations provided by table 1 and 2 of 10 CFR 61.55 are based on the assumption of shallow burial and subsequent excavation.

Unlike waste that has been disposed at currently operating LLW facilities, the radiological characteristics of GTCC wastes are quite varied—some GTCC wastes have mostly short-lived radionuclides while others have more long-lived radionuclides. GTCC wastes may have concentrations of short- and long-lived radionuclides that are significantly larger than in Class A, B, or C LLW.

The proposed safety criteria and limits for licensing land disposal of GTCC waste account for these unusual characteristics. For GTCC waste, NRC's 2019 regulatory basis document concluded that some GTCC waste streams with concentrations of transuranic alpha-emitting radionuclides below 10,000 nanocuries per gram are suitable for near-surface disposal. In a 2026 supplement to the 2019 technical analysis of hazards document that supported the 2019 draft regulatory basis document, NRC determined that additional GTCC waste streams could be generally acceptable for disposal in a specialized land disposal facility.

Specifically, the NRC determined that waste streams with the radionuclide concentrations not exceeding the values in the following table could be generally acceptable for disposal in a specialized land disposal facility.

Upper Limit of Radionuclide Concentrations in GTCC Waste Generally Acceptable for Land Disposal

Radionuclide	Concentration
Sum of alpha emitting radionuclides with half-life greater than 50 years	18.5 megabecquerel per gram (500 microcuries per gram)
Sum of beta and photon emitting radionuclides with half-life greater than 50 years	1.85×10^5 gigabecquerel per cubic meter (5,000 curies per cubic meter)
Sum of beta and photon emitting radionuclides with half-life greater than 50 years in activated metal	1.85×10^6 gigabecquerel per cubic meter (50,000 curies per cubic meter)
Tc-99	1.85×10^4 gigabecquerel per cubic meter (500 curies per cubic meter)
I-129	370 gigabecquerel per cubic meter (10 curies per cubic meter)

For land disposal facilities, the NRC proposes new requirements for protection of the public after closure of the disposal facility (§ 61.41(a) and (b)), protection of the public who may inadvertently use the disposal facility after closure (§ 61.42(a) and (b)), and protection of the public during operations (§ 61.43). The NRC considered a variety of approaches to provide criteria that would ensure protection of public health and safety from the disposal of GTCC wastes. In the United States, there are multiple operating disposal facilities located in different environments using different designs. They also accept different concentrations and quantities of waste. Facilities that may be developed in the future are likely to have corresponding differences. Requiring prescriptive design features in regulations is difficult in light of these different facilities in different environments disposing of different wastes. High-quality, site-specific technical analyses can more effectively and efficiently be used to identify design, operational, and other limits to provide protection.

Because GTCC wastes exceed the concentrations of Class C waste, some additional prescriptive requirements are warranted. For near-surface disposal facilities, the NRC is proposing minimum requirements for GTCC waste of a 500-year intruder barrier and a 5-m (16-ft) disposal depth. This would ensure that at least 500 years of decay will occur before an intruder could interact with the waste and when they do interact it is unlikely to be from excavation given the depth at which the waste is disposed. Depending on the characteristics of the GTCC waste, an applicant would be able to identify in the technical analyses those additional barriers or performance characteristics that are necessary to provide protection, such as a greater disposal depth or an intruder barrier of greater longevity. The disposal depth will need to be maintained for as long as the waste is hazardous.

The NRC is proposing an upper limit for GTCC waste disposal of long-lived transuranic radionuclides in near-surface disposal of 370,000 becquerel per gram (Bq/g) (10,000 nCi/g). Previously, the NRC staff had analyzed the disposal of different types of GTCC waste and determined that, when the waste approaches concentrations of long-lived transuranic radionuclides of 370,000 Bq/g (10,000 nCi/g), it can be very difficult to establish that an intruder who inadvertently drills a well into the waste in the future would not receive an acute dose more than 0.5 mSv (500 mrem) (84 FR 35037; July 22, 2019). Therefore, the NRC is proposing this upper limit for the concentration of long-lived transuranic radionuclides in waste for near-surface disposal. However, with special technology or designs a licensee may be able to justify that performance criteria could be met with quantities in excess of this limit. Such circumstances would be evaluated on a case-by-case basis.

The NRC is proposing an upper limit for GTCC waste land disposal as shown in the table in this section of the proposed rule entitled ''Upper Limit of Radionuclide Concentrations in GTCC Waste Generally Acceptable for Land Disposal.'' At a specialized land disposal facility, the NRC is proposing that an applicant must demonstrate that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. In addition, the NRC is proposing that the licensee or applicant must demonstrate that an inadvertent intruder will not receive a dose exceeding 5 mSv (500 mrem) from unlikely but plausible onsite releases of radioactivity from the waste (*e.g.,* which could occur from using potentially contaminated groundwater pumped onsite).

Because of the difficulty of demonstrating that engineered intrusion barriers will function effectively for thousands of years into the future, the proposed rule would require licensees or applicants to demonstrate that a combination of engineered barriers and natural features will prevent an inadvertent intruder from disrupting or contacting emplaced waste while it remains a radiological hazard during the compliance period (*i.e.,* either 1,000 or 10,000 years). For example, one such natural feature might be disposal at significant depth in chemically reducing saline water under any potable aquifer an inadvertent intruder could potentially attempt to access. One such engineered feature could be a deflection plate made of a sufficient thickness of a hard, corrosion-resistant metal, such as titanium or appropriately designed alloys, which may be cost prohibitive over a large near-surface facility but could be cost effective over a small footprint, such as over a borehole waste disposal unit.

Safety of the public and workers during operation of a low-level waste disposal facility has traditionally been achieved using management controls, active and passive safety features, procedures, inspections, training, emergency response, and monitoring. The NRC evaluated accidents (*e.g.,* fires and drops) when the waste

classification system was developed, but accident scenarios did not result in modifications to limiting derived concentrations. The disposal of GTCC waste could, under certain accident conditions, result in increased offsite impacts to a member of the public. For this reason, the NRC is proposing requirements for an operational safety assessment in 10 CFR 61.13 and proposing that these assessments be quantitative for GTCC wastes.

In addition, GTCC waste may have unique characteristics compared to Class A, B, and C low-level wastes. These characteristics include heat generation, radiolysis, criticality, and dispersibility. The NRC is proposing additional waste characteristics requirements in § 61.56(c) specific to GTCC wastes that a licensee must consider. These requirements would ensure that the technical analyses are comprehensive and necessary restrictions, limits, or design modifications to account for the unique characteristics are identified and implemented.

viii. Disposal Depth

The NRC proposes different disposal depth considerations for GTCC disposal in near-surface and specialized facilities. For near-surface disposal, the NRC proposes to include a minimum disposal depth requirement of 5 meters for GTCC wastes and for waste with significant quantities of long-lived radionuclides (*e.g.,* depleted uranium). This approach would help ensure that uncertainties associated with future human activities and geomorphic evolution of landforms are mitigated by simple and easily implemented design-based requirements. A licensee would also be permitted to use greater disposal depth to mitigate uncertainties. The GTCC wastes would also be required to be disposed with intruder barriers that are designed to protect against an inadvertent intrusion for a least 500 years. For waste streams with significant quantities of long-lived radionuclides, the longevity of intruder barriers and site conditions need to be factored into the approach used to protect against an inadvertent intrusion at a closed disposal site. Because the proposed rule would also define a specialized land disposal facility to exclude near-surface disposal, waste disposed in a specialized land disposal facility would be a minimum of 30 meters below the ground surface. Furthermore, disposal of waste at significant depth (*e.g.,* below any potable water) could be a natural feature that, in combination with engineered barriers, would preclude an inadvertent intruder from disrupting or contacting emplaced waste while it remains a radiological hazard.

Requiring that certain wastes must be disposed at a minimum depth is a method used throughout the world to limit the accessibility to the waste. Some wastes may contain radionuclides that persist for long periods of time (thousands of years and longer). Other wastes, such as some GTCC wastes, may contain short-lived radionuclides in concentrations that are higher than in A, B, and C wastes. In general, near-surface disposal is used as the disposal concept for wastes that contain limited amounts of short- and long-lived radionuclides. The NRC also requires that inadvertent intruders be protected from the disposal of LLW. In the current regulations, use of the classification tables, site ownership requirements, and institutional controls provide this protection for Class A and B wastes. In addition, to achieve protection for Class C waste, the NRC currently requires that the waste must be disposed so that the top of the waste is a minimum of 5 meters below the top of the cover or must be disposed with intruder barriers that are designed to protect against an inadvertent intrusion for at least 500 years. The basis for this requirement is that if an intruder were to excavate into a closed disposal facility potentially large volumes of waste would be exhumed. Radiological impacts to inadvertent intruders are driven by the concentrations of radionuclides, which in turn are a product of the amount of waste exhumed and the volume of media in which it is dispersed in the environment. The imposition of a depth requirement for certain wastes ensures that normal means of excavation, if they were to occur, will not disturb the waste. Rather, the NRC assumed that drilling or some other form of less intrusive disturbance may occur.

The NRC is proposing to require different reference points for the determination of disposal depth for different types of waste. The NRC is requiring the reference point for determination of the disposal depth for Class C wastes to ensure that if inadvertent intrusion were to occur before sufficient decay of radioactivity in the waste, that the disturbance would not be from excavation, but rather from drilling for a well. For GTCC waste or waste with significant quantities of long-lived radionuclides (*e.g.,* depleted uranium) the reference point for the depth requirement is the land surface. This is to help mitigate uncertainties in the long-term performance of the disposal system impacted by natural and anthropogenic surface processes and events for waste that will not decay sufficiently for long periods of time.

ix. Physical Protection of LLW Including GTCC Waste

The NRC is proposing to revise its physical security regulations to clarify physical protection requirements for SNM being disposed in a land disposal facility licensed by the NRC. These revisions would take into account the material attractiveness of the SNM and are intended to provide a set of security measures that would reduce the regulatory burden on licensees of such facilities.

As discussed in the DOE FEIS], GTCC waste streams are quite varied. Some of the GTCC waste streams may contain quantities of SNM that would require physical protection measures. Additionally, specific wastes that fall under Classes A, B, C low-level radioactive wastes could contain sufficient quantities of SNM that could require physical protection under the current regulations. The current regulations at 10 CFR part 61 require any application to receive and possess SNM in quantities subject to the requirements of 10 CFR part 73 (Physical Protection of Plants and Materials) to include information on how the physical security requirements will be met (see 10 CFR 61.16). These requirements are limited to quantities of SNM prior to disposal and do not apply to quantities that have been disposed.

The objective of physical protection of radioactive waste at a land disposal facility is to prevent the theft or diversion of radioactive material with the intent of nefarious purposes (*e.g.,* potential use in an improvised nuclear device [IND]), and limiting, as appropriate, the potential for a successful sabotage event. The regulations at 10 CFR part 73 require, in part, the establishment and maintenance of a physical protection system that will have capabilities for the protection of SNM at fixed sites. A low-level waste disposal facility is expected to only have dilute concentrations of SNM in quantities of low strategic significance; therefore, multiple thefts would be required for an adversary to obtain a formula quantity of plutonium, uranium-233, or high enriched uranium.

In the physical security context, material attractiveness refers to form and concentration of the material, the relative ease of theft or diversion, and the capability level required to process material containing SNM for use in an IND. Material in forms and concentrations that are more difficult to readily turn into an IND are considered less attractive for potential theft or

diversion. A radioactive waste disposal facility presents some unique challenges to an adversary seeking to obtain SNM for use in an IND. These challenges include the following:

1. Radioactive waste containers are very similar in appearance.

Radioactive waste containing SNM at a land disposal facility can be expected to be stored in similar containers as other waste types. For theft or diversion of SNM to occur, an adversary would need to have knowledge of which containers have higher concentrations of SNM, therefore increasing the volume of waste that would need to be stolen to obtain a quantity of SNM potentially useful for an IND.

2. Radioactive waste only contains dilute amounts of SNM.

Processes and activities using SNM can generate waste material containing SNM; however, SNM that is readily separable from a waste stream is typically removed, resulting in low concentrations of SNM in waste materials. Low concentrations of SNM in waste materials present difficulties in separating SNM from waste material due to the need to process large volumes of waste material. Dilution of SNM in radioactive waste materials inhibits an adversary's ability to acquire and use the material in an IND. Greater levels of material dilution create a set of progressively greater complexities associated with material acquisition (because of material weight and size) and processing (because of larger equipment and process scales, increased processing timelines, and higher cost). Additionally, the increased time and resource burden on the adversary to process dilute material increases the chances for timely interruption of adversary actions and material recovery by law enforcement organizations. The SNM in waste material is typically highly dilute and distributed through a high volume of waste. This limits the attractiveness of this material as a target for theft or diversion.

3. Separation of SNM as usable material for an IND can be complex.

Separation of SNM from radioactive waste material for an IND can be complicated for radioactive waste streams due to the presence of both non-radioactive material and other radionuclides and isotopes of uranium and plutonium.

Radioactive waste containing low concentrations of SNM that is not readily separable from the radioactive waste presents adversaries with greater technical, operational, and logistical challenges when conducting SNM processing operations and constructing an IND. All of these challenges result in such waste materials being more difficult to steal and easier to recover. For example, obtaining a formula quantity of strategic SNM from radioactive waste at a concentration of 0.01% of SNM would require theft and subsequent processing of tens of tons of radioactive waste. Assuming that an adversary was able to select primarily those packages with plutonium at a concentration very near to a concentration of 0.01% (*e.g.,* assume half of the diverted waste containers contain SNM at concentrations much less than 0.01%), an adversary would need 40 metric tons of radioactive waste or on the order of 100 waste drums. Although detection of the diversion of a single radioactive waste drum may go unnoticed, diversion or theft of tens of drums is easily detected. A large pickup truck (*e.g.,* one-ton truck) could potentially remove five waste drums. Theft of 100 drums would be far more noticeable, take longer to load, and require significantly more SNM waste to be available at the time of the theft. Further, the additional limitation that the quantity is of low strategic significance would require multiple thefts even if the adversary successfully found and removed only those packages with an amount of SNM at the maximum quantity to be considered of low strategic significance (*e.g.,* regardless of truck size and number of waste containers removed an adversary would need a larger quantity of low strategic significance material than is present at the facility, prior to disposal, to obtain sufficient material for the purpose of constructing an IND assuming the adversary could separate all the SNM from the waste). Multiple attempts at removing all the SNM waste containers present at a facility would be extremely unlikely to succeed without detection.

Additionally, the International Atomic Energy Agency (IAEA) has provided recommendations on physical protection (INFCIRC/225/Revision 5, IAEA Nuclear Security Series No. 13, IAEA, Vienna (2011)) that recognizes a graded approach for physical protection based on the attractiveness of the material. Paragraph 4.7 of the IAEA report states that nuclear material, which is in a form that is no longer usable for any nuclear activity, minimizes environmental dispersal and is practicably irrecoverable, may be protected against unauthorized removal in accordance with prudent management practice.

The limited attractiveness of radioactive waste with specific characteristics (*i.e.,* quantity of material of low strategic significance containing very dilute concentrations of SNM such as 0.01%, SNM that is not readily separable from the non-SNM waste material using equipment commercially available to individuals—such as bulk screening and sifting equipment) provides a reasonable demarcation for physical protection of radioactive waste materials at a land disposal facility.

The NRC is proposing a revision to its regulations at 10 CFR part 73 to include an exemption from the physical protection requirements in 10 CFR 73.67 for SNM of limited attractiveness at a land disposal facility licensed by the NRC. The NRC's proposed approach is similar to exemptions currently specified at § 73.67(b)(1)(i) through (iii) that exempt materials containing SNM from the requirements of § 73.67 due to specific attributes and characteristics of the material. Adding an exemption to § 73.67(b)(1) for radioactive waste containing SNM of limited attractiveness would allow for more risk-informed security requirements for land disposal facilities accepting such waste than is currently provided for in § 73.56(b)(1)(i) through (iii).

These proposed changes to part 73 would affect only facilities licensed by the NRC and not Agreement State licensees because the security requirements in 10 CFR part 73 were promulgated pursuant to the NRC's authority to protect the common defense and security. Consistent with section 274 of the AEA, the NRC cannot discontinue its regulatory authority over matters related to common defense and security.

The exemption from the requirements at § 73.67 for radioactive waste containing SNM to be disposed at a land disposal facility that is of limited attractiveness for theft and diversion would not exempt the licensee from physical protection and security requirements in other parts of NRC's regulations. Any land disposal facility is still required to provide physical protection and security for radioactive material under 10 CFR part 20, subpart I, as well as other physical protection requirements under 10 CFR part 37 for radioactive waste regulated by that part. This proposed revision is intended to provide appropriate flexibility to NRC regulating Class A, B, C, and GTCC wastes that meet the requirements for safe disposal at a near-surface disposal facility. Draft NUREG–2175, Revision 1 would provide guidance regarding physical protection.

x. Criticality Safety of LLW Including GTCC Waste

The current regulations at § 61.16(b) identify other safety information

concerning criticality that, if appropriate, is required for demonstrating criticality safety. The NRC is proposing to revise § 61.16(b) with respect to criticality safety during operations so that NRC applicants and licensees would not be required to consider radioactive waste containing fissile material meeting the requirements specified at § 71.15(c). As specified in the first sentence of § 61.23(j), which is current existing language, an applicant must demonstrate the adequacy of its criticality safety procedures to protect the public health and safety and provide reasonable assurance that the requirements of § 70.24, ''Criticality accident requirements,'' will be met, insofar as they are applicable to SNM to be possessed before disposal under the license. These requirements would apply when a licensee is authorized to possess SNM in a quantity exceeding the amounts specified at § 70.24(a) (*e.g.,* 700 grams (g) of U–235, 450 grams of plutonium). The second sentence of § 61.23(j) is new regulatory text and applies only to disposal of GTCC waste.

Some of the GTCC waste streams described in the DOE's FEIS contain SNM in quantities and concentrations significantly greater than that associated with Class A, B, and C wastes. The NRC staff is proposing revisions to provide for appropriate criticality controls for GTCC waste (1) during the operation period of a land disposal facility prior to disposal (*i.e.,* receipt, handling, emplacement of waste) and (2) after the operational period has ended and the facility is closed (*i.e.,* waste is no longer being disposed).

Most GTCC waste in DOE's FEIS is expected to be packaged in a variety of different container types depending on the type of waste and radionuclides present (*e.g.,* sealed sources in a 210 L (55-gallon) sized container, a stainless-steel activated metal canister, a standard waste box that holds approximately five times more waste volume than a 210 L (55-gallon) drum). Future GTCC wastes from a reprocessing facility may be disposed in specialized canisters used for very specific wasteforms. These wasteforms could also include SNM in a quantity exceeding the amounts specified at § 70.24(a). As GTCC waste containers are received at a land disposal facility, the requirements for criticality safety would apply when the threshold amounts specified at § 70.24(a) are exceeded for those waste containers that are not yet disposed (*i.e.,* waste containers on the surface of the facility). In general, criticality safety would be associated with the configuration of those waste packages containing SNM during storage on the surface and how they are emplaced within a disposal unit (*e.g.,* both the stacking of waste containers and the areal array of packages).

The NRC has previously considered specific configurations of waste packages containing fissile material in the context of transportation packages that are also appropriate for criticality safety during operations at a low-level waste facility with waste packages containing similar fissile material. In particular, 10 CFR part 71 provides exemptions from classification of radioactive material as fissile material when specific requirements are met (*e.g.,* § 71.15(c) provides an exemption for low concentrations of solid fissile material commingled with solid nonfissile material meeting certain specifications). NUREG/CR–7239, ''Review of Exemptions and General License for Fissile Material in 10 CFR [Part] 71,'' provides explanatory information on the background, intent, and anticipated use of the provisions to assist fissile material licensees in their interpretation and application of the provisions such that criticality safety is ensured during transportation activities. This document states that criticality safety risk depends on several factors including the mass, concentration, or isotopic distribution of the fissile material and the system geometry and surrounding materials (reflectors) that might reflect neutrons back into the package (NUREG/CR–7239, page 1).

The NRC is proposing to amend § 61.16 to adopt an exemption at 10 CFR 71.15 for the disposal of certain solid fissile material at low-level waste disposal facilities because the criticality considerations for transportation packages are also appropriate for operations at a low-level waste facility. The NRC's transportation regulations at 10 CFR 71.15 provide that certain material is exempt from classification as fissile material under conditions for the fissile material type, quantity, form, moderation, and mass concentration for which there are no credible means to achieve a critical condition under normal conditions of transport or hypothetical accident conditions. The intent of including exemptions from classification as fissile material in the regulations is to reduce the burden and cost imposed for packages that contain quantities and concentrations of fissile material that are low risk in terms of potential for inadvertent criticality in transport. These packages can be shipped without a packaging assessment for criticality safety purposes and require little or no regulatory oversight to ensure inadvertent criticality will not occur (NUREG/CR–7239, page 16).

The exemption for low concentrations of solid fissile material at § 71.15(c) is a condition that is applicable to radioactive waste packages containing waste material that meets the requirements for the exemption. NUREG/CR–7239 considered a variety of scenarios and accident conditions in analyzing the safety margin provided by the low concentration exemption at § 71.15(c), which requires at least 2000 grams of solid nonfissile material for every gram of fissile material. These accident conditions included fire, water immersion, reconfiguration into a worst-case geometry, and the combining of material from multiple packages.

As stated in NUREG/CR–7239, the criteria for exemption from classification as fissile material are designed to maintain the fissile concentration, fissile mass, and/or fissile enrichment sufficiently low that accidental criticality is not credible under normal conditions of transport or hypothetical accident conditions, as defined in 10 CFR part 71. Under normal conditions of transport, a single package could easily be shown to remain subcritical; however, the fissile exemptions also consider the accumulation of fissile mass as a result of the commingling of multiple packages. Therefore, the fissile mass or mass concentration must be sufficiently low, based on conservative assumptions, to assure a subcritical arrangement for transport of individual or multiple packages. The exemption criteria are based on worst-case or optimal conditions, including: unlimited accumulation; optimum moderation by water; presence of low-neutron-absorbing moderators such as beryllium, graphite, or hydrogenous material enriched in deuterium; spherical geometry; and pure fissile content (*i.e.,* plutonium-239, plutonium-241, uranium-235, or uranium-233, without nonfissile uranium and plutonium nuclides). For purposes of ensuring criticality safety, the exemptions consider that the material can be released from any packaging during transport, may reconfigure into a worst-case geometric arrangement, may combine with material from other transport vehicles, and may be subject to the fire and water immersion conditions assumed as part of the criticality safety assessment for package designs approved to transport fissile material.

NUREG/CR–7239 is a bounding analysis for a land disposal facility because the accidents analyzed for NUREG/CR–7239 (fire, water

immersion, reconfiguration into worst-case geometry, unlimited accumulation from multiple packages) are representative of extreme accidents and conditions during operations at a disposal facility (*e.g.,* handling accidents, flooding, fires). The concentrations that form the basis for the exemption at § 71.15(c) are based on accident scenarios analyzed in NUREG/CR–7239. Importantly, if the exemption at § 71.15(c) were adopted for low-level waste facilities, it would not restrict the number and configuration of the waste packages stored on the surface or emplaced within a disposal unit. However, such an exemption would place certain requirements on the commingling of fissile and nonfissile material and homogeneity of the wasteform, which are also addressed in NUREG/CR–7239.

Homogeneity of the wasteform is important to ensure that heterogeneities within the wasteforms are such that it would not be credible to accumulate the volume and configuration of fissile material to introduce criticality concerns. Small heterogeneous volumes can be expected to exist in a number of wasteforms, however, the requirement that 180 g of fissile material be distributed within a minimum of 360,000 g (360 kilogram (kg)) of contiguous nonfissile material provides added assurance that redistribution of the potentially heterogeneous portions of the fissile material will not result in a criticality concern (see NUREG/CR–7239 pages 20 and 21 for further details).

In summary, the NRC considers the exemption at § 71.15(c) and the associated criteria for its implementation to be appropriate for waste packages received, handled, stored, and emplaced at a land disposal facility. NUREG/CR–7239 provides extensive evaluations of criticality risk over a range of accident conditions designed to enhance the likelihood of a criticality (*e.g.,* fire, waste immersion, reconfiguration into a worst-case geometry, and the combining of material from multiple packages). NUREG/CR–7239 demonstrated that even under these optimum conditions for a criticality to occur there is still a large safety margin in preventing a criticality (NUREG/CR–7239; Figure 3). The NRC is therefore proposing to revise § 61.16(b) with respect to criticality safety during operations so that an applicant for an NRC license would not be required to consider radioactive waste containing fissile material meeting the requirements specified at § 71.15(c). Draft guidance is provided in NUREG–2175, Revision 1 regarding criticality controls during operations.

Following the cessation of operations and after a land disposal facility is closed, the overall amount of GTCC waste disposed could contain significant amounts of fissile material (*i.e.,* greater than a critical mass). The DOE's FEIS accounted for approximately 12,000m^3 of waste streams that, when combined, have the potential to include large quantities of fissile material (*e.g.,* tens to hundreds of kilograms). Depending on the wasteform and disposal system design, reconcentration of fissile material could occur following disposal as containers degrade and radionuclides are mobilized by infiltrating water. An applicant should consider the potential for reconcentration of fissile material contained in GTCC waste at a facility that disposes of significant amounts of fissile material. The NRC is proposing to add a requirement in § 61.16(b)(3) that an applicant must provide information identifying the design attributes that limit the potential for reconcentration of fissile material following disposal when disposing of more than a critical mass of material in a disposal unit. Draft guidance is provided in NUREG–2175, Revision 1 to help determine what is a significant quantity of long-lived radionuclides. The NRC has provided draft guidance in NUREG–2175, Revision 1, related to postclosure criticality safety considerations. For example, NUREG–2175 contains guidance regarding the potential for reconcentration of fissile material.

Although the exemption at § 71.15(c) for designating SNM radioactive waste material as non-fissile was evaluated in the context of land disposal of GTCC radioactive waste rather than Classes A, B, and, C low-level waste, the basis for this exemption is equally valid for Classes A, B, and C radioactive waste because radionuclides are fissile or non-fissile regardless of waste class. Application of this exemption to Classes A, B, and C low-level waste would provide NRC licensees with the flexibility to dispose of certain, limited waste streams containing fissile material.

Section 274b.(3) of the AEA precludes the NRC from relinquishing its authority over SNM unless the material quantities are not sufficient to form a critical mass. Those limits are defined in 10 CFR 150.11, ''Critical mass.'' The Commission Staff Requirements Memorandum on SECY–98–226, ''Issuance of a Section 274f, Atomic Energy Act Order to Exempt Envirocare of Utah, Inc. From Licensing Requirements for Special Nuclear Material in Diffuse Waste That Will be Regulated by the State of Utah,'' issued on October 22, 1998, allowed the NRC to conclude that an exemption from 10 CFR part 70 license requirements for a land disposal facility could be based on concentration limits and other considerations to ensure that quantities greater than a critical mass are safe. As stated in SECY–98–226: ''At the time Part 150 was developed, the Commission likely did not envision that large quantities of diffuse waste containing low concentrations of SNM would be generated. Therefore, mass limits that are in part 150 have little relevance to large quantities of diffuse waste containing low U–235 concentrations, other than providing absolute assurance of criticality safety by preventing accumulation of a critical mass'' (September 29, 1998).

For over 20 years, the NRC has implemented a process for commercial LLW sites located in an NRC Agreement State that allows for Agreement State authority over the receipt, possession, and disposal of quantities SNM greater than a critical mass that are safe under certain prescribed conditions. That process must have the support of the NRC Agreement State in which the commercial LLW site is located with an effective NRC Exemption Order for SNM.

Currently, there are two near-surface disposal facilities with an NRC Exemption Order for SNM:

1. NRC Exemption Order for SNM to EnergySolutions-Utah is from January 2003 (68 FR 7399; February 13, 2003); but, with the name change from Envirocare-Utah to EnergySolutions-Utah from May 2006 (71 FR 34168; June 13, 2006).

2. NRC Exemption Order for SNM to Waste Control Specialists LLC-Texas is from December 2014 (79 FR 73647; December 11, 2014), as supplemented by the five NRC letters dated September 23, 2016, September 26, 2017, December 19, 2018, December 7, 2020, and June 8, 2022.

The proposed changes to § 61.16(b)(1) and (2) for disposal of radioactive waste would not change the current orders for Energy Solutions-Utah and Waste Control Specialists LLC-Texas.

xi. Agreement State Authorities Under 10 CFR Part 150

The NRC is proposing several changes to 10 CFR part 150 to clarify LLW disposal activities that can be regulated by Agreement States and which activities must be regulated by the NRC. As discussed in Section IV. B. ii. of this proposed rule, the NRC has determined that it may not relinquish its regulatory

authority with respect to the disposal of GTCC waste. Section 3 of the LLRWPAA delineates the LLW disposal responsibilities between the States and the Federal Government. Section 3(b)(1) of the LLRWPAA provides that the Federal Government is responsible for regulating and providing for the disposal of GTCC waste streams. Section 3(b)(2) of the LLRWPAA provides that all radioactive waste designated a Federal responsibility pursuant to (b)(1)(D) (a section which pertains to GTCC waste) that results from activities licensed by the NRC under the AEA shall be disposed of in a facility licensed by the NRC that the Commission determines is adequate to protect the public health and safety. Accordingly, the NRC is proposing to amend 10 CFR 150.15(a) to reflect that disposal of GTCC waste is an activity that must be exclusively licensed by the NRC.

Additionally, the NRC is proposing to revise 10 CFR 150.15(a)(4) to maintain federal oversight in determining which wastes are incidental to reprocessing but also allow the Agreement States to regulate disposal sites that receive this waste if it is Class A, B, or C. Section 150.15(a)(4) precludes, on a generic basis, Agreement State authority for the transfer, storage, or disposal of radioactive waste material resulting from the separation in a production facility of SNM from irradiated nuclear reactor fuel (reprocessing waste). This exclusion was adopted by the Atomic Energy Commission (AEC) in 1962 without a distinction whether the radioactive waste was high-level or low-level waste. At that time, the AEC determined that high-level radioactive waste should not be disposed of without a license from the AEC and stated the States would have control over land disposal of LLW (27 FR 1350; February 14, 1962).

The concept of waste incidental to reprocessing, or waste that can be managed based on the risk rather than the source, has been recognized since 1969 when the AEC issued a proposed rulemaking regarding the siting of reprocessing facilities. Waste incidental to reprocessing can include a variety of items (*e.g.,* ion exchange beds, sludges, contaminated laboratory items, clothing, tools, and equipment). The history of NRC's role in waste incidental to reprocessing is provided in NUREG–1854, ''NRC Staff Guidance for Activities Related to U.S. Department of Energy Waste Determinations.'' In 1993, the Commission approved specific criteria for determining whether a waste was incidental to reprocessing and appropriate for disposal as low-level waste (58 FR 12342; March 4, 1993). The determination is made by the appropriate Federal regulator (NRC for commercial licensees; DOE for wastes generated by DOE) for the waste generator to treat the waste as incidental and appropriate for land disposal.

Accordingly, the NRC is proposing revisions to clarify that Agreement States may still regulate the transfer, storage or disposal of contaminated equipment or waste incidental to reprocessing that has been evaluated and approved as material to be disposed at a near-surface land disposal facility. Stated differently, while the Federal government retains authority over reprocessing facilities, Agreement States may regulate waste determined to be incidental to reprocessing that qualifies as Class A, B, or C.

xii. ALARA Discussion

The proposed rule replaces the ALARA references in § 61.41 and 61.43 with a reference back to 10 CFR 20.1101(b). The proposed cross-reference will provide consistency across NRC's regulatory framework and allow part 61 to remain consistent with any changes to part 20.

xiii. Commencement of Construction

The NRC proposes to clarify the definition of ''commencement of construction'' and add a definition for '''construction'' consistent with changes made in a 2011 rulemaking for licensing and approval processes for byproduct, source, and special nuclear materials licenses, and irradiators (76 FR 56951; September 15, 2011). A licensee may commence construction, at its own risk, provided there is no nexus to radiological safety.

xiv. Preoperational Monitoring Data Collection

The NRC proposes to amend § 61.53(a) to remove the requirement that an applicant conduct a preoperational monitoring program as the source of the required environmental data on disposal site characteristics. This amendment would allow applicants flexibility to rely on multiple sources of information, such as pre-existing environmental data, as applicable, as part of the required environmental data submission.

xv. Unofficial Redline Strikeout

The NRC prepared an unofficial redline strikeout version of the proposed changes to regulatory text that is intended to help the reader identify the proposed changes. This document compares the proposed changes to the NRC's regulations to the current regulations in the CFR. The unofficial redline strikeout version of the proposed rule is publicly available and is listed in the ''Availability of Documents'' section.

V. Specific Request for Comment

The NRC is seeking advice and recommendations from the public on the proposed rule. The NRC is particularly interested in comments and supporting rationale from the public on the following:

1. The proposed rule contemplates performance evaluations that can cover periods up to 10,000 years and qualitative analyses of periods beyond those time frames. The new specialized land disposal category for GTCC waste encompasses a wide range of concentrations of long-lived alpha-emitting radionuclides, generally from 10,000 to 500,000 nCi/g, with the potential for higher concentrations through the site-specific waste acceptance criteria process. Because this approach is new and applies to GTCC waste streams with potentially high concentrations of long-lived alpha emitters, the NRC seeks stakeholder perspectives on:

(a) What challenges could arise from performing analyses over these timeframes?

(b) What steps can the agency take to clarify expectations and to help applicants and licensees maximize the realism and fidelity of these analyses?

(c) What alternative approaches, such as durations or additional qualitative factors graded by the concentration of waste, should the NRC consider to improve the effectiveness or clarity of either the compliance period or the performance period?

2. Under the proposed rule, the NRC would license disposal of GTCC waste streams under part 61.

(a) What steps can the NRC take to ensure that states' insights are considered and received with respect to licensing GTCC facilities?

(b) Does part 61, subpart F, appropriately enable states to consider and provide input in NRC licensing of GTCC facilities?

3. Proposed section 61.58(e) requires licensees to undertake an annual review of the inputs to the site-specific performance analysis. Does the annual review provide sufficient flexibility to licensees?

4. Advanced reactors, advanced reactor fuels, emerging reprocessing approaches, and expanded medical and industrial uses of radioisotopes will potentially generate novel GTCC streams. A clear disposal pathway for

these emerging waste streams is essential.

(a) Do the proposed concentration limits, performance assessment methodology and waste characterization expectations remain valid for these emerging waste streams?

(b) Are there alternatives or other considerations that should be addressed to accommodate novel GTCC waste streams?

5. In the draft regulatory analysis, the NRC's cost-benefit evaluation focusses primarily on quantified costs and averted storage costs associated with earlier disposal of GTCC waste. The analysis notes that many potential benefits—such as increased disposal efficiencies, expanded disposal options for generators, and reductions in long term uncertainties—were not quantified.

(a) To help the NRC further inform and enhance the regulatory analysis, the NRC requests stakeholder input on any additional data, analyses, or supporting information that could help characterize costs or benefits not currently quantified. Specifically, the NRC is seeking information, operational experience, or cost data that the NRC can leverage to refine or expand the analysis of impacts associated with the proposed rule. Benefits of providing an alternative path for disposal for reprocessing wastes and other waste streams, which previously would not have been considered for land disposal, are of particular interest to the NRC.

6. The proposed rule permits the use of site-specific Waste Acceptance Criteria (WAC) for GTCC specialized land disposal, which could allow for the disposal of waste with concentrations exceeding the standard specified limits established for GTCC specialized land disposal.

(a) What are the expected benefits and drawbacks of allowing a higher GTCC specialized land disposal limit with a site-specific WAC? What specific use cases are expected to leverage these flexibilities and what benefits are anticipated for these use cases if the flexibilities are adopted? Please provide quantitative information and description of use cases to the extent possible; however, qualitative assessments would be useful, as well.

(b) Are there potential qualitative or quantitative limits on the concentration of activity allowed in a GTCC specialized land disposal with a site-specific WAC that the NRC should consider? Are there any practical use cases that would be challenged by limiting the concentration?

7. The proposed rule would require an application for a LLW disposal facility to include a safety case as newly defined in this proposed rule. The safety case is an integrated, concise, and transparent synthesis of technical analyses, site characteristics, facility design, and management/regulatory controls that collectively demonstrate how the facility will meet the performance objectives in subpart C of part 61. The safety case is intended to support the licensee's demonstration that the land disposal facility will be constructed and operated safely and facilitate effective review by the NRC and public understanding. Recognizing that most of the technical elements are already required under current regulations, this proposed requirement seeks to ensure these elements are integrated and communicated in a coherent manner.

(a) Is the guidance provided in draft NUREG–2175 sufficient to address the appropriate scope, structure, and level of detail that should be included in the safety case for land disposal facility license applications? If not, what additional guidance or clarifications would be beneficial to ensure the safety case provides a clear, integrated, and risk-informed basis for regulatory decision-making?

(b) Are there international or domestic best practices regarding the scope of the safety case that NRC should consider?

(c) Are there additional guidance documents or supporting materials that should be updated or developed to facilitate effective implementation of the safety case requirement?

Provide the basis for your responses, including any relevant experience, best practices, or suggestions for further clarifying the safety case requirement in the final rule.

VI. Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule, if adopted, will not have a significant economic impact on a substantial number of small entities. This proposed rule affects only the licensing and operation of LLW disposal facilities. The companies that own these facilities do not fall within the scope of the definition of ''small entities'' set forth in the Regulatory Flexibility Act or the size standards established by the NRC (10 CFR 2.810).

Any small entity subject to this regulation that determines, because of its size, it is likely to bear a disproportionate adverse economic impact should notify the Commission of this opinion in a comment that indicates—

(a) The licensee's size and how the proposed regulation would impose a significant economic burden on the licensee as compared to the economic burden on a larger licensee;

(b) How the proposed regulations could be modified to take into account the licensee's differing needs or capabilities;

(c) The benefits that would accrue or the detriments that would be avoided if the proposed regulations were modified as suggested by the licensee;

(d) How the proposed regulation, as modified, would more closely equalize the impact of NRC regulations or create more equal access to the benefits of Federal programs as opposed to providing special advantages to any individual or group; and

(e) How the proposed regulation, as modified, would still adequately protect public health and safety.

Comments should be submitted as indicated under the **ADDRESSES** caption.

VII. Regulatory Analysis

The NRC has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the NRC. The NRC requests public comment on the draft regulatory analysis. The regulatory analysis is available as indicated in the ''Availability of Documents'' section of this document. Comments on the draft analysis may be submitted to the NRC as indicated under the **ADDRESSES** caption of this document. The conclusion from the analysis is that this proposed rule and associated guidance will result in net cost savings to the industry, the NRC, and Agreement States of $39.4 million using a 7-percent discount rate and $69.9 million using a 3-percent discount rate, using a 30-year analysis period. Detailed information on the costs and cost savings is presented in Table 1.

BILLING CODE 7590–01–P

Table 1—Total Costs and Cost Savings of Proposed Rule

[In 2024 dollars]

Attribute	**Costs**		
	Undiscounted	Discounted (7%)	Discounted (3%)
Industry Total:	$0	$0	$0
DOE Total:	$0	$0	$0
NRC Total:	310,000	270,000	290,000
AS Total:	500,000	340,000	420,000
Net:	810,000	610,000	710,000
Annualized:		49,158	36,224
Attribute	**Cost Savings**		
	Undiscounted	Discounted (7%)	Discounted (3%)
Industry Total:	($570,000)	($430,000)	($500,000)
DOE Total:	($109,720,000)	($39,170,000)	($69,640,000)
NRC Total:	(260,000)	(170,000)	(210,000)
AS Total:	(50,000)	(40,000)	(50,000)
Net:	(110,870,000)	(39,950,000)	(70,600,000)
Annualized:		(3,220,000)	(3,602,000)
Attribute	**Net Cost Savings**		
	Undiscounted	Discounted (7%)	Discounted (3%)
Industry Net:	($570,000)	($430,000)	($500,000)
DOE Total:	($109,720,000)	($39,170,000)	($69,640,000)
NRC Net:	50,000	100,000	80,000
AS Net:	450,000	300,000	370,000
Net:	(110,060,000)	(39,350,000)	(69,890,000)
Annualized:		(3,171,000)	(3,566,000)
Qualitative Benefits:	Public Confidence, Improvements in Knowledge, Regulatory Flexibility		

BILLING CODE 7590–01–C

VIII. Backfitting and Issue Finality

The NRC has determined that the backfitting provisions in 10 CFR 50.109, 53.1390, 70.76, 72.62, and 76.76 and the issue finality provisions in 10 CFR parts 52 and 53 do not apply to this proposed rule. This rulemaking would apply to applicants for a new low-level waste facility license, current low-level waste facility licensees, and current low-level waste facility licensees that submit an application to the NRC to dispose of GTCC waste or submit a license amendment request to dispose of significant quantities of long-lived radionuclides, the application for which is submitted after the effective date of this rulemaking. These licensees would be regulated in accordance with 10 CFR part 61. As 10 CFR part 61 contains no backfitting provisions, and these licensees are not within the scope of an NRC regulation that contains a backfitting or issue finality provision, this proposed rule is not within the scope of the NRC's backfitting and issue finality provisions.

However, while this proposed rule is not within the scope of NRC's backfitting and issue finality provisions, the NRC nevertheless considered what new or revised regulations in proposed 10 CFR part 61 should apply to existing facilities. Proposed § 61.1(b)(1) lists the new or revised regulations that need not apply to existing licensees. To arrive at the regulations listed in proposed § 61.1(b)(1), the NRC relied upon principles in its backfitting regulations. The regulations listed in proposed § 61.1(b)(1) need not apply to licensees that are conducting activities that already have a clear safety basis. As a consequence, the NRC determined that a consideration of backfitting principles warrants excusing those licensees from adopting the new regulations.

IX. Cumulative Effects of Regulation

The NRC seeks to minimize potential negative consequences resulting from the cumulative effects of regulation

(CER). The NRC believes that the de-regulatory impacts of this rulemaking activity are unlikely to cause implementation challenges for stakeholders. In addition, during the pendency of this rulemaking, the NRC is deprioritizing issuance of regulatory actions that might influence the implementation date for the new rule requirements (*e.g.,* orders, generic communications, license amendment requests, and inspection findings of a generic nature).

To fully understand any potential CER implications that could result from this rulemaking, the NRC is asking the following questions. Response to these questions is voluntary and any input will be considered during development of the final rule.

1. The NRC is proposing an effective date that will be 30 days after the date of publication of a final rule. Does this provide sufficient time to implement the proposed requirements? Please provide a rationale for your response.

2. Are there unintended consequences related to this rulemaking and how should they be addressed? Please provide a rationale for your response.

3. Please comment on the NRC's cost and benefit estimates in the regulatory analysis that supports this proposed rule.

X. Plain Writing

The Plain Writing Act of 2010 (Pub. L. 111–274) requires Federal agencies to write documents in a clear, concise, and well-organized manner. The NRC has written this document to be consistent with the Plain Writing Act as well as the Presidential Memorandum, ''Plain Language in Government Writing,'' published June 10, 1998 (63 FR 31885). The NRC requests comment on this document with respect to the clarity and effectiveness of the language used.

XI. National Environmental Policy Act

A. Introduction

The NRC has prepared this environmental assessment (EA) of the proposed rule amending low-level radioactive waste disposal regulations to determine the significance of the environmental effects of the proposed agency action in accordance with the National Environmental Policy Act of 1969, as amended (NEPA) and NRC's NEPA implementing regulations in 10 CFR part 51, ''Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.'' As explained in this assessment, the NRC has determined that the proposed agency action to amend low-level radioactive waste disposal regulations would have no significant effect on the quality of the human environment.

B. Environmental Impact of the Proposed Agency Action

Proposed rule changes would occur in 10 CFR parts 20, 61, 73, and 150. Conforming changes would be made to guidance consistent with changes to regulations. Table B–1 lists the sections of the regulations being changed and affected guidance.

Table B-1 Regulations Under Consideration in the Low-Level Radioactive Waste Disposal Rulemaking

Regulations	Guidance
20.1003, Appendix G to Part 20, 61.1, 61.2, 61.3, 61.4, 61.7, 61.8, 61.9, 61.9a, 61.10, 61.12, 61.13, 61.16, 61.20,61.22, 61.23, 61.24, 61.25, 61.26, 61.27, 61.28, 61.29, 61.30, 61.32, 61.41, 61.42, 61.43, 61.44, 61.50, 61.51, 61.52, 61.53, 61.55, 61.56, 61.57, 61.58; 61.59, 61.61, 61.62, 61.63, 61.71, 61.73, 61.80, 61.81, 61.82, 61.84, 73.67, 150.11, 150.14, 150.15	NUREG-2175, Rev. 1

Conforming changes are administrative actions with no physical environmental effect and provide for the appropriate administrative and regulatory framework for package certification under title 10 of the CFR. An example would be adding a reference to a newly created subsection in an existing regulation. All proposed amendments to NRC regulations in the proposed rule occur within their affected regulation.

i. Rule Amendments Addressed Under Categorical Exclusion

The NRC has determined that some of the changes to the regulations identified in this proposed rule meet criteria for categorical exclusion under § 51.22, ''Categorical exclusions.'' Categorical exclusions provide a mechanism to identify Federal actions that normally do not have a significant environmental effect on the human environment and for which neither an environmental assessment nor environmental impact statement is normally required. This ensures that resources are not expended on the environmental analysis of proposed actions that do not present the potential for significant environmental effects. Rule amendments with applicable categorical exclusions are presented in Table B–2 in this assessment and no further NEPA analysis is required.

These proposed rule amendments belong to categories of actions that the Commission, by rule or regulation, has declared to be a categorical exclusion, after first finding that the actions within the category do not individually or cumulatively have a significant effect on the human environment. In reviewing the list of regulations in Table B–1, the NRC has determined that several of the rule amendments are actions eligible for categorical exclusion under § 51.22(a)(1) or § 51.22(a)(3). Specifically, § 51.22(a)(1) cites actions that are administrative, procedural, or solely financial in nature, including, for example: issuance of or changes to procedures for filing and reviewing applications, recordkeeping or reporting requirements, and amendments to the regulations in this chapter that are corrective or of a minor or nonpolicy nature and do not substantially modify existing regulations. Also, § 51.22 (a)(3) cites amendments to parts 1, 2, 4, 5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 19, 21, 25, 26, 55, 75, 95, 110, 140, 150, 160, 170, or 171 of this chapter.

The following rulemaking actions meet the criterion for categorical exclusion under § 51.22(a)(1) or § 51.22(a)(3):

BILLING CODE 7590–01–P

Table B-2 Rule Amendments Covered by Categorical Exclusion

Rule Amendments	Categorical Exclusion	Reason
61.10	§ 51.22(a)(1)	Actions that are administrative, procedural, or solely financial in nature, including, for example (i), Issuance of or changes to procedures for filing and reviewing applications. The proposed rule amends procedures in 10 CFR 61.10 for filing and reviewing applications to receive, possess and dispose of waste containing or contaminated with source, byproduct, or special nuclear material by land disposal.
61.80	§ 51.22(a)(1)	Example (ii). Issuance of or changes to recordkeeping or reporting requirements. The proposed rule amends record keeping and reporting requirements in 10 CFR 61.80.
20.1003; 61.2; 61.3; 61.4; 61.7; 61.8; 61.9; 61.9a; 61.20; 61.22; 61.26; 61.27; 61.29; 61.30; 61.32; 61.44; 61.53; 61.57; 61.59; 61.61; 61.62; 61.63; 61.71; 61.73; 61.81; 61.82; 61.84	§ 51.22(a)(1)	Examples (iv) and (vi). Issuance of or changes to administrative procedures or requirements and amendments to the regulations that are corrective or of a minor or nonpolicy nature and do not substantially modify existing regulations. These amendments are administrative, corrective or of a minor or nonpolicy nature and do not substantially modify existing regulations. Clarifications and procedural corrections include replacing the word "shall" with "must", updating definitions, and conforming changes based on changes in other regulations and removing no longer relevant text. In addition, regulatory requirements in 10 CFR 61.7 would be removed to eliminate redundancy, because a description of waste classifications used in 10 CFR part 61 is added to revised § 61.55 and to guidance.
150.11; 150.14; 150.15	§ 51.22(a)(3)	Amendments belong to a category of actions which the Commission, by rule or regulation, has declared to be a categorical exclusion.

These proposed rule amendments, meeting criteria for categorical exclusion under § 51.22, consist of administrative and procedural changes—taking place in an office setting, relying on paper or electronic (*e.g.,* computer) screen to demonstrate compliance would not authorize any site-specific action on the part of the NRC or licensee. They clarify NRC regulations and would not change radiation protection and emergency preparedness requirements while continuing to provide reasonable assurance of adequate protection of public health and safety.

ii. Rule Amendments Requiring Environmental Assessment

The NRC also identified rule amendments that do not meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22. The NRC evaluated these proposed rule amendments for their potential to have an effect on the quality of the human environment and determined that the proposed agency action (this rulemaking) would not have a significant environmental effect. Most environmental effects would be the same for a given facility regardless of whether the NRC approves these amendments. However, some amendments involve safety requirements that differ from those under the existing regulatory framework. Therefore, the following analysis focuses on whether these different safety requirements would lead to different environmental effects than those expected under the NRC's existing regulations. As explained in this assessment, these rule amendments would clarify NRC regulations, would continue to provide reasonable assurance of adequate protection of public health and safety, and therefore, would result in no new or different environmental effects. The following table presents the basis for why these proposed rule amendments would have no significant environmental effects.

Table B-3 Basis for No Significant Environmental Effects Determination for Rule Amendments Not Covered by a Categorical Exclusion

Rule Amendments	Basis for No Significant Environmental Effects
Appendix G to Part 20; 61.1; 61.12; 61.13; 61.16; 61.23; 61.24; 61.25; 61.28; 61.41; 61.42; 61.43; 61.50; 61.51; 61.52; 61.55; 61.56; 61.58; and 73.67	The proposed rule would amend regulations in 10 CFR parts 20, 61, and 73 to: (1) align 10 CFR part 61 requirements with other NRC health and safety standards. (2) require new and revised site-specific technical analyses, performance assessments, and permit the development of site-specific land disposal facility criteria for low-level radioactive waste acceptance based on the results of these analyses, and (3) create a pathway, and waste characteristic and classification requirements, for land disposal of Greater-Than-Class-C (GTCC) waste streams. (4) Appendix G to 10 CFR part 20, "Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests," imposes manifest requirements on shipments of low-level radioactive waste. Manifests must identify the classification and provide a certification that the low-level radioactive waste is properly classified, described, packaged, marked, and labeled. (5) specify technical requirements for specialized land disposal facilities for the disposal of certain GTCC waste streams. (6) establish site suitability, design, operation and closure requirements for both near surface and specialized land disposal facilities. (7) provide flexibility for site-specific waste acceptance criteria. (8) create an additional exemption to the requirements in 10 CFR 73.67 for NRC licensees. These amendments increase regulatory clarity by specifying requirements for the technical analyses needed to demonstrate that performance objectives are met. They also provide greater flexibility for applicants and licensees to design and operate their LLW disposal sites in accordance with the site-specific conditions at their facility. The regulations concerning specialized land disposal facilities ensure GTCC waste at higher concentrations will be disposed safely, and in accordance with performance-based methodologies. Licensees and applicants would need to request and receive separate regulatory approval before undertaking disposal actions pursuant to these new requirements. Consequently, this rulemaking provides the

Rule Amendments	Basis for No Significant Environmental Effects
	basis for any procedure granting the license but does not, by its own operation, provide a license for disposal actions. Consequently, this rulemaking provides the basis for any license action but does not, by its own operation, provide a license for construction or disposal activities. Applicants must comply with NRC or Agreement State regulations before they can receive a license. These amendments would not physically change the environment, and the NRC has determined that this proposed agency action will not have a significant effect on the quality of the human environment.

BILLING CODE 7590–01–C

The proposed rule amendments listed in Table B–3 would modernize existing NRC regulations while ensuring the continued safe, effective, and efficient low-level radioactive waste disposal regulations and continuing to provide reasonable assurance of adequate protection of public health and safety and the environment. As noted in Table B–3, the proposed amendments would not authorize any site-specific action on the part of the NRC or licensee and would have no significantly different environmental effects than those from the current regulatory framework.

C. Summary of the Environmental Impacts of the Proposed Agency Action

Implementation of the proposed rule would result in no physical changes to the environment, and, therefore, the NRC has determined that this proposed agency action will not have a significant effect on the quality of the human environment. Proposed rule amendments are administrative in application, matters of procedure, clarify record keeping and reporting requirements, maintains ample margins of safety for public exposure, and would provide an equivalent level of safety and security as current NRC regulations.

Since no physical changes would occur in the human environment, the proposed agency action (rulemaking) would not affect any threatened or endangered species or historic properties. Accordingly, the NRC finds that the proposed rulemaking would have no significant environmental impact.

D. Environmental Impacts of the Alternative to the Proposed Agency Action

Under the no-action alternative (*i.e.,* the status quo), NRC regulations would remain unchanged. As stated in section B of this EA, the proposed rule would not have a significant effect on the quality of the human environment. Therefore, the no action alternative and the proposed agency action (rulemaking) would have the same environmental effect, although there would be costs attributable to reviewing the environmental effects of exemption and license amendment requests under the no action alternative. Licensees would continue to comply with existing NRC regulations or request regulatory relief (exemption) from the regulations. The NRC would continue to evaluate the environmental effects of exemption and license amendment requests. The averted costs (benefits) of the rulemaking would not occur. The regulatory analysis for the proposed rule provides information about the costs and benefits of the no action alternative and the proposed agency action (refer to the Availability of Documents section of this proposed rule).

E. Agencies and Persons Consulted

The NRC is requesting public comments on the proposed rule, draft EA and Finding of No Significant Impact (FONSI). The NRC will consider public comments in the development of the final rule, EA, and FONSI and will issue the EA and FONSI when it publishes the final rule.

The proposed rule is one step in the rulemaking process. During the development of this proposed rule, the NRC conducted public meetings and other interactions with stakeholders. As discussed in Section C, the proposed rule provisions would not have a significant effect on the quality of the human environment or impact threatened or endangered species or critical habitat, and the NRC has determined that section 7 consultation under the Endangered Species Act of 1973, as amended, is not necessary. The proposed regulatory changes do not involve any ground disturbing activities or visual effects that would adversely affect historic properties. Therefore, the NRC has determined that consultation is not required under section 106 of the National Historic Preservation Act of 1966, as amended.

F. Draft Finding of No Significant Impact

The NRC has prepared this EA to determine the environmental effects of the proposed agency action (rulemaking). Proposed rule amendments are primarily administrative or procedural in nature and therefore would not have any physical environmental effect. As explained in the EA, the NRC has determined the proposed rulemaking would not change radiation protection and emergency preparedness requirements or overall risk, would continue to provide reasonable assurance of adequate protection of public health and safety, and would result in no new or different environmental effects. Therefore, the NRC concludes that the proposed regulatory changes would not have a significant effect on the quality of the human environment. Based on this conclusion, the NRC has determined there is no need to prepare an environmental impact statement. Accordingly, the NRC finds the proposed agency action would have no significant environmental impact.

XII. Paperwork Reduction Act

This proposed rule contains new or amended collections of information subject to the Paperwork Reduction Act of 1995 (44 U.S.C. *et seq.*). This proposed rule has been submitted to the Office of Management and Budget for review and approval of the information collections. The proposed changes to 10 CFR parts 20, 73 and 150 do not contain any new or amended collections of

information subject to the Paperwork Reduction Act of 1995.

Type of submission: Revision.

The title of the information collection: Information Collections Contained in the Integrated Low-Level Radioactive Waste Disposal Proposed Rule.

OMB approval number(s): 3150–0135.

The form number if applicable: Not applicable.

How often the collection is required or requested: Information is required to be submitted with an application for a new facility or an amendment to an existing facility. Records are required to be retained as they are generated or completed.

Who will be required or asked to respond: Current and future LLW disposal facilities that are regulated by the NRC or an Agreement State.

An estimate of the number of annual responses: 4.

The estimated number of annual respondents: 4.

An estimate of the total number of hours needed annually to comply with the information collection requirement or request: 160 hours (0 hours reporting + 160 hours recordkeeping + 0 hours third party disclosure).

Abstract: The NRC is proposing to amend its regulations to require LLW disposal facilities to conduct site-specific technical analyses to demonstrate compliance with the performance objectives of 10 CFR part 61. The intent of the rule is to ensure performance objectives are met at disposal sites for disposal of LLW that was not analyzed in the original 10 CFR part 61 regulatory basis (*e.g.,* significant quantities of depleted uranium, GTCC waste). The site-specific technical analyses would include compliance period analyses with both a performance assessment and an intruder assessment, performance period analyses to evaluate how the disposal system could mitigate the risk from long-lived LLW, and an LLW acceptance plan identifying the WAC for the disposal facility. In addition, licensees must review their LLW acceptance plan annually and update analyses as part of the application for closure.

The information collection would be conducted to demonstrate compliance with the performance objectives in 10 CFR part 61 and develop criteria for LLW acceptance based on the results of these analyses that would continue to ensure the safe disposal of LLW. Information would be used by the NRC to ensure compliance with the performance objectives in subpart C of 10 CFR part 61 to ensure that LLW streams that are significantly different from those considered during the development of the original regulations can be disposed of safely and meet the performance objectives for land disposal of LLW. These amendments would also increase the use of site-specific information to better ensure that public health and safety continues to be protected.

The NRC is seeking public comment on the potential impact of the information collections contained in this proposed rule and on the following issues:

1. Is the proposed information collection necessary for the proper performance of the functions of the NRC, including whether the information will have practical utility? Please explain your response.

2. Is the estimate of the burden of the proposed information collection accurate? Please explain your response.

3. Is there a way to enhance the quality, utility, and clarity of the information to be collected? Please explain your response.

4. How can the burden of the proposed information collection on respondents be minimized, including the use of automated collection techniques or other forms of information technology?

A copy of the Office of Management and Budget (OMB) clearance package and proposed rule are available in the ''Availability of Documents'' section of this document or may be viewed free of charge by contacting the NRC's Public Document Room reference staff at 1–800–397–4209, at 301–415–4737, or by email to *PDR.Resource@nrc.gov.* You may obtain information and comment on submissions related to the OMB clearance documents by searching on *https://www.regulations.gov* under Docket ID NRC–2011–0012.

You may submit comments on any aspect of these proposed information collections, including suggestions for reducing the burden and on the issues mentioned in this section, by the following method:

- *Federal rulemaking website:* Go to *https://www.regulations.gov* and search for Docket ID NRC–2011–0012.

Submit comments by July 31, 2026.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

XIII. Executive Orders

The following are Executive Orders that are related to this proposed rule:

A. Executive Order 12866: Regulatory Planning and Review (as Amended by Executive Order 14215, Ensuring Accountability for All Agencies)

The Office of Information and Regulatory Affairs (OIRA) has determined that this proposed rule is a significant regulatory action. Accordingly, NRC submitted this proposed rule to OIRA for review. The NRC is required to conduct an economic analysis in accordance with section 6(a)(3)(B) of E.O. 12866. More can be found in Section VII of this document, ''Regulatory Analysis.''

B. Executive Order 14154: Unleashing American Energy

The NRC has examined this proposed rule and has determined that it is consistent with the policies and directives outlined in E.O. 14154.

C. Executive Order 14192: Unleashing Prosperity Through Deregulation

This action is tentatively determined to be a deregulatory action as defined by E.O. 14192. An E.O. 14192 deregulatory action is defined as ''an action that has been finalized and has total costs less than zero.'' The proposed rule and associated guidance, if finalized, would be expected to result in net cost savings to the industry and the NRC of $39.2 million using a 7-percent discount rate and $69.7 million using a 3-percent discount rate, over the 30-year analysis period. The annualized costs are approximately $49,200 per year at a 7 percent discount rate, and $36,200 per year at a 3 percent discount rate. The annualized cost savings are approximately $3.21 million per year at a 7 percent discount rate, and $3.59 million per year at a 3 percent discount rate. Therefore, the annualized net cost savings are estimated at $3.16 million per year at a 7 percent discount rate and $3.55 million per year at a 3 percent discount rate. Accordingly, this proposed rule would be expected to have total costs less than zero, and therefore would qualify as an E.O. 14192 deregulatory action if finalized. Details on the estimated costs of this proposed rule can be found in Section VII of this document, ''Regulatory Analysis.''

D. Executive Order 14270: Zero-Based Regulatory Budgeting To Unleash American Energy

E.O. 14270, ''Zero-Based Regulatory Budgeting to Unleash American Energy,'' requires the NRC to insert a conditional sunset date into all new or amended NRC regulations provided the regulations are (1) promulgated under the AEA, the Energy Reorganization Act

of 1974, as amended (ERA), or the Nuclear Waste Policy Act of 1982, as amended (NWPA); (2) not statutorily required; and (3) not part of the NRC's permitting regime. The NRC determined that the regulatory changes proposed in this rule are for licensing and oversight of LLW disposal facilities, which are part of the NRC's permitting regime. Therefore, the NRC views this rulemaking to be outside the scope of Executive Order 14270 and did not insert conditional sunset dates for the regulatory changes in this proposed rule.

E. Executive Order 14294: Fighting Overcriminalization in Federal Regulations

This proposed rule includes Federal regulations that, if adopted, would be enforceable by criminal penalty, as authorized by Section 223 of the AEA. Therefore, per Executive Order 14294, those regulations constitute ''criminal regulatory offenses.''

For the purposes of Section 223 of the AEA, the NRC is issuing this proposed rule that would amend 10 CFR parts 61, 73, and 150 under one or more of Sections 161b, 161i, or 161o of the AEA, except as noted in 10 CFR 61.84(b), 73.81(b), and 150.33(b), respectively. The applicability of criminal penalties to regulations in parts 20, 61, 73, and 150 is set forth in §§ 61.84, 73.81, and 150.33, respectively. Willful violations of the 10 CFR parts 61, 73, and 150 regulations, other than those listed in §§ 61.84(b), 73.81(b), and 150.33(b) (including as updated by this proposed rule), would be subject to criminal enforcement.

XIV. Criminal Penalties

This proposed rule includes Federal regulations that, if adopted, would be enforceable by criminal penalty, as authorized by Section 223 of the AEA. Therefore, per E.O. 14294, those regulations constitute ''criminal regulatory offenses.''

For the purposes of Section 223 of the AEA, the NRC is issuing this proposed rule that would amend 10 CFR parts 61, 73, and 150 under one or more of Sections 161b, 161i, or 161o of the AEA, except as noted in 10 CFR 61.84(b), 73.81(b), and 150.33(b), respectively. The applicability of criminal penalties to regulations in parts 20, 61, 73, and 150 is set forth in §§ 61.84, 73.81, and 150.33, respectively. Willful violations of the 10 CFR parts 61, 73, and 150 regulations, other than those listed in §§ 61.84(b), 73.81(b), and 150.33(b) (including as updated by this proposed rule), would be subject to criminal enforcement.

XV. Coordination With NRC Agreement States

The NRC coordinated with the Agreement States during the development of this rulemaking, through consultation with the Standing Committee on Compatibility for the review of the rulemaking and the compatibility determinations.

XVI. Compatibility of Agreement State Regulations

On the basis of the ''Agreement State Program Policy Statement'' approved by the Commission on October 2, 2017, and published in the **Federal Register** (82 FR 48535; October 18, 2017), NRC program elements can be placed into six categories (A, B, C, D, NRC, or health and safety (H&S)) to form the basis for evaluating and classifying the program elements. Under the Policy Statement, a program element means any component or function of a radiation control regulatory program, including regulations and other legally binding requirements imposed on regulated persons, which contributes to implementation of that program.

Compatibility Category A are those program elements that include basic radiation protection standards and scientific terms and definitions that are necessary to understand radiation protection concepts. Compatibility Category A program elements adopted by an Agreement State should be essentially identical to those of the NRC to provide uniformity in the regulation of agreement material on a nationwide basis.

Compatibility Category B pertains to a limited number of program elements that cross jurisdictional boundaries and should be addressed to ensure uniformity of regulation on a nationwide basis. For Compatibility Category B, the Agreement State program element shall be essentially identical to that of NRC. Program elements in Compatibility Category C include those program elements that are important for an Agreement State to have in order to avoid conflict, duplication, gaps, or other conditions that would jeopardize an orderly pattern in the regulation of agreement material on a national basis. An Agreement State program shall embody the essential objectives of the Category C program elements.

Under Category C, Agreement State program elements may be more restrictive than NRC program elements; however, they should not be so restrictive as to prohibit a practice authorized by the Atomic Energy Act of 1954 (AEA), as amended, and in the national interest without an adequate public health and safety or environmental basis related to radiation protection.

Compatibility Category D are those program elements that do not meet any of the criteria of Category A, B, or C, and are not required to be adopted by Agreement States for purposes of compatibility. An Agreement State has the flexibility to adopt and implement program elements within the State's jurisdiction that are not addressed by the NRC or that are not required for compatibility (*i.e.,* Compatibility Category D). However, such program elements of an Agreement State relating to agreement material shall (1) not create conflicts, duplications, gaps, or other conditions that would jeopardize an orderly pattern in the regulation of agreement material on a nationwide basis; (2) not preclude a practice authorized by the AEA and in the national interest; and (3) not preclude the ability of the NRC to evaluate the effectiveness of Agreement State programs for agreement material with respect to protection of public health and safety.

Compatibility Category NRC are those program elements that address areas of regulation that cannot be relinquished to the Agreement States under the AEA, or provisions of Title 10 of the of the Code of Federal Regulations. The NRC maintains regulatory authority over these program elements and the Agreement States must not adopt these NRC program elements. However, an Agreement State may inform its licensees of these NRC requirements through a mechanism under the State's administrative procedure laws, as long as the State adopts these provisions solely for the purposes of notification, and does not exercise any regulatory authority as a result. Regardless of a requirement's compatibility category, if any portion of that requirement addresses areas reserved to the NRC, that portion is designated as a Compatibility Category NRC.

Category H&S program elements embody the basic health and safety aspects of the NRC's program elements. Although H&S program elements are not required for purposes of compatibility, they do have particular health and safety significance. The Agreement State must adopt the essential objectives of such program elements to maintain an adequate program.

The proposed rule is a matter of compatibility between the NRC and the Agreement States, thereby providing consistency among Agreement State and NRC requirements. The NRC is proposing to designate those aspects of

the proposed rule in 10 CFR parts 20 and 150, 10 CFR 61.55 through 61.57 (note, all Agreement States are currently required to adopt 10 CFR 61.58, however this requirement has been redesignated as 10 CFR 61.55(c) and the new 61.58 is only applicable to LLW licensees), and the definition of waste acceptance criteria in 10 CFR 61.2 as Compatibility Category B since they have cross jurisdictional impacts (*e.g.,* for shipping waste consistently across States) regardless of whether they have exercised their authority to license an operating LLW disposal facility. The NRC is proposing to designate the new requirements in 10 CFR 61.58 as Compatibility Category C. These new requirements provide flexibility for facilities to develop site-specific waste acceptance criteria. While this flexibility itself is important for Agreement States to adopt to avoid conflict, duplication, gaps, or other conditions that would jeopardize an orderly pattern of regulation, the State may be more restrictive in implementing the site-specific waste acceptance criteria for their licensees. That said, consistent with Compatibility Category C, all State equivalent regulations to 10 CFR 61. 58 must embody the essential objectives of the regulation, namely that the type of information included in the WAC is adequate to characterize the waste and certify its acceptability for disposal.

Further, the NRC is proposing to designate 10 CFR 61.1(b) as Compatibility Category B. At a high level, proposed 10 CFR 61.1(b) would allow entities licensed before the effective date of this rule and that do not accept Greater-Than-Class C waste or a significant quantity of long-lived radionuclides to continue their current waste acceptance practices. The proposed 10 CFR 61.1(b) criteria must be adopted in an essentially identical manner in order to ensure uniformity of regulation on a nationwide basis. Otherwise, licensees could be subject to a patchwork of ranging requirements such that existing licensees would be required to meet new requirements in one jurisdiction but not another.

The NRC is also proposing to change the compatibility or adequacy category for some of the proposed amended regulations. For example, the NRC is proposing to change the category for 10 CFR 61.10(a) from Category D to Category H&S. Under the proposed rule 10 CFR 61.10(a) concerns the content of applications and specifies that an application must consist of general information, specific technical information, technical analyses, institutional information, and financial information as set forth in §§ 61.11 through 61.16. With the exception of 61.16, which is Category NRC, the NRC is proposing designating §§ 61.11 through 61.15 H&S as well. Taken together, §§ 61.10 through 61.15 require an application demonstrates the facility can meet the performance objectives in 10 CFR part 61, subpart C. As such, these requirements embody particular health and safety considerations appropriate for an H&S designation and therefore must be adopted by Agreement States.

Agreement States that have exercised their assumed authority to regulate the land disposal of byproduct, source, or special nuclear waste materials received from other persons and plan to authorize a LLW disposal facility within their State to receive significant quantities of long-lived radionuclides would be required to develop compatible requirements to 10 CFR part 61 in accordance with the assigned Compatibility Category designations. Agreement States that do not have authority or do not plan to license a LLW disposal facility within their State are not required to adopt the amendments to 10 CFR part 61, except for 10 CFR 61.55 through 61.57 (this exception would no longer apply to 10 CFR 61.58 in this proposed rule) and the definition of waste acceptance criteria in 10 CFR 61.2. Regulations that contain technical content categorized as necessary for adequacy, *i.e.,* those designated as category H&S, reflect the rigor with which the NRC believes these topics should be addressed. The compatibility (A, B, C, D, and NRC) and adequacy (H&S) categories are designated in the following tables:

BILLING CODE 7590–01–P

Adequacy and Compatibility Table for 10 CFR Part 20

Section	Change	Subject	Compatibility	
			Existing	New
20.1003	Amend	Definition-Waste.	B	B
App.G I.D	Amend	Manifest.	B	B
App.G I.E	Amend	Manifest.	B	B
App.G II	Amend	Certification.	B	B
App.G III.A	Amend	Control and Tracking.	B	B
App.G III.C	Amend	Control and Tracking.	B	B

Adequacy and Compatibility Table for 10 CFR Part 61

Section	Change	Subject	Compatibility	
			Existing	New
61.1(a)	Amend	Purpose and scope.	D	D
61.1(b)	New	Exception criteria	-	B
61.1(c)	Amend	Purpose and scope.	D	D
61.1(d)	Amend	Purpose and scope.	D	D
61.2	Amend	Definition-Active maintenance.	H&S	H&S
61.2	Amend	Definition-Buffer zone.	D	D
61.2	Amend	Definition-Chelating agent.	D	D
61.2	Amend	Definition-Commencement of Construction, paragraph 1	D	D
61.2	Amend	Definition-Commencement of Construction, paragraph 2	-	NRC
61.2	New	Definition-Compliance period.	-	C
61.2	New	Definition-Construction	-	D
61.2	New	Definition-Defense-in-depth.	-	H&S
61.2	Amend	Definition-Disposal.	C	C
61.2	Amend	Definition-Disposal unit.	D	D
61.2	Amend	Definition-Engineered barrier.	D	D
61.2	Amend	Definition-Inadvertent intruder.	C	C
61.2	New	Definition-Inadvertent intruder assessment.	-	H&S
61.2	Amend	Definition-Intruder barrier.	C	C
61.2	Amend	Definition-Indian Tribe	D	D

61.2	Amend	Definition-Land disposal facility.	B	B
61.2	New	Definition-Long-lived radionuclide.	-	B
61.2	New	Definition-Model support.	-	C
61.2	Amend	Definition-Monitoring.	C	C
61.2	Amend	Definition-Near-surface disposal facility.	D	D
61.2	New	Definition-Operational safety assessment.	-	H&S
61.2	New	Definition-Performance assessment.	-	H&S
61.2	New	Definition-Performance period.	-	C
61.2	New	Definition-Performance period analyses.	-	C
61.2	New	Definition-Safety case.	-	H&S
61.2	New	Definition-Significant quantities.	-	B
61.2	Amend	Definition-Site closure and stabilization.	D	D
61.2	New	Definition-Site stability assessment.	-	D
61.2	New	Definition-Specialized Land Disposal Facility	-	NRC
61.2	Amend	Definition-Stability.	D	D
61.2	Amend	Definition-State.	D	D
61.2	New	Definition-Technical analyses.	-	C
61.2	Amend	Definition-Tribal governing body.	D	D
61.2	Amend	Definition-Waste.	B	B
61.2	New	Definition-Waste acceptance criteria.	-	B
61.3	Amend	License Required.	C	C
61.4	Amend	Communications.	D	D
61.7	Removed	Concepts.	H&S	-
61.8	Amend	Information collection requirements: Office of Management and Budget approval.	D	D
61.9	Amend	Employee protection.	D	D
61.9a	Amend	Completeness and accuracy of information.	D	D
61.10(a) (Current 61.10)	Amend/ Revised Compatibility Category	Content of application.	D	H&S
61.10(b) (Current 61.10)	Amend	Content of application.	D	D
61.10(c)	New	Content of application.	-	H&S
61.12	Amend/ Revised Compatibility Category	Specific technical information.	D	H&S
61.13	Amend	Technical analyses.	H&S	H&S
61.16(a)	Amend	Other information.	NRC	NRC
61.16(b)(1)	Amend	Other information.	NRC	NRC
61.16(b)(2)	Amend	Other information.	NRC	NRC
61.16(b)(3)	New	Other information.	-	NRC

61.20	Amend	Filing and distribution of application.	D	D
61.22	Amend	Updating of application.	D	D
61.23(b)	Amend	Standards for issuance of a license.	H&S	H&S
61.23(c)	Amend	Standards for issuance of a license.	H&S	H&S
61.23(d)	Amend	Standards for issuance of a license.	H&S	H&S
61.23(c)	Amend	Standards for issuance of a license.	H&S	H&S
61.23(f)	Amend	Standards for issuance of a license.	H&S	H&S
61.23(g)	Amend	Standards for issuance of a license.	H&S	H&S
61.23(j)	Amend/ Revised Compatibility Category	Standards for issuance of a license.	NRC	NRC
61.23(k)	Amend	Standards for issuance of a license.	D	D
61.23(m)	New	Standards for issuance of a license.	-	H&S
61.23(n)	New	Standards for issuance of a license.	-	NRC
61.24(b)	Amend	Conditions of licenses.	D	D
61.24(c)	Amend	Conditions of licenses.	D	D
61.24(d)	Amend	Conditions of licenses.	D	D
61.24(f)	Amend/ Revised Compatibility Category	Conditions of licenses.	D	D
61.24(i)	Amend	Conditions of licenses.	D	NRC
61.24(j)	Amend	Conditions of licenses.	D	D
61.24(k)	Amend	Conditions of licenses.	D	D
61.24(l)	New	Conditions of licenses.	-	H&S
61.25	Amend/ Revised Compatibility Category	Changes.	D	H&S
61.26	Amend	Amendment of license.	D	D
61.27	Amend	Application for renewal or closure	D	D
61.28(a)	Amend/ Revised Compatibility Category	Contents of application for closure.	D	H&S
61.28(c)	Amend	Contents of application for closure.	D	D
61.29	Amend	Postclosure observation and maintenance.	D	D
61.30	Amend	Transfer of license.	H&S	H&S
61.32	Amend	Facility information and verification.	NRC	NRC
61.41(a)	New	Protection of the general population from releases of radioactivity.	-	A
61.41(b)	New	Protection of the general population from releases of radioactivity.	-	C
61.41(c)	Amend (current 61.41)	Protection of the general population from releases of radioactivity.	A	H&S

61.42(a)	New	Protection of individuals from inadvertent intrusion.	-	A
61.42(b)	New	Protection of individuals from inadvertent intrusion.	-	C
61.42(c)	Amend (current 61.42)	Protection of individuals from inadvertent intrusion.	H&S	C
61.43	Amend	Protection of individuals during operations.	H&S	C
61.44	Amend	Stability of the disposal site after closure.	H&S	H&S
61.50(a)	New	Disposal site suitability requirements for land disposal.	-	H&S
61.50(b)	New	Disposal site suitability requirements for land disposal.	-	H&S
61.50(c)	Amend (current 61.50)	Disposal site suitability requirements for land disposal.	H&S	H&S
61.51	Amend	Disposal site design for land disposal.	H&S	H&S
61.52(a)	Amend	Land disposal facility operation and disposal site closure.	H&S	H&S
61.52(b)	New	Land disposal facility operation and disposal site closure.	-	NRC
61.53	Amend	Environmental monitoring.	H&S	H&S
61.55(a)	Amend	Waste classification.	B	B
61.55(b)	New	Waste classification.	-	B
61.55(c)	Redesignate (Current 61.58)	Waste classification.	-	D
61.56(a)	Amend	Waste characteristics.	H&S	H&S
61.56(b)	Amend	Waste characteristics.	H&S	H&S
61.56(c)	New	Waste characteristics.	-	NRC
61.57	Amend	Labeling.	H&S	H&S
61.58	Retitled, Amend	Waste acceptance. (Previously titled Alternative requirements for waste classification and characteristics)	D	C/D*
61.59	Amend	Institutional requirements.	H&S	H&S
61.61	Amend	Applicant qualifications and assurances.	D	D
61.62	Amend	Funding for disposal site closure and stabilization.	H&S	H&S
61.63	Amend	Financial assurances for institutional controls.	H&S	H&S
61.71	Amend	State and Tribal government consultation.	D	D
61.73	Amend	Commission approval of proposals.	D	D
61.80	Amend	Maintenance of records, reports, and transfers.	C	C

61.81	Amend	Tests at land disposal facilities.	D	D
61.82	Amend	Commission inspections of land disposal facilities.	D	D

Adequacy and Compatibility Table for 10 CFR Part 150

Section	Change	Subject	Compatibility	
			Existing	New
150.11	Amend	Critical mass.	B	B
150.14	Amend	Commission regulatory authority for physical protection.	NRC	NRC
150.15	Amend	Persons not exempt.	NRC	NRC

* - For States that regulate LLW disposal facilities section 61.58 is Category C, and for all others it is Category D.

BILLING CODE 7590–01–C

The NRC invites comment on the compatibility category designations in the proposed rule and suggests that commenters refer to Management Directive 5.9, ''Adequacy and Compatibility of Program Elements for Agreement State Programs,'' and its Handbook for more information. The NRC notes that, like the rule text, the compatibility category designations can change between the proposed rule and final rule, based on comments received and NRC decisions regarding the final rule. The NRC encourages anyone interested in commenting on the compatibility category designations in any manner to do so during the comment period.

XVII. Voluntary Consensus Standards

The National Technology Transfer and Advancement Act of 1995, Public Law 104–113, requires that Federal agencies use technical standards that are developed or adopted by voluntary consensus standards bodies unless the use of such a standard is inconsistent with applicable law or otherwise impractical. In this proposed rule, the NRC is proposing to amend its regulations that govern LLW disposal facilities to require new licensees or existing licensees wanting to accept GTCC waste or a significant quantity of long-lived radionuclides to develop new and revised site-specific technical analyses and to permit the development of site-specific WAC based on the results of these analyses. These amendments would ensure that LLW streams that are significantly different from those considered in the regulatory basis for the current regulations can be disposed of safely and meet the performance objectives for land disposal of LLW. These amendments would also increase the use of site-specific information to ensure public health and safety is protected. This action does not constitute the establishment of a standard that contains generally applicable requirements.

XVIII. Availability of Guidance

The NRC is issuing revised draft guidance in NUREG–2175, Revision 1, ''Guidance for Conducting Technical Analyses for 10 CFR part 61,'' for implementation of the proposed requirements in this rulemaking. The draft guidance is available in ADAMS as shown in the ''Availability of Documents'' section of this document. When finalized, ''Guidance for Conducting Technical Analyses for 10 CFR part 61'' will provide stakeholders with guidance for implementing the final requirements contemplated by this proposed rule. You may submit comments on the draft regulatory guidance by the methods outlined in the **ADDRESSES** section of this document. You may obtain information and comment submissions related to the previous draft guidance document that was issued concurrent with the LLW disposal proposed rule in March 2015 by searching on *https://www.regulations.gov* under Docket ID NRC–2015–0003. All subsequent changes to this guidance for this rulemaking can be found under Docket ID NRC–2011–0012.

In the draft NUREG–2175, Revision 1, the NRC provides guidance on conducting technical analyses (*i.e.,* performance assessment, inadvertent intruder assessment, operational safety assessment, site stability assessment, and performance period analyses) to demonstrate compliance with the performance objectives in 10 CFR part 61. This guidance should facilitate licensees' implementation of the amendments in this proposed rule as well as assist regulatory authorities in reviewing the technical analyses. This guidance would apply to all waste streams disposed of at a land disposal facility licensed under 10 CFR part 61, including waste streams with significant quantities of long-lived radionuclides (*e.g.,* significant quantities of depleted uranium), blended waste, and GTCC waste.

In addition, draft NUREG–2175, Revision 1, provides detailed guidance in new areas, such as waste acceptance, defense-in-depth, determination of significant quantities, and GTCC waste disposal considerations both in the context of near-surface disposal and in a specialized land disposal facility. This guidance discusses the use of a graded level of effort needed to risk-inform the analyses for the compliance period (1,000 or 10,000 years after disposal site closure) and cover the performance period analyses that should be performed for analysis of long-lived waste beyond 10,000 years. Additional topics covered in this document include (1) identification and screening of the features, events, and processes to develop scenarios for technical analyses; (2) use of the waste classification tables or the results of the technical analyses to develop generic or site-specific WAC; and (3) use of performance confirmation to evaluate and verify the accuracy of information used to demonstrate compliance prior to site closure.

XIX. Public Meeting

The NRC plans to conduct a public meeting on the proposed rule for the purpose of describing the proposed rule

to the public and answering questions from the public on the proposed rule. The NRC will publish a notice of the location, time, and agenda of the meeting in the **Federal Register**, on *Regulations.gov*, and on the NRC's public meeting website within at least 10 calendar days before the meeting. Stakeholders should monitor the NRC's public meeting website for information about the public meeting at: *https://www.nrc.gov/public-involve/public-meetings/index.cfm.*

XX. Availability of Documents

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

BILLING CODE 7590–01–P

DOCUMENT	ADAMS ACCESSION NO. / WEB LINK / *FEDERAL REGISTER* CITATION
Proposed Rule Package Documents	
Draft Regulatory Analysis	ML26174A244
Draft NUREG-2175, Revision 1, "Guidance for Conducting Technical Analyses for 10 CFR Part 61," June 2026	ML23255A282
Proposed rule draft information collection supporting statement for 10 CFR part 61	ML26089A163
Proposed rule draft information collection burden table for 10 CFR part 61	ML26089A164
Summary of GTCC regulatory basis comments	ML26175A046
Historical Low-Level Waste Rulemaking Documents	
Federal Register Notice for the Licensing of Byproduct Material, Atomic Energy Commission, February 14, 1962	27 FR 1350
Federal Register Notice for the Licensing Requirements for Land Disposal of Radioactive Waste Proposed Rule, July 24, 1981	46 FR 38081
Federal Register Notice for the Licensing Requirements for Land Disposal of Radioactive Waste Final Rule, December 27, 1982	47 FR 57446
NUREG-0945, "Final Environmental Impact Statement on 10 CFR Part 61 Licensing Requirements for Land Disposal of Radioactive Waste," Volume 1: Summary and Main Report, November 1982	ML052590184
NUREG-0945, "Final Environmental Impact Statement on 10 CFR Part 61 Licensing Requirements for Land Disposal of Radioactive Waste," Volume 2: Appendices A-B, November 1982	ML052920727
NUREG-0945, "Final Environmental Impact Statement on 10 CFR Part 61 Licensing Requirements for Land Disposal of Radioactive Waste," Volume 3: Appendices C-F, November 1982	ML052590187
Federal Register Notice for the Disposal of Radioactive Wastes Final Rule, May 25, 1989	54 FR 22578
PRM-61-2, "New England Coalition on Nuclear Pollution, Inc.; Denial of Petition for Rulemaking," March 29, 1994	ML093490607
SECY-98-226, "Issuance of a Section 274f, Atomic Energy Act Order to Exempt Envirocare of Utah, Inc. from the Licensing Requirements for Special Nuclear Material in Diffuse Waste That Will Be Regulated by the State of Utah," September 29, 1998	ML992870055

SRM-SECY-98-226, "Issuance of a Section 274f, Atomic Energy Act Order to Exempt Envirocare of Utah, Inc. from the Licensing Requirements for Special Nuclear Material in Diffuse Waste That Will Be Regulated by the State of Utah," October 22, 1998	ML003752670
Federal Register Notice for Envirocare of Utah, Inc.: Order Modifying Exemption From Requirements Relative to Possession of Special Nuclear Material, February 13, 2003	68 FR 7399
Federal Register Notice for In the Matter of EnergySolutions, LLC (formerly Envirocare of Utah, LLC) Order Modifying Exemption from 10 CFR part 70, June 13, 2006	71 FR 34168
SRM-COMWDM-11-0002/COMGEA-11-0002, Revision to 10 CFR part 61, January 19, 2012	ML120190360
SECY-13-0075, "Proposed Rule: Low-Level Radioactive Waste Disposal (10 CFR Part 61) (RIN-3150-AI92)," July 18, 2013	ML13128A160 (package)
SRM-SECY-13-0075, "Staff Requirements—SECY-13-0075—Proposed Rule: Low-Level Radioactive Waste Disposal (10 CFR Part 61) (RIN-3150-AI92)," February 12, 2014	ML14043A371
Federal Register Notice for Supersede Exemption for Waste Control Specialists, LLC: Andrews County, Texas, December 11, 2014	79 FR 73647
Federal Register Notice for the Low-Level Radioactive Waste Disposal Proposed Rule, March 26, 2015	80 FR 16081
NUREG-2175, "Guidance for Conducting Technical Analyses for 10 CFR Part 61," March 2015	ML15056A516
Federal Register Notice for the Low-Level Radioactive Waste Disposal Proposed Rule and draft NUREG reopening of comment period, August 27, 2015	80 FR 51964
SECY-16-0106, "Final Rule: Low-Level Radioactive Waste Disposal (10 CFR Part 61) (RIN 3150-AI92)," September 15, 2016	ML16188A290 (package)
SRM-SECY-16-0106, "Staff Requirements—SECY-16-0106—Final Rule: Low-Level Radioactive Waste Disposal (10 CFR Part 61) (RIN 3150-AI92)," September 8, 2017	ML17251B147
NRC Letter – "Response to Request For Possession Time Extension in The U.S. Nuclear Regulatory Commission Exemption Order Condition 8.B.4 At Waste Control Specialists LLC (CAC No. L00904)," September 23, 2016	ML16097A265
NRC Letter – "Closing NRC Review of WCS Request Dated December 4, 2014," September 26, 2017	ML17234A415
NRC Letter – "Response to The August 30, 2018, Waste Control Specialists LLC Request to Extend the Possession Time in the NRC Special Nuclear Material Exemption Order Condition 8.B.4 to Waste Control Specialists LLC.," December 19, 2018	ML18269A318
NRC Letter – "NRC Response Letter for Extending Possession Time of LANL Waste until 12-23-2022," December 7, 2020	ML20252A182

NRC Letter – "NRC Response Letter for WCS Request to Extend Possession Time of LANL Waste until December 31, 2024," June 8, 2022	ML22094A131
SRM-M140918, "Staff Requirements - Briefing on Management of Low-Level Waste, High-Level Waste, and Spent Nuclear Fuel, 9:00 A.M., Thursday, September 18, 2014, Commissioners' Conference Room, One White Flint North, Rockville, Maryland (Open to Public Attendance)," September 24, 2014	ML14267A365
Letter from TCEQ regarding the authority and jurisdiction regarding GTCC type waste streams, January 30, 2015	ML15034A181
SECY-15-0094, "Historical and Current Issues Related to Disposal of Greater-Than-Class C Low-Level Radioactive Waste," July 17, 2015	ML15162A849 (package)
SRM-SECY-15-0094, "Staff Requirements - Historical and Current Issues Related to Disposal of Greater-Than-Class C Low-Level Radioactive Waste," December 22, 2015	ML15356A623
NUREG/CR-7239, "Review of Exemptions and General Licenses for Fissile Material in 10 CFR [part] 71," January 2018	ML18052A520
SRM-M181011, "Staff Requirements Memorandum—Briefing on Strategic Programmatic Overview of the Decommissioning and Low-Level Waste and Spent Fuel Storage and Transportation Business Lines, 9:00 A.M., Thursday, October 11, 2018, Commissioners' Conference Room, One White Flint North, Rockville, Maryland (Open to Public Attendance)," October 23, 2018	ML18296A479
Letter from Governor Greg Abbott, State of Texas, to the NRC, April 26, 2019	ML19121A544
Letter from the NRC to Governor Greg Abbott, State of Texas, June 5, 2019	ML19129A300
Draft Regulatory Basis, "Disposal of Greater-than-Class C (GTCC) and Transuranic Waste," Draft Report for Comment, June 27, 2019	ML19059A403
Technical Analysis of the Hazards of Disposal of Greater-Than-Class C (GTCC) and Transuranic Waste," Washington, DC, July 2019.	ML19162A259
Supplement to NRC's Technical Analysis of the Hazards of Disposal of Greater-than-Class-C (GTCC) and Transuranic Waste: Consideration of a Specialized Land Disposal Facility and Additional Waste Streams, March 2026	ML26174A245
Federal Register Notice for Greater-Than-Class-C and Transuranic Waste Draft Regulatory Basis request for comment, July 22, 2019	84 FR 35037
Federal Register Notice for Greater-Than-Class-C and Transuranic Waste Draft Regulatory Basis extension of comment period, September 13, 2019	84 FR 48309
SECY-20-0098, "Path Forward and Recommendations for Certain Low-Level Radioactive Waste Disposal Rulemakings," October 21, 2020	ML20143A164 (package)

SRM-SECY-20-0098, "Staff Requirements—SECY-20-0098—Path Forward and Recommendations for Certain Low-Level Radioactive Waste Disposal Rulemakings," April 5, 2022	ML22095A227
NUREG-1573, "A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities: Recommendations of NRC's Performance Assessment Working Group," October 2000	ML003770778
NRC Procedure SA-700, "Processing an Agreement," June 15, 2022	ML22138A414
January 23, 2024 Public Meeting Summary, Integrated Low-Level Radioactive Waste Disposal Rulemaking, January 23, 2024	ML24045A173
May 17, 2023 Public Meeting Summary, Integrated Low-Level Radioactive Waste Disposal Rulemaking, June 12, 2023	ML23145A268
SRM-SECY-21-0067, SECY-21-0110, SECY-23-0062, SECY-24-0045, "Withdrawal of Rulemaking Plan and Proposed Rules," September 11, 2025	ML25254A183
Presidential Executive Orders	
Executive Order 12866, "Regulatory Planning and Review," October 4, 1993	58 FR 51735
Executive Order 14154, "Unleashing American Energy," January 29, 2025	90 FR 8353
Executive Order 14192, "Unleashing Prosperity Through Deregulation," February 6, 2025	90 FR 9065
Executive Order 14215, "Ensuring Accountability for All Agencies," February 24, 2025	90 FR 10447
Executive Order 14267, "Reducing Anti-Competitive Regulatory Barriers," April 15, 2025	90 FR 15629
Executive Order 14270, "Zero-Based Regulatory Budgeting to Unleash American Energy," April 15, 2025	90 FR 15643
Executive Order 14294, "Fighting Overcriminalization in Federal Regulations," May 14, 2025	90 FR 20363
Executive Order 14300, "Ordering the Reform of the Nuclear Regulatory Commission," May 29, 2025	90 FR 22587
Laws and Statutes	
Endangered Species Act of 1973, as amended. Pub. L. No.93-205, 87 Stat. 884 (1973).	https://www.govinfo.gov/content/pkg/COMPS-3002/pdf/COMPS-3002.pdf
National Environmental Policy Act of 1969, as amended. Pub. L. 91-190, 83 Stat. 852 (1969).	https://www.govinfo.gov/content/pkg/COMPS-10352/pdf/COMPS-10352.pdf
National Historic Preservation Act of 1966, as amended. Pub. L. 89-665, 80 Stat. 915 (1966).	https://www.govinfo.gov/content/pkg/STATUTE-80/pdf/STATUTE-80-Pg915.pdf
Other References	

DOE/EIS-0375 ,"Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste," January 2016	https://www.energy.gov/nepa/downloads/eis-0375-final-environmental-impact-statement
Presidential Memorandum, "Plain Language in Government Writing," June 10, 1998	63 FR 31885
DOE/NE-0077, "Recommendations for Management of Greater-Than-Class-C Low-Level Radioactive Waste," Report to Congress in Response to Public Law 99·240, February 1987	https://www.energy.gov/sites/prod/files/2018/09/f55/GTCC-1987-Report-to-Congress-DOE-NE-0077.pdf

BILLING CODE 7590–01–C

The NRC may post materials related to this document, including public comments, on the Federal rulemaking website at *https://www.regulations.gov* under Docket ID NRC–2011–0012. In addition, the Federal rulemaking website allows members of the public to receive alerts when changes or additions occur in a docket folder. To subscribe: (1) navigate to the docket folder NRC–2011–0012; (2) click the ''Subscribe'' button; and (3) enter an email address and click on the ''Subscribe'' button.

List of Subjects

10 CFR Part 20

Byproduct material, Criminal penalties, Fusion, Hazardous waste, Licensed material, Nuclear energy, Nuclear materials, Nuclear power plants and reactors, Occupational safety and health, Packaging and containers, Penalties, Radiation protection, Reporting and recordkeeping requirements, Source material, Special nuclear material, Waste treatment and disposal.

10 CFR Part 61

Criminal penalties, Hazardous waste, Indians, Intergovernmental relations, Low-level waste, Nuclear energy, Nuclear materials, Penalties, Reporting and recordkeeping requirements, Waste treatment and disposal, Whistleblowing.

10 CFR Part 73

Criminal penalties, Exports, Hazardous materials transportation, Imports, Nuclear energy, Nuclear materials, Nuclear power plants and reactors, Penalties, Reporting and recordkeeping requirements, Security measures.

10 CFR Part 150

Criminal penalties, Hazardous materials transportation, Intergovernmental relations, Nuclear energy, Nuclear materials, Penalties, Reporting and recordkeeping requirements, Security measures, Source material, Special nuclear material.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 552 and 553, the NRC is proposing to amend 10 CFR parts 20, 61, 73 and 150 as follows:

PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION

■ 1. The authority citation for part 20 is revised to read as follows:

Authority: Atomic Energy Act of 1954, secs. 11, 53, 63, 65, 81, 103, 104, 161, 170H, 182, 186, 223, 234, 274, 1701 (42 U.S.C. 2014, 2073, 2093, 2095, 2111, 2133, 2134, 2201, 2210h, 2232, 2236, 2273, 2282, 2021, 2297f); Energy Reorganization Act of 1974, secs. 201, 202 (42 U.S.C. 5841, 5842); Low-Level Radioactive Waste Policy Amendments Act of 1985, sec. 2 (42 U.S.C. 2021b); 44 U.S.C. 3504 note; American Medical Isotopes Production Act of 2011 sec. 3(f).

■ 2. In § 20.1003, revise the definition ''Waste'' to read as follows:

§ 20.1003 Definitions.

* * * * *

Waste means those low-level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level radioactive waste means radioactive waste not classified as high-level radioactive waste, spent nuclear fuel, or byproduct material as defined in paragraphs (2), (3), and (4) of the definition of *Byproduct material* set forth in this section. Low-level waste also includes radioactive material resulting from the production of medical isotopes that has been permanently removed from a reactor or subcritical assembly for which there is no further use and the disposal of which can meet the requirements of this part.

* * * * *

■ 3. Revise Appendix G to part 20 to read as follows:

Appendix G to Part 20—Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests

I. Manifest

* * * * *

Information Requirements

* * * * *

C. Disposal Container and Waste Information

The shipper of the radioactive waste shall provide the following information on the uniform manifest regarding the waste and each disposal container of waste in the shipment:

* * * * *

12. For wastes consigned to a disposal facility, the classification of the waste pursuant to § 61.55 of this chapter. Unless the disposal facility has established waste acceptance criteria under § 61.58 of this chapter, waste not meeting the structural stability requirements of § 61.56(b) of this chapter must be identified.

D. Uncontainerized Waste Information

The shipper of the radioactive waste shall provide the following information on the uniform manifest regarding a waste shipment delivered without a disposal container:

* * * * *

4. For waste consigned to a disposal facility, the classification of the waste pursuant to § 61.55 of this chapter. Unless the disposal facility has established waste acceptance criteria under § 61.58 of this chapter, waste not meeting the structural stability requirements of § 61.56(b) of this chapter must be identified;

* * * * *

E. Multi-Generator Disposal Container Information

This section applies to disposal containers enclosing mixtures of waste originating from different generators. (Note: The origin of the LLW resulting from a processor's activities may be attributable to one or more ''generators'' (including ''waste generators'') as defined in this part). It also applies to mixtures of wastes shipped in an

uncontainerized form, for which portions of the mixture within the shipment originate from different generators.

* * * * *

2. For heterogeneous mixtures of waste, such as the combined products from a large compactor, identify each generator contributing waste to the disposal container, and, for discrete waste types (*i.e.,* activated materials, contaminated equipment, mechanical filters, sealed source/devices, and wastes in solidification/stabilization media), the identities and activities of individual radionuclides contained on these waste types within the disposal container. For each generator, provide the following:

* * * * *

(d) The sorbing or solidification media, if any, and the identity of the solidification media vendor and brand name if the media is claimed to meet stability requirements in 10 CFR 61.56(b) or the disposal facility's waste acceptance criteria established under 10 CFR 61.58; and

* * * * *

II. Certification

An authorized representative of the waste generator, processor, or collector must certify by signing and dating the shipment manifest that the transported materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the Commission, and equivalent Agreement State regulations. For materials that are consigned to a land disposal facility or waste collector, the authorized representative must certify that the materials are classified per the applicable requirements of part 61 of this chapter, meet the land disposal facility's waste acceptance criteria, and are in proper condition for disposal as described in accordance with the applicable requirements in this part and in part 61 of this chapter, or equivalent Agreement State regulations. If the land disposal facility to which the material is consigned has established waste acceptance criteria under § 61.58, the authorized representative must certify that the material meets the waste acceptance criteria in accordance with the land disposal facility's authorized waste certification program. A collector in signing the certification is certifying that nothing has been done to the collected waste which would invalidate the waste generator's certification.

III. Control and Tracking

A. Any licensee who transfers radioactive waste to a land disposal facility or a licensed waste collector shall comply with the requirements in paragraphs A.1 through 9 of this section. Any licensee who transfers waste to a licensed waste processor for waste treatment or repackaging shall comply with the requirements of paragraphs A.4 through 9 of this section. A licensee shall:

1. Prepare all wastes so that the waste is classified according to § 61.55 and meets the waste characteristics requirements in § 61.56 of this chapter, or if the land disposal facility to which the material is consigned has established waste acceptance criteria under § 61.58, prepare the waste so that it meets the land disposal facility's waste acceptance criteria;

2. Label each disposal container (or transport package if potential radiation hazards preclude labeling of the individual disposal container) of waste in accordance with § 61.57 of this chapter;

3. Conduct a quality assurance program, which must include management evaluation of audits, to ensure compliance with both §§ 61.55 and 61.56 of this chapter or, if the land disposal facility to which the material is consigned has established waste acceptance criteria under § 61.58, to ensure the waste meets the land disposal facility's waste acceptance criteria;

* * * * *

C. Any licensed waste processor who treats or repackages waste shall:

* * * * *

3. Prepare all wastes so that the waste is classified according to § 61.55 of this chapter and meets the waste characteristics requirements in § 61.56 of this chapter, or if the land disposal facility to which the material is consigned has established waste acceptance criteria under § 61.58, prepare the waste so that it meets the land disposal facility's waste acceptance criteria;

4. Label each package of waste, in accordance with § 61.57 of this chapter;

5. Conduct a quality assurance program (which must include management evaluation of audits) to ensure compliance with both §§ 61.55 and 61.56 of this chapter or, if the land disposal facility to which the material is consigned has established waste acceptance criteria under § 61.58, to ensure the waste meets the land disposal facility's waste acceptance criteria;

* * * * *

PART 61—LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE

4. The authority citation for part 61 is revised to read as follows:

Authority: Atomic Energy Act of 1954, secs. 53, 57, 62, 63, 65, 81, 161, 181, 182, 183, 223, 234 (42 U.S.C. 2073, 2077, 2092, 2093, 2095, 2111, 2201, 2231, 2232, 2233, 2273, 2282); Energy Reorganization Act of 1974, secs. 201, 206, 211 (42 U.S.C. 5841, 5846, 5851); Low-Level Radioactive Waste Policy Amendments Act of 1985, sec. 2 (42 U.S.C. 2021b); 44 U.S.C. 3504 note; American Medical Isotopes Production Act of 2011 sec. 3(f).

■ 5. Revise § 61.1 to read as follows:

§ 61.1 Purpose and scope.

(a) The regulations in this part establish, for land disposal of radioactive waste, the procedures, criteria, and terms and conditions upon which the Commission issues licenses for the disposal of radioactive wastes containing byproduct, source and special nuclear material received from other persons. Disposal of waste by an individual licensee is set forth in part 20 of this chapter.

(b) The regulations in this part apply with the following accommodation for certain licensees:

(1) Licensees need not comply with the requirements in §§ 61.10(c), 61.13(a) through 61.13(e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), 61.50(a) and (b), and 61.58, if the following criteria are met:

(i) The land disposal facility license was originally issued before [30 DAYS AFTER DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**]; and

(ii) The licensee does not accept Greater-Than-Class C waste or a significant quantity of long-lived radionuclides. For purposes of this paragraph, an amount greater than or equal to 10 metric tons of depleted uranium is considered a significant quantity of long-lived radionuclides.

(2) Licensees who meet the criteria of § 61.1(b)(1)(i) and (ii) and who choose not to comply with the requirements in §§ 61.10(c), 61.13(a) through (e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), 61.50(a) and (b), and 61.58 must instead comply with §§ 61.13(f), 61.41(c), 61.42(c), and 61.50(c).

(c) Except as provided in part 150 of this chapter, which addresses assumption of certain regulatory authority by Agreement States, and § 61.6, ''Exemptions,'' the regulations in this part apply to all persons in the United States. The regulations in this part do not apply to—

(1) Disposal of high-level waste as provided for in part 60 or 63 of this chapter;

(2) Disposal of uranium or thorium tailings or wastes (byproduct material as defined in § 40.4 as provided for in part 40 of this chapter in quantities greater than 10,000 kilograms and containing more than 5 millicuries of radium-226; or

(3) Disposal of licensed material as provided for in part 20 of this chapter.

(d) This part also gives notice to all persons who knowingly provide to any licensee, applicant, contractor, or subcontractor, components, equipment, materials, or other goods or services, that relate to a licensee's or applicant's activities subject to this part, that they may be individually subject to NRC enforcement action for violation of § 61.9b.

■ 6. Revise and republish § 61.2 to read as follows:

§ 61.2 Definitions.

As used in this part:

Active maintenance means any significant remedial activity needed to

maintain a reasonable assurance that the performance objectives in §§ 61.41 and 61.42 of this part are met. Such active maintenance includes ongoing activities such as the pumping and treatment of water from a disposal unit or one-time measures such as replacement of a disposal unit cover. Active maintenance does not include custodial activities such as repair of fencing, repair or replacement of monitoring equipment, revegetation, minor additions to soil cover, minor repair of disposal unit covers, and general disposal site upkeep such as mowing grass.

Buffer zone is a portion of the disposal site that is controlled by the licensee and that lies between the disposal units and the boundary of the site. For near-surface disposal, the buffer zone also extends under the disposal units. For a specialized land disposal facility, the presence of a buffer zone under the disposal units depends on the facility design.

Chelating agent means amine polycarboxylic acids (*e.g.,* ethylenediaminetetraacetic, diethylenetriaminepentaacetic), hydroxy-carboxylic acids, and polycarboxylic acids (*e.g.,* citric acid, carbolic acid, and gluconic acid).

Commencement of construction means taking any action defined as ''construction'' or any other activity at the site of a facility subject to the regulations in this part that has a reasonable nexus to:

(1) Radiological health and safety; or

(2) Common defense and security.

Commission means the Nuclear Regulatory Commission or its duly authorized representatives.

Compliance period means the time from the completion of site closure to 1,000 years after site closure for disposal sites that do not contain significant quantities of long-lived radionuclides. For disposal sites that contain significant quantities of long-lived radionuclides, the compliance period ends 10,000 years after closure of the disposal site.

Construction means the installation of foundations, or in-place assembly, erection, fabrication, or testing for any structure, system, or component of a facility or activity subject to the regulations in this part that are related to radiological safety or security. The term ''construction'' does not include:

(1) Changes for temporary use of the land for public recreational purposes;

(2) Site exploration, including necessary borings to determine foundation conditions or other preconstruction monitoring to establish background information related to the suitability of the site, the environmental impacts of construction or operation, or the protection of environmental values;

(3) Preparation of the site for construction of the facility, including clearing of the site, grading, installation of drainage, erosion and other environmental mitigation measures, and construction of temporary roads and borrow areas;

(4) Erection of fences and other access control measures that are not related to the safe use of, or security of, radiological materials subject to this part;

(5) Excavation;

(6) Erection of support buildings (*e.g.,* construction equipment storage sheds, warehouse and shop facilities, utilities, concrete mixing plants, docking and unloading facilities, and office buildings) for use in connection with the construction of the facility;

(7) Building of service facilities (*e.g.,* paved roads, parking lots, railroad spurs, exterior utility and lighting systems, potable water systems, sanitary sewerage treatment facilities, and transmission lines);

(8) Procurement or fabrication of components or portions of the proposed facility occurring at other than the final, in-place location at the facility; or

(9) Taking any other action that has no reasonable nexus to:

(i) Radiological health and safety, or

(ii) Common defense and security.

Custodial Agency means an agency of the government designated to act on behalf of the government owner of the disposal site.

Defense-in-depth means the use of multiple independent and, where possible, redundant layers of defense against release of radioactive material such that no single layer, no matter how robust, is exclusively relied upon.

Director means the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission.

Disposal means the removal of radioactive wastes from the biosphere inhabited by a person and containing the person's food chains by emplacement in a land disposal facility.

Disposal site means that portion of a land disposal facility which is used for disposal of waste. It consists of disposal units and a buffer zone.

Disposal unit means a discrete portion of the disposal site into which waste is placed for disposal (*e.g.,* a trench, borehole, specialized vault).

Engineered barrier means a man-made structure or device that is intended to improve the disposal site's ability to meet the performance objectives in subpart C of this part.

Explosive material means any chemical compound, mixture, or device, which produces a substantial instantaneous release of gas and heat spontaneously or by contact with sparks or flame.

Government agency means any executive department, commission, independent establishment, or corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States; or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the government.

Hazardous waste means those wastes designated as hazardous by Environmental Protection Agency regulations in 40 CFR part 261.

Hydrogeologic unit means any soil or rock unit or zone which by virtue of its porosity or permeability, or lack thereof, has a distinct influence on the storage or movement of groundwater.

Inadvertent intruder means a person who occupies the disposal site after closure and might engage in agricultural or residential activities and other reasonably foreseeable pursuits that could unknowingly expose the person to radiation emitted or released from the waste in the disposal units.

Inadvertent intruder assessment is an analysis performed to demonstrate compliance with § 61.42(a) and (b) that includes assessment of appropriate exposure pathways and consideration of barriers and site features that limit or prohibit inadvertent intrusion.

Indian Tribe means an Indian Tribe as defined in the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

Intruder barrier means an engineered structure or natural feature over the waste that inhibits contact with waste and helps to ensure that radiation exposures to an inadvertent intruder will meet the performance objectives set forth in this part.

Land disposal facility means the land, building, structures, disposal sites, and equipment which are intended to be used for, or to support, the disposal of radioactive wastes. For purposes of this chapter, a ''geologic repository'' as defined in part 60 or 63 is not considered a land disposal facility.

License means a license issued under the regulations in part 61 of this chapter. *Licensee* means the holder of such a license.

Long-lived radionuclide means a radionuclide where:

(1) More than 10 percent of the initial activity of the radionuclide remains after 1,000 years;

(2) The peak activity from progeny occurs after 1,000 years; or

(3) More than 10 percent of the peak activity of the radionuclide (including progeny) that occurs within 1,000 years remains after 1,000 years.

Model support is data and information that technically support the development of the numerical models or assessments and provide confidence in their results. Model support that involves multiple sources and types of information is generally more robust and can include laboratory or field tests, comparison to analogous systems, natural analogs, formal independent peer review, and comparison to monitoring data. *Monitoring* means the collection of field observations and measurement data to evaluate the performance and characteristics of the disposal site.

Near-surface disposal facility means a land disposal facility in which radioactive waste is disposed generally within the upper 30 meters of the earth's surface. Near-surface disposal facilities are designed or managed to inhibit contact with the waste and limit dose exposure from the waste while the waste remains a radiological hazard.

Operational safety assessment is an assessment used to demonstrate that exposures will be controlled to meet the requirements of 10 CFR part 20, thereby meeting the performance objective for the protection of individuals during operations set forth in § 61.43 of this part. An operational safety assessment is more detailed and comprehensive as the level of hazard posed by the waste increases.

Performance assessment is an analysis used to demonstrate compliance with § 61.41(a) and (b) that identifies the features, events, and processes that could affect the performance of the disposal site; and estimates the potential dose as a result of releases caused by all significant features, events, and processes including an evaluation of the uncertainties.

Performance period is the timeframe after the compliance period during which waste that contains significant quantities of long-lived radionuclides remains a radiological hazard.

Performance period analyses are analyses used to demonstrate compliance with §§ 61.41(b) and 61.42(b) by providing information, consistent with available data and current scientific understanding, that demonstrates that releases of long-lived radioactive waste from a disposal site are effectively managed during the performance period.

Person means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, government agency other than the Commission or the Department of Energy (except that the Department of Energy is considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to law), any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

Pyrophoric liquid means any liquid that ignites spontaneously in dry or moist air at or below 130 °F (54.5 °C). A pyrophoric solid is any solid material, other than one classed as an explosive, which under normal conditions is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling, or disposal hazard. Included are spontaneously combustible and water-reactive materials.

Safety case is a high-level evaluation of the information and analyses that support the licensee's demonstration that the land disposal facility will be constructed and operated safely. The safety case, which is a component of the application, provides a summary of the safety basis that the disposal site will be capable of isolating waste and limiting releases to the environment; describes the strength and reliability of the technical analyses; and includes consideration of defense-in-depth protections and safety relevant aspects of the site, the facility design, and the managerial, engineering, regulatory, and institutional controls.

Significant quantities of long-lived radionuclides means an amount (volume or mass) and concentration accepted for disposal after [30 DAYS AFTER DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**] that could, if released, result in the performance objectives of subpart C of this part not being met. *Site closure and stabilization* means those actions that are taken upon completion of operations that prepare the disposal site for custodial care and that ensure, to the extent practical, that the disposal site will remain stable and will not need ongoing active maintenance.

Site stability assessment is an assessment used to demonstrate compliance with § 61.44 by providing reasonable assurance that long-term stability of the disposal site can be ensured and that maintenance following site closure will not be needed. Long-term stability of the disposal site includes the ability of the site to maintain structural stability from within the disposal units and to maintain stability of the site. A site stability assessment is tailored to the types of waste disposed and the facility design.

Specialized land disposal facility means a land disposal facility that is designed to prevent an inadvertent intruder from disrupting or contacting emplaced waste while it remains a radiological hazard. A specialized land disposal facility is not a near-surface disposal facility.

Stability means the capability of the disposal site (*e.g.,* wasteform, disposal containers, and disposal units) to maintain its shape and properties to an extent that will not prohibit the demonstration that the disposal site will meet the performance objectives in §§ 61.41 and 61.42 of this part and will, to the extent practical, eliminate the need for active maintenance after site closure and for maintenance in any form after license termination.

State means any State, the District of Columbia, Puerto Rico, and any territory or possession of the United States.

Surveillance means observation of the disposal site for purposes of visual detection of need for maintenance, custodial care, evidence of intrusion, and compliance with other license and regulatory requirements.

Technical analyses means the analyses described in § 61.13 and includes the performance assessment, the intruder assessment, the operational safety assessment, and the site stability assessment, in addition to, under certain circumstances, the performance period analyses, needed to demonstrate compliance with the performance objectives of subpart C of this part.

Tribal Governing Body means a ''Tribal organization'' as that term is defined by the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

Waste means those low-level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level radioactive waste means radioactive waste not classified as high-level radioactive waste, spent nuclear fuel, or byproduct material as defined in paragraphs (2), (3), and (4) of the definition of *Byproduct material* set forth in § 20.1003 of this chapter. Low-level waste also includes radioactive material resulting from the production of

medical isotopes that has been permanently removed from a reactor or subcritical assembly for which there is no further use and the disposal of which can meet the requirements of this part.

Waste acceptance criteria means the requirements developed through technical analyses or other methods to ensure, in part, that waste disposed in a facility will meet the established performance objectives set forth in this part.

§ 61.3 [Amended]

■ 7. In § 61.3,

■ a. In paragraph (b), remove the phrase ''shall file'' and add in its place the phrase ''must file''; and

■ b. In paragraph (b), replace the word ''commencing'' with ''commencement of''.

■ 8. Revise and republish § 61.4 to read as follows:

§ 61.4 Communications.

Except where otherwise specified, all communications and reports concerning the regulations in this part and applications filed under them should be sent by mail addressed: ATTN: Document Control Desk; Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; by hand delivery to the NRC's Offices at 11555 Rockville Pike, Rockville, Maryland; or, where practical, by electronic submission, for example, via Electronic Information Exchange, or digital media. Electronic submissions must be made in a manner that enables the NRC to receive, read, authenticate, distribute, and archive the submission, and process and retrieve it a single page at a time. Detailed guidance on making electronic submissions can be obtained by visiting the NRC's website at *https://www.nrc.gov/site-help/e-submittals.html;* by email to *MSHD.Resource@nrc.gov;* or by writing the Office of the Chief Information Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. The guidance discusses, among other topics, the formats the NRC can accept, the use of electronic signatures, and the treatment of nonpublic information.

■ 9. Remove and reserve § 61.7.

§ 61.7 [Removed and Reserved]

■ 10. In § 61.8, revise paragraph (b) to read as follows:

§ 61.8 Information collection requirements: OMB approval.

* * * * *

(b) The approved information collection requirements contained in this part appear in §§ 61.3, 61.6, 61.9, 61.10, 61.11, 61.12, 61.13, 61.14, 61.15, 61.16, 61.20, 61.22, 61.24, 61.26, 61.27, 61.28, 61.30, 61.31, 61.32, 61.41, 61.42, 61.53, 61.57, 61.58, 61.61, 61.62, 61.63, 61.72, and 61.80.

* * * * *

■ 11. In § 61.9:

■ a. In paragraphs (a)(1)(i), (a)(1)(iii), (a)(3) and (f), remove the phrase ''his or her employer'' and add in its place the phrase ''the employer'';

■ b. In paragraph (d), remove the phrase ''him or her'' and add in its place the phrase ''the employee'';

■ c. Revise paragraph (e) introductory text and (e)(1); and

■ d. In paragraph (e)(2), remove the phrase ''*http://www.nrc.gov/reading-rm/doc-collections/forms/*'' and add in its place the phrase ''*https://www.nrc.gov/reading-rm/doc-collections/forms/*''.

The revisions read as follows:

§ 61.9 Employee protection.

* * * * *

(e) To ensure compliance with employee notification requirements, licensees and applicants shall adhere to the following provisions regarding the posting and availability of NRC Form 3, ''Notice to Employees,'' referenced in 10 CFR 19.11(c):

(1) Each licensee and each applicant for a license must prominently post the revision of NRC Form 3. This form must be posted at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

* * * * *

§ 61.9a [Amended]

■ 12. § 61.9a, remove the word ''shall'' wherever it appears and in its place the word ''must''.

■ 13. Revise § 61.10 to read as follows:

§ 61.10 Content of application.

(a) An application to receive from others, possess and dispose of wastes containing or contaminated with source, byproduct or special nuclear material by land disposal must consist of general information, specific technical information, technical analyses, institutional information, and financial information as set forth in §§ 61.11 through 61.16.

(b) An environmental report prepared in accordance with subpart A of part 51 of this chapter must accompany the application.

(c) The application must include the safety case, which demonstrates that the land disposal facility will be constructed and operated safely, provides a summary of the safety basis that the disposal site will meet the performance objectives in subpart C of this part, and describes the defense-in-depth protections that enhance the resiliency of the facility in complying with the performance objectives specified at §§ 61.41 and 61.43.

■ 14. Revise and republish § 61.12 to read as follows:

§ 61.12 Specific technical information.

The application must include the following specific technical information to demonstrate that the performance objectives of subpart C of this part and the applicable technical requirements of subpart D of this part will be met:

(a) A description of the natural and demographic disposal site characteristics as determined by disposal site selection and characterization activities. The description must include geologic, geotechnical, geochemical, geomorphological, hydrologic, meteorologic, climatologic, and biotic features, events, and processes of the disposal site and vicinity.

(b) A description of the design features of the land disposal facility, including the disposal units. The description must include, as appropriate, those design features related to surface cover runoff and infiltration; evapotranspiration from the soil and vegetation overlying the cover material; infiltration reaching the waste; integrity of covers for disposal units; structural stability of backfill, wastes, and covers; disposal site drainage; disposal site closure and stabilization; long-term disposal site maintenance; inadvertent intrusion; intruder barriers; occupational exposures; disposal site monitoring; and adequacy of the size of the buffer zone for monitoring and potential mitigative measures. For a specialized land disposal facility, the description should also include a discussion of structural stability.

(c) A description of the principal design criteria and their relationship to the performance objectives of subpart C to this part.

(d) A description of the design basis natural events or phenomena and their relationships to the principal design criteria. These phenomena could include, among others, earthquakes, fires, and exceptional rain events.

(e) A description of codes and standards that the applicant has applied to the design and that will apply to

construction of the land disposal facility.

(f) A description of the proposed construction and operation of the land disposal facility. At a minimum, the application must describe the methods of construction of disposal units; the methods of waste emplacement; the procedures for and areas of waste segregation; the onsite traffic systems and drainage systems; the survey control program; the methods and areas of waste storage; and the methods to control surface water and groundwater access to the wastes. The application must also describe the methods to be employed in the handling and disposal of wastes containing chelating agents or other non-radiological substances that might affect meeting the performance objectives in subpart C of this part.

(g) A description of the disposal site closure plan, including those design features which are intended to facilitate disposal site closure and to eliminate the need for ongoing active maintenance.

(h) An identification of the known natural resources in the vicinity of the disposal site, the exploitation of which could result in inadvertent intrusion into the wastes after removal of active institutional control.

(i) A description of the kind, amount, classification, characteristics, and specifications of the waste proposed to be received, possessed, and disposed at the land disposal facility, including the proposed wasteform, disposal containers, the facility's proposed waste acceptance criteria, and a description of the procedures for waste acceptance.

(j) A description of the quality assurance program developed by the applicant for: (1) the identification and selection of the disposal site, including any natural features relied upon to enhance the performance of the disposal site; (2) the development of technical analyses; (3) the design and construction of the land disposal facility; (4) the operation of the land disposal facility, including the receipt, handling, and emplacement of waste; and (5) the site closure of the land disposal facility.

(k) A description of the radiation safety program to ensure compliance with the performance objective in § 61.41 of this part, including the control of radioactive effluents, and the occupational and public radiation protection requirements of part 20 of this chapter. The radiation safety program must address both routine operations and accidents and include procedures for dosimetry and preventing and controlling the radioactive contamination of personnel, buildings, vehicles, and equipment.

(l) A description of the environmental monitoring program that provides data for an evaluation of the disposal site performance including potential health and environmental impacts and the plan for taking corrective measures commensurate with detected radionuclide migration.

(m) A description of the administrative procedures that the applicant will apply to control activities at the land disposal facility.

(n) A description of the facility electronic recordkeeping system as required in § 61.80.

■ 15. Revise § 61.13 to read as follows:

§ 61.13 Technical analyses.

This section describes the technical analyses that must be submitted as part of any application under part 61. Licensees who meet the criteria in § 61.1(b)(1) need only comply with paragraph (f) of this section. The specific technical information must include the following analyses needed to demonstrate that the performance objectives of subpart C of this part will be met:

(a) *Performance assessment.* A performance assessment that demonstrates that the exposure to humans from radioactivity released from the disposal site will meet the protection of the general population performance objective set forth in § 61.41(a) for the duration of the compliance period. The performance assessment must:

(1) Identify the natural characteristics of the disposal site (*e.g.,* geomorphology, meteorology, hydrology, hydrogeology, geochemistry, and biology); the characteristics of any engineered barriers; and the interactions between the disposal site and any engineered barrier's characteristics that might affect performance of the disposal site. Identify radionuclide transport characteristics of the waste (*i.e.,* the ease with which radionuclides can escape containment). A performance assessment must further identify and examine the effects of the eventual degradation, deterioration, or alteration of any engineered barriers (including the wasteform and container) together with the disposal site characteristics to evaluate the ability of the disposal site to limit waste releases and to provide an estimate of the annual dose to a member of the public for comparison with the appropriate subpart C performance objective.

(2) Consider features, events, and processes that might affect demonstrating compliance with § 61.41. The features, events, and processes considered must represent a range of phenomena, including those that may have beneficial effects, adverse effects, or both beneficial and adverse effects on performance, and must consider the specific technical information required in §§ 61.12(a) through (i). A technical basis for either the inclusion or exclusion of specific features, events, or processes must be provided.

(3) Consider the probability of disruptive features, events, or processes when estimating the consequences for comparison with the dose limits set forth in § 61.41(a).

(4) Provide model support for the models used in the performance assessment.

(5) Evaluate contaminant transport pathways and processes in environmental media (*e.g.,* air, soil, groundwater, surface water) including but not limited to advection, diffusion, plant uptake, and exhumation by burrowing animals.

(6) Account for uncertainties and variability in the projected performance of the disposal site and surrounding environment.

(7) Assume the receptor is either a resident farmer or resident gardener based on reasonable foreseeable pursuits that are consistent with the activities occurring at and around the receptor location or provide justification for an alternative receptor scenario.

(8) Identify and differentiate between the roles performed by the natural characteristics and the design features of the disposal site in limiting radiological releases to the general population.

(b) *Inadvertent intruder assessment.* An inadvertent intruder assessment demonstrates protection of an inadvertent intruder for the duration of the compliance period. An inadvertent intruder assessment demonstrates that any inadvertent intruder will not receive a dose that exceeds the limits in the performance objective set forth in § 61.42 (a) for the duration of the compliance period. The inadvertent intruder assessment must also:

(1) Assume that an inadvertent intruder occupies the disposal site and engages in agricultural and residential activities and other reasonably foreseeable pursuits that are consistent with the activities occurring in and around the site at the time of development of the inadvertent intruder assessment.

(2) Account for uncertainties and variability in the projected performance of the disposal site and surrounding environment.

(3) For near-surface disposal, identify barriers to inadvertent intrusion that

inhibit contact with the waste or limit dose exposure from the waste and provide a basis for their degree of effectiveness and the time period over which barriers are effective.

(4) For disposal of waste in a specialized land disposal facility, the inadvertent intruder assessment must also demonstrate that the engineered barriers and natural features ensure that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard.

(c) *Operational safety assessment.* An operational safety assessment of the protection of individuals during operations. The assessment must include analyses of expected exposures due to routine operations and likely accidents during handling, storage, and disposal of waste. The assessment must demonstrate that exposures will be controlled to meet the requirements of part 20 of this chapter, thereby meeting the performance objective set forth in § 61.43. These analyses can be qualitative and credit administrative controls and procedures. Operational safety assessments involving Greater-Than-Class C waste must also include quantitative analyses of expected exposures due to unlikely accidents (including fire, handling events, and other credible accidents), and the identification of safety features to prevent and mitigate accidents.

(d) *Site stability assessment.* An assessment of the stability of the disposal site and the need for ongoing active maintenance after site closure. The assessment must demonstrate that long-term stability of the disposal site can be ensured and that there will not be a need for ongoing active maintenance following site closure, thereby meeting the performance objective set forth in § 61.44.

(1) For near surface waste disposal, the assessment must be based upon analyses of active natural processes such as erosion, mass wasting, slope failure, settlement of wastes and backfill, infiltration through covers over disposal areas and adjacent soils, and surface drainage of the disposal site.

(2) For waste disposal in a specialized land disposal facility, the assessment must consider any applicable processes listed in subparagraph (d)(1) and any additional processes relevant to the specialized design, such as seismic activity, that occur with such frequency and extent that they could significantly affect the ability of the disposal site to meet the performance objectives of subpart C of this part or preclude defensible modeling results due to large uncertainties.

(e) *Performance period analyses.* Analyses of how the disposal site limits the potential long-term radiological impacts during the performance period. The performance period analyses must be consistent with available data and current scientific understanding. The analyses must identify and describe disposal site design features and natural characteristics relied on to demonstrate compliance with the applicable performance objectives set forth in §§ 61.41(b) and 61.42(b). In addition, the analyses must evaluate those processes likely to occur during the performance period, including degradation, deterioration, and alteration processes that affect performance.

(f) *Technical analyses pursuant to criteria in* § 61.1(b). For licensees who meet the criteria for the accommodation outlined in § 61.1(b)(1), the specific technical information must include the following analyses needed to demonstrate that the performance objectives of subpart C of this part will be met:

(1) Pathways analyzed in demonstrating protection of the general population from releases of radioactivity must include air, soil, groundwater, surface water, plant uptake, and exhumation by burrowing animals. The analyses must clearly identify and differentiate between the roles performed by the natural disposal site characteristics and design features in isolating and segregating the wastes. The analyses must clearly demonstrate that there is reasonable assurance that the exposure to humans from the release of radioactivity will not exceed the limits set forth in § 61.41(c).

(2) Analyses of the protection of individuals from inadvertent intrusion must include demonstration that there is reasonable assurance the waste classification and segregation requirements will be met and that adequate barriers to inadvertent intrusion will be provided.

(3) Analyses of the protection of individuals during operations must include assessments of expected exposures due to routine operations and likely accidents during handling, storage, and disposal of waste. The analyses must provide reasonable assurance that exposures will be controlled to meet the requirements of part 20 of this chapter.

(4) Analyses of the long-term stability of the disposal site and the need for ongoing active maintenance after closure must be based upon analyses of active natural processes such as erosion, mass wasting, slope failure, settlement of wastes and backfill, infiltration through covers over disposal areas and adjacent soils, and surface drainage of the disposal site. The analyses must provide reasonable assurance that there will not be a need for ongoing active maintenance of the disposal site following closure.

■ 16. Revise and republish § 61.16 to read as follows:

§ 61.16 Other information.

Depending upon the nature of the wastes to be disposed of, and the design and proposed operation of the land disposal facility, additional information may be requested by the Commission including the following:

(a) *Physical security measures, if appropriate.* Any application to receive and possess special nuclear material in quantities subject to the requirements of part 73 of this chapter must demonstrate how the physical security requirements of part 73 will be met. In determining whether receipt and possession will be subject to the physical protection requirements of part 73, the applicant is not required to consider the quantity of special nuclear material that has been disposed of.

(b) *Safety information concerning criticality, if appropriate.*

(1) Any application to receive and possess special nuclear material in quantities that would be subject to the requirements of § 70.24, ''Criticality accident requirements,'' of this chapter must demonstrate how the requirements of that section will be met, unless the applicant requests an exemption pursuant to § 70.24(d) of this chapter. In determining whether receipt and possession would be subject to the requirements of § 70.24 of this chapter, the applicant is not required to consider the quantity of special nuclear material that has been disposed or radioactive waste containing fissile material that meets the exemption requirements specified in § 71.15(c) of this chapter.

(2) Any application to receive and possess special nuclear material must describe proposed procedures for avoiding accidental criticality, which address both storage of special nuclear material prior to disposal and waste emplacement for disposal. The procedure is not required to address radioactive waste containing fissile material that meets the exemption requirements specified in § 71.15(c) of this chapter.

(3) Any application to dispose of Greater-Than-Class C radioactive waste containing special nuclear material in quantities that exceed the limits set forth in § 70.24, ''Criticality accident requirements,'' of this chapter must identify the disposal unit and facility design features that limit

reconcentration of fissile material following disposal to ensure that the performance objectives of subpart C of this part will be met during the compliance period.

§ 61.20 [Amended]

■ 17. In § 61.20, paragraph (b), remove the word ''shall'' and add in its place the word ''must''.

§ 61.22 [Amended]

■ 18. In § 61.22, paragraph (b), remove the word ''shall'' and add in its place the word ''must''.

■ 19. Revise and republish § 61.23 to read as follows:

§ 61.23 Standards for issuance of a license.

A license for the receipt, possession, and disposal of waste containing or contaminated with source, special nuclear, or byproduct material will be issued by the Commission upon finding that the issuance of the license will not be inimical to the common defense and security and will not constitute an unreasonable risk to the health and safety of the public, and:

(a) The applicant is qualified by reason of training and experience to carry out the disposal operations requested in a manner that protects health and minimizes danger to life or property.

(b) The applicant's proposed disposal site, disposal site design, waste acceptance criteria, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and postclosure institutional controls are adequate to protect the public health and safety because they provide reasonable assurance that the general population will be protected from releases of radioactivity as specified in the performance objective in § 61.41.

(c) The applicant's proposed disposal site, disposal site design, waste acceptance criteria, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and postclosure institutional controls are adequate to protect the public health and safety because they provide reasonable assurance that inadvertent intruders are protected in accordance with the performance objective in § 61.42.

(d) The applicant's proposed waste acceptance criteria and land disposal facility operations (including equipment, facilities, and procedures) are adequate to protect the public health and safety because they provide reasonable assurance that the standards for radiation protection set out in part 20 of this chapter will be met.

(e) The applicant's proposed disposal site, disposal site design, waste acceptance criteria, land disposal facility operations, disposal site closure, and postclosure institutional controls are adequate to protect the public health and safety because they provide reasonable assurance that long-term stability of the disposed waste and the disposal site will be achieved and will eliminate to the extent practical the need for ongoing active maintenance of the disposal site following closure.

(f) The application provides reasonable assurance that the applicable technical requirements of subpart D of this part will be met.

(g) The applicant's proposal for institutional control provides reasonable assurance that institutional control will be provided for the length of time found necessary to ensure the findings in paragraphs (b) through (e) of this section and that the institutional control meets the requirements of § 61.59.

(h) The information on financial assurances meets the requirements of subpart E of this part.

(i) The applicant's physical security information provides reasonable assurance that the requirements of part 73 of this chapter will be met, insofar as they are applicable to special nuclear material to be possessed before disposal under the license.

(j) The applicant's criticality safety procedures are adequate to protect the public health and safety and provide reasonable assurance that the requirements of § 70.24 of this chapter will be met, insofar as they are applicable to special nuclear material to be possessed before disposal under the license. For Greater-Than-Class C radioactive waste containing special nuclear material in quantities that exceed the limits set forth in § 70.24, the applicant's facility design must identify, as necessary, the disposal unit and facility design considerations that limit reconcentration of fissile material to prevent a potential criticality event following disposal.

(k) Any additional information submitted as requested by the Commission pursuant to § 61.16 is adequate.

(l) The requirements of subpart A of part 51 of this chapter have been met.

(m) The applicant's safety case is adequate to support the licensing decision.

(n) The Director of Nuclear Material Safety and Safeguards or his/her designee, before commencement of construction of a land disposal facility, on the basis of information filed and evaluations made pursuant to subpart A of part 51 of this chapter, has concluded, after weighing the environmental, economic, technical, and other benefits against environmental costs and considering available alternatives, that the action called for is the issuance of the proposed license, with any appropriate conditions to protect environmental values. Commencement of construction prior to this conclusion is undertaken by the applicant at its own risk. Commencement of construction as defined in section 61.2 may include non-construction activities if the activity has a reasonable nexus to radiological safety and security.

■ 20. In § 61.24:

■ a. In paragraphs (b), (d), (f), and (k), remove the word ''shall'' wherever it appears and add in its place the word ''must'';

■ b. In paragraph (c), remove the phrase ''post closure'' and add in its place the phrase ''postclosure'';

■ c. Revise paragraph (i);

■ d. In paragraph (j), remove the phrase ''of this part''; and

■ e. Add new paragraph (l).

The revision and additions read as follows:

§ 61.24 Conditions of licenses.

* * * * *

(i) Any licensee who receives and possesses special nuclear material under this part in quantities that would be subject to the requirements of § 70.24 of this chapter must comply with the requirements of that section. The licensee must consider the quantity of special nuclear material as specified under § 61.16(b) for preventing criticality during storage of special nuclear material prior to disposal and waste emplacement for disposal. For Greater-Than-Class C radioactive waste containing special nuclear material in quantities that exceed the limits set forth in § 70.24 the licensee has, as necessary, implemented design considerations that limit reconcentration of fissile material as a means to prevent a potential criticality event following disposal.

* * * * *

(l) The licensee must not operate the land disposal facility in a manner that would be inconsistent with the technical analyses.

(1) The licensee must evaluate whether updates to the technical analyses are warranted:

(i) if significant changes have occurred at the site; or

(ii) before receiving new waste streams not analyzed in the most recent approved technical analyses.

(2) The evaluations specified in paragraph (l)(1) of this section must be

retained as records in accordance with § 61.80.

■ 21. Revise and republish § 61.25 to read as follows:

§ 61.25 Changes.

(a) Except as provided for in specific license conditions, the licensee must not make changes in the land disposal facility or procedures described in the license application. The license will include conditions restricting subsequent changes to the facility and the procedures authorized that are important to public health and safety. These license restrictions will fall into three categories of descending importance to public health and safety as follows:

(1) those features and procedures that may not be changed without: (i) 60 days prior notice to the Commission, (ii) 30 days notice of opportunity for a prior hearing, and (iii) prior Commission approval; (2) those features and procedures that may not be changed without: (i) 60 days prior notice to the Commission, and (ii) prior Commission approval; and (3) those features and procedures that may not be changed without 60 days prior notice to the Commission. Features and procedures falling in paragraph (a)(3) of this section may not be changed without prior Commission approval if the Commission so orders, after having received the required notice.

(b) Amendments authorizing waste acceptance criteria changes, site closure, license transfer, or license termination will be included in the license restriction described in paragraph (a)(1) of this section.

(c) Changes to the technical analyses that do not involve waste acceptance criteria changes will be included in the license restriction described in paragraph (a)(2) of this section.

(d) The Commission must provide a copy of the notices of opportunity for hearing provided in paragraph (a)(1) of this section to State and local officials or tribal governing bodies specified in § 2.104(c) of this chapter.

§ 61.26 [Amended]

■ 22. In paragraph (a) remove the word ''shall'' and add in its place the word ''must''.

§ 61.27 [Amended]

■ 23. In paragraph (a) remove the word ''shall'' and add in its place the word ''does''.

■ 24. In § 61.28:

■ a. Revise paragraph (a); and

■ b. In paragraph (c) remove the word ''shall'' and add in its place the word ''will''.

The revision reads as follows:

§ 61.28 Contents of application for closure.

(a) Prior to closure of the disposal site, or as otherwise directed by the Commission, the licensee must submit an application to amend the license for site closure. This site closure application must include a final revision of the safety case, if applicable, and a final disposal site closure plan, which updates and revises, as appropriate, the disposal site closure plan that was submitted with the license application in accordance with § 61.12(g). The final disposal site closure plan must include each of the following:

(1) Any additional geologic, hydrologic, or other disposal site data pertinent to the long-term containment of emplaced radioactive wastes obtained during the operational period.

(2) The results of tests, experiments, or any other analyses relating to backfill of excavated areas, closure and sealing, waste migration and interaction with emplacement media, or any other tests, experiments, or analysis pertinent to the long-term containment of emplaced waste within the disposal site.

(3) Any revisions to the technical analyses necessary to support site closure; such revisions must consider the waste disposed during operations and reflect significant changes to the human activities occurring in and around the site.

(4) Any plan or proposed revision of a previously submitted plan for:

(i) Decontamination and/or dismantlement of surface facilities;

(ii) Backfilling of excavated areas; or

(iii) Stabilization of the disposal site for postclosure care.

(5) The total volume and mass of waste that was disposed as well as the total radioactivity in curies of each radionuclide that was disposed.

■ 25. In § 61.29:

■ a. Revise the section heading; and

■ b. Revise and republish § 61.29 to read as follows:

§ 61.29 Postclosure observation and maintenance.

Following completion of closure authorized in § 61.28(c), the licensee must observe, monitor, and carry out necessary maintenance and repairs at the disposal site until the license is transferred by the Commission in accordance with § 61.30. Responsibility for the disposal site must be maintained by the licensee for 5 years. A shorter or longer time period for postclosure observation and maintenance may be established and approved as part of the site closure plan, based on site-specific conditions.

■ 26. In § 61.30:

■ a. Revise paragraph (a) introductory text; and

■ b. In paragraph (a)(4) remove the phrase ''post closure'' and add in its place the phrase ''postclosure''.

The revision reads as follows:

§ 61.30 Transfer of license.

(a) Following closure and the period of postclosure observation and maintenance, the licensee may apply for an amendment to transfer the license to the disposal site owner. The license amendment request will be approved and the license transferred if the Commission finds:

* * * * *

■ 27. § 61.32:

■ a. In paragraphs (a) and (b), remove the word ''shall'' and add in its place the word ''must''; and

■ b. Revise paragraph (c).

The revisions reads as follows:

§ 61.32 Facility information and verification.

* * * * *

(c) Applicants and licensees specified in paragraph (a) of this section must permit verification thereof by the International Atomic Energy Agency (IAEA) and take other action as necessary to implement the US/IAEA Safeguards Agreement, as described in part 75 of this chapter.

■ 28. Revise and republish § 61.41 to read as follows:

§ 61.41 Protection of the general population from releases of radioactivity.

(a) Concentrations of radioactive material that may be released from the disposal site to groundwater, surface water, air, soil, plants, or animals, after the period of operations, must not result in an annual total effective dose or total effective dose equivalent, as applicable, exceeding the radiological dose criteria for unrestricted use in 10 CFR 20.1402 to any member of the public within the compliance period. Compliance with this paragraph must be demonstrated in the performance assessment as required by § 61.13(a). Licensees must manage releases of radioactivity to the general environment consistent with 10 CFR 20.1101(b).

(b) Releases of radioactivity from the disposal site must be effectively managed during the performance period. Compliance with this paragraph must be demonstrated through performance period analyses as required by § 61.13(e).

(c) For licensees who meet the criteria for the accommodation outlined in

§ 61.1(b)(1) of this part and choose to comply with the requirements in § 61.1(b)(2) of this part, concentrations of radioactive material which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals must not result in an annual dose exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public, or 25 mrem TEDE, or TED, as applicable.

■ 29. Revise and republish § 61.42 to read as follows:

§ 61.42 Protection of individuals from inadvertent intrusion.

(a) Design, operation, and closure of the land disposal facility must ensure protection of an inadvertent intruder into the disposal site who occupies the site or contacts the waste at any time after active institutional controls over the disposal site are removed.

(1) For near-surface disposal, the annual dose must not exceed 5 milliSieverts (500 millirems) to any inadvertent intruder within the compliance period. Compliance with this paragraph must be demonstrated through the inadvertent intruder assessment as required by § 61.13(b).

(2) For waste disposal in a specialized land disposal facility, the inadvertent intruder assessment must demonstrate that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. The inadvertent intruder assessment must also demonstrate that the annual dose to any inadvertent intruder within the compliance period from any onsite releases (*e.g.,* radon emanation, groundwater contamination) will not exceed 5 milliSieverts (500 millirems). Compliance with this paragraph must be demonstrated through the inadvertent intruder assessment as required by § 61.13(b).

(b) Exposures to an inadvertent intruder must be effectively managed during the performance period. Compliance with this paragraph must be demonstrated through the performance period analyses as required by § 61.13(e).

(c) For licensees who meet the criteria for the accommodation outlined in § 61.1(b)(1) of this part and choose to comply with the requirements in § 61.1(b)(2) of this part, design, operation, and closure of the land disposal facility must ensure protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste at any time after active institutional controls over the disposal site are removed.

■ 30. Revise and republish § 61.43 to read as follows:

§ 61.43 Protection of individuals during operations.

Operations at the land disposal facility must be conducted in compliance with the standards for radiation protection set out in part 20 of this chapter, including § 20.1101(b), except that the annual dose to a member of the public from releases of radioactivity from the land disposal facility must not exceed an annual total effective dose or total effective dose equivalent, as applicable, of 0.25 milliSievert (25 millirems). Compliance with this section must be demonstrated through the operational safety assessment as required by § 61.13(c) or 61.13(f)(3), as applicable.

■ 31. Revise and republish § 61.44 to read as follows:

§ 61.44 Stability of the disposal site after closure.

The land disposal facility must be sited, designed, used, operated, and closed to achieve long-term stability of the disposal site. During the institutional control period, the licensee must eliminate to the extent practical the need for ongoing active maintenance of the disposal site following site closure so that only surveillance, monitoring, or minor custodial care are required. Compliance with this section must be demonstrated through the site stability assessment as required by § 61.13(d) or 61.13(f)(4), as applicable.

■ 32. Revise and republish § 61.50 to read as follows:

§ 61.50 Disposal site suitability requirements for land disposal.

The primary emphasis of disposal site suitability requirements is to avoid sites with disruptive processes and events and to foster favorable conditions that will provide reasonable assurance that the performance objectives of subpart C of this part will be met, rather than short-term benefits to site operation.

(a) *Disposal site suitability for near-surface disposal.* The purpose of this section is to specify the minimum characteristics a disposal site must possess to be acceptable for the disposal of waste in the near surface. The disposal site must meet the following minimum requirements:

(1) The disposal site must be capable of being characterized, modeled, analyzed, and monitored to the extent that the long-term performance objectives of subpart C of this part can be met.

(2) For at least 500 years following closure of the land disposal facility, the disposal site cannot have any of the following characteristics:

(i) Poor drainage, flooding or frequent ponding, located in a 100-year flood plain, as defined in Executive Order 11988, ''Floodplain Management'', or located in a wetland, as defined in Executive Order 11990, ''Protection of Wetlands.''

(ii) Uncontrolled runoff from upstream drainage areas, which could erode or inundate disposal units.

(iii) A water table too close to the land surface. The unsaturated zone must be thick enough so that waste is not disposed within a saturated zone nor a zone of water table fluctuation, perennial or otherwise.

(iv) Groundwater from below discharging to the land surface within the disposal site at any time.

(3) If any of the characteristics in paragraphs (2)(i) through (iv) of this section are present after the first 500 years following closure of the land disposal facility, the performance objectives of subpart C of this part must still be met.

(4) The projected population growth and future developments in the vicinity of the land disposal facility are not likely to affect the ability of the land disposal facility to meet the performance objectives of subpart C of this part or to preclude defensible modeling due to large uncertainties.

(5) The land disposal facility must not be located in, or in the immediate vicinity of, an area:

(i) having known natural resources which, if exploited, would result in the failure of the disposal site to meet the performance objectives of subpart C of this part;

(ii) where tectonic processes such as faulting, folding, seismic activity, or vulcanism may occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of subpart C of this part, or to preclude defensible modeling results due to large uncertainties;

(iii) where surface geologic processes such as mass wasting, erosion, slumping, landslides, or weathering occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of subpart C of this part, or to preclude defensible modeling results due to large uncertainties; and

(iv) where nearby facilities or activities could significantly affect the ability of the disposal site to meet the performance objectives of subpart C of

this part or significantly mask the environmental monitoring program.

(b) *Disposal site suitability requirements for specialized land disposal facilities.* Specialized land disposal facility sites must meet the suitability requirements of paragraphs (a)(1), (a)(4), and (a)(5); and applicable requirements of paragraphs (a)(2) and (a)(3) of this section.

(c) *Disposal site suitability requirements pursuant to criteria in § 61.1(b).* For licensees who meet the criteria for the accommodation outlined in § 61.1(b)(1), the disposal site suitability requirements for near-surface disposal are as follows. The purpose of this section is to specify the minimum characteristics a disposal site must have to be acceptable for use as a near-surface disposal facility. The primary emphasis in disposal site suitability is given to isolation of wastes, a matter having long-term impacts, and to disposal site features that ensure that the long-term performance objectives of subpart C of this part are met, as opposed to short-term convenience or benefits. Licensees who meet the criteria for the accommodation outlined in § 61.1(b)(1) of this part and choose to comply with the requirements in § 61.1(b)(2) of this part, must meet the following site suitability requirements:

(1) The disposal site shall be capable of being characterized, modeled, analyzed and monitored.

(2) Within the region or state where the facility is to be located, a disposal site should be selected so that projected population growth and future developments are not likely to affect the ability of the disposal facility to meet the performance objectives of subpart C of this part.

(3) Areas must be avoided having known natural resources which, if exploited, would result in failure to meet the performance objectives of subpart C of this part.

(4) The disposal site must be generally well drained and free of areas of flooding or frequent ponding. Waste disposal shall not take place in a 100-year flood plain, coastal high-hazard area or wetland, as defined in Executive Order 11988, ''Floodplain Management Guidelines.''

(5) Upstream drainage areas must be minimized to decrease the amount of runoff which could erode or inundate waste disposal units.

(6) The disposal site must provide sufficient depth to the water table that groundwater intrusion, perennial or otherwise, into the waste will not occur. The Commission will consider an exception to this requirement to allow disposal below the water table if it can be conclusively shown that disposal site characteristics will result in molecular diffusion being the predominant means of radionuclide movement and the rate of movement will result in the performance objectives of subpart C of this part being met. In no case will waste disposal be permitted in the zone of fluctuation of the water table.

(7) The hydrogeologic unit used for disposal shall not discharge groundwater to the surface within the disposal site.

(8) Areas must be avoided where tectonic processes such as faulting, folding, seismic activity, or vulcanism may occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of subpart C of this part, or may preclude defensible modeling and prediction of long-term impacts.

(9) Areas must be avoided where surface geologic processes such as mass wasting, erosion, slumping, landsliding, or weathering occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of subpart C of this part, or may preclude defensible modeling and prediction of long-term impacts.

(10) The disposal site must not be located where nearby facilities or activities could adversely impact the ability of the site to meet the performance objectives of subpart C of this part or significantly mask the environmental monitoring program.

■ 33. Revise and republish § 61.51 to read as follows:

§ 61.51 Disposal site design for land disposal.

(a) *Disposal site design for near-surface disposal.*

(1) Site design features must be directed toward long-term isolation of the waste and must avoid the need to continue active maintenance after site closure.

(2) The disposal site design and operation must be compatible with the disposal site closure and stabilization plan and lead to disposal site closure that provides reasonable assurance that the performance objectives of subpart C of this part will be met.

(3) The disposal site must be designed to complement and improve, where appropriate, the ability of the disposal site's natural characteristics to assure that the performance objectives of subpart C of this part will be met.

(4) Covers must be designed, to the extent practical, to minimize water infiltration, to direct percolating or surface water away from the disposed waste, and to resist degradation by surface geologic processes and biotic activity.

(5) Surface features must direct surface water drainage away from disposal units at velocities and gradients which will not result in erosion that will require ongoing active maintenance in the future.

(6) The disposal site must be designed, to the extent practical, to minimize the contact of water with waste during storage, the contact of standing water with waste during disposal, and the contact of percolating or standing water with wastes after disposal.

(b) *Disposal site design for specialized land disposal facilities.*

(1) Site design and operation must meet the requirements of paragraphs (a)(1) through (3), and (6), as well as any applicable requirements of paragraphs (a)(4) and (5) of this section.

(2) The disposal site design must include engineered and natural barriers that will, in combination, prevent an inadvertent intruder from disrupting or contacting emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. Natural barriers could include significant depth to disposal or natural features that would pose significant challenges to drilling.

■ 34. Revise and republish § 61.52 to read as follows:

§ 61.52 Land disposal facility operation and disposal site closure.

(a) *Near-surface disposal facility operation and disposal site closure.*

(1) Wastes designated as Class A pursuant to § 61.55, must be segregated from other wastes by placing the Class A waste in disposal units that are sufficiently separated from disposal units containing other waste classes such that any interaction between Class A wastes and other wastes will not result in the failure to meet the performance objectives in subpart C of this part. This segregation is not necessary for Class A wastes if they meet the stability requirements in § 61.56(b).

(2) Wastes designated as Class C pursuant to § 61.55, must be disposed of so that the top of the waste is a minimum of 5 meters below the top surface of the cover or must be disposed of with intruder barriers that are designed to protect against an inadvertent intrusion for a least 500 years.

(3) Wastes designated as Greater-Than-Class C pursuant to § 61.55 and with concentrations of alpha-emitting transuranic radionuclides with half-

lives greater than 5 years that are equal to or less than 10,000 nanocuries per gram may be disposed in the near-surface provided that the top of the waste is a minimum of 5 meters below the land surface and must be disposed with intruder barriers that are designed to protect against an inadvertent intrusion for at least 500 years.

(4) Wastes designated as Greater-Than-Class C pursuant to § 61.55 and with concentrations of alpha-emitting transuranic radionuclides with half-lives greater than 5 years that exceed 10,000 nanocuries per gram are not generally acceptable for near-surface disposal but may be disposed in a specialized land disposal facility pursuant to § 61.52(b).

(5) All wastes meeting the criteria of paragraphs (a)(1) through (3) of this section must be disposed of in accordance with the requirements of paragraphs (a)(6) through (18) of this section.

(6) Wastes must be emplaced in a manner that maintains the package integrity during emplacement, minimizes the void spaces between packages, and permits the void spaces to be filled.

(7) Void spaces between waste packages must be filled with earth or other material to reduce future subsidence within the fill.

(8) Waste must be placed and covered in a manner that limits the radiation dose rate at the surface of the cover to levels that at a minimum will permit the licensee to comply with all provisions of §§ 20.1301 and 20.1302 of this chapter at the time the license is transferred pursuant to § 61.30 of this part.

(9) The boundaries and locations of each disposal unit (*e.g.,* trenches) must be accurately located and mapped by means of a land survey. Near-surface disposal units must be marked in such a way that the boundaries of each unit can be easily defined. Three permanent survey marker control points, referenced to United States Geological Survey (USGS) or National Geodetic Survey (NGS) survey control stations, must be established on the site to facilitate surveys. The USGS or NGS control stations must provide horizontal and vertical controls as checked against USGS or NGS record files.

(10) A buffer zone of land must be maintained between any buried waste and the disposal site boundary and beneath the disposed waste. The buffer zone must be of adequate dimensions to allow a licensee to carry out environmental monitoring activities specified in § 61.53(d) and take mitigative measures if needed.

(11) Closure and stabilization measures as set forth in the approved site closure plan must be carried out as each disposal unit (*e.g.,* each trench) is filled and covered.

(12) Active waste disposal operations must not have an adverse effect on completed closure and stabilization measures.

(13) Only wastes containing or contaminated with radioactive materials may be disposed of at the disposal site.

(14) Waste accepted for disposal must meet that facility's waste acceptance criteria.

(15) Waste must be disposed consistent with the description provided in § 61.12(f) of this part and the licensee must not operate the land disposal facility in a manner that would be inconsistent with the technical analyses.

(16) Significant quantities of uranium must be disposed so that the top of the waste is a minimum of 5 meters below the land surface.

(17) Greater-Than-Class C waste must be disposed so as to not produce thermal effects that would significantly degrade the performance of the disposal site.

(18) Greater-Than-Class C waste must be disposed in a manner that limits the potential for a criticality event during placement and operations.

(b) *Facility operation and disposal site closure for specialized land disposal facilities.*

(1) Facility operation and disposal site closure must meet the requirements of paragraphs (a)(1), (a)(6)–(9), and (a)(11)–(18) of this section.

(2) A buffer zone of land must be maintained between any buried waste and the disposal site boundary. The buffer zone must be of adequate dimensions to allow a licensee to carry out environmental monitoring activities specified in § 61.53(d) and take mitigative measures if needed. The licensee must maintain a buffer zone beneath the disposed waste or demonstrate that such a buffer zone is not required to carry out environmental monitoring activities specified in § 61.53(d).

(3) Wastes with radionuclide concentrations that exceed the values in Table 3 of § 61.55 must be disposed in accordance with § 61.55(b)(2)(iii).

■ 35. In § 61.53:

■ a. Revise paragraphs (a), (b), and (d); and

■ b. In paragraph (c) remove the word ''shall'' and add in its place the word ''must''.

The revisions read as follows:

§ 61.53 Environmental monitoring.

(a) At the time a license application is submitted, the applicant must provide environmental data on the disposal site characteristics, including information and data concerning the ecology, meteorology, climate, hydrology, geology, geomorphology, geochemistry, and seismology of the disposal site. For those characteristics that are subject to seasonal variation, data must cover at least a 12-month period.

(b) At the time a license application is submitted, the applicant must have plans for taking corrective measures during the lifespan of the facility if migration of radionuclides would indicate that the performance objectives of subpart C may not be met.

* * * * *

(d) After the disposal site is closed, the licensee, in accordance with § 61.29 of this part, is responsible for post-operational surveillance of the disposal site and must maintain a monitoring system based on the operating history and the closure and stabilization of the disposal site. The monitoring system must be capable of providing early warning of releases of radionuclides from the disposal site before they leave the site boundary.

■ 36. Revise and republish § 61.55 to read as follows:

§ 61.55 Waste classification.

Different classes of waste (A, B, C, and Greater-Than-Class C (GTCC)) have been developed with corresponding requirements for each class of waste. Class A waste is the least hazardous and GTCC waste is the most hazardous. Classification of Class A, B, and C radioactive waste is addressed in paragraph (a) of this section. Only waste with radionuclide concentrations that exceed the Class C limit when classified according to paragraph (a) must be classified according to paragraph (b) of this section. Consistent with the requirements of 10 CFR part 20 appendix G (I) of this chapter, references to radionuclide concentrations in this section mean their concentrations in the waste when it is prepared for shipment for disposal.

(a) *Classification of Class A, B, and C radioactive waste—*

(1) *Considerations.*

(i) Class A and B limits in this section were based on the assumption that access to the site would not occur during a 100 year institutional control period after site closure. This permits the disposal of Class A and Class B waste without special provisions for intrusion protection, because these classes of waste contain types and quantities of radionuclides that will

decay during the 100-year period and will present an acceptable hazard to an intruder. Waste that will decay to levels which present an acceptable hazard to an intruder after 100 years and before 500 years is designated as Class C waste. This waste is disposed of at a greater depth than the other classes of waste so that subsequent surface activities by an intruder will not disturb the waste. Where site conditions prevent deeper disposal, intruder barriers such as concrete covers may be used. The effective life of these intruder barriers should be 500 years. A maximum concentration of radionuclides is specified for all Class C wastes so that, at the end of the 500-year period, remaining radioactivity will be at a level that does not pose an unacceptable hazard to an intruder or public health and safety.

(ii) Determination of the classification of Class A, B, and C radioactive waste involves two considerations. First, consideration must be given to the concentration of long-lived radionuclides (and their shorter-lived precursors) whose potential hazard will persist long after such precautions as institutional controls, improved wasteform, and deeper disposal have ceased to be effective. These precautions delay the time when long-lived radionuclides could cause exposures. In addition, the magnitude of the potential dose is limited by the concentration and availability of the radionuclide at the time of exposure. Second, consideration must be given to the concentration of shorter-lived radionuclides for which requirements on institutional controls, wasteform, and disposal methods are effective.

(2) *Classes of waste.*

(i) Class A waste is usually segregated from other waste classes at the disposal site. The physical form and characteristics of Class A waste must meet the minimum requirements set forth in § 61.56(a). If Class A waste also meets the stability requirements set forth in § 61.56(b), it is not necessary to segregate the waste for disposal. Class A waste that does not meet the stability requirements of § 61.56(b) must be segregated from other waste.

(ii) Class B waste must meet more rigorous requirements on wasteform to ensure stability after disposal. The physical form and characteristics of Class B waste must meet both the minimum and stability requirements set forth in §§ 61.56(a) and (b). Class B wasteforms or containers, to the extent practical, must be designed to be stable (*i.e.,* maintain gross physical properties and identity) over 300 years.

(iii) Class C waste not only must meet more rigorous requirements on wasteform to ensure stability but also requires additional measures at the disposal facility to protect against inadvertent intrusion. The physical form and characteristics of Class C waste must meet both the minimum and stability requirements set forth in §§ 61.56(a) and (b). Class C wasteforms or containers, to the extent practical, must be designed to be stable (*i.e.,* maintain gross physical properties and identity) over 300 years.

(3) *Classification determined by long-lived radionuclides.* If radioactive waste contains only radionuclides listed in Table 1, classification is determined as follows:

(i) If the concentration does not exceed 0.1 times the value in Table 1, the waste is Class A.

(ii) If the concentration exceeds 0.1 times the value in Table 1 but does not exceed the value in Table 1, the waste is Class C.

(iii) If the concentration exceeds the value in Table 1, the waste must be classified under paragraph (b) of this section.

(iv) For wastes containing mixtures of radionuclides listed in Table 1, the total concentration is determined by the sum of fractions rule described in paragraph (a)(7) of this section.

TABLE 1

Radionuclide	Concentration, curies per cubic meter
C–14	8
C–14 in activated metal	80
Ni-59 in activated metal	220
Nb-94 in activated metal	0.2
Tc-99	3
I–129	0.08
Alpha emitting transuranic radionuclides with half-life greater than 5 years	[1] 100
Pu-241	[1] 3,500
Cm-242	[1] 20,000

[1] Units are nanocuries per gram.

(4) *Classification determined by short-lived radionuclides.* If radioactive waste does not contain any of the radionuclides listed in Table 1, classification is determined based on the concentrations shown in Table 2. However, as specified in paragraph (a)(6) of this section, if radioactive waste does not contain any radionuclides listed in either Table 1 or 2, it is Class A.

(i) If the concentration does not exceed the value in Column 1, the waste is Class A.

(ii) If the concentration exceeds the value in Column 1, but does not exceed the value in Column 2, the waste is Class B.

(iii) If the concentration exceeds the value in Column 2, but does not exceed the value in Column 3, the waste is Class C.

(iv) If the concentration exceeds the value in Column 3, the waste must be classified under paragraph (b) of this section.

(v) For wastes containing mixtures of the radionuclides listed in Table 2, the total concentration is determined by the sum of fractions rule described in paragraph (a)(7) of this section.

TABLE 2

Radionuclide	Concentration, curies per cubic meter		
	Col. 1	Col. 2	Col. 3
Total of all radionuclides with less than 5-year half-life	700	(1)	(1)
H–3	40	(1)	(1)
Co-60	700	(1)	(1)
Ni-63	3.5	70	700
Ni-63 in activated metal	35	700	7,000
Sr-90	0.04	150	7,000
Cs-137	1	44	4,600

[1] There are no limits established for these radionuclides in Class B or C wastes.

Practical considerations such as the effects of external radiation and internal heat generation on transportation, handling, and disposal will limit the concentrations for these wastes. These wastes are Class B unless the concentrations of other radionuclides in Table 2 determine the waste to be Class C or greater independent of these radionuclides.

(5) *Classification determined by both long- and short-lived radionuclides.* If radioactive waste contains a mixture of radionuclides, some of which are listed in Table 1, and some of which are listed in Table 2, classification is determined as follows:

(i) If the concentration of a radionuclide listed in Table 1 does not exceed 0.1 times the value listed in Table 1, the class is determined by the concentration of radionuclides listed in Table 2.

(ii) If the concentration of a radionuclide listed in Table 1 exceeds 0.1 times the value listed in Table 1 but does not exceed the value in Table 1, the waste is Class C, provided the concentration of radionuclides listed in Table 2 does not exceed the value shown in Column 3 of Table 2.

(iii) If the concentration of a radionuclide listed in Table 1 exceeds the value in Table 1 or the value provided in Column 3 of Table 2, the waste must be classified under paragraph (b) of this section.

(6) *Classification of wastes with radionuclides other than those listed in Tables 1 and 2.* If radioactive waste does not contain any radionuclides listed in either Table 1 or 2, it is Class A.

(7) *The sum of the fractions rule for mixtures of radionuclides.* For determining classification for waste that contains a mixture of radionuclides, it is necessary to determine the sum of fractions by dividing each radionuclide's concentration by the appropriate limit and adding the resulting values. The appropriate limits must all be taken from the same column of the same table. The sum of the fractions for the column must be less than 1.0 if the waste class is to be determined by that column. Example: A waste contains Sr-90 in a concentration of 50 Ci/m^3 and Cs-137 in a concentration of 22 Ci/m^3. Since the concentrations both exceed the values in Column 1, Table 2, they must be compared to Column 2 values. For Sr-90 fraction 50/150 = 0.33; for Cs-137 fraction, 22/44 = 0.5; the sum of the fractions = 0.83. Since the sum is less than 1.0, the waste is Class B.

(8) *Determination of concentrations in wastes.* The concentration of a radionuclide may be determined by indirect methods such as use of scaling factors which relate the inferred concentration of one radionuclide to another that is measured, or radionuclide material accountability, if there is reasonable assurance that the indirect methods can be correlated with actual measurements. The concentration of a radionuclide may be averaged over the volume of the waste, or weight of the waste if the units are expressed as nanocuries per gram.

(b) *Classification of Greater-than-Class-C Waste.*

(1) *Considerations.*

(i) Determination of the classification of waste under this paragraph applies only if waste has first been determined to exceed Class C limits under § 61.55(a). That waste is then classified based on the concentrations of groupings of radionuclides with half-lives greater than 50 years as described in § 61.55(b)(2). Waste with radionuclide concentrations in excess of the Class C limits codified at 42 U.S.C. 2021c(b)(1)(D) on a sum-of-fractions basis must be disposed of in a site licensed by the Commission.

(ii) Greater-than-Class C waste has higher concentrations of radionuclides than Class C waste and will require additional protections and analyses. Greater-Than-Class C waste must meet the requirements for Class C waste and the additional requirements set forth in § 61.56(c). Whereas protection of an inadvertent intruder from the disposal of Class C waste will be provided by a sufficient burial depth or an intruder barrier, protection of an inadvertent intruder from Greater-Than-Class C waste will require both a sufficient burial depth and one or more intruder barriers.

(iii) Greater-Than-Class C waste with concentrations of alpha-emitting transuranic radionuclides with half-lives greater than 5 years exceeding 10,000 nanocuries per gram is not generally acceptable for near-surface disposal. Such waste may be disposed of in a specialized land disposal facility as defined in this part. Such waste may be disposed of in a near-surface disposal facility if a proposal for such disposal in a site licensed pursuant to this part is approved by the Commission.

(2) *Classification determined by radionuclide concentrations.*

(i) Waste that is Class A pursuant to § 61.55(a)(6) because it does not contain any of the radionuclides in Table 1 or Table 2 of § 61.55(a) is Class A waste irrespective of the comparison of the radionuclide concentrations in the waste to the values in Table 3.

(ii) Waste with radionuclide concentrations that exceed the Class C limits under § 61.55(a) is Greater-Than-Class-C if the radionuclide concentrations in the waste do not exceed any of the values in Table 3.

(iii) Waste that exceeds one or more of the values in Table 3 in this section is not generally acceptable for land disposal unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are approved by the Commission.

(iv) The concentration of a radionuclide may be determined by indirect methods as described in paragraph (a)(8) of this section.

TABLE 3

Radionuclide	Concentration
Sum of alpha emitting radionuclides with half-life greater than 50 years	18.5 megabecquerel per gram (500 microcuries per gram).
Sum of beta and photon emitting radionuclides with half-life greater than 50 years.	1.85×10^5 gigabecquerel per cubic meter (5,000 curies per cubic meter).
Sum of beta and photon emitting radionuclides with half-life greater than 50 years in activated metal.	1.85×10^6 gigabecquerel per cubic meter (50,000 curies per cubic meter).
Tc-99	1.85×10^4 gigabecquerel per cubic meter (500 curies per cubic meter).
I–129	370 gigabecquerel per cubic meter (10 curies per cubic meter).

(c) *Commission Authorization.* The Commission may, upon request or on its own initiative, authorize other provisions for the classification and characteristics of waste on a specific basis, if, after evaluation of the specific characteristics of the waste, disposal site, and method of disposal, it finds reasonable assurance of compliance with the performance objectives in subpart C of this part.

■ 37. In § 61.56:

■ a. Revise paragraph (a) introductory text, paragraph (a)(3), and (b)(2);

■ b. In paragraph (a)(6), remove the word ''shall'' and add in its place the word ''must'';

■ c. In paragraph (a)(8), remove the word ''practicable'' and add in its place the word ''practical'';

■ d. In paragraph (b) introductory text, remove the word ''since'' and add in its place the word ''because'';

■ e. In paragraph (b)(1), remove the terms ''waste form'' where it may appear and add in its place the term ''wasteform''; and

■ f. Add new paragraph (c).

The revisions and addition read as follows:

§ 61.56 Waste characteristics.

(a) The following requirements apply for all waste and are intended to facilitate handling at the disposal site and provide protection of health and safety of personnel at the disposal site.

* * * * *

(3) Solid waste containing liquid must contain as little free standing and noncorrosive liquid as is reasonably achievable, but the liquid must not exceed 1% of the volume.

* * * * *

(b) * * *

(2) Notwithstanding the provisions in § 61.56(a) (2) and (3), liquid wastes, or wastes containing liquid, must be converted into a form that contains as little free standing and noncorrosive liquid as is reasonably achievable, but the liquid must not exceed 1% of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5% of the volume of the waste for waste processed to a stable form.

* * * * *

(c) The following additional requirements apply to land disposal of Greater-Than-Class C waste.

(1) Waste must not generate heat in amounts that impact the release of radioactive material from the disposal site or the long-term stability of the disposal site.

(2) Waste must not contain quantities and concentrations of fissionable radionuclides that could result in criticality.

(3) Waste must not emit radiation at levels that could lead to degradation of the disposal environment conditions, such as through radiolysis.

(4) Waste must be in a stable physical form that is not dispersible (*e.g.,* grout, activated metal).

■ 38. Revise and republish § 61.57 to read as follows:

§ 61.57 Labeling.

Each package of waste must be clearly labeled to indicate the waste class in accordance with § 61.55 when shipped for disposal in a land disposal facility. Each package of waste also must be clearly labeled to identify any additional information required by the land disposal facility's criteria for waste acceptance developed in accordance with § 61.58.

■ 39. Revise and republish § 61.58 heading title and section to read as follows:

§ 61.58 Waste acceptance.

(a) *Waste acceptance criteria.* Each licensee must implement waste acceptance criteria approved by the Director, that provide reasonable assurance of compliance with the performance objectives of subpart C of this part. Waste acceptance criteria may be either generic or site specific.

(1) *Generic waste acceptance criteria.* Licensees may implement the generic waste acceptance criteria set forth in §§ 61.55 and 61.56.

(2) *Site-specific waste acceptance criteria.* Licensees may implement site-specific waste acceptance criteria that have been approved by the Director. Site-specific waste acceptance criteria must provide safety equivalent to the requirements in § 61.56. Waste with radionuclide concentrations in excess of the Class C limits codified at 42 U.S.C. 2021c(b)(1)(D) on a sum-of-fractions basis is Greater-Than-Class C waste and site-specific limits established under this part cannot change that designation. Site-specific waste acceptance criteria must specify the following:

(i) Allowable activities and concentrations of specific radionuclides. The allowable activities and concentrations for each specific radionuclide that the licensee intends to accept for disposal, developed from the technical analyses.

(ii) Acceptable wasteform characteristics and waste container specifications. The wasteform characteristics of the waste to be accepted for disposal and the specifications for all waste containers that will be deployed during operations at the facility.

(iii) Restrictions or prohibitions on waste, materials, or containers that might affect the facility's ability to meet the performance objectives in subpart C of this part.

(b) *Waste characterization.* Each licensee must implement methods for characterizing the waste to be accepted for disposal that have been approved by the Director. The methods must identify the characterization parameters and acceptable uncertainty in the characterization data. The following information is required to characterize waste:

(1) Physical and chemical characteristics of the waste;

(2) Waste volume, including any stabilization or absorbent media;

(3) Weight of the container and contents;

(4) Radionuclide identities, activities, and concentrations;

(5) Characterization date;

(6) Generating source; and

(7) Any other information needed to characterize the waste to demonstrate that the waste acceptance criteria set forth in § 61.58(a) are met.

(c) *Waste certification program.* Each licensee must implement a program approved by the Director to certify that waste, prior to shipment to the land disposal facility, meets the waste acceptance criteria developed for the facility in accordance with paragraph (a) of this section. The certification program must:

(1) Provide procedures for designating authority to certify and receive waste for disposal at the facility;

(2) Provide procedures for certifying that the waste to be received at the facility meets the waste acceptance criteria;

(3) Specify documentation required for waste acceptance including waste characterization, shipment information (including the information described in appendix G to part 20 of this chapter), and certification;

(4) Identify records, reports, tests, and inspections that are necessary to comply with the requirements in § 61.80 of this part; and

(5) Provide approaches for managing waste that has been certified as meeting the waste acceptance criteria in a manner that maintains its certification status.

(d) *Licensing.* The approved waste acceptance criteria will be incorporated into the facility license.

(e) *Annual Review.* Each licensee must annually review the implementation of the waste acceptance criteria, waste characterization methods, and certification program. The review must be documented and maintained in accordance with § 61.80 of this part.

■ 40. In § 61.59, revise paragraph(b) to read as follows:

§ 61.59 Institutional requirements.

* * * * *

(b) *Institutional control.* The land owner or custodial agency must carry out an institutional control program to physically control access to the disposal site following transfer of control of the disposal site from the disposal site operator. The institutional control program must also include, but not be limited to, carrying out an environmental monitoring program at the disposal site, periodic surveillance, minor custodial care, and other requirements as determined by the Commission; and administration of funds to cover the costs for these activities. The period of institutional controls will be determined by the Commission. For technical analyses, licensees should not take credit for institutional controls for more than 100 years following transfer of control of the disposal site to the owner.

§ 61.61 [Amended]

■ 41. In § 61.61, remove the word ''shall'' and add in its place the word ''must''.

■ 42. In § 61.62:

■ a. Revise paragraphs (a) and (d);

■ b. In paragraph (f), remove the word ''shall'' and add in its place the word ''must''.

The revisions read as follows:

§ 61.62 Funding for disposal site closure and stabilization.

(a) The applicant must provide assurance that sufficient funds will be available to carry out disposal site closure and stabilization, including: (1) Decontamination or dismantlement of land disposal facility structures; and (2) closure and stabilization of the disposal site so that following transfer of the disposal site to the site owner, the need for ongoing active maintenance is eliminated to the extent practical and only minor custodial care, surveillance, and monitoring are required. These assurances must be based on Commission-approved cost estimates reflecting the Commission-approved plan for disposal site closure and stabilization. The applicant's cost estimates must take into account total capital costs that would be incurred if an independent contractor were hired to perform the closure and stabilization work.

* * * * *

(d) The amount of surety liability should change in accordance with the predicted cost of future closure and stabilization. Factors affecting closure and stabilization cost estimates include: inflation; increases in the amount of disturbed land; changes in engineering plans; closure and stabilization that has already been accomplished and any other conditions affecting costs. This will yield a surety that is at least sufficient at all times to cover the costs of closure of the disposal units that are expected to be used before the next license renewal.

* * * * *

§ 61.63 [Amended]

■ 43. In § 61.63, remove the word ''shall'' wherever it may appear and add in its place the word ''must''.

§ 61.71 [Amended]

■ 44. In § 61.71, remove the word ''shall'' wherever it may appear and add in its place the word ''must''.

§ 61.73 [Amended]

■ 45. In § 61.73:

■ a. Remove the word ''shall'' wherever it may appear and add in its place the word ''must'';

■ b. Remove the word ''Tribal'' wherever it may appear and add in its place the word ''tribal''; and

■ c. Remove the word ''Tribe'' wherever it may appear and add in its place the word ''tribe''.

■ 46. In § 61.80:

■ a. Remove the word ''shall'' wherever it appears and add in its place the word ''must'';

■ b. In paragraph (e), remove the phrase ''the facility'' and add in its place the phrase ''the land disposal facility'';

■ c. In paragraph (g), remove the phrase ''Inventory reports'' and add in its place the word ''Reports'';

■ d. Add new paragraph (i) header text and paragraphs (i)(3), (m) and (n); and

■ e. Revise paragraphs (i)(1) and (2), (l)(1) introductory text, and (l)(1)(i).

The additions and revisions read as follows:

§ 61.80 Maintenance of records, reports, and transfers.

* * * * *

(i) Licensees must comply with the following annual report requirements:

(1) Each licensee authorized to dispose of waste materials received from other persons under this part must submit annual reports to the Director by an appropriate method listed in § 61.4, with a copy to the appropriate NRC Regional Office shown in appendix D to part 20 of this chapter. Reports must be submitted by the end of the first calendar quarter of each year for the preceding year.

(2) The reports must include—

(i) specification of the quantity of each of the principal radionuclides released to unrestricted areas in liquid and in airborne effluents during the preceding year;

(ii) the results of the environmental monitoring program;

(iii) a summary of licensee disposal unit survey and maintenance activities;

(iv) a summary of activities and quantities of radionuclides disposed of;

(v) any instances in which observed site characteristics were significantly different from those described in the application for a license; and

(vi) any other information the Commission may require.

(3) If the quantities of radioactive materials released during the reporting period, monitoring results, or maintenance performed are significantly different from those expected in the materials previously reviewed as part of the licensing action, the report must cover this specifically.

* * * * *

(l) * * *

(1) The manifest information that must be electronically stored is—

(i) That information required in appendix G to part 20 of this chapter, with the exception of shipper and carrier telephone numbers and shipper and consignee certifications; and

* * * * *

(m) Each licensee must maintain waste acceptance records including:

(1) Records for waste acceptance including the waste acceptance criteria, characterization methods, and certification program; and

(2) Audits and other reviews of program content and implementation. The licensee must retain records of audits and other reviews for 3 years after the record is made.

(n) Each licensee must maintain records of evaluations on whether updates to the technical analyses are warranted, pursuant to § 61.24 (l)(1).

§ 61.81 [Amended]

■ 47. In § 61.81:

■ a. In paragraph (a) remove the word ''shall'' and add in its place the word ''must''; and

■ b. Reserve paragraph (b).

§ 61.82 [Amended]

■ 48. In § 61.82, remove the word ''shall'' wherever it appears and add in its place the word ''must''.

■ 49. In § 61.84, revise paragraph (b) to read as follows:

§ 61.84 Criminal penalties.

* * * * *

(b) The regulations in part 61 that are not issued under sections 161b, 161i, or 161o for the purposes of Section 223 are as follows: §§ 61.1, 61.2, 61.4, 61.5, 61.6, 61.8, 61.10, 61.11, 61.12, 61.13, 61.14, 61.15, 61.16, 61.20, 61.21, 61.22, 61.23, 61.26, 61.30, 61.31, 61.54, 61.55, 61.61, 61.63, 61.70, 61.71, 61.72, 61.73, 61.83, and 61.84.

PART 73—PHYSICAL PROTECTION OF PLANTS AND MATERIALS

■ 50. The authority citation for part 73 continues to read as follows:

Authority: Atomic Energy Act of 1954, secs. 53, 147, 149, 161, 161A, 170D, 170E, 170H, 170I, 223, 229, 234, 1701 (42 U.S.C. 2073, 2167, 2169, 2201, 2201a, 2210d, 2210e, 2210h, 2210i, 2273, 2278a, 2282, 2297f); Energy Reorganization Act of 1974, secs. 201, 202 (42 U.S.C. 5841, 5842); Nuclear Waste Policy Act of 1982, secs. 135, 141 (42 U.S.C. 10155, 10161); 44 U.S.C. 3504 note.

Section 73.37(b)(2) also issued under Sec. 301, Public Law 96–295, 94 Stat. 789 (42 U.S.C. 5841 note).

■ 51. In § 73.67:

■ a. Add new paragraph (b) introductory text and (b)(1)(iv); and

■ b. Remove the phrase ''plutonium-238.'' and add in its place the phrase ''plutonium-238, or''.

§ 73.67 Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance.

* * * * *

(b) *Accommodations.*

(1) * * *

(iv) Radioactive waste under 10 CFR part 61 containing special nuclear material to be disposed in a land disposal facility which is (a) in quantities of low strategic significance prior to disposal, (b) not readily separable from the other radioactive waste material, and (c) is in a concentration of special nuclear material that is no more than 0.01% of the mass of the other waste material.

* * * * *

PART 150—EXEMPTIONS AND CONTINUED REGULATORY AUTHORITY IN AGREEMENT STATES AND IN OFFSHORE WATERS UNDER SECTION 274

■ 52. The authority citation for part 150 continues to read as follows:

Authority: Atomic Energy Act of 1954, secs. 11, 53, 81, 83, 84, 122, 161, 181, 223, 234, 274 (42 U.S.C. 2014, 2201, 2231, 2273, 2282, 2021); Energy Reorganization Act of 1974, sec. 201 (42 U.S.C. 5841); Nuclear Waste Policy Act of 1982, secs. 135, 141 (42 U.S.C. 10155, 10161); 44 U.S.C. 3504 note.

Sections 150.3, 150.15, 150.15a, 150.31, 150.32 also issued under Atomic Energy Act secs. 11e(2), 81, 83, 84 (42 U.S.C. 2014e(2), 2111, 2113, 2114).

Section 150.14 also issued under Atomic Energy Act sec. 53 (42 U.S.C. 2073).

Section 150.15 also issued under Nuclear Waste Policy Act sec. 135 (42 U.S.C. 10155, 10161).

Section 150.17a also issued under Atomic Energy Act sec. 122 (42 U.S.C. 2152).

Section 150.30 also issued under Atomic Energy Act sec. 234 (42 U.S.C. 2282).

§ 150.11 [Amended]

■ 53. In § 150.11:

■ a. Remove the word ''shall'' wherever it appears and add in its place the word ''must''; and

■ b. Remove the phrase ''which he'' and add in its place the phrase ''which the person''.

§ 150.14 Commission regulatory authority for physical protection.

■ 54. In § 150.14, remove the word ''shall'' and add in its place the word ''must''.

■ 55. In § 150.15:

■ a. In paragraph (a) introductory text, remove the phrase ''agreement States'' and add in its place the phrase ''Agreement States'';

■ b. Revise the last sentence in paragraph (a)(4); and

■ c. Revise and republish paragraphs (a)(7), (8), and (b).

The revisions read as follows:

§ 150.15 Persons not exempt.

(a) * * *

(4) * * * This subparagraph does not apply to the transfer, storage or disposal of contaminated equipment or to waste incidental to reprocessing that has been evaluated and approved as material to be disposed at a near-surface land disposal facility.

* * * * *

(7) The storage of:

(i) Spent fuel in an independent spent fuel storage installation (ISFSI) licensed under part 72 of this chapter,

(ii) Spent fuel and high-level radioactive waste in a monitored retrievable storage installation (MRS) licensed under part 72 of this chapter, or

(iii) Greater-Than-Class C waste, as defined in part 72 of this chapter, in an ISFSI or an MRS licensed under part 72 of this chapter; the Greater-Than-Class C waste must originate in, or be used by, a facility licensed under part 50 or part 52 of this chapter.

(iv) Greater-Than-Class C waste, as defined in part 72 of this chapter, that originates in, or is used by, a facility licensed under part 50 or part 52 of this chapter and is licensed under part 30 and/or part 70 of this chapter.

(8) The disposal of radioactive material exceeding Class C limits (Greater-Than-Class C waste), as defined by section 61.55 of this chapter, as in effect on January 26, 1983.

(9) The requirements for the protection of Safeguards information in § 73.21 of this chapter and the requirements in § 73.22 or § 73.23 of this chapter, as applicable.

(b) Notwithstanding any exemptions provided in this part, the Commission may require that the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source, byproduct, or special nuclear material not transfer possession or control of such product except pursuant to a license or an exemption from licensing issued by the Commission.

Dated: June 29, 2026.

For the Nuclear Regulatory Commission.

Jody Martin,

Secretary of the Commission.

[FR Doc. 2026–13302 Filed 6–30–26; 8:45 am]

BILLING CODE 7590–01–P

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: July 14, 2026
Status: Posted
Posted: July 15, 2026
Tracking No. mrl-0bby-penc
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0212
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Pacific Northwest National Laboratory

Submitter Information

Email: stuart.arm@pnnl.gov
Organization: Pacific Northwest National Laboratory

General Comment

Regarding the table 'Upper Limit of Radionuclide Concentrations in GTCC Waste Generally Acceptable for Land Disposal', please clarify whether alpha emitting radionuclides should also be included in the sum of beta and photon radionuclides when those alpha emitting radionuclides also emit a photon.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 07, 2026
Status: Posted
Posted: August 10, 2026
Tracking No. msi-z9bz-26ms
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0213
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Fred Schofer

Submitter Information

Name: Fred Schofer
Address:
Derwood, MD, 20855
Email: fschofer@comcast.net
Phone: 3017586408

General Comment

See attached file(s)

Attachments

NRC 2011 0012 Comment Letter_final

July 26, 2026

VIA REGULATIONS.GOV

U.S. Nuclear Regulatory Commission
Office of Administration
Rules, Announcements, and Directives Branch
Mail Stop: OWFN-12-H08
Washington, D.C. 20555-0001
ATTN: Rulemakings and Adjudications Staff

Re: Comments on Proposed Rule, *Integrated Low-Level Radioactive Waste Disposal*, 91 Fed. Reg. 40,290 (July 1, 2026)

Docket ID: NRC-2011-0012; NRC-2015-0003; NRC-2017-0081 (RIN 3150-AI92)

Dear Sir or Madam:

I. Introduction and Statement of Interest

I submit these comments in my individual capacity as a member of the public with a sustained interest in the Commission's (NRC or Commission) regulatory program for the disposal of low-level radioactive waste (LLW), including waste streams containing greater-than-Class-C (GTCC) and transuranic (TRU) constituents. I have closely followed the administrative record underlying this docket. Separately, I submitted comments on the Commission's proposed physical protection requirements for Category 1 and Category 2 quantities of radioactive material, Docket NRC-2025-1238, a proceeding that intersects with this one in a limited but material respect I address in Section VIII below.

These comments evaluate the proposed rule's compliance with governing statutory and administrative mandates, specifically the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 et seq.; the Administrative Procedure Act (APA), 5 U.S.C. §§ 551 et seq; Executive Order (E.O.) 12,866, 3 C.F.R. 638 (1993), reprinted as amended in 5 U.S.C. § 601 note; OMB Circular A-4 (Sep. 17, 2003); and the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321 et seq., as those legal authorities bear on the technical, economic, and legal bases offered by the Commission.

This proceeding possesses an unusually extensive administrative history, spanning more than a decade and consolidating two once-separate rulemakings. This administrative record is itself highly probative evidence because it consists predominantly of the agency's own prior technical findings and policy decisions. Accordingly, I examine this lineage first before analyzing the specific technical and legal deficiencies in the current proposal.

II. The Administrative Lineage of This Rulemaking Confirms an Unusually Well-Documented History Against Which the 2026 Proposal Must Be Tested

The Commission's preamble narrative traces this rulemaking from the original 1982 promulgation of 10 CFR Part 61, which is grounded in NUREG-0945, Volumes 1 through 3,[1] through a multi-year sequence of Commission decisions, draft regulatory bases, and executive directives. Key milestones in this administrative lineage are summarized in the table below.

Date	Document / Action	Regulatory Substance and Context
Dec. 27, 1982	Original 10 CFR Part 61 (47 Fed. Reg. 57,446)	Promulgated near-surface LLW disposal framework; classification limits derived from NUREG-0945, Vols. 1-3.
Feb. 12, 2014	SRM-SECY-13-0075 (ADAMS Accession No. ML14043A371)	Commission directed a 1,000-year compliance period, a 10,000-year intruder assessment, and a protective-assurance analysis out to 10,000 years.
Mar. 26, 2015	80 Fed. Reg. 16,081	Published first proposed rule; opened public comment period (including EnergySolutions' comments discussed in Section IV.C).
Sept. 8, 2017	SRM-SECY-16-0106 (ADAMS Accession No. ML17251B147)	Commission directed staff to revise and republish the 2015 proposal.
July 22, 2019	84 Fed. Reg. 35,037 (draft GTCC regulatory basis)	Staff concluded ~80% of GTCC waste volume was potentially suitable for near-surface disposal; comment responses compiled at ML26175A046.
Apr. 5, 2022	SRM-SECY-20-0098 (ADAMS Accession No. ML22095A227)	Commission approved consolidating Part 61 and GTCC tracks and directed a site-specific, graded compliance-period approach tied to peak-dose timing.
May 29, 2024	SECY-24-0045	Submitted fully staffed integrated proposed rule to the Commission.
May 23, 2025	E.O. 14300	Section 5 directed wholesale review of NRC regulations and guidance.
Sept. 11, 2025	SRM-SECY-24-0045 (ADAMS Accession No. ML25254A183)	Commission withdrew SECY-24-0045 along with three unrelated rulemaking papers as part of the E.O. 14300 review.
July 21, 2026	91 Fed. Reg. 45,833	NRC withdrew NUREG/BR-0058 (all revisions) and NUREG/BR-0184 in their entirety, effective immediately (16 days before this comment deadline).
July 1, 2026	Current NPRM (91 Fed. Reg. 40,290)	Reconstituted integrated proposed rule issued for public comment (comments due Aug. 17, 2026).

This administrative lineage establishes that the Commission had, by 2016 (SECY-16-0106) and again by 2019, developed thoroughly considered technical and policy positions on the compliance-period structure for LLW disposal and the regulatory basis for GTCC disposal. Under settled administrative law, an agency

[1] NRC, *Final Environmental Impact Statement on 10 C.F.R. Part 61: Licensing Requirements for Land Disposal of Radioactive Waste*, NUREG-0945, Volumes 1 through 3 (Nov. 1982), ADAMS Accession Nos. ML052590184, ML052920727, and ML052590187).

changing course from a prior position must explicitly acknowledge the change and must supply a reasoned explanation for the change.[2] Where regulated parties have developed significant reliance interests in the prior position, the agency's obligation to provide a detailed explanation is heightened. *Encino Motorcars, LLC v. Navarro*[3] sharpens that requirement where regulated parties have developed serious reliance interests in the prior position. Such reliance interests are clearly present here, given the multi-year, multi-million-dollar investments licensees have made preparing site-specific technical analyses under the existing regulatory structure.

The final rule's Statement of Consideration must expressly reconcile the proposed text with the Commission's 2016 draft final rule (SECY-16-0106) and its 2019 draft regulatory basis conclusions, rather than treating E.O. 14300's general directive to review NRC regulations as a freestanding justification that substitutes for reasoned engagement with the agency's own prior technical record. Executive orders cannot replace the reasoned decisionmaking mandated by the APA and the organic nuclear safety statutes.[4]

While the September 2025 withdrawal of SECY-24-0045 included three unrelated rulemaking papers, which supports the view that the withdrawal was a generic administrative action rather than a substantive rejection of the 2024 proposal; that context does not relieve the Commission of its legal obligation to explain how the current NPRM aligns with or departs from its prior technical findings.

III. The Draft Regulatory Analysis Does Not Fully Satisfy OMB Circular A-4

The Commission's Draft Regulatory Analysis (RA)[5] applies OMB Circular A-4 as issued September 17, 2003. This version is legally correct because OMB rescinded the November 9, 2023 revision[6] and reinstated the 2003 Circular via memorandum in March 2025,[7] pursuant to E.O. 14192.[8] Although the governing circular is correctly identified, the RA's application of Circular-A-4 suffers from multiple methodological defects.

A. Uncertainty Methodology Rests on Outdated Guidance and Illustrative Inputs

The RA supplements its present-value calculations with a Monte Carlo uncertainty analysis (RA § 4.5). However, it derives its incremental labor-rate methodology from NUREG/CR-3568[9] — a document over

---

[2] *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515-16 (2009) (holding that an agency changing course must display awareness that it is changing position and supply a reasoned explanation for the new policy).
[3] *See Encino Motorcars, LLC v. Navarro*, 579 U.S. 211, 221–22 (2016) (explaining that an agency must give clear reasons when changing policies that conflict with significant reliance interests).
[4] *See Youngstown Sheet & Tube Co. v. Sawyer*, 343 U.S. 579, 585-89 (1952) (holding that executive action must stem from an act of Congress or the Constitution); *also see Chrysler Corp. v. Brown*, 441 U.S. 281, 301-04 (1979) (holding that executive orders lack the force of law absent a statutory delegation).
[5] NRC, *Integrated Low-Level Radioactive Waste Disposal: Proposed Rule Draft Regulatory Analysis for Comment* (2026), ADAMS Accession No. ML26174A244.
[6] 88 Fed. Reg. 77,615 (Nov. 13, 2023).
[7] OMB Memoranda, *M-25-15 Recission and Reinstatement of Circular A-4* (Feb. 12, 2025).
[8] 90 Fed. Reg. 9,065 (Feb. 6, 2025)
[9] NRC, *NUREG/CR-3568, A Handbook for Value-Impact Assessment* (Dec. 1983), ADAMS Accession No. ML062830096, *see* RA at § 3.2.5.

four decades old. The Commission must confirm whether a 1983 cost-estimation handbook remains an adequate technical basis for 2024-dollar labor-rates or identify current guidance that governs.

Furthermore, in response to comments on the 2019 draft regulatory basis challenging contractor probability distributions for waste-cuttings behavior during inadvertent intrusion, the Commission characterized its own generic analyses as "illustrative and not definitive."[10] Inputs that are merely illustrative cannot serve as an adequate foundation for a Monte Carlo uncertainty analysis intended to inform regulatory decisionmaking under Circular A-4. The underlying probability-distribution documentation must be made public.

B. The Stated Governing Methodology Document Has Been Withdrawn

The RA states that NUREG/BR-0058, Revision 5 (draft final)[11] "governs the NRC's regulatory analysis process."[12] However, Revision 5 was never finalized. The only finalized version was Revision 4 (Sept. 2004), which the RA never cites. This failure violates Circular A-4's transparency and disclosure requirements.[13]

This procedural flaw is compounded by agency action. On May 3, 2024, the Commission withdrew SECY-20-0008 (the Revision 5 draft final) and directed staff to conform it to OMB guidance, consolidate papers, and seek public comment— none of which occurred prior to this NPRM.[14] On July 21, 2026 — sixteen days before this comment deadline — the Commission published a notice withdrawing NUREG/BR-0058 (all revisions) and NUREG/BR-0184 in their entirety, effective immediately.[15] The Commission must clarify what methodological document governed the preparation of this RA, given that the cited document no longer exists.

C. Failure to Disaggregate Costs Across Several Requirements

NUREG/BR-0058, Revision 4 § 4.3.2, and OMB Circular A-4 require separate cost estimates for each distinct regulatory requirement to ensure that net benefits from one provision do not mask unjustified costs in another. The RA's disaggregation analysis (RA § 4.6) fails to perform this requirement-by-requirement breakdown, stating only that overall efficiency savings exceed primary cost drivers.

Real-world data on this docket highlights the materiality of this omission. In 2015, EnergySolutions reported spending over $4,000,000 to perform a site-specific performance assessment for depleted uranium at its Clive, Utah facility—exclusive of stand-alone defense-in-depth analyses.[16] A single facility cost of

---

[10] *See* ML26175A046, at 12.
[11] NRC, *Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission, Draft Report for Comment (NUREG/BR*-0058, Rev. 5) (Apr. 2017), ADAMS Accession No. ML17100A480.
[12] *See* ML26174A244, at 7.
[13] *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 393 (D.C. Cir. 1973) (holding that agencies must disclose the technical basis for a proposed rule in a form permitting meaningful public comment).
[14] *See Staff Requirements – SECY-20-0008, SECY-22-0028, and SECY-23-0016 Related to NUREG/BR-0058* (May 3, 2024), ADAMS Accession No. ML24124A088.
[15] 91 Fed. Reg. 45,833 (Docket No. NRC-2017-0091).
[16] *See EnergySolutions Comments* (Jul. 24, 2015), Docket IDs NRC-2011-0012, NRC-2015-0003, ADAMS Accession No. ML15215A291 at 6-7.

$4 million for one requirement contradicts an RA that provides no disaggregated cost breakdown. Additionally, Agreement States face severe technical burdens; when Utah requested NRC support to review EnergySolutions' performance assessment, NRC declined on jurisdictional grounds.[17] The Commission must provide disaggregated cost estimates and clarify technical support policies for Agreement States.

D. Omission of Quantified Health, Safety, or Security Benefit Metrics

The RA quantifies only net cost savings ($39.2 to $69.7 million in net present value) while treating public health, safety, and security as purely qualitative factors.[18] Circular A-4 requires a benefit-cost analysis using a willingness-to-pay or equivalent effectiveness measures for major safety rulemakings to monetize the rule's net safety and security effects or explain why Circular A-4's monetization expectation does not apply here. Furthermore, the Commission failed to utilize its existing guidance, NUREG-1530,[19] which establishes a $5,200 per-person-rem-conversion factor ($2,600/$$7,800 bounds). The Commission should apply NUREG-1530 to quantify radiological consequences or explain its omission.

E. Non-Compliance with GAO Cost-Estimating Best Practices

The RA describes a labor-category decomposition (i.e., executives, managers, technical staff, administrative staff, and licensing staff) rather than a product-oriented Work Breakdown Structure (WBS).[20] U.S. Government Accountability Office (GAO) Cost Estimating and Assessment Guide[21] identifies a product-oriented WBS as essential for reliable cost estimation. In 2014, GAO evaluated NRC's cost-estimating practices under NUREG/BR-0058 and rated them "Minimally Met" due to the lack of a product-oriented WBS and "Not Met" regarding independent cost estimates.[22] The RA also does not disclose which cost-estimating methodology — analogy, engineering build-up, or parametric — the Staff used to develop the point estimate, and does not indicate whether an independent cost estimate was obtained from a group outside the regulatory analyst group. The RA only states reliance on "subject matter experts," "extrapolation techniques," and "collective professional knowledge and judgment."[23] The Commission must disclose (i) which cost-estimating methodology it used to develop the RA's point estimates; (ii) whether an independent cost estimate was obtained; and (iii) the current status of the Commissioners' May 2024 direction to revise NRC's cost-estimating procedures to reflect both the current Circular A-4 and GAO's Cost Guide — a commitment the Government Accountability Office's most recent priority-recommendations letter still lists as open and unimplemented, independent of and unaffected by the July 2026 withdrawal.[24]

---

[17] *See EnergySolutions Comments* (Jul. 24, 2015), Docket IDs NRC-2011-0012, NRC-2015-0003, at 1–2.
[18] *See* NRC, RA §§ 4.4, 4.7.2
[19] NRC, *Reassessment of NRC's Dollar Per Person-Rem Conversion Factor Policy, Final Report (NUREG-1530, Rev. 1)* (Feb. 2022), ADAMS Accession No. ML22053A025.
[20] *See* NRC, RA § 3.2.8.
[21] GAO, *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs (GAO-20-195G)* (Mar. 2020).
[22] GAO, *NRC Needs to Improve Its Cost Estimates by Incorporating More Best Practices, GAO-15-98* (Dec. 2014).
[23] *See* NRC, RA § 3.2.8.
[24] GAO, *Priority Open Recommendations: Nuclear Regulatory Commission, GAO-25-108097* (May 2025).

F. Omission of Distributional Effects and Ancillary-Benefits / Countervailing-Risks

Circular A-4 mandates a description of distributional effects across sub-populations and an analysis of ancillary benefits and countervailing risks.[25] The RA contains neither. Given that cost impacts are concentrated on specific licensees and Agreement States (RA Table 1), and that new disposal pathways carry distinct secondary risks (e.g., near-surface disposal of GTCC waste and specialized land disposal facilities whose siting and licensing may carry safety, environmental, or operational effects distinct from the averted-cost calculation the RA presents). These omissions must be rectified in the final RA.

G. Omission of Phased Compliance and Federalism Alternatives

RA Section 2 presents three alternatives — regulatory baseline, new guidance, and rulemaking — differentiated only by regulatory instrument. Circular A-4 instructs agencies to evaluate regulatory alternatives varying in compliance dates, enforcement methods, and federalism impacts.[26] The RA examines only choice-of-instrument alternatives (baseline, guidance, rulemaking) over a 2026–2056 horizon[27] despite the rule's site-specific technical-analysis and depth/barrier requirements plausibly lending themselves to a phased compliance schedule that could reduce near-term industry cost without altering the rule's ultimate protective requirements.

Circular A-4 also directs that, where a rule has State or local implications, the analysis should "examine whether it would be more efficient to retain or reduce State and local regulation."[28] The RA identifies Agreement States as a cost-bearing party throughout, RA Tables 6-7, and the 2015 EnergySolutions comment submission[29] indicates that Agreement States may lack the resources or NRC technical support needed to review site-specific technical analyses of the kind this rule requires. Yet the RA nowhere addresses this federalism dimension — the allocation of new site-specific analytical burden onto Agreement States of varying technical capacity.

The Commission should evaluate a phased compliance schedule and explicitly analyze the federalism implications of shifting analytical burdens onto Agreement States.

IV. The GTCC 500-Year Intruder-Barrier Standard Lacks a Risk-Graded Rationale

The 10 C.F.R. § 61.55 waste classification limits were derived in 1982 based on a 5 mSv (500 mrem) annual intruder dose assumption.[30] The Commission deleted the explicit 500 mrem dose limit from the final 1982 rule because licensees could not demonstrate compliance for hypothetical intruder scenarios centuries into

[25] OMB, Circular A-4, at 14, 26.
[26] OMB Circular A-4, at 6, 7.
[27] NRC, RA § 3.2.7.
[28] OMB Circular A-4, at 6.
[29] *See EnergySolutions Comment Submission* (Jul. 24, 2015), ADAMS Accession No. ML15215A291 at 7.
[30] NRC, NUREG-0945.

the future, retaining it solely as a calculation basis.[31] In denying PRM-61-2,[32] the NRC reaffirmed that this dose basis remains protective.[33]

However, applying an unadjusted 500-year intruder-barrier standard to GTCC waste fails the arbitrary-and-capricious standard of review.[34] Proposed 10 C.F.R. § 61.55(a)(1)(ii) requires both a 5-meter burial depth and a 500-year intruder barrier for GTCC waste. Because GTCC waste presents a materially higher and longer-lived radiological hazard than Class C waste, applying the identical 500-year Class C barrier duration without risk-graded adjustment is irrational.

NUREG-1573[35] recommended a 10,000-year performance assessment timeframe to capture long-lived radionuclides and permitted assuming complete barrier degradation after 500 years only as a simplifying option requiring site-specific justification. The flat 500-year standard conflicts with NUREG-1573 and the Commission's direction in SRM-SECY-20-0098[36] to adopt a site-specific, graded approach based on peak-dose timing. Furthermore, the NRC's deterrence-based theory of intruder barriers lacks empirical support demonstrating that deterrence reliably lasts 500 years.

A related and more readily testable point concerns the qualitative theory underlying the barrier requirement itself. The NRC has explained that an intruder barrier is "not intended to be impossible to penetrate, break, or remove," but rather is intended to "convince the inadvertent intruders to cease their efforts" — a deterrence, rather than physical-exclusion, standard.[37] The Commission must identify the empirical or historical basis supporting the assumption that a deterrence-based barrier reliably achieves 500 years of effective protection, as distinct from a barrier engineered to withstand full physical penetration for that period, consistent with the technical-basis disclosure obligation described in *Portland Cement*, 486 F.2d at 393.

This same question was raised, and left unanswered on this specific point, more than a decade ago in this very docket. In its July 2015 comments, EnergySolutions argued that "there is no technical basis for a stability requirement of 10,000 years, nor is it possible to credibly demonstrate compliance with such a requirement," citing NRC's, EPA's, and Congress's recognition under the Uranium Mill Tailings Radiation Control Act that stability "beyond 200 to 1,000 years cannot be proven." EnergySolutions proposed a two-tier compliance structure in place of the three-tier approach then under consideration.[38] The current

---

[31] *See* NRC, NUREG-0945, Vol. 1, at 5-2 to 5-3.
[32] NRC, *10 CFR Part 61 [Docket No. PRM-61-2] New England Coalition on Nuclear Pollution, Inc.; Denial of Petition for Rulemaking* (Mar. 29, 1994), ADAMS Accession No. ML093490607.
[33] *See* 91 Fed. Reg. at 40,299–300.
[34] *See Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.,* 463 U.S. 29, 43 (1983) (requiring an agency to articulate a rational connection between the facts found and the choice made).
[35] NRC, *A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities: Recommendations of NRC's Performance Assessment Working Group (NUREG-1573)* (Oct. 2000), ADAMS Accession No. ML003770778.
[36] NRC, *Staff Requirements – SECY-20-0098 – Path Forward and Recommendations for Certain Low-Level Radioactive Waste Disposal Rulemakings* (Apr. 5, 2022), ADAMS Accession No. ML22095A227.
[37] NRC, *NRC Responses to Public Comments – Draft Regulatory Basis: Disposal of Greater-than-Class C and Transuranic Waste* (undated), ADAMS Accession No. ML26175A046, at 14-16.
[38] *EnergySolutions Comments* (Jul. 24, 2015), ADAMS Accession No. ML15208A290 at 9.

guidance retains a materially similar tiered structure — a 1,000-year default extending to 10,000 years for sites with significant long-lived radionuclides. Yet the underlying stability-timeframe question has remained unresolved. Industry has pressed the underlying stability-timeframe issue since 2015 without a technical response addressing the specific 200-to-1,000-year science the commenter identified.

The same 2015 submission also argued that requiring a stand-alone defense-in-depth "analysis" — as distinct from a "clear statement" that licensing decisions are based on defense-in-depth protections, which is what the Commission's February 2014 SRM actually directed — misapplies a redundancy concept borrowed from reactor licensing to a passive disposal system. The Commission must clarify which approach the current text adopts and explain any departure from the 2014 direction if a stand-alone analysis requirement has in fact been retained.

V. The Risk-Informed, Performance-Based Transition is Unsupported by Dose-Modeling Evidence

The NPRM justifies its shift toward site-specific waste acceptance criteria (WAC) on the ground that generic classification limits are overly conservative.[39] This claim asserts an administrative inconvenience rather than demonstrating that current limits are unsafe or technically flawed. Under *Fox*, 556 U.S. at 515-16, and *State Farm*, 463 U.S. at 43, the agency must demonstrate that the flexible pathway provides equivalent protection across all site types.

That distinction matters under both *State Farm* and *Fox*: an agency changing a substantive protective requirement must reasonably explain why the new approach continues to satisfy the statutory and regulatory performance objectives, not merely that it reduces cost. The RA's quantified benefit is framed as regulatory efficiency and net cost savings rather than a safety improvement, and the Draft Regulatory Analysis documents cost savings from the new flexibility but does not present a site-specific or generic dose-modeling comparison demonstrating that facilities electing the flexible pathway will achieve protection equivalent to the existing generic limits at every site type likely to use it, including smaller Agreement State-licensed facilities with more limited site-characterization resources. No independent study, contractor report, or peer-reviewed source in the record supports the proposition that the current generic limits "cannot be technically justified"; the strongest available statement is the NPRM's own observation that other countries commonly set numerical limits "based on generic technical analyses or policy decisions rather than the results of site-specific technical analyses," and that the U.S. approach is "very similar" to the original 1982 methodology — a passage that supports a change in regulatory philosophy but does not, on its own terms, supply evidence that the existing approach is technically unjustifiable. The Commission must identify any generic dose-reconstruction or margin analysis demonstrating the degree of conservatism actually embedded in the current Table 1 and Table 2 limits at representative sites, since the RA's cost-benefit case rests on an assumption of "unnecessary" burden that remains asserted rather than technically demonstrated.

[39] 91 Fed. Reg. at 40,299-300.

A related request bears on the transition's application to already-licensed, currently operating facilities. EnergySolutions' 2015 comments on the predecessor proposal requested that any new site-specific technical-analysis requirements apply only to sites accepting waste streams not analyzed under the original Part 61 framework, rather than requiring existing licensees to redo technical analyses "at the cost of millions of dollars" absent new or unanalyzed conditions, relying on 10 CFR 61.1's provision that applicability of new requirements to existing licenses is determined "on a case-by-case basis."[40] In accordance with *Encino Motorcars*, 579 U.S. at 221-22, the Commission must confirm that operating facilities not accepting newly regulated waste streams will not be required to redo technical analyses at multi-million-dollar costs.

VI. Change in Position on GTCC Borehole Disposal Lacks an Adequate Technical Predicate

Since 1982, 10 CFR 61.2 has defined "near-surface disposal facility" as a land disposal facility in which waste is disposed "within the upper 30 meters of the earth's surface" — a definition originally applied without qualification and understood, at the time of the original rulemaking, to describe essentially all existing low-level waste disposal practice. Non-near-surface disposal of high-hazard radioactive material was historically the province of the separate deep geologic repository program under the Nuclear Waste Policy Act, 42 U.S.C. §§ 10101 et seq., and the Waste Isolation Pilot Plant Land Withdrawal Act, not Part 61 licensing.

The pivot away from a rigid 30-meter definition originates in NRC's response to a 2019 comment from the Department of Energy asking whether NRC considered the Waste Control Specialists (WCS) facility a near-surface facility. NRC agreed the 30-meter figure was never intended as "a rigid definition that provides a sharp distinction," and committed to add the qualifying word "generally" to the regulatory definition.[41] The current NPRM codifies that 2019 commitment by softening the definition to "generally within the upper 30 meters" and creating a new regulatory category, "specialized land disposal facility," defined as a facility "not a near-surface disposal facility" designed to prevent an inadvertent intruder from disrupting or contacting emplaced waste, with an illustrative reference to a steel deflector plate "cost effective over a small footprint, such as over a borehole waste disposal unit."[42]

A. DOE Intermediate-Depth Borehole Alternative

U.S. Department of Energy's (DOE's) 2016 Final Environmental Impact Statement for GTCC and GTCC-like waste disposal[43] evaluated "Alternative 3: Disposal in a New Intermediate-Depth Borehole Disposal Facility" as one of four fully developed action alternatives, using a conceptual design of 2.4-meter diameter, smooth-steel-cased boreholes drilled to 40 meters at five federal reference locations, and separately at generic commercial sites within NRC Region IV only — excluded from the other three NRC

[40] *EnergySolutions Comments* (July 24, 2015), ADAMS Accession No. ML15215A291 at 11.
[41] NRC, *NRC Responses to Public Comments – Draft Regulatory Basis: Disposal of Greater-than-Class C and Transuranic Waste* (undated), ADAMS Accession No. ML26175A046, at 26-27.
[42] 91 Fed. Reg. at 40,307-08, 40,336.
[43] DOE, *Final Environmental Impact Statement for the Disposal of Greater-than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste (DOE/EIS-0375)* (Jan. 2016) (multiple volumes).

regions for insufficient depth to groundwater, and excluded at the Savannah River Site specifically for shallow groundwater conditions.[44] DOE itself cautions that its comparative results "should not be used for regulatory compliance purposes" and should not be compared against the site-specific performance assessments Part 61 licensing requires, because the analysis rests on generic, conceptual designs adopted for comparative NEPA purposes.[45] DOE further states that the borehole method, given "the low volume capacity of the borehole and the much higher volume of unused space surrounding each borehole," "might be better suited to specific waste types (e.g., sealed sources)... than for bulk activated-metal or Other Waste streams, which make up most of the GTCC inventory by volume.[46]

DOE's Section 631(b)(1)(B)(i) Report to Congress on this inventory was submitted November 2, 2017, and no Record of Decision has been issued in the more than eight years since. None of the FEIS's five alternatives, including the intermediate-depth borehole alternative, has ever been selected as DOE policy, confirmed by Congress, or tested against the 10 CFR 61.13's site-specific performance-assessment standard.

B. IAEA "BOSS" Concept

NRC's Response to Public Comments separately invokes an analogy to "an IAEA borehole disposal concept." IAEA Safety Standards Series No. SSG-1, Revision 1, "Borehole Disposal Facilities for Disused Sealed Radioactive Sources," states without qualification that it provides recommendations only for disused sealed radioactive sources and small volumes of associated secondary waste, and expressly "does not provide recommendations on the borehole disposal of other low and intermediate level waste" outside that category. IAEA-TECDOC-1644, "BOSS: Borehole Disposal of Disused Sealed Sources: A Technical Manual" (IAEA 2011),[47] likewise instructs implementers to classify national inventories to separate small-volume sealed-source waste suitable for borehole disposal from "long lived wastes needing deep disposal but with volumes or dimensions that make them unsuitable for borehole disposal," and cautions that if the latter category is significant in volume, "a borehole facility... may not be a cost effective solution."[48] SSG-1's reference design uses a vertical, 260-millimeter-diameter borehole — roughly one-eleventh the diameter of DOE's 2.4-meter reference design for the actual GTCC inventory. I ask the Commission to identify which of the two borehole concepts — DOE's intermediate-depth alternative or the narrower IAEA concept — the final rule's performance-based criteria are meant to validate, and to place in the docket whatever site-specific or design-specific analysis bridges the gap between either reference design and the codified performance criteria the final rule will need to state, consistent with *Portland Cement*, 486 F.2d at 393.

---

[44] DOE, *Final Environmental Impact Statement for the Disposal of Greater-than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste (DOE/EIS-0375)*, Summary at S-17 to S-23; Vol. II, Ch. 10, at 10-1.
[45] DOE, *DOE/EIS-0375*, Summary at S-53.
[46] DOE. *DOE/EIS-0375*, Summary at S-69 to S-70.
[47] IAEA-TECDOC-1644, *BOSS: Borehole Disposal of Disused Sealed Sources: A Technical Manual* (2011).
[48] *See IAEA Safety Standards Series No. SSG-1, Rev. 1, Borehole Disposal Facilities for Disused Sealed Radioactive Sources; IAEA-TECDOC-1644* (2024), at 16.

C. The Only Site-Specific GTCC Disposal Proposal to Date Uses Near-Surface Vault Technology

DOE's 2018 site-specific Environmental Assessment for disposal of the entire GTCC inventory at the WCS facility[49]— the same facility whose regulatory status produced NRC's 2019 commitment to soften the 30-meter definition — proposes disposal in modular concrete canisters at depths of up to 120 feet within an already-licensed near-surface disposal unit, using no additional construction beyond the facility's currently licensed design.[50] This is neither DOE's intermediate-depth borehole design nor the IAEA reference concept; it is a deepened variant of near-surface vault disposal. The one facility that catalyzed the depth-definition softening this NPRM codifies has never itself been proposed to use borehole technology. The Commission should confirm whether any developer or facility has proposed near-surface or intermediate-depth borehole disposal for GTCC material specifically, as distinct from DOE's comparative FEIS analysis and the narrower IAEA concept, and, if not, to explain the technical basis for codifying a borehole-inclusive "specialized land disposal facility" category before any such proposal exists.

D. The NPRM Appears to Convert a Case-by-Case GTCC Licensing Safety Valve into a Generically Available Pathway Without Explanation

In its 2019 Response to Public Comments, NRC told commenters that GTCC waste exceeding 10,000 nCi/g of alpha-emitting TRU radionuclides "would need to be considered by the Commission on a case-by-case basis," and offered the IAEA borehole concept only as an illustrative example of the kind of engineered system that might, on that case-by-case basis, be found acceptable.[51] The current NPRM, by contrast, appears to establish a Specialized Land Disposal Facility as a generically available licensing pathway — available to any qualifying applicant under generally applicable technical criteria — for waste streams above that same 10,000 nCi/g threshold: proposed 10 CFR 61.55(a)(1)(iii) provides that such waste "may be disposed of in a specialized land disposal facility as defined in this part," reserving case-by-case Commission approval only for the separate option of disposing of that waste in a near-surface facility.[52] The Commission's Draft Regulatory Analysis confirms this is a deliberate shift. It states that the new framework would allow qualifying waste streams to "be disposed of safely and meet the performance objectives for land disposal of LLW without the need for future rulemaking to address those different streams on a case-by-case basis, such as the current provision in 10 CFR 61.55(a)(2)(iv) for GTCC wastes," and separately that specific regulations for GTCC disposal "would provide a clearer regulatory path than the current case-by-case provision in 10 CFR 61.55(a)(2)(iv)."[53] If that reading is correct, the NPRM converts what NRC described in 2019 as an exceptional, case-by-case safety valve into a standing, generically available disposal category, without acknowledging or explaining that change in regulatory posture as a change from the 2019 position. This is a discrete *State Farm*/*Fox* concern, independent of but additive to the technology-mismatch issues in described above. The Commission must confirm whether

---

[49] DOE, *Environmental Assessment for the Disposal of Greater-than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste at Waste Control Specialists, Andrews County, Texas, DOE/EA-2082* (Oct. 2018).
[50] DOE, *DOE/EA-2082* at 1-1 to 1-2, 2-1.
[51] NRC, *NRC Responses to Public Comments,* ADAMS Accession No. ML26175A046, at 9-10.
[52] 91 Fed. Reg. at 40,306-08, 40,343.
[53] NRC, *Draft Regulatory Analysis,* ADAMS Accession No. ML26174A244, at 11, 33.

Specialized Land Disposal Facility licensing for waste above 10,000 nCi/g remains subject to case-by-case Commission approval as described in 2019, or is now a generic pathway, and, if the latter, to explain the change and its technical basis.

E. Logical-Outgrowth Reservation

Because no codified minimum design or performance criteria for borehole units — diameter, waste-form and package specifications, casing and grout performance criteria, or engineered-barrier standards — appear in the proposed regulatory text itself, "borehole" and "specialized land disposal facility" remain illustrative preamble and guidance concepts rather than defined technical terms with associated acceptance criteria. Because no codified design criteria for boreholes appear in the rule text, any future binding criteria in the final rule that is not presented here would violate the logical outgrowth doctrine.[54]

VII. Incomplete Executive Order, Statutory Disclosures, and Security Alignment

A. Executive Order 13045 (Protection of Children) Is Not Addressed

Executive Order 13045 requires that, for "any substantive rulemaking action" that "is likely to result in" an economically significant rule concerning "an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children," the agency provide OMB/OIRA "an evaluation of the environmental health or safety effects of the planned regulation on children" and "an explanation of why the planned regulation is preferable to other potentially and reasonably feasible alternatives."[55] Neither the NPRM's Executive Orders section, § XIII, nor the RA addresses E.O. 13045 or states an applicability determination under E.O. 13045, § 5-501, 62 Fed. Reg. 19,885.

B. B. Executive Order 13211 (Energy Effects) Is Not Addressed, Despite the NPRM's Discussion of Two Other Energy-Related Executive Orders

For a "significant energy action," E.O. 13211 requires the agency to "prepare and submit to [OMB] a Statement of Energy Effects" addressing "any adverse effects on energy supply, distribution, or use" and to "publish the Statement or a summary" in the proposed and final rule.[56] The NPRM's Executive Orders section discusses E.O. 14154 (Unleashing American Energy) and E.O. 14270 (Zero-Based Regulatory Budgeting To Unleash American Energy), NPRM § XIII.B, D, but does not address E.O. 13211 — the order that would actually require disclosure of the rule's energy effects, as distinct from a policy-consistency statement. Given that this rulemaking concerns the disposal pathway for nuclear-generation waste, the Commission must disclose whether it made the "significant energy action" determination Executive Order 13211 requires and, if the rule was determined not to be a significant energy

[54] *See Long Island Care at Home, Ltd. v. Coke*, 551 U.S. 158, 174 (2007) (holding that final rules must be a logical outgrowth of the proposed rule).
[55] *See* E.O. 13045, § 5-501, 62 Fed. Reg. 19,885 (Apr. 23, 1997); OMB Circular A-4, at 43–44 (cataloguing this as a "Specialized Analytical Requirement").
[56] E.O. 13211, § 2, 66 Fed. Reg. 28,355 (May 22, 2001); OMB Circular A-4, at 44.

action, to state that determination and its basis on the record, consistent with the technical-basis disclosure principle of *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 393 (D.C. Cir. 1973).

C. Unfunded Mandates Reform Act Threshold Determination Is Undisclosed

The Unfunded Mandates Reform Act requires a written statement of benefits and costs before issuing a rule that "may result" in aggregate annual expenditure of $100,000,000 or more (adjusted for inflation) by State, local, and tribal governments or the private sector.[57] Neither the NPRM nor the RA states whether this threshold is met. The RA's own cost figures — $39.2 million (7 percent NPV) to $69.7 million (3 percent NPV) over a 30-year horizon, with annualized costs on the order of $36,000 to $49,000 per year — suggest the threshold is not triggered,[58] but the record does not say so affirmatively anywhere, leaving a reviewer to infer non-applicability rather than confirm it. The Commission must add the threshold determination to the final rule's preamble, consistent with the disclosure practice it already follows for the Regulatory Flexibility Act, NPRM § VI, and the Paperwork Reduction Act, NPRM § XII.

D. The NPRM Does Not State Whether the Rule Is "Economically Significant" Under Executive Order 12866 Section 3(f)(1)

NPRM § XIII.A states, in its entirety, that "OIRA has determined that this proposed rule is a significant regulatory action" and that NRC "is required to conduct an economic analysis in accordance with section 6(a)(3)(B)" of E.O. 12866.[59] That statement does not address whether the rule is "economically significant" within the meaning of Executive Order 12866 § 3(f)(1) — a distinct and more consequential classification — as opposed to significant on some other § 3(f) basis. The Commission must state which § 3(f) basis supports the significant-action designation.

E. NUREG/BR-0058's Withdrawal Occurred After Executive Order 13891's Guidance-Document Procedures Returned to Effect, and the Withdrawal Notice Does Not Address Them

Executive Order 13891, "Promoting the Rule of Law Through Improved Agency Guidance Documents,"[60] directs agencies to follow specified procedures — including, for "significant guidance documents," notice-and-comment-like treatment — before issuing or rescinding guidance documents. President Biden revoked E.O. 13891 through E.O. 13992 on January 20, 2021. President Trump's E.O. 14148, "Initial Rescissions of Harmful Executive Orders and Actions," revoked E.O. 13992 on January 20, 2025, and the Department of Justice has since treated E.O. 13891 as restored to effect, formally reinstating regulations implementing it.[61] Executive Order 13891 was accordingly back in effect for roughly eighteen months before the Commission's July 21, 2026 withdrawal of NUREG/BR-0058 and NUREG/BR-0184 — itself a rescission of agency guidance documents squarely within E.O. 13891's subject matter. Neither the withdrawal notice[62] nor the RA references E.O. 13891 or explains why its guidance-document-rescission

[57] 2 U.S.C. § 1532; OMB Circular A-4, at 43.
[58] NRC, RA §§ 4.5.3, 4.7.1.
[59] 91 Fed. Reg. 40,290.
[60] 84 Fed. Reg. 55,235 (Oct. 9, 2019).
[61] *Processes and Procedures for Issuance and Use of Guidance Documents*, 90 Fed. Reg. 6,805 (Jan. 21, 2025).
[62] 91 Fed. Reg. 45,833

procedures do not apply, or were satisfied, here. The Commission must confirm whether NUREG/BR-0058 and NUREG/BR-0184 constituted "guidance documents" and whether either was a "significant guidance document" within the meaning of E.O. 13891, and if so, to identify the procedures the Commission followed in rescinding them, consistent with *Fox*, 556 U.S. at 515-16.

VIII. The Proposed Physical Protection Exemption Should Be Coordinated With Docket NRC-2025-1238

The NPRM also proposes a new exemption at 10 CFR 73.67(b)(1) from physical protection requirements for special nuclear material "of limited attractiveness" at a land disposal facility, framed as providing "more risk-informed security requirements" than the existing exemptions.[63] Proposed 10 C.F.R. § 73.67(b)(1) physical protection exemptions must be coordinated with Docket ID NRC-2025-1238. NRC's authority under AEA § 274(c), 42 U.S.C. § 2021(c), is non-relinquishable and interacts directly with Agreement State critical-mass thresholds under 10 C.F.R. §§ 150.11 and 150.14

IX. Summary of Requested Commission Actions

For the reasons set out above, I respectfully request that the Commission:

1. Reconcile the final rule's Statement of Consideration with the Commission's 2016 draft final rule (SECY-16-0106) and 2019 draft regulatory basis conclusions, rather than relying on E.O. 14,300 (Section II).
2. Confirm whether NUREG/CR-3568 (1983) remains an adequate technical basis for labor-rate estimation (Section III.A).
3. Provide the underlying probability-distribution documentation used in the waste-cuttings behavior during inadvertent intrusion analysis (Section III.A).
4. Clarify what governing methodology document or documents governed preparation of the Regulatory Analysis, given the July 21, 2026 withdrawal of NUREG/BR-0058 following its July 21, 2026 withdrawal and reconcile that withdrawal with the Commission's May 2024 direction to revise, consolidate, and retransmit Revision 5 (Section III.B).
5. Provide disaggregated cost estimates disaggregated by individual new requirement, consistent with NUREG/BR-0058 § 4.3.2 and Circular A-4 (Section III.C).
6. Clarify the terms on which NRC technical support will be made available to Agreement States reviewing site-specific technical analyses under the final rule (Section III.C).
7. Supplement the RA with a quantified or monetized treatment of the rule's net safety and security effects, consistent with OMB Circular A-4 including incorporating NUREG-1530. Revision 1

[63] 91 Fed. Reg. at 40,303.

dollar-per-person-rem values to monetize radiological impacts, or explain why that expectation does not apply (Section III.D).

8. Adhere to GAO Cost Estimating Best Practices (GAO-20-195G) by establishing a product-oriented WBS, obtaining independent cost estimates, and disclosing which cost-estimating methodology is used. (Section III.E)

9. Provide the current status of the Commissioners' May 2024 direction to revise NRC's cost-estimating procedures to reflect both the current Circular A-4 and GAO's Cost Guide — a commitment the GAO's most recent priority-recommendations letter still lists as open and unimplemented, independent of and unaffected by the July 2026 withdrawal (Section III.E)

10. Provide Circular A-4 required analyses for distributional effects, ancillary benefits, countervailing risks, phased compliance, and federalism (Sections III.F and III.G).

11. Reconcile the flat 500-year GTCC intruder-barrier figure with NUREG-1573's peak-dose-timing rationale and SRM-SECY-20-0098's site-specific, graded compliance-period direction, or explain why an unadjusted Class C figure is appropriate for a waste class the Commission describes as materially more hazardous (Section IV).

12. Provide the empirical or historical basis supporting the assumption that a deterrence-based intruder barrier reliably achieves 500 years of effective protection (Section IV).

13. Clarify whether the rule retains a stand-alone defense-in-depth "analysis" requirement or the "clear statement" formulation directed by SRM-SECY-13-0075, and explain any departure from that 2014 direction (Section IV).

14. Confirm the current scope of 10 CFR 61.1's case-by-case applicability of new requirements to existing licenses, and confirm that existing licensees not accepting newly regulated waste streams will not be required to prepare new technical analyses solely because the classification framework has changed (Section V).

15. Provide generic dose-reconstruction or margin analysis demonstrating the degree of conservatism in the current Table 1 and Table 2 classification limits to justify the RA's "unnecessary burden" premise (Section V).

16. Identify which borehole reference design — DOE's intermediate-depth alternative or the IAEA BOSS concept — the final rule's performance criteria are meant to validate, and place supporting site-specific or design-specific analysis in the docket, including any siting constraints (Section VI.C-E, G).

17. Confirm whether Specialized Land Disposal Facility licensing for GTCC waste above 10,000 nCi/g remains subject to case-by-case Commission approval as described in the Commission's 2019 Response to Public Comments, or is now a generically available pathway, and if the latter, explain and justify the change (Section VI.F).

18. Identify by ADAMS accession number, and place in the docket, the "2026 supplement to the 2019 technical analysis of hazards document" cited at 91 Fed. Reg. 40,307 as the technical basis for the Specialized Land Disposal Facility concentration table.

19. Publish threshold applicability determinations for E.O. 13045, E.O. 13211, UMRA (2 U.S.C. § 1532), and E.O. 12866 § 3(f)(1).

20. Explain compliance with E.O. 13891 guidance-rescission procedures during the withdrawal of NUREG/BR-0058.

21. Coordinate physical protection exemptions under 10 C.F.R. § 73.67(b)(1) with Docket ID NRC-2025-1238 and AEA § 274(c) statutory constraints.

X. Conclusion

The record in this docket is unusual in its depth, and that depth cuts against the proposal at several points of increasing severity.

Most seriously, the Regulatory Analysis rests on a governing methodology that no longer exists. NUREG/BR-0058 was withdrawn in its entirety, together with NUREG/BR-0184, sixteen days before this comment period opened, after the Commission had directed staff only fourteen months earlier to revise, consolidate, and retransmit the very document the RA cites — not to abandon it. OMB Circular A-4 does not fill the resulting void on the record's own terms: it supplies no work-breakdown-structure concept, no cost-estimating methodology, and no independent-cost-estimate practice, so the RA's cost estimate cannot presently be tested against any governing instrument at all. A Regulatory Analysis whose stated methodological basis has been formally withdrawn, and whose cost-estimating basis was already found deficient by GAO in 2014 and has not since been corrected, is not a sound foundation for a final rule.

Nearly as serious are the unexplained departures from the Commission's own prior reasoning. The GTCC intruder-barrier provision carries forward the 500-year Class C duration figure without adjustment, despite the Commission's own premise that GTCC waste presents materially greater and longer-lived hazard — a mismatch *State Farm* requires the Commission to reconcile and has not yet reconciled. The risk-informed transition rests on an aggregation-conservatism rationale that the record does not support with site-specific or generic dose-modeling evidence, leaving the claim that current limits are "unnecessarily" conservative asserted rather than demonstrated. Additionally, the shift from a case-by-case GTCC licensing safety valve to what reads as a generically available specialized-disposal pathway, resting in part on a DOE environmental analysis that did not evaluate the technology NRC now proposes to rely on, changes the Commission's 2019 position without the reasoned explanation *Fox* demands. Each of these examples represent a significant question about whether the final rule can survive arbitrary-and-capricious review.

A second tier of findings concerns analyses Circular A-4 requires that the RA simply does not perform: a disaggregated cost estimate that disaggregates nothing, tested against a real, decade-old, on-docket cost figure the RA does not engage; no monetized health, safety, or security benefit metric for a rule otherwise framed as safety-relevant, even though NRC's own NUREG-1530 factor is available and unused; no

distributional-effects description; no ancillary-benefits or countervailing-risks discussion; and no examination of compliance-date, enforcement-method, or federalism alternatives. None of these gaps depend on the July 2026 withdrawal — Circular A-4 required each of them before the withdrawal and requires them now — and none has been supplied.

A third tier concerns disclosure rather than substance: the NPRM does not state whether the rule is "economically significant" under E.O. 12866 § 3(f)(1), does not address E.O. 13045 or E.O. 13211 despite discussing two other energy-related orders, does not include the Unfunded Mandates Reform Act threshold statement it includes for parallel statutes, and does not address E.O. 13891's guidance-document procedures in withdrawing NUREG/BR-0058 despite that Order having been back in effect for eighteen months. These omissions are more readily corrected than the first two tiers, but they leave the record incomplete on questions the Commission has a duty to answer on this record, not to defer to the final rule.

Finally, the physical protection exemption at 10 CFR 73.67(b)(1) should be coordinated with the pending rulemaking at Docket NRC-2025-1238 before either is finalized, to avoid inconsistent Category 1/2 physical protection outcomes for the same waste streams.

The record before the Commission is not sufficient to support final action on this rulemaking. Although the rule addresses a genuine and long-deferred gap in the low-level waste disposal framework, the deficiencies identified above preclude a defensible and analytically coherent final rule. The Commission should first resolve each issue — beginning with the governing-methodology and cost-estimating gaps in Sections III.C and III.F, and the unexplained departures in Sections IV through VI — before proceeding to any finalization. Addressing these matters is essential to ensuring a durable, technically grounded, and legally sustainable outcome. I appreciate the opportunity to comment.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 11, 2026
Status: Posted
Posted: August 12, 2026
Tracking No. msp-68tz-hufi
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0214
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Offices of the Attorneys General of Illinois and Massachusetts

Submitter Information

Email: joanna.brinkman@ilag.gov
Government Agency Type: State
Government Agency: Offices of the Attorneys General of Illinois and Massachusetts

General Comment

Comment Extension Request of the Attorneys General of the States of Illinois and Massachusetts

Attachments

NRC comment extension request Low Level Waste Rule

COMMENT OF THE ATTORNEYS GENERAL OF ILLINOIS AND MASSACHUSETTS

August 11, 2026

Via Electronic Submission and email

The Honorable David A. Wright, Chairman
Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Integrated Low-Level Radioactive Waste Disposal proposed rule, 91 Fed. Reg. 40,290 (July 1, 2026). Docket ID Nos. NRC-2011-0012; NRC-2015-0003; NRC-2017-0081

Dear Chairman Wright:

The Offices of the Illinois and Massachusetts Attorneys General ("States") respectfully request that the Nuclear Regulatory Commission ("NRC") extend the public comment period for the Integrated Low-Level Radioactive Waste Disposal proposed rule, 91 Fed. Reg. 40,290 (July 1, 2026 ("Proposed Rule") by an additional 45 days, until October 1, 2026. The additional time will allow the States to review this rule in coordination with at least three other related NRC rules, all issued since July 1, 2026, and with successive 45-day comment response deadlines of August 17, August 21, and August 31, 2026.

Illinois leads the nation in nuclear power generation, with six nuclear power plants and 11 operating reactors that produce over half of the electricity generated in the state. The Illinois Emergency Management Agency's Office of Nuclear & Radiation Safety is internationally recognized as a leader in safety, responsible for monitoring the 11 reactors and regulating over 750 radioactive materials licenses and 35,000 x-ray machines. Illinois has a strong interest in ensuring it remains a leader in safe nuclear energy production with effective regulations and procedures that protect public health, worker safety, and the environment. Illinois also is an Agreement State under the Atomic Energy Act, allowing state regulation of most types of radioactive material in a manner compatible with federal regulations. Changes to the NRC regulations could impact the regulatory and enforcement programs of Agreement States like Illinois.

The Proposed Rule is part of NRC's "wholesale revision of its regulations," and therefore is expansive in scope and relates to other recently proposed or anticipated rules with similarly broad regulatory reforms. Overlapping 45-day comment periods simply are not sufficient to allow for informed public comment on such wholesale revisions of nationally significant matters.

Among the other interrelated rules are: the Modernizing Reactor licensing, Safety Oversight, and Siting Practices proposed rule, 91 Fed. Reg. 44,560 (July 16, 2026), the Implementation of the National Environmental Policy Act ("NEPA") proposed rule, 91 Fed. Reg. 42,086 (July 7, 2026), and the Reforming and Modernizing the NRC's Radiation Protection Framework proposed rule, 91 Fed. Reg. 43,456 (July 15, 2026).

Several of the provisions in the Proposed Rule appear to relate directly to proposals in these other rulemakings. For example, the Proposed Rule proposes to eliminate the "as low as reasonably achievable" (ALARA) standard, which NRC also proposes to eliminate in the Modernizing the NRC's Radiation Protection Framework rule. The Modernizing Reactor Licensing, Safety Oversight, and Siting Practices rule proposes changes to performance standards and quality assurance procedures and discusses and alters licensing procedures and siting decisions, all of which may interrelate with waste disposal. And the NEPA implementation rule impacts environmental review requirements that will be relevant to low-level waste disposal.

These are only a few examples of the intertwined nature of the proposals, all of which involve matters of significant state and public interest. Commenters will need to review these rules carefully and simultaneously to identify inconsistencies or concerns with the proposed standards and procedures. The overlapping issues raise important considerations for operational and worker safety and environmental protection, and will require coordinated review that is very time and resource-intensive.

The interrelated nature of these rulemakings greatly complicates the review process for commenters and provides good cause for the NRC to extend the Proposed Rule comment deadline. Accordingly, the States request the NRC to extend the comment period by an additional 45-days, with a new deadline of October 1, 2026.

Respectfully submitted,

FOR THE STATE OF ILLINOIS
KWAME RAOUL
ATTORNEY GENERAL

By: */s/ Joanna K. Brinkman*
Joanna K. Brinkman
Complex Litigation Counsel
Jason E. James
Assistant Attorney General
Illinois Attorney General's Office
115 S. LaSalle St., Chicago, IL 60603
312-814-3033
joanna.brinkman@ilag.gov

FOR THE STATE OF MASSACHUSETTS
ANDREA JOY CAMPBELL
in her official capacity as Attorney General of the Commonwealth of Massachusetts

By*: /s/ Amy Laura Cahn*

Amy Laura Cahn
Special Assistant Attorney General

Edwin Ward
Assistant Attorney General
Energy and Environment Bureau
Massachusetts Office of the Attorney General
One Ashburton Place
Boston, MA 02108
617-963-2281
Amy.Laura.Cahn@mass.gov

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 12, 2026
Status: Posted
Posted: August 12, 2026
Tracking No. msp-ome4-n6rf
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0215
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Anonymous

Submitter Information

Name: Anonymous Anonymous

General Comment

Nuclear energy has been a controversial topic for years considering the dangers of nuclear waste, however, the NRC's proposed rule expands the land disposal options for certain transuranic and Greater-Than-Class C wastes that are currently stranded in sites such as operating reactors, sealed-source facilities, and DOE sites. The shift from generic limits that this rule proposes allows for different facilities to develop their own site-specific waste acceptance criteria based on their geological and design characteristics. This can improve operational efficiency and yield an overall industry-wide net cost savings to the tune to 40 million.
The critical aspect to this proposal is the graded approach that balances safety with regulatory efficiency. This graded approach represents the necessary environmental and public health considerations due to previous generic approaches which were overly restrictive, creating unnecessary burdens on sites that have stronger characteristics, such as robust designs and protective operational practices. By requiring deep and long-term technical analyses only where waste persistence demands, the framework of this proposal ensures that public health and the environment are robustly protected without creating disproportionate regulatory impositions that burden lower hazard level nuclear disposal facilities.
The immediate implementation of this proposal is essential in resolving the long-standing waste stranded at the previously mentioned sites. By establishing a permanent risk-informed framework, this proposal provides a clear and reliable pathway for the back end of the nuclear fuel cycle. Regulation modernization is essential to safely isolate existing highly concentrated materials such as depleted uranium. Ultimately, implementing this regulation is necessary in aligning nuclear waste management with modern health and safety standards, ensuring robust long-term public health and environmental protection.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 12, 2026
Status: Posted
Posted: August 12, 2026
Tracking No. msp-pmcv-8s4x
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0216
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Texas Nuclear Watchdogs

Submitter Information

Email: karendhadden@gmail.com
Organization: Texas Nuclear Watchdogs

General Comment

See attached file(s)

Attachments

Texas Nuclear Watchdogs comments on Low-Level Waste rule

Comments on FR Doc # 2026-13302, NRC-2011-0012

August 12, 2026

VIA REGULATIONS.GOV

U.S. Nuclear Regulatory Commission

Office of Administration Rules, Announcements, and Directives Branch

Mail Stop: OWFN-12-H08

Washington, D.C. 20555-0001

ATTN: Rulemakings and Adjudications Staff

Re: Comments on Proposed Rule, Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40,290 (July 1, 2026)

Docket ID: NRC-2011-0012; NRC-2015-0003; NRC-2017-0081 (RIN 3150-AI92)

Dear NRC Commissioners and Rulemakings and Adjudications Staff,

The following comments are submitted by Karen Hadden, on behalf of the Texas Nuclear Watchdogs. We request a three-month extension of the August 17, 2026, deadline for public comment on the U.S. Nuclear Regulatory Commission's proposal to establish new regulatory requirements for the permanent disposal of Greater-Than-Class C (GTCC), GTCC-like, and transuranic (TRU) waste.

We also request that NRC hold public meetings allowing for official public comment for this and other current rulemaking proposals, rather than relying solely on webinar presentations. While the webinars are informative, they resemble industry work sessions more than public meetings. The substantial revisions proposed in NRC-2011-0012 require careful public review. Additional time is needed for the public to study the lengthy documents, consult nuclear experts, and provide meaningful comments. This is one of many pending rulemaking changes to the Code of Federal Regulations, presumably intended to meet the requirements of Executive Order 14300, issued May 29, 2025. Some of the other NRC proposals overlap with or depend on other rule changes. The NRC should slow the process to allow adequate public understanding, analysis and opportunity for input.

NRC's website states that the Integrated Low-Level Radioactive Waste Disposal proposal seeks to "amend the NRC's regulations to require new and revised site-specific technical analyses and permit the development of site-specific criteria for low-level radioactive waste acceptance based on the results of these analyses. The rulemaking proposes to authorize the near-surface disposal of certain Greater-Than-Class C waste streams and provide for Agreement State licensing of these waste streams. Licensees of currently operating low-level radioactive waste facilities that do not plan to accept Greater-Than-Class C waste or significant quantities of long-lived radionuclides after the effective date of this rulemaking would continue to comply with current regulations."

The Texas Nuclear Watchdogs oppose these changes. Many members of Texas Nuclear Watchdogs have been involved in low-level and high-level radioactive waste disposal issues in Texas for years, and have testified about the health, safety, environmental, economic and security risks of radioactive waste transport, storage and disposal. We opposed importing spent nuclear fuel and GTCC for storage or disposal. The NRC has been requiring deep geologic disposal, not risky shallow burial for this waste, which can include extremely hot control rods that have been inside reactors for decades. Farmers and ranchers, oil companies, cities and counties, and environmental activists sought to prevent importation of this waste to protect our land, aquifers and health from contamination.

State law should be respected and followed. In 2021, HB7 passed in a special session of the Texas Legislature with a nearly unanimous, bipartisan vote, banning the storage or disposal of imported high-level radioactive waste. Governor Abbott signed HB7 on September 9, 2021, and vowed to protect Texans from the risks of high-level radioactive waste. Legal battles ensued, at the 5th Circuit Court of Appeals, the DC Circuit Court of Appeals and the U.S. Supreme Court.

We have many concerns about the proposed rule. We adopt by reference the full comments in this docket by Fred Schofer, former NRC Regulatory Analysis Lead and Rulemaking Project Manager. An excerpted portion of his comments are included later here.

The shallow burial of GTCC and GTCC-like waste proposed in this rule should never be allowed, now or in the future. Leaks, accidents and contamination could have disastrous and expensive impacts. Six original commercial low-level radioactive waste disposal sites have had releases above allowable limits, despite promises that they would not leak for thousands of years. We don't need to learn lessons again the hard way. The existing **requirement for deep geologic disposal is a protection that should not be weakened. It must be kept in place. Deep geologic disposal is necessary for GTCC and GTCC-like waste due to their high concentrations of radionuclides and long lifespans. Texans have been clear that we do not want these waste streams brought into our state. The NRC now considers some GTCC waste "low-level," but that doesn't change the intensity of this dangerous waste. Radiation exposure can lead to cancers, genetic damage, birth defects and heart problems, and can be lethal.**

This rule establishes a risk-informed framework that allows for shallow or near surface land disposal of certain Greater Than Class C (GTCC), GTCC-like and specific transuranic wastes,

provided they pass rigorous site-specific technical and performance analyses. We urge that uniform standards be utilized for all sites, standards protective of health, air, water and soil. **There should be no site-specific standards.** There should be no difference in standards at sites where there are significant amounts of waste versus those with very little. **We oppose allowing site-specific determination of waste acceptance criteria. Adequate safety standards should be set nationally to protect health and safety at all potential sites. They should not be set by companies who stand to profit by lax standards.**

The costs of potential accidents, leaks and quantifiable health impacts from exposures, should be considered. It's the nuclear industry that tands to profit, not citizens. Shallow waste burial may be cost-cutting for nuclear waste companies, but it comes at the risk and expense of citizens, and local and state governments. Those risks and costs should be quantified.

Consolidated Interim Storage plans for Texas and New Mexico were slowed by overwhelming opposition and legislation. Many Texans and New Mexicans had hoped that the Department of Energy (DOE) consent-based siting process would help prevent consolidated interim storage of high-level waste (GTCC and spent nuclear fuel) imports.

However, US Senators, state governors, legislators, cities, counties ranchers, oil companies and the public were all disregarded when DOE held eight "stakeholder " hearings around the country, but none in either Texas or New Mexico, the targeted states.

There is no consent in Texas and New Mexico, but this proposed rule would allow a back-door path for roughly half of the high-level waste originally slated for storage in the two states, despite legislation and legislative intent. Once again, our elected leaders and the people of Texas and New Mexico are being disregarded by this ill-conceived proposed rule change.

We oppose the removal of state authority, while our people and industries would bear the brunt of dealing with accidents or contamination.

We oppose allowing site-specific determination of waste acceptance criteria. Standards should be set uniformly to protect health and safety at all potential sites, not set by companies that stand to profit from lax policies.

Greater Than Class C waste is significantly hotter than Class C waste. A 500-year intruder barrier for GTCC is inadequate. Fred Schofer commented that "applying an unadjusted intruder-barrier standard to GTCC waste fails the arbitrary and capricious standard of review. Physical barriers should be required, not just signs to deter or discourage intruders.

As noted earlier, Texas Nuclear Watchdogs share the concerns raised by Fred Schofer in his comments on this docket. We adopt his comments by reference. We make the same following requests of NRC. This excerpt begins on page 14 of 17 of Mr. Schofer's comments:

"Summary of Requested Commission Actions

For the reasons set out above, I respectfully request that the Commission:

1. Reconcile the final rule's Statement of Consideration with the Commission's 2016 draft final rule (SECY-16-0106) and 2019 draft regulatory basis conclusions, rather than relying on E.O. 14,300 (Section II).

2. Confirm whether NUREG/CR-3568 (1983) remains an adequate technical basis for labor-rate estimation (Section III.A).

3. Provide the underlying probability-distribution documentation used in the waste-cuttings behavior during inadvertent intrusion analysis (Section III.A).

4. Clarify what governing methodology document or documents governed preparation of the Regulatory Analysis, given the July 21, 2026 withdrawal of NUREG/BR-0058 following its July 21, 2026 withdrawal and reconcile that withdrawal with the Commission's May 2024 direction to revise, consolidate, and retransmit Revision 5 (Section III.B).

5. Provide disaggregated cost estimates disaggregated by individual new requirement, consistent with NUREG/BR-0058 § 4.3.2 and Circular A-4 (Section III.C).

6. Clarify the terms on which NRC technical support will be made available to Agreement States reviewing site-specific technical analyses under the final rule (Section III.C).

7. Supplement the RA with a quantified or monetized treatment of the rule's net safety and security effects, consistent with OMB Circular A-4 including incorporating NUREG-1530. Revision 1 63 91 Fed. Reg. at 40,303. dollar-per-person-rem values to monetize radiological impacts or explain why that expectation does not apply (Section III.D).

8. Adhere to GAO Cost Estimating Best Practices (GAO-20-195G) by establishing a product-oriented WBS, obtaining independent cost estimates, and disclosing which cost-estimating methodology is used. (Section III.E)

9. Provide the current status of the Commissioners' May 2024 direction to revise NRC's cost-estimating procedures to reflect both the current Circular A-4 and GAO's Cost Guide — a commitment the GAO's most recent priority-recommendations letter still lists as open and unimplemented, independent of and unaffected by the July 2026 withdrawal (Section III.E)

10. Provide Circular A-4 required analyses for distributional effects, ancillary benefits, countervailing risks, phased compliance, and federalism (Sections III.F and III.G).

11. Reconcile the flat 500-year GTCC intruder-barrier figure with NUREG-1573's peak-dose-timing rationale and SRM-SECY-20-0098's site-specific, graded compliance-period direction, or explain why an unadjusted Class C figure is appropriate for a waste class the Commission describes as materially more hazardous (Section IV).

12. Provide the empirical or historical basis supporting the assumption that a deterrence-based intruder barrier reliably achieves 500 years of effective protection (Section IV).

13. Clarify whether the rule retains a stand-alone defense-in-depth "analysis" requirement or the "clear statement" formulation directed by SRM-SECY-13-0075 and explain any departure from that 2014 direction (Section IV).

14. Confirm the current scope of 10 CFR 61.1's case-by-case applicability of new requirements to existing licenses, and confirm that existing licensees not accepting newly regulated waste streams will not be required to prepare new technical analyses solely because the classification framework has changed (Section V).

15. Provide generic dose-reconstruction or margin analysis demonstrating the degree of conservatism in the current Table 1 and Table 2 classification limits to justify the RA's "unnecessary burden" premise (Section V).

16. Identify which borehole reference design — DOE's intermediate-depth alternative or the IAEA BOSS concept — the final rule's performance criteria are meant to validate, and place supporting site-specific or design-specific analysis in the docket, including any siting constraints (Section VI.CE, G).

17. Confirm whether Specialized Land Disposal Facility licensing for GTCC waste above 10,000 nCi/g remains subject to case-by-case Commission approval as described in the Commission's 2019 Response to Public Comments, or is now a generically available pathway, and if the latter, explain and justify the change (Section VI.F).

18. Identify by ADAMS accession number, and place in the docket, the "2026 supplement to the 2019 technical analysis of hazards document" cited at 91 Fed. Reg. 40,307 as the technical basis for the Specialized Land Disposal Facility concentration table.

19. Publish threshold applicability determinations for E.O. 13045, E.O. 13211, UMRA (2 U.S.C. § 1532), and E.O. 12866 § 3(f)(1).

20. Explain compliance with E.O. 13891 guidance-rescission procedures during the withdrawal of NUREG/BR-0058.

21. Coordinate physical protection exemptions under 10 C.F.R. § 73.67(b)(1) with Docket ID NRC 2025-1238 and AEA § 274(c) statutory constraints.

X. Conclusion

The record in this docket is unusual in its depth, and that depth cuts against the proposal at several points of increasing severity.

Most seriously, the Regulatory Analysis rests on a governing methodology that no longer exists. NUREG/BR-0058 was withdrawn in its entirety, together with NUREG/BR-0184, sixteen days before this comment period opened, after the Commission had directed staff only fourteen months earlier to revise, consolidate, and retransmit the very document the RA cites — not to abandon it. OMB Circular A-4 does not fill the resulting void on the record's own terms: it supplies no work-breakdown-structure concept, no cost-estimating methodology, and no independent-cost-estimate practice, so the RA's cost estimate cannot presently be tested against any governing instrument at all. A Regulatory Analysis whose stated methodological basis has been formally withdrawn, and whose cost-estimating basis was already found deficient by GAO in 2014 and has not since been corrected, is not a sound foundation for a final rule.

Nearly as serious are the unexplained departures from the Commission's own prior reasoning. The GTCC intruder-barrier provision carries forward the 500-year Class C duration figure without adjustment, despite the Commission's own premise that GTCC waste presents materially greater and longer-lived hazard — a mismatch State Farm requires the Commission to reconcile and has not yet reconciled. The risk-informed transition rests on an aggregation-conservatism rationale that the record does not support with site-specific or generic dose-modeling evidence, leaving the claim that current limits are "unnecessarily" conservative asserted rather than demonstrated. Additionally, the shift from a case-by-case GTCC licensing safety valve to what reads as a generically available specialized-disposal pathway, resting in part on a DOE environmental analysis that did not evaluate the technology NRC now proposes to rely on, changes the Commission's 2019 position without the reasoned explanation Fox demands. Each of these examples represent a significant question about whether the final rule can survive arbitrary-and-capricious review.

A second tier of findings concerns analyses Circular A-4 requires that the RA simply does not perform: a disaggregated cost estimate that disaggregates nothing, tested against a real, decade-old, on-docket cost figure the RA does not engage; no monetized health, safety, or security benefit metric for a rule otherwise framed as safety-relevant, even though NRC's own NUREG-1530 factor is available and unused; no distributional-effects description; no ancillary-benefits or countervailing-risks discussion; and no examination of compliance-

date, enforcement-method, or federalism alternatives. None of these gaps depend on the July 2026 withdrawal — Circular A-4 required each of them before the withdrawal and requires them now — and none has been supplied.

A third tier concerns disclosure rather than substance: the NPRM does not state whether the rule is "economically significant" under E.O. 12866 § 3(f)(1), does not address E.O. 13045 or E.O. 13211 despite discussing two other energy-related orders, does not include the Unfunded Mandates Reform Act threshold statement it includes for parallel statutes, and does not address E.O. 13891's guidance-document procedures in withdrawing NUREG/BR-0058 despite that Order having been back in effect for eighteen months. These omissions are more readily corrected than the first two tiers, but they leave the record incomplete on questions the Commission has a duty to answer on this record, not to defer to the final rule.

Finally, the physical protection exemption at 10 CFR 73.67(b)(1) should be coordinated with the pending rulemaking at Docket NRC-2025-1238 before either is finalized, to avoid inconsistent Category 1/2 physical protection outcomes for the same waste streams.

The record before the Commission is not sufficient to support final action on this rulemaking. Although the rule addresses a genuine and long-deferred gap in the low-level waste disposal framework, the deficiencies identified above preclude a defensible and analytically coherent final rule. The Commission should first resolve each issue — beginning with the governing-methodology and cost-estimating gaps in Sections III.C and III.F, and the unexplained departures in Sections IV through VI — before proceeding to any finalization. Addressing these matters is essential to ensuring a durable, technically grounded, and legally sustainable outcome. I appreciate the opportunity to comment."

Please consider our requests and revise or abandon the proposed Integrated Low-Level Radioactive Waste Disposal rule.

Sincerely, Karen Hadden, Texas Nuclear Watchdogs

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 12, 2026
Status: Posted
Posted: August 12, 2026
Tracking No. msq-5l0k-xdmo
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0217
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from NRD, LLC

Submitter Information

Email: lbalali@nrdllc.com
Organization: NRD, LLC

General Comment

Comment on Docket ID: NRC-2011-0012 from NRD, LLC

Attachments

Letter of Support_NRD_LLC

August 12, 2026

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Submitted via Regulations.gov
Docket ID: NRC-2011-0012

Re: Comments in Support of the Proposed Integrated Low-Level Radioactive Waste Disposal Rule

NRD, LLC (the "Company" or "NRD"), respectfully submits these comments in support of the U.S. Nuclear Regulatory Commission's proposed rulemaking to establish a clearer regulatory pathway for the disposal of certain higher-activity radioactive waste.

NRD is a limited liability company formed in accordance with the terms and conditions stipulated under the Delaware Limited Liability Act and is based in Grand Island, New York. NRD possesses a radioactive materials license under the jurisdiction of the New York State Department of Health with more than fifty-five (55) years of experience in the safe manufacture, possession, and management of sealed radioactive sources and other radioactive materials. For decades, NRD has maintained Greater Than Class C (GTCC) material in secure on-site storage because no practical commercial disposal pathway currently exists. This inventory includes material of both U.S. and foreign origin. Throughout this time, the Company has managed and maintained the security of this material in accordance with all applicable radiological protection regulations and laws.

Because NRD, LLC has managed and secured stranded GTCC material for decades, the Company has firsthand experience with the operational, financial, and regulatory consequences of maintaining this category of radioactive waste in long-term storage without a viable disposal pathway. The comments below are based upon NRD's experience and analysis and are thereby intended to provide the Nuclear Regulatory Commission with the perspective of a commercial licensee directly affected by the existing regulatory framework.

While safe interim storage is achievable, indefinite on-site storage is not a sustainable long-term waste management strategy. It requires commercial licensees to dedicate significant financial and personnel resources to maintaining radioactive material that has no viable disposition pathway. These resources could otherwise be invested in research and development, manufacturing capacity, workforce growth, and the commercialization of advanced nuclear technologies.

The proposed rule addresses two longstanding challenges facing commercial licensees: the economic burden of indefinite storage and the long-term security and regulatory burden of maintaining higher-activity radioactive waste at numerous commercial facilities.

Financial Burden of Indefinite Storage

Indefinite storage requires licensees to devote ongoing financial and personnel resources to radioactive material that can no longer be used, but cannot be disposed of. These obligations include maintaining radiation protection and security programs, monitoring and controlling the inventory, and meeting continuing regulatory requirements. The resources dedicated to these activities could otherwise be used for plant improvements, organizational growth, research and development, and other productive investments.

NRD's experience demonstrates that the absence of a practical GTCC disposal pathway creates recurring costs that extend well beyond the physical storage of the material. These costs include personnel and technical support, storage and facility operations, and ongoing compliance and regulatory activities.

NRD's personnel-cost estimate is based on an internal allocation of time for employees whose work directly supports GTCC storage, compliance, technical support, health physics, waste handling, and disposition readiness. NRD did not apply a generalized percentage to its overall workforce. Instead, the estimate reflects the employees and functions directly involved in GTCC-related activities, with allocation percentages based on their estimated level of involvement.

Based on this methodology, NRD estimates approximately $2,979,065 per year in personnel and related technical support costs attributable to GTCC activities. The Company also estimates approximately $492,167 per year in compliance and other GTCC-specific operating costs, along with approximately $155,328 per year in storage facility operations costs. Together, these costs represent approximately $3,626,560 in recurring annual cash and operating costs associated with maintaining the GTCC inventory.

NRD also currently maintains $3.9 million in a letter of credit capacity to satisfy its decommissioning financial assurance requirements. At a 6.0% annual opportunity cost assumption, maintaining this financial capacity represents an additional $234,000 in annual imputed opportunity cost. This is not a direct cash expenditure; rather, it represents the estimated economic value of financial capacity that must be maintained for decommissioning assurance rather than being available for other productive uses.

Including this imputed opportunity cost, NRD estimates its current annual economic burden associated with indefinite GTCC storage at approximately **$3,860,560**.

These figures reflect NRD's current costs and financial-assurance obligations and should be viewed as a current snapshot rather than a measure of the total long-term burden. As radioactive material remains in storage and inventories grow, the associated costs of storage, monitoring, compliance, security, and financial assurance can be expected to place additional demands on licensees and increase the economic burden of indefinite storage.

The absence of a disposal pathway also creates uncertainty for licensees approaching decommissioning. Commercial facilities cannot simply dispose of GTCC waste when operations cease if no authorized disposal option exists. Instead, they must continue maintaining licensed possession of the material or identify another authorized entity willing and able to assume long-term stewardship. As a result, facilities that might otherwise be fully decommissioned and redeveloped can remain under regulatory control in perpetuity while continuing to require financial assurance, security, inspections, and other regulatory obligations. This delays the productive reuse of industrial properties, leaving buildings vacant and limiting opportunities for economic redevelopment and investment within the surrounding community. The proposed rule would substantially reduce this uncertainty by establishing a practical disposal pathway for eligible waste.

Security and Long-Term Stewardship

Continued storage of GTCC waste at numerous commercial facilities also increases the long-term security and regulatory burden associated with these materials. While licensees maintain appropriate security controls and operate under continuous regulatory oversight, every storage location requires ongoing physical protection, inventory accountability, inspections, emergency preparedness, and compliance activities.

Providing a disposal pathway would allow eligible material to be consolidated at appropriately licensed disposal facilities specifically designed for long-term isolation. This would reduce the number of locations where higher-activity radioactive material must be maintained while continuing to protect public health, safety, and national security.

Important Provisions to Retain

NRD also encourages the Commission to retain several important provisions included in the proposed rule.

A significant portion of stranded GTCC inventory throughout the commercial sector does not exist as conventional bulk waste. Instead, it consists of sealed sources, source capsules, source assemblies, contaminated source components, and legacy devices. Retaining these provisions in the final rule will ensure that a meaningful portion of the existing commercial inventory can ultimately be dispositioned.

In addition, although this rule cannot supersede statutory limitations governing certain foreign-origin material, NRD supports retaining the proposed risk-informed framework that evaluates waste based on its technical characteristics rather than its origin. Material with equivalent radiological properties presents the same technical disposal considerations regardless of where it was produced. Maintaining this approach preserves future opportunities for Congress or other federal agencies to address the remaining statutory barriers affecting foreign-origin material.

Conclusion

NRD supports the Commission's effort to replace indefinite on-site storage with a modern, risk-informed, performance-based disposal framework. The proposed rule appropriately recognizes that disposal decisions should be based on site-specific technical analyses, actual radiological risk, and waste form rather than the absence of an available disposal pathway.

The current system does not eliminate risk. It simply transfers responsibility for long-term stewardship to individual licensees without providing a permanent solution. For commercial licensees such as NRD, the proposed rule represents an opportunity to safely dispose long-stranded radioactive material while allowing resources to be redirected toward innovation, manufacturing, and growth within the U.S. nuclear industry.

NRD appreciates the opportunity to comment and would be pleased to respond to any additional questions the Commission may have.

Respectfully submitted,

NRD, LLC
2937 Alt Blvd.
Grand Island, NY 14072

By:

Lila Balali
Director of Regulatory Affairs
(716) 773-7634 ext. 334
lbalali@nrdllc.com

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 12, 2026
Status: Posted
Posted: August 13, 2026
Tracking No. msq-itbg-imn7
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0220
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from LLW Forum Inc.

Submitter Information

Email: michael@michaelklebe.com
Organization: LLW Forum Inc.

General Comment

Attached are the comments from the LLW Forum Inc. on the docket NRC-2011-0012.

Attachments

LLW Forum Inc comments on docket NRC-2011-0012 Integrated LLRW Disposal

LLW FORUM, INC

August 12, 2026

Jody Martin
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Mail Stop O-16 B33
Washington, DC 20555-0001

Docket: NRC-2011-0012

The Low-Level Radioactive Waste Forum (LLW Forum) is pleased to provide comments on the US Nuclear Regulatory Commission's (NRC) proposed rulemaking *Integrated Low-Level Radioactive Waste Disposal*, docket NRC-2011-0012. The LLW Forum is a non-profit organization of representatives appointed by Governors and compact commissions that seeks to facilitate state and compact implementation of the Low-Level Radioactive Waste Policy Act of 1980 and its 1985 amendments, as well as to promote the objectives of regional low-level radioactive waste disposal compacts.

The LLW Forum appreciates the opportunity to provide comments on the NRC's proposed *Integrated Low-Level Radioactive Waste Disposal* rulemaking. We support the Commission's effort to modernize Part 61 and strengthen the national framework for safe, predictable, and transparent low-level radioactive waste (LLRW) disposal. At the same time, several elements of the proposed rule require clarification or revision to ensure that the regulatory structure remains workable, scientifically grounded, and consistent with the statutory roles of States, Tribes, and Compacts.

The LLW Forum has developed detailed comments on the Federal Register notice and the proposed revision to existing NRC regulations. In addition, the LLW Forum has prepared responses to the specific questions posed by the NRC in the Federal Register notice. The responses in this cover letter and the attachments were adopted by a majority vote of the Directors of the LLW Forum, but may not represent the specific views of each individual compact and state. The key points of our comments are summarized below.

First, the rule must preserve the ability of States, Tribes, and Interstate Compacts to fully participate in all Part 61 licensing activities. These entities should not be required to

petition for involvement in licensing actions that directly affect their responsibilities under the Low-Level Radioactive Waste Policy Act as Amended (LLRWPAA). Their participation is essential to maintaining the cooperative federalism framework Congress established. In addition, since the current Part 61 disposal facilities are all licensed by Agreement States and overseen by Compacts, their technical and administrative expertise needs to be drawn upon by the NRC.

Second, we urge the NRC to retain the current public dose limits. The existing standards have proven protective, stable, and well-understood by both regulators and licensees. No technical basis has been presented that would justify revising these limits, and changes would introduce unnecessary regulatory uncertainty and public scrutiny. This consistency is important for preserving public confidence in the ability to safely dispose of LLRW in a near-surface disposal facility.

Third, the rule should clearly state that existing facilities that will not accept significant quantities of long-lived radionuclides or GTCC waste can follow the current regulatory structure and not the new licensing requirements. Facilities operating under historical authorizations and limited waste profiles should not be compelled to undertake extensive new evaluations that are irrelevant to their mission and inconsistent with their waste acceptance criteria. The rule should also explicitly state that these existing facilities may renew their licenses following the existing regulatory framework.

Fourth, with respect to GTCC waste, the rule should distinguish between disposal responsibility and licensing authority. While the Federal Government is responsible for providing GTCC disposal capacity, the Atomic Energy Act allows Agreement States to license GTCC disposal facilities if the Commission delegates that authority. The rule should acknowledge this distinction and avoid language that could be read to foreclose Agreement State licenses for decades. The existing facilities have been operating under Agreement State licensing. The respective Agreement State programs have consistently demonstrated their ability to properly license and regulate LLRW disposal.

Fifth, the proposed inclusion of transuranic (TRU) waste within the definition of LLRW raises significant technical and policy questions. TRU waste has historically been managed under a distinct statutory and regulatory framework. If the NRC intends to alter that framework, the implications for waste classification, facility design, and national disposal strategy must be addressed explicitly. As proposed by the NRC in this rulemaking, civilian TRU wastes could be disposed in a near surface facility or a specialized land disposal facility while defense-related TRU is disposed only at the Waste Isolation Pilot Project (WIPP) at a depth greater than 2000 feet. The NRC has not provided a technically or policy-based justification for imposing different disposal requirements on similar waste streams solely because of their origin.

Sixth, we agree that a 10,000-year performance evaluation period is appropriate for facilities that will accept substantial quantities of long-lived radionuclides. However, the rule should acknowledge that performance over such timeframes cannot be predicted with precision. Regulatory expectations should reflect the inherent uncertainties of deep-time modeling and avoid implying a level of predictive accuracy that is not scientifically achievable. The proposed regulations should specifically identify when a quantitative analysis is required, when a qualitative analysis is appropriate, or when a combination of both is required.

Seventh, the proposed requirement for a "safety case" is duplicative of existing performance assessment and licensing requirements. As drafted, the proposed rulemaking would impose substantial additional costs without providing commensurate regulatory or safety benefit. We recommend eliminating this requirement or clarifying that it does not create new analytical obligations beyond those already required under Part 61.

Eighth, the rule contains numerous ambiguous, vague, and undefined terms that create confusion for applicants, licensees, and regulators. Many of these ambiguous, vague and undefined terms have existed in Part 61 since its initial promulgation in 1983. This has added to the burden for applicants, licensees, and Agreement State regulators. These terms should be removed or clearly defined to ensure consistent implementation across jurisdictions.

Finally, the proposed rulemaking should include a savings clause affirming that nothing in the revised Parts 20, 61, and 150 regulations diminishes or alters the statutory authority of the interstate compacts approved by Congress as federal law. This clarification is essential to maintaining the balance of responsibilities established under the LLRWPAA and preserving the authority of regional compacts to regulate the import and export of LLRW into and out of their respective compacts. This authority applies to all classes of LLRW; A, B, C, and GTCC. As such, the Compact Commissions have a role in the disposal process for LLRW and should have an equal opportunity to participate in the licensing process.

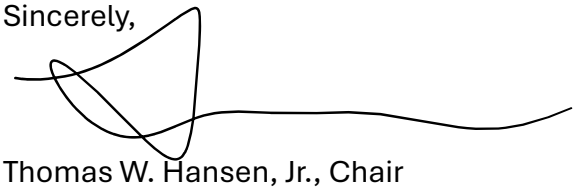
As mentioned above, the LLW Forum has developed detailed comments on the Federal Register notice and the proposed revision to existing NRC regulations. Our comments are organized into the following attachments:

Attachment 1 – LLW Forum Comments on Federal Register Notice Part IV. B. – Applicability and NRC Authority Over GTCC Disposal
Attachment 2 – LLW Forum Comments on Federal Register Notice Part IV. C – Technical Areas with Proposed Rulemaking Requirements
Attachment 3 – LLW Forum Response to Federal Register Notice Part V. – Specific Request for Comment

Attachment 4 – LLW Forum Comments on Proposed Revision to 10 CFR Part 20
Attachment 5 – LLW Forum Comments on Proposed Revision to 10 CFR Part 61
Attachment 6 – LLW Forum Comments on Proposed Revision to 10 CFR Part 150
Attachment 7 – LLW Forum Comments on NUREG-2175 Guidance for Conducting Technical Analyses for 10 CFR Part 61

The LLW Forum appreciates the opportunity to provide these comments to the NRC on the proposed rulemaking. Any questions may be directed to Dan Shrum, Executive Director of the LLW Forum at dshrum@llwforum.org.

Sincerely,



Thomas W. Hansen, Jr., Chair
LLW Forum

Attachments as noted above

Attachment 1

LLW Forum Comments on Federal Register Notice Part IV. B. – Applicability and NRC Authority Over GTCC Disposal

I. Introduction

The NRC's proposed Integrated Low-Level Radioactive Waste Disposal Rule asserts that the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) requires the NRC to retain sole licensing authority over GTCC waste disposal facilities. The NRC bases this conclusion on a "plain language reading" of Section 3(b)(2) of the LLRWPAA.

This comment evaluates that claim through:

- a statutory analysis of the LLRWPAA,
- a side-by-side comparison of competing interpretations,
- a Chevron and major questions doctrine review, and
- a recommended alternative interpretation consistent with the Atomic Energy Act (AEA).

The conclusion is clear: the LLRWPAA does not require NRC licensing of all GTCC disposal facilities, nor does it prohibit Agreement States from licensing such facilities under the AEA.

II. Statutory Text of the LLRWPAA

The NRC's interpretation hinges on Section 3 of the LLRWPAA. The relevant statutory language is reproduced verbatim below.

> **Section 3(a)(1) – State Responsibility**
>
> "Each State shall be responsible for providing, either by itself or in cooperation with other States, for the disposal of low-level radioactive waste generated within the State, except for waste— (A) owned or generated by the Federal Government, or (B) generated as a result of Federal research, development, testing, or production activities."
>
> **Section 3(b)(1) – Federal Responsibility**
>
> "The Federal Government shall be responsible for the disposal of – (A) low-level radioactive waste owned or generated by the Federal Government; (B) low-level radioactive waste that results from Federal research, development, testing, or

production activities; and (C) low-level radioactive waste that is not the responsibility of the States under subsection (a)(1)."

Section 3(b)(2) – NRC Licensing Requirement

"The Commission shall license any facility for the disposal of low-level radioactive waste under subsection (b)(1)(C) resulting from activities licensed by the Commission."

III. NRC Authority Over GTCC Waste Disposal Facilities

The NRC's assertion that the LLRWPAA requires NRC to retain sole licensing authority over GTCC disposal facilities is not supported by the statutory text, legislative structure, or NRC's own prior interpretation.

A. The LLRWPAA assigns disposal responsibility, not licensing authority

Section 3(b)(1) assigns responsibility for GTCC disposal to the Federal Government (DOE). Responsibility does not equal licensing authority.

DOE could fulfill its responsibility by:

- constructing a federal GTCC disposal facility,
- contracting with a commercial facility,
- using a facility licensed by an Agreement State, or
- using a facility licensed by NRC.

Nothing in the statute requires NRC licensing of all GTCC waste disposal facilities.

B. The statutory text does not mandate exclusive NRC licensing authority

Section 3(b)(2) states that the NRC "shall license any facility" for disposal of GTCC waste resulting from NRC-licensed activities. The key interpretive question is:

> Does "any facility" mean "all facilities," or does it mean "any facility that falls under NRC jurisdiction"?

The statute does not define "any facility," nor does it reference Agreement States or amend the AEA's allocation of licensing authority. As a result, the phrase is ambiguous and must be interpreted in context.

C. The LLRWPAA does not amend the Atomic Energy Act

The Atomic Energy Act (AEA) is the statute that governs licensing authority. Under the AEA:

- NRC may relinquish licensing authority to Agreement States (AEA § 274).
- Agreement States may license disposal facilities for byproduct, source, and special nuclear material.
- NRC retains authority only where the AEA explicitly requires it.

The AEA governs licensing authority. LLRWPAA does **not** amend:

- AEA § 274 (Agreement State authority),
- NRC's ability to relinquish authority,
- or the cooperative federalism structure

The LLRWPAA does **not** amend § 274 or any other provision of the AEA. If Congress intended to remove Agreement State authority over GTCC disposal, it would have amended the AEA. It did not.

D. NRC's new interpretation contradicts its own prior direction

In SECY-20-0098 (2020), the NRC staff recommended allowing Agreement States to license GTCC disposal facilities that meet near-surface disposal criteria. The Commission approved this interpretation in SRM-SECY-20-0098 (2022), stating:

> "Authority to license a disposal facility for GTCC waste can be relinquished to Agreement States."

This was the Commission's formal legal interpretation. To reverse that interpretation, NRC must:

- demonstrate that its prior reading was legally incorrect,
- provide a reasoned explanation for the change, and
- show that the new interpretation better fits the statute.

The proposed rule does not do this. The proposed rule reverses this conclusion without acknowledging the change or providing a reasoned explanation. It simply asserts a new "plain language reading."

E. The NRC's new interpretation is not compelled by the statutory text

The phrase "any facility" is not a term of art and does not inherently imply exclusivity. It is not as "plain" as the NRC claims. It can reasonably be read to mean:

"Any facility that the NRC licenses under the AEA."

This interpretation:

- aligns with the structure of the AEA,
- preserves Agreement State authority,
- matches NRC's 2020–2022 interpretation, and
- avoids creating an implied repeal of § 274.

The NRC's interpretation is not compelled by the text.

F. The NRC's interpretation creates an implied repeal of Agreement State authority

Implied repeals are strongly disfavored.

Implied repeals are strongly disfavored in statutory interpretation. Under NRC's new reading:

- Agreement States would lose authority over GTCC disposal facilities,
- even though the AEA explicitly grants them authority over disposal of radioactive material,
- and Congress did not amend the AEA to remove that authority.

NRC's reading would eliminate Agreement State authority without congressional action. This is not a permissible interpretation unless the statutory text clearly requires it. It does not.

Conclusion
The LLRWPAA does **not** require NRC licensing of all GTCC disposal facilities. The NRC's interpretation is legally unsound and should be withdrawn or revised.

IV. Side by Side Comparison of Current and Past NRC Positions

A. Relationship to the Atomic Energy Act (AEA)

NRC 2026 Interpretation	NRC 2020–2022 Interpretation
LLRWPAA implicitly overrides AEA § 274 by removing Agreement State authority over GTCC disposal.	LLRWPAA does not amend the AEA; Agreement State authority remains intact.
Creates an implied repeal of Agreement State licensing authority.	Avoids implied repeal; harmonizes LLRWPAA with AEA cooperative federalism.
Treats LLRWPAA as a licensing statute.	Treats LLRWPAA as a responsibility-allocation statute.

B. Meaning of "Federal responsibility" in § 3(b)(1)

NRC 2026 Interpretation	NRC 2020–2022 Interpretation
"Federal responsibility" = NRC must license GTCC disposal.	"Federal responsibility" = DOE must provide a disposal pathway; licensing is governed by the AEA.
Conflates disposal responsibility with licensing authority.	Distinguishes responsibility (DOE) from licensing (NRC or Agreement States).
Assumes federal responsibility requires federal licensing.	Recognizes that DOE may use facilities licensed by Agreement States or NRC.

C. Side-by-Side Comparison of Interpretations of LLRWPAA § 3(b)(2)

NRC 2026 Interpretation	Commission-Approved 2020–2022 Interpretation
"Any facility" equals all facilities, regardless of Agreement State status.	"Any facility" equals any facility NRC licenses under the AEA.
NRC must license every GTCC disposal facility.	Agreement States may license GTCC disposal facilities under § 274.
Implied repeal of Agreement State authority.	Harmonizes LLRWPAA with AEA cooperative federalism.
Conflates disposal responsibility with licensing.	Distinguishes DOE responsibility from licensing authority.
Contradicts prior Commission direction.	Reflects Commission's formal legal interpretation.
Creates major new federal authority.	Preserves established federal-state balance.

D. What "any facility" means

NRC 2026 Interpretation	NRC 2020–2022 Interpretation
"Any facility" means all facilities, regardless of location or Agreement State status. NRC must license every GTCC disposal facility.	"Any facility" means any facility that NRC licenses under the AEA, not all facilities. Agreement States may license GTCC disposal facilities if they meet NRC criteria.
Reading treats "any" as an exclusivity mandate.	Reading treats "any" as a jurisdictional descriptor.
Implies Congress silently removed Agreement State authority.	Preserves Agreement State authority unless Congress explicitly removes it.

E. Consistency with NRC's own prior interpretation

NRC 2026 Interpretation	NRC 2020–2022 Interpretation
Reverses prior Commission direction without acknowledging or explaining the change.	Reflects the Commission's formal legal interpretation in SRM-SECY-20-0098.
Claims prior interpretation was incorrect but provides no legal analysis.	Supported by staff analysis, stakeholder input, and AEA structure.
Introduces inconsistency in NRC's statutory interpretation record.	Maintains continuity with decades of NRC practice.

F. Practical Consequences

NRC 2026 Interpretation	NRC 2020–2022 Interpretation
NRC becomes the sole licensing authority for all GTCC disposal facilities nationwide.	Agreement States may license GTCC disposal facilities that meet NRC technical criteria.
Reduces Agreement State authority and flexibility.	Preserves cooperative federalism and state participation.
Increases NRC workload and regulatory burden.	Distributes regulatory responsibilities consistent with AEA § 274.
Limits disposal options for GTCC waste.	Expands disposal options and reduces federal bottlenecks.

Narrative Summary of the Differences

The NRC's new interpretation treats LLRWPAA § 3(b)(2) as a mandate for exclusive federal licensing authority. This reading is not compelled by the statutory text, contradicts the structure of the AEA, and reverses the Commission's own prior interpretation without adequate explanation. It also creates an implied repeal of Agreement State authority - something Congress did not express or even hint at.

By contrast, the prior Commission-approved interpretation harmonizes the LLRWPAA with the AEA, preserves Agreement State authority, and reflects the cooperative federalism model that has governed radioactive materials licensing for decades. It recognizes that "Federal responsibility" for GTCC disposal does not equate to "NRC licensing authority," and that DOE may rely on facilities licensed by Agreement States.

The side-by-side comparison demonstrates that the NRC's new interpretation is neither compelled by the statutory text nor consistent with the AEA, administrative law principles, or NRC's own prior direction. The Commission's 2020–2022 interpretation remains the more legally sound, structurally coherent, and administratively reasonable reading of the LLRWPAA.

V. Legislative Purpose and Structure

The LLRWPAA was enacted to:

- assign responsibility for LLW disposal,
- encourage regional compacts, and
- clarify federal vs. state roles.

It was **not** intended to restructure NRC licensing authority. Congress did not discuss Agreement State licensing of GTCC waste in hearings, committee reports, or floor debates.

The NRC's new interpretation would:

- expand NRC authority beyond what Congress specified,
- reduce Agreement State authority without statutory basis, and
- contradict the cooperative federalism model of the AEA.

V. Administrative Law Considerations

A. The NRC must provide a reasoned explanation for changing its interpretation

The Administrative Procedure Act requires agencies to engage in reasoned decision-making, particularly when changing an established interpretation. In *FCC v. Fox Television Stations*, 556 U.S. 502 (2009), the Supreme Court held that an agency may revise its interpretation of a statute, but only if it satisfies specific procedural and substantive obligations. The Court emphasized that an agency must:

1. Acknowledge that it is changing its position;
2. Provide a reasoned explanation for abandoning its prior interpretation;
3. Demonstrate that the new interpretation is permissible under the statute; and
4. Address reliance interests created by the prior interpretation.

The NRC's proposed GTCC rule fails each of these requirements.

1. Failure to Acknowledge the Change in Interpretation

Under *Fox*, an agency must clearly and candidly acknowledge that it is reversing course. The NRC does not do so. Instead, the proposed rule presents its new interpretation that NRC has *exclusive* licensing authority over GTCC disposal facilities as if it were longstanding or self-evident. Yet the record shows the opposite:

- For decades, NRC interpreted the AEA and LLRWPAA to mean that Agreement States retain authority over disposal facilities unless Congress expressly removes it.
- NRC repeatedly stated (including in 2020–2022 rulemaking documents) that GTCC waste is a federal responsibility for disposal, not a federal licensing category.
- NRC staff guidance, public statements, and prior rulemaking documents all treated GTCC disposal as a shared federal–state responsibility, not an exclusively federal licensing matter.

The proposed rule does not acknowledge this reversal, nor does it identify any new statutory language or congressional directive that would justify it.

2. Failure to Explain Why the Prior Interpretation Is Being Abandoned

Fox requires an agency to explain why it is abandoning its prior interpretation. The NRC provides no such explanation. The proposed rule:

- Does not identify any factual developments that undermine the prior interpretation.
- Does not identify any legal developments that require a new interpretation.
- Does not explain why the prior interpretation was incorrect.
- Does not address the Commission's own prior statements that the AEA was *not* amended by the LLRWPAA and that Agreement State authority remains intact.

Instead, the NRC simply asserts the new interpretation without analysis. This is precisely the type of unexplained reversal *Fox* prohibits.

3. Failure to Demonstrate That the New Interpretation Is Permissible Under the Statute

Under *Fox*, an agency must show that its new interpretation is permissible under the governing statute. The NRC does not do so. The proposed rule:

- Does not identify any statutory text granting NRC exclusive licensing authority over GTCC disposal facilities.
- Does not reconcile its interpretation with the cooperative federalism structure of the AEA.
- Does not explain how "any facility" in LLRWPAA § 3(b)(2) could implicitly repeal Agreement State authority nationwide.
- Does not address the absence of any congressional amendment to the AEA — the statute that actually governs licensing authority.

The NRC's new interpretation is not merely unexplained; it is statutorily unsupported.

4. Failure to Address Reliance Interests

Fox also requires agencies to consider **reliance interests** created by the prior interpretation. The NRC does not address these interests at all.

Agreement States, disposal facility operators, and waste generators have relied on the longstanding understanding that:

- Agreement States retain licensing authority over disposal facilities unless Congress expressly removes it.
- GTCC waste is a federal responsibility for disposal, not a federal licensing category.
- NRC's jurisdiction is defined by the AEA, not by ambiguous language in the LLRWPAA.

The proposed rule would disrupt decades of regulatory practice, impose new federal licensing burdens, and alter state–federal responsibilities yet the NRC does not acknowledge or analyze these reliance interests.

5. The Proposed Rule Does Not Meet the Fox Standard

Taken together, these deficiencies mean the NRC has not satisfied the requirements of *FCC v. Fox Television Stations*. The agency has:

- Not acknowledged that it is changing its interpretation.

- Not explained why it is abandoning its prior interpretation.
- Not demonstrated that the new interpretation is permissible under the AEA or LLRWPAA.
- Not addressed reliance interests created by decades of prior practice.

Under *Fox*, an agency's failure to provide a reasoned explanation for a change in interpretation renders the action arbitrary and capricious under the APA.

B. Chevron and Major Questions Analysis of NRC's Interpretation of LLRWPAA § 3(b)(2)

I. Introduction

The NRC's proposed rule asserts that the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) requires the NRC to retain sole licensing authority over GTCC waste disposal facilities. This interpretation is presented as a "plain language reading" of Section 3(b)(2).
This comment evaluates that claim under the Chevron framework and the major questions doctrine, both of which govern judicial review of agency statutory interpretation. Under either doctrine, the NRC's interpretation is not legally sustainable.

II. Chevron Analysis

Chevron U.S.A. v. NRDC (1984) establishes a two-step process for evaluating agency interpretations of statutes. The NRC's interpretation of LLRWPAA § 3(b)(2) fails at both steps.

A. Chevron Step One – The Statute Is Not Unambiguous

Chevron Step One asks:

> Has Congress spoken directly to the precise question at issue?

The statutory text at issue is:

LLRWPAA § 3(b)(2)

> "The Commission shall license any facility for the disposal of low-level radioactive waste under subsection (b)(1)(C) resulting from activities licensed by the Commission."

The NRC interprets "any facility" to mean all facilities, regardless of Agreement State status. However, the statute does not:

- define “any facility,”
- mention Agreement States,
- amend the Atomic Energy Act (AEA),
- modify AEA § 274 (Agreement State authority),
- or indicate that Congress intended to remove Agreement State licensing authority.

The phrase “any facility” is not a term of art and is susceptible to multiple reasonable interpretations. It can mean:

1. Any facility that NRC licenses under the AEA, or
2. All facilities nationwide, regardless of jurisdiction.

Because the statute does not resolve this ambiguity, Chevron Step One is not satisfied.

B. Chevron Step Two – NRC’s Interpretation Is Not Reasonable

Chevron Step Two asks:

> Is the agency’s interpretation reasonable and consistent with the statutory scheme?

NRC’s interpretation is not reasonable for several reasons:

1. It contradicts the structure of the Atomic Energy Act

The AEA governs licensing authority. Under § 274:

- NRC may relinquish licensing authority to Agreement States.
- Agreement States may license disposal facilities for radioactive materials.
- NRC retains authority only where Congress explicitly requires it.

LLRWPAA does **not** amend § 274 or any other AEA provision. If Congress intended to remove Agreement State authority over GTCC disposal, it would have amended the AEA. It did not.

2. It conflates “federal responsibility” with “federal licensing authority”

LLRWPAA § 3(b)(1) assigns responsibility for GTCC disposal to the Federal Government (DOE). Responsibility does not equal licensing authority.

DOE may fulfill its responsibility using:

- a federal facility,
- a commercial facility licensed by NRC, or
- a facility licensed by an Agreement State.

Nothing in the statute requires NRC licensing.

3. It creates an implied repeal of Agreement State authority

Implied repeals are strongly disfavored. NRC's interpretation would:

- eliminate Agreement State authority over GTCC disposal facilities,
- despite Congress never mentioning Agreement States,
- and without amending the AEA.

This is not a permissible interpretation unless the statutory text clearly requires it. It does not.

4. It contradicts NRC's own prior interpretation

In 2020–2022, the Commission formally concluded:

> "Authority to license a disposal facility for GTCC waste can be relinquished to Agreement States."

The proposed rule reverses this interpretation without acknowledging the change or providing a reasoned explanation, violating *FCC v. Fox Television Stations*.

5. It expands NRC authority beyond historical practice

For 40 years, NRC has not claimed exclusive licensing authority over GTCC disposal facilities. The new interpretation is a significant expansion of NRC jurisdiction without statutory basis.

Conclusion under Chevron

Because the statute is ambiguous (Step One) and NRC's interpretation is unreasonable (Step Two), the NRC's interpretation fails Chevron.

III. Major Questions Doctrine Analysis

The major questions doctrine (West Virginia v. EPA, 2022) provides an independent basis for rejecting NRC's interpretation. The doctrine holds:

> Agencies cannot assert broad new regulatory powers of major economic or political significance without clear congressional authorization.

NRC's interpretation triggers this doctrine for several reasons.

A. NRC is asserting a major new regulatory power

Under the proposed rule, NRC claims:

- exclusive federal licensing authority over GTCC disposal facilities,
- eliminating Agreement State authority nationwide,
- expanding NRC jurisdiction beyond historical practice,
- centralizing all GTCC disposal licensing in NRC.

This is a major policy shift with national implications.

B. The asserted authority has major economic and political significance

Exclusive NRC licensing authority would:

- restrict disposal options for GTCC waste,
- increase federal regulatory burden,
- reduce Agreement State autonomy,
- affect commercial disposal facilities,
- and alter the federal-state balance established under the AEA.

These are precisely the types of consequences that trigger the major questions doctrine.

C. Congress did not clearly authorize this expansion of NRC authority

Congress did not:

- amend the AEA,
- mention Agreement States,
- grant exclusive NRC licensing authority,
- or indicate any intent to restructure radioactive waste licensing.

LLRWPAA § 3(b)(2) does not contain the "clear congressional authorization" required under the major questions doctrine.

D. The NRC's interpretation would require Congress to have silently rewritten the AEA

Under NRC's reading, Congress implicitly:

- repealed Agreement State authority over GTCC disposal,
- expanded NRC jurisdiction,
- and altered the federal-state regulatory structure.

Courts do not permit agencies to discover such sweeping powers in ambiguous statutory language.

Conclusion

Under both Chevron and the major questions doctrine, the NRC's interpretation of LLRWPAA § 3(b)(2) is legally unsustainable. The statute is ambiguous, the NRC's interpretation is unreasonable, and Congress did not clearly authorize the sweeping expansion of NRC licensing authority asserted in the proposed rule.

The LLRWPAA does not require NRC to retain sole licensing authority over GTCC waste disposal facilities. The statutory text assigns responsibility for GTCC disposal to the Federal Government but does not mandate NRC licensing or prohibit Agreement State licensing. NRC's new interpretation contradicts its own prior Commission direction, is not compelled by statutory language, and is inconsistent with the structure of the Atomic Energy Act.
Therefore, the proposed rule's assertion that "licensing of disposal facilities for GTCC waste must be done by the NRC and not Agreement States" is not supported by the LLRWPAA. Therefore, the NRC should withdraw or revise its interpretation and restore the Commission's prior conclusion that Agreement States may license GTCC disposal facilities consistent with the Atomic Energy Act.

VI. Recommended Alternative Interpretation of LLRWPAA § 3(b)(2)

Preserving Agreement State Authority Consistent with the Atomic Energy Act

1. Introduction

The NRC's proposed rule asserts that the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) requires the NRC to retain sole licensing authority over GTCC waste disposal facilities. This interpretation is not compelled by the statutory text, is inconsistent with the Atomic Energy Act (AEA), and contradicts the Commission's own prior interpretation.

This section presents a recommended alternative interpretation of LLRWPAA § 3(b)(2) that is legally sound, consistent with the AEA's cooperative federalism structure, and aligned with the Commission's 2020–2022 direction.

2. Statutory Text
The relevant statutory language is:

LLRWPAA § 3(b)(2)

> "The Commission shall license any facility for the disposal of low-level radioactive waste under subsection (b)(1)(C) resulting from activities licensed by the Commission."

This sentence is the sole basis for NRC's claim of exclusive licensing authority. The recommended interpretation below explains why this text does **not** require NRC to license all GTCC disposal facilities.

3. Recommended Alternative Interpretation

A. "Any facility" refers to facilities within NRC jurisdiction under the Atomic Energy Act

The phrase "any facility" is best interpreted to mean:

> Any facility that the NRC licenses under the Atomic Energy Act — not all facilities nationwide.

This interpretation is consistent with:

- the structure of the AEA,
- the Agreement State program under AEA § 274,
- NRC's historical practice,
- and the Commission's 2020–2022 interpretation.

Under this reading:

- NRC licenses GTCC disposal facilities when they fall under NRC jurisdiction,
- Agreement States license GTCC disposal facilities when NRC has relinquished authority under § 274,
- and DOE may use either type of facility to fulfill its federal responsibility.

This harmonizes the LLRWPAA with the AEA rather than creating an implied repeal of Agreement State authority.

B. LLRWPAA assigns disposal responsibility, not licensing authority

LLRWPAA § 3(b)(1) states that the Federal Government is responsible for GTCC waste disposal. Disposal responsibility does not equal licensing authority. DOE may satisfy its responsibility by:

- constructing a federal disposal facility,
- contracting with a commercial facility licensed by NRC,

- or using a facility licensed by an Agreement State.

Nothing in the statute requires NRC licensing of all GTCC disposal facilities. This interpretation respects the distinction between:

- responsibility (LLRWPAA), and
- licensing authority (AEA).

C. The LLRWPAA does not amend the Atomic Energy Act or limit Agreement State authority

Congress did not amend:

- AEA § 274 (Agreement State authority),
- NRC's ability to relinquish licensing authority,
- or the cooperative federalism structure of radioactive materials regulation.

If Congress intended to remove Agreement State authority over GTCC disposal, it would have amended the AEA. It did not.

The recommended interpretation avoids creating an implied repeal of § 274 — something courts strongly disfavor.

D. The recommended interpretation aligns with NRC's prior Commission direction

In SRM-SECY-20-0098 (2022), the Commission concluded:

> "Authority to license a disposal facility for GTCC waste can be relinquished to Agreement States."

This was not a casual observation. It was the Commission's formal legal interpretation.

The recommended interpretation preserves this conclusion and provides continuity with:

- NRC staff analysis,
- stakeholder input,
- and decades of NRC practice.

E. The recommended interpretation avoids the legal defects in NRC's new reading

The alternative interpretation avoids:

- the ambiguity problems under Chevron Step One,
- the unreasonableness problems under Chevron Step Two,

- the implied repeal of Agreement State authority,
- the need for NRC to justify reversal under *FCC v. Fox*,
- and the major questions doctrine, which requires clear congressional authorization for sweeping new federal authority.

By contrast, NRC's new interpretation triggers all of these problems.

F. The recommended interpretation preserves cooperative federalism

The AEA is built on a cooperative federalism model:

- NRC sets national standards,
- Agreement States implement them,
- NRC retains authority only where Congress explicitly requires it.

The recommended interpretation:

- preserves this structure,
- respects state expertise and autonomy,
- and avoids unnecessary federal centralization.

This is consistent with Congress's intent in both the AEA and the LLRWPAA.

IV. Summary of the Recommended Interpretation

The recommended interpretation of LLRWPAA § 3(b)(2) is:

> The NRC shall license any GTCC disposal facility that falls under NRC jurisdiction under the Atomic Energy Act. The statute does not require NRC to license all GTCC disposal facilities, nor does it prohibit Agreement States from licensing such facilities when NRC has relinquished authority under AEA § 274.

This interpretation:

- harmonizes the LLRWPAA with the AEA,
- preserves Agreement State authority,
- aligns with prior Commission direction,
- avoids implied statutory repeal,
- and satisfies Chevron and major questions requirements.

Conclusion

The NRC should adopt the recommended alternative interpretation of LLRWPAA § 3(b)(2). This interpretation is legally sound, consistent with congressional intent, and avoids the

statutory, administrative, and constitutional defects inherent in the NRC's proposed reading. It also preserves the cooperative federalism structure that has governed radioactive materials regulation for decades.

VII. Final Comment Conclusion

The NRC's proposed interpretation of LLRWPAA § 3(b)(2) is not supported by the statutory text, contradicts the structure of the Atomic Energy Act, reverses prior Commission direction without justification, and asserts a major new federal authority without clear congressional authorization.

The Commission should adopt the recommended alternative interpretation and revise the proposed rule accordingly.

Attachment 2

LLW Forum Comments on Federal Register Notice Part IV. C. – Technical Areas with Proposed Revisions to Requirements

I. Inclusion of Transuranic Waste in the Definition of LLW

Definition of LLRW, Transuranic Waste, and State Responsibility Under the LLRWPAA

1. Introduction

The NRC proposes to revise the definition of "low-level radioactive waste" (LLRW) in 10 CFR 20.1003 and 10 CFR 61.2 by removing the explicit exclusion of "transuranic waste." NRC states that this change aligns the definition with the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) and supports the addition of Table 3 in § 61.55, which would allow disposal of waste containing higher concentrations of transuranic radionuclides through site-specific technical analyses.

This comment addresses three issues:

1. Comment contained in our specific comments on the proposed revision to 10 CFR Part 61 about transuranic waste and the definition of LLRW.
2. Why revising the regulatory definition of LLRW does not and cannot alter the statutory responsibility of States under the LLRWPAA.
3. Additional comments in light of NRC's proposed Table 3.

2. Summary of Prior Comments (Attachment 1 – Part 61)

In our Part 61 comments, we make several key points that remain directly relevant:

A. The LLRWPAA relies on the 1983 definition of LLRW

Our comments emphasize that:

- Congress did not create a new definition of LLRW in the LLRWPAA.
- Congress relied on the regulatory definition in § 61.2 and § 20.1003 as it existed in 1983.
- That definition explicitly excluded "transuranic waste."

B. State responsibility is tied to the 1983 definition

We note that:

- States were assigned responsibility for LLRW as defined at the time of enactment of the Act which references the definition of LLRW in the 1983 version of Part 61.
- NRC cannot expand state responsibility by redefining LLRW decades later.

C. Transuranic waste was never part of State responsibility

From the time that the LLRWPAA was enacted:

- Transuranic waste (above 100 nCi/g) was excluded from LLRW in 1983.
- Therefore, States were never responsible for its disposal.
- NRC cannot change this statutory allocation through regulatory redefinition.

D. NRC's proposed definition risks confusion

In changing the definition of LLRW, the NRC risks creating confusion for the regulated community and public in general:

- Removing the exclusion of "transuranic waste" from the definition may mislead stakeholders into thinking States must now dispose of transuranic waste.
- This would be legally incorrect.

These points form the backbone of the unified comment below.

3. Revising the Definition of LLRW Does Not Alter State Responsibility Under the LLRWPAA

The NRC proposes to revise the definition of LLRW by removing the explicit exclusion of "transuranic waste." NRC further proposes to add Table 3 to § 61.55, allowing disposal of waste containing higher concentrations of transuranic radionuclides through site-specific analyses.

However, revising the regulatory definition of LLRW, even with the addition of Table 3, does not and cannot alter the statutory allocation of responsibility established in the LLRWPAA.

A. The LLRWPAA incorporates the 1983 definition of LLRW

Section 3(a)(1) of the LLRWPAA states:

> "Each State shall be responsible for providing… for the disposal of low-level radioactive waste generated within the State, except for waste owned or generated by the Federal Government…"

Congress did not create a new definition of LLRW in the statute. Congress relied on the existing regulatory definition in § 61.2 and § 20.1003 as it existed in 1983. That definition excluded "transuranic waste."

B. State responsibility is fixed by statute, not by later regulatory changes

The LLRWPAA is a federal statute. NRC regulations cannot amend or expand statutory responsibilities.

Therefore:

- States are responsible only for LLRW as defined in 1983.
- Transuranic waste was excluded from that definition.
- States have never been responsible for transuranic waste disposal (above 100 nCi/g).
- NRC cannot expand state responsibility by redefining LLRW in 2026.

C. The addition of Table 3 does not change statutory responsibility

Table 3 may allow disposal of higher-concentration transuranic radionuclides at licensed facilities, but:

- Table 3 does not redefine "transuranic waste."
- Table 3 does not amend the LLRWPAA.
- Table 3 does not expand State responsibility.

Table 3 simply creates a new regulatory pathway for disposal of certain waste streams. It does not change the statutory allocation of responsibility between States and the Federal Government.

D. NRC must clarify that States are not responsible for transuranic waste

To avoid confusion among Agreement States, compacts, and generators, NRC should explicitly state:

> "Revisions to the regulatory definition of LLRW and the addition of Table 3 do not alter the statutory allocation of responsibility under the LLRWPAA. States remain responsible only for LLRW as defined in 1983, and transuranic waste above 100 nCi/g remains a federal responsibility."

This clarification is essential.

4. Additional Comments

A. The proposed definition undermines the coherence of the waste classification system

The waste classification system in § 61.55 was designed around the 1983 definition of LLRW. It assumed:

- transuranic radionuclides would be present only in limited concentrations,
- higher concentrations were not LLRW,
- and transuranic waste was a federal responsibility.

By redefining LLRW to include transuranic waste and adding Table 3:

- NRC is effectively rewriting the waste classification system,
- without revising the underlying statutory framework,
- and without reconciling the new definition with the LLRWPAA.

This creates internal inconsistency within Part 61.

B. The proposed definition may create confusion for interstate compacts

Compacts were formed based on:

- the 1983 definition of LLRW,
- the statutory responsibilities in the LLRWPAA,
- and the assumption that transuranic waste is a federal responsibility.

Changing the definition now may:

- create uncertainty about compact obligations,
- raise questions about acceptance criteria,
- and potentially trigger disputes between States.

C. NRC should clarify the distinction between "transuranic waste" and "waste containing transuranic radionuclides"

These terms are not interchangeable.

- "Transuranic waste" is a DOE term tied to concentration thresholds and defense waste categories.
- "Waste containing transuranic radionuclides" is a broader category.

NRC's proposed definition blurs this distinction, especially with the addition of Table 3.

D. NRC should revise § 61.55 comprehensively if it intends to redefine LLRW

If NRC intends to allow disposal of higher-concentration transuranic radionuclides:

- the waste classification tables must be revised comprehensively,
- performance objectives must be reevaluated,
- and Agreement State programs must be updated.

Changing the definition alone is insufficient.

5. Conclusion

The NRC's proposed revision to the definition of LLRW, even with the addition of Table 3, does not alter the statutory allocation of responsibility under the LLRWPAA. States remain responsible only for LLRW as defined in 1983, and transuranic waste remains a federal responsibility. NRC should clarify this explicitly and ensure that regulatory changes do not create confusion or conflict with statutory mandates.

II. Site-Specific, Graded Approach to Compliance Periods

1. The NRC's justification for a site-specific, graded approach is incomplete and internally inconsistent

The NRC asserts that the proposed rule "implements a site-specific, graded approach" to compliance periods, but the structure of the rule does not reflect a genuinely graded or site-specific framework. Instead, it imposes a uniform 10,000-year compliance period for any facility disposing of "significant quantities of long-lived radionuclides," while exempting certain existing facilities under § 61.1(b). This is not a graded approach; it is a binary regime with a single threshold and no meaningful gradation.

A true graded approach would:

- scale compliance periods based on hazard magnitude,
- allow intermediate compliance periods where appropriate,
- and provide clear, objective criteria for determining when longer periods are required.

The proposed rule does none of these.

2. The NRC does not provide a clear, objective, or reproducible definition of "significant quantities"

The entire graded framework hinges on the term "significant quantities of long-lived radionuclides." Yet:

- The term is not defined in regulation.

- NRC relies on draft guidance (NUREG-2175 Rev. 1), which has no regulatory force.
- The criteria are not numerical, objective, or reproducible.
- Licensees cannot know in advance whether they fall under the 1,000-year or 10,000-year regime.

This violates basic administrative-law principles of clarity and predictability. A graded approach cannot function if the trigger is undefined.

3. The NRC's reliance on international practices is selective and does not support the proposed rule

The NRC cites international approaches to justify its framework, but the discussion is incomplete:

- Many countries prohibit near-surface disposal of long-lived radionuclides entirely.
- Others impose strict concentration limits or depth requirements.
- Still others use generic limits, not site-specific performance assessments.

The NRC does not adopt any of these approaches. Instead, it uses international restrictions to justify a less restrictive U.S. approach, without explaining why the U.S. hazard profile or disposal environment warrants a different conclusion.

This is not a reasoned comparison; it is selective citation.

4. The NRC's depleted-uranium rationale does not justify applying a 10,000-year compliance period to all long-lived radionuclides

The NRC's technical justification for the 10,000-year compliance period is based almost entirely on depleted uranium, specifically:

- its long half-life,
- ingrowth of progeny,
- and peak hazard occurring around or after 10,000 years.

But depleted uranium is not representative of all long-lived radionuclides. Many long-lived radionuclides:

- have different decay chains,
- do not exhibit increasing hazard over time,
- or have peak doses well before 10,000 years.

The NRC does not provide technical analysis showing that all radionuclides classified as "long-lived" require a 10,000-year compliance period. Instead, it extrapolates from DU to all long-lived radionuclides without demonstrating comparable hazard persistence.

This is scientifically unsupported and inconsistent with NRC's own statement that analysis timeframes should be "commensurate with the persistence of the hazard."

5. The proposed rule is not truly risk-informed

The NRC claims the rule is "more risk-informed," but the structure contradicts that claim:

- A single compliance period (10,000 years) is imposed for all radionuclides above an undefined threshold.
- No intermediate compliance periods are allowed.
- No site-specific hazard scaling is permitted.
- No alternative performance objectives are considered.
- The exemption for § 61.1(b) facilities is not risk-based.

A risk-informed framework would allow:

- graded compliance periods (e.g., 1,000, 3,000, 5,000, 10,000 years),
- hazard-based thresholds,
- site-specific flexibility,
- and performance-based alternatives.

The proposed rule does not.

6. The NRC's treatment of uncertainty is inconsistent with its regulatory conclusions

The NRC acknowledges that:

- uncertainties increase dramatically over long timeframes,
- natural-system predictions beyond several thousand years are highly speculative,
- societal assumptions are inherently unreliable over millennia.

Yet the NRC uses these uncertainties to justify longer compliance periods rather than limiting the compliance period to a timeframe where meaningful analysis is possible. This is backwards. Under NRC's own performance-assessment guidance, uncertainty should constrain the analysis timeframe, not expand it.

7. The proposed rule does not demonstrate that a 10,000-year compliance period is necessary for adequate protection

The NRC states that the purpose of analysis is to provide "reasonable assurance" of safety while the hazard exists. But the NRC does not demonstrate that:

- a 10,000-year compliance period is necessary to achieve reasonable assurance,
- a shorter compliance period would be insufficient,

- or that performance-period analyses alone would not provide adequate insight.

The NRC simply asserts that 10,000 years is appropriate because DU peaks around that time. This is not a reasoned justification for a universal requirement. In addition, DU ingrowth (activity) does not peak at 10,000 years as the NRC's own figures demonstrate. As such, the 10,000 year proposed time period introduces a significant amount of uncertainty in the analysis while capturing only a small portion of projected ingrowth.

8. Summary of Key Deficiencies

The proposed site-specific, graded approach suffers from:

- undefined regulatory triggers ("significant quantities"),
- arbitrary exemptions,
- unsupported extrapolation from DU to all long-lived radionuclides,
- selective use of international comparisons,
- internal inconsistencies in the treatment of uncertainty,
- and a binary framework that is neither graded nor risk-informed.

These deficiencies render the proposed approach arbitrary and capricious under the Administrative Procedure Act.

III. New and Revised Technical Analyses

The NRC's proposed revisions to the technical-analysis requirements represent a significant expansion of analytical obligations for applicants and licensees. While the intent of strengthening performance evaluations is understandable, several aspects of the proposed framework require clarification to ensure that the analyses are technically justified, risk-informed, and consistent with the stated objectives of Part 61.

1. Performance Assessment

The proposed rule requires a revised performance assessment using a 10,000-year compliance period for facilities disposing of "significant quantities of long-lived radionuclides." However, the technical basis for applying a uniform 10,000-year period is not fully demonstrated.

The NRC's justification relies heavily on the characteristics of depleted uranium, particularly progeny ingrowth and peak hazard occurring at or beyond 10,000 years. Depleted uranium is not representative of all long-lived radionuclides. Many radionuclides with long half-lives do not exhibit increasing hazard over time, do not have comparable decay chains, and may reach peak concentrations well before 10,000 years.

The proposed rule does not provide a technical demonstration that all radionuclides classified as "long-lived" require a 10,000-year compliance period. Without radionuclide-specific analysis, the requirement appears overly broad and not fully risk-informed.

Additionally, the term "significant quantities" is not defined in regulation, and reliance on draft guidance in NUREG-2175 does not provide regulatory clarity. A performance-assessment trigger of this importance requires a clear, objective, and reproducible definition.

2. Inadvertent Intruder Assessment

The proposed rule requires an inadvertent intruder assessment using a 10,000-year compliance period and a 5 mSv (500 mrem) annual dose limit. While intruder protection is a longstanding component of Part 61, the extension of the intruder analysis to 10,000 years raises several concerns.

The NRC acknowledges that societal conditions, land-use patterns, and institutional controls cannot be reliably projected over millennial timeframes. Yet the proposed rule requires intruder scenarios to be evaluated over 10,000 years without explaining how such scenarios can be meaningfully constructed or justified.

If the NRC believes that intruder scenarios beyond 1,000 years are necessary, the rule should provide a clear technical basis for the assumed intruder behaviors, exposure pathways, and land-use conditions over such extended periods. Without this, the intruder assessment risks becoming speculative rather than informative.

3. Operational Safety Assessment

The operational safety assessment requirements remain largely consistent with existing Part 61 provisions. However, the proposed rule does not clearly explain how the expanded analytical framework interacts with operational safety considerations.

If the NRC intends operational safety assessments to remain focused on near-term worker and public protection, it should clarify that these assessments are not expected to incorporate the extended timeframes or long-term uncertainties associated with performance assessments. Without such clarification, licensees may interpret the expanded analytical requirements as applying to operational safety as well, creating unnecessary confusion.

4. Site Stability Assessment

The proposed rule retains the requirement for a site stability assessment but does not fully explain how stability considerations relate to the new 10,000-year compliance period.

Site stability is inherently tied to near-surface disposal conditions, engineered barriers, and environmental processes that can be evaluated with reasonable confidence over decades to centuries. The NRC does not explain how stability assessments are expected to address conditions thousands of years in the future, nor does it clarify whether stability analyses are intended to support or supplement the extended performance assessment.

If stability assessments are intended to remain focused on near-term post-closure conditions, the rule should state this explicitly. If they are intended to support millennial-scale analyses, the NRC should provide technical guidance on how stability can be meaningfully evaluated over such timeframes.

5. Performance Period Assessment

The proposed rule introduces performance period analyses beyond the 10,000-year compliance period. While long-term insight can be valuable, the NRC acknowledges that uncertainties in natural systems, engineered barriers, and societal conditions increase substantially over extended timeframes.

The rule does not explain how performance period analyses are expected to provide meaningful information given these uncertainties, nor does it identify the regulatory purpose of such analyses. If performance period analyses are intended to inform waste acceptance criteria, disposal depth, or engineered-barrier design, the rule should specify how these analyses will be used in regulatory decision-making.

Additionally, the NRC does not explain why performance period analyses are required for all long-lived radionuclides rather than only those with hazard persistence beyond 10,000 years. A risk-informed approach would tailor performance period requirements to radionuclide-specific hazard characteristics.

6. Summary

The proposed revisions to the technical-analysis requirements represent a substantial expansion of analytical obligations. However, several aspects of the framework, particularly the uniform 10,000-year compliance period, the undefined “significant quantities” threshold, the feasibility of intruder and stability analyses over millennial timeframes, and the purpose of performance period analyses—require additional clarification to ensure that the rule is technically justified, risk-informed, and consistent with the underlying principles of Part 61.

IV. Revised Performance Objectives

The NRC's proposed revisions to the performance objectives in §§ 61.41 through 61.44 represent a significant restructuring of the regulatory framework governing protection of the public, inadvertent intruders, workers, and long-term site stability. While aligning performance objectives with the revised analytical framework is a reasonable goal, several aspects of the proposed revisions raise concerns under the Administrative Procedure Act (APA), including issues identified in *FCC v. Fox Television Stations* and *Motor Vehicle Manufacturers Association v. State Farm*.

1. § 61.41 – Protection of the General Population from Releases of Radioactivity

The NRC proposes dividing § 61.41 into subsections (a), (b), and (c), with subsection (a) establishing a new annual dose limit of 0.25 mSv (25 mrem) for the compliance period, subsection (b) addressing performance-period considerations, and subsection (c) retaining the existing organ-specific dose limits for licensees meeting § 61.1(b).

a. Inconsistency between rationale and regulatory structure

The NRC states that the revised dose limit in § 61.41(a) is necessary to align Part 61 with the dose methodology in Part 20. However, § 61.41(c) preserves the existing organ-specific limits for § 61.1(b) licensees. The proposed rule does not explain why two fundamentally different dose-calculation methodologies are appropriate for facilities that pose similar hazards.

This mismatch between the stated rationale (harmonization with Part 20) and the regulatory action (dual dose frameworks) reflects the type of inconsistency *State Farm* identifies as arbitrary and capricious.

b. Failure to acknowledge and justify a change in interpretation

The NRC does not acknowledge that it is changing its interpretation of § 61.41 by introducing TEDE-based limits for most licensees while retaining organ-specific limits for others. Under *Fox*, the agency must acknowledge the change and explain why the prior approach is being abandoned. The proposed rule does not provide this explanation.

c. Undefined performance-period expectations

The proposed § 61.41(b) requires licensees to "effectively manage" releases during the performance period, but the rule does not define what constitutes effective management or how such management is demonstrated. Without clear criteria, the requirement is not actionable and risks inconsistent application.

2. § 61.42 – Protection of Individuals from Inadvertent Intrusion

The NRC proposes dividing § 61.42 into subsections (a), (b), and (c), with subsection (a) establishing a new inadvertent intruder dose limit of 5 mSv (500 mrem) for the compliance period.

a. Lack of reasoned explanation for millennial-scale intruder protection

The proposed rule requires intruder protection over the full compliance period, including 10,000 years for facilities disposing of significant quantities of long-lived radionuclides. The Federal Register discussion acknowledges that societal conditions, land-use patterns, and institutional controls cannot be reliably projected over such timeframes.

The rule does not explain how intruder scenarios can be meaningfully constructed over 10,000 years, nor does it address the feasibility of modeling intruder behavior over millennia. This omission reflects a failure to consider an important aspect of the problem, as required under *State Farm*.

b. Unacknowledged change in interpretation

The NRC does not acknowledge that it is changing its interpretation of § 61.42 by introducing a new intruder dose limit for most licensees while retaining the existing framework for § 61.1(b) licensees. Under *Fox*, the agency must acknowledge the change and explain why the prior interpretation is being abandoned. The proposed rule does not provide this explanation.

3. § 61.43 – Protection of Individuals During Operations

The NRC proposes revising § 61.43 to specify an annual dose limit directly and require demonstration of compliance through the operational safety assessment.

a. Need for clarity regarding the relationship between operational and long-term dose limits

The proposed revision improves clarity by specifying an annual dose limit rather than referencing § 61.41. However, the rule does not explain how operational dose limits relate to compliance-period and performance-period dose limits. Without clarification, licensees may interpret the expanded analytical requirements as applying to operational safety as well, creating unnecessary confusion.

b. Failure to consider an important aspect of the problem

The proposed rule does not address how operational safety assessments are expected to interact with the expanded long-term analytical framework. This omission reflects a failure to consider an important aspect of the problem.

4. § 61.44 – Stability of the Disposal Site After Closure

The NRC proposes revising § 61.44 to require demonstration of compliance through the site stability assessment and to clarify that stability need not be demonstrated for the full compliance period.

a. Lack of clear criteria for acceptable instability

The Federal Register text states that "some instability may be tolerable," but does not provide criteria for determining what level of instability is acceptable. Without clear criteria, stability assessments may be applied inconsistently.

b. Inconsistency between rationale and regulatory action

The NRC states that stability is only significant if it translates to health and safety impacts, yet the rule requires stability assessments to support compliance with §§ 61.41 and 61.42 without explaining how stability expectations relate to dose-based performance objectives. This mismatch reflects the type of inconsistency *State Farm* identifies as arbitrary and capricious.

c. Unacknowledged change in interpretation

The NRC does not acknowledge that it is changing its interpretation of § 61.44 by introducing performance-period considerations and linking stability assessments to compliance-period dose limits. Under *Fox*, the agency must acknowledge the change and explain why the prior interpretation is being abandoned.

d. Summary

The proposed revisions to the performance objectives in §§ 61.41 through 61.44 introduce new dose limits, restructure existing requirements, and integrate performance-period considerations. However, several aspects of the proposed framework—particularly the lack of clear criteria for performance-period expectations, the feasibility of intruder and stability assessments over millennial timeframes, and the relationship between stability and dose-based objectives raise concerns under *FCC v. Fox* and *State Farm*.

V. Flexibility for Facilities To Develop Site-Specific Waste Acceptance Criteria

The NRC's proposed revisions to § 61.58 represent a significant shift in how waste acceptance criteria (WAC) are established and applied. The stated intent, to provide a more risk-informed, site-specific approach, is reasonable. However, several aspects of the proposed framework require clarification to ensure that the WAC provisions are technically justified, administratively consistent, and aligned with the broader revisions to Part 61.

1. The proposed WAC framework is not fully risk-informed

The NRC states that the revised § 61.58 "would provide a risk-informed approach" by allowing licensees to develop site-specific WAC based on performance assessments rather than relying solely on generic concentration limits. While this is a positive direction, the proposed rule does not fully implement a risk-informed structure.

The NRC states that licensees "other than those meeting § 61.1(b)" must develop WAC, but does not specify:

- when generic WAC are sufficient,
- when site-specific WAC are required,
- or how licensees should determine which approach is appropriate.

Without clear criteria, the WAC framework risks inconsistent application.

2. The undefined "significant quantities" threshold undermines the WAC structure

The proposed rule repeatedly relies on the concept of "significant quantities of long-lived radionuclides" to determine when extended analyses and site-specific WAC are required. However:

- the term is not defined in regulation,
- the criteria are not numerical or objective,
- and reliance on draft guidance (NUREG-2175) does not provide regulatory clarity.

Because WAC are directly tied to the technical analyses in § 61.13, the absence of a clear definition of "significant quantities" creates uncertainty for licensees and regulators. This is a recurring concern throughout the proposed rule.

3. The proposed WAC structure raises administrative-law concerns under Fox and State Farm

a. Unacknowledged change in interpretation

The NRC does not acknowledge that it is changing its interpretation of § 61.58 by replacing the longstanding "alternative classification and characteristics" provision with a new WAC framework. Under *FCC v. Fox*, the agency must:

- acknowledge the change,
- explain why the prior interpretation is being abandoned, and
- demonstrate that the new interpretation is permissible.

The proposed rule does not provide this explanation.

b. Mismatch between rationale and regulatory action

The NRC states that the revised WAC framework is intended to reduce unnecessary regulatory burden by allowing site-specific flexibility. However, the proposed rule simultaneously:

- expands analytical requirements,
- imposes new certification and characterization obligations,
- and requires site-specific WAC for all licensees except those meeting § 61.1(b).

This is not a reduction in burden; it is a substantial increase. The stated rationale does not match the regulatory action, which is a classic *State Farm* deficiency.

4. The proposed WAC framework is inconsistent with the NRC's GTCC licensing position

The NRC states that Agreement State licensees remain constrained by the statutory Class C limits in 42 U.S.C. 2021c(b)(1)(D). However, the proposed rule also states that:

> "waste with radionuclide concentrations in excess of the Class C limits… must be disposed of in a site licensed by the Commission."

This language assumes that the NRC has **exclusive licensing authority** over GTCC disposal facilities, a position that is not supported by the AEA, the LLRWPAA, or decades of NRC interpretation. Because the WAC framework relies on this assumption, the proposed rule embeds a legal conclusion that is not adequately justified.

This creates a structural inconsistency: the WAC provisions depend on a licensing authority that the NRC has not demonstrated it possesses.

5. The relationship between WAC and the LLW classification system is unclear

The NRC states that:

- waste generators must continue to classify LLW under § 61.55,
- transportation and manifesting practices will not change,
- and generic concentration limits remain in place.

However, the proposed rule also states that:

- site-specific WAC may replace generic concentration limits,
- alternative classification provisions in § 61.55(c) and current § 61.58 are being removed,
- and exemptions under § 61.6 may be used instead.

This creates several ambiguities:

a. Are generic concentration limits still binding?

If site-specific WAC may replace generic limits, the rule should clarify when generic limits apply and when they do not.

b. How do site-specific WAC interact with LLW classification?

If site-specific WAC allow disposal of waste that exceeds generic concentration limits, the rule should explain how such waste is classified for shipment and manifesting.

c. What is the role of § 61.6 exemptions?

The proposed rule appears to shift all alternative classification requests to § 61.6, but does not explain how § 61.6 is intended to function in this context.

6. The proposed WAC framework may create inconsistent regulatory obligations for § 61.1(b) licensees

The NRC proposes that § 61.1(b) licensees:

- are exempt from the revised performance objectives,
- are exempt from the revised technical analyses,
- but must still implement WAC approved by the regulator.

This creates a structural inconsistency: WAC are supposed to be derived from the technical analyses in § 61.13, but § 61.1(b) licensees are exempt from those analyses. The rule does not explain how WAC for § 61.1(b) licensees should be developed or evaluated.

7. Summary

The proposed revisions to § 61.58 introduce a more flexible, site-specific approach to waste acceptance criteria. However, several aspects of the proposed framework—particularly the undefined "significant quantities" threshold, the inconsistent treatment of § 61.1(b) licensees, the reliance on an unsubstantiated GTCC licensing position, and the mismatch between the stated rationale and the regulatory action, require additional clarification to ensure that the WAC provisions are technically justified, risk-informed, and consistent with the Administrative Procedure Act.

VI. Safety Case

The NRC's proposal to require a "safety case" for new applicants and licensees that do not meet the criteria in § 61.1(b) represents a significant expansion of the documentation and analytical obligations under Part 61. While the NRC's stated intent, to improve transparency, align with international practice, and consolidate safety information, is understandable, several aspects of the proposed safety-case requirement raise technical, regulatory, and administrative-law concerns.

1. The proposed safety-case requirement is not clearly justified under Fox

Under *FCC v. Fox Television Stations*, when an agency changes its regulatory interpretation or imposes new obligations, it must:

- acknowledge the change,
- explain why the prior approach is inadequate, and
- demonstrate that the new approach is permissible.

The NRC does not acknowledge that the proposed safety-case requirement represents a new regulatory obligation. For nearly four decades, the NRC has concluded that §§ 61.10–61.16, together with the performance objectives and technical requirements, provide adequate assurance of safety without a formal safety case. The Federal Register text states that the existing framework "ensures that a licensee or applicant demonstrates the safety of a proposed land disposal facility," yet the NRC now proposes to add a new, overarching safety-case requirement without explaining:

- why the existing framework is no longer sufficient,
- what deficiencies have been identified, or
- why a safety case is necessary for some licensees but not others.

This omission is a Fox deficiency.

2. The proposed safety-case requirement exhibits State Farm inconsistencies

Under *State Farm*, an agency acts arbitrarily and capriciously when its rationale does not match its regulatory action or when it fails to consider important aspects of the problem. Several inconsistencies arise:

a. The NRC states that the existing framework is adequate, yet proposes a new requirement

The Federal Register text repeatedly states that the current requirements already ensure safety. If so, the NRC must explain why an additional safety-case requirement is necessary. The proposed rule does not provide this explanation.

b. The safety case is required only for licensees not meeting § 61.1(b)

If a safety case is necessary to ensure adequate protection, the basis for exempting § 61.1(b) licensees is unclear. Conversely, if § 61.1(b) licensees do not need a safety case, the rule does not explain why future applicants do. This mismatch between rationale and regulatory action is a State Farm problem.

c. The NRC does not explain how the safety case interacts with existing requirements

The proposed rule states that the safety case is "a high-level evaluation" summarizing the technical analyses in § 61.13. However, the rule does not explain:

- whether the safety case adds new substantive requirements,
- whether it merely repackages existing analyses,
- how it will be evaluated, or
- how it will affect licensing decisions.

This lack of clarity reflects a failure to consider important aspects of the problem.

3. The proposed safety case duplicates existing requirements without clear benefit

The safety case is described as:

- a summary of the safety basis,
- a description of the strength and reliability of technical analyses,
- a discussion of defense-in-depth, and
- a consolidation of site, design, managerial, engineering, regulatory, and institutional controls.

However, these elements are already required under:

- §§ 61.10–61.16 (application content),
- § 61.13 (technical analyses),
- § 61.44 (site stability),
- § 61.43 (operational safety),
- § 61.55–61.58 (waste acceptance), and
- Part 20 (radiation protection).

The proposed rule does not identify any gap in the existing framework that the safety case is intended to fill. Without a clear purpose, the safety case risks becoming a duplicative administrative burden rather than a meaningful safety enhancement.

4. The proposed safety-case update requirements are vague and potentially burdensome

The NRC proposes that the safety case must be updated:

- at license renewal, and
- at site closure,
- if "new information that could significantly impact safety" is acquired.

However, the rule does not define:

- what constitutes "new information,"
- what qualifies as "significant,"
- how licensees should determine when an update is required, or
- how regulators will evaluate compliance.

Without clear criteria, the update requirement risks inconsistent application and unnecessary burden.

5. The proposed defense-in-depth discussion lacks clear regulatory criteria

The NRC proposes that the safety case include a description of defense-in-depth protections. While defense-in-depth is an established concept in reactor regulation, its application to LLW disposal is fundamentally different. The Federal Register text acknowledges this difference but does not provide:

- criteria for acceptable defense-in-depth,
- guidance on how to evaluate passive barriers over millennial timeframes, or
- clarity on how defense-in-depth relates to compliance with §§ 61.41 and 61.42.

Without clear criteria, defense-in-depth risks becoming a subjective, qualitative requirement rather than a measurable regulatory standard.

6. The safety-case requirement is inconsistent with the NRC's GTCC licensing position

The proposed rule exempts § 61.1(b) licensees from the safety-case requirement. However, the NRC's GTCC licensing position (asserting exclusive federal licensing authority) would convert certain Agreement State facilities into NRC-licensed facilities. The rule does not explain:

- whether such facilities would then require safety cases,
- how safety cases would be developed for existing facilities, or
- how the exemption interacts with the NRC's GTCC interpretation.

This inconsistency further undermines the clarity of the proposed safety-case framework.

7. Summary

The proposed safety-case requirement introduces a new, overarching documentation obligation for most Part 61 licensees. However, the NRC has not:

- acknowledged that it is changing its interpretation (Fox),
- explained why the existing framework is inadequate (Fox),
- demonstrated a rational connection between the stated rationale and the regulatory action (State Farm),
- provided clear criteria for safety-case content or updates, or
- clarified how the safety case interacts with existing requirements.

As drafted, the safety-case requirement appears duplicative, inconsistently applied, and insufficiently justified under the Administrative Procedure Act. Additional clarification and justification are necessary to ensure that the safety-case requirement is technically meaningful, risk-informed, and administratively sound.

VII. Safety Criteria and Limits for Licensing Land Disposal of GTCC Waste

The NRC's proposed safety criteria and limits for licensing land disposal of GTCC waste represent one of the most consequential elements of the rulemaking. While the NRC's intent, to provide additional disposal options for GTCC waste within a risk-informed, performance-based framework, is understandable, several aspects of the proposed approach require clarification to ensure that the regulatory structure is technically justified, internally consistent, and compliant with the Administrative Procedure Act.

1. The proposed GTCC disposal framework relies on an unacknowledged change in interpretation (Fox)

The NRC's proposal assumes that the Commission has exclusive licensing authority over GTCC disposal facilities. This assumption underlies:

- the requirement that GTCC waste exceeding Class C limits must be disposed of in a "site licensed by the Commission,"
- the creation of "specialized land disposal facilities,"
- the imposition of new GTCC-specific performance objectives, and
- the establishment of upper concentration limits for GTCC disposal.

However, the NRC does not acknowledge that this represents a change in interpretation from decades of prior NRC statements and practice. Under *FCC v. Fox Television Stations*, the agency must:

- acknowledge the change,
- explain why the prior interpretation is being abandoned, and
- demonstrate that the new interpretation is permissible under the AEA and LLRWPAA.

The proposed rule does not satisfy these requirements. The GTCC disposal framework is therefore built on an unacknowledged and unsubstantiated legal premise.

2. The proposed GTCC safety criteria exhibit State Farm inconsistencies

Under *State Farm*, an agency acts arbitrarily and capriciously when its rationale does not match its regulatory action or when it fails to consider important aspects of the problem. Several inconsistencies arise in the GTCC section:

a. The NRC does not explain how the proposed limits relate to the performance objectives

The proposed upper limits for GTCC disposal are based on prior NRC staff analyses, but the rule does not explain:

- how these limits relate to the 5 mSv intruder dose limit,
- how they relate to the 0.25 mSv public dose limit,
- how they relate to the 10,000-year compliance period, or
- how they relate to the performance-period analyses.

Without a clear connection between the limits and the performance objectives, the regulatory structure lacks a rational foundation.

b. The NRC does not address the feasibility of demonstrating intruder protection over millennial timeframes

The proposed rule requires licensees to demonstrate that an inadvertent intruder will not disrupt or contact emplaced waste during the compliance period (up to 10,000 years). The NRC acknowledges that engineered barriers cannot be reliably projected over such timeframes, yet the rule requires licensees to demonstrate barrier performance over millennia.

This is a failure to consider an important aspect of the problem, as required under *State Farm*.

3. The proposed GTCC concentration limits require additional justification

The NRC proposes two sets of limits:

1. An upper limit of 370,000 Bq/g (10,000 nCi/g) for long-lived transuranic radionuclides in near-surface disposal.
2. A broader set of radionuclide-specific limits for specialized land disposal facilities (the table you provided).

Several concerns arise:

a. The NRC does not explain why the 10,000 nCi/g limit is appropriate for all GTCC waste

The NRC states that staff analyses found difficulty demonstrating intruder protection above this level. However:

- the analyses were limited to specific waste streams,
- the rule does not provide radionuclide-specific justification, and
- the rule does not explain how site-specific conditions could mitigate the hazard.

b. The NRC does not explain how the table of radionuclide limits was derived

The table includes limits for:

- alpha-emitters,
- beta/photon emitters,
- activated metals,
- Tc-99, and
- I-129.

However, the rule does not provide:

- the technical basis for each limit,
- the assumptions underlying the analyses,
- the exposure scenarios considered, or

- how these limits relate to the performance objectives.

Without this information, the limits appear arbitrary.

c. The NRC does not explain how the limits interact with site-specific WAC

If site-specific WAC may allow disposal above generic limits, the rule should clarify:

- when the table limits are binding,
- when they may be exceeded, and
- how licensees should justify deviations.

The proposed rule does not provide this clarity.

4. The proposed GTCC framework is not fully risk-informed

The NRC states that the GTCC disposal framework is risk-informed and performance-based. However, the rule:

- imposes prescriptive depth and barrier requirements,
- imposes prescriptive concentration limits,
- requires millennial-scale intruder protection,
- does not allow graded compliance periods for GTCC waste, and
- does not allow graded intruder scenarios.

A risk-informed framework would allow:

- hazard-based scaling of requirements,
- site-specific tailoring of depth and barrier requirements,
- radionuclide-specific limits, and
- performance-based alternatives.

The proposed rule does not.

5. The proposed operational safety assessment requirements require clarification

The NRC proposes quantitative operational safety assessments for GTCC waste. However, the rule does not:

- specify the required level of detail,
- explain how these assessments relate to Part 20 limits,
- explain how accident scenarios should be modeled, and

- explain how operational assessments relate to long-term performance assessments.

Without clear criteria, the requirement risks inconsistent application.

6. The proposed GTCC waste-characteristics requirements require additional justification

The NRC proposes new requirements in § 61.56(c) for GTCC waste, including consideration of:

- heat generation,
- radiolysis,
- criticality, and
- dispersibility.

These are reasonable considerations, but the rule does not explain:

- how these characteristics should be evaluated,
- what thresholds apply, or
- how these characteristics relate to the performance objectives.

Without clear criteria, the requirement is not actionable.

7. Summary

The proposed safety criteria and limits for licensing land disposal of GTCC waste introduce new disposal options and new regulatory requirements. However, several aspects of the proposed framework, particularly the unacknowledged change in interpretation regarding GTCC licensing authority, the mismatch between rationale and regulatory action, the lack of clear technical bases for concentration limits, the feasibility of millennial-scale intruder protection, and the inconsistent application of risk-informed principles, require additional clarification to ensure that the GTCC disposal framework is technically justified, risk-informed, and compliant with the Administrative Procedure Act.

VIII. Disposal Depth

The NRC's proposed disposal-depth requirements for GTCC waste and waste containing significant quantities of long-lived radionuclides represent a substantial expansion of prescriptive design criteria within Part 61. While disposal depth is an important factor in limiting inadvertent intrusion and mitigating long-term uncertainties, several aspects of the proposed framework require clarification to ensure that the requirements are technically justified, risk-informed, and consistent with the Administrative Procedure Act.

1. The proposed disposal-depth requirements reflect an unacknowledged change in interpretation (Fox)

Under *FCC v. Fox Television Stations*, when an agency changes its regulatory interpretation or imposes new obligations, it must:

- acknowledge the change,
- explain why the prior approach is inadequate, and
- demonstrate that the new approach is permissible.

The NRC does not acknowledge that the proposed disposal-depth requirements represent a new regulatory obligation. For decades, Part 61 has required:

- 5 meters of depth or a 500-year intruder barrier only for Class C waste,
- with no minimum depth requirement for GTCC waste,
- and no minimum depth requirement for waste containing long-lived radionuclides such as depleted uranium.

The proposed rule now imposes:

- a mandatory 5-meter minimum depth for GTCC waste and long-lived radionuclide waste in near-surface disposal, and
- a mandatory 30-meter minimum depth for specialized land-disposal facilities.

The NRC does not acknowledge that this is a departure from the longstanding regulatory structure, nor does it explain why the prior approach is insufficient. This omission is a Fox deficiency.

2. The proposed disposal-depth requirements exhibit State Farm inconsistencies

Under *State Farm*, an agency acts arbitrarily and capriciously when its rationale does not match its regulatory action or when it fails to consider important aspects of the problem. Several inconsistencies arise:

a. The NRC states that prescriptive design features are difficult to justify, yet imposes prescriptive depth requirements

The Federal Register text acknowledges that prescriptive design requirements are difficult to impose given the diversity of disposal environments. Yet the proposed rule imposes:

- a fixed 5-meter depth for near-surface GTCC and long-lived radionuclide waste, and
- a fixed 30-meter depth for specialized facilities.

The rule does not explain why these specific depths are appropriate across all sites, nor does it provide a technical basis for selecting these values. This mismatch between rationale and regulatory action is a State Farm deficiency.

b. The NRC does not explain how disposal depth relates to the performance objectives

The proposed rule does not clearly explain:

- how the 5-meter depth ensures compliance with the 5 mSv intruder dose limit,
- how the 30-meter depth ensures compliance with the 0.25 mSv public dose limit,
- how depth requirements interact with the 10,000-year compliance period, or
- how depth requirements relate to performance-period analyses.

Without a clear connection between depth requirements and performance objectives, the regulatory structure lacks a rational foundation.

c. The NRC does not address the feasibility of demonstrating intruder protection over millennial timeframes

The proposed rule requires licensees to demonstrate that an inadvertent intruder will not disrupt or contact emplaced waste during the compliance period (up to 10,000 years). The NRC acknowledges that engineered barriers cannot be reliably projected over such timeframes, yet the rule requires licensees to demonstrate barrier performance over millennia.

This is a failure to consider an important aspect of the problem, as required under *State Farm*.

3. The proposed disposal-depth framework is not fully risk-informed

The NRC states that disposal depth is intended to mitigate uncertainties associated with:

- future human activities,
- geomorphic evolution, and
- long-term environmental processes.

However, the proposed framework does not reflect a fully risk-informed approach:

a. The rule imposes fixed depth requirements rather than hazard-based scaling

A risk-informed framework would allow disposal depth to scale with:

- radionuclide hazard,
- wasteform durability,

- site-specific environmental conditions, and
- intruder-scenario likelihood.

The proposed rule does not provide such flexibility.

b. The rule does not allow graded depth requirements for different GTCC waste streams

The NRC acknowledges that GTCC waste streams vary widely in hazard characteristics, yet imposes a uniform depth requirement. A risk-informed approach would tailor depth requirements to radionuclide-specific hazard profiles.

c. The rule does not explain how depth interacts with site-specific WAC

If site-specific WAC may allow disposal above generic limits, the rule should clarify:

- when depth requirements are binding,
- when they may be exceeded, and
- how licensees should justify deviations.

The proposed rule does not provide this clarity.

4. The proposed reference-point distinction requires additional justification

The NRC proposes different reference points for determining disposal depth:

- Class C waste: depth measured from the top of the cover.
- GTCC and long-lived radionuclide waste: depth measured from the land surface.

The rule does not explain:

- why the reference point must differ,
- how the distinction affects intruder-scenario modeling, or
- how the distinction relates to geomorphic evolution.

Without a clear technical basis, the distinction appears arbitrary.

5. The proposed disposal-depth requirements may conflict with the NRC's GTCC licensing position

The NRC's assumption of exclusive federal licensing authority for GTCC disposal facilities affects:

- which facilities must meet the 30-meter depth requirement,

- which facilities must meet the 5-meter depth requirement, and
- how Agreement State facilities are treated.

The rule does not explain how disposal-depth requirements apply to:

- existing Agreement State facilities,
- future NRC-licensed facilities, or
- facilities that may transition between regulatory authorities.

This inconsistency further undermines the clarity of the proposed disposal-depth framework.

6. Summary

The proposed disposal-depth requirements introduce new prescriptive design criteria for GTCC waste and waste containing significant quantities of long-lived radionuclides. However, the NRC has not:

- acknowledged that it is changing its interpretation (Fox),
- explained why the existing framework is inadequate (Fox),
- demonstrated a rational connection between the stated rationale and the regulatory action (State Farm),
- provided clear technical bases for the specific depth requirements,
- clarified how depth requirements relate to performance objectives, or
- ensured that the disposal-depth framework is fully risk-informed.

Additional clarification and justification are necessary to ensure that the disposal-depth requirements are technically meaningful, risk-informed, and administratively sound.

IX. Physical Protection of LLW Including GTCC Waste

The NRC's proposed revisions to physical protection requirements for LLRW and GTCC waste introduce new security considerations intended to reflect material attractiveness, reduce unnecessary regulatory burden, and align with international recommendations. While the intent is reasonable, several aspects of the proposed framework require clarification to ensure that the physical-protection provisions are technically justified, risk-informed, and consistent with the Administrative Procedure Act.

1. The proposed physical-protection revisions rely on an unacknowledged change in interpretation

The NRC proposes to revise 10 CFR part 73 to exempt "SNM of limited attractiveness" at NRC-licensed land-disposal facilities from certain physical-protection requirements. This

represents a new regulatory interpretation of how SNM in waste should be treated under Part 73.

Under *FCC v. Fox Television Stations*, when an agency changes its interpretation or imposes new obligations, it must:

- acknowledge the change,
- explain why the prior approach is inadequate, and
- demonstrate that the new approach is permissible.

The proposed rule does not acknowledge that:

- Part 73 has historically applied to SNM prior to disposal,
- Part 61 has historically treated SNM in waste as subject to radiological-hazard-based regulation, not common-defense-and-security regulation, and
- the NRC has not previously applied material-attractiveness criteria to LLW or GTCC waste.

The NRC does not explain why the prior approach is insufficient or why the new approach is necessary. This omission is a Fox deficiency.

2. The proposed physical-protection framework exhibits State Farm inconsistencies

Under *State Farm*, an agency acts arbitrarily and capriciously when its rationale does not match its regulatory action or when it fails to consider important aspects of the problem. Several inconsistencies arise:

a. The NRC states that SNM in waste is of low attractiveness, yet proposes new regulatory requirements

The Federal Register text repeatedly emphasizes that:

- SNM in waste is highly dilute,
- SNM is difficult to separate from waste,
- large volumes of waste would be required to obtain usable quantities, and
- theft of sufficient quantities would be easily detected.

These statements strongly support the conclusion that SNM in waste poses minimal common-defense-and-security risk. Yet the proposed rule introduces new physical-protection requirements and new exemptions, implying that existing regulations are insufficient.

The NRC does not explain why new requirements are necessary given its own conclusion that SNM in waste is unattractive and difficult to misuse. This mismatch between rationale and regulatory action is a State Farm deficiency.

b. The NRC does not explain how material-attractiveness criteria will be applied

The proposed rule references:

- dilution,
- separability,
- container similarity,
- processing difficulty, and
- logistical challenges.

However, the rule does not specify:

- how these factors will be quantified,
- how licensees should demonstrate "limited attractiveness,"
- how regulators will evaluate compliance, or
- how material-attractiveness criteria interact with Part 73 thresholds.

Without clear criteria, the requirement is not actionable.

c. The NRC does not address the interaction between Part 73 and Part 61

The proposed rule states that:

- Part 73 applies only to NRC-licensed facilities,
- Agreement State facilities are not subject to Part 73, and
- SNM in waste may require physical protection under Part 73 prior to disposal.

However, the rule does not explain:

- how physical-protection requirements apply during waste transfer between Agreement State and NRC-licensed facilities,
- how physical-protection requirements apply to GTCC waste if the NRC's GTCC licensing position changes, or
- how physical-protection requirements interact with site-specific WAC.

This lack of clarity reflects a failure to consider important aspects of the problem.

3. The proposed exemption for SNM of limited attractiveness requires additional justification

The NRC proposes an exemption from § 73.67 for SNM of limited attractiveness at NRC-licensed land-disposal facilities. While the concept is reasonable, several issues require clarification:

a. The rule does not define "limited attractiveness"

The proposed rule references:

- SNM concentrations around 0.01%,
- large waste volumes,
- processing difficulty, and
- logistical challenges.

However, the rule does not define:

- numerical thresholds,
- radionuclide-specific criteria,
- wasteform considerations, or
- separability metrics.

Without clear criteria, the exemption risks inconsistent application.

b. The rule does not explain how the exemption interacts with other security requirements

The proposed exemption does not relieve licensees from:

- Part 20 Subpart I,
- Part 37, or
- other physical-protection requirements.

The rule does not explain:

- how these requirements overlap,
- how conflicts will be resolved, or
- how licensees should determine which requirements apply.

c. The rule does not explain how the exemption interacts with GTCC disposal authority

The NRC's assumption of exclusive federal licensing authority for GTCC disposal facilities affects:

- which facilities may use the exemption,
- how Agreement State facilities are treated, and
- how SNM in GTCC waste is regulated.

The rule does not address these issues.

4. The proposed physical-protection framework is not fully risk-informed

The NRC states that the proposed exemption is intended to provide "risk-informed security requirements." However:

- the rule does not provide graded thresholds,
- the rule does not provide radionuclide-specific criteria,
- the rule does not provide wasteform-specific criteria, and
- the rule does not provide site-specific tailoring.

A risk-informed framework would allow:

- hazard-based scaling of requirements,
- site-specific tailoring of security measures, and
- performance-based alternatives.

The proposed rule does not.

5. Summary

The proposed revisions to physical-protection requirements for LLW and GTCC waste introduce new security considerations intended to reflect material attractiveness and reduce unnecessary regulatory burden. However, the NRC has not:

- acknowledged that it is changing its interpretation (Fox),
- explained why the existing framework is inadequate (Fox),
- demonstrated a rational connection between the stated rationale and the regulatory action (State Farm),
- provided clear criteria for material attractiveness,
- clarified how Part 73 interacts with Part 61, or
- ensured that the physical-protection framework is fully risk-informed.

Additional clarification and justification are necessary to ensure that the physical-protection requirements are technically meaningful, risk-informed, and administratively sound.

X. Criticality Safety of LLW Including GTCC Waste

Overview

The NRC proposes revisions to §61.16(b) and §61.23(j) to clarify criticality safety requirements for low-level radioactive waste (LLW) and greater-than-Class-C (GTCC) waste during operations and post-closure. The revisions rely heavily on the fissile-material exemption in §71.15(c) and the transportation-based analyses in NUREG/CR-7239. The NRC also proposes a new requirement in §61.16(b)(3) for applicants disposing of more than a critical mass of fissile material to identify design attributes that limit reconcentration following disposal.

While the intent to clarify criticality safety expectations is appropriate, several aspects of the proposed approach raise technical, regulatory, and consistency concerns.

Comments

1. The NRC has not demonstrated that transportation accident analyses bound disposal-facility conditions

The proposed rule asserts that NUREG/CR-7239 provides a "bounding analysis" for disposal-facility operations because transportation accident scenarios (fire, water immersion, worst-case geometry, unlimited accumulation) are representative of extreme conditions at LLW disposal facilities. This conclusion is not supported.

Transportation accident scenarios are:

- Short-duration
- Transient
- Defined by regulatory accident conditions

Disposal-facility conditions are:

- Long-term (centuries to millennia)
- Geochemically dynamic
- Subject to corrosion, leaching, radionuclide migration, and reconcentration

The NRC provides no technical demonstration that transportation scenarios bound the long-term post-closure environment of a land disposal facility. The assumption of equivalence between transportation and disposal conditions is a foundational element of the proposed exemption, yet it is not justified.

Recommendation: NRC should provide a technical basis demonstrating that transportation accident scenarios bound disposal-facility conditions, or reconsider the applicability of §71.15(c) to disposal operations.

2. Homogeneity assumptions underlying §71.15(c) are not realistic for LLRW or GTCC wasteforms

The exemption requires:

- ≥2000 g non-fissile material per 1 g fissile
- Fissile material dispersed within ≥360 kg contiguous non-fissile material

These assumptions may be reasonable for transportation packages engineered for homogeneity, but they are not representative of LLW or GTCC wasteforms, which often include:

- Activated metals
- Sealed sources
- Debris waste
- Heterogeneous mixtures
- Specialized canisters from reprocessing

Furthermore, post-closure degradation processes (corrosion, leaching, physical breakdown) will eliminate the assumed "contiguous" non-fissile mass. The exemption's technical basis does not appear applicable to disposal conditions.

Recommendation: NRC should evaluate whether homogeneity assumptions remain valid over disposal timeframes and provide criteria for assessing wasteform stability and heterogeneity.

3. The proposed rule contains internal inconsistencies regarding reconcentration

Earlier sections of the proposed rule acknowledge that reconcentration of fissile material is a credible post-closure phenomenon requiring design controls. The new §61.16(b)(3) similarly requires applicants to identify design attributes that limit reconcentration.

However, this section asserts that the §71.15(c) exemption obviates criticality concerns for exempt wasteforms.

These positions cannot both be correct.

If reconcentration is credible, then the exemption cannot be assumed to remain protective over disposal timeframes. If the exemption is protective, then reconcentration should not be considered credible.

Recommendation: NRC should reconcile these conflicting positions and clarify whether reconcentration is assumed to be credible for exempt wasteforms.

4. The proposed §61.16(b)(3) requirement lacks measurable performance criteria

The proposed requirement for applicants to "identify design attributes that limit reconcentration" is vague and not tied to:

- Performance objectives in §§61.41 and 61.42
- Quantitative criteria
- Acceptable design features
- Evaluation methods

Without objective criteria, implementation will be inconsistent across licensees and Agreement States.

Recommendation: NRC should develop performance-based criteria for reconcentration control, including:

- Quantitative thresholds
- Acceptable design features
- Evaluation methodologies
- Linkage to performance objectives

5. Reliance on historical SNM exemption orders is not an adequate basis for a generic exemption

The proposed rule references historical SNM exemption orders (EnergySolutions Utah; WCS Texas) as precedent for applying concentration-based safety arguments. However:

- These orders were site-specific
- They applied to diffuse, low-concentration SNM
- They were developed under Agreement State authority
- They included prescribed conditions tailored to each facility

The proposed rule would apply a generic exemption across all LLW disposal facilities without comparable site-specific analysis or conditions.
Recommendation: NRC should clarify how site-specific conditions from historical exemption orders will be incorporated into the generic exemption framework.

6. The cumulative effects of large GTCC inventories are not addressed

DOE's FEIS identifies:

- ~12,000 m^3 of GTCC waste
- Tens to hundreds of kilograms of fissile material

The proposed rule does not explain:

- How cumulative fissile mass is evaluated
- Whether multiple disposal units interact
- How reconcentration could occur across units
- Whether facility-wide criticality analyses are required

Recommendation: NRC should provide guidance on evaluating cumulative fissile inventories and interactions between disposal units.

7. Summary of Requested NRC Actions

1. Provide a technical demonstration that transportation accident scenarios bound disposal-facility conditions, or reconsider the applicability of §71.15(c) to disposal operations.
2. Reevaluate homogeneity assumptions for LLW and GTCC wasteforms over disposal timeframes.
3. Resolve internal inconsistencies regarding reconcentration and clarify whether reconcentration is assumed to be credible for exempt wasteforms.
4. Develop performance-based criteria for reconcentration control under §61.16(b)(3).
5. Clarify how site-specific conditions from historical SNM exemption orders will be incorporated into the generic exemption framework.
6. Provide guidance on evaluating cumulative fissile inventories and interactions between disposal units.

XI. Agreement State Authorities Under 10 CFR Part 150

Overview

The NRC proposes revisions to 10 CFR part 150 to clarify which LLW disposal activities Agreement States may regulate and which activities remain under exclusive NRC authority. The proposed rule:

- Adds explicit NRC-exclusive authority over GTCC waste disposal (§150.15(a)(8))
- Expands NRC authority over GTCC storage (§150.15(a)(7)(iii)–(iv))
- Revises §150.15(a)(4) to allow Agreement States to regulate incidental waste disposal once NRC has approved the incidental determination
- Retains NRC authority over reprocessing facilities and incidental waste determinations

- Leaves §150.15(b) unchanged except for minor wording edits

These changes are significant because they redefine the federal–state boundary for LLW disposal and introduce new regulatory conditions for GTCC waste and incidental waste.

Comments

1. The proposed text creates two different definitions of GTCC waste, which may cause regulatory confusion

The NRC proposes:

- §150.15(a)(7)(iii)–(iv) — GTCC waste "as defined in part 72"
- §150.15(a)(8) — GTCC waste "as defined by §61.55 as in effect on January 26, 1983"

These definitions are not identical.

- Part 72 defines GTCC waste in the context of storage, tied to spent fuel and reactor operations.
- §61.55 defines GTCC waste in the context of disposal, based on waste classification tables.
- The reference to "as in effect on January 26, 1983" freezes the definition in time, even though Part 61 is being revised.

This dual-definition structure is likely to create confusion for licensees and Agreement States.

Recommendation: NRC should harmonize GTCC definitions across Parts 61, 72, and 150 or provide explicit guidance explaining when each definition applies.

2. The new §150.15(a)(4) language is clearer, but still leaves ambiguity about Agreement State authority over incidental waste

The proposed revision states:

> "This subparagraph does not apply to the transfer, storage or disposal of contaminated equipment or to waste incidental to reprocessing that has been evaluated and approved as material to be disposed at a near-surface land disposal facility."

This clarifies that:

- NRC retains authority over reprocessing facilities
- NRC retains authority over incidental waste determinations

- Agreement States may regulate disposal of incidental waste once NRC has approved it

However, the text does not clarify:

- Whether Agreement States may regulate treatment or processing of incidental waste prior to disposal
- Whether Agreement States may regulate storage of incidental waste at non-reprocessing facilities
- How disputes between NRC and Agreement States will be resolved
- Whether Agreement States may regulate incidental waste that is not Class A/B/C (e.g., waste that fails classification but is still incidental)

Recommendation: NRC should clarify the regulatory boundary for incidental waste, including treatment, storage, and dispute resolution.

3. The proposed GTCC storage provisions in §150.15(a)(7) expand NRC authority beyond what the Federal Register narrative suggests

The proposed rule adds:

- §150.15(a)(7)(iii) — NRC authority over GTCC waste stored in an ISFSI or MRS
- §150.15(a)(7)(iv) — NRC authority over GTCC waste stored under Part 30 or Part 70 licenses

This is broader than the narrative description, which focused primarily on disposal.
The new text means:

- Agreement States may not regulate GTCC storage, even if the facility is otherwise under Agreement State jurisdiction.
- GTCC waste stored under Part 30 or 70 licenses (e.g., sealed sources, activated metals) is now explicitly under NRC authority.

This is a significant expansion of federal authority.

Recommendation: NRC should explain the rationale for expanding federal authority over GTCC storage and clarify how this affects existing Agreement State licensees.

4. The proposed rule does not address cumulative impacts of incidental waste disposal at Agreement State facilities

Allowing Agreement States to regulate disposal of incidental waste is appropriate, but:

- Incidental waste streams may contain long-lived radionuclides

- Large volumes could be disposed at Agreement State facilities
- Cumulative impacts may differ from typical LLW streams

The proposed rule does not address:

- Whether Agreement States must evaluate cumulative impacts
- Whether NRC will review or oversee such evaluations
- Whether incidental waste disposal affects facility performance assessments under Part 61

Recommendation: NRC should provide guidance on evaluating cumulative impacts of incidental waste disposal at Agreement State facilities.

5. §150.15(b) remains unchanged but interacts with the new GTCC provisions in ways that need clarification

§150.15(b) allows NRC to require manufacturers or processors to transfer certain products only under NRC license.

With the new GTCC provisions:

- NRC may need to clarify whether GTCC-containing devices (e.g., activated components, sealed sources) fall under §150.15(b)
- Agreement States may need guidance on when GTCC-containing products must be transferred under NRC authority

Recommendation: NRC should clarify how §150.15(b) interacts with GTCC waste provisions to avoid inconsistent enforcement.

6. Summary of Requested NRC Actions

1. Harmonize GTCC definitions across Parts 61, 72, and 150 or provide explicit guidance on when each definition applies.
2. Clarify the regulatory boundary for incidental waste, including treatment, storage, and dispute resolution.
3. Explain the rationale for expanding federal authority over GTCC storage and clarify impacts on existing Agreement State licensees.
4. Provide guidance on evaluating cumulative impacts of incidental waste disposal at Agreement State facilities.
5. Clarify how §150.15(b) interacts with GTCC waste provisions to avoid inconsistent enforcement.

XIII. Commencement of Construction

Comment

The NRC proposes to revise the definition of "commencement of construction" and add a definition of "construction" consistent with the 2011 rulemaking for materials licenses. The intent is to clarify that licensees may begin certain activities at their own risk, provided those activities have no nexus to radiological safety.

While harmonization with the 2011 rule is reasonable, the proposed change raises several issues specific to land disposal facilities.

First, the concept of "nexus to radiological safety" is not clearly defined in the context of Part 61. For disposal facilities, many early-stage activities, such as site grading, excavation, road building, and installation of drainage systems, may not involve radioactive materials but can directly affect long-term performance, infiltration pathways, or waste isolation. It is unclear whether such activities would be considered "construction" with a nexus to radiological safety or permissible pre-construction activities.

Second, the proposed definition may unintentionally encourage licensees to undertake substantial site development prior to NRC approval. Although the rule states that construction may begin "at the licensee's own risk," early site work can create practical momentum that complicates NRC review, public participation, and environmental analysis. The NRC should clarify how pre-construction activities will be evaluated to ensure they do not prejudice the licensing process.

Third, the proposed definition does not address how "commencement of construction" interacts with NEPA requirements. Certain site-preparation activities may constitute "major federal actions" requiring environmental review. The NRC should clarify whether pre-construction activities without a radiological nexus are exempt from NEPA or whether they must be evaluated as part of the licensing process.

Recommendation

The NRC should provide additional guidance defining "nexus to radiological safety" in the context of disposal facilities, including examples of activities that are and are not permissible prior to license issuance. The NRC should also clarify how pre-construction activities will be evaluated under NEPA and how the agency will ensure that early site work does not prejudice the licensing process or undermine public participation.

XIV. Preoperational Monitoring Data Collection

Comment

The NRC proposes to amend §61.53(a) to remove the requirement that applicants conduct a preoperational monitoring program as the *source* of environmental data on disposal site characteristics. Instead, applicants would be allowed to rely on "multiple sources of information," including pre-existing environmental data, as applicable.

While flexibility in data sources can be beneficial, the proposed change raises several concerns regarding data quality, consistency, and regulatory sufficiency.

1. Preoperational monitoring serves a unique purpose that pre-existing data may not fulfill

Preoperational monitoring is designed to:

- Characterize site-specific baseline conditions
- Capture current hydrologic, geologic, and meteorological parameters
- Identify seasonal and interannual variability
- Provide data collected using methods and instrumentation consistent with NRC expectations

Pre-existing data, often collected for unrelated purposes, may:

- Be outdated
- Use inconsistent methodologies
- Lack site-specific resolution
- Be insufficient for performance assessment modeling
- Fail to capture current environmental conditions or recent land-use changes

Removing the requirement for preoperational monitoring risks weakening the scientific foundation of site characterization.

2. The proposed rule may lead to inconsistent data quality across applicants

Pre-existing environmental data vary widely in:

- Age
- Spatial resolution
- Measurement methods
- Intended purpose
- Quality assurance/quality control (QA/QC) practices

Without clear criteria for acceptable data sources, applicants may rely on data that are:

- Incomplete
- Non-representative
- Collected under non-NRC standards
- Inadequate for long-term performance modeling under §61.41 and §61.42

This could result in inconsistent regulatory reviews and uneven protection of public health and safety.

3. The proposed change may complicate Agreement State implementation

Agreement States rely on Part 61 as a self-contained framework for disposal facility licensing. Removing the explicit requirement for preoperational monitoring:

- Reduces clarity
- Introduces variability in how states interpret "multiple sources of information"
- May lead to divergent state-level expectations for environmental data sufficiency

This undermines the compatibility and uniformity that Part 61 is intended to support.

4. Preoperational monitoring is essential for validating performance assessment models

Performance assessments depend on:

- Site-specific infiltration rates
- Groundwater flow characteristics
- Soil and rock properties
- Radionuclide transport parameters
- Meteorological inputs

Pre-existing data may not align with the modeling assumptions required under Part 61. Without preoperational monitoring:

- Applicants may rely on generic or regional data
- Model calibration and validation may be weakened
- Uncertainty in long-term predictions may increase

This is inconsistent with the risk-informed, performance-based approach the NRC emphasizes elsewhere in the proposed rule.

5. The proposed rule does not specify minimum criteria for acceptable pre-existing data

The amendment allows applicants to rely on "multiple sources of information," but does not define:

- Minimum data age
- Required spatial resolution
- Required temporal coverage
- QA/QC standards
- Acceptable data types
- Conditions under which new monitoring is required

Without such criteria, the regulatory standard becomes subjective and potentially inconsistent.

6. Recommendation

The NRC should retain the requirement for preoperational monitoring or, at minimum, establish clear criteria defining when pre-existing environmental data are acceptable. These criteria should include:

- Data age limits
- Required spatial and temporal resolution
- QA/QC requirements
- Conditions requiring supplemental monitoring
- Documentation standards for data provenance and applicability

The NRC should also clarify how Agreement States should evaluate pre-existing data to ensure consistent implementation across jurisdictions.

Attachment 3

LLW Forum's Response to Federal Register Notice Section V – Specific Request for Comment

The NRC is seeking advice and recommendations from the public on the proposed rule. The NRC is particularly interested in comments and supporting rationale from the public on the following:

Question 1 – The proposed rule contemplates performance evaluations that can cover periods up to 10,000 years and qualitative analyses of periods beyond those time frames. The new specialized land disposal category for GTCC waste encompasses a wide range of concentrations of long-lived alpha-emitting radionuclides, generally from 10,000 to 500,000 nCi/g, with the potential for higher concentrations through the site-specific waste acceptance criteria process. Because this approach is new and applies to GTCC waste streams with potentially high concentrations of long-lived alpha emitters, the NRC seeks stakeholder perspectives on:

(a) What challenges could arise from performing analyses over these timeframes?
(b) What steps can the agency take to clarify expectations and to help applicants and licensees maximize the realism and fidelity of these analyses?
(c) What alternative approaches, such as durations or additional qualitative factors graded by the concentration of waste, should the NRC consider to improve the effectiveness or clarity of either the compliance period or the performance period?

Response to Question 1 — Performance Evaluations up to 10,000 Years and Qualitative Analyses Beyond

Long-term performance assessments can inform the decision-making process and provide valuable information regarding the continued effectiveness of site characteristics, engineered barriers, and waste forms in protecting public health and safety. However, the NRC's proposed performance-evaluation framework — quantitative analyses out to 10,000 years and qualitative analyses beyond — raises several technical, methodological, and regulatory challenges. These challenges are amplified for GTCC waste streams containing long-lived alpha-emitting radionuclides at concentrations ranging from 10,000 to 500,000 nCi/g and potentially higher under site-specific WAC. The following perspectives are offered to support the NRC's refinement of expectations and to improve the realism, defensibility, and clarity of long-term performance evaluations.

1(a). Challenges Associated with Analyses Over 10,000 Years and Beyond

1. Non-linear growth of uncertainty
Uncertainty does not increase linearly with time; it increases exponentially. Beyond a few hundred years, uncertainty in:

- climate evolution,
- engineered barrier performance and degradation,
- hydrologic regime,
- geomorphic processes,
- wasteform degradation, and
- human land-use patterns becomes dominated by expert judgment rather than empirical data.

This undermines the defensibility of quantitative projections at 10,000 years and makes qualitative evaluations beyond that timeframe inherently speculative.

2. Wasteform and engineered barrier degradation assumptions
For GTCC waste streams with high alpha activity, long-term degradation mechanisms (radiolysis, corrosion, micro-fracturing, gas generation) cannot be credibly modeled over millennial timescales. The proposed rule does not specify:

- acceptable degradation models,
- required bounding assumptions, or
- how to treat uncertainty in wasteform evolution.

3. Geologic and climatic variability
Over 10,000+ years, the following cannot be known with a high degree of confidence:

- glacial/interglacial cycles,
- regional hydrologic shifts,
- seismic recurrence intervals,
- erosion rates, and
- groundwater flowpath evolution.

These factors dominate long-term dose projections. Implying certainty in predicting future geologic and climate variability is not possible.

4. Intruder scenarios lose realism
The intruder protection framework is based on a 500-year concept of "reasonable foreseeability." Beyond 500 years, assumptions about land use, drilling practices, and societal conditions become speculative. Attempting to model intruder scenarios at 10,000 years implies artificial precision.

5. Parameter distributions become unconstrained
Key parameters (hydraulic conductivity, sorption coefficients, infiltration rates, wasteform diffusivity) cannot be meaningfully bounded over 10,000 years. This leads to:

- extremely wide uncertainty bands,
- non-informative probability distributions, and
- performance assessments dominated by modeling artifacts rather than site characteristics.

1(b). Steps NRC Can Take to Clarify Expectations and Improve Realism

1. Define what must be quantitative vs. qualitative
NRC should clearly specify:

- which performance metrics require quantitative modeling,
- which may be semi-quantitative, and
- which must be qualitative beyond 10,000 years.

This prevents applicants from over-modeling inherently speculative phenomena.

2. Provide standardized reference scenarios
NRC can improve consistency by defining:

- reference climate scenarios (e.g., interglacial, glacial maximum, aridification),
- reference geomorphic disturbance scenarios,
- reference hydrologic evolution pathways.

This reduces applicant-to-applicant variability.

3. Clarify acceptable uncertainty bounds
NRC should specify:

- acceptable ranges for key parameters,
- acceptable methods for propagating uncertainty, and
- expectations for sensitivity analyses.

4. Provide guidance on wasteform degradation modeling
For GTCC waste streams, NRC should clarify:

- acceptable radiolysis models,
- corrosion rate assumptions,
- treatment of alpha-induced microstructural changes, and
- expectations for bounding analyses.

5. Clarify expectations for intruder analysis beyond 500 years
NRC should state explicitly that:

- intruder scenarios beyond 500 years are qualitative,
- dose projections beyond 500 years are qualitative, and
- the purpose of long-term intruder analysis is conceptual, not predictive.

6. Provide a graded approach based on waste concentration
Higher-concentration GTCC waste streams may require:

- more robust wasteform stability analyses,
- more conservative bounding assumptions, and
- more detailed qualitative evaluations.

Lower-concentration GTCC waste streams may not.

1(c). Alternative Approaches NRC Should Consider

1. Tiered performance periods
A tiered approach would improve realism:

- 0–1,000 years: Fully quantitative
- 1,000–10,000 years: Semi-quantitative with bounded uncertainty
- >10,000 years: Qualitative, conceptual, and scenario-based

This aligns with international best practices (IAEA, WIPP, NWMO, RWM Ltd.).

2. Graded analysis based on waste concentration
For GTCC waste streams:

- 10,000–50,000 nCi/g: Standard GTCC analysis
- 50,000–200,000 nCi/g: Enhanced wasteform degradation modeling
- >200,000 nCi/g: Additional qualitative factors or alternative disposal pathways

3. Risk-significance threshold
NRC could define a threshold below which long-term performance is dominated by natural system isolation rather than wasteform behavior.

4. Alternative qualitative factors
NRC could allow qualitative evaluation of the following beyond 1,000 years:

- long-term geologic stability,

- climate resilience,
- natural barrier robustness, and
- societal land-use trends.

This avoids implying greater precision than is possible.

Summary
The proposed 10,000-year quantitative performance period and qualitative analysis beyond that timeframe present significant technical challenges, especially for high-concentration GTCC waste streams. There is more to a site than a model and although performance assessment techniques have improved, their ability to predict future events is based on inputs generated solely on recent observations. NRC can improve clarity and realism by defining quantitative vs. qualitative expectations, standardizing reference scenarios, clarifying uncertainty treatment, and adopting a graded or tiered approach. These refinements would enhance the defensibility of performance assessments and ensure consistent implementation across applicants and Agreement States.

Question 2 – Under the proposed rule, the NRC would license disposal of GTCC waste streams under part 61.

(a) What steps can the NRC take to ensure that states' insights are considered and received with respect to licensing GTCC facilities?
(b) Does part 61, subpart F, appropriately enable states to consider and provide input in NRC licensing of GTCC facilities?

Response to Question 2 — State and Compact Involvement in Licensing GTCC Facilities Under Part 61

The proposed rule requires the NRC to license GTCC disposal facilities under Part 61. Because GTCC disposal was historically associated with DOE responsibilities under 42 U.S.C. 2021c(b), the shift toward NRC licensing raises important questions about how Agreement States, non-Agreement States, and Compacts will participate in the licensing process. The following perspectives address both parts of Question 2.

2(a). Steps the NRC Can Take to Ensure States' Insights Are Considered and Received

GTCC disposal presents unique technical, political, and environmental sensitivities. States, tribal nations, and compacts will demand meaningful involvement in any licensing action that affects their jurisdiction. Low-level radioactive waste compacts must be included in this process as now GTCC waste is defined as low-level radioactive waste and falls within the jurisdiction of the Compacts. Compacts were not included as they were not

authorized until after 10 CFR Part 61 was promulgated. The existing regional LLRW compacts were approved by acts of congress. Several steps would help ensure that state insights are consistently incorporated into NRC licensing of GTCC facilities:

1. Establish explicit consultation requirements in Subpart F
Subpart F currently provides limited involvement for state and tribal nation participation but does not explicitly require consultation for GTCC licensing. NRC could strengthen state, tribal and compact involvement by adding defined requirements including:

- Pre-application technical engagement meetings with affected states, tribal nations, and compacts,
- Formal state and tribal nation comment periods on the safety case and performance assessment,
- State, tribal nation, and compact participation in issue-resolution meetings,
- State and tribal nation review of site-specific WAC proposals, especially where concentrations exceed standard GTCC limits,
- State and tribal nation review of the draft license.

2. Provide early notification and structured engagement
States, tribal nations, and compacts should receive:

- early notification of intent to submit a GTCC license application,
- access to pre-application technical information,
- opportunities to identify specific concerns (e.g., groundwater protection standards, land-use restrictions, seismic considerations).

This mirrors the early engagement model used for reactor licensing and would improve transparency.

3. Encourage state and tribal nation participation in environmental review
Under NEPA, states and tribal nations often provide critical input on:

- groundwater pathways,
- ecological receptors,
- cultural resources, and
- socioeconomic impacts.

NRC should explicitly invite state and tribal nation participation in scoping and draft EIS review for GTCC facilities.

4. Provide a mechanism for state and tribal nation technical feedback on site-specific WAC
Because site-specific WAC may allow concentrations above standard GTCC limits, states should have a defined opportunity to:

- review the technical basis,
- provide comments, and
- raise concerns about long-term land-use compatibility.

2(b). Does Part 61, Subpart F Appropriately Enable States and Tribal Nations to Provide Input?

Subpart F is woefully inadequate for consent-based licensing actions and only provides a general framework for public participation, but it does not explicitly ensure robust state, tribal nation, and compact involvement for GTCC licensing. Several gaps exist:

1. Subpart F is designed for LLW disposal, not GTCC
GTCC disposal presents:

- higher radiological hazards,
- longer performance periods,
- more complex wasteforms, and
- greater public sensitivity.

Subpart F's generic provisions may not be sufficient for the unique challenges of GTCC licensing.

2. No explicit requirement for state, tribal nation, or compact consultation
Subpart F allows states to comment as members of the public, but it does not:

- require NRC to consult states, tribal nations, and compacts,
- require NRC to solicit state, tribal nations, and compacts input, or
- provide states with a defined role in reviewing site-specific WAC.

Given the statutory history of GTCC waste, states, tribal nations, and compacts may demand a more formal role.

3. No mechanism for state and tribal nation review of safety case or performance assessment
The safety case is intended to be a comprehensive, integrated demonstration of compliance with Subpart C. However Subpart F:

- does not require NRC to provide the safety case for review, and
- does not require NRC to address state, tribal nations, and compact technical comments.

Given the complexity of GTCC disposal, states and compacts should have a defined opportunity to review and comment on the safety case.

4. Institutional control considerations
GTCC disposal may require:

- long-term land-use restrictions,
- state involvement in institutional control, or
- coordination with state environmental agencies.

Subpart F does not explicitly address how states participate in institutional-control planning for GTCC facilities.

Summary
To ensure meaningful state, tribal nation, and compact involvement in GTCC licensing under Part 61, NRC should add explicit consultation requirements, and provide structured opportunities for review of safety cases, performance assessments, and site-specific WAC. Subpart F provides a foundation for public participation, but it does not adequately address the unique technical and regulatory considerations associated with GTCC disposal. Enhancing state, tribal nation, and compact engagement would improve transparency, regulatory clarity, and public confidence in GTCC licensing decisions. The four current low-level radioactive waste disposal facilities are all licensed by agreement state regulators and operate within the jurisdiction of their associated compacts. Licensing of a GTCC disposal facility must follow this template in order to be successful

Question 3 – Proposed section 61.58(e) requires licensees to undertake an annual review of the inputs to the site-specific performance analysis. Does the annual review provide sufficient flexibility to licensees?

Response to Question 3 — Annual Review of Inputs to the Site-Specific Performance Analysis

Proposed § 61.58(e) would require licensees to conduct an annual review of the inputs to the site-specific performance analysis. While the intent of this requirement is understandable — ensuring that performance analyses remain current and reflective of operational realities — the provision is unnecessary and redundant. All four operating sites currently have performance assessments and waste acceptance criteria (WAC). Every shipment is evaluated against the WAC to ensure compliance with the license. Adding an annual review would only generate a summary of the yearly shipments.

Furthermore, the four operating facilities licensed under 10 CFR Part 61 have dynamic licenses that are modified due to regulatory concerns, waste stream changes, and operational issues. These modifications occur several times per year and would

incorporate any changes to inputs to the site-specific performance analysis. Making this a mandatory requirement would be redundant based on actual operational experience.

1. Annual Review Provides Some Flexibility, but Key Ambiguities Limit Its Practicality

1.1. Lack of clarity on what constitutes "inputs"
The proposed rule does not define which elements of the performance analysis must be reviewed annually. Performance analyses typically include:

- waste inventory projections,
- wasteform degradation parameters,
- hydrologic and geologic data,
- infiltration and climate assumptions,
- engineered barrier performance assumptions,
- intruder scenario parameters, and
- institutional control assumptions.

Some of these inputs change frequently (e.g., waste inventory), while others change slowly or not at all (e.g., regional geology). Without clear guidance, licensees may interpret the requirement inconsistently.

1.2. Unclear relationship with § 61.24(l)
Section 61.24(l) requires licensees to evaluate whether technical analyses need updating but does not require updates to be completed within a specific timeframe. Section 61.58(e) requires an annual review but does not specify:

- whether the review must be submitted to NRC,
- whether identified changes require immediate updates, or
- whether updates require a license amendment under § 61.25(c).

This creates uncertainty about regulatory expectations and compliance obligations.

1.3. Potential for unnecessary burden
For facilities with stable waste streams or slow-changing environmental conditions, an annual review may be unnecessarily frequent. For facilities with rapidly evolving waste streams (e.g., advanced reactor fuels), annual review may be appropriate. A one-size-fits-all requirement may not reflect the diversity of Part 61 facilities.

1.4. Lack of clarity on the level of rigor required
The rule does not specify whether the annual review must be:

- a qualitative check,
- a quantitative update,
- a full re-run of the performance model, or

- a documentation-only review.

This ambiguity may lead to inconsistent implementation across licensees and Agreement States.

2. Recommended Clarifications to Improve Flexibility and Consistency

2.1. Define the scope of "inputs"
NRC should specify which categories of inputs must be reviewed annually, such as:

- waste inventory and characterization data,
- wasteform stability parameters,
- engineered barrier performance assumptions,
- hydrologic and climatic data,
- intruder scenario assumptions.

This would ensure consistent implementation.

2.2. Clarify the interaction with § 61.24 and § 61.25
NRC should clarify:

- whether the annual review must be submitted to NRC,
- whether identified changes require immediate updates to the performance analysis,
- whether updates require a license amendment, and
- whether minor updates can be handled internally.

This would prevent unnecessary license amendments and reduce regulatory burden.

2.3. Adopt a graded approach
A graded approach would improve flexibility:

- **Stable facilities** (e.g., disposal of homogeneous waste streams): qualitative annual review, quantitative updates as needed.
- **Dynamic facilities** (e.g., advanced reactor waste streams): more detailed annual review, periodic quantitative updates.
- **GTCC specialized facilities**: enhanced review of wasteform degradation and inventory projections.

2.4. Clarify expectations for documentation
NRC should specify:

- the required content of the annual review,
- the required level of detail, and
- whether the review must be retained on-site or submitted to NRC.

2.5. Remove the requirement entirely
NRC should not adopt this new requirement as:

- the information is redundant based on daily operations,
- current licensees regularly amend their licenses to react to changes.

This would improve consistency across licensees.

3. Summary
The annual review requirement in § 61.58(e) is unnecessary and redundant. In addition, the provision lacks clarity regarding scope, rigor, documentation, and interaction with other regulatory requirements. A graded approach, clearer definitions, and explicit guidance on how annual reviews relate to § 61.24 and § 61.25 would improve understanding of this new requirement and ensure consistent implementation across NRC and Agreement State programs.

Question 4 – Advanced reactors, advanced reactor fuels, emerging reprocessing approaches, and expanded medical and industrial uses of radioisotopes will potentially generate novel GTCC streams. A clear disposal pathway for these emerging waste streams is essential.

> (a) Do the proposed concentration limits, performance assessment methodology and waste characterization expectations remain valid for these emerging waste streams?
> (b) Are there alternatives or other considerations that should be addressed to accommodate novel GTCC waste streams?

Response to Question 4 — Emerging GTCC Waste Streams (Advanced Reactors, Reprocessing, Medical/Industrial Isotopes)

The NRC correctly notes that advanced reactors, advanced fuels, emerging reprocessing technologies, and expanded medical/industrial isotope production will generate novel GTCC waste streams. These streams may differ substantially from legacy GTCC sources (e.g., activated metals, sealed sources, reactor internals). The proposed rule's concentration limits, performance assessment methodology, and waste-characterization expectations provide a foundation for regulating these wastes, but several technical considerations suggest that refinements may be necessary to ensure clarity, realism, and regulatory consistency.

4(a). Validity of Proposed Concentration Limits, Performance Assessment Methodology, and Waste-Characterization Expectations

1. Concentration limits are broadly valid but may not fully capture emerging waste chemistries
The proposed GTCC concentration limits (Table 3 and associated provisions) are generally appropriate for:

- activated metals,
- legacy reactor components,
- high-activity sealed sources, and
- certain reprocessing residues.

However, emerging waste streams may exhibit characteristics not fully addressed by the current concentration-based framework:

a. Advanced reactor fuels

- TRISO particles contain high-specific-activity radionuclides encapsulated in ceramic layers.
- Molten-salt reactor residues may contain radionuclides in highly mobile ionic forms.
- Metallic fuels (e.g., U-Zr, U-Mo) may degrade differently under disposal conditions.

These wasteforms may require additional consideration beyond simple concentration limits.

b. Reprocessing residues
Emerging pyroprocessing and electrochemical reprocessing technologies produce:

- chloride-based salts,
- oxide powders,
- metallic residues, and
- high-specific-activity fission-product concentrates.

These materials may not behave like traditional GTCC wasteforms.

c. Medical and industrial isotopes
High-specific-activity isotopes (e.g., Ac-225, Ra-223, Lu-177 production residues) may:

- exceed GTCC limits in small volumes,
- exhibit unique radiolysis behavior,
- require specialized wasteform stabilization.

2. Performance assessment methodology is broadly valid but may require additional flexibility

The proposed methodology — quantitative analysis to 10,000 years and qualitative analysis beyond — is generally appropriate. However, emerging waste streams may require:

- Enhanced wasteform degradation modeling for ceramic, salt, or composite wasteforms.
- Alternative solubility and sorption models for radionuclides in non-traditional chemical matrices.
- Different gas-generation or radiolysis assumptions for salt-based or high-alpha-activity materials.
- Modified intruder scenarios for small-volume, high-specific-activity waste streams.

3. Waste-characterization expectations are valid but may need expansion
The proposed characterization requirements (physical/chemical characteristics, radionuclide identities, activities, concentrations, etc.) are appropriate. However, emerging waste streams may require additional parameters, such as:

- microstructural stability (e.g., TRISO kernels),
- salt chemistry (chloride vs. fluoride),
- radionuclide speciation,
- oxidation state distribution,
- moisture sensitivity,
- gas-generation potential, and
- radiolysis susceptibility.

These parameters may be essential for realistic performance modeling.

4(b). Alternatives or Additional Considerations for Novel GTCC Waste Streams

1. Adopt a technology-neutral wasteform framework
Rather than relying solely on concentration limits, NRC could incorporate a technology-neutral wasteform classification system based on:

- chemical matrix,
- physical stability,
- radionuclide mobility,
- radiolysis behavior, and
- degradation mechanisms.

This would allow consistent treatment of:

- ceramic fuels,
- salt residues,
- metallic fuels,
- composite wasteforms,

- high-specific-activity isotopes.

2. Provide supplemental guidance for salt-based wasteforms
Molten-salt reactor residues and pyroprocessing salts may require:

- specific stabilization requirements (e.g., vitrification, encapsulation),
- alternative solubility models,
- alternative sorption assumptions, and
- modified hydrologic transport modeling.

3. Clarify classification of radionuclides not listed in Tables 1–3
Emerging waste streams may contain radionuclides not currently listed in the tables. NRC should clarify:

- how such radionuclides are classified,
- how concentration limits are determined, and
- whether site-specific WAC may be used to establish limits.

4. Provide guidance for high-specific-activity medical isotope residues
Medical isotope production residues may:

- exceed GTCC limits in very small volumes,
- require specialized stabilization, and
- exhibit unique radiolysis behavior.

NRC should consider:

- a supplemental wasteform stability guide,
- a small-volume GTCC pathway, or
- a specialized WAC category.

5. Consider a graded approach based on wasteform complexity
A graded approach could include:

- Standard GTCC analysis for traditional wasteforms,
- Enhanced analysis for salt-based or ceramic wasteforms,
- Special analysis for high-specific-activity isotopes or novel chemistries.

6. Clarify expectations for wasteform degradation modeling
NRC should specify:

- acceptable degradation models for ceramic, salt, and metallic wasteforms,
- acceptable radiolysis models,
- acceptable bounding assumptions, and

- expectations for uncertainty treatment.

Summary
The proposed concentration limits, performance assessment methodology, and waste-characterization expectations provide a solid foundation for regulating GTCC waste. However, emerging waste streams from advanced reactors, reprocessing technologies, and medical isotope production may exhibit characteristics not fully captured by the current framework. NRC can improve clarity and regulatory consistency by adopting a technology-neutral wasteform approach, providing supplemental guidance for salt-based and ceramic wasteforms, clarifying classification of radionuclides not listed in Tables 1–3, and implementing a graded analysis structure based on wasteform complexity and radionuclide concentration.

Question 5 – In the draft regulatory analysis, the NRC's cost-benefit evaluation focusses primarily on quantified costs and averted storage costs associated with earlier disposal of GTCC waste. The analysis notes that many potential benefits—such as increased disposal efficiencies, expanded disposal options for generators, and reductions in long term uncertainties—were not quantified.

(a) To help the NRC further inform and enhance the regulatory analysis, the NRC requests stakeholder input on any additional data, analyses, or supporting information that could help characterize costs or benefits not currently quantified. Specifically, the NRC is seeking information, operational experience, or cost data that the NRC can leverage to refine or expand the analysis of impacts associated with the proposed rule. Benefits of providing an alternative path for disposal for reprocessing wastes and other waste streams, which previously would not have been considered for land disposal, are of particular interest to the NRC.

Response to Question 5 — Cost-Benefit Evaluation and Unquantified Benefits

The NRC's draft regulatory analysis appears to identify the primary quantifiable benefit of the proposed rule: reduced long-term storage costs associated with earlier disposal of GTCC waste. The Low-Level Radioactive Waste Forum has no additional data that can confirm the numbers or assumptions used by the NRC.

Question 6 – The proposed rule permits the use of site-specific Waste Acceptance Criteria (WAC) for GTCC specialized land disposal, which could allow for the disposal of waste with concentrations exceeding the standard specified limits established for GTCC specialized land disposal.

(a) What are the expected benefits and drawbacks of allowing a higher GTCC specialized land disposal limit with a site-specific WAC? What specific use cases are expected to leverage these flexibilities and what benefits are anticipated for these use cases if the flexibilities are adopted? Please provide quantitative information and description of use cases to the extent possible; however, qualitative assessments would be useful, as well.
(b) Are there potential qualitative or quantitative limits on the concentration of activity allowed in a GTCC specialized land disposal with a site-specific WAC that the NRC should consider? Are there any practical use cases that would be challenged by limiting the concentration?

Response to Question 6 — Site-Specific Waste Acceptance Criteria (WAC) for GTCC Specialized Land Disposal

The proposed rule permits licensees to develop site-specific Waste Acceptance Criteria (WAC) for GTCC specialized land-disposal facilities, including the possibility of accepting waste with concentrations exceeding the standard GTCC limits in Table 3. This flexibility is consistent with the performance based approach the NRC has taken in Part 61 and potentially beneficial, but it also introduces technical, regulatory, and risk-communication challenges. The following perspectives address both parts of Question 6.

6(a). Expected Benefits and Drawbacks of Allowing Higher GTCC Limits Through Site-Specific WAC

Expected Benefits
1. Flexibility for high-activity metallic waste (reactor internals, advanced fuels)
Many GTCC waste streams — particularly activated metals and advanced reactor fuels — have radionuclide concentrations that exceed standard GTCC limits but pose limited mobility risk due to:

- low solubility,
- strong matrix retention,
- minimal radiolysis susceptibility, and
- predictable degradation behavior.

Site-specific WAC allows disposal of these materials without continuing indefinite storage.

2. Enables disposal of advanced reactor and reprocessing residues
Emerging waste streams may contain:

- high-specific-activity fission products,
- ceramic fuel kernels (TRISO),

- salt-based residues from molten-salt reactors,
- metallic residues from pyroprocessing.

These wasteforms may exceed standard GTCC limits but remain suitable for disposal in specialized facilities with robust natural and engineered barriers.

3. Reduces long-term storage burdens
Generators benefit from:

- reduced storage costs,
- reduced security requirements,
- reduced repackaging needs, and
- reduced regulatory uncertainty.

This is especially important for medical isotope producers and advanced reactor developers.

4. Improves alignment with risk-informed regulation
Concentration limits alone do not fully capture risk. Site-specific WAC allows:

- consideration of wasteform stability,
- geologic isolation,
- hydrologic conditions,
- engineered barrier performance, and
- intruder protection.

This aligns with the performance-objective framework in Subpart C.

5. Supports DOE programmatic efficiency
DOE's GTCC backlog includes waste streams that exceed standard limits. Some of these waste streams may be suitable for disposal in specialized facilities. Site-specific WAC provides a pathway to reduce DOE's long-term liability.

Expected Drawbacks
1. Increased NRC review burden
Site-specific WAC proposals require:

- detailed technical analyses,
- wasteform degradation modeling,
- hydrologic and geologic justification,
- intruder analysis, and
- uncertainty evaluation.

This increases NRC's workload and may lengthen licensing timelines.

2. Public confidence challenges
Allowing disposal of waste above standard GTCC limits may raise concerns about:

- "higher-activity waste" being disposed in land-based facilities,
- long-term environmental protection, and
- intruder safety.

Members of the public may see this as a degradation in safety standards.

3. Potential for over-reliance on engineered barriers
If site-specific WAC is used to justify very high concentrations, NRC must ensure that:

- engineered barriers are not treated as permanent,
- wasteform stability is adequately demonstrated, and
- long-term geologic isolation is robust.

6(b). Potential Qualitative or Quantitative Limits NRC Should Consider

To protect long-term performance, NRC should consider establishing upper bounds or decision criteria for site-specific WAC. These could include:

1. Heat-generation limits
Waste should not exceed thermal loads that:

- degrade engineered barriers,
- accelerate wasteform degradation, or
- alter hydrologic conditions.

Quantitative limits could be tied to:

- maximum allowable temperature at the wasteform surface,
- maximum allowable temperature in engineered barriers, or
- maximum allowable heat flux.

2. Criticality safety limits
NRC should specify:

- maximum allowable fissile mass,
- maximum allowable enrichment, and
- required spacing or moderation controls.

3. Wasteform stability limits
NRC could require:

- demonstration of long-term physical stability,
- radiolysis resistance,
- corrosion resistance, and
- predictable degradation behavior.

4. Intruder-dose limits
NRC could specify that site-specific WAC must ensure:

- intruder doses remain below § 61.42 limits,
- even for higher-concentration waste streams.

5. Hydrologic transport limits
NRC could require:

- bounding solubility limits,
- bounding sorption assumptions, and
- demonstration that radionuclide mobility remains low.

6. Practical upper bounds

NRC may wish to establish a "hard ceiling" for concentrations that cannot be exceeded even under site-specific WAC, such as:

- a maximum alpha-activity concentration (e.g., 1,000,000 nCi/g),
- a maximum curie-per-container limit, or
- a maximum curie-per-disposal-unit limit.

This prevents extreme cases that could challenge long-term performance.

Summary
Allowing site-specific WAC for GTCC specialized land disposal provides meaningful flexibility and enables disposal of advanced reactor fuels, reprocessing residues, high-activity sealed sources, and medical isotope production wastes. The benefits are substantial, but the approach also introduces challenges related to public confidence, and NRC review burden. NRC should consider establishing qualitative and quantitative limits to ensure that site-specific WAC remains risk-informed, technically defensible, and aligned with the performance objectives in Subpart C.

Question 7 – The proposed rule would require an application for a LLW disposal facility to include a safety case as newly defined in this proposed rule. The safety case is an integrated, concise, and transparent synthesis of technical analyses, site characteristics, facility design, and management/regulatory controls that collectively demonstrate how the facility will meet the performance objectives in subpart C of part 61. The safety case is intended to support the licensee's demonstration that the land disposal facility will be constructed and operated safely and facilitate effective review by the NRC and public understanding. Recognizing that most of the technical elements are already required under current regulations, this proposed requirement seeks to ensure these elements are integrated and communicated in a coherent manner.

(a) Is the guidance provided in draft NUREG–2175 sufficient to address the appropriate scope, structure, and level of detail that should be included in the safety case for land disposal facility license applications? If not, what additional guidance or clarifications would be beneficial to ensure the safety case provides a clear, integrated, and risk-informed basis for regulatory decision-making?
(b) Are there international or domestic best practices regarding the scope of the safety case that NRC should consider?
(c) Are there additional guidance documents or supporting materials that should be updated or developed to facilitate effective implementation of the safety case requirement?

Response to Question 7 — Safety Case Requirement and Draft NUREG-2175 Guidance

The proposed rule would require applicants to submit a "safety case" — an integrated, concise, and transparent synthesis of technical analyses, site characteristics, facility design, and management/regulatory controls demonstrating compliance with Subpart C performance objectives. All the underlying technical elements are already required under existing regulations. As such, the addition of a safety case requirement is redundant. Should the NRC continue with this new requirement, the following perspectives address the adequacy of draft NUREG-2175 and identify additional guidance and best practices that would improve clarity, consistency, and regulatory effectiveness.

7(a). Adequacy of Draft NUREG-2175 Guidance

Draft NUREG-2175 provides a useful foundation, but several areas require clarification to ensure that safety cases are complete, coherent, and risk-informed.

1. Clarify expectations for uncertainty treatment
The safety case must integrate multiple analyses with varying degrees of uncertainty. NUREG-2175 should provide clearer expectations for:

- treatment of epistemic vs. aleatory uncertainty,

- acceptable methods for propagating uncertainty through performance models,
- documentation of key assumptions, and
- identification of parameters most influential to long-term performance.

Without explicit guidance, applicants may adopt inconsistent approaches.

2. Clarify expectations for wasteform degradation modeling
For GTCC waste streams — particularly advanced reactor fuels, salt-based residues, and high-specific-activity isotopes — wasteform degradation is a dominant factor in long-term performance. NUREG-2175 should clarify:

- acceptable degradation models,
- required bounding assumptions,
- treatment of radiolysis, corrosion, and microstructural changes, and
- expectations for sensitivity analyses.

3. Clarify expectations for intruder analysis
The safety case must demonstrate compliance with § 61.42. NUREG-2175 should clarify:

- the level of detail required for intruder scenarios,
- expectations for intruder-barrier performance,
- treatment of intruder scenarios beyond 500 years, and
- acceptable qualitative vs. quantitative approaches.

4. Clarify integration of site-specific WAC
Because site-specific WAC may allow concentrations above standard GTCC limits, NUREG-2175 should clarify:

- how WAC limits must be justified within the safety case,
- how WAC interacts with wasteform stability and performance modeling, and
- how WAC changes affect the safety case over time.

5. Clarify expectations for safety case updates
The safety case interacts with § 61.24 (technical analyses) and § 61.25 (license amendments). NUREG-2175 should clarify:

- when updates are required,
- whether updates require NRC approval, and
- how updates relate to annual reviews under § 61.58(e).

6. Provide a model safety case outline
A standardized outline would improve consistency across applicants and Agreement States. The outline should include:

- site characteristics,
- facility design,
- wasteform characteristics,
- performance assessment,
- intruder analysis,
- uncertainty treatment,
- WAC justification, and
- management/regulatory controls.

7(b). International and Domestic Best Practices NRC Should Consider
Several international and domestic programs provide mature safety case frameworks that NRC could draw upon:

1. IAEA Safety Case Framework
IAEA guidance emphasizes:

- clear articulation of safety functions,
- multiple lines of evidence,
- treatment of uncertainty, and
- transparent communication.

2. WIPP Performance Assessment Framework
WIPP's safety case integrates:

- probabilistic modeling,
- scenario development,
- wasteform degradation modeling, and
- uncertainty quantification.

3. Canadian NWMO Safety Case Approach
NWMO emphasizes:

- multiple barriers,
- long-term geologic stability,
- clear documentation of assumptions, and
- structured uncertainty analysis.

4. UK Radioactive Waste Management Ltd. Safety Case Structure
RWM Ltd. uses:

- a tiered safety case structure,
- clear linkage between design and performance, and
- transparent justification of assumptions.

These frameworks could help NRC refine expectations for structure, content, and uncertainty treatment.

7(c). Additional Guidance or Supporting Materials Needed

To facilitate effective implementation of the safety case requirement, NRC should consider developing or updating the following:

1. A supplemental safety case implementation guide
This guide could provide:

- a model outline,
- examples of acceptable analyses,
- examples of acceptable uncertainty treatment, and
- examples of acceptable intruder analyses.

2. Guidance on integrating safety case updates with § 61.24 and § 61.25
Applicants need clarity on:

- when updates require NRC approval,
- when updates require license amendments, and
- how updates interact with annual reviews under § 61.58(e).

3. Guidance on public communication of safety cases
Because safety cases are intended to improve public understanding, NRC should provide guidance on:

- plain-language summaries,
- communication of uncertainty,
- and communication of long-term performance.

4. Supplemental guidance for novel wasteforms
Emerging waste streams may require:

- specialized degradation models,
- specialized radiolysis models,
- specialized hydrologic transport models.

NRC should consider developing supplemental guidance for:

- TRISO fuels,
- molten-salt residues,
- pyroprocessing salts,
- high-specific-activity isotopes.

Summary

The safety case is a critical document in a completely different licensing framework. The addition of the safety case in the US regulatory framework is redundant and unnecessary, and the implementation may be problematic as it is not used currently in the United States framework. Draft NUREG-2175 provides a beginning, but additional guidance is needed to ensure consistent treatment of uncertainty, wasteform degradation, intruder analysis, site-specific WAC, and safety case updates. Although out of scope for this proposed rule, the adoption of international licensing practices might be a useful endeavor, but the inclusion in the current framework just adds another element to the patchwork of US licensing.

Attachment 4

LLW Forum's Comments on the Proposed Revision to 10 CFR Part 20 Regulations

Overview

Although the proposed changes to Part 20 appear limited, primarily revising the definition of "waste" and updating Appendix G, they have significant regulatory implications when viewed in the context of the broader rulemaking. Several issues warrant comment.

1. The revised definition of "waste" in §20.1003 is inconsistent with statutory responsibilities under the Low-Level Radioactive Waste Policy Amendments Act (LLRWPAA)

The proposed definition of "waste" mirrors the revised Part 61 definition, but its placement in Part 20 creates several problems:

A. Part 20 is a radiation protection rule, not a waste classification rule

Embedding a waste definition in Part 20:

- blurs the regulatory boundary between radiation protection and waste classification,
- creates potential conflicts with Part 61, Part 150, and Part 72, and
- risks future inconsistency if Part 20 is amended for reasons unrelated to waste disposal.

Part 20 is intended to be generally applicable, while waste classification is program-specific. The NRC should avoid embedding disposal-specific definitions in Part 20.

B. The definition includes medical isotope production waste without clear justification

The definition adds:

> "Low-level waste also includes radioactive material resulting from the production of medical isotopes… permanently removed from a reactor or subcritical assembly…"

This language:

- is not present in the LLRWPAA,

- is not present in the AEA,
- is not present in the existing Part 20 definition, and
- is not clearly justified in the Federal Register discussion.

If the NRC intends to expand the scope of LLW to include certain reactor-based isotope production wastes, it should provide a clear statutory and technical basis.

Recommendation

The NRC should either retain the existing Part 20 definition or provide a clear justification for expanding the definition to include medical isotope production waste and aligning Part 20 with Part 61.

2. The revised definition of "waste" may create confusion with GTCC waste definitions in Parts 61, 72, and 150

As noted in our Part 150 comments, the NRC is now using multiple definitions of GTCC waste across different parts of the CFR. The revised Part 20 definition of "waste" does not clarify:

- whether GTCC waste is included or excluded,
- whether medical isotope production waste could ever be GTCC,
- how Part 20's definition interacts with Part 61's classification tables,
- how Part 20's definition interacts with Part 150's frozen 1983 definition.

This creates ambiguity for licensees, processors, and Agreement States.

Recommendation

NRC should harmonize waste definitions across Parts 20, 61, 72, and 150 or provide explicit guidance explaining how each definition applies.

Summary of Requested NRC Actions

1. Provide justification for revising the Part 20 definition of "waste," particularly the inclusion of medical isotope production waste.
2. Harmonize waste definitions across Parts 20, 61, 72, and 150 or provide explicit guidance.

Attachment 5

LLW Forum's Comments on the Proposed Revision to 10 CFR Part 61 Regulations

Subpart A – General Provisions

61.1 Purpose and Scope

The four operating commercial low-level radioactive waste (LLRW) disposal facilities, all licensed by Agreement States, have safely and compliantly disposed of the nation's LLRW following the regulations found in 10 CFR Part 61. The Forum appreciates the NRC recognizing the success of the current regulatory framework by allowing the current regulations as an option for facilities that do not intend to take significant quantities of long-lived isotopes or Greater than Class C (GTCC) waste. Please clarify that the option to use the existing regulatory framework continues during license renewal until the end of the useful life of the facility assuming the waste streams remain within the boundaries established by the original Part 61. The addition of "originally licensed" in 61.1(b)(1)(i) suggests that this is the case, but confirmation is requested.

61.2 Definitions

"Buffer Zone"

The proposed definition of "buffer zone" introduces an inconsistency between near-surface disposal facilities and specialized land-disposal facilities. As written, near-surface facilities must maintain a buffer zone beneath the disposal units, while specialized facilities that do accept these higher-hazard waste streams may not.

This creates a counterintuitive regulatory outcome: the facility managing lower-hazard waste is required to maintain a more protective site geometry than the facility managing higher-hazard waste.

For near-surface disposal, the under-unit buffer zone is essential for monitoring, early detection of radionuclide migration, and mitigative measures. If specialized facilities are permitted to omit this feature, the rule should clearly explain how equivalent monitoring and mitigative capabilities will be ensured. Without such clarification, the proposed definition may inadvertently weaken protective measures for facilities handling the most radiologically significant waste.

Clarifying this point would improve internal consistency and strengthen confidence in the protective framework for all disposal facility types.

"Institutional Control Period"

The term *"institutional control period"* is used throughout Part 61, including in §§ 61.7, 61.23, 61.30, and 61.31, but it is not defined in § 61.2. The absence of a formal definition creates ambiguity because the duration and scope of institutional control directly affect several regulatory determinations, including the applicant's demonstration under § 61.23(g) and the timing of license transfer and termination. This lack of clarity also affects the implementation of the financial assurance requirements in Subpart E.

Financial assurance under Part 61 is intended to ensure that adequate resources are available to carry out disposal operations, site closure, post-closure observation and maintenance, and the transition to institutional control. However, without a defined institutional control period, it is unclear how applicants should determine the duration and magnitude of financial assurance needed to support activities up to license transfer and through the institutional control phase. The rule specifies that institutional control may be required "for up to 100 years," but it does not define the institutional control period itself or indicate whether this timeframe is fixed, site-specific, or dependent on waste characteristics.

This ambiguity affects the financial assurance demonstration in several ways:

- It is unclear whether applicants should assume a 100-year institutional control period for financial planning or whether a shorter or longer period may be justified.
- The absence of a definition complicates the determination of when financial assurance obligations end and when responsibility transitions to the custodial agency.
- The undefined term creates uncertainty in evaluating whether the financial assurance provided is sufficient to support the activities required under §§ 61.30 and 61.31.

Adding a definition of *"institutional control period"* to § 61.2 would improve internal consistency and provide a clear basis for determining the financial assurance obligations associated with institutional control. This clarification would support consistent regulatory implementation and ensure that applicants, Agreement States, and reviewers apply the same understanding when evaluating compliance with Subpart E and the performance objectives in Subpart C.

"Long-Lived Radionuclide"

The LLW Forum appreciates the opportunity to provide comments on the NRC's proposed definition of "long-lived radionuclide." The Commission's intent to identify radionuclides

whose radiological significance persists beyond 1,000 years is understandable and appropriate. However, the definition as currently drafted introduces unnecessary complexity and may hinder consistent application across regulatory programs.

1. The proposed definition lacks clarity and is unnecessarily complex. The definition relies on three separate criteria involving:

1. the fraction of initial activity remaining after 1,000 years,
2. the timing of peak progeny activity, and
3. the fraction of peak activity remaining after 1,000 years.

Although each criterion is technically valid, the combined structure is difficult to interpret. The definition reads as a multi-part analytical test rather than a clear regulatory standard. Stakeholders may struggle to determine whether a radionuclide meets the definition without performing detailed decay-chain modeling, which is not the NRC's stated intent.

A regulatory definition should be concise, accessible, and straightforward to apply. In this case, the NRC has taken a concept that can be expressed simply — radionuclides that remain radiologically significant after 1,000 years — and articulated it in a manner that is more complicated than necessary.

2. A simplified definition would improve clarity without altering regulatory intent. The NRC's intent can be preserved in a more direct and comprehensible formulation. The following language captures all three criteria while remaining clear and easy to apply:

> A long-lived radionuclide is any radionuclide whose own activity, or the activity of its radioactive progeny, remains greater than 10 percent of its initial or peak activity after 1,000 years.

This formulation:

- incorporates the NRC's technical basis,
- reflects the role of progeny activity,
- aligns with the 10-percent threshold, and
- avoids unnecessary complexity.

If additional clarification is desired, the NRC could include a supplemental sentence such as:

> This includes radionuclides with half-lives greater than approximately 300 years, as well as radionuclides that decay into long-lived daughters.

This approach maintains technical rigor while significantly improving readability and regulatory transparency.

3. The NRC should provide a reference list of radionuclides that meet the definition. The proposed definition requires stakeholders to evaluate radionuclides against multiple decay-chain-dependent criteria. Without a reference list, this may lead to inconsistent interpretations and impose unnecessary analytical burdens on licensees and Agreement States.

To ensure clarity and uniform application, the NRC should include a footnote, table, or appendix listing radionuclides that meet the definition. Based on the criteria provided, radionuclides that clearly qualify include:

- Uranium isotopes: U-233, U-234, U-235, U-236, U-238
- Thorium isotopes: Th-229, Th-230, Th-232
- Protactinium: Pa-231
- Neptunium: Np-237
- Plutonium isotopes: Pu-239, Pu-240, Pu-242, Pu-244 (Pu-238 qualifies via progeny)
- Americium: Am-241, Am-243 (Am-242m qualifies via progeny)
- Curium: Cm-245, Cm-246, Cm-247
- Radium: Ra-226
- Other progeny-driven cases: Po-209 and similar decay chains

Providing this list would promote consistency, reduce ambiguity, and improve transparency for both regulated entities and the public.

4. Recommendation

For the reasons described above, the LLW Forum respectfully recommend that the NRC:

1. Simplify the definition of "long-lived radionuclide" to a single, clear statement that captures the Commission's intent; and
2. Include a reference list of radionuclides that meet the definition to ensure consistent application across regulatory programs.

This approach maintains the NRC's technical objectives while significantly improving clarity, usability, and regulatory consistency.

"Significant Quantities"

There is an internal inconsistency between two related provisions: (1) the proposed fixed threshold of 10 metric tons of depleted uranium, and (2) the later proposed definition of "significant quantities of long-lived radionuclides."

The NRC first establishes a fixed, prescriptive threshold for depleted uranium in 61.1(b)(ii) where the proposed rule states:

> "For purposes of this paragraph, an amount greater than or equal to 10 metric tons of depleted uranium is considered a significant quantity of long-lived radionuclides."

This language establishes a single, universal, prescriptive threshold. This is a clear, bright-line standard.

Later, the NRC defines in 61.2 "significant quantities of long-lived radionuclides" in a completely different, performance-based manner. The proposed definition states:

> "Significant quantities of long-lived radionuclides means an amount (volume or mass) and concentration accepted for disposal that could, if released, result in the performance objectives of subpart C of this part not being met."

This definition is not prescriptive. It is performance-based, site-dependent, and contextual. Under this definition, a quantity is "significant" only if a hypothetical release at a specific disposal facility could cause the performance objectives of Subpart C to be exceeded.
Under this definition, "significant quantities" is not a fixed number. It varies by facility, waste stream, and disposal conditions.
The fixed DU threshold and the performance-based definition describe fundamentally different regulatory concepts.

The result is a regulatory inconsistency that will create confusion for licensees, Agreement States, and the public.

Recommendation:

To ensure clarity and regulatory consistency, the LLW Forum respectfully recommends that the NRC adopt the 10 metric ton quantity as the definition of "significant quantity of long-lived radionuclides'. This will provide applicants, licensees, Agreement State programs, and the public with a consistent, easy to understand standard.

"Waste"

The proposed revision to the definition of *"waste"* in § 61.2 removes the explicit exclusion of transuranic waste that appears in the current definition. Although the revised definition continues to rely on a negative definition of low-level radioactive waste (i.e., waste not classified as high-level waste, spent nuclear fuel, or certain byproduct materials), the removal of the explicit reference to transuranic waste may create confusion when read in conjunction with the waste classification system in § 61.55.

Section 61.55 establishes the classification framework for low-level radioactive waste and has remained substantively unchanged since the Low-Level Radioactive Waste Policy

Amendments Act of 1985 (LLRWPAA). Under the LLRWPAA, States are responsible for providing for disposal of low-level radioactive waste as defined in § 61.55 at the time of enactment. Transuranic waste was not included in that definition and remains outside the scope of State responsibility. The proposed revision to § 61.2 does not alter this statutory boundary, but removing the explicit exclusion of transuranic waste from the definition of "waste" may lead to misinterpretation by readers who rely solely on Part 61 for understanding the scope of waste subject to State and Compact disposal responsibilities.

This concern is particularly relevant for Agreement State programs. Agreement States implement waste classification and disposal requirements based on § 61.55 and the associated definitions in § 61.2. If the definition of "waste" no longer explicitly excludes transuranic waste, Agreement States may face questions regarding whether their regulatory programs must expand to address waste streams that remain outside their statutory responsibility. This could lead to inconsistent interpretations, unnecessary regulatory development, or confusion among generators, processors, and disposal facilities regarding the acceptability of certain waste types for near-surface disposal.

The proposed definition also introduces new language regarding radioactive material resulting from the production of medical isotopes that has been permanently removed from a reactor or subcritical assembly. While this addition may be appropriate for certain disposal scenarios, it further underscores the need for clarity regarding the boundary between low-level radioactive waste as defined by statute and other radioactive materials that may be acceptable for disposal in a land-disposal facility.

For these reasons, the NRC should consider retain the current exclusion that transuranic waste is not low-level radioactive waste for purposes of Part 61, and state that the proposed changes do not modify State and Compact responsibilities under the Low-Level Radioactive Waste Policy Amendments Act. Such clarification would improve internal consistency, avoid potential misunderstanding within Agreement State programs, and ensure that the regulatory text remains aligned with statutory requirements and the waste classification framework in § 61.55.

Subpart B – Licenses

61.13 Technical Analyses

The proposed revisions to § 61.13 introduce substantial changes to the technical analyses required to demonstrate compliance with the performance objectives in Subpart C. While many of the proposed updates reflect current analytical practices, several aspects of the proposed rule warrant clarification to ensure internal consistency, technical defensibility, and alignment with the hazard-based structure of Part 61.

1. Non-Performance-Based Requirement in § 61.13(b)(4)

Section 61.13(b)(4) requires that, for specialized land-disposal facilities, the inadvertent intruder assessment must demonstrate that engineered barriers and natural features "ensure that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard."

This requirement appears to be absolute rather than performance-based. It does not account for the possibility that a determined intruder equipped with drilling equipment could penetrate engineered barriers or natural geologic features. The performance objectives in § 61.42 are dose-based, not contact-based. They require reasonable assurance that inadvertent intruders are protected from unacceptable exposures — not that contact with waste is physically impossible under all circumstances.

A requirement that "no inadvertent intruder could disrupt or contact emplaced waste" is not technically achievable for all specialized disposal configurations and does not reflect the probabilistic, risk-informed structure of the performance objectives. A more defensible approach would require demonstration that the probability of intrusion leading to waste contact is sufficiently low, or that barriers are adequate to prevent contact under reasonably foreseeable intrusion scenarios. Clarifying this requirement would align § 61.13(b)(4) with the performance-objective framework in § 61.42 and with the probabilistic treatment of disruptive events in § 61.13(a)(3).

2. Additional Technical Concerns

a. Overlap and Potential Redundancy Between § 61.13(a) and § 61.13(e)
The proposed performance-period analyses in § 61.13(e) appear to duplicate several elements of the performance assessment in § 61.13(a), including evaluation of degradation processes and reliance on natural and engineered features. Clarifying the distinction between the compliance-period analyses and performance-period analyses would help ensure that applicants understand the expected scope and avoid unnecessary duplication.

b. Prescriptive Receptor Assumptions in § 61.13(a)(7)
The requirement to assume a resident farmer or resident gardener receptor may not be appropriate for all disposal-site settings, particularly specialized facilities located in remote or industrial areas. Allowing site-specific receptor scenarios where justified would better align with the "reasonably foreseeable pursuits" language and avoid imposing unrealistic assumptions.

c. Treatment of Uncertainty
The proposed rule requires accounting for uncertainties and variability in multiple subsections (§ 61.13(a)(6), § 61.13(b)(2)). While appropriate, the rule does not specify whether uncertainty must be treated probabilistically, deterministically, or through

bounding analyses. Clarifying the expected treatment of uncertainty would improve consistency across applications and reviews.

d. Agreement State Implementation
Because Agreement States must adopt compatible regulations, the differential treatment of legacy and new facilities and the absolute intrusion-prevention requirement in § 61.13(b)(4) may create challenges for compatibility determinations. Clarification of the technical basis for these distinctions would help Agreement States implement the revised rule consistently.

Summary
The proposed revisions to § 61.13 significantly expand and restructure the technical analyses required to demonstrate compliance with the performance objectives. Clarifying the rationale for differential treatment of legacy and new facilities, revising the non-performance-based requirement in § 61.13(b)(4), and addressing the additional technical concerns identified above would improve internal consistency, technical defensibility, and alignment with the hazard-based structure of Part 61.

61.23 Standards for Issuance of a License

While the intent of the revision to 61.23(n) is appropriate, the language as drafted is unnecessarily complex, difficult to follow, and inconsistent with the NRC's modern drafting style.

1. The proposed text is confusing due to its structure and content. The paragraph attempts to address several distinct regulatory concepts within a single, extended sentence:

- the requirement for a formal environmental determination under part 51,
- the weighing of environmental, economic, technical, and other benefits against environmental costs,
- the consideration of alternatives,
- the conclusion that license issuance is justified,
- a warning that early construction is at the applicant's own risk, and
- a clarification that "commencement of construction" may include certain non-construction activities.

Combining these elements into one paragraph obscures the primary regulatory requirement: that construction may not begin until the NRC has completed its environmental review and determined that license issuance is warranted. The nested clauses and multiple dependent phrases make the text difficult to parse and may lead to inconsistent interpretation by licensees and Agreement States.

Additionally, the paragraph mixes procedural requirements, advisory statements, and definitions in a single block of text. This blurs the distinction between mandatory prerequisites, cautionary language, and definitional clarification. Separating these concepts improves readability and ensures that applicants clearly understand the sequence of required actions.

Finally, the use of "his/her designee" is inconsistent with the gender-neutral terminology used throughout the remainder of the proposed rulemaking. Updating this phrasing would align the provision with current NRC drafting conventions.

2. To improve clarity, readability, and consistency with NRC's typical rulemaking style, the LLW Forum recommends replacing the paragraph with the following language. This version preserves all substantive requirements while presenting them in a clear, direct, and gender-neutral format:

> "Before construction of a land disposal facility may begin, the Director of Nuclear Materials Safety and Safeguards, or their designee, must determine — based on the information submitted and the evaluations performed under subpart A of part 51 — that issuing the license, with any necessary conditions to protect environmental values, is justified after considering environmental, economic, technical, and other benefits and weighing them against environmental costs, including an evaluation of reasonable alternatives. Any construction activities undertaken before this determination are performed at the applicant's own risk. "Commencement of construction," as defined in § 61.2, may include certain non-construction activities when those activities have a reasonable nexus to radiological safety and security.

This formulation:

- clearly states the prerequisite determination,
- separates the applicant-risk statement into its own sentence,
- preserves the definition-related clarification without embedding it in a long clause, and
- uses gender-neutral language consistent with the rest of the proposed rule.

3. For the reasons described above, the LLW Forum respectfully recommends that the NRC adopt the revised language or a similar formulation that improves clarity, readability, and consistency with modern NRC drafting practices.

61.24 Conditions of License

The proposed revisions to § 61.24 introduce new requirements related to criticality safety and technical-analysis maintenance. Several aspects of the proposed language would

benefit from clarification to ensure consistent implementation and alignment with the performance-objective framework in Subpart C.

1. Confusing and internally inconsistent requirements in § 61.24(l)
Paragraph (l) requires licensees to operate the land-disposal facility in a manner consistent with the technical analyses, while also requiring licensees to evaluate whether updates to those analyses are warranted when significant changes occur or when new waste streams are received. The provision does not specify what constitutes a "significant change," how "new waste streams" are defined, or whether the licensee must actually update the analyses once an evaluation indicates that updates are warranted.

This creates a circular and potentially unenforceable requirement: licensees must operate consistent with analyses that may no longer reflect current conditions, yet the rule does not require timely updates or specify the process for submitting or approving such updates. Clarification is needed to ensure that technical analyses remain current and that licensees understand when updates are required, when NRC approval is necessary, and how § 61.24(l) interacts with the change-control requirements in § 61.25.

2. Ambiguity in § 61.24(i) regarding special nuclear material and GTCC waste
The proposed language in § 61.24(i) requires licensees disposing of GTCC waste containing special nuclear material above § 70.24 thresholds to implement "design considerations that limit reconcentration of fissile material." This requirement is not performance-based and does not specify how reconcentration must be limited, how effectiveness is demonstrated, or how this requirement relates to the criticality-safety provisions in § 61.16(b). The phrase "as necessary" is subjective and may lead to inconsistent implementation across NRC and Agreement State programs.

Clarifying the performance basis for limiting reconcentration, and the relationship between § 61.24(i), § 61.16(b), and § 70.24, would improve internal consistency and ensure that criticality safety is addressed in a technically defensible manner.

3. Lack of clarity regarding interaction with § 61.25 (Changes)
The proposed rule does not specify whether updates to technical analyses constitute license amendments under § 61.25. If updates are required to maintain consistency with facility operations, it is unclear whether the licensee must obtain NRC approval before receiving new waste streams or implementing changes. Clarifying whether updates to technical analyses require prior approval, notification, or inspection review would improve regulatory predictability.

4. Need for definition of "new waste streams"
The requirement to evaluate new waste streams under § 61.24(l)(1)(ii) is not supported by a definition of "new waste stream." Without a definition, licensees may interpret this requirement inconsistently, leading to uncertainty regarding when evaluations are required

and how they relate to waste classification under § 61.55. Providing a definition or cross-reference would improve clarity and support consistent implementation.

5. Recordkeeping alone is insufficient
While § 61.24(l)(2) appropriately requires retention of evaluations under § 61.80, record retention alone does not ensure that technical analyses remain current or that NRC or Agreement States review changes in a timely manner. Clarifying whether evaluations must be submitted for review or incorporated into license amendments would strengthen the regulatory framework.

61.25 Changes

The proposed revisions to § 61.25 introduce a structured hierarchy for license-restriction categories, but when read together with § 61.24(l), the resulting framework is not enforceable as written. Several provisions create ambiguity, conflicting obligations, and procedural uncertainty that will impair both NRC and Agreement State implementation.

1. § 61.24(l) and § 61.25(c) create a compliance trap
Section 61.24(l) requires licensees to operate the facility in a manner consistent with the technical analyses, while also requiring licensees to evaluate whether updates to those analyses are warranted when significant changes occur or new waste streams are received. Section 61.25(c) then states that any change to the technical analyses requires 60 days prior notice and prior Commission approval.

This creates an unenforceable situation:

- The licensee must operate consistent with analyses that may no longer reflect current conditions.
- The licensee must evaluate whether updates are needed.
- But the licensee cannot update the analyses without prior NRC approval.
- And the rule does not specify whether operations must cease until approval is granted.

This structure places licensees at risk of violating § 61.24(l) simply because the approval process in § 61.25(c) has not yet concluded. The rule needs to clearly specify whether operations may continue while updates are pending, or whether NRC expects licensees to suspend waste receipt until approval is obtained.

2. "Significant changes" and "new waste streams" are undefined and unenforceable
Section 61.24(l) uses two undefined triggers:

- "significant changes," and
- "new waste streams."

Neither term is defined anywhere in Part 61. Without definitions, NRC cannot enforce these provisions consistently, and licensees cannot determine when evaluations are required. This ambiguity is especially problematic because these triggers may lead to license-restriction actions under § 61.25(a)–(c), including hearing opportunities and prior approval requirements.

3. § 61.25(a) categories do not align with § 61.24(l) triggers
The three categories in § 61.25(a) are based on public-health significance and specific licensing actions. They do not correspond to the triggers in § 61.24(l). As a result, licensees cannot determine which category applies when § 61.24(l) requires an evaluation. This disconnect undermines enforceability and creates procedural uncertainty.

4. § 61.25(a)(3) allows retroactive elevation of approval requirements
Section 61.25(a)(3) allows NRC to require prior approval for changes that would otherwise require only notice. When combined with the vague triggers in § 61.24(l), this provision creates unpredictable regulatory outcomes. Licensees may begin a change under the assumption that only notice is required, only to have NRC retroactively impose an approval requirement. This unpredictability is not compatible with enforceable licensing conditions.

5. Agreement State compatibility will be impaired
Agreement States must adopt compatible regulations. The unclear interaction between § 61.24(l) and § 61.25(a)–(c) will lead to inconsistent interpretations across jurisdictions. Undefined triggers, ambiguous approval pathways, and retroactive elevation authority will make compatibility determinations difficult and may result in divergent regulatory practices.

Subpart C Performance Objectives

The NRC's effort to modernize the performance objectives in Part 61 is commendable. However, several aspects of the proposed text introduce ambiguity and internal inconsistencies.

1. Inconsistent and Ambiguous Use of Dose Quantities (TED vs. TEDE)
The proposed revisions repeatedly use the phrase "total effective dose or total effective dose equivalent, as applicable". This phrasing is ambiguous and technically inconsistent.

- **TED** is the modern, ICRP-aligned quantity appropriate for public dose assessments and environmental modeling.
- **TEDE** is the older regulatory construct used for occupational dose compliance.
- The phrase "as applicable" is undefined and invites inconsistent interpretation by applicants and Agreement States.

Part 61 should use one dose quantity consistently, and TED is the appropriate quantity for public dose limits associated with waste disposal operations.

2. Inconsistent Use of SI Units vs. Traditional Units
The proposed revisions to §§ 61.41, 61.42, and 61.43 use SI units (millisieverts) as the primary unit, with millirems parenthetical. Other sections retain millirems as the primary unit. This inconsistency creates several problems:

- Part 61 historically uses millirems as the primary unit.
- NRC guidance documents (NUREG-1573, NUREG-2175) use millirems as the primary unit.
- Agreement States overwhelmingly use millirems.
- Proposed § 61.41(c) retains organ-specific limits expressed solely in millirems.

For clarity and consistency, Part 61 should use millirems as the primary unit, with SI units parenthetical if desired.

3. Concerns Regarding Long-Term Modeling for Intruder and Public Dose Assessments (§§ 61.41 and 61.42)
The proposed rule requires applicants to demonstrate compliance through computer-based exposure modeling over extremely long timeframes (1,000 or 10,000 years). This raises significant technical concerns:

- Model uncertainty dominates at long timeframes due to unpredictable changes in climate, hydrology, erosion, land use, waste form degradation, and human behavior.
- Intruder scenarios become speculative and cannot be credibly projected thousands of years into the future.
- NRC guidance acknowledges that intruder scenarios are stylized constructs, not realistic predictions.
- Regulatory decisions should not rely on the apparent precision of models whose assumptions cannot be validated.
- There are other decision analyses that do not depend on computer-based exposure modeling that are not included in this framework.

The NRC should acknowledge these limitations and ensure that compliance determinations do not rely on speculative long-term projections.

4. Vague and Undefined Terminology Across §§ 61.42–61.44
Several phrases in the proposed text are vague, subjective, or not tied to measurable regulatory criteria:

- “effectively managed” (§ 61.42(b))
- “ensure protection” (§ 61.42(c))

- “long-term stability” (§ 61.44)
- “to the extent practical” (§ 61.44)
- “as applicable” (multiple sections)

These phrases:

- are not defined in Part 61,
- invite inconsistent interpretation,
- and are not enforceable without measurable criteria.

Regulatory text should use clear, objective, and measurable performance requirements.

5. Structural and Internal Consistency Issues
The proposed revisions to §§ 61.41–61.43 follow a pattern of:

- dose limit
- performance objective
- demonstration requirement

However, § 61.44 uses broad qualitative language without specifying the performance attributes that constitute “stability.” This inconsistency makes § 61.44 harder to interpret and apply. For consistency, § 61.44 should adopt the same clarity and structure as the other revised performance objectives.

Summary of Recommendations
To improve clarity, consistency, and alignment with Commission direction, the LLW Forum respectfully recommend that the NRC:

1. Use TED consistently as the dose quantity for public dose limits.
2. Retain millirems as the primary dose unit throughout Part 61.
3. Acknowledge the limitations of long-term exposure modeling and avoid reliance on speculative projections.
4. Replace vague terminology with clear, measurable performance criteria.
5. Align § 61.44’s structure with the clarity and specificity of §§ 61.41–61.43.

These changes would preserve the NRC’s intent while ensuring that the revised performance objectives remain clear, technically defensible, and consistent with current Commission policy.

Subpart D Technical Requirements for Land Disposal Facilities

§ 61.50 — Disposal Site Suitability Requirements
While the NRC's intent to update disposal site suitability requirements is appropriate, the proposed text introduces ambiguity, internal inconsistency, duplicative provisions, and structural issues that will complicate implementation by applicants and Agreement States. Our comments below address these concerns.

1. Ambiguity in § 61.50(a)(2)(iv): What does "from below discharging" mean?
Paragraph (a)(2)(iv) states:

> "Groundwater from below discharging to the land surface within the disposal site at any time."

The phrase "from below discharging" is unclear and technically ambiguous:

- Does "below" refer to surficial groundwater seeps emerging from shallow perched zones?
- Does it refer to regional groundwater rising upward through the disposal units?
- Does it refer to upward hydraulic gradients caused by artesian conditions?
- Does it refer to discharge from beneath the waste units, or simply anywhere on the disposal site?

Because groundwater discharge can occur through multiple mechanisms (perched water tables, upward gradients, seepage faces, spring lines), the phrase "from below" must be clarified. As written, it is not possible for applicants to determine what hydrogeologic conditions are prohibited.

2. Relationship between § 61.50(a)(2) and § 61.50(a)(3) is unclear and potentially contradictory
Paragraph (a)(2) prohibits certain site characteristics for the first 500 years. Paragraph (a)(3) then states:

> "If any of the characteristics in paragraphs (2)(i) through (iv) are present after the first 500 years… the performance objectives… must still be met."

This raises several concerns:

- Paragraph (a)(2) prohibits these characteristics entirely for 500 years.
- Paragraph (a)(3) appears to allow them after 500 years, but only if performance objectives are met.
- This creates a two-tiered standard that is not explained anywhere else in Part 61.
- It is unclear why these characteristics are unacceptable for 500 years but acceptable afterward.

- The relationship between the compliance period and the performance period is not explained.

The NRC should clarify whether (a)(3) is intended to relax the prohibition after 500 years, or whether it is intended to address long-term uncertainty. As written, the two paragraphs conflict.

3. § 61.50(a)(4) is incomplete, unclear, and appears out of place
Paragraph (a)(4) states:

> "The projected population growth and future developments in the vicinity of the land disposal facility are not likely to affect the ability of the land disposal facility to meet the performance objectives… or to preclude defensible modeling due to large uncertainties."

This sentence is structurally awkward and appears incomplete:

- It is unclear what "not likely to affect" means — no criteria are provided.
- The phrase "preclude defensible modeling" is vague and undefined.
- The sentence does not specify what modeling is being referenced (hydrologic? intruder? erosion? land-use?).
- The requirement appears to belong in § 61.7 (concepts) or § 61.13 (performance assessment), not in site suitability.

As written, paragraph (a)(4) is not a clear or enforceable site suitability requirement.

4. § 61.50(a)(5)(i) and (ii): What time period is envisioned for "defensible modeling"?
Paragraphs (a)(5)(i) and (ii) require avoiding areas where natural resources or tectonic processes may:

> "…preclude defensible modeling due to large uncertainties."

This raises several questions:

- What is the modeling timeframe? 500 years? 1,000 years? 10,000 years?
- What level of uncertainty renders modeling "indefensible"?
- Does "defensible" refer to quantitative uncertainty, qualitative uncertainty, or scenario uncertainty?
- How does this requirement interact with the performance period in § 61.13(e)?

Given the inherent uncertainty in long-term geologic processes, the NRC must specify the timeframe and criteria for "defensible modeling." Without clarification, applicants cannot determine whether a site meets this requirement.

5. Ambiguity of "significantly affect" in § 61.50(a)(5)(iv)
Paragraph (a)(5)(iv) requires avoiding areas where nearby facilities or activities could:

> "significantly affect the ability of the disposal site to meet the performance objectives…"

The term "significantly affect" is subjective and undefined:

- Does "significant" refer to dose impact?
- Hydrologic impact?
- Erosion potential?
- Monitoring interference?
- Land-use conflict?

Without measurable criteria, this requirement is not enforceable and will be interpreted inconsistently by applicants and Agreement States.

6. § 61.50(b) is confusing and appears to reference the entirety of § 61.50(a)
Paragraph (b) states that specialized land disposal facilities must meet:

> "the suitability requirements of paragraphs (a)(1), (a)(4), and (a)(5); and applicable requirements of paragraphs (a)(2) and (a)(3)."

This structure is confusing:

- Paragraph (b) appears to incorporate almost all of paragraph (a).
- It is unclear which portions of (a)(2) and (a)(3) are "applicable."
- The NRC provides no explanation of how specialized facilities differ from near-surface facilities in terms of suitability.

The NRC should clarify the intended differences between near-surface and specialized facilities and rewrite paragraph (b) accordingly.

7. § 61.50(c) appears to apply to *all* near-surface disposal facilities
Paragraph (c) applies to licensees meeting § 61.1(b)(1) and choosing § 61.1(b)(2). However:

- § 61.1(b)(1) applies to facilities not accepting large quantities of long-lived radionuclides or GTCC waste.
- § 61.1(b)(2) applies to facilities that do accept such waste.
- Together, these two categories encompass all near-surface disposal facilities.

Thus, paragraph (c) appears to apply to every near-surface disposal facility, making it unclear why paragraph (a) exists at all. The NRC should clarify whether paragraph (c) is intended to be an alternative pathway or whether it inadvertently duplicates paragraph (a).

8. § 61.50(c) is written out of order and contains preamble-style text inside regulatory language
Paragraph (c) begins with:

> "The purpose of this section is to specify the minimum characteristics…"

This is preamble language, not regulatory text. Regulatory text should not contain explanatory statements, purpose statements, or narrative justification. The paragraph then shifts abruptly to:

> "The primary emphasis in disposal site suitability is given to isolation of wastes…"

Again, this is preamble-style narrative, not enforceable regulatory language. The NRC should remove narrative text and rewrite paragraph (c) in a clear regulatory format.

9. § 61.50(c)(1) through (10) appear duplicative of § 61.50(a)
Paragraphs (c)(1) – (10) repeat nearly all the requirements in paragraph (a):

- Characterization
- Population growth
- Natural resources
- Flooding
- Runoff
- Water table depth
- Groundwater discharge
- Tectonic processes
- Surface geologic processes
- Nearby facilities

This duplication creates confusion:

- Are paragraphs (a) and (c) intended to be alternative pathways?
- Are they intended to apply to different facility types?
- Why are the requirements repeated with slightly different wording?

Duplicative regulatory text increases the likelihood of inconsistent interpretation and should be consolidated.

10. Additional observations in 61.50
a. The section repeatedly uses vague, subjective terminology
Terms such as:

- "reasonable assurance"

- “likely to affect”
- “significantly affect”
- “defensible modeling”
- “to the extent practical”

are not defined and are not tied to measurable criteria.

b. The section relies heavily on long-term modeling despite inherent uncertainty
As noted in earlier comments, modeling over 500–10,000 years is inherently speculative. The NRC should acknowledge these limitations.

c. The structure of § 61.50 is inconsistent with §§ 61.41–61.44
The other performance objectives follow a clear pattern:

- requirement
- dose limit or performance criterion
- demonstration requirement

§ 61.50 mixes narrative, requirements, and duplicative text.

Summary of Recommendations
To improve clarity, consistency, and enforceability, the LLW Forum respectfully recommends that the NRC:

1. Clarify ambiguous hydrogeologic terminology in § 61.50(a)(2)(iv).
2. Explain the relationship between paragraphs (a)(2) and (a)(3).
3. Rewrite paragraph (a)(4) to provide clear, measurable criteria.
4. Specify the modeling timeframe and criteria for “defensible modeling.”
5. Define “significantly affect” in paragraph (a)(5)(iv).
6. Clarify the applicability of paragraph (b) and its relationship to paragraph (a).
7. Clarify whether paragraph (c) applies to all near-surface facilities.
8. Remove preamble-style narrative from paragraph (c).
9. Consolidate duplicative requirements in paragraphs (a) and (c).
10. Replace vague terminology with objective, measurable standards.

These changes would preserve the NRC’s intent while ensuring that § 61.50 remains clear, technically defensible, and consistent with the rest of the Part 61 performance objectives.

§ 61.51 Disposal Site Design for Land Disposal

While the NRC’s intent to modernize disposal site design requirements contained in 61.51 is appropriate, several aspects of the proposed text introduce ambiguity, inconsistency, or conflict with current Commission direction. Our comments below address these issues.

1. Continued use of vague language ("to the extent practical")
Paragraphs (a)(4) and (a)(6) state:

- "Covers must be designed, to the extent practical, to minimize water infiltration…"
- "The disposal site must be designed, to the extent practical, to minimize the contact of water with waste…"

The phrase "to the extent practical" is vague language. It is subjective, undefined, and not tied to measurable criteria.
The NRC should avoid the use of vague language. This phrase should be replaced with objective, enforceable language such as:

> "must be designed to minimize water infiltration" or "must be designed to minimize contact of water with waste."

2. Paragraph (a)(1) is vague and not tied to measurable criteria
Paragraph (a)(1) states:

> "Site design features must be directed toward long-term isolation of the waste and must avoid the need to continue active maintenance after site closure."

This raises several concerns:

- "Directed toward" is vague and not enforceable.
- "Avoid the need" is subjective — how much avoidance is required?
- No measurable design criteria are provided.

The NRC should specify what design features are required and how compliance is demonstrated. Please note that the LLW Forum is not suggesting that the NRC develop a standard design, only clarification on the required features and how they will be evaluated.

3. Paragraph (a)(3) uses unclear language ("complement and improve… where appropriate")
Paragraph (a)(3) states:

> "The disposal site must be designed to complement and improve, **where appropriate**, the ability of the disposal site's natural characteristics…"

This language is problematic:

- "Complement and improve" is vague and not tied to measurable criteria.
- "Where appropriate" is undefined and invites inconsistent interpretation.
- The phrase resembles preamble narrative rather than regulatory text.

The NRC should specify which natural characteristics must be complemented and what design improvements are required.

4. Paragraph (a)(5) uses subjective language ("velocities and gradients which will not result in erosion")
Paragraph (a)(5) requires:

> "Surface features must direct surface water drainage away… at velocities and gradients which will not result in erosion…"

This raises several issues:

- "Will not result in erosion" is absolute and unrealistic — all sites experience some erosion.
- No quantitative criteria (e.g., allowable erosion rates, slope limits, runoff coefficients) are provided.
- The requirement is not tied to the performance assessment in § 61.13.

The NRC should specify acceptable erosion thresholds or reference engineering standards.

5. Paragraph (a)(6) duplicates requirements already addressed in § 61.50
Paragraph (a)(6) requires minimizing water contact with waste during:

- storage,
- disposal, and
- post-closure.

However:

- § 61.50(a)(2)(iii) already prohibits disposal in saturated zones or water-table fluctuation zones.
- § 61.50(a)(2)(iv) already prohibits groundwater discharge to the surface.
- § 61.50(a)(5)(iii) already addresses erosion and surface geologic processes.

Paragraph (a)(6) appears duplicative and should be consolidated with § 61.50.

6. Paragraph (b)(1) is unclear about which portions of (a) apply to specialized facilities
This section, as proposed, reads as follows:

> (b) Disposal site design for specialized land disposal facilities
>
> > (1) Site design and operation must meet the requirements of paragraphs (a)(1) through (3), and (6), as well as any applicable requirements of paragraphs (a)(4) and (5) of this section.

This structure is confusing:

The LLW Forum recommends that this proposed section be written as:

(b) Disposal site design for specialized land disposal facilities

(1) Site design and operation must meet the requirements of paragraph (a) of this section.

7. Paragraph (b)(2) introduces new intruder-protection design requirements not aligned with § 61.42

Paragraph (b)(2) requires:

> "...engineered and natural barriers that will, in combination, prevent an inadvertent intruder from disrupting or contacting emplaced waste..."

This raises several concerns:

- § 61.42 already defines the intruder performance objective.
- § 61.42(a)(1) allows intruder contact as long as dose limits are met.
- § 61.42(a)(2) requires preventing contact only for specialized facilities.
- § 61.51(b)(2) appears to impose a zero-contact requirement, which is stricter than § 61.42.

The NRC should ensure consistency between § 61.51(b)(2) and § 61.42.

8. Continued use of vague, subjective terminology

Across § 61.51, the NRC uses terms such as:

- "directed toward"
- "reasonable assurance"
- "where appropriate"
- "to the extent practical"
- "will not result in erosion"

These terms are not defined and are not tied to measurable criteria. They invite inconsistent interpretation and reduce enforceability.

Summary of Recommendations

To improve clarity, consistency, and alignment with Commission direction, the LLW Forum respectfully recommends that the NRC:

1. Remove vague language such as "to the extent practical."
2. Replace vague terminology with objective, measurable design criteria.
3. Clarify the relationship between § 61.51 and § 61.50 to avoid duplication.

4. Clarify which portions of § 61.51(a) apply to specialized facilities under § 61.51(b).
5. Ensure consistency between intruder-protection requirements in § 61.51(b)(2) and § 61.42.
6. Provide quantitative or engineering-based criteria for erosion control and water-management design.

These changes would preserve the NRC's intent while ensuring that § 61.51 remains clear, enforceable, and consistent with the rest of the Part 61 performance objectives.

§ 61.52 Land Disposal Facility Operation and Disposal Site Closure

The NRC's intent to update operational and closure requirements contained in § 61.52 is appropriate, several aspects of the proposed text introduce ambiguity, structural inconsistency, duplicative provisions, and unclear regulatory logic. Our comments below address these concerns.

1. Awkward phrasing in § 61.52(a)(3): "disposed in the near-surface provided…"
Paragraph (a)(3) states:

> "…may be disposed in the near-surface provided that the top of the waste is a minimum of 5 meters below the land surface…"

This phrasing is awkward and inconsistent with NRC terminology. The phrase "disposed in the near-surface provided" reads as if "near-surface" is a condition rather than a facility type.

A clearer phrasing would be:

> "…may be disposed in a near-surface disposal facility provided that…"

Alternatively, if the NRC intends for these wastes to be disposed **only** in specialized land disposal facilities, paragraph (a)(3) could be rewritten to reference § 61.52(b):

> "…may be disposed in a specialized land disposal facility pursuant to § 61.52(b)."

If paragraph (a)(3) is rewritten this way, paragraph (a)(4) becomes unnecessary, because the only difference between (a)(3) and (a)(4) is the concentration of transuranic radionuclides. Eliminating (a)(4) would require renumbering subsequent paragraphs and updating cross-references.

2. Inconsistency between § 61.52(a)(10) and § 61.52(b)(2) regarding buffer zones beneath disposed waste
Paragraph (a)(10) requires:

> "...a buffer zone of land must be maintained... beneath the disposed waste..."

Paragraph (b)(2) states:

> "...or demonstrate that such a buffer zone is not required..."

This raises a fairness and consistency concern:

- Why can specialized land disposal facilities demonstrate that a buffer zone beneath the waste is unnecessary, while near-surface facilities cannot?
- Both facility types must conduct environmental monitoring under § 61.53(d).
- Both facility types must meet the same performance objectives in Subpart C.

There is no technical justification provided for treating the two facility types differently. The NRC should either:

- allow both facility types to demonstrate that a subsurface buffer zone is unnecessary, or
- require both facility types to maintain such a buffer zone.

As written, the requirement is inconsistent and lacks a defensible regulatory basis.

3. Undefined term "significant quantities" in § 61.52(a)(16)
Paragraph (a)(16) states:

> "Significant quantities of uranium must be disposed so that the top of the waste is a minimum of 5 meters below the land surface."

The term "significant quantities" is not defined anywhere in Part 61 or in the proposed revisions. This creates several problems:

- Applicants cannot determine whether the requirement applies.
- Agreement States may interpret "significant" differently.
- The term is not tied to dose, mass, concentration, or hazard.
- The requirement is not linked to § 61.55 waste classification.

Regulatory text should use clear, measurable criteria, not subjective terminology.

4. § 61.52(a)(17): Is this a disposal design requirement or a waste acceptance criterion?
Paragraph (a)(17) states:

> "Greater-Than-Class C waste must be disposed so as to not produce thermal effects that would significantly degrade the performance of the disposal site."

This requirement appears to be:

- a waste acceptance criterion (i.e., the waste must not produce excessive heat),
- not a disposal design requirement.

If GTCC waste produces thermal effects, the issue is with the waste characteristics, not the disposal design. This requirement belongs in:

- § 61.55 (waste classification), or
- § 61.56 (waste form and stability),

not in § 61.52 (operations and closure).

5. § 61.52(a)(18): Is this requirement appropriate for GTCC waste or diffuse SNM?
Paragraph (a)(18) states:

> "Greater-Than-Class C waste must be disposed in a manner that limits the potential for a criticality event…"

This raises several concerns:

- GTCC waste does not necessarily contain fissile material.
- Diffuse special nuclear material (SNM) may pose criticality concerns, but GTCC waste is defined by concentration of long-lived radionuclides, not fissile content.
- The requirement appears misplaced unless the NRC intends to regulate SNM disposal under Part 61.

If the NRC intends to regulate criticality safety for SNM disposal, this requirement should be placed in:

- § 61.56 (waste form), or
- § 61.55 (classification),

not in § 61.52.

6. Suggested revision to § 61.52(b)(2) and elimination of duplicative text
If paragraph (b)(1) is revised to include a reference to § 61.52(a)(10), then the first half of paragraph (b)(2) becomes duplicative. Paragraph (b)(2) could be rewritten as:

> "The licensee may demonstrate that a buffer zone beneath the disposed waste is not required to carry out environmental monitoring activities specified in § 61.53(d)."

This eliminates duplication and aligns the requirement with paragraph (a)(10).

7. § 61.52(b)(3) appears unnecessary and duplicative
Paragraph (b)(3) states:

> "Wastes with radionuclide concentrations that exceed the values in Table 3 of § 61.55 must be disposed in accordance with § 61.55(b)(2)(iii)."

This requirement is unnecessary because:

- § 61.55(b)(2)(iii) already governs disposal of such wastes.
- Specialized land disposal facilities are already defined as facilities capable of disposing of such wastes.
- The requirement adds no new information and duplicates existing regulatory text.

Paragraph (b)(3) should be removed.

8. Additional observations on § 61.52
a. Several paragraphs use vague terminology
Terms such as:

- "sufficiently separated,"
- "significant quantities,"
- "significantly degrade,"
- "significantly mask,"
- "not generally acceptable,"

are subjective and not tied to measurable criteria.

b. Several requirements belong in other sections
Thermal effects, criticality safety, and waste acceptance criteria belong in §§ 61.55–61.56, not § 61.52.

c. The structure of § 61.52 is inconsistent with §§ 61.50–61.51
The NRC mixes:

- waste classification,
- disposal design,
- operational requirements,
- closure requirements,
- and waste acceptance criteria

in a single section, making it difficult to interpret.

Summary of Recommendations
To improve clarity, consistency, and regulatory coherence, the LLW Forum respectfully recommends that the NRC:

1. Rewrite § 61.52(a)(3) for clarity and consider eliminating § 61.52(a)(4).
2. Harmonize buffer-zone requirements between near-surface and specialized facilities.
3. Define "significant quantities" or replace it with measurable criteria.
4. Relocate thermal-effect and criticality-safety requirements to §§ 61.55–61.56.
5. Revise § 61.52(b)(2) to eliminate duplication.
6. Remove § 61.52(b)(3) as unnecessary.
7. Replace vague terminology with objective, measurable standards.
8. Improve structural consistency with other sections of Subpart C.

These changes would preserve the NRC's intent while ensuring that § 61.52 remains clear, enforceable, and consistent with the rest of Part 61.

§ 61.55 — Waste Classification
The proposed revisions to § 61.55 introduce several ambiguities, inconsistencies, and structural issues that warrant clarification to ensure the regulation remains internally coherent, aligned with the performance-based framework of Part 61, and usable by applicants and Agreement States. The following consolidated comment addresses concerns across § 61.55(a)(1), § 61.55(a)(2), and § 61.55(b).

I. § 61.55(a)(1) — "Considerations" for Class A, B, and C Waste
1. Inconsistent hazard terminology ("acceptable hazard" vs. "not unacceptable hazard")
The paragraph uses two different constructions to describe intruder hazard thresholds:

- Class A/B waste: "*will present an acceptable hazard to an intruder*."
- Class C waste: "*does not pose an unacceptable hazard to an intruder*."

These formulations are logically equivalent but rhetorically opposite. This inconsistency may lead to differing interpretations of hazard thresholds and is inconsistent with the rest of Part 61, which generally uses positive formulations ("acceptable hazard," "acceptable concentration," "acceptable dose").

Recommended revision: Use a single, consistent formulation—preferably "presents an acceptable hazard"—throughout § 61.55(a)(1).

2. Reliance on fixed decay periods (100 years, 500 years) conflicts with performance-based regulation

The paragraph re-asserts 1982 assumptions that:

- Class A/B waste becomes acceptable after 100 years,
- Class C waste becomes acceptable after 500 years,
- Intruder barriers must last 500 years.

These fixed timeframes conflict with the proposed rule's emphasis on site-specific performance assessments and quantitative intruder dose criteria under § 61.42. Institutional control for 100 years is not guaranteed, and the 500-year assumption may not be appropriate for all sites.

Recommended revision: Clarify that decay periods and barrier lifetimes are historical reference points, not prescriptive requirements, and that compliance is determined through site-specific performance assessments.

3. Oversimplification of intrusion protection for Class A/B waste
The text states that Class A/B waste may be disposed "without special provisions for intrusion protection." In practice:

- Many disposal sites use engineered covers or depth-of-burial even for Class A/B waste.
- Agreement States often require intruder analyses for all waste classes.
- The proposed rule's new intruder dose criteria may require additional measures depending on site conditions.

Recommended revision: Clarify that intrusion protection requirements for Class A/B waste may vary based on site-specific performance assessments.

4. Outdated terminology ("surface activities")
The paragraph states that deeper burial of Class C waste prevents disturbance from "surface activities." Modern intruder scenarios include:

- Excavation
- Trenching
- Drilling
- Construction
- Utility installation

Recommended revision: Replace "surface activities" with "intruder activities that may disturb subsurface waste."

5. Implicit assumption that Class C waste always decays to acceptable levels by 500 years
Several Class C radionuclides (e.g., C-14, Ni-59, Ni-63) remain significant beyond 500 years. Hazard depends on site-specific intruder pathways and dose modeling, not solely decay time.

Recommended revision: Clarify that decay periods are general considerations, not universal determinants of acceptability.

6. Blurring classification criteria with intruder protection requirements
Waste classification (§ 61.55) and intruder protection (§ 61.42) are distinct regulatory concepts. Mixing them may confuse applicants about whether classification depends on intruder protection design.

Recommended revision: Separate classification logic from intruder protection requirements.

7. Lack of clarity regarding GTCC waste
The structure implies that wastes exceeding Class C limits but not meeting decay assumptions are simply "unacceptable." GTCC waste is governed by statute (42 U.S.C. 2021c(b)(1)(D)) and disposed under DOE authority unless NRC licenses a facility.

Recommended revision: Clarify that § 61.55(a)(1) applies only to commercial LLRW, not GTCC.

II. § 61.55(a)(2) — Waste Classes and Stability Requirements
1. Use of the phrase "to the extent practical"
The phrase appears in both Class B and Class C stability requirements:

> "…must be designed to be stable…over 300 years, to the extent practical."

Concerns include:

- The term is undefined and subjective.
- It conflicts with the performance-based structure of the proposed rule.
- It creates uncertainty about compliance expectations.

Recommended revision: Remove "to the extent practical" or replace it with a clear, performance-based criterion tied to § 61.42 intruder dose limits or § 61.56 stability requirements.

2. Outdated 300-year stability requirement
The 300-year stability requirement reflects 1982 assumptions. Modern wasteform performance is evaluated through site-specific modeling.

Recommended revision: Clarify whether 300-year stability is a design goal, minimum requirement, or historical reference point.

3. Segregation language for Class A waste is unclear
The text states Class A waste "is usually segregated," but segregation practices vary widely.

Recommended revision: Clarify whether segregation is required, recommended, or simply common practice.

III. § 61.55(b) — Classification of Greater-Than-Class-C Waste
1. Ambiguity in "sufficient burial depth" — § 61.55(b)(1)(ii)
The phrase is undefined. The only explicit burial-depth requirement in Part 61 is the 5-meter minimum depth in § 61.52(a)(2) for Class C waste.

Does "sufficient burial depth" for GTCC mean:

- ≥ 5 meters?
- 5 meters?
- A site-specific depth determined through performance assessment?

Recommended revision: Define "sufficient burial depth" or reference § 61.52(a)(2).

2. Confusing and contradictory language in § 61.55(b)(1)(iii)
The paragraph states:

- GTCC waste with TRU >10,000 nCi/g is "not generally acceptable" for near-surface disposal,
- but "may" be disposed in a specialized facility,
- and "may" be disposed in a near-surface facility if NRC approves.

This structure is circular and confusing.

Recommended revision: Rewrite the paragraph to clearly state:

1. Such waste is not acceptable for near-surface disposal by default.
2. It may be disposed in a specialized land disposal facility.
3. It **may** be disposed in a near-surface facility only if NRC grants specific approval.

3. Classification paradox in § 61.55(b)(2)(ii)
The paragraph states:

> "Waste exceeding Class C limits is GTCC **if** it does not exceed Table 3 values."

This raises a critical question. What is waste that exceeds Class C limits *and* exceeds Table 3 values? The rule does not say.

Logically, such waste is still GTCC, because GTCC is defined by statute. However, the text implies that waste exceeding Table 3 values is:

- GTCC,
- but "not generally acceptable for land disposal,"
- unless NRC approves disposal under § 61.55(b)(2)(iii).

Recommended revision: Clarify explicitly that waste exceeding Table 3 values remains GTCC but requires NRC approval for disposal.

4. Breadth of NRC approval authority under § 61.55(b)(2)(iii)
The paragraph states that waste exceeding Table 3 values:

> "…is not generally acceptable for land disposal unless proposals…are approved by the Commission."

This appears to authorize NRC to approve disposal of GTCC waste exceeding Table 3 values:

- in near-surface facilities,
- in specialized land disposal facilities,
- or in any Part 61 facility,

provided performance objectives are met.

Recommended revision: Clarify whether NRC intends to allow disposal of GTCC waste exceeding Table 3 values in any Part 61 facility or only in specialized facilities.

5. Use of "reasonable assurance" in § 61.55(c)
"Reasonable assurance" is a subjective standard that may conflict with the proposed rule's quantitative, performance-based approach.

Recommended revision: Clarify whether GTCC approvals must meet quantitative performance objectives under Subpart C or whether "reasonable assurance" remains the governing standard.

6. Additional structural concerns
a. Mixing classification criteria with intruder protection requirements
GTCC classification (§ 61.55) should not depend on intruder protection design (§ 61.42).

b. Table 3 clarity
Table 3 mixes:

- mass-based and volume-based units,

- alpha vs. beta/photon categories,
- activated metal vs. non-activated metal categories.

This structure is difficult to interpret and may lead to misclassification.

c. DOE's statutory role
GTCC disposal is DOE's responsibility unless NRC licenses a facility. The rule should acknowledge this to avoid jurisdictional confusion.

IV. Summary of Recommended Actions
To improve clarity, consistency, and regulatory usability, NRC should:

- Harmonize hazard terminology.
- Clarify decay periods and barrier lifetimes as non-prescriptive.
- Update intruder scenario terminology.
- Remove or define "to the extent practical."
- Clarify segregation requirements for Class A waste.
- Define "sufficient burial depth" for GTCC.
- Rewrite § 61.55(b)(1)(iii) for clarity.
- Clarify the status of GTCC waste exceeding Table 3 values.
- Clarify NRC's approval authority under § 61.55(b)(2)(iii).
- Clarify the use of "reasonable assurance."
- Improve Table 3 structure.
- Clarify DOE's statutory role.

These revisions would significantly improve the clarity, internal consistency, and practical usability of § 61.55 for applicants, Agreement States, and NRC reviewers.

§ 61.56 — Waste Characteristics

The proposed revisions to § 61.56 introduce several requirements intended to improve waste handling, stability, and long-term performance. However, several provisions rely on subjective terminology, lack measurable criteria, or create inconsistencies with other sections of Subpart D. Clarifying these provisions would improve enforceability, regulatory consistency, and alignment with the performance-objective framework in Subpart C.

1. Use of "as is reasonably achievable" introduces subjective optimization language
Both § 61.56(a)(3) and § 61.56(b)(2) require that free-standing and non-corrosive liquid be reduced "as is reasonably achievable." This phrase is undefined, subjective, and inconsistent with the performance-based structure of the proposed rule. It also reintroduces optimization language similar to "to the extent practical," which the Commission has proposed removing elsewhere.

The Commission should replace "reasonably achievable" with clear, enforceable criteria or define the term explicitly. If flexibility is intended, NRC should specify the factors that determine what is "reasonably achievable."

2. Liquid-content limits are repeated in two sections with slightly different framing
The 1% and 0.5% liquid limits appear in both § 61.56(a)(3) and § 61.56(b)(2). Although the contexts differ—general waste versus waste processed to a stable form—the language is nearly identical. Consolidating or cross-referencing these provisions would improve readability and reduce the potential for inconsistent interpretation.

3. § 61.56(c)(1) — Heat-generation requirement lacks measurable criteria
The requirement that GTCC waste "must not generate heat in amounts that impact the release of radioactive material or the long-term stability of the disposal site" is conceptually appropriate but lacks enforceable thresholds. The rule does not specify:

- what level of heat generation constitutes "impact,"
- whether the threshold is tied to temperature, thermal load, or wasteform degradation,
- or whether compliance must be demonstrated through quantitative modeling.

To ensure consistent implementation, NRC should tie this requirement to the performance objectives in Subpart C or specify quantitative criteria.

4. § 61.56(c)(3) — Radiolysis-related degradation requirement is vague
The requirement that waste "must not emit radiation at levels that could lead to degradation of the disposal environment" is ambiguous. Radiolysis thresholds depend on wasteform chemistry, moisture content, container materials, and disposal conditions. Without defined criteria, licensees may interpret this requirement inconsistently.

NRC should clarify whether compliance requires:

- a quantitative radiolysis analysis,
- a qualitative demonstration,
- or conformance with the stability requirements in § 61.56(b).

5. § 61.56(c)(4) — "Stable physical form that is not dispersible" is undefined
The requirement that GTCC waste be in a "stable physical form that is not dispersible" is reasonable but lacks definition. The examples provided ("grout, activated metal") are helpful but incomplete. It is unclear whether NRC intends to prohibit disposal of certain wasteforms (e.g., resins, sludges, soils) unless stabilized.

NRC should clarify whether "not dispersible" means:

- meeting the stability criteria in § 61.56(b),

- meeting intruder-protection criteria under § 61.42,
- or meeting a specific physical-integrity standard.

6. Structural consistency with § 61.55
Several structural issues arise when § 61.56 is read alongside § 61.55:

- § 61.56(c) mixes wasteform stability requirements with intruder-protection concepts, mirroring similar issues in § 61.55(b). These are distinct regulatory concepts and should be addressed separately.
- GTCC wasteform requirements should acknowledge DOE's statutory role in GTCC disposal unless NRC licenses a facility.
- The terminology in § 61.56(c)(4) ("stable physical form") should be harmonized with the 300-year stability language in § 61.55(a)(2) ("maintain gross physical properties and identity over 300 years").

Summary of Recommended Revisions
To improve clarity, enforceability, and consistency with the performance-based structure of Part 61, NRC should:

- Remove or define "reasonably achievable."
- Clarify heat-generation thresholds in § 61.56(c)(1).
- Clarify radiolysis-related degradation criteria in § 61.56(c)(3).
- Define "not dispersible" in § 61.56(c)(4).
- Harmonize wasteform-stability terminology with § 61.55.
- Distinguish wasteform requirements from intruder-protection requirements.
- Clarify DOE's statutory role in GTCC disposal.

These revisions would improve regulatory clarity, reduce ambiguity, and ensure consistent implementation across NRC and Agreement State programs.

§ 61.58 — Waste Acceptance

1. Use of "reasonable assurance" reintroduces subjective, non-quantitative language
§ 61.58(a) states:

> "Each licensee must implement waste acceptance criteria…that provide reasonable assurance of compliance with the performance objectives…"

This is the same concern raised earlier in § 61.55(c):

- "Reasonable assurance" is not a quantitative standard.
- It conflicts with the proposed rule's emphasis on performance-based, dose-based, and analysis-based compliance.

- It invites inconsistent interpretation across Agreement States.
- It is optimization-style language similar to "reasonably achievable" and "to the extent practical," which these comments have already flagged.

Recommended revision: Replace "reasonable assurance" with a reference to demonstrated compliance with the performance objectives in Subpart C, or define what constitutes "reasonable assurance" in this context.

2. The relationship between generic and site-specific waste acceptance criteria is unclear

§ 61.58(a)(1) and (a)(2) allow licensees to choose:

- Generic WAC (based on §§ 61.55 and 61.56), or
- Site-specific WAC (based on facility-specific analyses)

But the rule does not clearly state:

- Whether site-specific WAC may be more restrictive than generic WAC
- Whether site-specific WAC may be less restrictive (except for GTCC limits)
- Whether licensees may use a hybrid approach
- How NRC will evaluate equivalency to § 61.56 stability requirements

This ambiguity could lead to inconsistent implementation.

Recommended revision: Clarify whether site-specific WAC may be more or less restrictive than generic WAC, and specify how equivalency to § 61.56 will be evaluated.

3. The GTCC provision in § 61.58(a)(2) is correct but needs clarification

The text states:

> "Waste with radionuclide concentrations in excess of the Class C limits codified at 42 U.S.C. 2021c(b)(1)(D)…is GTCC waste and site-specific limits…cannot change that designation."

This is legally correct; GTCC classification is statutory, not regulatory. However, the rule does not clarify:

- Whether GTCC waste may be accepted at an NRC-licensed GTCC disposal facility under Part 61
- Whether GTCC waste is categorically excluded from site-specific WAC
- Whether GTCC waste must be rejected by facilities that do not have GTCC disposal authority
- How GTCC waste interacts with § 61.55(b)(2)(iii) (NRC approval for disposal of waste exceeding Table 3)

Given the confusion in § 61.55(b), this section should explicitly state:

- GTCC waste cannot be accepted under site-specific WAC unless the facility is licensed for GTCC disposal under § 2021c(b)(2).

4. § 61.58(a)(2)(i) — "Allowable activities and concentrations" needs clarification
The rule requires site-specific WAC to specify:

> "Allowable activities and concentrations…developed from the technical analyses."

But it does not specify:

- Whether these limits must be tied to intruder dose criteria (§ 61.42)
- Whether they must be tied to public dose criteria (§ 61.41)
- Whether they must be tied to operational dose criteria (§ 61.43)
- Whether they must be tied to stability requirements (§ 61.56)

This is a structural gap.

Recommended revision: Clarify that allowable activities and concentrations must be derived from all applicable performance objectives, not just unspecified "technical analyses."

5. § 61.58(a)(2)(ii) — Wasteform and container specifications should reference § 61.56
The rule requires:

> "Acceptable wasteform characteristics and waste container specifications."

But it does not explicitly reference:

- § 61.56(a) minimum wasteform requirements
- § 61.56(b) stability requirements
- § 61.56(c) GTCC wasteform requirements

Given the complexity of wasteform stability, NRC should explicitly tie site-specific WAC to § 61.56.

6. § 61.58(b) — Waste characterization requirements are reasonable but lack performance-based context
The characterization requirements are standard, but:

- They do not specify acceptable uncertainty levels
- They do not specify how uncertainty interacts with dose modeling

- They do not specify how characterization supports compliance with site-specific WAC

Given the proposed rule's emphasis on quantitative performance, NRC should clarify:

- How uncertainty must be evaluated
- How characterization supports compliance with Subpart C
- Whether licensees must perform uncertainty propagation in dose models

7. § 61.58(c) — Waste certification program is reasonable but incomplete
The certification program must:

- Designate authority
- Certify waste meets WAC
- Specify documentation
- Identify records
- Manage certified waste

However, it does not require:

- Verification of characterization data
- Audits of waste generators
- Corrective action procedures
- Non-conformance management

These are standard elements of waste certification programs (e.g., DOE Order 435.1, WIPP WAC).

Recommended revision: Add requirements for verification, audits, corrective actions, and non-conformance management.

Summary of Recommended Actions for § 61.58
To improve clarity and consistency, NRC should:

- Define or replace "reasonable assurance."
- Clarify the relationship between generic and site-specific WAC.
- Clarify GTCC waste acceptance limitations under § 2021c(b)(1)(D).
- Tie allowable activities and concentrations to specific performance objectives.
- Explicitly reference § 61.56 wasteform requirements.
- Clarify uncertainty requirements in waste characterization.
- Strengthen waste certification program requirements.

These revisions would improve regulatory clarity, reduce ambiguity, and align § 61.58 with the performance-based structure of the proposed Part 61 rulemaking.

Subpart E - Financial Assurances

Although the NRC proposes only limited revisions to Subpart E, this portion of Part 61 has long contained structural ambiguities that affect both regulatory clarity and practical implementation. The Commission should take this opportunity to correct these longstanding issues. As written, Subpart E does not provide a clear, consistent framework for financial assurance across the full lifecycle of a land disposal facility. Key terms are undefined, expectations shift without explanation, and the regulation does not distinguish between instruments appropriate for short-term contingencies and those required to fund long-term obligations.

The following comments identify specific areas where Subpart E should be strengthened to ensure that financial assurance requirements are transparent, enforceable, and aligned with contemporary NRC practice.

1. Use of the Term "Reasonable Assurance"
Section 61.61 requires applicants to demonstrate "reasonable assurance" of financial capacity, but the regulation provides no definition of this term. In the context of financial assurance, "reasonable assurance" is meaningful only when tied to:

- a defined obligation,
- a measurable cost estimate, and
- a financial instrument capable of meeting that obligation.

Absent such context, the phrase is subjective and invites inconsistent interpretation across licensing actions.

Recommendation: The Commission should define "reasonable assurance" within Subpart E or incorporate by reference an existing definition used elsewhere in NRC regulations (e.g., 10 CFR 50.75). The definition should make clear that "reasonable assurance" requires demonstrable financial capacity, not merely an assertion of future ability to obtain funds.

2. Lack of Clear Lifecycle Expectations
Subpart E does not articulate what financial guarantees must exist at each phase of the land disposal facility lifecycle. The regulation treats financial assurance as a single, undifferentiated obligation, even though the financial risks and responsibilities change substantially across:

- construction and operation,
- closure and stabilization,
- post-closure, and
- institutional control.

Guarantee-type instruments may be appropriate during operation, when the primary concern is sudden abandonment. However, predictable long-term obligations such as closure, post-closure monitoring, and institutional control require actual funds, not contingent guarantees. The addition of large quantities of long-lived radionuclides and GTCC wastes may result in an increased burden to the public that needs to be considered when determining the amount of financial assurance required.

Recommendation: The Commission should revise Subpart E to specify the financial assurance expectations for each lifecycle phase. This structure would align Part 61 with other NRC programs (e.g., reactor decommissioning, uranium recovery) and provide clarity to applicants and regulators.

3. Undefined Use of the Term "Surety"
Subpart E repeatedly uses the term "surety" without defining it. In practice, "surety" is used to refer to a wide range of instruments with fundamentally different financial characteristics, including:

- surety bonds,
- letters of credit,
- cash deposits,
- trust funds,
- escrow accounts, and
- government securities.

This lack of definition creates confusion about what instruments are acceptable for which obligations.

Recommendation: The Commission should define "surety" in § 61.2 or within Subpart E and distinguish between:

- guarantee instruments (surety bonds, letters of credit, corporate guarantees), and
- cash-backed instruments (trust funds, escrow accounts, government securities).

The regulation should state explicitly that guarantee instruments are appropriate for operational contingencies, while cash-backed instruments are required for closure, post-closure, and institutional control.

4. Need for Cash or Cash Equivalents for Long-Term Obligations
The existing text implies that guarantee-type instruments could remain in place through closure, post-closure, and institutional control. This is not realistic. Guarantee instruments are designed for short-term contingencies, not long-term funding of predictable obligations.

Closure and post-closure activities require actual funds. This is why reactor decommissioning requires an external sinking fund and why long-term environmental obligations in other Federal programs rely on cash-backed instruments.

Recommendation: The Commission should revise §§ 61.62 and 61.63 to state clearly that:

- guarantee instruments may be used during operation,
- cash or cash equivalents must be used for closure, post-closure, and institutional control, and
- the transition from guarantee instruments to cash-backed instruments must occur prior to approval of the closure plan.

This clarification would eliminate longstanding confusion and align Subpart E with established financial assurance principles.

5. Additional Improvements
Annual Review (§ 61.62(c))
The regulation should specify the criteria used in annual reviews, including inflation indices, cost-estimate methodologies, and treatment of partially completed closure activities.

Open-Ended Term (§ 61.62(e))
The Commission should clarify that open-ended instruments must remain valid until closure and stabilization are complete and the license is transferred to the site owner.

Institutional Control (§ 61.63)
The regulation should specify acceptable financial instruments for institutional control and require that funds be held in a manner that protects them from insolvency or bankruptcy of either the operator or the site owner.

Summary
Subpart E is foundational to ensuring that land disposal facilities remain protective throughout their lifecycle. The current text contains ambiguities that have persisted since the original promulgation of Part 61. The Commission should take this opportunity to modernize Subpart E, clarify expectations, define key terms, and align financial assurance requirements with contemporary NRC practice. These changes would improve regulatory clarity, reduce administrative burden, and ensure that adequate funds are available when needed—not merely promised.

Subpart F - Participation by State Governments and Indian Tribes

Although the Commission proposes only limited revisions to Subpart F, this portion of Part 61 continues to rely on a participation model that reflects the regulatory environment

of the early 1980's rather than current practice. As written, Subpart F contains ambiguities regarding the role of State governments, Tribal governments, Compacts, and local communities in the licensing of land disposal facilities. The following comments identify areas where the Commission should strengthen and modernize Subpart F to ensure that participation is meaningful, predictable, and aligned with contemporary NRC policy.

1. Basis for Requiring States or Tribes to Petition for Participation
Subpart F requires States and Tribal governments to petition the NRC in order to participate in the review of a license application. The regulation does not explain the basis for this requirement, nor does it identify any statutory limitation that would prevent the Commission from providing participation opportunities without requiring a formal petition. In addition, the Low-Level Radioactive Waste Policy Amendments Act was not in place when 10 CFR Part 61 was promulgated. As such, Subpart F needs to be updated to include the critical role Compacts play in the disposal of low-level radioactive waste.

This structure is unusual. States, Tribal governments and Compacts routinely participate in NRC licensing actions under other parts of Title 10 without petitioning for permission. In many cases, NRC practice encourages early coordination rather than requiring a formal request.

Recommendation: The Commission should revise Subpart F to eliminate the petition requirement and include Low-Level Radioactive Waste Compacts. A more modern and appropriate approach would allow States, Tribes and Compacts to participate without petitioning, consistent with NRC's current Tribal Policy Statement, longstanding State-consultation practices and implementation of the Low-Level Radioactive Waste Policy Amendments Act.

2. Different Time Periods for Petitioning (§ 61.72(a)(1) and (a)(2))
The regulation provides 45 days for the host State or compact States to petition for participation, but 120 days for non-compact States and Tribal governments. This structure raises several concerns:

- States, tribal governments, and compacts should not be required to petition to participate.
- The host State, which bears the greatest potential impact, is given less time to petition than non-impacted States.
- The regulation does not explain why compact membership affects the petition timeline.
- The longer timeline for non-impacted States and Tribes appears inconsistent with the principle that those most affected should have the earliest and clearest opportunity to participate.

Recommendation: The Commission should eliminate § 61.72(a)(1) and (a)(2) since States, Tribes, and Compacts should not have to petition in order to participate in the license review process.

3. Requirement for Petitioning States to Facilitate Local Participation (§ 61.72(c)(4))
Section 61.72(c)(4) requires a petitioning State or Tribe to describe how it will "facilitate local government and citizen participation." This requirement is unusual because:

- Subpart F contains no parallel requirement for the NRC to facilitate local participation.
- The regulation does not explain why a State or Tribe must assume responsibility for local engagement in order to participate in the licensing review.
- NRC already has established mechanisms for public participation under Part 2 and Part 51.

Recommendation: The Commission should clarify the purpose of § 61.72(c)(4) or remove it. If local participation is a desired component of the licensing process, NRC should specify its own responsibilities rather than placing the burden solely on petitioning States, Tribes, or Compacts.

4. Lack of Clear Decision Criteria for Approving Participation (§ 61.73)
Section 61.73 describes Commission approval of proposals but does not provide clear, objective criteria for determining whether a proposal will be approved. The regulation states only that the Director "may approve" a proposal if certain conditions are met, but those conditions are broad and subjective.

Without clear criteria, approval decisions may appear arbitrary or inconsistent.

Recommendation: The Commission should revise § 61.73 to include objective, transparent criteria for evaluating proposals. These criteria should be tied to statutory responsibilities, the nature of potential impacts, and the relevance of proposed activities to the licensing review. The decision criteria would be removed if the petition requirement is removed.

5. Determining Whether Proposed Activities "Will Contribute Productively" (§ 61.73(b)(2))
The phrase "will contribute productively to the licensing review" is subjective and undefined. The regulation does not identify:

- what constitutes a "productive" contribution,
- how the Commission will evaluate proposed activities, or
- how disagreements between NRC and a State, Tribe, or Compact will be resolved.

This ambiguity may discourage participation or lead to inconsistent approval decisions.

Recommendation: The Commission should define "productive contribution" or replace the phrase with objective criteria, such as relevance to safety analysis, environmental review, or regulatory compliance.

6. Additional Recommended Improvements

a. Modernize Treatment of Tribal Sovereignty

Subpart F predates NRC's Tribal Policy Statement and does not reflect modern principles of government-to-government consultation. The regulation should be updated to align with current NRC practice.

b. Clarify Relationship to Agreement State Authority

Subpart F does not distinguish between participation by non-Agreement States and participation by Agreement States that already possess regulatory authority over disposal facilities. This distinction should be clarified.

c. Provide Clear Expectations for Information Sharing

The regulation should specify baseline expectations for information sharing, including document types, timelines, and coordination mechanisms.

d. Update Terminology for Clarity

Terms such as "participation," "consultation," and "cooperation" are used interchangeably without definition. Modernizing terminology would improve clarity.

e. Acknowledge the role of Compact Commissions

Federal law establishes the specific authority for Compact Commissions to regulate the import and export of LLRW into and out of their compact region. This authority applies to all classes of LLRW; A, B, C, and GTCC. As such, the Compact Commissions have a role in the disposal process for LLRW and should have an equal opportunity to participate in the licensing process without petitioning.

Summary

Subpart F establishes an important mechanism for State, Tribal and Compact participation in the licensing of land disposal facilities. However, the current text contains ambiguities that have persisted since the original promulgation of Part 61. The Commission should take this opportunity to modernize Subpart F, clarify participation requirements, and align the regulation with contemporary NRC practice. These changes would improve transparency, reduce administrative burden, and ensure that participation by States, Tribal governments, and Compacts is meaningful and effective. Requiring States, Tribal governments, and Compacts to petition the NRC to be part of the licensing process is not acceptable.

Attachment 6

LLW Forum's Comments on the Proposed Revision to 10 CFR Part 150 Regulations

Overview

The NRC proposes amendments to 10 CFR Part 150 to clarify which activities in Agreement States remain under NRC authority, particularly regarding:

- Disposal and storage of Greater-Than-Class-C (GTCC) waste
- Disposal of waste incidental to reprocessing
- Clarification of federal authority under §150.15(a)(4), (7), and (8)

The intent is appropriate: to align Part 150 with statutory requirements in the Atomic Energy Act (AEA) and the Low-Level Radioactive Waste Policy Amendments Act (LLRWPAA). However, the proposed text introduces ambiguities, inconsistencies, and regulatory gaps that warrant comment.

Comments

1. The proposed rule introduces conflicting definitions of GTCC waste

The NRC proposes:

- §150.15(a)(7)(iii)–(iv) — GTCC waste "as defined in Part 72"
- §150.15(a)(8) — GTCC waste "as defined by §61.55 as in effect on January 26, 1983"

These definitions are not equivalent:

- Part 72 defines GTCC in the context of storage, tied to spent fuel and reactor operations.
- §61.55 defines GTCC in the context of disposal, based on waste classification tables.
- Freezing the definition to 1983 creates a regulatory artifact inconsistent with the ongoing Part 61 revision.

This dual-definition structure will create confusion for Agreement States and licensees, particularly when determining whether a waste stream is GTCC for storage, transport, or disposal.

Recommendation

NRC should harmonize GTCC definitions across Parts 61, 72, and 150 or provide explicit guidance explaining when each definition applies and why the 1983 definition is retained.

2. The expansion of NRC authority over GTCC storage is broader than described in the Federal Register notice

The proposed rule adds:

- NRC authority over GTCC waste stored in ISFSIs and MRS facilities (§150.15(a)(7)(iii))
- NRC authority over GTCC waste stored under Part 30 or Part 70 licenses (§150.15(a)(7)(iv))

This is a significant expansion of federal authority. It means:

- Agreement States may not regulate any GTCC storage, even at facilities otherwise under Agreement State jurisdiction.
- GTCC waste stored under Part 30 or 70 (e.g., sealed sources, activated metals) is now explicitly under NRC authority.

This expansion is not fully explained in the Federal Register narrative and may affect existing Agreement State licensees.

Recommendation

NRC should explain the rationale for expanding federal authority over GTCC storage and clarify how this affects existing Agreement State licensees and facilities.

3. The revised §150.15(a)(4) still leaves ambiguity regarding Agreement State authority over incidental waste

The proposed text states:

> "This subparagraph does not apply to the transfer, storage or disposal of contaminated equipment or to waste incidental to reprocessing that has been evaluated and approved as material to be disposed at a near-surface land disposal facility."

This clarifies that:

- NRC retains authority over reprocessing facilities
- NRC retains authority over incidental waste determinations

- Agreement States may regulate disposal of incidental waste once NRC approves the determination

However, the rule does not clarify:

- Whether Agreement States may regulate treatment or processing of incidental waste prior to disposal
- Whether Agreement States may regulate storage of incidental waste at non-reprocessing facilities
- How disputes between NRC and Agreement States will be resolved
- Whether Agreement States may regulate incidental waste that is not Class A/B/C

Recommendation

NRC should clarify the regulatory boundary for incidental waste, including treatment, storage, and dispute resolution, and specify whether incidental waste must meet Part 61 classification criteria.

4. The proposed rule does not address cumulative impacts of incidental waste disposal at Agreement State facilities

Allowing Agreement States to regulate disposal of incidental waste is appropriate, but:

- Incidental waste streams may contain long-lived radionuclides
- Large volumes could be disposed at Agreement State facilities
- Cumulative impacts may differ from typical LLW streams

The proposed rule does not address:

- Whether Agreement States must evaluate cumulative impacts
- Whether NRC will review or oversee such evaluations
- Whether incidental waste disposal affects facility performance assessments under Part 61

Recommendation

NRC should provide guidance on evaluating cumulative impacts of incidental waste disposal at Agreement State facilities.

5. §150.15(b) interacts with the new GTCC provisions in ways that need clarification

§150.15(b) allows NRC to require manufacturers or processors to transfer certain products only under NRC license.

With the new GTCC provisions:

- NRC may need to clarify whether GTCC-containing devices (e.g., activated components, sealed sources) fall under §150.15(b).
- Agreement States may need guidance on when GTCC-containing products must be transferred under NRC authority.

Recommendation

NRC should clarify how §150.15(b) interacts with GTCC waste provisions to avoid inconsistent enforcement.

Summary of Requested NRC Actions

1. Harmonize GTCC definitions across Parts 61, 72, and 150 or provide explicit guidance on when each definition applies.
2. Explain the rationale for expanding federal authority over GTCC storage and clarify impacts on existing Agreement State licensees.
3. Clarify the regulatory boundary for incidental waste, including treatment, storage, and dispute resolution.
4. Provide guidance on evaluating cumulative impacts of incidental waste disposal at Agreement State facilities.
5. Clarify how §150.15(b) interacts with GTCC waste provisions to avoid inconsistent enforcement.

Attachment 7

LLW Forum's Comments on NUREG-2175 Rev. 1 – Guidance for Conducting Technical Analyses for 10 CFR Part 61

NUREG-2175, Revision 1, as draft guidance for the Integrated Low-Level Radioactive Waste Disposal (ILLRWD) rule, substantially expands the analytical and interpretive framework for 10 CFR Part 61 beyond what is necessary to demonstrate compliance with the performance objectives. While the document is nominally "guidance," it functions in practice as de facto binding expectations for licensees and Agreement States, and therefore must be evaluated with the same rigor as the rule text itself. As written, NUREG-2175 embeds policy choices that:

- Normalize extremely long performance periods and speculative future behavior as central to licensing decisions, rather than as contextual, qualitative information.
- Treat GTCC waste disposal in near-surface facilities as a routine, manageable engineering problem rather than a policy choice that Congress reserved to the Federal Government and the Commission.
- Impose substantial analytical burdens on licensees and Agreement States that are not clearly tied to incremental public health and safety benefit.

We recommend that the NRC substantially revise NUREG-2175 to (1) align with the revised regulatory text in Parts 20, 61, and 150; (2) remove expectations that go beyond the dose limits and performance objectives; and (3) clearly distinguish between required analyses and optional, illustrative approaches.

Relationship to the rule and regulatory scope

NUREG-2175 repeatedly describes itself as "implementing guidance" for the ILLRWD rule and cross-walks specific regulatory requirements to detailed analytical expectations. In practice, this will cause the guidance to be treated as binding by both licensees and Agreement States, especially where the document uses prescriptive language ("should," "recommended approach," "expected level of review effort," etc.). This is particularly problematic where the guidance:

- Interprets "reasonable assurance" in Subpart C as requiring extensive probabilistic, long-term performance analyses beyond the compliance period.
- Embeds defense-in-depth and safety case concepts as if they were independent regulatory requirements, rather than tools that licensees may choose to use.

We recommend that the NRC:

- Explicitly state, in the Preface and Introduction, that NUREG-2175 does not create new obligations beyond the text of Parts 20, 61, and 150, and that alternative, simpler approaches that meet the performance objectives are acceptable.
- Replace prescriptive language ("licensees should…") with truly optional phrasing where the rule does not require the described analysis.
- Add clear, side-by-side examples of "minimum acceptable" analyses versus "enhanced" analyses, so that licensees can distinguish between what is required and what is optional.

Technical analyses and performance objectives (Chs. 1–3)

The guidance on performance assessment, inadvertent intruder assessment, operational safety assessment, site stability assessment, and performance period analyses is technically sophisticated but often exceeds what is necessary to demonstrate compliance with the performance objectives in 10 CFR 61.41–61.44.

Specific concerns:

- **Performance assessment (PA):** The PA guidance leans heavily on complex numerical modeling, extensive uncertainty analysis, and model support requirements that may be appropriate for high-level waste repositories but are disproportionate for commercial LLW facilities. The rule requires reasonable assurance, not exhaustive quantification of all uncertainties over thousands of years.
- **Compliance vs. performance period:** The guidance treats performance period analyses (beyond 10,000 years) as a central, quantitative component of the safety case, rather than as a qualitative, contextual evaluation. This goes beyond the rule text, which requires that releases be "effectively managed" during the performance period, not that licensees produce speculative numerical dose estimates far beyond any meaningful regulatory timeframe.

We recommend that the NRC:

- Clarify that quantitative performance assessment is required only for the compliance period, and that performance period analyses may be qualitative or semi-quantitative, focused on robustness of design rather than speculative dose projections.
- Provide simplified PA examples for small, conventional LLW facilities, demonstrating that complex probabilistic modeling is not required in all cases.

Inadvertent intruder assessment (Ch. 4)

The inadvertent intruder guidance is one of the most consequential expansions in NUREG-2175. While the rule now requires an intruder assessment, the guidance:

- Treats a wide range of hypothetical intruder behaviors and scenarios as if they must all be quantitatively analyzed, even when highly speculative.
- Encourages extensive modeling of intruder barriers, structural capabilities, and dose pathways that may not materially change the conclusion that the facility meets the 500 mrem intruder dose limit.
- Embeds defense-in-depth expectations (multiple barriers, structural capabilities, institutional controls) that go beyond the rule's requirement to demonstrate protection of an inadvertent intruder during the compliance period.

We recommend that the NRC:

- Clearly prioritize a small set of generic intruder scenarios that, if bounded, are sufficient to demonstrate compliance, rather than encouraging exhaustive scenario enumeration.
- Emphasize that the 500 mrem intruder dose limit is the controlling criterion, and that once that limit is met with reasonable assurance, additional optimization of intruder barriers is not required.
- Clarify that institutional controls and markers are supportive measures, not primary compliance tools, and that the intruder assessment should not be used to justify indefinite reliance on institutional controls.

Site stability and geomorphology (Ch. 5)

The site stability guidance introduces extensive discussion of geomorphological processes, erosion modeling, weathering, and long-term landscape evolution. Evaluation of changes to site stability and geomorphology should consider the duration of the hazard associated with the disposed wastes.

Concerns:

- The guidance suggests that licensees and reviewers should consider very long-term geomorphic processes (e.g., climate change, large-scale erosion) in detail, which may not be necessary to demonstrate that the site will remain stable over the compliance period.
- The emphasis on sophisticated modeling tools and codes risks turning site stability into a barrier to licensing, rather than a performance-based evaluation of whether the facility design and closure plan reasonably limit subsidence, erosion, and differential settlement.

We recommend that the NRC:

- Focus site stability guidance on the institutional control period and compliance period, with qualitative consideration of longer-term processes where relevant.

- Provide clear examples where simple engineering analyses (e.g., cover design, settlement estimates) are sufficient, without resorting to complex geomorphological modeling.
- Avoid implying that licensees must model climate change or large-scale landscape evolution beyond what is necessary to show that the performance objectives are met.

Performance period analyses (Ch. 6)

Chapter 6 formalizes performance period analyses as a major component of the safety case for long-lived radionuclides and GTCC waste. While the rule requires that releases be "effectively managed" during the performance period, the guidance:

- Encourages detailed scenario development, features-events-processes (FEP) screening, and numerical modeling beyond 10,000 years.
- Treats performance period analyses as if they must approach the rigor of compliance period performance assessment, despite the inherently speculative nature of such timeframes.
- Risks shifting the regulatory focus from meeting dose limits in realistic timeframes to debating speculative long-term scenarios.

We recommend that the NRC:

- Explicitly state that performance period analyses are primarily qualitative, intended to demonstrate that the disposal system is robust, rather than to produce precise dose estimates.
- Provide examples of acceptable qualitative performance period analyses, especially for facilities disposing of modest quantities of long-lived radionuclides.

Defense-in-depth and safety case (Ch. 1, 7, 9)

The guidance elevates defense-in-depth and the "safety case" to central organizing concepts.

Concerns:

- Defense-in-depth is described in terms of multiple, independent, redundant layers, safety margins, and risk-informed approaches.
- The safety case is framed as a high-level narrative that must integrate technical analyses, defense-in-depth, and "supporting evidence and reasoning," which risks becoming a subjective, open-ended requirement rather than a structured demonstration of compliance with specific performance objectives.

We recommend that the NRC:

- Recast defense-in-depth as a best management practices that licensees may use to enhance robustness, not as a requirement or implicit optimization criterion.
- Clarify that the safety case is simply the organized presentation of information required by 10 CFR 61.10–61.13, not an additional layer of expectations.
- Remove or soften language that suggests licensees must demonstrate "safety margins" beyond meeting dose limits and performance objectives.

Waste acceptance, classification, and Part 20 linkage (Ch. 8, App. G, H)

NUREG-2175's guidance on waste acceptance and classification is tightly coupled to Part 61's revised waste acceptance criteria and to Part 20's manifest and tracking requirements.

Concerns:

- The guidance encourages licensees to derive site-specific waste acceptance criteria from performance assessment results, which can easily become an optimization exercise rather than a straightforward application of the classification tables and structural stability requirements.
- The discussion of "significant quantities of long-lived radionuclides" and the compliance period selection (Appendix H) risks turning a qualitative concept into a rigid, quantitative threshold that may not reflect site-specific conditions.
- The GTCC guidance (Appendix G) treats near-surface GTCC disposal as a routine option, with detailed thermal, intruder barrier, and operational safety considerations, potentially normalizing a practice that Congress intended to be tightly controlled by the Federal Government.

We recommend that the NRC:

- Emphasize that the waste classification tables in 10 CFR 61.55 remain the primary basis for classification, and that site-specific waste acceptance criteria derived from performance assessment are optional refinements, not mandatory.
- Re-frame GTCC guidance to reflect the heightened policy sensitivity and Federal responsibility for GTCC disposal and avoid presenting near-surface GTCC disposal as a default option.

Existing licensees under 10 CFR 61.1(b)

NUREG-2175 acknowledges that certain existing disposal facilities that meet the criteria in 10 CFR 61.1(b) may continue to operate under the original 1982 requirements. However, the guidance often blurs the distinction between these facilities and new or modified facilities subject to the full ILLRWD rule.

We recommend that the NRC:

- Clearly segregate guidance applicable to 61.1(b) licensees from guidance applicable to new or modified facilities, including separate examples and review expectations.
- Avoid implying that existing facilities must voluntarily adopt the full suite of new technical analyses, performance period evaluations, and defense-in-depth expectations if they are not required by the rule.
- Provide explicit statements that existing facilities may continue to rely on the original performance objectives and technical requirements, as long as they do not accept GTCC or significant quantities of long-lived radionuclides.

Agreement State roles and coordination

NUREG-2175 should accurately reflect the legal framework governing GTCC waste disposal. As explained in our comment on LLRWPAA § 3(b)(2), the statute does not require exclusive NRC licensing of GTCC disposal facilities, nor does it prohibit Agreement States from licensing such facilities under AEA § 274.

At the same time, the NRC's *current proposed rule* interprets § 3(b)(2) as requiring NRC-only licensing. Guidance should be internally consistent with whatever interpretation the Commission ultimately adopts, while avoiding statements that imply Agreement States are categorically barred from licensing GTCC disposal facilities absent explicit Commission action.

We recommend that the NRC:

- Clarify that GTCC waste is a federal responsibility for disposal, and that licensing authority is governed by the AEA's cooperative federalism structure.
- State that Agreement States may license GTCC disposal facilities if the Commission chooses to relinquish authority under § 274, consistent with the Commission's 2020–2022 interpretation.
- Avoid characterizing NRC-only licensing as a statutory mandate and instead present it as the Commission's current policy interpretation, subject to change based on further legal or technical evaluation.

Conclusion

NUREG-2175, Revision 1, is an ambitious and technically rich guidance document. However, in its current form, it risks:

- Elevating speculative long-term analyses and performance period modeling to a central regulatory role, beyond what is necessary to demonstrate compliance with the performance objectives.
- Normalizing near-surface GTCC disposal and imposing substantial analytical burdens on licensees and Agreement States without clear, proportional public health and safety benefit.

We respectfully request that the NRC:

1. Revise NUREG-2175 to align strictly with the text and intent of the revised Parts 20, 61, and 150.
2. Provide clear, minimal examples of acceptable analyses that demonstrate compliance without unnecessary complexity, especially for conventional LLW facilities.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 13, 2026
Status: Posted
Posted: August 14, 2026
Tracking No. msr-qprq-gvjb
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0221
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Debra Higbee

Submitter Information

Name: Debra Higbee
Address:
Eugene, 97404
Email: dwhigbes@gmail.com
Phone: 541-554-6979

General Comment

It is ethically wrong to allow the shallow burial of Greater-Than-Class C (GTCC) radioactive waste, for which the NRC has always required disposal in a deep geologic repository. This unethical and dangerous change could lead to accidents and contamination, with health impacts from exposures.
The Greater-Than-Class C (GTCC) waste and spent nuclear fuel are each half of the "high-level" radioactive waste that I was saddened to see was allowed into Utah through the Energy Solutions company! The NRC will allow more dangerous radioactive waste to come to waste sites in Utah and other states such as Oregon.

The NRC wants to allow shallow burial and federal licensing of GTCC disposal, and allow companies that stand to profit to set their own waste acceptance criteria. It is sad to know that GTCC comes from nuclear reactor fuel rods that are "hotter" than spent nuclear fuel. This change will enrich the nuclear power industry at the expense of public health.

The GTCC inventory could end up in shallow burial sites. This waste belongs in a permanent repository. It must be isolated from living things. We should not risk contaminating our soil or aquifers.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 13, 2026
Status: Posted
Posted: August 14, 2026
Tracking No. msr-r3jw-wk49
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0222
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from 8 groups in LLRW states Diane D'Arrigo NIRS

Submitter Information

Email: dianed@nirs.org
Organization: 8 groups in LLRW states Diane D'Arrigo NIRS

General Comment

Nuclear Information and Resource Service, Don't Waste Michigan, HEAL Utah, Texas Nuclear Watchdogs, Oregon Conservancy Foundation, Tennessee Citizens for Wilderness Planning, Ecological Options Network and Hanford Challenge request a 45 day extension on the Comment Period for this rulemaking Integrated Low-Level Radioactive Waste Disposal NRC 2011-0012. This short extension could allow the NRC to still meet the deadline for a final rule, but could result in a rule that is more acceptable and less likely to be challenged. Many of us have been actively participating in the evolution of this rulemaking over the years but see this proposal as quite different in some ways from any previously discussed options. The federal and state authorities and opportunites for public involvement seem to be changing in ways that warrant fuller clarification, review and analysis. The implications for the safety, security and environmental impacts on existing and future "low-level" radioactive waste/10 CFR 61/Agreement-State-licensed disposal sites could be significant but the analysis in the proposal appears incomplete--we would like extra time to be able to more fully review the proposed rule and its supporting documents. As NRC is aware there are numerous simultaneous rulemakings up for comment-- please allow our groups, especially those of us who have been diligently participating in this rulemaking for decades, the opportunity to fully assess and reply to this one.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 14, 2026
Status: Posted
Posted: August 14, 2026
Tracking No. mss-in7s-x65r
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0223
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Sierra Club, Lone Star Chapter

Submitter Information

Email: cyrus.reed@sierraclub.org
Organization: Sierra Club, Lone Star Chapter

General Comment

Please see attached file from the Lone Star Chapter of the Sierra Club

Attachments

SC-Comment-to-NRC-GTCC

SIERRA CLUB
LONE STAR CHAPTER

PO Box 4998
Austin, TX 78765
512.477.1729
lonestar.chapter@sierraclub.org

sierraclub.org/texas

To: VIA REGULATIONS.GOV
U.S. Nuclear Regulatory Commission

Office of Administration Rules, Announcements, and Directives Branch

Mail Stop: OWFN-12-H08

Washington, D.C. 20555-0001

ATTN: Rulemakings and Adjudications Staff

Re: Comments on Proposed Rule, Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40,290 (July 1, 2026)

Docket ID: NRC-2011-0012; NRC-2015-0003; NRC-2017-0081 (RIN 3150-AI92)

From: Cyrus Reed, Legislative and Conservation Director, Sierra Club Lone Star Chapter, cyrus.reed@sierraclub.org , 512-888-9411

August 14th, 2026

Comment of the Lone Star Chapter of the Sierra Club on the Nuclear Regulatory Commission's proposal amending 10 CFR parts 20, 61, 73 and 150.

The Lone Star Chapter of the Sierra Club opposes the proposed changes in rules

The U.S. Nuclear Regulatory Commission has issued a proposal to implement new regulatory guidelines on the permanent disposal of Greater than Class C (GTCC), GTCC-like and Transuranic Waste (TRU). The deadline for public comment is August 17, and the NRC proposed to publish the Final Rule on December 15, with an effective date of January 15, 2027.

The Lone Star Chapter of the Sierra Club is the Texas chapter of the Sierra Club, a 501-C-4 conservation organization whose mission is to explore, enjoy and protect the

SIERRA CLUB
LONE STAR CHAPTER

PO Box 4998
Austin, TX 78765
512.477.1729
lonestar.chapter@sierraclub.org

sierraclub.org/texas

planet. We have some 21,000 members and many more supporters in Texas, some of whom live in West Texas. First of all, given the importance of this proposed major change in the management of certain radioactive wastes, we request a three-month extension of the August 17, 2026, deadline for public comment on the U.S. Nuclear Regulatory Commission's proposal to establish new regulatory requirements for the permanent disposal of Greater-Than-Class C (GTCC), GTCC-like, and transuranic (TRU) waste.

The proposal would substantially revise the Code of Federal Regulations which entrusts the NRC to license the storage and disposal of radioactive waste and set policy and regulations to achieve this objective while providing adequate protection for the health and safety of the public and environment. According to the NRC, their proposal to amend the regulations governing radioactive waste disposal is meant to satisfy Executive Order 14300, issued by the Executive Office of President Trump on May 29, 2025.

However, *the NRC's purported objective does not align with the directives of the Trump Administration. Contrary to the Executive Order meant to enhance nuclear power development, the agency has instead proposed a sweeping mandate that lacks disqualifiers and fails to eliminate the agency's operational inefficiency.*

The NRC's proposed regulatory change abandons secure, deep geologic disposal of one of the most radioactive forms of low-level waste for unproven shallow disposal, but this change does not come by the Order of the President. The proposal actually emanated from a private waste company's 2014 petition for rulemaking, and it bears no regard for the oil companies, ranchers, and farmers that oppose that private company's pursuit to expand their waste streams by allowing the potential for this importation of GTCC to our state.

NRC's Proposed Changes to the Code of Federal Regulations

NRC's website states that the Integrated Low-Level Radioactive Waste Disposal proposal seeks to "amend the NRC's regulations to require new and revised site-specific technical analyses and permit the development of site-specific criteria for low-level radioactive waste acceptance based on the results of these analyses. The rulemaking proposes to authorize the near-surface disposal of certain Greater-Than-Class C waste streams and provide for Agreement State licensing of these waste streams. Licensees

SIERRA CLUB
LONE STAR CHAPTER

PO Box 4998
Austin, TX 78765
512.477.1729
lonestar.chapter@sierraclub.org

sierraclub.org/texas

of currently operating low-level radioactive waste facilities that do not plan to accept Greater-Than-Class C waste or significant quantities of long-lived radionuclides after the effective date of this rulemaking would continue to comply with current regulations."

a. Among the NRC's proposed regulatory changes there exists language which allows the applicant seeking a waste disposal license to establish its own Waste Acceptance Criteria.

The flaws in the proposed regulation are worsened by the NRC's methodology of allowing the license applicant to conduct its own technical analyses and develop Waste Acceptance Criteria based on its own assessment. This harks back to the Executive's critique of the NRC for neglecting their obligations. Here, the NRC is failing to implement independent, objective standards and instead allowing subjective assessments performed by financially incentivized license applicants to govern. Such a conflict of interest degrades public trust. Good sense expects that the license applicant will downplay risks in order to accept as much waste as allowed.

This rule establishes a risk-informed framework that allows for shallow or near surface land disposal of certain Greater Than Class C (GTCC), GTCC-like and specific transuranic wastes, provided they pass rigorous site-specific technical and performance analyses. We urge that uniform standards be utilized for all sites, standards protective of health, air, water and soil. There should be no site-specific standards. There should be no difference in standards at sites where there are significant amounts of waste versus those with very little. We oppose allowing site-specific determination of waste acceptance criteria. Adequate safety standards should be set nationally to protect health and safety at all potential sites. They should not be set by companies who stand to profit by lax standards.

The costs of potential accidents, leaks and quantifiable health impacts from exposures, should be considered. It's the nuclear industry that stands to profit, not citizens. Shallow waste burial may be cost-cutting for nuclear waste companies, but it comes at the risk and expense of citizens, and local and state governments. Those risks and costs should be quantified.

SIERRA CLUB
LONE STAR CHAPTER

PO Box 4998
Austin, TX 78765
512.477.1729
lonestar.chapter@sierraclub.org

sierraclub.org/texas

b. The NRC's proposed "compliance periods" for waste streams ranges from one-thousand years to ten-thousand years or more, depending upon various characteristics.

Here, again, the NRC looks to the licensee to ensure public safety for multiple millennia. Humans cannot know what tomorrow holds. By comparison, a look-back of ten thousand years at the DOE's preferred site shows that region coming out of an ice age. Nothing is certain but uncertainty.

It is irrational to expect any guarantee of security and stability against radiological hazards for periods in the thousands of years when the disposal is near the surface. This is scientifically, legally and financially impossible. For these reasons, the requirement of deep geologic disposal should remain in place, and the proposed regulation should be denied.

The shallow burial of GTCC and GTCC-like waste proposed in this rule should never be allowed, now or in the future. Leaks, accidents and contamination could have disastrous and expensive impacts. Six original commercial low-level radioactive waste disposal sites have had releases above allowable limits, despite promises that they would not leak for thousands of years. We don't need to learn lessons again the hard way. The existing requirement for deep geologic disposal is a protection that should not be weakened. It must be kept in place. Deep geologic disposal is necessary for GTCC and GTCC-like waste due to their high concentrations of radionuclides and long lifespans. Texans have been clear that we do not want these waste streams brought into our state. The NRC now considers some GTCC waste "low-level," but that doesn't change the intensity of this dangerous waste. Radiation exposure can lead to cancers, genetic damage, birth defects and heart problems, and can be lethal.

Context and conclusions

Citizens, local government, oil companies and environmental organizations have for many years fought attempts by Waste Control Specialists in Andrews County to expand their low-level radioactive waste facility to also accept GTCC and transuranic waste. This company has been attempting to change their license to accept such wastes for many years.

The Sierra Club has opposed importing spent nuclear fuel and GTCC for storage or disposal to the WCS site for many years. Until now, the NRC has been requiring deep geologic disposal, not risky shallow burial for this waste, which can include extremely hot control rods that have been inside reactors for decades. Farmers and ranchers, oil

SIERRA CLUB
LONE STAR CHAPTER

PO Box 4998
Austin, TX 78765
512.477.1729
lonestar.chapter@sierraclub.org

sierraclub.org/texas

companies, cities and counties, and environmental activists sought to prevent importation of this waste to protect our land, aquifers and health from contamination.

State law should be respected and followed. In 2021, HB7 passed in a special session of the Texas Legislature with a nearly unanimous, bipartisan vote, banning the storage or disposal of imported high-level radioactive waste. Governor Abbott signed HB7 on September 9, 2021, and vowed to protect Texans from the risks of high-level radioactive waste. While the subject of HB 7 was high-level radioactive waste, pushing forward a proposal to allow GTCC waste to be managed in shallow, or above-ground facilities would create further concern in Texas.

Consolidated Interim Storage plans for Texas and New Mexico were slowed by overwhelming opposition and legislation. Many Texans and New Mexicans had hoped that the Department of Energy (DOE) consent-based siting process would help prevent consolidated interim storage of high-level waste (GTCC and spent nuclear fuel) imports.

However, US Senators, state governors, legislators, cities, counties ranchers, oil companies and the public were all disregarded when DOE held eight “stakeholder “ hearings around the country, but none in either Texas or New Mexico, the targeted states.

There is no consent in Texas and New Mexico, but this proposed rule would allow a back-door path for roughly half of the high-level waste originally slated for storage in the two states, despite legislation and legislative intent. Once again, our elected leaders and the people of Texas and New Mexico are being disregarded by this ill-conceived proposed rule change.

We oppose the removal of state authority, while our people and industries would bear the brunt of dealing with accidents or contamination.

We oppose allowing site-specific determination of waste acceptance criteria. Standards should be set uniformly to protect health and safety at all potential sites, not set by companies that stand to profit from lax policies.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 14, 2026
Status: Posted
Posted: August 14, 2026
Tracking No. mss-pv38-sbut
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0224
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Bo Baggs

Submitter Information

Name: Bo Baggs
Address:
Port Arthur, TX, 77642
Email: bo5483@netscape.net
Phone: (409) 853-4118

General Comment

There STILL has been no safe solution found for the disposal of nuclear waste. So why not a) increase exposure to that waste by workers and the general public, b) make it cheaper and easier to operators by decreasing their costs to dispose of the waste and, c) give the false illusion that a "solution" has been found to dispose of nuclear waste. Gee, what could go wrong with that???

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 14, 2026
Status: Posted
Posted: August 14, 2026
Tracking No. mss-y54q-rki5
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0225
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Deep Isolation Nuclear, Inc.

Submitter Information

Email: rod@deepisolation.com
Organization: Deep Isolation Nuclear, Inc.

General Comment

See attached file.

Attachments

Response to NRC on Part 61 - Final

August 14, 2026

U.S. Nuclear Regulatory Commission
Washington, DC 20555

Docket ID: NRC-2011-0012
Subject: Comments of Deep Isolation Nuclear, Inc. on Proposed Rule and Draft Guidance for Integrated Low-Level Radioactive Waste Disposal

Deep Isolation appreciates the opportunity to comment on the Nuclear Regulatory Commission's (NRC) proposed amendments to 10 CFR Part 61. Deep Isolation supports NRC's effort to modernize low-level radioactive waste disposal regulation by introducing a more risk-informed, site-specific, and performance-based framework for disposal of Greater-Than-Class-C (GTCC) waste and certain transuranic-bearing waste streams.

Deep Isolation understands the proposed rule to apply to LLW, GTCC waste, GTCC-like waste accepted by an NRC licensee, and certain transuranic-bearing waste streams. The proposed rule does not apply to spent nuclear fuel (SNF) or high-level radioactive waste (HLW) and does not alter the requirement for geologic disposal of SNF and HLW. Deep Isolation's comments are organized around what we support, where we believe clarification would strengthen the proposed rule, and recommendations for future regulatory modernization.

Deep Isolation supports the proposed rule and believes it provides a sound basis for risk-informed disposal of appropriate GTCC and transuranic (TRU) bearing waste streams. To strengthen the final rule, the NRC should clarify the regulatory treatment of reprocessing-derived waste streams, provide a more complete technical basis for the proposed 10,000-year compliance period, and ensure that requirements for specialized land disposal remain sufficiently flexible to accommodate alternative disposal configurations, including deep borehole disposal.

I. What Deep Isolation supports

Deep Isolation supports NRC's movement away from purely prescriptive concentration-based limits and towards a risk-informed, site-specific, performance-based framework.

2001 Addison St, Suite 300/Office 311, Berkeley, CA 94704
Office +1 415 915 6505 | Fax +1 510 277 9070

That direction is consistent with modern international best practice and with the regulatory approach needed for advanced nuclear fuel-cycle infrastructure.

Deep Isolation particularly supports the following elements of the proposed rule:

1. NRC's recognition that some GTCC waste streams may be suitable for safe land disposal if supported by an adequate safety case.
2. The use of site-specific waste acceptance criteria rather than exclusive reliance on generic waste classification tables.
3. The requirement for performance assessment, inadvertent intruder assessment, operational safety assessment, site stability assessment, and longer-term performance-period analyses where significant quantities of long-lived radionuclides are present.
4. NRC's decision to retain exclusive NRC authority over GTCC disposal rather than leaving GTCC licensing to Agreement States. This is important for national consistency, public confidence, safety and security, and avoidance of a fragmented approach to higher-activity waste disposal.
5. NRC's recognition that future waste streams from emerging technologies may differ materially from those assumed when Part 61 was originally developed.
6. Deep Isolation agrees that TRU waste, including appropriate medical isotope waste streams, should only be classified as low-level radioactive waste for disposal under Part 61 where it can be demonstrated to satisfy the applicable waste acceptance criteria and performance objectives. Clarifying this principle in the final rule would help ensure that waste classification remains tied to disposal suitability rather than solely to waste origin or statutory definition.
7. Deep Isolation supports the upper bound of 100 years for crediting institutional control, since longer institutional control durations could become increasingly difficult to track and enforce.
8. Deep Isolation supports a higher dose standard for inadvertent human intrusion where a reasonable scenario is to be devised to determine dose rate and exposure duration in such an intrusion scenario.
9. Deep Isolation supports the NRC's assertion that peak dose should be calculated to the point a maximum value rather than to a fixed number of years which, depending on waste form and repository design, could be too many or too few years.
10. Deep Isolation supports the NRC's consideration of disposal depth affecting how inadvertent intruders might interact with waste (i.e., drilling with less material excavation per length at deeper depths).
11. Deep Isolation supports the assertion for environmental monitoring for at least a 12-month duration for properties which may vary by season (61.53).

II. Areas where clarification is needed

Deep Isolation has identified the following items for clarification which are agnostic of repository configuration:

1. We support NRC retaining responsibility for GTCC disposal; however, Agreement States should be included in the review process as they may have a licensing history with the Licensee (pages 8, 24, 29, and Question 2.a on page 80).

2. Deep Isolation also recommends that the NRC clarify how the revised definition of low-level radioactive waste applies to reprocessing-derived waste streams so that the continued exclusion of spent nuclear fuel and high-level radioactive waste from Part 61 remains unambiguous.

3. Deep Isolation supports the proposed 10,000-year compliance period for disposal facilities licensed under this rule and agrees that a qualitative evaluation beyond 10,000 years is appropriate to demonstrate long-term safety. At the same time, we encourage the NRC to more clearly explain the technical basis for selecting the 10,000-year compliance period, including its relationship to radionuclide decay, engineered and natural barrier performance, long-term risk, and consistency with other federal disposal regulations. Deep Isolation recommends that the NRC reconsider or further explain its use of depleted uranium as the principal example supporting the proposed 10,000-year compliance period and the definition of "significant quantities of long-lived radionuclides." Because the half-life of uranium-235 greatly exceeds 10,000 years, the example does not clearly illustrate the technical basis for the proposed compliance period and may inadvertently suggest that depleted uranium is the primary or only waste stream intended by the provision. NRC should either provide additional technical justification for this example or replace it with one that more clearly demonstrates the relationship between radionuclide characteristics, long-term repository performance, and the selected compliance period.

4. Given current regulations grant EPA cognizance over aspects of TRU waste disposal generally (40 CFR Part 191) and at WIPP, specifically (40 CFR Part 194), the NRC should clarify how TRU classification as LLW would or would not affect EPA involvement and seek EPA concurrence with the clarification.

5. **61.13(a)(2)(7):** The NRC should specify the assumed daily water-consumption rate to be used for farmer and gardener receptor scenarios or provide criteria for selecting a site-specific value. Because assumptions used in prior domestic and international analyses have ranged from approximately 2 to 4 liters per day, the selected value could materially affect calculated peak dose.

III. Applicability of deep borehole disposal

The proposed rule supports the use of disposal in a borehole for some waste streams under the definition of a “specialized land disposal facility” and embraces several

regulatory principles that are central to modern radioactive waste disposal, including site-specific safety assessment, passive safety, performance assessment, waste acceptance criteria tailored to the disposal environment, and risk-informed regulation. Deep Isolation supports these principles and believes they should be applied more broadly across the regulatory framework for geologic disposal technologies, including deep borehole disposal.

The following feedback is separate from the above section due to its more direct applicability with borehole disposal of depths considerably deeper than 5 m, such as those in the 100s to 1000 m range considered in the corollary document: "IMPACT OF GREATER-THAN-CLASS C (GTCC) RADIOACTIVE WASTE DISPOSAL IN A SPECIALIZED LAND DISPOSAL FACILITY" dated 25 June 2026 (comments to that document are provided in the Appendix).

1. **61.50(a)(2)(iii):** We disagree with the requirement that the disposal site cannot have "a water table too close to the land surface" for specialized land disposal facilities (61.50(b)). For waste disposed in boreholes, the water table will be sealed off from the borehole environment during borehole construction, and the depth will be sufficiently deep to prevent radionuclide migration to the accessible environment (water table) during the compliance period. Rather, for waste disposed in a specialized land disposal facility, it may be more beneficial to have a water table nearer to the surface. Recognizing the fundamental difference between a borehole facility and a near-surface facility, we recommend a distinction be drawn between the two. Final compliance should be demonstrated through a site-specific performance assessment.
2. **61.52(a)(3):** Intrusion barrier fidelity and applicability remain in question for deeper disposal scenarios. It appears that institutional control may be credited for up to 100 years, but regardless of institutional control duration, intrusion barriers for GTCC waste need to be relied upon through at least 500 years after closure. The required extent of protection against intrusion required by barriers in this language is perhaps intentionally ambiguous. Earlier language suggested a titanium-like deflection plate, but we contend that commonly planned engineered barriers such as casing, cement, canisters, waste form, backfill, and seals should prove sufficient. Clarity on this matter, even if it cannot be codified in 10 CFR Part 61 for purposes of flexibility, would be helpful.
3. **61.52(a)(7):** We disagree that void spaces must be filled between waste packages for borehole disposal in a specialized land disposal facility (61.52(b)(1)). The borehole will be fully cased, filled with fluid, and waste packages will be placed in a manner to minimize void spaces between packages. The risk of subsidence is mitigated by the cased nature of the borehole, which may be considered part of the engineered barrier system.

IV. Public confidence

Public confidence is fundamental to successful implementation of radioactive waste disposal policy. Confidence may be weakened if the rule is perceived as simply reclassifying waste into less protective disposal pathways without a clearly articulated, risk-informed safety case. NRC should therefore clearly communicate that disposal decisions will be based on rigorous site-specific safety assessments evaluating waste forms, engineered barriers, natural barriers, repository design, and long-term performance.

VI. Conclusion

Deep Isolation supports NRC's proposed modernization of Part 61 as a constructive step toward a more risk-informed and performance-based waste disposal framework. The proposed rule can improve disposal pathways for appropriate GTCC and TRU-bearing waste streams while preserving high standards of protection. (or ref Appendix here)

We encourage the NRC to finalize the rule with these clarifications and to build upon the risk-informed, performance-based principles reflected in this rulemaking as it considers future modernization of the regulatory framework for geologic disposal.

Comments on the accompanying NRC borehole disposal analysis for select GTCC waste streams are provided in the Appendix.

We appreciate the opportunity to provide our perspectives on this important, proposed rule. If you have any questions, please contact me at *rod@deepisolation*.com.

Sincerely,



Rod Baltzer
President & CEO

Appendix

Deep Isolation Nuclear, Inc. Comments on the NRC Review of Borehole Disposal, titled: "IMPACT OF GREATER-THAN-CLASS C (GTCC) RADIOACTIVE WASTE DISPOSAL IN A SPECIALIZED LAND DISPOSAL FACILITY" dated June 25, 2026

Deep Isolation appreciates the opportunity to review the NRC staff report. We support the report as a valuable screening-level assessment and agree that it provides a reasonable foundation for continued evaluation of deep borehole disposal for GTCC waste. Our comments are intended to strengthen the technical basis of the report and clarify the appropriate interpretation of its conclusions.

1. **Overall performance assessment methodology.** The report provides very little discussion of the overall modeling methodology. Additional description of the GoldSim implementation and conceptual model would improve transparency and allow reviewers to better evaluate model fidelity.

2. **Treatment of uncertainty.** The report appropriately incorporates probabilistic sampling for many uncertain parameters, including hydraulic conductivity, sorption coefficients, canister lifetimes, and other material properties. However, much of the uncertainty is evaluated within a single conceptual model in which groundwater flow, waste-form degradation, and borehole evolution are prescribed and not supported by the technical discussion. Discussions of alternative conceptual models or sensitivity to those assumptions would strengthen confidence in the conclusion.

3. **Groundwater seepage velocities.** The seepage velocities appear representative for a generic screening analysis, but they are not clearly tied to site-scale hydrogeologic analyses. Because groundwater flow is a primary driver of repository performance, additional technical justification or sensitivity analyses would be valuable.

4. **Sorption coefficients (K_d).** The report uses literature-based K_d values that are appropriate for a generic screening assessment, but there is relatively little discussion of the technical basis for those values or their influence on the overall results. Since sorption is one of the primary controls on radionuclide transport, it is difficult to judge whether the reported conclusions are sensitive to the selected K_d values or would remain consistent under other K_d assumptions.

5. **Waste-form degradation.** The report references modern glass dissolution data (Brandt et al., 2024), but those kinetics are ultimately converted into assumed uniform release periods rather than being propagated directly through the transport calculations. The simplified treatment is appropriate for a screening assessment, but the technical basis for the selected release model and its influence on the overall conclusions should be discussed more explicitly.

6. **Barrier performance and borehole evolution.** More generally, the hydraulic evolution of the borehole is governed by a series of prescribed assumptions rather than being evaluated directly. Hydraulic conductivity is assumed to increase linearly with time, canister failures are represented using a Weibull distribution but translated into a linear increase in flow area, and upward hydraulic gradients are prescribed rather than derived from a groundwater flow model. Individually, these are reasonable simplifications for a screening assessment, but collectively they become an important part of the performance assessment. We recommend that the conclusions acknowledge that the performance reflects both the disposal concept and the modeling assumptions used to represent it.

7. **Interpretation of results.** The repository performance is strongly influenced by assumptions regarding upward groundwater flow. The distinction between physically plausible scenarios and scenarios that are likely to occur should be emphasized more clearly. We recommend that the conclusions acknowledge that the reported performance reflects both the disposal concept and the modeling assumptions used to represent it.

Overall Recommendation. Overall, the report provides a useful starting point and supports continued evaluation of deep borehole disposal for GTCC waste. We recommend the NRC more clearly characterize this document as a screening-level analysis and expand the discussion of model assumptions, conceptual uncertainty, and sensitivity to key hydrogeologic and engineered barrier parameters. These additions would improve the technical foundation for the report while preserving its overall conclusions.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 14, 2026
Status: Posted
Posted: August 14, 2026
Tracking No. mss-yphv-1g50
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0226
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Regional Association of Concerned Environmentalists (RACE)

Submitter Information

Email: markkris@earthlink.net
Government Agency Type: Regional
Government Agency: Regional Association of Concerned Environmentalists (RACE)

General Comment

See attached file(s)

Attachments

comments on LLRW rulemaking 2026

Regarding – Docket ID NRC-2011-0012 Dear United States Nuclear Regulatory Commission, Comments of Mark Donham on behalf of the Regional Association of Concerned Environmentalists (RACE)

I am writing regarding the proposed rule change on Low-Level Radioactive Waste.

A main thrust of this rulemaking, reading many of the other comments, has to do with the disposal of depleted uranium. Apparently, as an historical oversight, a lack of knowledge at the time, or bureaucratic mumbo jumbo, DUF6 is classified as class A LLRW, a misclassification. This should be changed, as the comments on this rule make clear that DUF6 is not just a long term disposal issue, but that it gets more radioactive over this long term storage.

While there is no doubt that the current stockpile of DUF6 (some 30,000 cylinders) at Paducah is not stored for that long of a time, and is in a really bad place for long term disposal. The New Madrid seismic zone is predicted to have major events well within the life of the DUF6, and at least some of the storage is on soils that are susceptible to liquifaction. Nevertheless, shipping 30,000 or more cylinders across the country, from either Paducah or Portsmouth, would be way expensive and create a transportation hazard at that scale.

While there is a conversion plant at Paducah, it only de-fluorinates 15K tons/year and there are 750K tons estimated. This raises the question of whether or not NRC would dare allow DUF6 cylinders to be disposed of in a LLRW facility as class A waste even if it were still fluorinated? This is asking for trouble, as the fluorination eats away at the containment over time. But if the DUF6 can only be disposed of after de-fluorination, then disposal of much of the inventory is many decades away.

The DUF6 needs to be better contained in earthquake resistant facilities that are prepared to last centuries. Wouldn't that would be a better way to spend the money that it would take to transport them and then pay big bucks to a LLRW facility? We realize that if an 1811-12 type seismic event occurred on the Madrid seismic zone, which is likely during the timeframe for the life of the DUF6, that it could be catastrophic, so any long term storage at Paducah would have to be constructed to contain that product through such an event or events.
Another factor in determining the classification of DUF6 is that at least some of the cylinders contain product created when reactor tails from plutonium reactors at Hanford and Savannah River were used as feedstock. Those products are contaminated with transuranics and fission products. This process has been responsible for significant contamination at the Paducah site which has resulted in illness and death of many who worked unknowingly in this contamination. This is costing the taxpayers billions in cleanup and compensation. We don't need the reckless handling of these materials to end up costing the taxpayers even more.

But there is plenty of other wastes at the Paducah site whose disposal could be impacted by these regulations. The 10 radiological buildings are proposed to eventually be torn down and that would include all the structural and infrastructure materials that had been exposed to significant radiation since the mid 1900s. These materials need to be contained for centuries. How these regulations impact the final disposition of so many materials will impact how and where they are transported and the level of containment provided. The agency should error on the side of caution when promulgating these regulations.

And perhaps one of the most significant and dangerous of all waste streams at Paducah is the nickel ingots. These are highly radioactive with volumetric contamination of all the transuranics and fission

products that were produced when plutonium reactor tails were used as feed stock and they contaminated the cascades and the nickel in the barriers had to be replaced twice. To the best of our knowledge, these ingots are stored outside. There are nearly 10,000 of these, and their contamination levels seem to vary significantly. The ingots came from all 3 gaseous diffusion sites – Paducah, Portsmouth and Oak Ridge. The Paducah ingots seem to be the most contaminated, but testing is significantly limited and few conclusions can be taken from current analysis. But one can conclude that basically every ingot contains Technetium 99, and some contain transuranics like Neptunium and Plutonium. This contamination cannot be washed off – it is part of the metal, and this should disqualify it from any kind of LLRW disposal.

DOE and NRC need to be transparent about everything that was done at the smelter at Paducah. What all metals were smelted there from other DOE sites, and what has happened to residual materials from that facility? Were they radioactive? We know the nickel is. Radioactive metals at levels such as the nickel ingots need to be contained, not sitting out in the open.

The HEAL organization comments spell out the legitimate concerns, which we share and adopt, with these proposed capability assessments for suitability to take wastes that might be more radioactive than current standards. These assessments lack transparency, public input, are often long and written in lingo. It makes a bright line standard a squishy one that can be manipulated by paperwork. That is a bad idea. Perhaps review the line between the different classifications of LLRW, with plenty of public oversight, against the latest scientific findings on radiation and human health and see if it is still appropriate, but do not blur the line so that lawyers can find their way over, under, and around it, the result being environmental degradation.

When one considers the shameful direction that the agency is going in terms of not putting human health and the environment first - the shortcuts in licensing requirements, in environmental studies, in public involvement – shortcuts in a system that supposedly was protective of human health and the environment, one has a right to be skeptical about the safety of living around an NRC approved or regulated facility.

We are also concerned that this new rule shifts authority away from states and to the federal government at a time when the federal government is relaxing health, safety, and public involvement standards. We believe should states should have the authority to require standards that not only meet the federal standards, but if a state feels that standards that are stricter than the federal standards are necessary to protect human health and environment, that they should have the authority to do so.

We also adopt and share the call by the Illinois and Massachusetts Attorneys General to extend the comment period. Considering the multiple rulemakings and the multiple license application for various nuclear facilities regulated by NRC, it is reasonable to have time to consider what is being proposed. As explained by the Illinois Attorney General, these regulations are inter-related. For example, the LLRW proposed rule's comment period ends the 17th – in 4 days. The NEPA proposed rule's comment period is the 21st, only a week away. Both of these rules present significant changes in way the NRC oversees it's responsibilities, and the public needs to have a reasonable time to be involved.

Respectfully submitted,
Mark Donham, as an individual and on behalf of the Regional Association of Concerned Environmentalists (RACE)

365 Azotus Road
Brookport, IL 62910
618-309-2169

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 14, 2026
Status: Posted
Posted: August 14, 2026
Tracking No. mss-zryn-wxdi
Comments Due: August 17, 2026
Submission Type: API

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0227
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from United States Nuclear Industry Council

Submitter Information

Email: cyril.draffin@usnic.org
Organization: United States Nuclear Industry Council

General Comment

See attached file(s)

Attachments

USNIC Integrated Low-Level Radioactive Waste Disposal Comments to NRC - Part 61 - Final

U.S. Nuclear Industry Council
4301 Fairfax Drive, Suite 315
Arlington, VA 22203
usnic.org

August 14, 2026

U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: United States Nuclear Industry Council Comments on NRC Proposed Rule: "Integrated Low-Level Radioactive Waste Disposal", Docket ID: NRC-2011-0012

The United States Nuclear Industry Council (USNIC) submits the following comments on the proposed rule, "Integrated Low-Level Radioactive Waste Disposal."

USNIC is a bipartisan, not-for-profit membership organization for U.S.-based companies and institutions involved in advanced nuclear energy development and deployment in the United States. USNIC convenes the nuclear industry through events, policy briefings, and professional forums that connect member organizations with federal agencies, regulators, and policymakers. USNIC's membership includes over 100 of the top nuclear organizations in America spanning reactor developers; utilities; fuel cycle companies; engineering, procurement, and construction companies; financial institutions; national laboratories; universities; and construction engineers.

USNIC appreciates the opportunity to comment on the Nuclear Regulatory Commission's (NRC) proposed amendments to 10 CFR Part 61. USNIC supports NRC's effort to modernize low-level radioactive waste disposal regulation by introducing a more risk-informed, site-specific, and performance-based framework for disposal of Greater-Than-Class-C (GTCC) waste and certain transuranic-bearing waste streams. At the same time, public confidence is fundamental to successful implementation of radioactive waste disposal policy. Confidence may be weakened if the rule is perceived as simply reclassifying waste into less protective disposal pathways without a clearly articulated, risk-informed safety case. NRC should therefore clearly communicate that, as a matter of policy, disposal decisions will be based on rigorous site-specific safety assessments that are based on multi-attributes evaluations of waste forms, engineered barriers, natural barriers, repository design, and long-term performance

USNIC 's comments are organized around what we support, where we believe clarification would strengthen the proposed rule, and recommendations for future regulatory modernization. USNIC supports the proposed rule and believes it provides a sound basis for risk-informed disposal of appropriate GTCC and transuranic (TRU) bearing waste streams. To strengthen the final rule, the NRC should clarify the regulatory treatment of reprocessing-derived waste streams, provide a more complete technical basis for the proposed 10,000-year compliance period, and ensure that

requirements for specialized land disposal remain sufficiently flexible to accommodate alternative disposal technologies and configurations, including deep borehole disposal.

I. What USNIC supports

USNIC supports NRC's movement away from purely prescriptive concentration-based limits and towards a risk-informed, site-specific, performance-based framework. That direction is consistent with modern international best practices and with the regulatory approach needed for advanced nuclear fuel-cycle infrastructure.

USNIC particularly supports the following elements of the proposed rule:

1. NRC's recognition that some GTCC waste streams may be suitable for safe land disposal if supported by an adequate safety case.
2. The use of site-specific waste acceptance criteria rather than exclusive reliance on generic waste classification tables.
3. The requirement for performance assessment, inadvertent intruder assessment, operational safety assessment, site stability assessment, and longer-term performance-period analyses where significant quantities of long-lived radionuclides are present.
4. NRC's decision to retain exclusive NRC authority over GTCC disposal rather than leaving GTCC licensing to Agreement States. This is important for national consistency, public confidence, safety and security, and avoidance of a fragmented approach to higher-activity waste disposal.
5. NRC's recognition that future waste streams from emerging technologies may differ materially from those assumed when Part 61 was originally developed.
6. USNIC agrees that TRU waste, including appropriate medical isotope waste streams, should only be classified as low-level radioactive waste for disposal under Part 61 where it can be demonstrated to satisfy the applicable waste acceptance criteria and performance objectives. Clarifying this principle in the final rule helps ensure that waste classification remains tied to disposal suitability rather than solely to waste origin or statutory definition.
7. USNIC supports the upper bound of 100 years for crediting institutional control, since longer institutional control durations could become increasingly difficult to track and enforce.
8. USNIC supports a higher dose standard for inadvertent human intrusion where a reasonable scenario is used to determine dose rate and exposure duration in such an intrusion scenario.
9. USNIC supports the NRC's assertion that peak dose should be calculated to the point of a maximum value rather than to a fixed number of years which, depending on waste form and repository design, could be too many or too few years.
10. USNIC supports the NRC's consideration of disposal depth affecting how inadvertent intruders might interact with waste (i.e., drilling with less material excavation per length at deeper depths).
11. USNIC supports the assertion for environmental monitoring for at least a 12-month duration for properties which may vary by season (61.53).

II. Areas where clarification is needed

USNIC has identified the following items for clarification which are agnostic of repository configuration:

1. We support NRC retaining responsibility for GTCC disposal; however, Agreement States should be included in the review process as they may have a licensing history with the Licensee (pages 8, 24, 29, and Question 2.a on page 80 of Docket ID NRC-2011-0012). Subpart F should be updated to require the inclusion of Agreement States.

2. USNIC also recommends that the NRC clarify how the revised definition of low-level radioactive waste (including wastes determined to be incidental to reprocessing) applies to commercial reprocessing waste streams to further explain how reprocessing wastes can be managed and disposed of as low-level radioactive waste.

3. USNIC supports the proposed 10,000-year compliance period for disposal facilities licensed under this rule and agrees that a qualitative evaluation beyond 10,000 years is appropriate to demonstrate long-term safety. At the same time, we encourage the NRC to more clearly explain the technical basis for selecting the 10,000-year compliance period, including its relationship to radionuclide decay, engineered and natural barrier performance, long-term risk, and consistency with other federal disposal regulations. USNIC recommends that the NRC reconsider or further explain its use of depleted uranium as the principal example supporting the proposed 10,000-year compliance period and the definition of "significant quantities of long-lived radionuclides." Because the half-life of uranium-235 greatly exceeds 10,000 years, the example does not clearly illustrate the technical basis for the proposed compliance period and may inadvertently suggest that depleted uranium is the primary or only waste stream intended by the provision. NRC should either provide additional technical justification for this example or replace it with one that more clearly demonstrates the relationship between radionuclide characteristics, long-term repository performance, and the selected compliance period.

4. Given current regulations grant EPA authority over aspects of TRU waste disposal generally (40 CFR Part 191) and at WIPP, specifically (40 CFR Part 194), the NRC should clarify how TRU classification as low-level waste (LLW) would or would not affect EPA involvement, and seek EPA concurrence with the clarification.

5. **61.13(a)(2)(7):** The NRC should specify the assumed daily water-consumption rate to be used for farmer and gardener receptor scenarios or provide criteria for selecting a site-specific value. Because assumptions used in prior domestic and international analyses have ranged from approximately 2 to 4 liters per day, the selected value could materially affect calculated peak dose.

III. Applicability of deep borehole disposal

The proposed rule supports the use of disposal in a borehole for some waste streams under the definition of a "specialized land disposal facility" and embraces several regulatory principles that are central to modern radioactive waste disposal, including site-specific safety assessment, passive safety, performance assessment, waste acceptance criteria tailored to the disposal environment, and risk-informed regulation. USNIC supports these principles and believes they should be applied more broadly across the regulatory framework for geologic disposal technologies, including deep borehole disposal.

The following comments are separate from the above section due to their more direct applicability to borehole disposal of depths considerably deeper than 5 m, such as those in the 100 m to 1000 m

range considered in the corollary document: "IMPACT OF GREATER-THAN-CLASS C (GTCC) RADIOACTIVE WASTE DISPOSAL IN A SPECIALIZED LAND DISPOSAL FACILITY" dated 25 June 2026 at ML26083A006 in the NRC ADAMS system.

1. **61.50(a)(2)(iii):** We disagree with the requirement that the disposal site cannot have "a water table too close to the land surface" for specialized land disposal facilities (61.50(b)). For waste disposed in boreholes, the water table will be sealed off from the borehole environment during borehole construction, and the depth will be sufficiently deep to prevent radionuclide migration to the accessible environment (water table) during the compliance period. Rather, for waste disposed in a specialized land disposal facility, it may be more beneficial to have a water table nearer to the surface. Recognizing the fundamental difference between a borehole facility and a near-surface facility, we recommend a distinction be drawn between the two. Final compliance should be demonstrated through a site-specific performance assessment.
2. **61.52(a)(3):** Intrusion barrier fidelity and applicability remain in question for deeper disposal scenarios. It appears that institutional control may be credited for up to 100 years, but regardless of institutional control duration, intrusion barriers for GTCC waste need to be relied upon through at least 500 years after closure. The required extent of protection against intrusion required by barriers in this language is perhaps intentionally ambiguous. Earlier language suggested a titanium-like deflection plate, but we contend that commonly planned engineered barriers such as casing, cement, canisters, waste form, backfill, and seals should prove sufficient protection. Clarity on this matter would be helpful.
3. **61.52(a)(7):** We disagree that void spaces must be filled with solid material between waste packages for borehole disposal in a specialized land disposal facility (61.52(b)(1)). The borehole will be fully cased, filled with fluid, and waste packages will be placed in a manner to minimize void spaces between packages. The risk of subsidence is mitigated by the cased nature of the borehole, which may be considered part of the engineered barrier system.

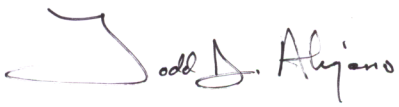
IV. Conclusion

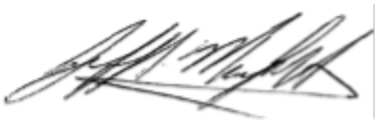
USNIC supports NRC's proposed modernization of Part 61 as a constructive step toward a more risk-informed and performance-based waste disposal framework. The proposed rule can improve disposal pathways for appropriate GTCC and TRU-bearing waste streams while preserving high standards of protection.

We encourage the NRC to finalize the rule with these clarifications and to build upon the risk-informed, performance-based principles reflected in this rulemaking as it considers future modernization of the regulatory framework for geologic disposal.

We appreciate the opportunity to provide our perspectives on this important, proposed rule. If you have any questions, please contact Rod Baltzer, Chair, USNIC Back End Working Group (*rod@deepisolation.*com).

Sincerely,





Todd J. Abrajano
President & CEO
United States Nuclear Industry Council
(USNIC)

Jeffrey Merrifield
Chairman
United States Nuclear Industry Council
(USNIC)

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 14, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. mst-eh3i-h6sg
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0229
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Washington State Department of Ecology

Submitter Information

Email: yoana.lucatero@ecy.wa.gov
Government Agency Type: State
Government Agency: Washington State Department of Ecology

General Comment

See attached file(s)

Attachments

WA Ecology Comments_NRC_Integrated LLRW Disposal

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Richland Field Office
3100 Port of Benton Blvd., Richland, WA 99354 • 509-372-7950

August 14, 2026 26-NWP-129

United States Nuclear Regulatory Commission
Washington, District of Columbia 20555-0001

Submitted electronically to:
https://www.regulations.gov/commenton/NRC-2011-0012-0205

Re: Docket ID: NRC-2011-0012, Washington State Department of Ecology Comments on Proposed Rule, Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40290 (July 1, 2026)

The Washington State Department of Ecology (Ecology) appreciates the opportunity to provide comments on the Nuclear Regulatory Commission's (NRC) proposed *Integrated Low-Level Radioactive Waste Disposal* rule, published July 1, 2026. The proposed rule expands NRC oversight to include transuranic wastes and introduces a risk-informed, site-specific disposal framework that could affect waste management operations at the Hanford Site.

Ecology has particular interest in 10 CFR Part 61 as a state agency with an obligation to ensure the safe, effective management of mixed waste (i.e., waste with both hazardous and radioactive components). Ecology provides the following comments to support alignment with Washington State regulatory requirements and the United States Department of Energy's Hanford Site cleanup obligations.

Under current regulations, transuranic waste is excluded from the definition of Low-Level Radioactive Waste (LLW), while transuranic radionuclides are not. It is typical for LLW to contain transuranic radionuclides in limited concentrations, and up to 100 nanocuries per gram (nCi/g) of transuranic radionuclides is permitted for disposal within the 10 CFR 61.55 limits. The proposed revision to the definition of LLW would allow the safety and suitability of the disposal of waste containing higher concentrations of transuranic radionuclides to be assessed with site-specific technical analyses.

Because this proposal expands regulatory coverage into transuranic waste streams, Ecology requests that the final rule avoid conflicts with state-federal legal obligations, accommodate cleanup commitments, and remain consistent with existing commitments under the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) M-91 Milestone series.

The M-91 Milestone series was established to complete removal and disposal of retrievably stored waste from burial grounds and Mixed Low-Level Waste (MLLW) and Transuranic Mixed (TRUM) waste in storage. Ecology expects the TRUM waste that is covered under M-91 will be sent offsite to the Waste Isolation Pilot Plant (WIPP) in New Mexico for disposal. Any alternative to dispose of this waste stream other than at WIPP would conflict with the requirements of the *Hanford Federal Facility Agreement and Consent Order*.

Regarding the near surface disposal of Greater than Class C (GTCC) waste, Ecology acknowledges that any determination of suitability for near surface disposal of GTCC waste must be supported by robust, site-specific analyses for the proposed disposal location. Accurate waste stream inventories and detailed technical evaluations are essential for assessing whether any GTCC waste stream should be considered for near surface disposal. However, some GTCC waste includes significant quantities of long-lived radionuclides that should not be disposed of in a near surface landfill.

Ecology emphasizes the importance of maintaining the distinction between GTCC waste, which is regulated by the NRC as commercial waste, and GTCC-like waste, which is regulated by the United States Department of Energy as defense related waste. In addition, Ecology disagrees with the inclusion of a "generic pathway" to disposal under Section 61.58. Such a pathway is inconsistent with the necessary site-specific thoroughness and could allow waste streams to be evaluated without sufficient consideration of local environmental conditions, regulatory constraints, and established cleanup commitments.

Ecology emphasizes that the NRC must evaluate not only the impacts of this proposed rule, but also the cumulative impacts of this rule in conjunction with the numerous other rulemakings the NRC has recently finalized or is currently pursuing. Taken together, these actions represent a broader, ongoing revision of the NRC's regulatory framework, and their combined effects have not yet been fully evaluated.

The National Environmental Policy Act (NEPA) analyses are necessary to ensure that all environmental impacts associated with waste disposal in Washington State are adequately considered. Section 102 in Title I of NEPA requires that:

> "…federal agencies are to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. Specifically, all federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment."

A comprehensive NEPA review is necessary to ensure the cumulative environmental impacts associated with these rulemakings are fully understood.

Thank you for your consideration of Ecology's comments on this proposed rule change. If there are any questions, please contact John Temple, Waste Management Section Manager, at john.temple@ecy.wa.gov or (509) 980-1038.

Sincerely,



Stephanie Schleif
Program Manager
Nuclear Waste Program

yl/lb

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 15, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. mst-y8gt-qy5b
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0230
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from John Tate

Submitter Information

Name: John Tate
Address:
Austin, TX, 78757
Email: johntate@acm.org

General Comment

Comments on NRC Proposed Rule: “Integrated Low-Level Radioactive Waste Disposal”, Docket ID: NRC-2011-0012

I am a resident of Texas, and I oppose the transport and storage of highly-radioactive waste to any place other than a geologically-stable permanent repository. I opposed the proposal to allow the interim storage of high-level waste in Andrews County a few years ago, and I supported the actions by our Legislature and Governor rejecting that proposal.

Since much GTCC is highly radioactive for a long period of time, it should be in a long-term geologically-stable repository. For the ordinary citizen, the most troubling aspect of the present proposal is the combination of allowing GTCC to be disposed of in low-level waste disposal facilities, and allowing the operators of facilities to set their own waste acceptance criteria. This presents the appearance of simply ignoring the risks to people and the environment of transporting the waste across the country and storing it in inadequate facilities, for the convenience of waste generators and the operators of disposal facilities. If the proposal resulted in GTCC being stored in the low-level waste disposal facility in Andrews County, it would also ignore the strongly-stated will of Texans.

Other commenters have pointed out that the proposed changes have multiple legal and technical flaws. They are proposed at the same time as other changes to related rules, and some of the comment periods run concurrently. I ask that the comment period for this proposal be extended for an additional three months, until November 16, 2026. This would provide more time for interested parties and the public to examine the proposed changes and assess the interactions between them. In addition, the NRC should hold public meetings at which public comments are accepted.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 15, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msu-fr1l-5w71
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0231
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Elizabeth Padilla

Submitter Information

Name: Elizabeth Padilla
Address:
TX, 79714
Email: eeflakis@yahoo.com

General Comment

I am a lifelong Andrews County resident. As a mother and a resident who loves this community, I am very concerned and strongly oppose the new regulation on integrated low-level radioactive waste.

The proposed rule, which would allow shallow burial of Greater-Than-Class C (GTCC) radioactive waste and let companies set their own waste acceptance criteria, could lead to transportation accidents and contamination of land and aquifers, with health impacts from exposure. GTCC waste belongs in a DEEP DEEP repository, not shallow burial!

As a resident of Andrews, TX, where WCS is currently located, Andrews would be greatly impacted by this new rulemaking, as we understand that there is interest in making Andrews a shallow burial location for GTCC waste.

Given the many risk factors in this new rulemaking, we request an extension for public comment and ask that you hold a public meeting in Andrews, TX, that allows public comment, not just a question-and-answer session.

I would appreciate a response to my comment.

Thank you.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 15, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msu-rnvz-lt5b
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0232
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Brandt Mannchen

Submitter Information

Name: Brandt Mannchen
Address:
Houston, TX, 77006
Email: brandt_mannchen@comcast.net
Phone: (281) 570-7212

General Comment

Dear NRC,

These are my personal comments about the proposal to loosen regulation of integrated low-level radioactive waste disposal.

I oppose any Greater Than Class C (GTCC) inventory being licensed and buried in shallow soil sties anywhere but particularly at the Waste Control Specialists site in Andrews County, Texas. GTCC should be disposed of in a permanent deep geologic repository. NRC should ensure that GTCC is isolated from living things or it will be biomagnified and carried to other places in the environment and affect many life forms. I oppose any increased risk of contamination of our soil or aquifers, water tables, groundwater, springs, rivers, bayous, creeks, streams, and seeps.

I oppose any loosening of GTCC regulation and specifically oppose these proposed integrated low-level radioactive waste disposal regulations which loosen regulation of these dangerous and long-lived wastes.

No more cancers, birth defects, and mutations! Stop the spread of nuclear waste and its radiation now. A deep geologic radioactive waste disposal site is needed for GTCC now just like for spent fuels and other highly radioactive materials.

Brandt Mannchen

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msv-uvwc-yaw7
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0233
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Anonymous

Submitter Information

Name: Anonymous Anonymous

General Comment

I am not in favor of the Proposed Rule by the Nuclear Regulatory Commission.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-0q7w-5k96
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0234
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from W.S. Herrick

Submitter Information

Name: W.S. Herrick
Address:
Campton, KY, 41301
Email: plef@appal.org

General Comment

See attached pdf

Attachments

nrc.wsh.llw

Comments on the proposed rule “Integrated Low-Level Radioactive Waste Disposal” published in the *Federal Register / Vol. 91, No. 125 / Wednesday, July 1, 2026 Docket ID NRC–2011–0012, RIN 3150–AI92.*

The DOE/NRC’s management of the nuclear fuel cycle waste stream is well documented. The DOE’s Environmental Management budget details the massive legacy of nuclear waste, ORNL’s reports on the strategies to defluorinate and stabilize DUF6 when coupled with the NRC’s 2009 Federal Register solicitation for strategies to reduce our DUF6 stockpiles, and the recent publicity surrounding the GLE and GM interest in the remaining ^{235}U in the Paducah inventory of DUF6 show that the DOE/NRC has only managed to process a small fraction of the national low level waste inventory and has, at best, modest plans to effect the expeditious waste disposal of the remainder. The NRC’s most recent proposal, “Integrated Low-Level Radioactive Waste Disposal” is deficient in protections of public health and safety, and in scale and impact.

While other industries in the U.S. are bound to prove they have the means to safely dispose of their waste, since the construction of the AEC the federal government has claimed and defended their sole responsibility for the nuclear health and safety of the nation’s public. The empirical fact is that the AEC/DOE/NRC federal agencies have not kept up with the effluents of the nuclear fuel cycle.

Making small dollar improvements in the management of low level waste won’t make much impact on the profitability of nuclear waste management. It offers meager support to the current NRC and industry narrative that nuclear power has an affordable role in the production of electricity. The dollar payout cited by the NRC in this proposal is dwarfed by the real costs as shown in the DOE Environmental Management budget. Please do not distract the nation from facing the full cost of our nuclear policies. In addition to the already budgeted expenditures, the DOE needs a great deal more money than the $70 million reported in the NRC proposal to properly secure and dispose of low level nuclear waste.

The notion that the NRC should accept radiological waste survey data provided by the commercial enterprise being paid to manage that radiological waste as the basis for constructing the waste management criteria defeats the regulatory role of the Nuclear Regulatory Commission. Compelling examples like the Tetra Tech spoofing of radiological samples in the remediation of the Bay Area’s Hunter’s Point naval yard offer proof that the NRC should retain their role in assessment. Offloading that critical obligation to the very entity being governed will inevitably weaken public safety. The NRC shouldn’t advocate shifting risks and harms to the public just to make small dollar improvements in the industry’s bottom line.

The NRC’s “risk-informed regulatory framework”, where risk surveys and the information associated with a waste stream are provided by the contractor, is wrong-headed. Those criteria are best left to nationally recognized public and nuclear safety agencies.

Price-Anderson (and prior federal statutes) denies all but the federal government a role in governing nuclear health and safety issues. NRC mistakes are irreparable by anyone but the NRC. Further, the proposed changes may take away or alter the small roles the NRC has granted to some states to manage low level nuclear waste streams. The cost to states to conform to the proposed regulation changes appears absent from the NRC cost benefit analysis. Those costs will carve significant dollars from the published dollar benefits the NRC claims as the motivating benefit to make the changes: when 40 states have to revise statutes and regulations and retrain or review staffing, the net payoff is smaller than the NRC has calculated. Please don’t make this national scale mistake.

The Federal Register's July 1, 2026 published NRC proposal only report costs and benefits to industry and governments. It references the NRC's own "30 year analysis" of the costs and benefits of the proposed regulatory changes. Even at the 7% discount rated values, the benefits are small dollars.

What is also missing from that cost benefit analysis is the shifting of costs to the public who will bear the health consequences of increased exposure to the higher transuranic assay waste. This is a departure from previous policy: as published in the Federal Register July 1, 2026, in Section B.i "Previous Rulemaking Activities" the cited 2013 and 2014 considerations make no mention of relieving the industry or government of costs. The intent of those proposals was "to ensure the protection of the public health and safety.", not to shift the health and safety costs from the commercial contractors to the nation's public.

In 2019 the NRC determined that in accordance with Section 3(b) of the the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA), disposal of Greater Than Class C (GTCC) waste must remain within the NRC's exclusive authority. Replacing the ''as low as is reasonably achievable'' language in §§ 61.41 and 61.43, language that requires protection of the general population from releases of radioactivity and protection of individuals during operations is dangerous, unnecessary and conflicts with the 2019 NRC determination that the NRC, not their contractors, is responsible for the GTCC waste stream.

Abandoning the ''as low as is reasonably achievable'' language suggests that some in the NRC have embraced the notion that ionized tissue finds benefit from the ionization. That notion has no biochemical or empiric basis in fact. The contrary, however, does have factual and observable evidence of bodily harm. It may be convenient that the rate of harm from an injurious ionizing radiant material may fall into the same range as other sources of damage. That low signal to noise measure may make proving a specific occasion and cause separate from other harmful agents difficult. *Not being easy to prove does not mean safe.*

Without clear explicit language about the qualities of nuclear waste that might gain classification as Greater Than Class C (GTCC & GTCC-like), making the class determination on a case by case basis is a short trip for the NRC to not be able to do their job well. It is bad policy to let some NRC staffers pick the winners and losers: that's not a level playing field and every choice will invite legitimate public concern. Some will invite competitors to dispute the NRC's choices too. Each case will make the NRC assert and defend the choices they should have made in the regulation, adding staff time and uncertainty compared to making the requisite criteria an exact and public regulation.

The lion's share of the benefits the NRC presented due from the proposed regulatory change falls to the commercial agents contracting to manage the waste. The public will bear the health cost of those commercial agent's savings. Making small dollar advantages to industry and government at the cost of public health and safety is bad policy. Inviting public scrutiny for each case of GTCC waste disposal won't make the NRC's job any easier. The NRC should see good reason in revising this proposal to not use the case by case method and to not use the contractor's samples and data to make the waste class determination.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-80eh-o2ex
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0235
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Ace Hoffman

Submitter Information

Name: Ace Hoffman
Address:
Carlsbad, CA, 92010
Email: rhoffman@animatedsoftware.com

General Comment

We strongly oppose NRC-2011-0012-0205, which would modify current regulations for radioactive waste disposal and redefine low-level radioactive waste to cover some Greater-Than-Class C (GTCC) waste including "... certain transuranic wastes." If this proposal is approved, the modifications to Part 61 of Title 10 (Energy) of the Code of Federal Regulations (CFR) would allow these transuranics, including Plutonium to be disposed of as Low Level Waste (LLW), while at the same time allowing " ... higher concentrations of waste, providing new alternatives for safe low-level waste management."

Redefining GTCC waste makes the problem of radioactive contamination in the environment worse, not better, and these "new alternatives" should be abandoned now (rather than losing track of the waste's location and composition 500 (or 10,000 or more) years from now).

Existing and proposed Part 61 regulations are supposed to protect the environment for AT LEAST 10,000 years, but only require the waste to be protected from "intrusion" for the first 500 years. The oldest pyramids are nearly 5,000 years old. One would think a society with five millennia to perfect containment, that ALSO chooses to work with plutonium — the most toxic (carcinogenic, mutagenic, etc.) and insidious (human senses cannot detect radiation) — element ever conceived, discovered, or created — could — and would — be able to create and guarantee the workability of 10,000-year containment. Or know not create the mess in the first place.

Plutonium-239 has a half-life of 24,100 years and radioactive materials are considered dangerous for at least 10-20 half-lives. The possibility of using low-level radioactive waste facilities to store GTCC waste that includes transuranics means that the waste would remain hazardous for hundreds of millennia. By then any "near-surface" containment might well be fully exposed through surface erosion, earthquakes, thermonuclear war, or under water, or in the middle of a city or farm. The proposed regulation ignores this reality, and states that: "The disposal depth will need to be maintained for as long as the waste is hazardous."

What are the design criteria for something that needs to contain lethal poison essentially forever, and what types of intrusion will it be protected from? The regulations describe intrusion by humans (whether deliberate on inadvertent), but it's easy to envision an animal intruding into a structure where concrete was cracked (perhaps by a tree root and/or an earthquake and/or the degradation of the containment caused by the radioactivity contained within) in far less than 500 years. The proposed regulations defer actual rules with vague statements such as: "Depending on the characteristics of the GTCC waste, an applicant would be able to identify in the technical analyses those additional barriers or performance characteristics that are necessary to provide protection, such as a greater disposal depth or an intruder barrier of greater longevity."

One reason the Nuclear Regulatory Commission (NRC) is proposing changes to Part 61 is: " ... GTCC waste streams are stranded at operating reactors, sealed-source facilities, and Department of Energy (DOE) facilities." At the same time, the NRC describes the proposed changes to Part 61 as providing: " ... a clear licensing pathway for the back end of the fuel cycle." and a solution for: "... all nuclear waste except spent nuclear fuel and high-level radioactive waste." This statement makes it clear that the NRC recognizes that there is not even a plan for disposing of spent nuclear fuel and yet, the agency continues to promote its role in "... activities [that] will help reestablish the United States as a global nuclear energy leader".

America can lead the world in nuclear technology by properly guarding future generations against the mistakes we have made today, and by not continuing to make more nuclear waste with no safe solution possible.

We incorporate by reference and adopt as our own the comments submitted by Fred Schofer (https://www.regulations.gov/comment/NRC-2011-0012-0213 tracking #: msi-z9bz-26ms)

Sharon and Ace Hoffman, Carlsbad, California USA

(All quotes are from the docket materials at: https://www.regulations.gov/document/NRC-2011-0012-0205)

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-9i30-rikk
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0236
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Ann Suellentrop

Submitter Information

Name: Ann Suellentrop
Address:
Kansas City, KS, 66103
Email: annsuellen@gmail.com
Phone: 9132717925

General Comment

I strongly oppose NRC-2011-0012-0205, which would modify current regulations for radioactive waste disposal and redefine low-level radioactive waste to cover some Greater-Than-Class C (GTCC) waste including "... certain transuranic wastes." If this proposal is approved, the modifications to Part 61 of Title 10 (Energy) of the Code of Federal Regulations (CFR) would allow these transuranics, including Plutonium to be disposed of as Low Level Waste (LLW), while at the same time allowing " ... higher concentrations of waste, providing new alternatives for safe low-level waste management."

I am a pediatric nurse and am aware that ionizing radiation is many times more damaging to unborn babies, infants and children than it is to adults. It is unthinkable that we would expose future generations to poisonous and potentially lethal substances! We must not relax radiation limits, rather we must tighten regulations!

Redefining GTCC waste makes the problem of radioactive contamination in the environment worse, and these "new alternatives" should be abandoned now. We risk losing track of the waste's location and composition 500 (or 10,000 or more) years from now.

We are talking about affecting the health and the lives of human beings, people, and all living things as well. To relax limits of ionizing radiation is unconscionable. We must protect life at all costs. No amount of financial or political gain is worth endangering life on earth, that is our DNA, which ionizing radiation damages and destroys. Ionizing radiation causes many forms and types of cancers, heart disease, immune-compromising diseases, reproductive harm and genetic damage.

Existing and proposed Part 61 regulations are supposed to protect the environment for AT LEAST 10,000 years, but only require the waste to be protected from "intrusion" for the first 500 years. The oldest pyramids are nearly

5,000 years old. One would think a society with five millennia to perfect containment, that ALSO chooses to work with plutonium — the most toxic (carcinogenic, mutagenic, etc.) and insidious (human senses cannot detect radiation) — element ever conceived, discovered, or created — could — and would — be able to create and guarantee the workability of 10,000-year containment.

Plutonium-239 has a half-life of 24,100 years and radioactive materials are considered dangerous for at least 10-20 half-lives. The possibility of using low-level radioactive waste facilities to store GTCC waste that includes transuranics means that the waste would remain hazardous for hundreds of millennia. By then any "near-surface" containment might well be fully exposed through surface erosion, earthquakes, thermonuclear war, or under water, or in the middle of a city or farm. The proposed regulation ignores this reality, and states that: "The disposal depth will need to be maintained for as long as the waste is hazardous."

What are the design criteria for something that needs to contain lethal poison essentially forever, and what types of intrusion will it be protected from? The regulations describe intrusion by humans (whether deliberate on inadvertent), but it's easy to envision an animal intruding into a structure where concrete was cracked (perhaps by a tree root and/or an earthquake and/or the degradation of the containment caused by the radioactivity contained within) in far less than 500 years. The proposed regulations defer actual rules with vague statements such as: "Depending on the characteristics of the GTCC waste, an applicant would be able to identify in the technical analyses those additional barriers or performance characteristics that are necessary to provide protection, such as a greater disposal depth or an intruder barrier of greater longevity."

One reason the Nuclear Regulatory Commission (NRC) is proposing changes to Part 61 is: " ... GTCC waste streams are stranded at operating reactors, sealed-source facilities, and Department of Energy (DOE) facilities." At the same time, the NRC describes the proposed changes to Part 61 as providing: " ... a clear licensing pathway for the back end of the fuel cycle." and a solution for: "... all nuclear waste except spent nuclear fuel and high-level radioactive waste." This statement makes it clear that the NRC recognizes that there is not even a plan for disposing of spent nuclear fuel and yet, the agency continues to promote its role in "... activities [that] will help reestablish the United States as a global nuclear energy leader".

America can lead the world in nuclear technology by properly guarding future generations against the mistakes we have made today, and by not continuing to make more nuclear waste with no safe solution possible.

Ann Suellentrop, Kansas City, Kansas, USA

(All quotes are from the docket materials at: https://www.regulations.gov/document/NRC-2011-0012-0205)

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-jrgv-xih7
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0237
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Anonymous

Submitter Information

Name: Anonymous Anonymous

General Comment

The attached submission provides detailed technical, economic, and legal analyses evaluating the Commission's proposed transition from deterministic concentration tables (10 CFR § 61.55) to site-specific, performance-based modeling for Greater-Than-Class-C (GTCC) and transuranic (TRU) waste streams. Specifically, the comment addresses:
* Baseline Parameter Standardization: The regulatory vulnerabilities under Motor Vehicle Mfrs. Ass'n v. State Farm, 463 U.S. 29 (1983), arising from applicant-designed performance assessment models lacking standardized exposure parameter ranges.
* Compliance Horizon Limits: The technical and legal consequences of truncating formal quantitative compliance assessments at 10,000 years under 10 CFR § 61.13 without requiring a qualitative evaluation of peak radiological hazards for long-lived isotopes like Depleted Uranium.
* Borehole & Shallow Trench Conflation: Contradictions in applying legacy near-surface physical requirements (water-table proximity prohibitions under § 61.50 and solid void-filling rules under § 61.52) to specialized deep borehole configurations.
* Cooperative Federalism: Agreement State jurisdictional roles and consultation rights under Section 274 of the Atomic Energy Act of 1954 (42 U.S.C. § 2021).
* Viable Regulatory Alternative: A concrete, two-tiered hybrid framework establishing bright-line concentration caps for shallow land burial alongside a dedicated deep borehole regulatory subpart.

See attached file(s)

Attachments

NRC-2011-0012 Low-Level Waste Disposal FINAL

August 16, 2026
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Re: Public Comment and Administrative Record Submittal on Proposed Rule: "Integrated Low-Level Radioactive Waste Disposal," 10 CFR Part 61 (91 Fed. Reg. 40,290; Docket ID: NRC-2011-0012)

We appreciate the opportunity to provide feedback on the Nuclear Regulatory Commission's (NRC) proposed rulemaking for 10 CFR Part 61 (*Integrated Low-Level Radioactive Waste Disposal*). The proposed rule shifts low-level radioactive waste suitability, including Greater-Than-Class-C (GTCC) and transuranic (TRU) waste streams, from deterministic, bright-line concentration tables to site-specific, performance-based modeling.

1. **Shifts Historical Baselines Without Standardized Inputs (*State Farm* Defect):** Abandons bright-line waste classification limits (10 CFR § 61.55) in favor of applicant-designed performance assessment models without defining binding, standardized exposure parameter ranges or objective evaluation frameworks, violating *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29 (1983).
2. **Imposes an Arbitrary 10,000-Year Compliance Horizon:** Truncates formal compliance evaluation at 10,000 years under 10 CFR § 61.13, while relying on technical justifications (such as Depleted Uranium decay) where the peak radiological hazard demonstrably occurs hundreds of thousands of years post-closure, without requiring a complementary qualitative analysis of long-term radiological impacts.
3. **Imposes Internally Contradictory Physical and Packaging Requirements:** Conflates shallow land burial criteria with deep borehole configurations, retaining legacy water-table proximity prohibitions (10 CFR § 61.50) and solid void-filling mandates (10 CFR § 61.52) that render deep borehole disposal options technically unworkable while weakening near-surface protections.
4. **Infringes Upon Cooperative Federalism & Preempts State Authority:** Retains exclusive federal jurisdiction over GTCC waste under Subpart F, depriving Agreement States of their statutory consultation and review roles under Section 274 of the Atomic Energy Act (42 U.S.C. § 2021).
5. **Violates Procedural Due Process via Regulatory Stacking:** Overlaps narrow comment windows with three simultaneous, structurally interrelated rulemakings (NEPA Implementation, Radiation Protection Framework, and Reactor Siting), while quietly altering foundational safety principles such as the "As Low As Reasonably Achievable" (ALARA) standard, depriving stakeholders of a meaningful opportunity to comment under 5 U.S.C. § 553(c).

Notice is hereby given pursuant to 5 U.S.C. § 553(c), 5 U.S.C. § 706(2)(A), and 5 CFR § 1320.11 that the Commission is legally obligated to respond to every substantive technical, empirical, and legal query set forth herein in its Final Rule preamble.

2. Comparative Technical Analysis and Compliance Impacts

2.1 Comparative Baseline Delta (Status Quo vs. Proposed Framework)

Under the current 10 CFR Part 61 baseline, low-level radioactive waste suitability is governed by deterministic concentration limits (Class A, B, C) set forth in 10 CFR § 61.55. GTCC waste is categorically presumed unsuitable for near-surface disposal, providing an objective, bright-line standard.

The proposed rule replaces this deterministic baseline with an open-ended framework requiring applicant-generated Performance Assessments (PAs) and Inadvertent Intruder Assessments (IIAs). By shifting from fixed isotopic concentration tables to customized site models, the NRC introduces unbounded variability. Without binding baseline exposure parameter ranges published in binding NUREG guidance or CFR provisions, compliance depends on an applicant's selection of arbitrary model parameters rather than physical containment.

2.2 PRA & Regulatory Burden Refutation

The NRC’s Paperwork Reduction Act (PRA) statement and Regulatory Impact Analysis (RIA) severely underestimate the administrative burden imposed on regulatory reviewers, Agreement States, and the public. Developing, auditing, and litigating site-specific PAs extending 10,000 years requires multi-variable hydrodynamic, geochemical, and radiological transport modeling. Historical time-motion logs from complex site characterization proceedings demonstrate that auditing unstandardized, multi-variable transport models requires 12,000 to 18,000 professional technical review hours per facility. The NRC’s failure to account for these technical auditing requirements violates OMB Circular A-4.

2.3 Cumulative Compliance & Multi-Agency Overhead Analysis

The proposed rule fails to evaluate the cumulative compliance impact of modifying Part 61 concurrently with the NRC’s proposed revisions to its Radiation Protection Framework (91 Fed. Reg. 43,456), NEPA Implementation rules (91 Fed. Reg. 42,086), and Reactor Siting Practices (91 Fed. Reg. 44,560). Evaluating Part 61 in isolation ignores the compounding administrative overhead imposed on state regulators and licensees who must simultaneously adapt to altered exposure baselines and modified environmental review protocols.

3. Statutory and Jurisdictional Audit

3.1 Statutory Overreach & Preemption of Cooperative Federalism

The NRC's proposed retention of exclusive regulatory authority over GTCC waste disposal directly impinges upon the statutory structure established under Section 274 of the Atomic Energy Act of 1954 (42 U.S.C. § 2021). By denying Agreement States formal regulatory consultation and participation roles over GTCC streams within their borders while removing deterministic federal concentration caps, the NRC deprives host states of their statutory right to enforce compatible environmental health and safety standards.

3.2 Operational Staging & Prerequisite Deficits

The proposed rule improperly attempts to finalize specialized land disposal licensing pathways before establishing standardized baseline parameter ranges for Performance Assessment models. Allowing applicants to select site-specific exposure parameters (e.g., variable daily human water consumption assumptions) prior to issuing binding, standardized NUREG guidance creates a procedural flaw where compliance is determined by model parameter selection.

CFR Section	Specific Language	Identified Issues	Action / Resolution
10 CFR § 61.13(a)	Requires performance assessment calculations to demonstrate safety for 10,000 years post-closure.	Truncates compliance evaluation at 10,000 years, ignoring peak doses occurring beyond 10,000 years for long-lived isotopes like Depleted Uranium without requiring qualitative long-term performance assessments.	Re-draft § 61.13 to mandate a quantitative 10,000-year compliance assessment alongside a required qualitative Post-10,000-Year Performance Analysis evaluating peak dose impacts.

10 CFR § 61.50(a)(2)(iii)	Prohibits disposal where the water table is too close to the surface across all land disposal sites.	Conflates near-surface trench criteria with deep borehole facilities (100m–1000m depth); creates internal regulatory contradiction.	Formally bifurcate near-surface trench criteria from deep borehole disposal standards directly within the CFR text.
10 CFR § 61.52(a)(7)	Mandates that all void spaces between waste packages be filled with solid material.	Technically unworkable for cased, fluid-filled deep boreholes; creates an unenforceable dual standard.	Formally define structural stability rules tailored specifically to borehole geometry and fluid casing.
10 CFR Subpart F	Retains exclusive NRC authority over GTCC waste disposal.	Deprives Agreement States of statutory consultation and review roles under AEA § 274.	Amend Subpart F to require mandatory Agreement State consultation and state environmental review coordination for GTCC site licensing.

4. Proposed Alternative: A Two-Tiered Hybrid Framework

To satisfy its statutory obligations under the Atomic Energy Act, *Motor Vehicle Mfrs. Ass'n, and DHS v Univ of Cal,* and comply with the APA, the NRC must evaluate a concrete, less burdensome, and more protective regulatory alternative before finalizing the proposed rule:

1. **Tier 1 (Deterministic Concentration Baseline for Shallow Land):** Retain bright-line, upper-bound isotopic concentration limits in 10 CFR § 61.55 for near-surface disposal (top 30 meters). Waste exceeding these absolute thresholds (including high-concentration GTCC and long-lived TRU waste) is categorically prohibited from shallow trench disposal.
2. **Tier 2 (Dedicated Deep Geologic / Borehole Subpart):** Establish a separate, dedicated regulatory Subpart specifically tailored for deep borehole and intermediate geologic disposal (depths exceeding 100 meters). This subpart would mandate:

- Quantitative Performance Assessments modeled to 10,000 years, supplemented by a **mandatory qualitative Post-10,000-Year Performance Analysis** evaluating peak dose behavior for long-lived isotopes.
- Standardized site-characterization parameters and exposure guidance published in binding NUREG reference documents.
- Tailored engineering requirements that replace shallow-land void-filling rules with cased-fluid seal integrity standards.

3. **Mandatory Agreement State Consultation:** Require formal NRC and Agreement State joint consultation and state environmental review coordination for any specialized facility licensed under Tier 2 within an Agreement State's jurisdiction.

This alternative achieves the agency's goal of creating a disposal pathway for GTCC waste while eliminating model manipulation and preserving state regulatory partnership.

5. Summary of Actions

Action Item ID	Target Regulation / Section	Mandatory Agency Action Required Before Finalization	Legal Basis / Statutory Trigger
Action 01	10 CFR § 61.13	Incorporate a required Post-10,000-Year Qualitative Performance Analysis to evaluate long-term radiological impacts and peak dose trends.	APA *State Farm* Standard (463 U.S. at 43); AEA Public Health Mandate.
Action 02	Preamble Section III / RIA	Formally evaluate and respond to the Viable Regulatory Alternative set forth in Section 4 in the Final RIA.	APA *State Farm* Standard (463 U.S. at 51); *DHS v. Regents* (140 S. Ct. at 1913).

Action 03	10 CFR § 61.13(a)(2)	Promulgate binding site-characterization parameter ranges and exposure pathways in formal NUREG guidance referenced by the CFR.	Paperwork Reduction Act (44 U.S.C. § 3507); OMB Circular A-4 Guidelines.
Action 04	Docket ID: NRC-2011-0012	Issue a 45-day public comment period extension to de-conflict overlapping rule deadlines.	APA Procedural Due Process (5 U.S.C. § 553(c)).

The NRC is asked to provide written, document-backed responses to the following technical and legal queries in the preamble to the Final Rule:

1. **Modeling Variable Standardization:** What specific binding NUREG guidance or CFR provisions will establish standardized parameter selection frameworks to prevent an applicant from selecting artificially low baseline exposure values to suppress calculated peak doses in site-specific Performance Assessments?
2. **Peak Dose Evaluation:** What is the technical and empirical justification for terminating formal quantitative performance assessment compliance at 10,000 years without requiring a complementary qualitative assessment of post-10,000-year peak radiological hazards for depleted uranium and transuranic isotopes?
3. **Borehole Regulatory Conflation:** What specific empirical testing or hydrodynamic modeling supports applying shallow-land water-table proximity restrictions (§ 61.50) and solid void-filling rules (§ 61.52) to specialized land disposal facilities operating at depths below 100 meters?
4. **Agreement State Preemption:** What specific statutory authority under Atomic Energy Act Section 274 allows the NRC to restrict Agreement State environmental consultation and coordination regarding GTCC waste streams disposed of within an Agreement State's geographic borders?
5. **Cumulative Procedural Assessment:** What formal assessment did the NRC perform regarding the cumulative administrative burden placed on public commenters by overlapping the comment windows of Docket ID NRC-2011-0012 with three concurrent structural rulemakings (91 Fed. Reg. 44,560; 91 Fed. Reg. 42,086; 91 Fed. Reg. 43,456)?

Respectfully submitted,

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-ky13-xp8q
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0238
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Tayyaba Sadiq

Submitter Information

Name: Tayyaba Sadiq
Address:
Columbia, SC, 29229
Email: infinityiz@yahoo.com

General Comment

Docket ID NRC-2011-0012-0205

1. Please extend the comment period by 60 days to allow rate payers to have meaningful time to be able to voice their comments.

2. This merger is dangerous and unfair to rate payers because we are driving closer and closer to monopolizing the industry and causing even more harm to rate payers. You need to allow ample environmental impact study, as well as not except that the polluters will also investigate themselves.

I oppose this.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-lnuu-cfvh
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0239
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Anonymous

Submitter Information

Name: Anonymous Anonymous

General Comment

As a concerned Texan who feels that nuclear waste should be disposed of safely and properly, am opposed to the proposed NRC regulatory changes that would allow the shallow burial of Greater-Than-Class C (GTCC) radioactive waste. NRC has always required disposal of GTCC in a deep geologic repository. This dangerous change could lead to accidents and contamination, with health impacts from exposures.

The nation's entire GTCC inventory could end up in shallow burial at the Waste Control Specialists site in Andrews County, Texas. This waste instead belongs in a permanent repository. It must be isolated from living things. We should not risk contaminating our soil or aquifers.

I request a 3-month extension of the public comment deadline and that a public meeting be held that allows public comment, not just questions and answers.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-o1s5-c82v
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0240
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Beki Halpin

Submitter Information

Name: Beki Halpin
Address:
Pflugerville, TX, 78660
Email: beki.halpin@gmail.com
Phone: 5126582599

General Comment

My comment is attached in pdf

Attachments

Comments from Beki Halpin

Comments on FR Doc # 2026-13302, NRC-2011-0012
August 16 2026
VIA REGULATIONS.GOV
U.S. Nuclear Regulatory Commission
Office of Administration Rules, Announcements, and Directives Branch
Mail Stop: OWFN-12-H08
Washington, D.C. 20555-0001
ATTN: Rulemakings and Adjudications Staff
Re: Comments on Proposed Rule, Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40,290 (July 1, 2026)
Docket ID: NRC-2011-0012; NRC-2015-0003; NRC-2017-0081 (RIN 3150-AI92)

Dear NRC Commissioners and Rulemakings and Adjudications Staff,

These comments are submitted by Beki Halpin, a concerned citizen of the great state of Texas and this spectacular but tormented planet Earth.

I request at least a three-month extension of the August 17, 2026, deadline for public comment on the U.S. Nuclear Regulatory Commission's proposal to establish new regulatory requirements for the permanent disposal of Greater-Than-Class C (GTCC), GTCC-like, and transuranic (TRU) waste.

I oppose the proposed changes in the rules. The time from when these draft rules were issued until the deadline for comments is insufficient to assess the full and complex impact of the rules on efficiency, safety for workers, safety for the communities the waste will pass through on its way to "storage", safety of the residents in communities that are near the "storage facilities" or downwind of it, safety of water that is in aquifers below or near the "storage facilities", or safety of surface water running off the "storage" facilities.

A reasonable person can see that shallow or near-surface of what is actually highly radioactive GTCC, GTCC-like and transuranic waste, all of which will remain deadly radiation emitters for millennia, is a recipe for disaster. All of these materials should be in a deep geologic repository and not set out on the landscape where they will be exposed to increasing heat, potential conflagration of fire, flooding, tornadoes, terrorist attack, lightning strike, or combination thereof. Any of these could cause catastrophic containment failure, leading to a domino effect of one safety system after another in rapid succession. Shallow burial is nothing but a catastrophe waiting to happen and is in no way safe. In a couple of hundred years (or likely sooner), these "storage facilities," should they be built, will resemble radioactive dumps more than safe state-of-the-art facilities.

A reasonable person can say with certitude that the American taxpayer will pick up the tab when the site is one big radioactive danger. Local residents will pay the price as leaking containment vessels that cannot be repaired or repackaged poison their communities. Local emergency responders will pay the price as they rush to respond to radioactive incidents and disasters. This is not in any way more efficient than the outcome that the current rules would result in. Instead, these rule changes will be more inefficient and costly overall than current rules.

Site-specific standards developed by different individual sites is dangerous. There should be one set of scientifically established safety standards for all sites. Having individual sites set their own standards would, of course, lead to standards developed with profit and not safety in mind. This rule change is not efficient or safe.

Additionally, I adopt by reference the full comments docket by Fred Schofer, former NRC Regulatory Analysis Lead and Rulemaking Project Manager.
An excerpt of Fred Schofer's comments is included here, and I **make the same following comments and requests of NRC.**

The following begins on page 14 of 17 Mr. Schofer's submitted comments:
"Summary of Requested Commission Actions:

For the reasons set out above, I respectfully request that the Commission:
1. Reconcile the final rule's Statement of Consideration with the Commission's 2016 draft
final rule (SECY-16-0106) and 2019 draft regulatory basis conclusions, rather than relying
on E.O. 14,300 (Section II).
2. Confirm whether NUREG/CR-3568 (1983) remains an adequate technical basis for labor-rate estimation (Section III.A).
3. Provide the underlying probability-distribution documentation used in the waste-cuttings behavior during inadvertent intrusion analysis (Section III.A).
4. Clarify what governing methodology document or documents governed preparation of the Regulatory Analysis, given the July 21, 2026 withdrawal of NUREG/BR-0058 following
its July 21, 2026 withdrawal and reconcile that withdrawal with the Commission's May 2024 direction to revise, consolidate, and retransmit Revision 5 (Section III.B).
5. Provide disaggregated cost estimates disaggregated by individual new requirement, consistent with NUREG/BR-0058 § 4.3.2 and Circular A-4 (Section III.C).
6. Clarify the terms on which NRC technical support will be made available to Agreement
States reviewing site-specific technical analyses under the final rule (Section III.C).
7. Supplement the RA with a quantified or monetized treatment of the rule's net safety and security effects, consistent with OMB Circular A-4 including incorporating NUREG-1530. Revision 1 63 91 Fed. Reg. at 40,303. dollar-per-person-rem values to monetize radiological impacts or explain why that expectation does not apply (Section III.D).

8. Adhere to GAO Cost Estimating Best Practices (GAO-20-195G) by establishing a product-oriented WBS, obtaining independent cost estimates, and disclosing which cost-
estimating methodology is used. (Section III.E)
9. Provide the current status of the Commissioners' May 2024 direction to revise NRC's cost-estimating procedures to reflect both the current Circular A-4 and GAO's Cost Guide
— a commitment the GAO's most recent priority-recommendations letter still lists as open
and unimplemented, independent of and unaffected by the July 2026 withdrawal (Section
III.E)
10. Provide Circular A-4 required analyses for distributional effects, ancillary benefits, countervailing risks, phased compliance, and federalism (Sections III.F and III.G).11. Reconcile the flat 500-year GTCC intruder-barrier figure with NUREG-1573's peak-dose-timing rationale and SRM-SECY-20-0098's site-specific, graded compliance-period
direction, or explain why an unadjusted Class C figure is appropriate for a waste class the
Commission describes as materially more hazardous (Section IV).
12. Provide the empirical or historical basis supporting the assumption that a deterrence-
based intruder barrier reliably achieves 500 years of effective protection (Section IV).
13. Clarify whether the rule retains a stand-alone defense-in-depth "analysis" requirement
or the "clear statement" formulation directed by SRM-SECY-13-0075 and explain any departure from that 2014 direction (Section IV).
14. Confirm the current scope of 10 CFR 61.1's case-by-case applicability of new requirements to existing licenses, and confirm that existing licensees not accepting newly
regulated waste streams will not be required to prepare new technical analyses solely because the classification framework has changed (Section V).
15. Provide generic dose-reconstruction or margin analysis demonstrating the degree of conservatism in the current Table 1 and Table 2 classification limits to justify the RA's "unnecessary burden" premise (Section V).
16. Identify which borehole reference design — DOE's intermediate-depth alternative or the IAEA BOSS concept — the final rule's performance criteria are meant to validate, and
place supporting site-specific or design-specific analysis in the docket, including any siting
constraints (Section VI.CE, G).
17. Confirm whether Specialized Land Disposal Facility licensing for GTCC waste above
10,000 nCi/g remains subject to case-by-case Commission approval as described in the Commission's 2019 Response to Public Comments, or is now a generically available pathway, and if the latter, explain and justify the change (Section VI.F).

18. Identify by ADAMS accession number, and place in the docket, the “2026 supplement
to the 2019 technical analysis of hazards document” cited at 91 Fed. Reg. 40,307 as the technical basis for the Specialized Land Disposal Facility concentration table.
19. Publish threshold applicability determinations for E.O. 13045, E.O. 13211, UMRA (2 U.S.C. § 1532), and E.O. 12866 § 3(f)(1).
20. Explain compliance with E.O. 13891 guidance-rescission procedures during the withdrawal of NUREG/BR-0058.
21. Coordinate physical protection exemptions under 10 C.F.R. § 73.67(b)(1) with Docket
ID NRC 2025-1238 and AEA § 274(c) statutory constraints.
X. ConclusionThe record in this docket is unusual in its depth, and that depth cuts against the proposal
at several points of increasing severity.
Most seriously, the Regulatory Analysis rests on a governing methodology that no longer
exists. NUREG/BR-0058 was withdrawn in its entirety, together with NUREG/BR-0184, sixteen days before this comment period opened, after the Commission had directed staff
only fourteen months earlier to revise, consolidate, and retransmit the very document the
RA cites — not to abandon it. OMB Circular A-4 does not fill the resulting void on the record’s own terms: it supplies no work-breakdown-structure concept, no cost-estimating
methodology, and no independent-cost-estimate practice, so the RA’s cost estimate cannot presently be tested against any governing instrument at all. A Regulatory Analysis
whose stated methodological basis has been formally withdrawn, and whose cost-estimating basis was already found deficient by GAO in 2014 and has not since been corrected, is not a sound foundation for a final rule.
Nearly as serious are the unexplained departures from the Commission’s own prior reasoning. The GTCC intruder-barrier provision carries forward the 500-year Class C duration figure without adjustment, despite the Commission’s own premise that GTCC waste presents materially greater and longer-lived hazard — a mismatch State Farm requires the Commission to reconcile and has not yet reconciled. The risk-informed transition rests on an aggregation-conservatism rationale that the record does not support
with site-specific or generic dose-modeling evidence, leaving the claim that current limits
are “unnecessarily” conservative asserted rather than demonstrated. Additionally, the shift from a case-by-case GTCC licensing safety valve to what reads as a generically available specialized-disposal pathway, resting in part on a DOE environmental analysis that did not evaluate the technology NRC now proposes to rely on, changes the Commission’s 2019 position without the reasoned explanation Fox demands. Each of these examples represent a significant question about whether the final rule can survive arbitrary-and-capricious review.

A second tier of findings concerns analyses Circular A-4 requires that the RA simply does not perform: a disaggregated cost estimate that disaggregates nothing, tested against a real, decade-old, on-docket cost figure the RA does not engage; no monetized health, safety, or security benefit metric for a rule otherwise framed as safety-relevant, even though NRC's own NUREG-1530 factor is available and unused; no distributional-effects description; no ancillary-benefits or countervailing-risks discussion; and no examination of compliance-date, enforcement-method, or federalism alternatives. None of these gaps depend on the July 2026 withdrawal — Circular A-4 required each of them before the withdrawal and requires them now — and none has been supplied.

A third tier concerns disclosure rather than substance: the NPRM does not state whether the rule is "economically significant" under E.O. 12866 § 3(f)(1), does not address E.O.13045 or E.O. 13211 despite discussing two other energy-related orders, does not include the Unfunded Mandates Reform Act threshold statement it includes for parallel statutes, and does not address E.O. 13891's guidance-document procedures in withdrawing NUREG/BR-0058 despite that Order having been back in effect for eighteen months. These omissions are more readily corrected than the first two tiers, but they leave the record incomplete on questions the Commission has a duty to answer on this record, not to defer to the final rule.

Finally, the physical protection exemption at 10 CFR 73.67(b)(1) should be coordinated with the pending rulemaking at Docket NRC-2025-1238 before either is finalized, to avoid inconsistent Category 1/2 physical protection outcomes for the same waste streams.

The record before the Commission is not sufficient to support final action on this rulemaking. Although the rule addresses a genuine and long-deferred gap in the low-level waste disposal framework, the deficiencies identified above preclude a defensible and analytically coherent final rule. The Commission should first resolve each issue — beginning with the governing-methodology and cost-estimating gaps in Sections III.C and III.F, and the unexplained departures in Sections IV through VI — before proceeding to any finalization. Addressing these matters is essential to ensuring a durable, technically grounded, and legally sustainable outcome. I appreciate the opportunity to comment."

Please extend the comment period on these rules for 3 months so these rules and their intended and unintended consequences can be better understood and the rules can be appropriately revised or rejected.

Thank you,
Beki Halpin

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 16, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msw-ocfx-eeam
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0241
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Laura Georgi

Submitter Information

Name: Laura Georgi
Address: United States,

General Comment

Docket ID NRC-2011-0012
I am a retired biologist. I received radiation safety training and worked with radionuclides in the course of my career. The ones I worked with had short half-lives with stable decay products so waste disposal was merely a matter of waiting a few weeks or months before disposing. This isn't an option for long-lived radionuclides. Disposing of waste from nuclear reactors is a hard problem. In my opinion it is practically insoluble and a compelling reason for not making more of it. The current administration would like to accelerate building of reactors while vigorously opposing other, low-cost, clean power sources that can be brought online much more quickly. Hence its push to "solve" the problem of what to do with the significant volumes of LLW that has already been generated but cannot be legally disposed of under current regulations.
The administration has shown over and over that it will choose corporate and personal profit over public safety, and also that it doesn't know what it is doing. The firing of the NNSA is an example particularly relevant here. That leaves me with deep misgivings about any regulatory action the administration proposes. On the other hand, the LLW problem has been around and wrestled with by several administrations, and what I've read so far of what is represented to be the draft proposed rule from 2024 looks very much like what I've read so far of the current proposed rule (albeit perhaps a bit more readable). If so, this rulemaking could have been done by now if that draft had been published instead of withdrawn.
It seems fantastic (in the sense of not realistic) to be contemplating 10,000 year and even the 1,000 year compliance periods, in the context of a 250-year old country that is currently engaged in what some of us consider to be an existential struggle, or indeed struggles, plural, considering the dual threats to our democracy and our planet. On the other hand, the proposed dose limits (0.25 mSv for the public and 5 mSv for the "inadvertent intruder") do seem quite reasonable, if it can be achieved. Count me as skeptical. A lot can happen in 10,000 years, and something buried 5 m below the surface may not remain 5 m below the surface.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-5mvt-qbd8
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0242
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Laura Jonasse

Submitter Information

Name: Laura Jonasse
Address:
Webster, NY,
Email: m.jonasse@att.net
Phone: 5855454469

General Comment

Please do your research and do not allow this to happen in the Basin! Protect the environment!

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-ae31-ekxo
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0243
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Nuclear Energy Institute

Submitter Information

Email: atb@nei.org
Organization: Nuclear Energy Institute

General Comment

See attached file(s)

Attachments

08-17-26_NRC_Industry Comments ILLRWD Part 61

NUCLEAR ENERGY INSTITUTE
1201 F Street NW • Suite 1100
Washington, DC 20004
nei.org

Jennifer Uhle, Ph.D.
Sr. Vice President
Technical & Regulatory Services

Phone: 202.247.5717
Email: jlu@nei.org

August 17, 2026

Jody C. Martin
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

Project Number: 689

Submitted via Regulations.gov

Subject: Nuclear Energy Institute Comments on Proposed Rule, "Integrated Low-Level Radioactive Waste Disposal" [Docket ID NRC-2011-0012]

Dear Mr. Martin:

The Nuclear Energy Institute (NEI)[1], on behalf of its members, appreciates the opportunity to submit comments as requested by the U.S. Nuclear Regulatory Commission (NRC) in 91 Fed. Reg. 40290 on the Proposed Rule, "Integrated Low-Level Radioactive Waste (LLRW) Disposal." We appreciate the NRC staff's efforts in developing this improved framework for the disposal of the types of radioactive wastes that are or will be generated from a variety of industrial activities. The proposed framework would provide a pathway for disposal of two waste types not currently addressed in NRC's regulations:

1. Greater-than-class-C (GTCC) wastes currently being stored onsite at commercial nuclear reactors, independent spent fuel storage installations (ISFSI), hospitals, and other industrial facilities. This is a much-needed improvement that reflects substantial work over the past two decades.
2. Materials resulting from used nuclear fuel recycling. With recycling projects now envisioned as a key element of DOE's Nuclear Lifecycle Innovation Campus initiative, providing an alternate disposal path for some reprocessing wastes will be a valuable addition to NRC's regulatory framework. We recommend that the NRC provide additional information on the technical basis for the concentration limits proposed.

[1] The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

We support this proposed rulemaking and offer four key recommendations to enhance the rule's effectiveness and clarity which will be important for guiding applicants and NRC reviewers in the licensing of future disposal facilities.

1. NRC has appropriately concluded that under the Atomic Energy Act and the Low-Level Radioactive Waste Amendments Act of 1985, the licensing of a GTCC disposal site is the sole responsibility of the NRC. In the current regulatory framework, the disposal of LLRW is regulated by Agreement States. Under the proposed rule, the role of the Agreement States, or a state hosting a GTCC waste disposal facility, would be undefined. We believe states hosting such facilities must have meaningful involvement in NRC's licensing and ongoing oversight of the operations, closure, and long-term monitoring of these sites. Subpart F of the proposed rule should be revised to reflect this.

2. The proposed rule in Part 61.2, "Definitions," establishes 10,000 years as the performance period against which a new disposal site for wastes containing significant quantities of long-lived radionuclides is evaluated. While long-term performance assessments can help inform the decision-making process by providing valuable information regarding the continued effectiveness of site characteristics, engineered barriers, and waste forms in protecting public health and safety, analyses extending to 10,000 years are inherently uncertain. Because of these uncertainties, NEI recommends that NRC clarify, either in the final rule or in NUREG-2175, Revision 1, how applicants should characterize, evaluate, and communicate uncertainty in both the 10,000-year compliance demonstration and the qualitative performance evaluations beyond that timeframe. Additional guidance on sensitivity analyses, alternative conceptual models, uncertainty treatment, and the role of qualitative information would improve consistency and regulatory predictability while preserving the protective intent of the proposed rule.

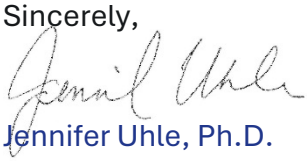
3. NEI does not support the addition of a mandatory "safety case" in Part 61.10, "Content of Application." The proposed rule already requires, and Draft NUREG-2175, Revision 1 already provides substantial guidance for the technical analyses that form the basis for determining whether a land disposal facility will meet the Part 61 performance objectives. Those analyses include a performance assessment, an inadvertent intruder assessment, an operational safety assessment, a site stability assessment, a performance period analysis, a discussion of defense-in-depth considerations, and waste acceptance criteria. Requiring a separate safety case as a new—redundant and inefficient—application element would merely repackage information already contained in the license application, technical analyses, safety basis, and executive summary without creating a new independent safety demonstration. NEI therefore recommends that NRC remove the proposed mandatory safety case requirement. The Commission's

reasonable assurance determination should continue to rest on the technical analyses and compliance with the Part 61 performance objectives, not on the preparation of a separate narrative document.

4. NEI does not support the proposed prescriptive 5-meter minimum burial depth. This requirement is inconsistent with the NRC's stated risk-informed, performance-based approach, which otherwise relies on site-specific performance assessment and waste acceptance criteria to demonstrate compliance with Part 61 performance objectives. NUREG-2175, Rev. 1 states an explicit basis for the 5-meter figure, as the traditional 3-meter depth used to distinguish an intruder-construction scenario from an intruder-drilling scenario, plus an additional 2 meters to attenuate radon in-growth from uranium decay, with a further caveat that arid or semi-arid sites may require more than 5 meters because lower soil moisture reduces radon attenuation. NEI does not dispute that this is a genuine physical mechanism. NEI submits that it is nonetheless a generic default developed for the general case, not a site-specific finding, and that a rule otherwise built on site-specific performance assessment should permit that default to be tested, and where the data support it, displaced, by an actual site-specific analysis, rather than applied as an unrebuttable floor. Disposal system performance depends on site-specific factors such as geology, hydrology, engineered barriers, waste form, and facility design, not a single design parameter. The NRC appropriately moves away from prescriptive waste classification limits in §61.55 by allowing disposal facility operators to establish site-specific waste acceptance criteria, including radionuclide concentration limits, through rigorous performance assessments that demonstrate compliance with the performance objectives of Subpart C. While burial depth is an important consideration, the approach should be determined through site-specific performance assessments, and defense-in-depth evaluations rather than prescribed by regulation. The proposed 5-meter burial depth requirement represents a departure from this philosophy by imposing a one-size-fits-all design criterion without demonstrating that such a requirement is necessary across the wide range of potential disposal environments. If a disposal configuration can demonstrate compliance with all the performance objectives, including protection of the public, inadvertent intruders, groundwater, and long-term stability, it should be permitted without requiring a fixed burial depth. Accordingly, the NRC should replace the prescriptive 5-meter requirement found in §61.52 (a)(2),(3) and (16) with a performance-based standard that allows burial depths to be justified through site-specific analyses supporting compliance with the performance objectives of 10 CFR Part 61, Subpart C.

We appreciate the opportunity to provide our perspectives on this important regulatory matter. If you have questions or require additional information, please contact Rod McCullum (rxm@nei.org), or Bruce Montgomery (bsm@nei.org).

Sincerely,



Jennifer Uhle, Ph.D.
Senior Vice President, Technical & Regulatory Services

Attachment A: Responses to NRC's Specific Requests for Comment

Attachment B: Detailed Comments on NRC's Proposed ILLRWD Rule Language and Guidance

CC: Mike King, EDO, NRC
Sabrina Atack, Deputy EDO, Reactor, Materials and Preparedness Programs, NRC
Andrea Kock, Director, Office of Nuclear Materials, Safety and Safeguards, NRC
Jane Marshall, Director, Division of Decommissioning, Closure, Analysis, and Financial Oversight, NRC
George Tartal, Office of Nuclear Material Safety and Safeguards, NRC
Priya Yadav, Office of Nuclear Material Safety and Safeguards, NRC

1. **The proposed rule contemplates performance evaluations that can cover periods up to 10,000 years and qualitative analyses of periods beyond those time frames. The new specialized land disposal category for GTCC waste encompasses a wide range of concentrations of long-lived alpha-emitting radionuclides, generally from 10,000 to 500,000 nCi/g, with the potential for higher concentrations through the site-specific waste acceptance criteria process. Because this approach is new and applies to GTCC waste streams with potentially high concentrations of long-lived alpha emitters, the NRC seeks stakeholder perspectives on:**

    a. **What challenges could arise from performing analyses over these timeframes?**

NEI Response

Long-term performance assessments can help inform the decision-making process by providing valuable information regarding the continued effectiveness of site characteristics, engineered barriers, and waste forms in protecting public health and safety. However, analyses extending to 10,000 years and beyond are inherently uncertain due to challenges associated with projecting natural system evolution, engineered barrier performance, and future human activities over such extended periods.

Key sources of uncertainty include long-term geologic and hydrogeologic evolution, including future climate conditions, infiltration rates, groundwater flow paths, and geochemical conditions; the performance and degradation behavior of engineered barriers, waste forms, and other protective features over timeframes that exceed direct empirical observation; future land-use patterns, institutional controls, societal continuity, and human behavior. Characterizing and communicating uncertainty in a manner that is technically sound and consistently interpreted across applicants, Agreement States, and NRC reviewers will be challenging.

These challenges are particularly relevant for the proposed specialized land disposal category because the rule would allow disposal of waste streams containing relatively high concentrations of long-lived alpha-emitting radionuclides. The long hazard duration of these radionuclides increases the importance of understanding how uncertainty is treated within performance assessments and supporting qualitative evaluations.

Importantly, increasing uncertainty does not diminish the value of long-term performance assessments. Rather, it underscores that these analyses should be viewed as demonstrations of disposal system performance and resilience under a range of reasonably foreseeable conditions, not as precise predictions of future outcomes. Consistent with NRC's risk-informed regulatory framework, quantitative modeling results should therefore be considered together with site characterization information, engineered barrier performance, waste characteristics, sensitivity analyses, and other qualitative considerations as part of an overall reasonable assurance determination.

NEI therefore recommends that NRC clarify, either in the final rule or in NUREG-2175, Revision 1, how applicants should characterize, evaluate, and communicate uncertainty in both the 10,000-year compliance demonstration and the qualitative performance evaluations beyond that timeframe. Additional guidance on sensitivity analyses, alternative conceptual models, uncertainty treatment, and the role of qualitative information would improve consistency and regulatory predictability while preserving the protective intent of the proposed rule.

NRC should also consider relevant long-term performance evaluation principles embedded in EPA's disposal regulations and guidance. EPA's frameworks under 40 CFR Parts 191 and 194 and its RCRA no-migration requirements emphasize a "reasonable expectation" of compliance and consideration of conservative qualitative evidence where precise long-term predictions are not technically supportable. These established approaches could help NRC develop guidance that is consistent and appropriate to GTCC low-level radioactive wastes.

b. What steps can the agency take to clarify expectations and to help applicants and licensees maximize the realism and fidelity of these analyses?

NEI Response

NEI believes the realism, fidelity, and defensibility of long-term performance analyses would benefit from additional implementation guidance in NUREG-2175, Revision 1. Clear guidance would improve consistency among applicants, Agreement States, and NRC reviewers while preserving the flexibility necessary for site-specific evaluations

First, NRC should clarify expectations for developing and supporting conceptual site models. Applicants should identify and evaluate the features, events, and processes that may significantly influence radionuclide release, transport, and exposure over the compliance period. Depending on site-specific and waste-specific conditions, these may include waste form degradation, engineered barrier performance, infiltration, recharge, groundwater flow, geochemical interactions, radionuclide solubility and retardation, diffusion, dispersion, and exposure pathway assumptions. NRC guidance should further clarify how applicants are expected to develop the technical basis for including or excluding specific features, events, and processes, and how uncertainty in conceptual model selection and model development should be addressed within the performance assessment.

Second, NRC should provide additional guidance regarding uncertainty and sensitivity analyses. Long-term assessments inherently involve uncertainty, and applicants would benefit from clearer expectations regarding the evaluation and discussion of uncertainty, including sensitivity analyses, alternative conceptual models, and reasonable bounding assumptions. Such guidance would improve consistency and transparency across future licensing reviews.

Third, NRC should clarify how engineered barriers, disposal depth, site features, and other protective characteristics may be credited in the analysis. For specialized land disposal facilities, these features are central to demonstrating long-term isolation and should be evaluated in a manner that reflects realistic site-specific conditions rather than generic or overly conservative assumptions. This would help applicants and licensees develop analyses that better reflect actual disposal system performance while maintaining adequate protection.

Fourth, NRC should align the final rule's treatment of inadvertent intrusion with NRC's existing guidance on intruder scenario selection. The NRC's Concentration Averaging and Encapsulation Branch Technical Position recognizes that "there is no scientific basis for quantitatively predicting the nature or probability of a future human activity," and therefore assumes reasonably bounding scenarios that could occur and evaluates the radiological consequences to individuals who might intrude onto the disposal site if institutional controls or societal memory were lost.

Consistent with that approach, NEI recommends that the final rule and NUREG-2175, Revision 1 apply a scenario-based approach to inadvertent intrusion for specialized land disposal facilities, rather than requiring an absolute demonstration that intrusion cannot occur. The guidance should recognize that, in some cases, it may be reasonable to assume intrusion will not occur based on disposal depth, site features, engineered barriers, or other protective factors. This is not the same as asserting that intrusion is impossible; rather, it reflects a risk-informed evaluation of whether intrusion is a credible scenario under the site-specific disposal configuration.

Finally, NRC should clarify expectations for the way quantitative modeling results, uncertainty analyses, bounding assumptions, conceptual model evaluations, and qualitative information should be integrated into the licensing basis. This would help ensure that long-term performance analyses are interpreted as part of a broader reasonable assurance determination, rather than as precise predictions of future conditions. Clear guidance in these areas would improve realism, fidelity, consistency, and regulatory predictability while preserving the protective intent of the proposed rule.

In summary, NEI recommends that NRC enhance NUREG-2175, Revision 1, by providing additional guidance on conceptual site model development, uncertainty and sensitivity analyses, reasonable bounding assumptions, crediting engineered and natural barriers and applying realistic scenario-based inadvertent intruder assessments. These steps would help applicants and licensees prepare technically defensible analyses that reflect site-specific conditions and support consistent regulatory reviews.

c. What alternative approaches, such as durations or additional qualitative factors graded by the concentration of waste, should the NRC consider to improve the effectiveness or clarity of either the compliance period or the performance period?

NEI Response

The proposed timeframe provides a reasonable framework for evaluating the long-term performance of disposal systems intended to manage long-lived radionuclides while remaining consistent with the broader objectives of the rulemaking.

Rather than modifying the compliance period, NEI believes the effectiveness and clarity of the framework would be improved through additional NRC guidance describing the qualitative and site-specific factors that should be considered alongside radionuclide concentration. Long-term disposal system performance is influenced not only by radionuclide inventory and half-life, but also by waste form stability, engineered barrier performance, disposal configuration, hydrogeologic setting, groundwater travel time, and other site characteristics that influence radionuclide migration and potential exposure.

NEI recommends that NRC develop, in NUREG-2175, Revision 1, qualitative factors graded by waste concentration and informed by site-specific characteristics beyond radionuclide half-life and travel time. These factors should include, as appropriate, depth-to-groundwater, net infiltration, engineered barriers, waste form performance, disposal depth, geochemical conditions, groundwater travel time, and other natural or engineered features relevant to long-term isolation. This approach would be consistent with the risk-informed, site-specific framework NRC has adopted elsewhere in the proposed rulemaking.

NRC should also clarify how waste concentration, radionuclide characteristics, disposal system design, and site-specific conditions may be used to determine the appropriate scope and level of detail for long-term performance assessments. Waste streams containing higher concentrations of long-lived radionuclides, or

radionuclides with greater mobility, may warrant additional evaluation of waste form performance, engineered barrier degradation, uncertainty analyses, and transport processes. Conversely, where site characterization demonstrates strong natural and engineered isolation—such as substantial disposal depth, low infiltration rates, favorable geochemical conditions, robust engineered barriers, and long groundwater travel times—the performance assessment may appropriately focus on the principal radionuclides, dominant transport pathways, and key performance drivers shown to influence long-term disposal system performance.

For the performance period beyond the quantitative compliance timeframe, NRC should clarify the role of qualitative information in supporting long-term confidence in disposal system performance. Factors such as site stability, barrier durability, defense-in-depth, hydrogeologic isolation, and overall system resilience can provide important context for evaluating long-term protectiveness as uncertainties increase over time. Clarification regarding how these qualitative considerations should be incorporated into the licensing basis would improve consistency, transparency, and regulatory predictability.

NEI recommends that NRC continue to frame the compliance period and performance period as complementary parts of a risk-informed evaluation. Quantitative analyses provide important information regarding disposal system behavior during the compliance period, while qualitative evaluations provide additional confidence regarding long-term system performance as uncertainties increase beyond that period. Together, these approaches provide a more complete basis for demonstrating reasonable assurance than either approach individually, and are consistent with the overall objectives of the proposed rulemaking.

To bolster the practical application of this framework, NEI recommends that NRC improve its effectiveness and clarity by developing guidance that grades qualitative and site-specific factors by waste concentration and radionuclide characteristics. This guidance should explain how natural features, engineered barriers, waste form performance, hydrogeologic conditions, transport characteristics, and broader qualitative information should inform the scope and level of detail of both the compliance-period analysis and the post-compliance performance period evaluation.

2. Under the proposed rule, the NRC would license disposal of GTCC waste streams under part 61.

a. What steps can the NRC take to ensure that states' insights are considered and received with respect to licensing GTCC facilities?

NEI Response

There are important steps that NRC can take to ensure states' insights are considered in licensing GTCC disposal facilities. Since the NRC's position on whether Agreement States can license and regulate a GTCC disposal facility has changed, we recommend that the NRC explain in more detail the basis for this change and work with potential host states to explore how the Agreement States and the Compacts can be involved in the licensing and ongoing oversight of these facilities.

b. Does part 61, subpart F, appropriately enable states to consider and provide input in NRC licensing of GTCC facilities?

NEI Response

We don't think that Subpart F appropriately enables states' involvement in the licensing process. Because of the importance of the host state's role in successfully deploying a GTCC disposal site, Subpart F should be revised to require NRC to meaningfully involve a host state in the licensing and oversight of a GTCC disposal site, within the constraints of the Atomic Energy Act and the Low-Level Radioactive Waste Amendments Act.

3. Proposed section 61.58(e) requires licensees to undertake an annual review of the inputs to the site-specific performance analysis. Does the annual review provide sufficient flexibility to licensees?

NEI Response

No we don't believe an annual review is necessary. A periodic review should be required only when a triggering event occurs that could reasonably affect the validity of the existing performance analysis or when a licensee proposes to accept a waste stream not previously evaluated in the current licensing basis. The site-specific performance analysis is intended to demonstrate reasonable assurance that a facility will meet the Part 61 performance objectives based upon the waste streams, inventory, facility design, engineered barriers, site characteristics, and operational assumptions evaluated in the approved licensing basis. Once established, many of the key inputs to the performance analysis change infrequently, if at all. Consequently, a mandatory annual review of all performance analysis inputs may provide limited safety benefit while imposing significant administrative burden and resource expenditures on licensees. The requirement could result in repetitive evaluations that confirm no material changes have occurred and therefore do not enhance the protection of public health and safety.

Furthermore, the four operating facilities licensed under 10 CFR Part 61 have dynamic licenses that are modified due to regulatory questions, waste stream changes, and operational issues. These modifications occur several times per year and would incorporate any changes to inputs to the site-specific performance analysis. Based on actual operating experience, making this a mandatory requirement would be redundant and interfere with the natural cadence with which licenses would otherwise naturally be updated.

A more risk-informed approach would be to require review and update of the site-specific performance analysis when a change occurs that could materially affect the conclusions of the analysis. Examples include:

- Acceptance of a new waste stream not previously analyzed in the approved performance assessment;
- Receipt of waste containing radionuclides or concentrations outside the bounds of existing analyses;
- Significant changes to facility design, engineered barriers, disposal configuration, or operational practices;
- New site-specific information that materially affects key assumptions or model inputs; or
- Other conditions identified through the licensee's change control and corrective action programs as potentially affecting compliance with Part 61 performance objectives.

This approach is consistent with the overall risk-informed philosophy of the proposed Integrated Low-Level Radioactive Waste Disposal rule. Regulatory resources should be focused on changes that have the potential to affect safety-significant conclusions rather than on compliance with an arbitrary calendar-based review. In many years, an annual review may not identify any new information or conditions requiring update of the performance analysis, making the exercise largely administrative and providing little regulatory or safety value.

NRC should therefore consider revising proposed §61.58(e) to require periodic review only when a triggering event occurs that could reasonably affect the validity of the existing performance analysis or when a licensee proposes to accept a waste stream not previously evaluated in the current licensing basis. Such an approach would maintain regulatory oversight while providing greater flexibility, reducing unnecessary burden, and ensuring that licensee resources are directed toward activities that meaningfully contribute to demonstrating continued compliance with Part 61 performance objectives.

4. **Advanced reactors, advanced reactor fuels, emerging reprocessing approaches, and expanded medical and industrial uses of radioisotopes will potentially generate novel GTCC streams. A clear disposal pathway for these emerging waste streams is essential.**

    a. **Do the proposed concentration limits, performance assessment methodology and waste characterization expectations remain valid for these emerging waste streams?**

NEI Response

The classification system upon which this rule is based, including the concentration limits in Tables 1 and 2 of §61.55, traces to a survey of LLW generators conducted for the 1982 rulemaking, published as NUREG-0945 (U.S. Nuclear Regulatory Commission [NRC], 1982). NRC's own preamble to this proposed rule states that "*new technologies, such as advanced reactors, might result in the generation of different LLW streams that have not previously been considered*" (NRC, 2026a, *background discussion*). The technical basis for the numbers in §61.55 does not account for the waste streams at issue here.

At the same time, the proposed rule is not simply carrying the 1982 tables forward unchanged. NRC Chairman Ho Nieh, at the June 25, 2026, press roundtable announcing the proposed rule, described the shift this way: "*We're proposing a risk-informed framework that scales requirements to the actual hazards of the waste, not where it came from*" (Larson, 2026). At that same roundtable, Chairman Nieh illustrated the range of material already inside the GTCC category by citing irradiated reactor components such as control rod blades, while NMSS Director Andrea Kock added high-activity resins and sealed sources used in medical and industrial settings as further examples (Larson, 2026).

The nearly 80-percent figure for the share of GTCC inventory by volume potentially suitable for near-surface disposal, which Chairman Nieh referenced at the roundtable, is not a new finding. It is the NRC staff's conclusion in its 2019 Draft Regulatory Basis, "Disposal of Greater-Than-Class C (GTCC) and Transuranic Waste" (84 FR 35037, July 22, 2019), and the current proposed rule restates it in near-identical terms in its background discussion (NRC, 2026a, at 40296). Industry views this as a confirmed technical finding, documented in two dockets, and recommends the NRC carry the figure forward into the final regulatory basis along with the regulatory analysis with the specific supporting data set. This would make the basis readily available for public and licensee reliance without requiring a separate confirmation request.

Methodology: Proposed §61.13 does not ask a licensee to match its waste against a fixed 1982 table and stop there. It requires a site-specific performance assessment, an inadvertent intruder assessment, and, for waste with significant long-lived quantities, a performance-period analysis, factoring in the actual radiological and physical characteristics of the waste at that site (NRC, 2026a, §61.13 *technical analysis discussion*). This is precisely the design feature that makes the methodology adaptable to a waste stream the 1982 survey never saw. The rule's own criticality safety discussion is a working example of this adaptability already in the text. NRC proposes to extend the 10 CFR 71.15(c) fissile-material exemption to LLW disposal and explicitly anticipates that *"future GTCC wastes from a reprocessing facility may be disposed in specialized canisters used for very specific wasteforms. These wasteforms could also include SNM in a quantity exceeding the amounts specified at § 70.24(a),"* (NRC, 2026a, §§61.16, 61.23(j) *discussion*). NRC did not need to invent a new regulatory category to reach that conclusion. It applied the existing framework to a waste type the drafters of the original rule did not contemplate. That is the model the industry recommends the NRC confirm as generally applicable.

Concentration limits. The numeric limits in Tables 1 and 2 reflect radionuclide mixes and physical forms observed in the 1982-era generator survey, (e.g., activated metal, resins, sealed sources, and similar conventional forms [NRC, 1982]). Industry is not asking NRC to reopen or revalidate that 1982 technical basis and does not believe that step is necessary. As proposed, any waste stream whose form or concentration falls outside the existing tables is already addressed through the site-specific technical analysis and, where the concentration or hazard warrants it, through the specialized land disposal pathway this rule creates (NRC, 2026a, §61.13 *discussion*). Advanced reactor fuel and fuel cycle waste, including TRISO particle fuel in a graphite or ceramic matrix and molten-salt-reactor fuel-salt raffinate, are chemically and physically unlike anything in the 1982 survey, and their long-term leach behavior, radionuclide retention, and stability characteristics have not yet been validated against the wasteform stability requirements in §61.56 in the way grout and cement-solidified waste have. Industry recommends that NRC state directly, in NUREG-2175, that the site-specific technical analysis is the mechanism for evaluating a waste form outside the 1982 survey basis, so that licensees and generators have a clear administrative path for these forms without any need to amend Tables 1 and 2 themselves.

The concentration limits in proposed 61.55(b), Table 3, appropriately focuses on long-lived alpha-emitting radionuclides, since these radionuclides govern the long-term performance of a disposal site. The levels proposed in Table 3 appear to bound the concentrations that could be expected to be generated from future recycling processes. However, the genesis of the listed concentrations is not clear. NRC should document the technical basis for the values in Table 3 in NUREG-2175, Revision 1.

Medical and industrial radioisotope waste. Congress already extended the LLW definition to reach this category for reactor-based production. The waste definition in §20.1003 and §61.2, as revised consistent with Section 3(f) of the *American Medical Isotopes Production Act of 2011*, states that LLW, "*also includes radioactive material resulting from the production of medical isotopes that has been permanently removed from a reactor or subcritical assembly for which there is no further use and the disposal of which can meet the requirements of this part*" (NRC, 2026a, revised "waste" *definition discussion*; American Medical Isotopes Production Act, Pub. L. No. 112-239, Div. C, Tit. XXXI, Subtitle F, §§3171-3178 (2013); Section II verification note). That is settled ground for reactor-produced isotopes such as Mo-99. It does not by its own terms include isotopes produced by accelerator (cyclotron or linear accelerator), which is an increasingly common production method for isotopes such as Ac-225 and several other emerging therapeutic radionuclides, adopted in part to reduce reliance on highly enriched uranium targets.

Industry confirms, however, that this is not the gap it may appear to be. Accelerator-produced radioactive material is independently addressed as "*11e.(3)(B)*" byproduct material under Section 651(e) of the *Energy Policy Act of 2005*, and the rule's own preamble states that 11e.(3) and 11e.(4) byproduct material, while not LLW under the *Low-Level Waste Policy Act*, "*may nevertheless be disposed of at near-surface LLW disposal facilities*" under *Atomic Energy Act* Sections 81b. and 81c. (NRC, 2026a, *11e.(3),(4) discussion*). A disposal pathway exists. What is not yet clear is whether the new site-specific technical-analysis and site-specific WAC provisions this rule creates for "*LLW*" apply with the same clarity to 11e.(3)/(4) material disposed at the same facility. Recommendation 2, below, addresses this directly.

In summary, the site-specific technical analysis method is likely valid and is specifically designed for this situation. The fixed numeric concentration tables do not need to be reopened. The mechanism for addressing genuinely new waste forms already exists outside the tables.

b. Are there alternatives or other considerations that should be addressed to accommodate novel GTCC waste streams?

NEI Response

The existing site-specific analysis and annual review requirements already provide an update mechanism that does not depend on new rulemaking or guidance. Proposed §61.13 and §61.58(e) require, respectively, a site-specific technical analysis for any waste stream to be disposed of, and an annual licensee review of the inputs to that analysis. As written, a genuinely novel waste stream, whether from a new reactor design's fuel cycle or a new isotope-production method, is evaluated under this existing framework as a matter of course when it is proposed for disposal. Neither new rulemaking nor new guidance needs to be developed to support the analysis.

Clarity is needed regarding the treatment of11e.(3),(4) byproduct material. Industry recommends that NRC confirm, in the final rule or accompanying guidance, whether the new site-specific technical analysis and WAC provisions in §§61.13 and 61.58 apply to 11e.(3) and 11e.(4) byproduct material disposed at a near-surface LLW facility under AEA Sections 81b. and 81c., or whether that material continues to be evaluated under a separate framework. Given that expanded accelerator-based isotope production is one of the emerging streams this question specifically names and given that such material is already routinely disposed of at the same facilities as LLW, clarifying this point would avoid the kind of ambiguity Question 4 identifies as a concern.

NEI recommends that NRC address non-traditional wasteform stability testing. NUREG-2175 should state explicitly how the wasteform stability requirements in §61.56 are to be demonstrated for non-traditional matrices such as graphite or ceramic-matrix TRISO compacts and salt-based waste forms from advanced reactor reprocessing, rather than leaving licensees to infer an approach from guidance written around grout and activated metal.

NEI recommends the use of existing federal and state channels for early source-characterization data. The National Nuclear Security Administration (NNSA), through its Office of Radiological Security, operates the Off-Site Source Recovery Program and the Cesium Irradiator Replacement Project to recover and dispose of disused sealed sources from medical and industrial licensees. NNSA also sponsors related, state-administered subsidy and coordination programs run by Conference of Radiation Control Program Directors (CRCPD) member states (U.S. Government Accountability Office [GAO], 2023). These federal and state

channels are positioned to provide early, practical operational data on source-generated waste streams as radioisotope use in medicine and industry expands. Industry recommends NRC solicit this operational data directly from NNSA and CRCPD member states.

NEI recommends coupling characterization work to the DOE Nuclear Lifecycle Innovation Campus siting effort. The Department of Energy's Nuclear Lifecycle Innovation Campus initiative, launched by a January 28, 2026, Request for Information, is the most likely near-term source of genuinely novel reprocessing-derived waste requiring characterization under this rule, since it explicitly contemplates co-located fuel fabrication, reprocessing, and waste disposition (U.S. Department of Energy [DOE], 2026). Utah and South Carolina were both among the states that submitted substantive responses to the RFI (Utility Dive, 2026). Industry recommends NRC treat any such site's early waste characterization work as a priority input to the next revision of NUREG-2175, rather than waiting for a broader stakeholder process to accumulate the same data more slowly, and specifically engage existing licensed Agreement State disposal facilities, including those in Utah and South Carolina, in that characterization effort given their operating experience and proximity to prospective Innovation Campus sites.

Finally, NEI recommends NRC leverage existing site-specific technical analysis experience and Agreement State precedent to inform the final regulatory analysis. In response to Question 5's request for cost and benefit data not currently quantified in the draft regulatory analysis, NEI recommends that NRC solicit operational cost and throughput data directly from currently licensed near-surface disposal facilities with site-specific WAC and technical analysis experience. A comparable Agreement State, Texas, has already submitted comments on this proposed rule stating agreement with the technical analysis and site-specific WAC provisions and recommending that NRC update its regulatory analysis baseline scenarios to reflect the existence of an operating commercial LLRW disposal facility (Texas Commission on Environmental Quality [TCEQ], 2026). NEI recommends NRC treat this precedent, together with industry's operational data, as a basis for quantifying benefits associated with expanded disposal options for reprocessing and other previously unaccepted waste streams, consistent with the specific interest NRC expressed in Question 5.

Reference List for Responses to Comment 4:

American Medical Isotopes Production Act, Pub. L. No. 112-239, div. C, tit. XXXI, subtitle F, §§3171-3178 (2013), 126 Stat. 2211, 42 U.S.C. §2065 note. Originally introduced as S. 99, 112th Cong. (2011), commonly cited by its bill title as the "American Medical Isotopes Production Act of 2011."

Energy Policy Act of 2005, Pub. L. No. 109-58, §651(e) (2005).

Larson, A. (2026, June 30). NRC charts a disposal path for nuclear waste stuck at a "dead end." POWER Magazine. https://www.powermag.com/nrc-charts-a-disposal-path-for-nuclear-waste-stuck-at-a-dead-end/. (accessed July 16, 2026).

Texas Commission on Environmental Quality. (2026). TCEQ national comments log: Comments relating to waste issues [Comments on proposed revisions to 10 CFR Part 61]. https://www.tceq.texas.gov/agency/decisions/nc/Waste_Issues.html (accessed July 16, 2026).

U.S. Department of Energy. (2026, January 28). Department of Energy seeks hosts for Nuclear Lifecycle Innovation Campuses [Press release]. https://www.energy.gov/articles/department-energy-seeks-hosts-nuclear-lifecycle-innovation-campuses. (accessed July 16, 2026).

U.S. Government Accountability Office. (2023). High-risk radioactive material: Opportunities exist to improve the security of sources no longer in use (GAO-24-105998). https://www.gao.gov/products/gao-24-105998. (accessed July 16, 2026).

U.S. Nuclear Regulatory Commission. (1982). Final environmental impact statement on 10 CFR Part 61 (NUREG-0945, Vols. 1-3).

U.S. Nuclear Regulatory Commission. (2019, July 22). Disposal of Greater-Than-Class C (GTCC) and transuranic waste; draft regulatory basis. Federal Register, 84, 35037.

U.S. Nuclear Regulatory Commission. (2026a, July 1). Integrated low-level radioactive waste disposal; proposed rule. Federal Register, 91, 40290. (RIN 3150-AI92; Docket NRC-2011-0012).

Utility Dive. (2026, May 7). Will DOE's 'nuclear lifecycle innovation campuses' solve the US nuclear waste problem? https://www.utilitydive.com/news/will-does-nuclear-lifecycle-innovation-campuses-finally-close-the-fuel-c/819279/ (accessed July 16, 2026).

5. **In the draft regulatory analysis, the NRC's cost-benefit evaluation focusses primarily on quantified costs and averted storage costs associated with earlier disposal of GTCC waste. The analysis notes that many potential benefits – such as increased disposal efficiencies, expanded disposal options for generators, and reductions in long term uncertainties – were not quantified.**

    a. **To help the NRC further inform and enhance the regulatory analysis, the NRC requests stakeholder input on any additional data, analyses, or supporting information that could help characterize costs or benefits not currently quantified. Specifically, the NRC is seeking information, operational experience, or cost data that the NRC can leverage to refine or expand the analysis of impacts associated with the proposed rule. Benefits of providing an alternative path for disposal for reprocessing wastes and other waste streams, which previously would not have been considered for land disposal, are of particular interest to the NRC.**

NEI Response

NEI agrees with NRC's conclusion that the proposed rule would be cost beneficial. NEI does not have access to additional data, analyses, or supporting information that could help further characterize costs or benefits not currently quantified in the regulatory analysis.

6. **The proposed rule permits the use of site-specific Waste Acceptance Criteria (WAC) for GTCC specialized land disposal, which could allow for the disposal of waste with concentrations exceeding the standard specified limits established for GTCC specialized land disposal.**

    a. **What are the expected benefits and drawbacks of allowing a higher GTCC specialized land disposal limit with a site-specific WAC? What specific use cases are expected to leverage these flexibilities and what benefits are anticipated for these use cases if the flexibilities are adopted? Please provide quantitative information and description of use cases to the extent possible; however, qualitative assessments would be useful, as well.**

NEI Response

A potential benefit of allowing a higher GTCC specialized land disposal limit is that waste streams that are as yet unknown, e.g., from spent fuel reprocessing, may be shown to be suitable for disposal via the use of site-specific waste acceptance criteria in a site-specific performance assessment (PA). That would further one of the main objectives for initiating this rulemaking in 2008, which was to accommodate wastes unknown when the rule was promulgated. The benefit to any potential use case is that the waste could be disposed of in a suitable site without further rulemaking.

No specific change to GTCC limits is necessary because the language in §61.55(c) authorizes the NRC to allow disposal of other wastes if "…it finds reasonable assurance of compliance with the performance objectives in subpart C of this part."

b. **Are there potential qualitative or quantitative limits on the concentration of activity allowed in a GTCC specialized land disposal with a site-specific WAC that the NRC should consider? Are there any practical use cases that would be challenged by limiting the concentration?**

NEI Response

The language in §61.55(c) is adequate to accommodate other cases. NRC need not consider other limits or concentrations.

7. **The proposed rule would require an application for a LLW disposal facility to include a safety case as newly defined in this proposed rule. The safety case is an integrated, concise, and transparent synthesis of technical analyses, site characteristics, facility design, and management/regulatory controls that collectively demonstrate how the facility will meet the performance objectives in subpart C of part 61. The safety case is intended to support the licensee's demonstration that the land disposal facility will be constructed and operated safely and facilitate effective review by the NRC and public understanding. Recognizing that most of the technical elements are already required under current regulations, this proposed requirement seeks to ensure these elements are integrated and communicated in a coherent manner.**

    a. **Is the guidance provided in draft NUREG-2175 sufficient to address the appropriate scope, structure, and level of detail that should be included in the safety case for land disposal facility license applications? If not, what additional guidance or clarifications would be beneficial to ensure the safety case provides a clear, integrated, and risk-informed basis for regulatory decision-making?**

NEI Response

No. NEI does not support the proposed addition of a mandatory "safety case" requirement to 10 CFR Part 61. The proposed rule already requires, and Draft NUREG-2175, Revision 1 already provides substantial guidance for the technical analyses that form the basis for determining whether a land disposal facility will meet the Part 61 performance objectives. Those analyses include a performance assessment, an inadvertent intruder assessment, an operational safety assessment, a site stability assessment, performance period analyses, defense-in-depth considerations, and waste acceptance criteria. Requiring a separate safety case as a new application element would merely repackage information already contained in the license application,

technical analyses, safety basis, and executive summary without creating a new independent safety demonstration.

NEI therefore recommends that NRC remove the proposed mandatory safety case requirement. The Commission's reasonable assurance determination should continue to rest on the technical analyses and compliance with the Part 61 performance objectives, not on the preparation of a separate narrative document that could become an additional licensing basis requirement, review checklist, or source of Requests for Additional Information without a corresponding safety benefit.

The proposed safety case requirement is also inconsistent with the deregulatory and efficiency objectives underlying Executive Order 14300. NRC has described Executive Order 14300 as directing the agency to undertake a review and wholesale revision of regulations and guidance documents, and the Integrated Low-Level Radioactive Waste Disposal rulemaking is identified by NRC as an ongoing effort under that initiative. Adding a new mandatory licensing document that synthesizes information already required elsewhere would increase applicant burden, reviewer burden, and the potential for duplicative review, while not improving disposal facility performance or public health and safety.

b. Are there international or domestic best practices regarding the scope of the safety case that NRC should consider?

NEI Response

International guidance, such as the International Atomic Energy Agency safety case framework, may be useful as background reference material, but it should not be incorporated into Part 61 by implication or used by NRC reviewers as an unwritten standard. NRC's own public meeting materials described the safety case as widely recognized internationally and as a high-level summary of information and analyses supporting a demonstration that the facility will be constructed and operated safely. That characterization supports NEI's position that the concept should be included only as a high-level summary or "executive summary;" it should not be imposed as a separate mandatory application requirement. NRC should avoid creating a hybrid framework in which U.S. applicants must comply with domestic Part 61 technical requirements while also satisfying international safety case expectations.

If NRC does discuss international safety case practices in final guidance, it should clearly identify where those practices are consistent with the U.S. Part 61 regulatory framework and where they are not. NRC should also state that international guidance does not establish binding review criteria for Part 61 applications.

Domestically, the better practice is to maintain the existing Part 61 structure: applicants should demonstrate compliance through the required technical analyses, site-specific waste acceptance criteria, facility design information, operational controls, closure and institutional control provisions, and other license application content.

In summary, NRC should address international expectations but not include new Part 61 requirements that would be redundant to the existing framework.

c. Are there additional guidance documents or supporting materials that should be updated or developed to facilitate effective implementation of the safety case requirement?

NEI Response

NEI's recommendation is that NRC should not finalize the proposed mandatory safety case requirement. Therefore, the most effective implementation approach would be to revise the proposed rule and Draft NUREG-2175, Revision 1 to remove the safety case as a required application element. NRC could instead provide optional guidance for applicants that choose to include an integrated summary or crosswalk to help organize the technical analyses already required under Part 61.

Comment	Reference	Comment/Basis	Recommendation
1.	10 CFR 20 Appendix G, I. Manifest, Definition of "Generator"	This definition currently reads: "*Generator* means a licensee operating under a Commission or Agreement State license who (1) is a waste generator as defined in this part, or (2) is the licensee to whom waste can be attributed within the context of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (e.g., waste generated as a result of decontamination or recycle activities)."	The definition of "Generator" should be revised to minimize confusion about who the waste can be attributed to, as follows: "(2) is the licensee whose facility originated the waste. Regarding radioactive sources, the generator is the licensee that last benefited from the use of the source."
2.	10 CFR 20, Appendix G, I. Manifest Definition of "Residual Waste"	This definition currently reads: *"Residual waste* means low-level radioactive waste resulting from processing or decontamination activities that cannot be easily separated into distinct batches attributable to specific waste generators. This waste is attributable to the processor or decontamination facility, as applicable."	Revise this definition to improve waste attribution for thermal processing, as follows: "... waste resulting from processing or decontamination that cannot be easily separated by calculation or physically into distinct batches attributable to specific waste generators (e.g., grit blast media)" Basis: The residue from thermal treatment is higher in activity and the quantity from each generator can be tracked by calculation. Example: The Erwin, TN, facility originally operated by Studsvik would thermally treat about 100 ft^3 of resin in a poly container and reduce it to about 20ft^3 of resin residue. The residue from multiple generators would be loaded into one container holding 100 ft^3 total (5 generators). These 5 generators would be correctly listed on the 542 LLW Manifest form.

Comment	Reference	Comment/Basis	Recommendation
3.	10 CFR 61.1(b)(2)	(2) Licensees who meet the criteria of §61.1(b)(1)(i) and (ii) and who choose not to comply with the requirements in §§61.10(c), 61.13(a) through (e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), 61.50(a) and (b), and 61.58 must instead comply with §§61.13(f), 61.41(c), 61.42(c), and 61.50(c).	Clarification would be helpful on the following: should an existing facility wish to follow the proposed changes in §61.58, "Waste Acceptance Criteria," would all of the criteria found in §§61.10(c), 61.13(a) through (e), 61.24(l), 61.41(a) and (b), 61.42(a) and (b), and 61.50(a) and (b) need to be followed?
4.	10 CFR 61.55(b), Table 3	The radionuclide limits in Table 3 appear to be an attempt to set an upper bound for land disposal of GTCC wastes. However, the technical basis for these limits is not presented. An approach that sets specific concentration limits seems to run counter to the adoption of a risk-informed, performance-based approach which would allow applicants to propose waste acceptance criteria that would still satisfy the safety objectives of the rule at concentrations that may exceed the Table 3 limits.	It would be helpful if NRC explained the technical genesis of the Table 3 limits in NUREG-2175, Revision 1, and describe it in general terms in the preamble to the rule. Furthermore, the need for Table 3 should be reevaluated and replaced with a risk-informed, performance-based approach to establishing the limits for land disposal, similar to the provision in proposed §61.55(c).
5.	10 CFR 61 (General)	The applicability of the rule is unclear as regards ongoing activities disposing of depleted uranium (DU) under the authority of Agreement States.	NRC should clarify that the proposed rule is not intended to interrupt or halt ongoing disposal of large quantities of depleted uranium at existing Agreement State-licensed facilities. During the July 14, 2026, public meeting, NRC staff stated that facilities wishing to accept significant quantities of depleted uranium after the rule's effective date would need to use the new provisions of Part 61, creating uncertainty regarding the continued validity of existing licenses. At least one facility is currently safely disposing of large quantities of depleted uranium under an Agreement State license supported by site-specific performance assessments and DOE long-term

Comment	Reference	Comment/Basis	Recommendation
			stewardship, and another facility is actively going through the licensing process under their existing Agreement State regulations. The final rule, Statements of Consideration, or implementing guidance should explicitly state that existing authorized disposal activities may continue during the transition period while Agreement States adopt compatible regulations and determine whether updated analyses or license amendments are necessary. Without such clarification, the rule could be interpreted as requiring a de facto suspension of ongoing depleted uranium disposal activities pending future regulatory actions, an unintended consequence that would disrupt existing disposal capacity and undermine the regulatory stability that NRC has stated is a key objective of the rulemaking.
6.	10 CFR 61.55(b)	The proposed revisions to 10 CFR 61.55(a)(4)(iv) direct waste exceeding the Class C limits in Table 2 to be classified under §61.55(b). However, the proposed rule does not clearly explain how short-lived radionuclides with <50 year half-lives such as Sr-90 and Cs-137 are classified. Specifically, Table 3 contains concentration limits only for selected long-lived radionuclides and radionuclide groupings and does not include Sr-90 or Cs-137, for which greater flexibility in classification is warranted, even at higher concentrations than those listed Column 3 of Table 2.	Revise §61.55(b) to insert a new paragraph step after §61.55(b)(i) as follows: (ii) Waste that exceeds the Table 2 Class C concentration limits **solely due to radionuclides with half-lives less than 50 years** [emphasis added] shall not be classified as Greater-Than-Class-C waste under this section and shall remain eligible for disposal in a near-surface disposal facility licensed pursuant to this part or by an Agreement State, provided the disposal facility demonstrates compliance with §§61.41 and 61.42 and implements disposal measures equivalent to or greater than those required for Class C waste. OR

Comment	Reference	Comment/Basis	Recommendation
			Revise §61.55(a) and (b) as follows **(*New text is bolded/italicized*)**: §61.55(a)(5)(iii) If the concentration of a radionuclide listed in Table 1 exceeds the value in Table 1 or the value provided in Column 3 of Table 2, ***and has a half-life greater than 50 years,*** the waste must be classified under paragraph (b) of this section. §61.55(b)(1)(i) Determination of the classification of waste under this paragraph applies only if waste has first been determined to exceed ***the concentration for*** Class C limits under §61.55(a) ***and has a half-life greater than 50 years***. §61.55(b)(1) (ii) Greater-than-Class C waste has higher concentrations of radionuclides ***and longer half-lives*** than Class C waste and will require additional protections and analyses.
7.	10 CFR 61.55	**Text**: "Class A waste is the least hazardous and GTCC waste is the most hazardous…" **Comment**: This is an overly generic, factually incorrect statement over the majority of time periods when waste will actually be handled and should be removed. A Class A waste consisting of 10,000 Ci/m^3 of Ir-192 could be significantly more hazardous to human health for the first several years of disposal than 9 Ci/m^3 of GTCC-classed C-14 waste, with only low energy beta emissions offering little to no external radiological hazard. There is a common misconception amongst waste generating facilities, their employees, and the	Remove or appropriately revise/caveat this statement.

Comment	Reference	Comment/Basis	Recommendation
		public that waste classification correlates to radiological hazard for workers at the waste generation site or disposal facility, when, as pointed out in the proposed 10 CFR 61 text, it is only a means of protecting hypothetical members of the public 100 or 500+ years after a site's closure.	
8.	10 CFR 61.55	**Text**: Consistent with the requirements of 10 CFR Part 20 Appendix G (I) of this chapter, references to radionuclide concentrations in this section mean their concentrations in the waste when it is prepared for shipment for disposal. **Comment**: This does not appear to directly correlate to any particular text or requirement in 10 CFR 20 Appendix G. That appendix does not discuss or require radionuclide concentrations at any point. Manifests require "total radionuclide activity," but the concept of radionuclide concentration is not present in App G (I).	Clarify or remove statement, "Consistent with the requirements of 10 CFR part 20 appendix G (I) of this chapter." The rest of the sentence, "References to radionuclide concentrations…" adequately communicates the intention.
9.	10 CFR 61.55(a)(1)(i) and (ii)	The paragraphs that summarize the assumptions and justifications that went into determining classification limits are out of place and unnecessarily obscures the actual waste classification process and requirements. They previously resided in Section 61.7, "Concepts," which was removed from the proposed text. This was discussed during the public call and the NRC responded that the content of §61.7 was found to be more equivalent to guidance material than a	Suggest reinstating section 61.7, "Concepts," to clearly delineate requirements from underlying assumptions/guidance, and to include this content in that location. Alternatively, remove ALL guidance statements from the regulation and include them in Reg Guide or NUREG guidance.

Comment	Reference	Comment/Basis	Recommendation
		regulatory requirement. We agree with that sentiment, but adding guidance statements directly among the requirements results in a less clear regulation.	
10.	10 CFR 61.58(e); NUREG-2175 Rev. 1, Sections 8.4 and 8.5	**Annual review under proposed 10 CFR 61.58(e): three-way scope inconsistency and no materiality threshold:** The rule and the guidance describe the annual review one way, and NRC's own request for comment describes it another way. The proposed 10 CFR 61.58(e) states that each licensee shall annually review the content and implementation of the waste acceptance criteria, waste characterization methods, and certification program. NUREG-2175 Section 8.5 repeats that the review covers the content and implementation of the waste acceptance program. NRC's Specific Request for Comment 3, however, describes it as an annual review of the inputs to the site-specific performance analysis. **Basis for concern:** The rule text and NUREG-2175 scope the review to the waste acceptance program. The request for comment recasts it as a review of performance-analysis inputs, which is materially broader and could be read to require an annual re-examination of the performance assessment. NUREG-2175 Section 8.5 provides no materiality threshold and directs a license-amendment path, with supporting technical analyses, whenever the review	Recommend NRC conform §61.58(e) text, the NUREG-2175 description, and the request-for-comment description to a single bounded scope limited to waste-acceptance-program implementation and add an explicit materiality threshold so only a change that could plausibly affect a performance objective triggers a formal update. Confirm that an annual review does not require the performance assessment to be repeated.

Comment	Reference	Comment/Basis	Recommendation
		concludes the criteria no longer provide reasonable assurance. **Impact:** This creates a recurring annual burden with little safety benefit, particularly where a well-characterized disposal site is the subject. Also, this creates a path for the review to potentially re-open the license and the original performance assessment itself.	
11.	NUREG-2175 Rev. 1, Sections 1.1.3 and 8.5; proposed 10 CFR 61.24(l); 10 CFR 61.2 (safety case).	**Open-ended safety case and performance assessment update obligation (the arbitrary-update problem):** The guidance frames the safety case as something that evolves indefinitely and must be revisited on undefined triggers. NUREG-2175, Section 1.1.3, states the safety case will evolve over time as new information is gained and that licensees renewing their licenses should update their safety case. Proposed 10 CFR 61.24(l) requires licensees to evaluate whether updates to the technical analyses are warranted when significant changes occur at the site. NUREG-2175 Section 8.5 requires amended criteria plus supporting technical analyses whenever a review concludes reasonable assurance is no longer provided. **Basis for concern:** There is no bounded materiality standard for what a significant change or new information is. The guidance uses 'should' throughout, and the regulator retains broad discretion to compel a	Recommend NRC define, in rule text or NUREG-2175, a materiality and significance standard for update triggers and a bounded process and confirm the safety case is a synthesis of information already required under 10 CFR 61.13 rather than a standing new obligation.

Comment	Reference	Comment/Basis	Recommendation
		re-opening. Part 61 contains no backfitting or issue-finality provision, so there is no procedural check on new requirements applied through this route. **Impact:** Unpredictable re-opening of a performance assessment and safety case over the life of a radioactive material license.	
12.	NUREG-2175 Rev. 1, Section 1.1.11 and the generic NRC-staff substitution note; NRC Agreement State Program Policy Statement, 82 FR 48535.	**Inadequate Agreement-State-specific guidance; invites a patchwork** The guidance provides generic compatibility background but no tailored operational guidance for Agreement State reviewers. NUREG-2175, Section 1.1.11, restates the compatibility categories and notes that references to NRC staff should be interpreted to mean Agreement State regulators as well. It does not tell an Agreement State reviewer how to apply the site-specific waste acceptance criteria review, the Appendix H site-specific significant-quantity alternative, or co-located GTCC oversight in a consistent manner. **Basis for concern:** A generic substitution of Agreement State regulators for NRC staff is not implementation guidance. Under Compatibility Category C, an Agreement State may be more restrictive than NRC provided it meets the essential objective, so the absence of tailored guidance invites divergent State interpretations.	Recommend NRC add Agreement-State-specific implementation guidance and bound the site-specific WAC technical-basis requirement to reduce inconsistent Category C implementation.

Comment	Reference	Comment/Basis	Recommendation
		Impact: Sites could face a more restrictive Agreement State interpretation of site-specific WAC or of the significant-quantity threshold than NRC applies, potentially resulting in unnecessary regulatory burden.	
13.	Proposed 10 CFR Part 61 Subpart F and Part 150, and NUREG-2175 Rev. 1, Section 1.1.11	**No operational joint-oversight guidance for a GTCC unit co-located at an Agreement State site** GTCC disposal is exclusively NRC-licensed and cannot be relinquished to an Agreement State, yet a GTCC unit could be sited at an Agreement-State-licensed LLW facility. Neither the rule nor NUREG-2175 provides an operational framework for the resulting dual oversight. **Basis for Concern:** There is no guidance on the division of inspection responsibility, sharing of monitoring data, interaction between the NRC GTCC license and the Agreement State LLW license, or control of shared infrastructure operated by a single licensee. **Impact:** Duplicative or overlapping oversight, conflicting requirements and operational friction and cost for a co-located operator, plus ambiguity over which regulator controls shared systems and monitoring networks.	Recommend a defined consultation or concurrence mechanism in Subpart F for the host Agreement State, and that NUREG-2175 add operational-interface guidance covering inspection division, monitoring-data sharing, and shared-infrastructure control.

Comment	Reference	Comment/Basis	Recommendation
14.	NUREG-2175 Rev. 1, Section 9 (Performance Confirmation) and monitoring discussion; 10 CFR 61.53	**Monitoring and performance confirmation can re-open the performance assessment without bounds** The guidance ties operational and environmental monitoring and performance confirmation to validating or refuting performance assessment parameters but does not bound how a monitoring result feeds into a mandatory PA update. NUREG-2175 discusses how new site data might validate or refute the key parameters or model, and 10 CFR 61.53 requires environmental monitoring across construction, operation, and post-operation. **Basis for Concern:** Without a materiality-gated anomaly-response process, a single anomalous monitoring result can be argued to refute a PA parameter and thereby compel a PA revision. **Impact:** A transient or localized anomaly at a site could trigger an unnecessarily burdensome PA revision and a license-amendment cycle disproportionate to any safety significance of the issue.	Recommend NUREG-2175 define a graded, materiality-based anomaly response (i.e., investigate, then evaluate, then update only where a performance objective is plausibly affected). This should use the same materiality standard recommended for 1 and 2.
15.	10 CFR 61.1(b)(1)(ii); NUREG-2175 Rev. 1, Appendix H.	**The 10-metric-ton figure is a significance threshold, not a disposal cap, and its treatment of historical disposal is ambiguous.** Proposed 10 CFR 61.1(b)(1)(ii) provides that an amount greater than or equal to 10 metric tons	NRC should clarify in the rule text that the threshold applies only to DU accepted after the effective date, and that historical disposal does not retroactively remove the §61.1(b) accommodation. Industry recommends the Appendix H review apply a bounded, deferential standard.

Comment	Reference	Comment/Basis	Recommendation
		of depleted uranium is considered a significant quantity of long-lived radionuclides. This is the trigger that removes the excepted-site accommodation, not a limit on how much DU may be disposed. NUREG-2175 Appendix H provides a site-specific alternative to the 10-metric-ton figure through a screening process, with the licensee bearing the basis. **Reason for Concern:** The rule does not state clearly whether the 10-metric-ton threshold looks only at DU accepted after the effective date or also counts historical or cumulative disposal. There are sites that already contain far more than 10 metric tons of DU. The Appendix H alternative places a resource-intensive justification burden on the licensee while giving staff significant discretion in its review. **Impact:** Existing LLRW licenses could be deemed significant-quantity facilities based on historical disposal volumes, eliminating their current accommodation and bringing them under the new framework. The site-specific alternative would require burdensome justification, with no assurance of regulatory acceptance.	
16.	10 CFR 61.27, 61.28, and 61.24(l); NUREG-2175	**Renewal and closure become a vehicle to impose the full new framework on legacy DU licenses; no defined transition period.**	The NRC should limit the scope of the renewal review to changes rather than a full reevaluation of the licensing basis, provide a defined transition schedule for legacy DU licensees,

Comment	Reference	Comment/Basis	Recommendation
	Rev. 1, Section 1.1.3.	At the next license renewal or at closure, a legacy DU licensee must update its technical analyses and safety case to the new framework, and the guidance provides no defined transition or grace period. NUREG-2175 Section 1.1.3 states that licensees renewing their licenses should update their safety case, and the rule requires updated technical analyses at renewal (10 CFR 61.27) and closure (10 CFR 61.28). **Basis for Concern:** Renewal of a site's existing license could bring the entire existing operation into the new safety-case and performance-assessment framework without a defined implementation schedule. **Impact:** Renewal seems to retroactively impose the new framework, a loss of grandfathering at renewal, and a cost and schedule burden to legacy operations.	and confirm the renewal safety case includes the previously approved licensing basis and the new.
17.	10 CFR 61.2; NUREG-2175 Rev. 1, Section 1.1.3	**Safety case scope creep: new standalone obligation versus synthesis of existing analyses.** Proposed 10 CFR 61.2 defines the safety case as a high-level evaluation that summarizes the basis that the disposal site will be capable of isolating waste and limiting releases. NUREG-2175 Section 1.1.3 does not state clearly whether the safety case is a synthesis of the	NEI strongly opposes the provision requiring a new safety case. NEI believes that a "safety case" is merely a synthesis of information already required under 10 CFR 61.13. Therefore, NRC should clearly explain to the public where there is a safety gap that this new requirement is addressing. In the absence of such an explanation, this new requirement is unnecessarily burdensome and the industry recommends the NRC remove this new requirement from this proposed rule.

Comment	Reference	Comment/Basis	Recommendation
		10 CFR 61.13 analyses or a new analytical product. **Basis for Concern:** The summarizes-the-basis language points to a synthesis, but the length and structure of the guidance invite the staff to treat the safety case as a new deliverable, adding significant burden without a corresponding safety benefit. **Impact:** Additional preparation cost and review time at a legacy site if the safety case is treated as new, plus acceptance ambiguity over expected scope and level of detail.	
18.	NUREG-2175 Rev. 1, Attachment G-1	**No worked example for an arid, non-potable-groundwater site** The guidance provides some example calculations but no worked inadvertent-intruder assessment or safety case example for a site with arid remote defining characteristics. NUREG-2175 provides example calculations in Attachment G-1 focused on infiltration and geometric factors, but not an integrated worked example for an arid site with a deep-water table and non-potable groundwater. **Basis for Concern:** The inadvertent intruder assessment and the safety case both depend heavily on site-specific receptor and pathway assumptions. There is significant regulatory uncertainty	The NRC should add a worked inadvertent-intruder and safety-case examples matching arid, non-potable-groundwater conditions.

Comment	Reference	Comment/Basis	Recommendation
		without a worked example matching arid, non-potable-groundwater conditions. **Impact:** Longer review cycles and methodology disputes at a site, and a risk that a default residential and agricultural receptor is imposed despite site conditions that do not support it.	
19.	NUREG-2175 Rev. 1, front-matter disclaimer; pervasive usage of "should" statements throughout the body.	**Guidance "should" statements functioning as de facto requirements** NUREG-2175 is guidance, not a regulatory requirement, and expressly states that legally binding requirements are established only through laws, NRC regulations, licenses, and orders—not NUREG-series publications. In practice, however, NRC staff may treat its guidance, including provisions framed as "should," as effectively mandatory.	NRC should revise NUREG-2175 to make clear that the methods described in the guidance represent **one acceptable approach, rather than the only approach,** for demonstrating compliance with NRC regulations. The revised guidance should expressly recognize that alternative methods are acceptable when they satisfy the applicable regulatory requirements and performance objectives.
20.	Reference: 10 CFR 150.15(4)	10 CFR 150.15(4) allows for the near-surface disposal of wastes incidental to reprocessing, provided they have been evaluated and approved. However, the NRC currently lacks regulatory guidance for licensees on how to evaluate wastes incidental to reprocessing and obtain waste incidental to reprocessing determinations from the NRC.	NRC should provide guidance to licensees on how to both evaluate wastes incidental to reprocessing and request waste incidental to reprocessing determinations.
21.	Reference: 10 CFR 61.55(b) Table 3, NUREG-1854	10 CFR 61.55(b) Table 3 provides the upper limits for land disposal for GTCC waste, unless approved by the Commission, as these limits are assumed to achieve the performance objectives for land disposal. NUREG-1854,	NRC should clarify whether wastes that are GTCC and are incidental to reprocessing must meet both a disposal facility's waste acceptance criteria and comply with the limits of 10 CFR 61.55(b) Table 3.

Comment	Reference	Comment/Basis	Recommendation
		"NRC Staff Guidance for Activities Related to U.S. Department of Energy Waste Determinations," requires NRC to evaluate if disposal of DOE wastes incidental to reprocessing will achieve the performance objectives of 10 CFR Part 61, Subpart C. For land disposal of commercial GTCC wastes incidental to reprocessing, will the NRC require that this waste complies with the limits of 10 CFR 61.55(b) Table 3, and a disposal facility's waste acceptance criteria?	
22.	10CFR 61.41(b)	This paragraph requires a license applicant to demonstrate that releases or exposures are "effectively managed" during the performance period without defining what "effectively managed" means.	NRC should provide guidance in NUREG-2175, Rev. 1 on how to demonstrate "effective management."
23.	10 CFR 61.13(b)(4)	Inadvertent Intruder in a Specialized land disposal facility – NEI believes the requirement in §61.13(b)(4) is unnecessarily burdensome. The language states that, "For disposal of waste in a specialized land disposal facility, the inadvertent intruder assessment must also demonstrate that the engineered barriers and natural features ***ensure*** that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard." [emphasis added] This language imposes an absolute standard on a subject, the future actions of unknown persons over a period that may extend thousands of years, that NRC's own guidance acknowledges	Recommend replacing the word "**ensure**" with the words "**provide reasonable assurance**."

Comment	Reference	Comment/Basis	Recommendation
		cannot be predicted with certainty. "Ensure" is not the standard NRC uses elsewhere in its regulations to describe a licensee's burden; "reasonable assurance" is the well-established level of assurance, and it is the standard this same proposed rule uses for the Commission's own safety-case adequacy finding. Likewise, we believe the same wording that appears in §61.42(b)(4) is unnecessarily burdensome. NEI does not object to requiring an analysis that demonstrates protection of an inadvertent intruder, but it is not reasonable to require that a licensee ***ensure*** that the intruder does not contact the waste. The absolute nature of such a requirement simply cannot be satisfied. The inadvertent intruder analysis should demonstrate that it is not credible that intrusion into the waste occurs. This standard could be satisfied by a combination of the site design, including depth of burial and engineered barriers, and natural features of the site to provide adequate protection. It would also rely on the consideration of reasonably expected human activity.	
24.	10 CFR 61.52(a)(2), (3), and (16)	The proposed rule establishes a minimum disposal depth of 5 meters for near surface disposal. A risk-informed and performance-based approach could be used to justify other disposal depths, while still meeting the objective of Subpart C.	The NRC should retain the 5-meter figure in §61.52(a) as a performance-based default rather than an absolute minimum, with an explicit pathway for a licensee to demonstrate, through a site-specific performance assessment under §61.13(b), that a shallower depth achieves equivalent protection. The pre-existing 30-meter near-surface facility definition should remain

Comment	Reference	Comment/Basis	Recommendation
			a separate, unrelated threshold; it defines a facility category and is not a substitute intruder-protection standard for waste within that category.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-jjni-je9b
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0244
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from State of Nevada Agency for Nuclear Projects

Submitter Information

Email: nwpo@anp.nv.gov
Government Agency Type: State
Government Agency: State of Nevada Agency for Nuclear Projects

General Comment

Attached you will find the State of Nevada Agency for Nuclear Projects Comments Regarding NRC-2011-0012: Integrated Low-Level Radioactive Waste Disposal

Attachments

2026_08_Comments to NRC-2011-0012_ANP

JOE LOMBARDO
Governor

STATE OF NEVADA

FRED C. DILGER, PhD
Executive Director

OFFICE OF THE GOVERNOR
AGENCY FOR NUCLEAR PROJECTS
1761 E. College Parkway, Suite 118
Carson City, NV 89706-7954
Telephone (775) 687-3744 • Fax (775) 687-5277
E-mail: https://anp.nv.gov

Electronically submitted using *https://www.regulations.gov*

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Adjudications and Rulemaking Staff
rulemaking.comments@nrc.gov

Referencing Docket ID NRC-2011-0012

COMMENTS OF THE STATE OF NEVADA ON INTEGRATED LOW-LEVEL RADIOACTIVE WASTE DISPOSAL

Dear Adjudications and Rulemaking Staff:

On July 1, 2026, the Nuclear Regulatory Commission (NRC) issued a proposed rule, draft guidance, and request for comment entitled "Integrated Low-Level Radioactive Waste Disposal" (91 Fed. Reg. 40,290) (hereinafter referred to as the "LLRW Proposed Rule"). The LLW Proposed Rule solicits public comment by no later than August 17, 2026. The State of Nevada through its Attorney General's Office and its Agency for Nuclear Projects (collectively "Nevada") submits these comments.

First, Nevada agrees with NRC that the LLRW Proposed Rule does not, "alter legal requirements or policies to dispose of high-level radioactive waste or spent fuel in a geological repository including the Nuclear Waste Policy Act, 42 U.S.C. 10101, *et. seq.,*" or "redefine what constitutes high-level radioactive waste." 91 Fed. Reg. at 40,290, col. 3. Nevada opposes any effort to issue final rules resulting from the LLRW Proposed Rule that would alter these statements or the intent underlying them.

Second, Nevada agrees with the recent Commission decision articulated in the LLRW Proposed Rule that NRC will "retain authority over GTCC [Greater-Than-Class C] waste disposal." 91 Fed. Reg. at 40,291, col. 2. The decision reverses prior determinations made in 2019 and 2020, *see* 84 Fed. Reg. 35,037 (July 22, 2019), and reverses the prior NRC conclusion that GTCC waste could be safely regulated by Agreement States. "Upon reexamination of the LLRWPAA [the Low-Level Radioactive Waste Policy Amendments Act of 1987, 42 U.S.C. 2021], the Commission now finds the plain language reading of the LLRWPAA, where the Federal Government must retain sole authority over the regulation of GTCC waste, is the better interpretation." 91 Fed.

Reg. at 40,298, col. 3. Nevada opposes any effort to issue final rules resulting from the LLRW Proposed Rule that would alter these statements or allow any Agreement State to regulate GTCC waste disposal at either an existing LLRW disposal facility or a new LLRW disposal facility.

Third, Nevada agrees with NRC's finding that none of the 4 operating LLRW disposal facilities for Class A, B and C low-level radioactive waste – Energy Solutions in Clive, Utah, U.S. Ecology, Inc. in Richland, Washington, Waste Control Specialists LLC in Andrews, Texas, and Energy Solutions in Barnwell, South Carolina – currently possess a license to dispose of GTCC waste. 91 Fed. Reg. at 40,294, col. 1. Therefore, in the LLRW Proposed Rule, NRC is proposing that any existing or new LLRW disposal facility that plans to accept GTCC waste "must comply with new proposed technical analysis, intruder assessment, and other revised requirements." 91 Fed. Reg. at 40,291, col. 1. Nevada opposes any effort to issue final rules resulting from the LLW Proposed Rule that would allow existing or new LLRW disposal facilities to accept for disposal GTCC waste without complying with all the regulatory requirements and regulatory changes contained in the LLRW Proposed Rule.

Notwithstanding the foregoing points of agreement, Nevada requests NRC to clarify that, when the final rules are issued from the LLRW Proposed Rules, regulatory control by NRC over GTCC waste disposal includes the licensing of facilities for the disposal of both commercially generated and federally generated GTCC waste. The LLRW Proposed Rule includes acknowledgements by the U.S. Department of Energy (DOE) it has "responsibility for the disposal of commercially generated GTCC waste," and "its preferred alternative for the disposal of GTCC waste is disposal in the DOE's Waste Isolation Pilot Plant (WIPP) geologic repository near Carlsbad, New Mexico, and/or land disposal at generic commercial facilities." 91 Fed. Reg. at 40,294, col. 2. The LLRW Proposed Rules includes a recognition by NRC that "unless there is a legislative change, GTCC waste disposal at WIPP is not an option." 91 Fed. Reg. at 40,294, col. 2. Effectively, DOE is unable or unwilling to assume any reasonable form of responsibility over the disposal of either commercially generated GTCC waste or federally generated GTCC waste, or both. NRC already acknowledges "this proposed rule would retain NRC **sole** authority over licensing GTCC waste disposal facilities." 91 Fed. Reg. at 40,298, col. 3 (emphasis added). Therefore, when the final rules are issued from the LLW Proposed Rule, NRC needs to make clear that it retains responsibility over licensing GTCC waste disposal facilities that seek to dispose of commercially generated GTCC or federally generated GTCC waste, or both.

Nevada also opposes any NRC effort to recharacterize low-level radioactive waste as inclusive of GTCC waste. The LLRW Proposed Rule includes an NRC proposal "to revise the definition of LLW to address transuranic waste." 91 Fed. Reg. at 40,299, col. 1. Nevada is not commenting on that proposal, but Nevada is opposed to an expansion of that proposal to re-define LLW to include GTCC waste. As recognized in the LLRW Proposed Rule, "the radiological characteristics of GTCC waste are quite varied," and "because GTCC wastes exceed the concentrations of Class C waste, some additional prescriptive requirements are warranted." 91 Fed. Reg. at 40,306, col. 3, and

at 40,307, col. 1. "In addition, GTCC waste may have unique characteristics compared to Class A, B, and C low-level waste." 91 Fed. Reg. at 40, 308, col. 1. Simply put, GTCC waste is neither transuranic waste nor another variety of low-level radioactive waste, and Nevada opposes any effort to issue final rules resulting from the LLW Proposed Rule that would allow GTCC to be classified as low-level radioactive waste.

Nevada recognizes that some of the waste generated as a result of activities and operations at reprocessing facilities may qualify as Class A, Class B, or Class C low-level radioactive waste provided it falls with the limits specified in the tables provided in 10 C.F.R. § 61.55(a). And, if those limits are exceeded, then the waste generated as a result of activities and operations at reprocessing facilities would qualify as GTCC waste pursuant to 10 C.F.R. § 61.55(b). However, the only mention of reprocessing waste in the LLRW Proposed Rule suggests that all waste from reprocessing facilities is GTCC waste. "Future GTCC wastes from a reprocessing facility may be disposed in specialized canisters used for very specific wasteforms." 91 Fed. Reg. 40,310 at col. 1. Moreover, some reprocessing waste streams may include radionuclides, e.g., Krypton-85 separated during gaseous diffusion, noble metals, and some lanthanides) were not considered during the development of 10 C.F.R. § 61.55, and they are not listed in the tables included within that regulation. Whether some reprocessing waste should be categorized as Class A LLRW was discussed in SECY-09-0082, "Update on Reprocessing Regulatory Framework – Summary of Gap Analysis" at pages 20-21. Unfortunately, the LLRW Proposed Rule wholly fails to address reprocessing waste (except for the brief statement noted above) and wholly fails to address the gap analysis contained in SECY-09-0082. Nevada requests NRC to address and to resolve this oversight, and to address specifically the disposal of waste from activities or operations at reprocessing facilities when the final rules stemming from the LLRW Proposed Rule are issued.

Finally, Nevada responds to two of the questions posed by NRC in the LLRW Proposed Rule. Question 2(a) reads as follows: "What steps can the NRC take to ensure that states' insights are considered and received with respect to licensing GTCC facilities?" 91 Fed. Reg. at 40,312, col. 3. Question 2(b) read as follows: "Does part 61, subpart F, appropriately enable states to consider and provide input in NRC licensing of GTCC facilities?" 91 Fed. Reg. at 40,312, col. 3. Nevada's answers to both questions occurs in four parts.

1. First, in any State in which NRC would license any existing or new facility for the disposal of GTCC waste, that State and any nearby or adjoining State should be accorded automatic and full party standing to participate in the licensing proceeding (in addition to the right to participate in the adjudicatory proceeding) for that disposal facility. Currently, Subpart F requires a State to make requests and to file timely proposals to participate in a Part 61 licensing proceeding, *see* 10 C.F.R. §§ 61.71 and 61.72. More significantly, the NRC Staff has discretion on whether to grant such requests or proposals. *See* 10 C.F.R. § 61.73. Therefore, the regulations in Subpart F are not sufficient to ensure States'

insights are received and considered. Accordingly, the regulations in 10 C.F.R. §§ 61.71, 61.72 and 61.73 should be revised to make clear that State participatory rights in Part 61, Subpart F licensing proceedings are automatic and full.

2. Second, the LLWR Proposed Rule actually softens the referenced regulations by proposing to replace in those regulations all references to the word "shall" with references to the word "must". This proposed change does not match the intent behind Question 2(a) and Question 2(b) posed by the NRC Staff in the LLRW Proposed Rule. In addition, this proposed change is inconsistent with the four comments offered here by Nevada in response to those questions. As a result, Nevada opposes the wording change.
3. Third, to be clear and semantics aside, in any proceeding at NRC to license any existing or new facility to dispose of GTCC waste, the State in which the facility would be located (and any nearby or adjoining State) should be allowed to participate in all meetings, discussions, and other all communications with the license applicant, and should be allowed to raise comments or questions that the license applicant must respond to. It is not enough to reiterate that the States have rights to participate in an adjudicatory hearing for Part 61 licenses as provided by 10 C.F.R. Part 2. *See* 10 C.F.R. § 61.73(d). Instead, affected States must also be afforded the automatic right to participate fully in the NRC Staff licensing portion of such a proceeding.

4. Fourth, before NRC makes any decision with regard to the Part 61 licensing of an existing or new facility to dispose of GTCC waste, the State within which the facility would operate (and any nearby or adjoining State) should be afforded an approval right for that license. The LLWR Proposed Rule does not address this point; however, NRC Chairman Ho Nieh reported provided the following commentary regarding the LLWR Proposed Rule: "The NRC was careful to note the limits of what it can do alone. A disposal site would still have to be developed with the support of a host state before any application could move forward." "NRC Charts a Disposal Path for Nuclear Waste Stuck at a 'Dead End'," *Power Magazine* (June 30, 2026). Therefore, the final rule resulting from the LLWR Proposed Rule should make clear that approval of the State in which the GTCC waste disposal facility would be located (and any nearby or adjoining State) is required before the Part 61 license is issued, and the final rule also should indicate clearly when and how such State approval will be obtained. Absent such State approval, the Part 61 license application to dispose of GTCC waste should be denied.

We appreciate the opportunity to comment on this proposed rulemaking.

Sincere Regards,



Fred C. Dilger, Ph.D.
Executive Director

Cc: Nevada Governors' Office
Nevada Attorney Generals' Office

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-jvjv-7nhm
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0245
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Nuclear Innovation Alliance

Submitter Information

Email: mmcguire@nuclearinnovationalliance.org
Organization: Nuclear Innovation Alliance

General Comment

Please see attached comment

Attachments

NIA Integrated Low-Level Radioactive Waste Disposal Public Comment

August 17th, 2026

U.S. Nuclear Regulatory Commission
11555 Rockville Pike,
Rockville, Maryland 20852

Subject: Public Comment on NRC's Integrated Low-Level Radioactive Waste Disposal (RIN 3150-AI92)

Dear NRC Staff,

The Nuclear Innovation Alliance (NIA) is an independent, non-profit, non-partisan "think-and-do" tank whose mission is to help create the conditions for success for new nuclear energy so it can play a major role as an energy security and climate solution. Through policy analysis, research, outreach, and education, NIA is catalyzing the next era of nuclear energy. We focus on regulatory modernization, federal and state policy, and enabling private investment to support new reactor commercialization while meeting national environmental and energy security goals.

NIA appreciates the opportunity to comment on the July 1, 2026, proposed Integrated Low-Level Radioactive Waste Disposal rule and draft guidance NUREG-2175. NIA is generally supportive of the proposed rule but notes some specific areas of concern. The following sections address some of the NRC's questions in their request for comment in addition to areas identified by NIA.

NRC Authority over Greater than Class C (GTCC)

NRC notes in this proposed rule that "consistent with the best reading of LLRWPAA [Low-Level Radioactive Waste Policy Amendments Act of 1985], this proposed rule would retain NRC's sole authority over licensing GTCC waste disposal facilities." The Agreement States have been able to assume regulatory authority for low-level waste in Class A, B, and C, but not every Agreement State has chosen to take this responsibility. It appears that the proposed rule language could raise issues regarding the respective roles of NRC and some Agreement States. The NRC previously granted the Waste Control Specialists LLC (WCS) in Andrews, Texas, exemptions from certain NRC regulations and permitting requirements to allow for storage of certain waste and in 2018 DOE issued an environmental assessment for the disposal of GTCC and GTCC-Like waste at WCS. WCS "has been safely working with GTCC LLRW for over two decades" [1] as they temporarily stored GTCC-like waste for DOE. WCS is regulated by the Texas

[1] http://wcstexas.com/support-wcs/

Commission on Environmental Quality (TCEQ). Additionally, it is not uncommon for waste brokers to use "concentration averaging" to combine materials with higher and lower activity so that the overall average is below the Class C upper limit. This was common practice for disposal of high activity sources used in oil/gas exploration by mixing it with concrete in a 55-gallon drum or other metal container to make the overall concentration in the container less than the Class C upper limit. On page 69 of the proposed rule, NRC states that the proposed changes to Part 61.16(b)(1) and (2) would not change the current orders for WCS or the Energy Solutions facility in Utah. Recognizing the complexity of having dual Federal and State regulators, generally federal environmental, health and safety statutes provide options for Federal agencies, like the EPA or OSHA, to empower their state counterparts with plenary regulatory authority, subject to review by the Federal agency. In contrast, proposed Part 61 does not address these potential complexities. If an existing site is authorized by the State to dispose of low-level waste, adding a GTCC license to the site would mean that both state and federal regulations apply, and federal and state regulators have jurisdiction, at one facility. For areas where the regulations overlap, like radiation measurements, the site would need to comply with both State and Federal regimes simultaneously. NRC does not provide any insight into how the process would work where these overlaps arise. **NIA recommends providing clearer definitions for what the Agreement State can regulate and how a facility with both low level and GTCC waste would be regulated.**

In Question 2 of NRC's request for comment, NRC asked what steps they can take to ensure that "states' insights are considered and received with respect to licensing GTCC facilities", **NIA recommends that NRC directly interact with the individual states on this topic.** The state agencies overseeing nuclear activities in the state will be highly impacted by this rule and may encounter dual regulations. Not every state will be impacted the same way because of state-by-state programmatic differences. Furthermore, some states send their waste to the Utah Energy Solutions facility or other facilities identified by compacts.[2] The pathways created through the compact program could be at risk because the rule and guidance are silent on compacts. Pursuant to 42 USC 2021(b), the Atomic Energy Act allows for States to take over certain regulatory responsibilities. In addition, 42 USC 2021(i) of the Atomic Energy Act allows for cooperation between the NRC and a willing state in circumstances where the NRC must retain or has retained jurisdiction.[3] Strengthening the NRC-State interactions on GTCC waste could lead to a cooperative agreement with a State or group of states to perform inspections or other functions as the NRC deems appropriate. Even though the NRC retains jurisdiction over the licensing of GTCC waste, cooperative agreements could allow a State to conduct appropriate licensing functions as long as the NRC retains ultimate authority. Where a facility is already licensed by a State, allowing the State through a cooperation agreement to exercise much of the licensing function over GTCC waste could foster synergies and administrative efficiencies. It is important that NRC fully understand any disruption or changes Part 61 may cause to current licensed facilities and the states where they are located.

---

[2] Compacts are a group of two or more U.S. States that have formed alliances to dispose of low-level radioactive waste (LLW) per Compact | Nuclear Regulatory Commission

[3] "The Commission in carrying out its licensing and regulatory responsibilities under this chapter is authorized to enter into agreements with any State, or group of States, to perform inspections or other functions on a cooperative basis as the Commission deems appropriate." 42 USC 2021(i)

NRC also asked whether Part 61 Subpart F appropriately enables states to consider and provide input in NRC licensing of GTCC facilities. **NIA recommends that NRC further revise the outdated Subpart F**. As is currently written, states and Tribal populations can request participation "in the review of a license application for a land disposal facility." Subpart F was originally written in the 1980s and since then the relationship between the states and the NRC has changed significantly. Specifically, the Agreement States and NRC have developed a strong relationship as co-regulators. The NRC's Principles of Good Regulation were included in two joint NRC-State documents -- the Policy Statement on Adequacy and Compatibility of Agreement State Programs and the Statement of Principles and Policy for the Agreement State Program-- to foster "the common culture that the NRC and Agreement States share as co-regulators."[4] Furthermore, the States may be able to provide historical knowledge for some of the sites. Since the proposed rule would make NRC responsible for GTCC waste, **NIA recommends that NRC maintain this strong federal-state relationship and automatically allow the States' involvement rather than requiring States to request it.** NIA recognizes that NRC still will make the final regulatory decisions on GTCC, but NRC needs to revise Subpart F to take into account the evolved relationship with the States.

The NRC must also maintain a strong relationship with the Tribal populations. The NRC has Regional State Liaison Officers (RSLOs) who primarily interface between the states and the NRC but also maintain relationships with the federally recognized Tribes. These government-to-government relationships help create confidence, respect, and public trust. NRC must maintain communication with Tribal populations and allow participation in the reviews to the extent possible. As such, Subpart F should be revised to reflect the strong, engaged relationship that NRC has with the Tribal populations today.

Waste Acceptance Criteria (WAC)

In the proposed rule, Part 61.58 introduces two new definitions for site-specific and generic waste acceptance criteria. The proposed generic waste acceptance criteria refer back to the classifications defined in 61.55 and the characteristics in 61.56. It is important to note the term "waste acceptance criteria" is new in NRC regulations, but DOE uses this term in NE O435. The NRC notes that this proposed rule would help move stranded GTCC waste from DOE facilities. However, DOE and NRC define waste acceptance criteria differently, which could cause confusion instead of streamlining a path for this waste.

- **DOE definition of waste acceptance criteria:** The technical and administrative requirements that a waste must meet in order for it to be accepted at a storage, treatment, or disposal facility
- **NRC definition of waste acceptance criteria:** the requirements developed through technical analyses or other methods to ensure, in part, that waste disposed in a facility will meet the established performance objectives set forth in this part.

NRC has a clearer definition because it further defines generic and site-specific WAC and waste characterization. DOE does not have a breakdown of specific criteria. In general, the DOE criteria has not resulted in DOE accepting any GTCC waste for disposal despite the clear direction in the Low-Level Radioactive Waste Policy Act, as explained in the NRC proposed

[4] https://www.federalregister.gov/documents/2017/10/06/2017-21542/agreement-state-program-policy-statement

rule preamble. Draft NUREG-2175 section 8 addresses NRC's description of these definitions and what is allowed. Additionally, NRC classifies waste by Class A, B, C, and GTCC whereas DOE uses High-Level, Transuranic, and Low-Level waste. The proposed rule designates the new waste acceptance criteria definition as compatibility Category B for Agreement States, which means program elements cross jurisdictional boundaries and should be addressed to ensure uniformity of regulation on a nationwide basis. Compatibility Category B requires the Agreement State program element to be essentially identical to the NRC. Throughout the proposed rule, there is a strong emphasis on creating a path for stranded waste in addition to the various other proposed rulemakings that address transitions from DOE to NRC licensing. It would be more efficient if DOE adopted the NRC's definitions to allow for better characterization of waste. **NIA recommends that NRC and DOE align on these definitions to increase the efficiency of moving GTCC waste and to meet the emphasized goal of a path for stranded GTCC waste.**

Thresholds for Radionuclide Concentrations

NIA supports the NRC's proposal to establish a site-specific waste acceptance criteria pathway while retaining the existing generic classification approach. Differences between actual site conditions and practices at land disposal facilities and the generic assumptions used to develop the LLW classification system may result in the radionuclide concentration limits being either too restrictive or not restrictive enough. NIA agrees that site-specific technical analyses can better account for the characteristics of an individual disposal facility when it is conducted appropriately and can provide a more risk-informed and flexible framework compared to relying solely on generic concentration limits. However, NIA requests additional clarification on several aspects of the proposed rule to improve transparency, implementation, and regulatory certainty.

In the preamble of the proposed rule, the NRC does not identify the technical basis for the radionuclide concentration thresholds in proposed Table 3 of 10 CFR Part 61.55. Unlike the original Tables 1 and 2, which were derived and documented in NUREG-0945, the proposed rule does not explain how the Table 3 values were selected or where the supporting analyses may be found. Further, the proposed rule states that "some GTCC waste streams with concentrations of transuranic alpha-emitting radionuclides below 10,000 nanocuries per gram are suitable for near-surface disposal". However, the proposed Table 3 appears to establish substantially higher concentration thresholds for those radionuclides (e.g., 500,000 nanocuries per gram for the sum of alpha-emitting radionuclides with half-life greater than 50 years). **NIA recommends that the NRC explain the technical basis for the proposed Table 3 concentration thresholds and clarify the relationship between those thresholds and the 10,000 nanocuries per gram discussion in the preamble.**

Furthermore, NIA notes that future licensees may choose to utilize the generic classification approach rather than the site-specific approach, and that the generic classification approach may benefit from being updated to account for current and future waste streams. The NRC notes that the generic radionuclide concentration limits in Tables 1 and 2 found in 10 CFR Part 61.55 were developed in 1982 based on the technical analyses and waste characteristics available at the time, and documented in NUREG-0945, *Final Environmental Impact Statement on 10 CFR Part 61, Licensing Requirements for Land Disposal of Radioactive Waste".* More specially, as discussed in III.A of the proposed rule, the NRC states "isotopic concentration limits [in tables 1 and 2 of 10 CFR Part 61.55] were based on the NRC's understanding of the characteristics and volumes

of commercial LLW reasonably expected for commercial disposal through the year 2000, as well as the disposal methods likely to be used." Additionally, the NRC states that it "based the LLW classification tables in the current § 61.55 on radionuclide concentrations that would yield an annual dose comparable to 5 mSv (500 mrem) and adjustments to those values based on expectations about the composition of waste streams, among other factors." As advanced reactors are deployed, they are expected to generate novel GTCC waste streams with radionuclide inventories that differ from the waste streams the NRC evaluated when developing the generic concentration limits in Tables 1 and 2. **NIA recommends that the NRC evaluate whether the generic concentration limits remain appropriate or should be updated to reflect the characteristics of current and future waste streams**. Doing so would help ensure that the generic pathway remains a technically sound and practical option, rather than inadvertently forcing licensees to pursue a potentially more resource-intensive site-specific approach simply because the generic concentration limits no longer reflect current and anticipated waste streams.

ALARA

The proposed rule "replaces the 'as low as is reasonably achievable' requirements in the performance objectives for protection of the general population from releases of radioactivity and protection of individuals during operations in §§ 61.41 and 61.43, respectively, with references to dose limits in 10 CFR part 20."[5] On July 15, 2026, the NRC issued a proposed rule, Reforming and Modernizing the Radiation Protection Framework. This rule amends the regulations that govern radiation protection (Part 20) and removes references to ALARA. **NIA urges NRC to resolve any contradictions between the two proposed rules and ensure that they are harmonized in their implementation.** NIA will submit separate comments on the proposed Reforming and Modernizing the Radiation Protection Framework rule.

Compliance Periods

In NRC's request for comment Question 1, NRC requests input on what challenges could arise from performing analyses over the compliance period timeframes. NIA recognizes the long history of establishing compliance periods in the prior rulemaking efforts. Notably, in the prior proposed rulemaking NRC-2011-0012 Low-Level Radioactive Waste Disposal, NRC had proposed a 1,000-year compliance period and a 10,000-year protective assurance period. The protective assurance period was defined as the period from the end of the compliance period through 10,000 years following closure of the site.[6] Prior to the draft NRC-2011-0012 Low-Level Radioactive Waste Disposal, the NRC also considered a 20,000-year compliance period but ultimately moved towards the 1,000-year compliance period and the 10,000-year protective assurance period in that rulemaking.

This proposed rulemaking says nothing about a protective assurance period and instead follows a 1,000 year and 10,000-year compliance period, depending on the long-lived radionuclides at the site. The shift away from a vague protective assurance period to a clearer compliance period will help create more certainty and consistency across licensing. NRC notes in the current guidance associated with the rulemaking (NUREG-2175) that the "requirement is flexible such that

[5] Page 6 of the proposed rule
[6] https://www.regulations.gov/document/NRC-2011-0012-0077

different compliance periods can be used for different facilities and wastes. Some LLW may pose long-term risks while other types of LLW may not."

NIA is encouraged to see NRC take a more risk-informed approach to waste management. Appendix H of the NUREG describes how to determine which compliance period is appropriate. NIA commends the staff for providing a detailed Appendix H that also includes example scenarios. NIA is supportive of the changes but has some concerns about Agreement States implementing this method. The proposed rule designates the compliance period definition change as Category C, which means Agreement State programs may be more restrictive than NRC program elements. The current LLW facilities are all in Agreement States. If one of these facilities applies for a GTCC license through the NRC, there may be conflicting evaluations for the compliance period. **NIA recommends including in Appendix H how a conflict like this would be addressed as an additional example.**

Conclusion

The NRC emphasizes the goal of creating a path forward for stranded GTCC waste. The proposed rule needs to be durable and provide clear bounds for how GTCC waste will be handled with respect to existing waste sites, Agreement states, the Department of Energy, and current radionuclide thresholds.

NIA appreciates the Commission's leadership on this issue and the opportunity to provide input. If you have any questions, please contact Miranda McGuire at mmcguire@nuclearinnovationalliance.org.

Sincerely,

Judi Greenwald
President & CEO
Nuclear Innovation Alliance

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-jwqv-so5c
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0246
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Tennessee Department of Environment and Conservation

Submitter Information

Email: kat.cloud@tn.gov
Government Agency Type: State
Government Agency: Tennessee Department of Environment and Conservation

General Comment

Please see attached file.

Attachments

Response to Integrated LLRW Rulemaking - NRC-2011-0012

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Radiological Health
Davy Crockett Tower, 9th Floor
500 James Robertson Parkway
Nashville, Tennessee 37243
Telephone: (615) 532-0364
Fax: (615) 250-9861

August 14, 2026

U.S. Nuclear Regulatory Commission
Washington, DC 20555–0001

Docket IDs NRC-2011-0012, NRC-2015-0003, and NRC-2017-0081

The State of Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to comment on the proposed amendments to 10 CFR Parts 20, 61, 73, and 150 (Integrated Low-Level Radioactive Waste Disposal) published in the *Federal Register* Notice (FRN) on July 1, 2026 (91 FR 40290).

General Comments

1. The proposed rule removes § 61.7 "Concepts." This action impacts the fusion machine rulemaking since § 61.7 "Concepts" is referenced in the proposed rule in the proposed amendment to § 20.2008. The fusion machine proposed rule references § 61.7 to allow applicants to use analyses developed for radionuclides but not listed in the tables in § 61.55 when Part 61 was published in 1982. Fusion machine applicants could have used these analyses to justify the disposal of certain radionuclides using waste acceptance criteria based on the intruder scenario for § 61.42. Without this link, the fusion machine applicants will lose this regulatory efficiency. TDEC recommends that the NRC take appropriate action to restore this efficiency by amending the proposed fusion machine rule and guidance to align with this proposed rulemaking.

2. Subpart F of part 61 "Participation by State Governments and Indian Tribes" describes mechanisms though which the Commission will implement a formal request to participate in the review of a Part 61 license application. This subpart was adopted in 1982, never used, and does not reflect the current and successful regulatory partnership and working arrangements that exist between the NRC and the Agreement States. This subpart should be removed from Part 61 to modernize the regulations as directed by Executive Order 14300 for the following reasons.
    a. The NRC and Agreement States have coordinated and cooperated on numerous license actions involving large land disturbance operations similar to LLW disposal facilities including uranium recovery, fuel cycle, and large material broad scope facilities over the decades without the need for a formal process outlined in the NRC regulations like Subpart F of Part 61.

b. The State will likely be the disposal site owner which will result in the Part 61 license being transferred to them after the conclusion of the post-closure period in accordance with § 61.30. Since the proposed rulemaking does not make substantive changes to the closure and post closure license transfer requirements in § 61.28 through 61.30, it appears that a specialized or near-surface disposal facility license would be transferred to the State as the site owner. For this reason, the State needs to have full and complete knowledge by participating in the entire licensing process starting with the facility's siting through the construction, operational, closure, and post-closure phases for both the near-surface and specialized waste disposal sites. Relying on processes in Subpart F to share information with the State regulatory authority that will be ultimately responsible as the site owner for the institutional control of the near-surface and specialized disposal site does not make sense when it is the State, not the NRC, who has ultimate and long-term responsibility of the disposal site.
c. Subpart F describes a process for the Agreement State to participate in the licensing of a facility in their State. This includes filing a detailed proposal in accordance with § 61.72(b) that requires approval of the Director of the Office of Nuclear Material Safety and Safeguards (NMSS) and the Commission based on criteria in § 61.73(b). Such a process is counter to the coordination and cooperation reflected in the Agreement between the NRC and each Agreement State as well as the arrangement proposed by the US Department of Energy for the nuclear lifecycle innovation campus. The State should not be required to petition to participate in the licensing of a disposal facility within their borders.
d. The criteria in § 61.73(b) states that the NMSS Director can approve all or part of a State's § 61.72(b) proposal considering "1) the proposed activities are within the scope of Commission statutory responsibility and the type and magnitude of impacts which the State or Tribe may bear are sufficient to justify their participation; and 2) the proposed activities will contribute productively to the licensing review." Since both criteria must be met, they are currently written in a manner that can give the NRC the broad basis to reject any proposal especially since the phrase "contribute productively to the licensing review" can be broadly applied. For example, the additional time to engage the State and Tribal governments in the licensing process or an independent review of the site-specific dose model for the disposal site could be viewed as "not productive" and used as the basis for rejecting the proposal.
e. The siting, licensing, operation, closure, and transfer of license of a specialized waste disposal site was not considered in 1982 when Subpart F was adopted. As written, Subpart F only applies to near-surface facilities as specified in § 61.72(a). Since a specialized waste disposal site will only be licensed by the NRC, the current Subpart F process provides a regulatory basis for the NRC not to participate with State and Tribal governments with the siting, licensing, operation, closure, and transfer of license of a specialized waste disposal site. This is unacceptable and counter to the coordination and cooperation reflected in Section 274 of the Atomic Energy Act and the arrangement proposed by the US Department of Energy for the nuclear lifecycle innovation campus.

f. Section 61.72(a)(1) of Subpart F allows for "any State that is a member of an interstate compact that includes the State in which the disposal facility is located" to participate in the licensing process. Since the LLW compact process is not "within the scope of Commission statutory responsibility" as required for States and Tribes in § 61.73(b)(1), what is the justification to allow other States to participate in the safety and security licensing review for the disposal of radioactive material outside of their jurisdiction? Does this imply that specialized waste disposal sites are part of the LLW compact system and that the NRC recognizes that an interstate compact can participate in the health and safety review of Part 61 disposal site despite the fact that interstate compacts are based on congressional approved restrictions on interstate commerce and not based on public health and safety?

g. Subpart F requires that a State where the disposal facility will be located submit their proposal with 45 days of posting the application in the Federal Register to participate in the licensing process. Tribes and other interested States have 120 days. The licensing process for an LLW disposal site will likely take up to a few years to complete and designating two time periods of 45 and 120 days for interested stakeholders to express interest does not make sense. There should be only one time period so that no bias is shown to the host State.

h. The licensing of a Part 61 facility that will require the disposal of Greater than Class C (GTCC) waste will require the coordination of the NRC and the Agreement State to license a near-surface disposal facility or co-located specialized disposal facility. There will be sharing of support facilities (storage areas, roads, rail, etc.), regulatory requirements (security and financial assurance) and other state and local permits that will require close coordination between the NRC and Agreement State to license to ensure clear jurisdiction is maintained and understood. The requirements in Subpart F will impede and slow the efforts to efficiently license the facility by both agencies.

3. Contrary to decades of experience regulating LLW disposal facilities and the NRC's development of a regulatory pathway for Agreement States to regulate the disposal of GTCC waste in the 2024 Commission paper, the proposed rule pivots 180 degrees to limit the licensing of all GTCC waste to only the NRC. The proposed rule also indicates that certain concentrations of GTCC waste could be disposed in a near-surface facility when licensed by the NRC. While the proposed rule describes the regulatory relationship between the NRC and the Agreement State at existing disposal sites, the proposed rule does not provide any insight into the coordination of licensed activities between the NRC and Agreement State at existing disposal sites that choose to dispose of GTCC waste or a new near-surface disposal facility. Limiting GTCC waste disposed in a near-surface facility to NRC jurisdiction will complicate oversight by creating dual oversight of a single facility. As noted elsewhere in this letter, this is not streamlining the regulatory process. TDEC recommends that the NRC should provide specifics into the coordination for the oversight at a near-surface facility in the preamble for the final rule and commit to working with the Agreement States to update existing guidance for licensing a new or amending the existing license for a near-surface disposal facility that will dispose of GTCC waste prior to the receipt of a GTCC application. The guidance should address topics that include inspections, response to incidents, security, and financial assurance that will provide regulatory clarity to the licensee, regulators, and the public.

4. The proposed rule in § 61.30 requires that following the closure and post-closure phases, the license will be transferred to the disposal site owner, and the closed waste facility will enter a period of institutional control overseen by the "federal or state government agency." TDEC recommends that the proposed rule be revised to clarify and designate who is responsible (federal, state, or both) during the institutional control phase for a specialized waste disposal site and a near-surface disposal site where GTCC waste was disposed. The NRC should consider that the State could be the disposal site owner during the institutional control phase for the LLW disposal site and how that could affect oversight.

5. There are a number of terms used in Part 61 that are unclear and not defined. Examples are provided below. Without a formal definition, these terms would create ambiguity as they could be interpreted differently by the licensee, regulatory authority, public, or other stakeholders. TDEC recommends that these terms be defined in Part 61 for common understanding and regulatory clarity.
    a. The term "effectively managed" is used in § 61.41 and 61.42 of the proposed regulations and in the guidance document.
    b. In addition to "effectively managed," the terms "ensure protection," "long-term stability," "to the extent applicable," and "as applicable" are used throughout Subpart D. These terms create ambiguity and result in inconsistent interpretation.
    c. The term "institutional control period" is used throughout Part 61 and affects several regulatory determinations including § 61.23(g), the timing of license transfer and termination in § 61.30 and 61.31, and financial assurance requirements in Subpart F.
    d. There is a requirement to evaluate a "new waste stream" in § 61.24. Without a formal definition, licensees could interpret this requirement inconsistently, particularly how it would relate to the waste classifications in § 61.55.
    e. Section § 61.24 also includes the term "significant changes." Along with "new waste stream," the lack of a definition could lead to inconsistencies in determining when evaluations are required.
    f. The term "from below discharging" in § 61.50 is technically unclear. Additional terms in § 61.50 that are subjective include "likely to affect," "significantly affect," and "defensible modeling."

6. The NRC is only proposing limited changes to financial assurance requirements in Subpart E. As written, Subpart E does not provide for a viable financial assurance framework across the full life of the disposal facility that will likely include large quantities of long-lived radionuclides and GTCC wastes that have extended the compliance period well beyond the rule's original 1982 design. Subpart E does not specify what financial requirements must exist at each phase of the disposal facility. It only addresses near-surface disposal facilities, not specialized disposal facilities. Guarantee-type surety instruments may be appropriate during operation of the disposal facility, when the primary concern is sudden abandonment; however, financial risks and responsibilities change substantially across each phase of a near-surface or specialized disposal site. Long-term obligations for the closure, post-closure monitoring, and institutional control require actual funds, not surety bonds.

    The financial assurance requirements in Subpart E need to address both near-surface and specialized disposal sites, large quantities of long-lived radionuclides and GTCC wastes, and the requirement for the site owner to take over from the site operator during the institutional control phase. These factors will likely result in an increased burden to the State and the public

that needs to be considered when determining the amount of financial assurance required for the entire life of the facility. TDEC recommends that the Commission revise Subpart E to specify the financial assurance requirement for each phase of the disposal facility to provide clarity to applicants, regulators, and the public. The goal of the revised Part 61 financial assurance requirements should align with other federal programs with long-term institutional control obligations (e.g., uranium recovery license termination).

7. The compatibility designation for § 61.58 is Category C for Agreement States with disposal sites and Category D for Agreement States without sites. Although the development of the performance-based criteria for the site-specific WAC is the responsibility of the LLRW disposal operator, all Agreement State licensees should have knowledge of the criteria if they chose to use it. TDEC recommends that the NRC expand the note at the end of the compatibility table and include similar language in the Review Summary Sheets for Regulation Amendments issued to the Agreement State upon issuance of the final rule to encourage all Agreement States to incorporate § 61.58 along with § 61.55 through 61.57 in their regulations.

Specific Request for Comment

1. The proposed rule contemplates performance evaluations that can cover periods up to 10,000 years and qualitative analyses of periods beyond those time frames. The new specialized land disposal category for GTCC waste encompasses a wide range of concentrations of long-lived alpha-emitting radionuclides, generally from 10,000 to 500,000 nCi/g, with the potential for higher concentrations through the site-specific waste acceptance criteria process. Because this approach is new and applies to GTCC waste streams with potentially high concentrations of long-lived alpha emitters, the NRC seeks stakeholder perspectives on:
    a. What challenges could arise from performing analyses over these timeframes?
    b. What steps can the agency take to clarify expectations and to help applicants and licensees maximize the realism and fidelity of these analyses?
    c. What alternative approaches, such as durations or additional qualitative factors graded by the concentration of waste, should the NRC consider improving the effectiveness or clarity of either the compliance period or the performance period?

    TDEC response: The greatest challenge will be gaining the public's confidence to accept that the modeling and protective measures for an evaluation period of 10,000 years is meaningful and protective for future generations. To gain the public's confidence and trust, the applicant/licensee, the NRC, the DOE, and the State will all need to work closely with the communities hosting the disposal facilities during the siting process to address their concerns and questions. European countries have successfully navigated this process.

2. Under the proposed rule, the NRC would license disposal of GTCC waste streams under Part 61.
    a. What steps can the NRC take to ensure that states' insights are considered and received with respect to licensing GTCC facilities?
    b. Does Part 61, Subpart F, appropriately enable states to consider and provide input in NRC licensing of GTCC facilities?

TDEC response: As noted in General Comment No. 2 above, this subpart was adopted in 1982, never used, and is not appropriate since it does not reflect the current and successful regulatory partnership and working arrangements between the NRC and the Agreement States. This subpart should be removed from Part 61 to modernize the regulations as directed by Executive Order 14300.

3. Advanced reactors, advanced reactor fuels, emerging reprocessing approaches, and expanded medical and industrial uses of radioisotopes will potentially generate novel GTCC streams. A clear disposal pathway for these emerging waste streams is essential.
    a. Do the proposed concentration limits, performance assessment methodology and waste characterization expectations remain valid for these emerging waste streams?
    b. Are there alternatives or other considerations that should be addressed to accommodate novel GTCC waste streams?

    TDEC response: Commercial fusion pilot plants will likely start operation by the 2030's which are likely to produce GTCC quantities from the activation of components due to the very high neutron fluxes generated by the fusion reaction in the vacuum vessel. Given the diversity of fusion designs being currently developed along with the composition of the components not finalized, it is hard to judge what concentrations and quantities of low-level radioactive waste will be produced. Although the current proposed GTCC limits would probably be adequate, the availability of any GTCC disposal option would be welcomed.

4. In the draft regulatory analysis, the NRC's cost-benefit evaluation focusses primarily on quantified costs and averted storage costs associated with earlier disposal of GTCC waste. The analysis notes that many potential benefits – such as increased disposal efficiencies, expanded disposal options for generators, and reductions in long term uncertainties – were not quantified.
    a. To help the NRC further inform and enhance the regulatory analysis, the NRC requests stakeholder input on any additional data, analyses, or supporting information that could help characterize costs or benefits not currently quantified. Specifically, the NRC is seeking information, operational experience, or cost data that the NRC can leverage to refine or expand the analysis of impacts associated with the proposed rule. Benefits of providing an alternative path for disposal for reprocessing wastes and other waste streams, which previously would not have been considered for land disposal, are of particular interest to the NRC.

    TDEC response: Please see our response to item 3 under the cumulative effect of regulations section later in this letter.

5. The proposed rule permits the use of site-specific Waste Acceptance Criteria (WAC) for GTCC specialized land disposal, which could allow for the disposal of waste with concentrations exceeding the standard specified limits established for GTCC specialized land disposal.
    a. What are the expected benefits and drawbacks of allowing a higher GTCC specialized land disposal limit with a site-specific WAC? What specific use cases are expected to leverage these flexibilities and what benefits are anticipated for these use cases if the flexibilities are adopted? Please provide quantitative information and description of use cases to the extent possible; however, qualitative assessments would be useful, as well.

b. Are there potential qualitative or quantitative limits on the concentration of activity allowed in a GTCC specialized land disposal with a site-specific WAC that the NRC should consider? Are there any practical use cases that would be challenged by limiting the concentration?

TDEC response: As noted in item 4 above, some fusion machine designs may use novel materials in their components that would benefit from a site-specific waste acceptance concentration approach for disposal as GTCC waste.

6. The proposed rule would require an application for an LLW disposal facility to include a safety case as newly defined in this proposed rule. The safety case is an integrated, concise, and transparent synthesis of technical analyses, site characteristics, facility design, and management/regulatory controls that collectively demonstrate how the facility will meet the performance objectives in Subpart C of Part 61. The safety case is intended to support the licensee's demonstration that the land disposal facility will be constructed and operated safely and facilitate effective review by the NRC and public understanding. Recognizing that most of the technical elements are already required under current regulations, this proposed requirement seeks to ensure these elements are integrated and communicated in a coherent manner.
    a. Is the guidance provided in draft NUREG-2175 sufficient to address the appropriate scope, structure, and level of detail that should be included in the safety case for land disposal facility license applications? If not, what additional guidance or clarifications would be beneficial to ensure the safety case provides a clear, integrated, and risk-informed basis for regulatory decision-making?
    b. Are there best international or domestic practices regarding the scope of the safety case that NRC should consider?
    c. Are there additional guidance documents or supporting materials that should be updated or developed to facilitate effective implementation of the safety case requirement? Provide the basis for your responses, including any relevant experience, best practices, or suggestions for further clarifying the safety case requirement in the final rule.

TDEC response: The safety case should not only be written to support the regulatory decision-making, but as a concise summary document to help to support and build public confidence in the disposal facility. TDEC recommends that a model safety case document be included in the guidance document to serve the dual purpose of providing a transparent decision document for the general public and the regulatory agency.

<u>Cumulative Effects of Regulations</u>

1. The NRC is proposing an effective date that will be 30 days after the date of publication of a final rule. Does this provide sufficient time to implement the proposed requirements? Please provide a rationale for your response.

TDEC response: Agreement States with LLRW disposal sites, significant waste broker operations, fusion machine facilities, and hosting nuclear lifecycle innovation campuses will need the full three years to adopt and implement compatible requirements due to the significant changes being proposed. Specifically, TDEC will need to update its equivalent Part 61 regulations (§ 400-200-11) which will be resource intensive.

2. Are there unintended consequences related to this rulemaking and how should they be addressed? Please provide a rationale for your response.

   TDEC response: The Part 61 amendments are focused on safety and security of the existing or new near-surface or specialized disposal sites. Although LLRW compact requirements are outside the scope of this rulemaking, the Congressional approved compacts may need their regulations modified due to the proposed changes in the rulemaking, particularly the inclusion of certain transuranic wastes that will now be included in the definition of waste as LLW, long-lived radionuclides and GTCC. Compact rules may complicate the interstate disposal of waste, resulting in increased implementation times and costs for State and State licensed facilities. The DOE and NRC should consider the impact of compacts on the implementation of these amendments.

   As noted in General Comment 2e above, § 61.72(a)(1) of Subpart F allows for "any State that is a member of an interstate compact that includes the State in which the disposal facility is located" to participate in the licensing process. Since the LLW compact process is not "within the scope of Commission statutory responsibility," what is the justification to allow other compact States to participate in the safety and security licensing review for the disposal of radioactive material outside of their jurisdiction? This also implies that specialized waste disposal sites are part of the LLW compact system and that the NRC recognizes that an interstate compact can participate in the health safety review of Part 61 disposal site despite the fact that interstate compacts are based on congressional approved restrictions on interstate commerce and not based on public health and safety. Regardless of compact implications from these amendments to Part 61, TDEC will have to have make conforming changes to its regulations to maintain compatibility with the NRC.

3. Please comment on the NRC's cost and benefit estimates in the regulatory analysis that supports this proposed rule.

   TDEC response:
   a. All Agreement States will need to adopt compatible requirements for the packaging of waste that will be amended in § 61.55 – 61.57; the regulatory analysis does not include these costs.
   b. The analysis does consider the costs of adding NRC licensing for near-surface and specialized disposal facilities for GTCC and other long-lived radionuclides at an existing LLRW disposal facility, but it did not consider the cost for a new LLRW near-surface disposal facility (beyond the existing 4 sites) in the 30-year time frame evaluated in the regulatory analysis. Additional disposal capacity could be needed given the anticipated development of new fuel facilities, reprocessing of spent fuel, new fission reactors, commercial fusion machines, and other commercial operations. The development of a new near-surface disposal site may be needed or will be undertaken as a commercial venture. TDEC recommends that the regulatory analysis include this possibility.

c. The NRC has not regulated an operating LLRW disposal site since the 1970s (Sheffield). The regulatory analysis should include the development of NRC licensing and inspection expertise to provide oversight for GTCC at least at a specialized disposal facility.

In closing, TDEC appreciates the opportunity to comment on the amendments to the regulations that are part of the Integrated Low-Level Radioactive Waste Disposal draft amendments. Please contact me should you have any questions or need clarification regarding our responses.

Sincerely,

Beth Shelton Digitally signed by Beth Shelton
Date: 2026.08.14 15:57:16
-05'00'

Beth Shelton, Director
Division of Radiological Health
Tennessee Department of Environment and Conservation

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-kfzf-7a06
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0247
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from State of New York / NYSERDA

Submitter Information

Email: alyse.peterson@nyserda.ny.gov
Government Agency Type: State
Government Agency: State of New York / NYSERDA

General Comment

Comments of the State of New York are attached.

Attachments

NYS comments Integrated LLRW Disposal proposed rule 08-17-26

NEW YORK STATE | NYSERDA
New York State Energy Research and Development Authority

KATHY HOCHUL
Governor
CHARLES BELL
Acting Chair
DOREEN M. HARRIS
President and CEO

August 17, 2026

U.S. Nuclear Regulatory Commission
Office of the Secretary
ATTN: Rulemakings and Adjudications Staff
Washington, DC 20555

Subject: "Integrated Low-Level Radioactive Waste Disposal" [NRC-2011-0012, NRC-2015-0003, and NRC-2017-0081]

To all concerned:

The State of New York appreciates the opportunity to comment on the U.S. Nuclear Regulatory Commission's (NRC's) proposed rule "Integrated Low-Level Radioactive Waste Disposal" published in the Federal Register on July 1, 2026. The proposed rule updates the requirements for land disposal of low-level radioactive waste and establishes a non-repository disposal pathway for Greater-Than-Class C (GTCC) radioactive waste.

New York's Interest in the Proposed Rule

New York State has a direct and substantial interest in this action. New York hosts four operating civilian commercial nuclear power reactors at three sites that provide approximately 20 percent of the State's electricity. The State is also home to the Western New York Nuclear Service Center in West Valley, the only privately-operated spent fuel reprocessing plant in the United States, which operated from 1966 to 1972. The approximate 40-year cleanup of the site has proceeded under the West Valley Demonstration Project Act of 1980 and remains a multi-billion-dollar federal and State undertaking. The site is owned by the State of New York through the New York State Energy Research and Development Authority (NYSERDA).

Comments on the Proposed Rule

New York supports key provisions of the proposed rule. For example, including transuranic waste in the definition of low-level radioactive waste (LLW) allows disposal in commercial facilities if the waste meets the class requirements. In addition, NYSERDA appreciates that the proposed rule would allow for near-surface disposal of GTCC and specialized land disposal facilities for GTCC with a 10,000-year compliance period and an annual dose limit of 25 mrem for the general population and 500 mrem for an inadvertent

intruder. Near-surface disposal would be at least 5 meters deep and specialized land disposal facilities would be at least 30 meters deep. This should enable the disposal of GTCC waste from commercial facilities and generators in New York in the nuclear power, industrial, medical, and academic sectors. These options also increase flexibility for residual and secondary waste streams that may arise during Phase 2 decommissioning at the West Valley Demonstration Project.

At the same time, NYSERDA continues to maintain, as it has for many years, that the Waste Isolation Pilot Plant (WIPP) remains the most appropriate and preferred disposition facility for the approximately 30,000 cubic feet of transuranic waste currently stored at West Valley. In congressional testimony on May 18, 2018, NYSERDA General Counsel Noah C. Shaw stated:

> It is NYSERDA's position that the high-level radioactive waste (HLW) and transuranic waste (TRU) left at the site as a result of the reprocessing operation are 'from atomic energy defense activities' as defined in the Nuclear Waste Policy Act (NWPA)—i.e., they are 'defense waste'—and are therefore eligible for disposal in the same manner, and in the same facilities, as other U.S. Department of Energy (DOE) defense HLW and TRU.[1]

The testimony detailed the historical record: approximately 60 percent of the spent nuclear fuel reprocessed by Nuclear Fuel Services at West Valley originated from the Hanford N-Reactor under Atomic Energy Commission contracts; nearly all of the recovered plutonium and uranium was returned to federal defense facilities; and NFS performed additional defense-related work under U.S. Air Force contracts. These facts, NYSERDA has consistently argued, place the resulting TRU within the statutory definition of waste from atomic energy defense activities.

Subsequent public statements and briefings by NYSERDA (including to the West Valley Citizen Task Force and in National Governors Association materials) have reiterated the same position.[2] In 2021, the Government Accountability Office confirmed both the inventory figure and the continuing unresolved disagreement between DOE's "commercial" designation and New York's defense-origin analysis.[3]

While the proposed Part 61 revisions usefully provide alternative disposal options should legislative or administrative barriers to WIPP persist, those alternatives should not become a substitute for DOE issuing a defense-waste determination for West Valley TRU.

---

[1] https://www.congress.gov/115/meeting/house/108315/witnesses/HHRG-115-IF18-Wstate-ShawN-20180518.pdf

[2] *Cleaning up America's nuclear weapons complex 2023 update for governors*. (2023). and *Western New York Nuclear Service Center Development & early history*. (2024). https://westvalleyctf.org/wp-content/uploads/2024/06/Western-New-York-Nuclear-Service-Center-Development-Operations-and-Shut-Down-R3.0.pdf

[3] *Nuclear Waste: Congressional Action Needed to Clarify a Disposal Option at West Valley Site in New York*. U.S. Government Accountability Office (GAO-21-115). January 2021.

Reliance on commercial near-surface or specialized land disposal for material that meets the statutory definition of defense TRU would undermine the policy framework Congress established for defense-generated transuranic waste.

NYSERDA therefore recommends that the final rule and accompanying guidance clarify that nothing in the rule alters or diminishes the separate statutory and policy framework governing disposal of defense TRU at WIPP under the Waste Isolation Pilot Plant Land Withdrawal Act and the Nuclear Waste Policy Act. The existence of commercial pathways under Part 61 must not be interpreted as a suggestion that West Valley TRU is ineligible for WIPP or that the defense-origin question has been resolved. This balanced approach preserves the new flexibility created by the proposed rule while upholding the principle, consistently advanced by NYSERDA, that wastes generated, in significant part, by atomic energy defense activities belong in the dedicated national repository designed for that purpose.

State Engagement in Licensing Activities

10 CFR 61 subpart F does not appropriately enable Agreement States to consider and provide input in NRC licensing of Greater-Than-Class-C (GTCC) facilities. Agreement States have the technical expertise and capability for siting, licensing, and permitting of Class A, B, and C Low Level Radioactive Waste (LLRW) facilities and should remain active participants in license review of GTCC facilities located within their states. It is recommended that the final rule automatically include Agreement States in the process for siting and licensing a GTCC specialized land disposal facility, without the need to request participation, instead of relying on 10 CFR 61 Subpart F, which is currently only applicable to non-Agreement States' input in licensing LLRW disposal.

Non-Agreement States, which do not have licensing and permitting authority and, therefore, do not have the expertise to review technical analyses, can have a Class A, B, or C near surface disposal facility sited and licensed in their state by the NRC. Subpart F allows these states to be participants in the current process. The proposed 10 CFR 61 regulations should include specific language that would include an automatic participation process for Agreement States in NRC's licensing process of any GTCC LLRW facility in their respective state. This should be done so that Agreement States' substantive comments will be incorporated into an NRC license review ensuring consistency with Agreement States' licensing and permitting approvals.

Conclusion

New York appreciates NRC's important effort to establish a regulatory framework for non-repository disposal of commercial GTCC. Our recommended clarification will ensure

that this new pathway is available for commercial waste streams while recognizing that defense TRU, including West Valley TRU, should be disposed of at WIPP.

Thank you for the opportunity to comment. If you have any questions or concerns, please contact me.

Sincerely,

Alyse Peterson

Alyse Peterson, P.E.
Associate Director
Nuclear Coordination Office
NRC State Liaison Officer – Designee

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-l3o8-iwjn
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0248
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Raymond Vaughan

Submitter Information

Name: Raymond Vaughan
Address: United States,
Email: rcv9@verizon.net

General Comment

Please see attached comments on NRC-2011-0012.

Attachments

Comments on proposed rule NRC-2011-0012

I make these comments on NRC's proposed rule NRC-2011-0012, *Integrated Low-Level Radioactive Waste Disposal*, 91 FR 40,290 (July 1, 2026) based on my review of the proposed rule. My comments, while independent, refer in several places to the more detailed set of comments identified as NRC-2011-0012-0213 which has already been submitted to NRC on the same proposed rule. Where cited, those comments and their additional detail are incorporated here by reference.

1. It is well established in administrative law that agencies undertaking changes from a prior and duly promulgated regulatory position must clearly acknowledge and provide a reasoned explanation for such change, with this requirement being heightened when, as here, regulated parties have already relied significantly on the prior position. The missing explanation(s) must be provided and must express a rational basis for the changes set forth in the proposed rule. Executive orders, for example, do not automatically provide a rational basis for regulatory change if they are unsupported or contradicted by existing law, or if they deviate without explanation from longstanding agency process or practice. See also NRC-2011-0012-0213. It's important to recognize that rational-basis requirements are *not* roadblocks to beneficial change but merely a fairminded summary of the benefits and how they outweigh recognizable detriments.

2. NRC-2011-0012-0213 rightly criticizes the application of OMB Circular A-4 (September 17, 2003) and the labor-rate methodology, governing-methodology document(s), cost-disaggregation analyses, health/safety/security benefit metrics, cost-estimating practices, and issues of distributional effects, ancillary benefits and countervailing risk with which Circular A-4 has been linked in the proposed rule either erroneously or without justification; also issues of phased compliance and federalism alternatives. Corrections and/or reasoned explanations are needed on these various points in accordance with applicable law.

3. NRC-2011-0012-0213 rightly criticizes the GTCC 500-year intruder-barrier standard as being no more protective than the implicit Class-C standard despite the fact that "GTCC waste presents a materially higher and longer-lived radiological hazard than Class C waste." This mismatch apparently needs to be addressed by strengthening the GTCC standard, but see also comment 6 below on inappropriate reliance on intruder barriers beyond 100 years. And see also NRC-2011-0012-0213 for discussion, partially but not entirely on the same point, of whether "a deterrence-based barrier reliably achieves 500 years of effective protection…"

4. NRC's Draft Finding of No Significant Impact (91 FR 40318) uses conclusory language to reach an entirely unsupported claim of no significant impact. For example, the statement that "Proposed rule amendments are primarily administrative or procedural in

nature and therefore would not have any physical environmental effect" is entirely conclusory and reaches the unsupported conclusion that the proposed change "would not have any physical environmental effect." This finding needs to be reversed, and an EIS should be prepared to evaluate the impacts, i.e., to quantify, understand, and compare the recognizable positive and negative effects – including, for example, the major initial uncertainties such as those acknowledged at 91 FR 40313, column 1, paragraph 4(a), for advanced reactors, their fuels, etc. While there are too many uncertainties to create a reliable list during this short comment period on NRC-0011-0012, a list of such uncertainties is a crucial initial EIS step.

5. NRC-2011-0012-0213 rightly criticizes NRC's "shift toward site-specific waste acceptance criteria" based on claims that generic classification methods are overly conservative and thus pose an administrative inconvenience – where NRC is making this shift without having determined or demonstrated equivalent protection. This is a matter of radiation protection that exemplifies the need, expressed in the preceding paragraph, that an EIS be prepared. The EIS would then be the vehicle for dose-modeling or other means of demonstrating protection provided by generic classification methods versus protection provided by site-specific waste acceptance criteria.

6. The proposed rule puts undue reliance on intruder barriers (e.g., 91 FR 40307, "For near-surface disposal facilities, the NRC is proposing minimum requirements for GTCC waste of a 500-year intruder barrier and a 5-m [16-ft] disposal depth."). Institutional controls such as intruder barriers should not be assumed to be viable or protective beyond 100 years, based primarily on uncertainty of long-term societal or governmental continuity, whereby social or governmental entities cannot be assumed to maintain protective oversight and/or the ability to repair vandalized or otherwise damaged barriers (e.g., damaged by weather, physically displaced by extreme flooding, etc.) beyond 100 years.

7. NRC's regulations have for many years offered *defense in depth* against accidents and other unintended impacts of nuclear technology, particularly power generation and waste resulting from power generation. The current range of proposals to cut back NRC regulation would significantly reduce such defense in depth. This should not be allowed, especially not without review and assessment of the combined effects of NRC's several proposals. There should be no segmentation of the combined effects or impacts of the proposed changes.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-lt5b-i3p7
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0249
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from EnergySolutions

Submitter Information

Email: amsnyder@energysolutions.com
Organization: EnergySolutions

General Comment

See attached file(s)

Attachments

EnergySolutions Part 61 Comment Letter_Signed

ENERGYSOLUTIONS

August 17, 2026 ES-RA-2026-049

Jody C. Martin
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Mail Stop O-16 B33
Washington, DC 20555-0001
ATTN: Rulemakings Staff

Submitted electronically via https://www.regulations.gov under Docket ID NRC-2011-0012.

Subject: Comments on the Proposed Rule, Integrated Low-Level Radioactive Waste Disposal (RIN 3150-AI92; Docket IDs NRC-2011-0012, NRC-2015-0003, NRC-2017-0081; Federal Register Document No. 2026-13302, published July 1, 2026)

Energy*Solutions*, LLC (Energy*Solutions*) appreciates the opportunity to comment on the above-referenced proposed rule. Energy*Solutions* holds U.S. Nuclear Regulatory Commission (NRC) and Agreement State authorizations for the packaging, transport, treatment, and disposal of low-level radioactive waste (LLW) and mixed waste, including the licensed disposal facilities at Clive, Utah and Barnwell, South Carolina, and operates within the framework of Title 10 of the Code of *Federal Regulations* (10 CFR) parts 20, 61, 73, and 150 and equivalent Agreement State regulations.

Energy*Solutions* supports the Commission's effort to modernize 10 CFR Part 61 toward a risk-informed, performance-based framework, consistent with the direction of Executive Order 14300, "*Ordering the Reform of the Nuclear Regulatory Commission*" (90 FR 22587, May 29, 2025), toward efficient, predictable, and least-burdensome regulation. Energy*Solutions* particularly supports the graded approach in proposed § 61.1(b), the expanded near-surface regulatory disposal pathway for certain Greater-Than-Class-C (GTCC) waste and higher-concentration transuranic waste streams.

Energy*Solutions* submits specific comments, addressing 10 CFR parts 61, 20, 73, and 150, NUREG 2175, Rev. 1, and the rule's consistency with Executive Order 14300, together with responses to each of the seven specific requests for stakeholder input identified in Section 5 of the Supplementary Information to the proposed rule. In summary:

- On **Part 61**, Energy*Solutions'* primary concern is the proposed prescriptive 5-meter minimum burial depth requirement, which not only fails to reflect site-specific considerations, but is inconsistent with the NRC's stated risk-informed, performance-based approach seen elsewhere in the proposed rule. More directly, this requirement contradicts prior environmental analysis for depleted uranium (DU) disposal at the Clive, Utah, site, and could lead to regulatory uncertainty for this important disposal option, as explained further in comment 6 of the Enclosure.

  Disposal system performance depends on site-specific factors such as geology, hydrology, engineered barriers, waste form, and facility design, not a single design parameter. If a disposal

configuration can demonstrate compliance with all critical performance objectives, including public safety, inadvertent intruders, groundwater, and long-term stability objectives, then it should be permitted without requiring a fixed burial depth. The NRC appropriately moves away from prescriptive waste classification limits in §61.55 by allowing disposal facility operators to establish site-specific waste acceptance criteria, including radionuclide concentration limits, through rigorous performance assessments that demonstrate compliance with the performance objectives of Subpart C. While burial depth is an important consideration, the approach should be determined through site-specific performance assessments, and defense-in-depth evaluations rather than prescriptive, one-size-fits-all design criterion. Energy*Solutions* requests the NRC replace the prescriptive 5-meter requirement found in §61.52 (a)(2), (3) and (16) with a performance-based standard that allows burial depths to be justified through site-specific analyses supporting compliance with the performance objectives of 10 CFR Part 61, Subpart C. Additionally, Energy*Solutions* requests codification of key inadvertent intruder assessment principles in the rule rather than relying primarily on NUREG-2175, Rev. 1 guidance.

- On **Part 61**, Energy*Solutions* also does not support the mandatory 10,000-year compliance period for depleted uranium and significant quantities of other long-lived radionuclides. Not only does this threshold contain significant uncertainties, but it is more burdensome than the Commission's own 2015 proposed approach and sits in tension with the Commission's own stated basis for declining to require a site stability demonstration across the full compliance period. In the proposed rule, the Commission states that it is "*not proposing to specify that stability of the disposal site must be demonstrated for the compliance period,*" in part because "*stakeholders provided input that such a demonstration out to potentially 10,000 years is difficult to support with modeling tools currently available.*" 91 FR 40290, 40303 (July 1, 2026). Energy*Solutions* requests that the final rule restore the intermediate "*protective assurance period*" of the Commission's 2015 framework, under which the quantitative pass/fail compliance period is 1,000 years and the 1,000-to-10,000-year interval is analyzed quantitatively to inform, but not to determine, the licensing decision. Energy*Solutions* further requests that the final rule and NUREG-2175, Revision 1 state what magnitude and treatment of uncertainty the Commission considers acceptable in a near-surface disposal performance assessment.

  Energy*Solutions* also requests clarity on the facility application of § 61.1(b) to state that it applies on a per-disposal-unit basis, as applicable.

- On **Part 20**, Energy*Solutions* supports the revised definition of waste and requests confirmation in the rule that the Appendix G of Part 20, "Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests," manifest revisions are strictly conforming and that the new cross-reference to § 20.1101(b) does not affect an already-approved licensing basis.

- On **Part 73**, Energy*Solutions* requests that the new physical-protection exemption for special nuclear material of limited attractiveness be harmonized with the Section 274f of the Atomic Energy Act (AEA) exemption-order framework for special nuclear material that governs Agreement State facilities, so that Agreement State licensees are not held to a more conservative standard than NRC licensees for identical material.

- On **Part 150**, Energy*Solutions* requests the NRC publish concurrent-licensing mechanics for GTCC disposal requirements that are applicable to certain type wastes that Agreement States may regulate (i.e., DU) at Agreement State facilities, identify the reprocessing-incidental waste disposal pathway recognizing Agreement State's oversight capability, and add a compatibility category that does not permit open-ended additional State-level procedural burden on the newly authorized near-surface GTCC pathway.

- On **Executive Order 14300**, Energy*Solutions* requests that the final rule document, using current cost figures and the national context of federal fuel-cycle infrastructure initiatives, clarifies how each new requirement satisfies the Order's efficiency, predictability, and least-burden objectives, and includes that the Commission commit to defined licensing-review timelines for privately financed nuclear fuel-cycle projects.

- On **NUREG-2175, Rev. 1**, Energy*Solutions* requests that the guidance be modified to address many different areas to include conforming guidance to rule text; providing a materiality and significance standard for update triggers and a bounded process in more than one area; offering additional relevant examples and expectations on level of detail; adding guidance applicable to NRC requirements in Agreement-State-specific implementation guidance and bound the site-specific waste acceptance criteria (WAC) technical-basis requirement to reduce inconsistent Category C implementation; among other things.

Enclosure 1 provides the detailed basis and specifically recommended revision for each of the comments summarized above, together with Energy*Solutions'* responses to NRC's seven specific requests for comment. Energy*Solutions* would welcome the opportunity to discuss these comments at the public meeting referenced in the notice. If you have questions concerning this submittal, please contact me at achazelhoff@energysolutions.com or 269-370-7445.

Respectfully,

Amy C Hazelhoff Digitally signed by Amy C Hazelhoff
Date: 2026.08.17 14:41:21 -04'00'

Amy C. Hazelhoff
Senior Vice President Regulatory Affairs
Energy*Solutions*, LLC

Attachment 1: Detailed Comments of Energy*Solutions*, LLC

cc: Ted Sonnenburg, Director, Utah Division of Waste Management and Radiation Control
(tsonnenburg@utah.gov)
Lisa A. Hughey, Director, Tennessee Division of Solid Waste Management
(Lisa.Hughey@tn.gov)
Kent Krieg, Director, South Carolina Bureau of Land and Waste Management
(Kent.krieg@DES.SC.Gov)
Sarah Sanderlin, Chair, Organization of Agreement States (Sarah.Sanderlin@dep.nj.gov)
George Tartal, Office of Nuclear Material Safety and Safeguards, (George.Tartal@nrc.gov)
Priya Yadav, Office of Nuclear Material Safety and Safeguards (Priya.Yadav@nrc.gov)

Attachment 1

Detailed Comments of Energy*Solutions*, LLC

27 Pages Follow

Attachment 1
Detailed Comments of Energy*Solutions*, LLC

Integrated Low-Level Radioactive Waste Disposal Proposed Rule — RIN 3150-AI92,
Docket ID NRC-2011-0012

I. Introduction

These detailed comments address certain proposed changes to Title 10 of the Code of *Federal Regulations* (10 CFR) parts 61, 20, 73, and 150 as part of the Integrated Low-Level Radioactive Waste Disposal proposed rule, as well as discuss the proposed rule's consistency with Executive Order 14300 (EO 14300) "*Ordering the Reform of the Nuclear Regulatory Commission*" (90 FR 22587, May 29, 2025). Each comment states the issue, the background where relevant, Energy*Solutions'* recommendation, the operational consequence, and the comment's relationship to EO 14300.

Summary of Comments

No.	Part	Topic	Energy*Solutions* Comment
1	61	Compliance period for depleted uranium and other long-lived radionuclides	Cap the quantitative compliance period at 1,000 years; carry the long-lived analysis in the performance period.
2	61	Per-disposal-unit application of § 61.1(b)(1)(i) and (ii) criteria	Confirm that the basis for complying with the criteria in § 61.1(b)(1)(i) and (ii) apply per disposal-unit, not per facility.
3	61	Renewal/closure trigger for sites that comply with § 61.1(b)(1)(i) and (ii) (§§ 61.27, 61.28)	Allow a licensee that complies with the criteria in § 61.1(b)(1)(i) and (ii) to update analyses under prior methodology at renewal/closure absent a waste-stream change.
4	61	Compatibility category for site-specific Waste Acceptance Criteria (WAC) (§ 61.58)	Revise to Compatibility Category B.
5	61	Inadvertent intruder assessment — codify governing principles	Codify the creditable-barrier, contact-not-certain, and current-land-use principles in rule text.
6	61	Disposal depth (5 m near-surface)	Make the 5 m figure a performance-based default, not an inflexible

No.	Part	Topic	Energy*Solutions* Comment
			prescriptive minimum. Replace the prescriptive 5 m requirement found in §§61.52 (a)(2), (3) and (16) with a performance-based standard that allows the near surface burial depth to be justified through site-specific analyses supporting compliance with the performance objectives of 10 CFR Part 61, Subpart C. Otherwise, state that an exemption would not be necessary when the 5 m depth requirement is not met in § 61.13(b) if the performance objectives in Subpart C of the rule are met.
7	61	Bounded, feasible modeling for stability and long-term parameters (§ 61.44)	Confirm modeling is not required beyond the point NRC concedes current tools can support with reasonable assurance.
8	61	Backfitting, issue finality, and cost analysis	Document the practical cost effect on existing licensees; confirm prospective-only application.
9	61	Safety case scope	Confirm in the rule that the safety case is a synthesis of already-required § 61.13 analyses, not a new standalone deliverable, and that NUREG-2175 bounds its scope, structure, and update triggers with a materiality standard. Energy*Solutions* does not support a standalone safety case.
10	61	Open-ended performance-period standard	Define an endpoint and acceptance criteria for “effectively managed.”
11	20	Revised definition of 'waste' (§ 20.1003)	Support the change; confirm Class A treatment is unaffected; retain uniform compatibility.

No.	Part	Topic	Energy*Solutions* Comment
12	20	§ 20.1101(b) ALARA replacement cross-reference	Fix the applicable methodology at license issuance; require notice-and-comment for acceptability for future changes.
13	73	§ 73.67 Special Nuclear Material (SNM) exemption (Agreement State parity)	Extend the limited-attractiveness rationale through Section 274f of the Atomic Energy Act (AEA) order exemption framework.
14	150	§ 150.15(a) (Greater-Than-Class-C (GTCC) as exclusively NRC-licensed)	Publish concurrent-licensing mechanics for dual State/NRC authority, as applicable, at one site regarding different disposal units.
15	150	§ 150.15(a)(4) (waste incidental to reprocessing (WIR))	Confirm co-located units resulting from WIR determinations disposal proceed under the State license without separate NRC authorization.
16	150	Compatibility category for the near-surface GTCC requirements for certain waste that Agreement States may have oversight (i.e., DU waste)	Cap or limit additional Agreement State procedural gates not to go beyond the federal technical analyses.
17	61	Consistency for facilities disposing of low-level radioactive waste under a RCRA using a 10 CFR 20.2002 provision	NRC should confirm, in rule text or the Statements of Consideration, that the provisions of 61.58(2) that allow for a site-specific WAC only apply to a site with a Part 61 license. A site-wide WAC cannot be applied to a disposal site that has disposed of low activity waste in the past using the 20.2002 exemption process unless that site obtains a Part 61 license.
18	Cross-cutting / EO 14300	Licensing-timeline predictability	Commit to a defined or expedited review timeline for privately financed fuel-cycle infrastructure.

No.	Part	Topic	Energy*Solutions* Comment
19	61, NUREG-2175 Rev. 1	Annual review under proposed 10 CFR 61.58(e), NUREG-2175 Rev. 1, §§ 8.4, 8.5	Delete the annual review requirement. Revise to state that review is necessary in the event of a change to the waste accepted for disposal to include any waste stream not previously analyzed.
20	NUREG-2175 Rev. 1	Agreement-State-specific guidance	Add Agreement-State-specific implementation guidance and bound the site-specific WAC technical-basis requirement in NUREG-2175 Rev. 1, § 1.1.11 and the generic NRC-staff substitution note to reduce inconsistent Category C implementation.
21	61, NUREG-2175 Rev. 1, Section 9	Monitoring result can be argued to refute a PA parameter and thereby compel a PA revision (NUREG-2175 Rev. 1 § 9, 10 CFR § 61.53)	In NUREG-2175 define a graded, materiality-based anomaly response (i.e., investigate, then evaluate, then update only where a performance objective is plausibly affected).
22	61, NUREG-2175 Rev. 1	10-metric-ton threshold	Clarify in 10 CFR § 61.1(b)(1)(ii) that the threshold applies prospectively to DU accepted after the effective date, and that historical disposal does not retroactively remove the 61.1(b) accommodation. Apply a bounded, deferential in NUREG-2175, Rev. 1, Appendix H.
23	NUREG-2175 Rev. 1	Inadvertent-intruder-assessment example	NRC should include in NUREG-2175 Rev. 1 one or more worked inadvertent-intruder-assessment examples for arid, non-potable-groundwater, deep-water-table sites, illustrating the current-land-use scenario anchor, exclusion of a groundwater-ingestion pathway where groundwater is non-potable,

No.	Part	Topic	Energy*Solutions* Comment
			and crediting of disposal depth and waste form.

II. Executive Order 14300 Compliance Assessment

EO 14300 directs the NRC toward efficient, predictable regulation in support of restoring United States leadership in nuclear energy. Section 5 of the Order, "*Reforming and Modernizing the NRC's Regulations,*" directs the NRC to undertake a review and wholesale revision of its regulations and guidance documents as guided by the policies in Section 2 of the Order. E.O. 14300 § 5. The proposed rule advances several of these objectives directly: it replaces generic, most-limiting-case prescriptive concentration limits with site-specific, performance-based waste acceptance criteria; it creates, for the first time, a regulatory shallow land disposal pathway for certain GTCC waste through licensing that is currently stranded at reactors, sealed-source facilities, and DOE sites with no commercial disposal option; and its own regulatory analysis concludes the rule will produce net cost savings to industry, the NRC, and Agreement States of $39.4 million (7-percent discount rate) or $69.9 million (3-percent discount rate) over a 30-year analysis period.[1]

Energy*Solutions* submits that the rule's EO 14300 alignment can be strengthened in three respects, developed in the comments that follow: (1) several provisions state governing safety and implementation principles in the preamble or draft guidance rather than in binding rule text, which reduces predictability because licensees, applicants, and Agreement States are not bound by preamble language to the same degree as codified requirements; (2) the rule does not yet document how new inadvertent intruder, depth, and compliance-period requirements were tested against a least-burden alternative specific to the current national context, including the Department of Energy's Nuclear Lifecycle Innovation Campus initiative and related federal efforts to establish a domestic nuclear fuel-cycle infrastructure;[2] and (3) the rule does not commit to a defined licensing-review timeline for applications tied to privately financed fuel-cycle infrastructure, even though such projects require licensing certainty to secure financing. Comments 1, 4, 7, 9, 18, and 19 below address these points directly.

III. Comments on 10 CFR Part 61

Comment 1. Compliance period for depleted uranium and other long-lived radionuclides (§§ 61.2, 61.13(a)/(e), 61.41, 61.42)

[1] Federal Register Document No. 2026-13302, regulatory analysis discussion (net cost savings of $39.4 million at a 7-percent discount rate and $69.9 million at a 3-percent discount rate over a 30-year analysis period).

[2] U.S. Department of Energy, Department of Energy Seeks Hosts for Nuclear Lifecycle Innovation Campuses (news release), January 28, 2026; contemporaneous reporting on multi-State competitive responses.

Issue. The proposed rule requires a mandatory 10,000-year compliance period for any site disposing significant quantities of long-lived radionuclides, including depleted uranium (DU), reasoning that a 1,000-year period is not likely to sufficiently capture DU decay and in-growth, whose peak occurs at approximately 10,000 years or longer.[3]

Background. In the same rulemaking, the Commission declines to specify that site stability must be demonstrated for the compliance period. The Commission states it is "*not proposing to specify that stability of the disposal site must be demonstrated for the compliance period, because instability is only significant if it translates to health and safety impacts and stakeholders provided input that such a demonstration out to potentially 10,000 years is difficult to support with modeling tools currently available.*" 91 FR 40290, 40303 (July 1, 2026). The Commission instead adopts a graded demonstration that *could transition from justifying that adequate dimensional stability will be achieved early in the compliance period to demonstrating that expected instability later in the compliance period would not compromise compliance with §§ 61.41 and 61.42.*[4]

Energy*Solutions* respectfully submits that the same reasoning supports a graded treatment of the dose demonstration. The Commission has recognized, for one performance objective within this rule, that a single uniform standard of demonstration applied across the full 10,000 years is not feasible, and has substituted a demonstration whose character changes as modeling confidence declines with time. The proposed rule nonetheless applies a pass/fail numerical dose limit at every point in that same 10,000-year period, including at the horizon where the Commission has acknowledged the supporting modeling is least well supported.

The Commission's own prior proposal supports a 1,000-year period**.** The proposed 2015 rule on this docket defined the compliance period as 1,000 years for all sites, with a separate qualitative performance-period analysis for long-lived waste.[5] Critically, the 2015 framework was not two-tiered but three-tiered. Between the 1,000-year compliance period and the qualitative performance period beyond 10,000 years, the Commission defined an intermediate "*protective assurance period,*" running "*from 1,000 years to 10,000 years after disposal site closure,*" in which quantitative analysis was performed to inform the licensing decision without serving as the pass/fail compliance metric. See NUREG-2175, "*Guidance for Conducting Technical Analyses for 10 CFR Part 61,*" Draft Report for Comment (2015) (describing "*the compliance period (1,000 years), the protective assurance period (from 1,000 years to 10,000 years after disposal site closure), and … the*

[3] Federal Register Document No. 2026-13302, compliance-period discussion (§§ 61.2, 61.41(a), 61.42(a); depleted uranium in-growth and § 61.44 modeling-feasibility discussion).
[4] Ibid.
[5] U.S. NRC, Proposed Rule, Low-Level Radioactive Waste Disposal, 80 FR 16081 (March 26, 2015).

performance period analyses … for analysis of long-lived waste beyond 10,000 years"). The protective assurance period is precisely the analytical instrument the present rule lacks. It preserves the full 10,000-year quantitative examination of depleted uranium in-growth that the Commission correctly identifies as necessary, while assigning that examination the evidentiary weight its underlying modeling can bear. The 2026 collapse of this three-tier structure into a two-tier structure, in which the entire 1,000-to-10,000-year interval is absorbed into the pass/fail compliance period, is a substantive and more burdensome departure from the Commission's own earlier approach, and the proposed rule does not explain the basis for eliminating the intermediate tier. The Commission reaffirmed the 1,000-year compliance period in SECY-13-0075 (Feb. 12, 2014), the record of the Commission's approval to publish the proposed 2015 rule.

Recommendation. Set the quantitative pass/fail compliance period at 1,000 years for all licensees and restore an intermediate protective assurance period covering 1,000 to 10,000 years, in which a quantitative performance assessment of depleted uranium and other long-lived radionuclides, including radionuclides with long groundwater travel times, is required and is evaluated with explicit uncertainty bounds as an input to the licensing decision rather than as a numerical compliance demonstration. Retain the qualitative performance-period analyses in § 61.13(e) beyond 10,000 years.[6] In the alternative, fix a single, determinate inadvertent intruder and dose compliance period distinct from any Agreement State groundwater time of compliance, so that an Agreement State cannot substitute a longer, undefined modeling horizon.

EO 14300 relevance. A 1,000-year compliance period paired with bounded performance-period analysis reduces licensing cost and schedule uncertainty without reducing protection, directly serving the Order's least-burden and predictability objectives.

Comment 2. Per-disposal-unit application of the § 61.1(b)(1) (i) and (ii) criteria

Issue. Proposed § 61.1(b) is written at the licensee/facility level. It does not clearly address a facility that accepts significant quantities of long-lived radionuclides in one discrete, separately engineered disposal unit while continuing conventional operations in physically and hydrologically independent units.

Background. The graded, risk-informed structure of the proposed rule ties new requirements to the radiological characteristics of the waste actually accepted in a given

[6] Federal Register Document No. 2026-13302, compliance-period discussion (§§ 61.2, 61.41(a), 61.42(a); depleted uranium in-growth and § 61.44 modeling-feasibility discussion).

disposal unit.[7] The formal rule confirms § 61.1(b) is assigned Compatibility Category B, requiring adoption "*in an essentially identical manner*" by every Agreement State,[8] which means federal clarity on this question will bind all Agreement States uniformly.

Recommendation. Clarify in § 61.1(b), or a conforming definition, that the criteria apply on a per-disposal-unit basis, so that acceptance of long-lived radionuclides in one engineered unit does not, by itself, trigger the revised technical analyses for separate, unaffected disposal units at the same facility. Confirm that co-locating a new disposal unit at an existing facility does not require duplicative site-characterization work already reviewed and approved for the facility's existing units.

EO 14300 relevance. Because § 61.1(b) is assigned Compatibility Category B, resolving its per-disposal-unit application once at the federal level through this rulemaking avoids State-level disputes over the same interpretive question, directly serving the Order's predictability objective.

Comment 3. Renewal and closure trigger for licensees that otherwise meet the § 61.1(b)(1)(i) and (ii) criteria (§§ 61.27, 61.28)

Issue. A licensee that meets the § 61.1(b)(1)(i) and (ii) criteria, because it does not plan to accept GTCC waste or significant quantities of long-lived radionuclides, need not comply with the revised technical-analysis requirements while it continues under those criteria. However, the proposed rule would still require such a licensee to update its technical analyses and safety case at the next license renewal (§ 61.27) or at site closure (§ 61.28), even where the licensee has not changed, and does not plan to change, the waste streams it accepts.[9]

Background. As the proposed rule is currently written, the § 61.1(b)(1)(i) and (ii) exceptions are temporary; they would expire at the licensee's next renewal or closure event, regardless of whether anything about the facility's waste acceptance has changed. For a facility approaching license renewal, this could require a full update to technical analyses, developed under the new site-specific framework, solely because of the timing of the renewal cycle rather than any change in the type of waste being disposed of.

[7] U.S. NRC, Proposed Rule, Integrated Low-Level Radioactive Waste Disposal, Federal Register Document No. 2026-13302 (published July 1, 2026), Executive Summary and Major Changes discussion.
[8] Federal Register Document No. 2026-13302, Agreement State compatibility discussion (§ 61.1(b) Category B; § 61.55(c)/§ 61.58 redesignation and Category B/C designations; "may be more restrictive" language).
[9] Federal Register Document No. 2026-13302, §§ 61.27, 61.28 renewal and site-closure discussion (technical-analysis and safety-case update triggers for licensees meeting the § 61.1(b) criteria).

Recommendation. Clarify that a licensee meeting the § 61.1(b)(1)(i) and (ii) criteria that renews its license or closes its site without a change in the waste streams accepted for disposal may update its technical analyses using the existing performance objectives and methodology it operated under, rather than the newly revised requirements, unless and until it actually plans to accept GTCC waste or significant quantities of long-lived radionuclides. For a licensee that already holds legacy depleted uranium in quantities meeting or exceeding the significant-quantity threshold and therefore does not qualify for the § 61.1(b) exception, provide a defined transition schedule at the next license renewal so that existing technical analyses and the safety case are updated to reflect specific changes rather than a full re-derivation under the new framework, consistent with the scope of change actually occurring at that facility.

EO 14300 relevance. A licensee that has not changed its waste acceptance practices should not be required to bear the cost of a full technical-analysis overhaul solely because of a renewal or closure timeline; this recommendation directly supports the Order's least-burden objective.

Comment 4. Compatibility category for site-specific waste acceptance criteria (§ 61.58)

Issue. The proposed rule redesignates § 61.55(c) as the new alternative classification regulation and assigns it to Compatibility Category B. The new § 61.58 pertains to site-specific waste acceptance criteria and is assigned to Compatibility Category C.[10] The prior exception allowing Agreement States to avoid adopting § 61.58 would no longer apply.[11]

Background. NRC Management Directive 5.9 explains the criteria for each compatibility category and the proposed rule invites comment on category designations specifically.[12]

Recommendation. Energy*Solutions* requests that the Commission revise the Compatibility Category C designation for § 61.58 to B. This prevents Category C flexibility from becoming a vehicle for open-ended additional burden on multi-State operators without a corresponding safety justification. Consistent with the Commission's determination that § 61.55(c), which also governs waste classification and characteristics, warrants Category B treatment because it carries cross-jurisdictional implications regardless of whether a State operates a disposal facility, § 61.58 should receive the same

[10] Federal Register Document No. 2026-13302, Agreement State compatibility discussion (§ 61.1(b) Category B; § 61.55(c)/§ 61.58 redesignation and Category B/C designations; "may be more restrictive" language).
[11] Ibid.
[12] U.S. NRC, Management Directive 5.9, Adequacy and Compatibility of Program Elements for Agreement State Programs and accompanying Handbook.

designation, since it performs the same waste-acceptance function for the same multi-State licensees.

EO 14300 relevance. Unbounded State-level stringency under Category C is a direct source of the unpredictability EO 14300 seeks to eliminate; a documented-basis requirement preserves State authority while bounding its exercise.

Comment 5. Inadvertent intruder assessment — codify the governing method in rule text (§§ 61.13(b), 61.42)

Issue. The proposed rule establishes a 5 mSv (500 mrem) annual inadvertent intruder dose limit and states that contact is not presumed certain, that engineered barriers and disposal depth may be credited, and that scenario development should be informed by current site characteristics and societal information to limit speculation about future inadvertent intruder activities.[13] The Commission states plainly that it *is not proposing that licensees or applicants should assume that contact with the LLW by an inadvertent intruder is certain to occur,* and offers the following example of the depth-crediting principle, *if the disposal site implements a protective cover of at least 5-m (16-ft) thickness, it would not be reasonable to consider a receptor scenario in which (1) a residential dwelling foundation is excavated below 5 m (16 ft) and (2) waste is exhumed from a disposal unit if it is not normal to construct foundations in the surrounding area to that depth.* (91 FR 40290, 40302) (July 1, 2026). Several of these workable principles, and the current-land-use scenario anchor the Commission's own guidance describes, appear principally in the preamble and guidance rather than in the operative rule text.

Background. The 5 mSv limit is consistent with the critical-organ dose basis used to develop the original Part 61 classification tables[14] and reaffirmed in the denial of a related petition for rulemaking. NRC guidance states that scenario development should discourage excessive speculation about future events and that it is reasonable to assume current local land-use and water-use practices continue, absent evidence otherwise.[15] These principles currently appear in guidance, but NUREG-2175's own front-matter disclaimer states that its contents are not legally binding.

[13] Federal Register Document No. 2026-13302, compliance-period discussion (§§ 61.2, 61.41(a), 61.42(a); depleted uranium in-growth and § 61.44 modeling-feasibility discussion).
[14] U.S. NRC, NUREG-0945, Final Environmental Impact Statement on 10 CFR Part 61 (1982), dose basis for the LLW classification tables.
[15] U.S. NRC, NUREG-1573, A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities (2000), current-land-use scenario-selection guidance.

Recommendation. Codify in § 61.42 that (a) inadvertent contact is not presumed to occur with certainty, (b) engineered barriers, disposal depth, waste form, and site characteristics (for example, an arid setting or a non-potable groundwater classification) may be credited in the assessment, and (c) scenario selection is anchored to current local land-use and human-behavior practices, such that a scenario without a reasonable basis in current or historic regional practice need not be modeled. Confirm that a documented, site-specific non-potable groundwater classification is a sufficient basis to exclude a groundwater-ingestion pathway from the assessment. For depleted uranium specifically, confirm that the applicable inadvertent-intruder scenario is a well-drilling intrusion rather than the residential-foundation-excavation example the rule uses for illustration, and that the codified creditable-barrier and current-land-use principles recommended above apply with equal force to a drilling scenario.

EO 14300 relevance. Principles stated only in guidance are not binding on applicants and licensees. Important principles should be included in rule text; codification is the specific mechanism by which EO 14300's predictability objective is achieved for a compatibility-relevant provision.

Comment 6. Disposal depth — 5-meter near-surface minimum; §§ 61.13(b))

Issue. The proposed rule specifies a 5-meter minimum disposal depth for near-surface disposal of GTCC waste and waste with significant quantities of long-lived radionuclides, and a 30-meter minimum below ground surface for waste in a specialized land disposal facility.[16] Both depth requirements are prescriptive in a rule that otherwise relies on performance-based, site-specific analyses to protect the public.

Background. Existing regulations provide the choice of burial at the 5-meter depth ***or*** the inclusion of intruder barriers for higher activity (Class C) waste to protect the inadvertent intruder, the proposed rule requires 5-meter minimum disposal for both GTCC waste and waste with significant quantities of long-lived radionuclides (including depleted uranium) and requires an intruder barrier for GTCC waste specifically. NUREG-2175, Rev. 1 notes that this 5-meter figure is a combination of the traditional 3-meter depth used to distinguish an intruder-construction scenario from an intruder-drilling scenario, plus an additional 2 meters to attenuate radon in-growth from uranium decay. The guidance notes that arid or semi-arid sites may require more than 5 meters due to reduced radon attenuation.

The Commission previously directed NRC staff in SRM-SECY-08-0147 toward a site-specific technical analysis requirement for disposal of significant DU quantities, rather than

[16] Federal Register Document No. 2026-13302, disposal-depth discussion (5-meter near-surface minimum; 30-meter specialized-land-disposal-facility minimum).

a generic fixed classification or dimensional standard, on the basis that restrictions on DU disposal at a given site should be determined by site-specific analysis rather than a one-size-fits-all rule. The Department of Energy (DOE) prepared a Final Supplemental Environmental Impact Statement (SEIS) evaluating the disposition of depleted uranium oxide, in which it identified the Clive, Utah disposal site as one of the candidate sites suitable for that disposal.[17] The SEIS's underlying performance assessment and logic for the site near Clive, Utah supports disposing of depleted uranium at a distance from the final design surface of the closed embankment that is less than 5 meters (10 ft or about 3 m deep) measured from natural grade, provided that distance is equivalent to or exceeds the prescriptive depth proposed in the rule when measured to the engineered cover: it leverages natural site characteristics and engineered barriers to meet the inadvertent intruder performance objectives. The logic centers on substituting physical, non-potable groundwater and erosion-resistant desert conditions, along with a robust, multi-layer surface cap, to eliminate credible, high-dose exposure scenarios, so that the total protective distance from the waste to the final closed surface remains equivalent to or greater than the prescriptive depth even where the distance from natural, pre-excavation grade is less.

The Utah Division of Waste Management and Radiation Control (DWMRC) holds sole licensing authority over the Energy*Solutions* Clive site under the Agreement State program. The NRC establishes the overarching safety framework (10 CFR Part 61), but Utah implements and reviews the site-specific compliance details.

Recommendation. Energy*Solutions* proposes that the prescriptive depth requirement for 5-meter depth be removed from the proposed rule. The NRC should instead replace the drafted requirement in §61.52 (a)(2), (3) and (16) with a performance-based standard that allows burial depths to be justified through site-specific analyses supporting compliance with the performance objectives of 10 CFR Part 61, Subpart C, with the 5-meter figure included only in guidance as an alternative. These performance-based standards should allow for alternative burial depths without an exemption being required.

- If a licensee or applicant demonstrates that a shallower depth, measured from natural grade, meets all performance objectives, including protection of an inadvertent intruder and restriction of long-term radon flux, because the final engineered cover and embankment design achieve an equivalent or greater protective distance, the regulator should be able to approve it directly through the facility's Site-Specific Waste Acceptance Criteria (WAC).
- Inadvertent intruder protection should be a performance-based analysis: a licensee or applicant should be required to demonstrate it through the § 61.13(b)

[17] U.S. Department of Energy, Final Supplemental Environmental Impact Statement for Disposition of Depleted Uranium Oxide Conversion Product Generated from DOE's Inventory of Depleted Uranium Hexafluoride, DOE/EIS-0359-S1 and DOE/EIS-0360-S1 (2020); Record of Decision, June 5, 2020.

assessment, crediting disposal depth, engineered barriers, waste form, containerization, and site-specific hydrogeologic characteristics.

- As an alternative, the NRC could retain the prescriptive depths as an option for licensees who prefer the simplicity of a design-based compliance.
- Depth should be defined explicitly as being measured from the cover of the disposal cell, not the ground surface. Energy*Solutions* recognizes that the NRC proposes to measure from land surface rather than the cover to ensure protection against long-term surficial processes, on the premise that a cover's integrity at closure cannot be assumed to persist indefinitely. However, that concern is already, and independently, addressed by the erosion and long-term cover-stability analyses the performance assessment separately requires, making the from-ground measurement a redundant, overly prescriptive, and unnecessary requirement.

EO 14300 relevance. A rigid dimensional minimum can drive excavation, cell geometry, and capacity costs disproportionately to any incremental safety benefit where a site-specific analysis would support an equally protective alternative; A performance-based approach is not only the foundation of the proposed rule, is the least burdensome approach and is consistent with adequate protection.

Comment 7. Bounded, feasible modeling for site stability and long-term barrier and cover-system parameters (§ 61.44; preamble)

Issue. The proposed rule declines to require a full-compliance-period site stability demonstration because such a demonstration out to 10,000 years is difficult to support with current modeling tools.[18] The same feasibility limitation applies to long-term treatment of engineered-barrier and cover-system parameters, including whether such parameters should be modeled using as-built values or values reflecting long-term degradation.

Recommendation. Confirm in rule text and in NUREG-2175 that inadvertent intruder and stability demonstrations use realistic, bounded modeling, and provide a determinate, technically justified method for treating the long-term evolution of engineered-barrier and cover-system parameters, so that this modeling approach is consistent nationally rather than developed independently by each Agreement State. Consistent with Comment 1, the final rule should state that the licensing decision rests on the combination of (a) defense-in-depth protections, including siting, waste form and radionuclide content, engineered features, and the natural geologic features of the disposal site; (b) the quantitative performance assessment against the dose limit for the 1,000-year compliance period; and (c) the protective assurance period analysis covering 1,000 to 10,000 years, which assesses the sensitivity of projected dose to the assumptions used in the compliance-period analysis

[18] Federal Register Document No. 2026-13302, compliance-period discussion (§§ 61.2, 61.41(a), 61.42(a); depleted uranium in-growth and § 61.44 modeling-feasibility discussion).

and specifically addresses long-lived radionuclides with long groundwater travel times. The protective assurance period analysis informs the licensing decision and is not a pass/fail compliance demonstration, consistent with the Commission's treatment of that period in its 2015 framework and in NUREG-2175.

EO 14300 relevance. A single federal modeling method removes a recurring, high-cost, site-by-site technical dispute, directly reducing regulatory burden without reducing the underlying rigor of the analysis.

Comment 8. Backfitting, issue finality, and cost analysis for existing licensees

Issue. The proposed rule states that the Commission's backfitting and issue-finality provisions do not apply because Part 61 contains no backfitting provision and affected licensees are not within the scope of a regulation that contains such a provision.

Background. The absence of a codified backfit provision in Part 61 does not, by itself, relieve the Commission of the obligation to evaluate the cost impact of new requirements on existing licensees. The Commission's own regulatory-analysis practice, and the direction in EO 14300 to reduce unnecessary regulatory burden, each call for that evaluation independent of whether the formal backfit rule in 10 CFR 50.109 applies. The governing distinction, recognized in Union of Concerned Scientists v. NRC, 824 F.2d 108 (D.C. Cir. 1987), is between requirements necessary for adequate protection, for which cost may not be considered, and safety enhancements beyond adequate protection, for which the Commission may and does weigh economic cost. Energy*Solutions* does not contend that the Commission is barred from imposing the proposed requirements. It asks only that the Statements of Consideration document their cost and analytical effect on existing licensees.

Recommendation. Request that the Commission document, in the Statements of Consideration, the practical cost and analytical effect of the revised requirements on existing licensees and confirm that requirements triggered only upon a future license amendment, renewal, or closure application apply prospectively from that triggering action, consistent with the transition language in § 61.1(b).

EO 14300 relevance. A documented cost-impact finding for existing licensees is a direct component of the least-burden analysis EO 14300 requires, independent of whether the formal backfit rule applies.

Comment 9. Scope of the new safety case requirement (§§ 61.2, 61.10(c), 61.13(c)/(d), 61.23, 61.28)

Issue. The proposed rule would require a safety case synthesizing the site-specific technical analyses in § 61.13, with the Commission finding it adequate to support the licensing decision. The safety case's technical elements are already required under the current regulations in § 61.13.[19]

Recommendation. Energy*Solutions* proposes that the NRC confirm in the rule that the safety case is a synthesis of already-required § 61.13 analyses, **not a new standalone deliverable,** and that adhering to the NUREG-2175 materiality standard is sufficient to fulfill § 61.13. Energy*Solutions* does not support a standalone safety case. A materiality and significance standard should govern when an update to the safety case is triggered, rather than leaving that determination to open-ended discretion, given that Part 61 contains no backfitting or issue-finality provision to check new requirements imposed through this route. The objective of a safety case could be met, at lower cost, by a crosswalk table or table of contents referencing the underlying § 61.13 analyses rather than a new narrative document.

EO 14300 relevance. The Safety Case requirement is a new, burdensome requirement that runs counter to the Order's efficiency objective.

Comment 10. Open-ended performance-period standard (§§ 61.13(e), 61.41(b), 61.42(b))

Issue. The proposed rule requires that releases and inadvertent intruder exposures during the performance period beyond 10,000 years be "*effectively managed,*" without specifying an ending time or the criteria by which "*effectively managed*" is judged acceptable.

Recommendation. Add bounding language in rule text and NUREG-2175 clarifying that the performance-period analysis may terminate at or reasonably beyond the projected time of peak impact, and specify the acceptance criteria for "*effectively managed,*" so the obligation is determinate at the licensing stage.

EO 14300 relevance. An undefined, open-ended analytical and design obligation is a direct source of the regulatory unpredictability EO 14300 directs the Commission to eliminate.

[19] U.S. NRC, Proposed Rule, Integrated Low-Level Radioactive Waste Disposal, Federal Register Document No. 2026-13302 (published July 1, 2026), Executive Summary and Major Changes discussion

IV. Comments on 10 CFR Part 20

Comment 11. Revised definition of '*waste*' removing the transuranic-waste exclusion (§ 20.1003; conforming § 61.2)

Issue. The proposed rule deletes "*transuranic waste*" from the exclusion in the definition of "*waste*" in § 20.1003 and § 61.2, consistent with the Low-Level Radioactive Waste Policy Amendments Act of 1985 and Section 3(f) of the American Medical Isotopes Production Act of 2011.[20]

Recommendation. Energy*Solutions* supports this change. Energy*Solutions* requests that the Commission confirm the change does not alter the existing 100 nCi/g Class A treatment of transuranic radionuclides under § 61.55 or impose new characterization burdens on conventional LLW, and that the definition remain Compatibility Category B for nationwide uniformity.

EO 14300 relevance. This change is a direct example of the flexibility EO 14300 favors. It enables site-specific assessment of higher-concentration waste streams without disturbing the established classification of conventional LLW.

Comment 12. Coupling of Part 61 dose and ALARA provisions to Part 20 (§ 20.1101(b); §§ 61.13(a)/(e), 61.41(a), 61.43)

Issue. The proposed rule replaces the ALARA references in §§ 61.41 and 61.43 with a cross-reference to § 20.1101(b), so that future changes to Part 20 flow automatically into the Part 61 licensing basis.[21]

Recommendation. Confirm that the applicable Part 20 dose methodology for a given analysis is the methodology in effect at license issuance or amendment, not automatically displaced by a later Part 20 ALARA-type related revision absent a separate disposal-specific rulemaking, and provide transition relief so that existing, approved analyses are not invalidated mid-license-cycle by a change reaching disposal solely through the cross-reference.

[20] Federal Register Document No. 2026-13302, revised definition of "waste" discussion (§ 20.1003, § 61.2); Low-Level Radioactive Waste Policy Amendments Act of 1985; American Medical Isotopes Production Act of 2011, § 3(f).

[21] Federal Register Document No. 2026-13302, ALARA discussion (§ 20.1101(b) cross-reference replacing §§ 61.41 and 61.43 ALARA references).

EO 14300 relevance. An open cross-reference that imports future, unrelated Part 20 changes into a multi-thousand-year safety case creates cost and schedule uncertainty disproportionate to the benefit of the cross-reference, contrary to the Order's least-burden objective.

V. Comments on 10 CFR Part 73

Comment 13. Physical protection exemption for limited-attractiveness special nuclear material — Agreement State parity (§ 73.67; § 61.16)

Issue. The proposed rule adds an exemption from § 73.67 physical protection requirements for dilute, not-readily-separable special nuclear material (SNM) of limited attractiveness at a land disposal facility licensed by the NRC. The Commission states this exemption affects only NRC-licensed facilities, not Agreement State licensees, because Part 73 rests on the Commission's non-relinquishable common-defense authority.[22] The exemption does not relieve a licensee of physical protection obligations under Part 20, Subpart I, or, where applicable, Part 37.[23]

Background. Several Agreement State-licensed LLW facilities operate under a Section 274f exemption order addressing SNM in diffuse waste.[24] The risk-informed limited-attractiveness rationale the Commission now adopts for § 73.67 does not, by its terms, reach an Agreement State facility handling materially identical dilute SNM.

Recommendation. Confirm in the Statements of Consideration that the limited-attractiveness rationale informs the Section 274f exemption-order framework applicable to Agreement State facilities, so that such a facility is not held to a more conservative physical-protection basis than an NRC licensee for identical material and confirm that existing Section 274f exemption orders are not disturbed by this rulemaking. Confirm that the new § 61.16(b)(3) requirement to identify design features limiting post-disposal fissile reconcentration is implemented on a risk-informed basis proportionate to the dilute, not-readily-separable character of LLW.

EO 14300 relevance. Parity between NRC-licensed and Agreement-State-licensed facilities for identical material removes an unlevel regulatory burden without any offsetting security benefit, consistent with the least-burden objective.

---

[22] Federal Register Document No. 2026-13302, § 73.67 physical protection discussion, including the Part 20 Subpart I and Part 37 carve-out.

[23] Ibid.

[24] U.S. NRC, Staff Requirements Memorandum on SECY-98-226, Issuance of a Section 274f, Atomic Energy Act Order to Exempt Envirocare of Utah, Inc. From Licensing Requirements for Special Nuclear Material.

VI. Comments on 10 CFR Part 150

Comment 14. GTCC disposal as an exclusively NRC-licensed activity; concurrent authority at an Agreement State site (§ 150.15(a))

Issue. The proposed rule amends § 150.15(a) so that GTCC disposal is an activity that must be licensed exclusively by the NRC, because Section 3(b) of the Low-Level Radioactive Waste Policy Amendments Act makes GTCC disposal a Federal responsibility the Commission may not relinquish to an Agreement State.[25] An Agreement State facility that adds a GTCC unit would therefore operate under concurrent State and NRC authority at a single site.

Recommendation. Publish, in the final rule or accompanying guidance, the mechanics of concurrent State and NRC authority at a single site, including the division of inspection responsibility, fee assessment, and reporting, and commit to coordinated, concurrent licensing review rather than sequential review. NRC should clarify whether the entire facility or just the GTCC disposal unit is licensed by NRC. This is a live, not hypothetical, question given ongoing federal and State interest in siting integrated nuclear fuel-cycle infrastructure, including waste disposition, at existing sites.[26] Energy*Solutions* further recommends that the Commission use Part 61, Subpart F to formalize a defined mechanism for Agreement State input into NRC licensing of a GTCC unit co-located with, or adjacent to, an Agreement State-licensed disposal operation, addressing NRC's own question on this topic in Section 5 of the Supplementary Information.[27] Energy*Solutions* additionally recommends that NUREG-2175 add operational-interface guidance addressing the division of inspection responsibility, the sharing of monitoring data between the NRC and an Agreement State, and the control of shared infrastructure at a co-located site, so that the concurrent-licensing mechanics requested above have a defined operational counterpart in guidance.

EO 14300 relevance. Published concurrent-licensing mechanics, established before a specific project requires them, is precisely the kind of regulatory predictability EO 14300 directs the Commission to provide for capital-intensive, privately financed infrastructure.

---

[25] Federal Register Document No. 2026-13302, § 150.15(a) GTCC-exclusively-NRC-licensed discussion; Low-Level Radioactive Waste Policy Amendments Act § 3(b).

[26] U.S. Department of Energy, Department of Energy Seeks Hosts for Nuclear Lifecycle Innovation Campuses (news release), January 28, 2026; contemporaneous reporting on multi-State competitive responses.

[27] Federal Register Document No. 2026-13302, Section 5, "Specific Request for Comment" (seven numbered requests for stakeholder input).

Comment 15. Agreement State regulation of waste incidental to reprocessing (§ 150.15(a)(4))

Issue. The proposed rule revises § 150.15(a)(4) so that Agreement States may regulate the transfer, storage, or disposal of contaminated equipment or waste incidental to reprocessing that has been evaluated and approved as material to be disposed at a near-surface land disposal facility, provided it qualifies as Class A, B, or C. Federal authority is retained over the incidental-waste determination itself.[28] The Commission's related conforming amendment to § 150.11 is grammatical only, with no substantive effect.[29]

Recommendation. Energy*Solutions* supports this revision. Energy*Solutions* requests confirmation that, once the Federal incidental-waste determination is made, disposal of the associated resultant approved Class A, B, or C fraction, including LLW waste generated at a co-located or campus-adjacent reprocessing or recycling facility, may proceed under the Agreement State disposal license.

EO 14300 relevance. This clarification directly enables an efficient, co-located fuel-cycle-to-disposal model without requiring a new licensing category, consistent with the Order's efficiency objective.

Comment 16. Compatibility category for the near-surface GTCC performance objectives (for waste with significant quantities of long-lived radionuclides)

Issue. The proposed rule creates, for the first time, a federal pathway for commercial near-surface disposal of certain GTCC waste streams and other wastes that must follow GTCC waste stream criteria as identified in the proposed rule. Whether an Agreement State may layer additional procedural requirements onto waste categories the federal rule newly authorizes depends on the compatibility category assigned to the relevant provisions.

Recommendation. Assign the near-surface GTCC provisions a compatibility category that limits an Agreement State to the same technical and safety analyses that the federal rule itself requires, without foreclosing a State's independent authority under Section 274 of the Atomic Energy Act to decline particular waste streams through its own legislative process.

EO 14300 relevance. A tightly scoped compatibility category reduces federal-level burden without resolving State political questions, which remain for State legislatures, consistent with both the Order's least-burden objective and the Commission's statutory limits.

[28] Federal Register Document No. 2026-13302, § 150.15(a)(4) waste-incidental-to-reprocessing discussion; 27 FR 1350 (Feb. 14, 1962); NUREG-1854.
[29] Federal Register Document No. 2026-13302, § 150.11 [Amended] amendatory text.

Comment 17. Licensing consistency for facilities disposing of low-level radioactive waste under a RCRA 10 CFR 20.2002 provision

Issue. Some facilities licensed under the Resource Conservation and Recovery Act (RCRA) Subtitle C as hazardous waste facilities accept radioactive material under a case-by-case exemption process addressing only the disposal activity. Under this model, waste is received at a facility holding some form of radioactive material authorization, evaluated against an exemption standard, and then transferred to a hazardous-waste unit that is not independently licensed for radioactive material disposal.

Background. 10 CFR 20.2002 allows the Commission, on application, to approve disposal procedures not otherwise authorized in the Commission's regulations, on a case-by-case basis. This is a narrower, more limited process than a site-specific technical analysis and site-specific waste acceptance criteria under proposed §§ 61.13 and 61.58, and it does not require the same demonstrated performance objectives, safety case, or ongoing regulatory oversight that Part 61 establishes for a licensed near-surface disposal facility.

Recommendation. Energy*Solutions* is concerned that an applicant or licensee could seek to misapply the site-specific WAC in the proposed rule to a site that has accepted very low activity waste under 20.2002 but is not licensed under 10 CFR Part 61. Energy*Solutions* affirmatively supports higher waste-acceptance-criteria concentrations where justified by a site-specific performance assessment and considers such concentrations permissible under a 10 CFR Part 61 license on that basis. The NRC should confirm, in rule text or the Statements of Consideration, that the site-specific waste acceptance criteria provisions of 61.58 apply only to a site with a Part 61 license.

EO 14300 relevance. A single, consistent licensing standard for the activity of LLW disposal, regardless of the facility's underlying regulatory authorization, serves the Order's predictability objective and prevents the emergence of a lower-oversight disposal pathway operating alongside the risk-informed, performance-based framework this rule establishes.

VII. Crosscutting Comments on Executive Order 14300 Implementation

Comment 18. Licensing-timeline predictability for privately financed nuclear fuel-cycle infrastructure.

Issue. Current federal policy encourages private investment in integrated nuclear fuel-cycle infrastructure, including waste disposition, fuel fabrication, and reprocessing or recycling capability.[30] Private capital requires licensing-timeline predictability to underwrite multi-year, capital-intensive infrastructure investment.

[30] U.S. Department of Energy, Department of Energy Seeks Hosts for Nuclear Lifecycle Innovation Campuses (news release), January 28, 2026; contemporaneous reporting on multi-State competitive responses

Recommendation. Commit, in the final rule or implementing guidance, to a defined review timeline or an expedited, coordinated review pathway for license applications associated with a federally designated nuclear fuel-cycle site, consistent with the efficiency directive of EO 14300.

EO 14300 relevance. Timeline certainty is a direct input to private financing decisions and materially affects whether a project of national significance reaches construction, which is squarely within the Order's stated purpose.

VIII. Comments on NUREG-2175, Rev. 1 Guidance

Comment 19 Annual review under proposed 10 CFR 61.58(e): three-way scope inconsistency and no materiality threshold

Issue. The codified rule and the guidance contradict the NRC's request for comments on the topic of annual review. The proposed § 61.58(e) states that each licensee shall annually review the content and implementation of the waste acceptance criteria, waste characterization methods, and certification program. NUREG-2175, Rev. 1 Section 8.5 repeats that the review covers the content and implementation of the waste acceptance program. NRC's Specific Request for Comment, Question 3, however, describes it as an annual review of the inputs to the site-specific performance analysis.

Background. The proposed rule text and NUREG-2175, Rev. 1 scope the review to the waste acceptance program. The request for comment recasts it as a review of performance-analysis inputs, which is materially broader and could be read to require an annual re-examination of the performance assessment. NUREG-2175, Rev. 1, Section 8.5 provides no materiality threshold and directs a license-amendment path, with supporting technical analyses, whenever the review concludes the criteria no longer provide reasonable assurance. These inconsistencies pose risks to licensees, including a recurring annual burden with little safety benefit for a stable, well-characterized site, plus the opportunity for the review to become an annual re-opening of a DU PA. The unpredictability could create cost and schedule exposure without a commensurate safety benefit, especially as disposal of waste that is not properly accounted for in the site WAC already triggers a suitability review.

Recommendation. Confirm the annual review is not an annual performance assessment re-derivation. Conform the § 61.58(e) text, the NUREG-2175, Rev. 1 description, and the request-for-comment description of the review to a single bounded scope limited to waste-acceptance-program implementation and add an explicit threshold so only a change that

could plausibly affect a performance objective triggers a formal update. If it cannot be confirmed, then NRC should delete the 61.58(e) requirement.

EO 14300 relevance. Recurring, unbounded review obligations with no materiality threshold impose exactly the unpredictable, open-ended burden the Order directs the Commission to eliminate; a single conformed scope with a materiality threshold is the least-burdensome alternative consistent with adequate protection.

Comment 20. Inadequate Agreement-State-specific guidance; invites a patchwork

Issue. The guidance provides generic compatibility background but no tailored operational guidance for Agreement State reviewers. NUREG-2175, Rev. 1, Section 1.1.11 restates the compatibility categories and notes that references to NRC staff should be interpreted to mean Agreement State regulators as well. It does not tell an Agreement State reviewer how to apply the site-specific waste acceptance criteria review, the Appendix H site-specific significant-quantity alternative, or co-located GTCC oversight in a consistent manner.

Background. Under Compatibility Category C, an Agreement State may be more restrictive than NRC provided it meets the essential objective, so the absence of tailored guidance invites divergent State interpretations. Sites could face a more restrictive Agreement State interpretation of site-specific WAC or of the significant-quantity threshold than NRC applies, creating a competitive and cost disadvantage.

Recommendation. A generic substitution of Agreement State regulators for NRC staff is not implementation guidance. NRC should add Agreement-State-specific implementation guidance and bound the site-specific WAC technical-basis requirement to reduce inconsistent Category C implementation.

EO 14300 relevance. Inconsistent State-by-State implementation of the same federal standard is precisely the unpredictability the Order directs the Commission to reduce; tailored Agreement State guidance is a low-cost way to close that gap without narrowing States' independent authority.

Comment 21. Monitoring and performance confirmation can re-open the performance assessment without bounds

Issue. The guidance ties operational and environmental monitoring and performance confirmation to validating or refuting performance assessment parameters but does not bound how a monitoring result feeds into a mandatory PA update. NUREG-2175 discusses

how new site data might validate or refute the key parameters or model, and 10 CFR 61.53 requires environmental monitoring across construction, operation, and post-operation.

Background. NUREG-2175 discusses how new site data might validate or refute the key parameters or model, and 10 CFR 61.53 requires environmental monitoring across construction, operation, and post-operation. Without a materiality-gated anomaly-response process, a single anomalous monitoring result can be argued to refute a PA parameter and thereby compel a PA revision. Monitoring becomes a re-opening vector. A transient or localized anomaly at a site could trigger a costly PA revision and a license-amendment cycle disproportionate to any safety significance.

Recommendation. NRC should in NUREG-2175 define a graded, materiality-based anomaly response (i.e., investigate, then evaluate, then update only where a performance objective is plausibly affected). This should use the same materiality standard recommended for comments 19, above.

EO 14300 relevance. A retroactive reading of the significant quantity threshold would impose new-framework compliance on facilities that made no operational change, the opposite of the prospective, predictable application the Order directs; a clarified, prospective-only threshold and a deferential Appendix H standard are the least-burdensome way to close this ambiguity.

Comment 22. The 10-metric-ton figure is a significance threshold, not a disposal cap, and its treatment of historical disposal is ambiguous

Issue. Proposed 10 CFR 61.1(b)(1)(ii) provides that an amount greater than or equal to 10 metric tons of depleted uranium is considered a significant quantity of long-lived radionuclides. This is the trigger that removes the excepted-site accommodation, not a limit on how much DU may be disposed of. NUREG-2175, Rev. 1, Appendix H provides a site-specific alternative to the 10-metric-ton figure through a screening process, with the licensee bearing the basis.

Background. The rule does not state clearly whether the 10-metric-ton threshold looks only at DU accepted after the effective date or also counts historical or cumulative disposal. There are sites that have already emplaced far more than 10 metric tons of DU. The Appendix H alternative shifts a resource-intensive justification burden to the licensee and grants staff review discretion. Existing LLRW licenses could be argued into significant-quantity status based on historical disposal, which would remove its accommodation and pull it into the new framework. The site-specific alternative requires costly justification with uncertain acceptance.

Recommendation. NRC should clarify in rule text that the threshold applies prospectively to DU accepted after the effective date, and that historical disposal does not retroactively remove the 61.1(b) accommodation. Recommend the Appendix H review apply a bounded, deferential standard.

Comment 23. Worked inadvertent-intruder-assessment examples in draft NUREG-2175, Revision 1

Issue. Application of the general inadvertent intruder guidance to specific site types, particularly arid sites with non-potable groundwater and a deep-water table, is where the most significant implementation questions arise. The draft guidance does not appear to include a worked example for this site type.

Recommendation. Request that NUREG-2175, Rev. 1 include one or more worked inadvertent-intruder-assessment examples for arid, non-potable-groundwater, deep-water-table sites, illustrating the current-land-use scenario anchor, exclusion of a groundwater-ingestion pathway where groundwater is non-potable, and crediting of disposal depth and waste form.

EO 14300 relevance. A worked federal example reduces the interpretive space in which State-by-State implementation variability arises, directly serving predictability.

IX. Responses to NRC's Specific Requests for Comment

Section 5 of the Supplementary Information to the proposed rule poses seven specific requests for comment.[31] Energy*Solutions* responds to each below, cross-referencing the comments in Sections III through VII where a fuller discussion appears.

Question 1 — Analytical timeframes up to 10,000 years and specialized-facility concentration ranges (10,000 to 500,000 nCi/g and higher)

(a) Challenges from performing analyses over these timeframes: The principal challenge is that the Commission has itself found that a full 10,000-year demonstration is difficult to support with current modeling tools for site stability.[32] The same limitation applies to long-term treatment of engineered-barrier and cover-system parameters. See Energy*Solutions'* Comment 7, above.

[31] Federal Register Document No. 2026-13302, Section 5, "Specific Request for Comment" (seven numbered requests for stakeholder input).

[32] Federal Register Document No. 2026-13302, compliance-period discussion (§§ 61.2, 61.41(a), 61.42(a); depleted uranium in-growth and § 61.44 modeling-feasibility discussion).

(b) Steps to clarify expectations and maximize realism and fidelity: Provide a determinate, technically justified method in NUREG-2175 for treating long-term parameter evolution, and include worked examples for specific site types, including arid, non-potable-groundwater, deep-water-table sites. See Energy*Solutions'* Comments 5 and 23, above.

(c) Alternative approaches, including durations or qualitative factors graded by waste concentration: Energy*Solutions* recommends a 1,000-year quantitative compliance period for all licensees, with the long-lived and high-concentration GTCC analysis carried in a qualitative performance-period analysis beyond 1,000 years, consistent with the Commission's own 2015 proposed approach. See Comment 1. A graded approach tied to concentration, with more detailed quantitative analysis expected as concentration approaches the upper end of the 10,000 to 500,000 nCi/g specialized-facility range, may provide a workable middle path if the Commission does not adopt Energy*Solutions'* primary recommendation.

Question 2 — State insight into NRC licensing of GTCC facilities; Part 61, Subpart F

(a) Steps to ensure States' insights are considered: Formalize a defined consultation mechanism in Part 61, Subpart F for the Agreement State in which a GTCC unit would be located, particularly where that unit is co-located with, or adjacent to, an existing Agreement State-licensed LLW disposal operation. See Energy*Solutions'* Comment 14, above.

(b) Whether Subpart F appropriately enables State input: As proposed, Subpart F does not clearly provide for Agreement State input specific to a co-located licensing scenario. Energy*Solutions* recommends the Commission add such a mechanism, paired with the concurrent-licensing mechanics requested in Energy*Solutions'* Comment 14, above, so that State input is structured rather than ad hoc.

Question 3 — Sufficiency of the § 61.58(e) annual review of site-specific performance analysis inputs

Response. Energy*Solutions* recommends the review only be made where a significant change in input could plausibly affect a performance objective, rather than requiring a full re-review of immaterial input changes each year. This is a direct extension of the least-burden principle in Energy*Solutions'* Comment 9 (safety case scope), above, and Energy*Solutions'* Comment 18 (licensing-timeline predictability), above.

Question 4 — Novel GTCC waste streams from advanced reactors, advanced fuels, emerging reprocessing, and expanded medical/industrial radioisotope use

Response.

(a) Whether proposed concentration limits, performance assessment methodology, and waste characterization expectations remain valid: Energy*Solutions* has no site-specific operating experience with these emerging streams at this time and defers on the technical validity question, but notes that any framework adopted should be performance-based rather than prescriptive by waste-stream category, consistent with the rule's stated direction, so that a novel stream is evaluated on its actual radiological characteristics rather than requiring a separate rulemaking each time a new stream type is identified.

(b) Alternatives or considerations for novel streams: Energy*Solutions* recommends the Commission confirm that the existing site-specific technical analysis framework in § 61.13, together with site-specific WAC under § 61.58, is sufficient to evaluate a novel waste stream without further rule amendment, and that NUREG-2175 be updated periodically, rather than the rule itself, as new stream types are identified.

Question 5 — Unquantified costs and benefits in the regulatory analysis

Response. Energy*Solutions* does not have quantified cost or operational-experience data to offer at this time regarding unquantified benefits such as increased disposal efficiency or reduced long-term uncertainty. Energy*Solutions* notes that the current regulatory analysis concludes net cost savings of $39.4 million (7-percent discount rate) or $69.9 million (3-percent discount rate) over a 30-year period,[33] and recommends the final regulatory analysis be updated to reflect the most current available data, including any information provided by other commenters with direct operational cost experience in this area.

Question 6 — Site-specific WAC allowing GTCC specialized-facility concentrations above the standard limit

Response.

(a) Benefits and drawbacks; use cases: A site-specific WAC pathway allowing concentrations above the generic specialized-facility limit benefits a site, such as Clive, with strong natural and engineered barriers (arid climate, deep water table, non-potable groundwater) that can support a higher concentration without a corresponding increase in projected dose. The principal drawback is the compatibility-category risk addressed in Comment 4, above without a bounded, documented technical-basis requirement, this flexibility could be implemented inconsistently across Agreement States.

(b) Potential limits on concentration: Energy*Solutions* recommends any upper bound be performance-based, tied to the site-specific technical analyses in § 61.13, rather than a

[33] Id., regulatory analysis discussion (net cost savings of $39.4 million at a 7-percent discount rate and $69.9 million at a 3-percent discount rate over a 30-year analysis period).

separate fixed numerical ceiling above the generic limit, so that a site with a strong safety case is not constrained by a concentration limit unrelated to its actual demonstrated performance. Alternatively, the language in 61.55(c), as currently written, is adequate to accommodate other cases; and if remains unchanged it would result in no additional limits or concentrations.

Question 7 — Safety case guidance sufficiency, best practices, and supporting materials

Response.

(a) Sufficiency of draft NUREG-2175 guidance: As discussed in Energy*Solutions'* Comment 9, above, Energy*Solutions* opposes the addition of a stand-alone safety case to Part 61. It is unnecessarily burdensome without providing commensurate additional protection of human health and safety. Further, it seems unlikely that a standalone safety case will serve as a reviewer aid, as suggested by NRC staff at the public meeting, because a proper review must assess the details of an application, not a summary. Lastly, it offers opportunities for differing interpretations that would undoubtedly lead to requests for additional information (RAIs) that focus on superficial summary language rather than substantive technical issues that will drive a licensing review forward.

(b) International or domestic best practices: No, Energy*Solutions* is not aware of any best practices that should be added to Part 61. We do not believe NRC should import the stand-alone international safety case into Part 61. While international safety case frameworks may be useful in regulatory systems that are built around life-cycle safety case submissions, the U.S. Part 61 framework has historically relied on prescriptive regulatory requirements site-specific technical demonstrations, license conditions, performance objectives, and regulatory review of the underlying analyses.

(c) Additional guidance or supporting materials: Guidance for a crosswalk in the application or table of contents that indexes the safety case topics would be helpful and thus eliminate redundancy. Alternatively, guidance for an optional safety case could be improved with the addition of a worked safety case example for an arid, non-potable-groundwater site, paired with the worked inadvertent intruder-assessment example requested in Energy*Solutions'* Comment 23, above, would materially assist implementation.

X. Conclusion

Energy*Solutions* supports the Commission's risk-informed modernization of Parts 20, 61, 73, and 150 and offers these comments to improve the effectiveness, clarity, internal consistency, and EO 14300 alignment of the proposed requirements, while preserving protection of public health and safety. Energy*Solutions* would welcome the opportunity to discuss these comments further.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-nipm-i2i7
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0250
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Waste Control Specialists, LLC

Submitter Information

Email: sward@wcstexas.com
Organization: Waste Control Specialists, LLC

General Comment

Please see attached letter for comments from Waste Control Specialists, LLC.

Attachments

Final NRC Comments Letter

WASTE CONTROL SPECIALISTS

August 17, 2026 **VIA EMAIL**

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attention: Rulemaking Comments – Docket ID NRC-2011-0012
Submitted via Regulations.gov

Re: WCS Comments on Proposed Integrated Low-Level Radioactive Waste Disposal Rule

Waste Control Specialists (WCS) submits the following comments on the Nuclear Regulatory Commission's (NRC) proposed Integrated Low-Level Radioactive Waste Disposal rule. We recognize that arriving at this proposal has been a long and complex process, and we appreciate the contributions of all who have advanced it to this stage.

Waste Control Specialists LLC (WCS) strongly supports the Commission's proposed transition from a disposal framework based primarily on generic radionuclide concentration limits to a framework that relies on site-specific technical analyses, performance assessments, and facility-specific demonstrations of safety.

The existing classification system established in 1982 provided an appropriately conservative framework based upon the waste streams, disposal technologies, and facility designs anticipated at that time. However, the current regulatory structure does not fully account for substantial differences among disposal facility designs, geologic settings, disposal depths, engineered barriers, and waste characteristics. The proposed rule appropriately recognizes that safe disposal should be determined based upon facility-specific performance rather than solely through generic radionuclide concentration limits developed using assumptions that may not reflect modern disposal practices.

WCS supports NRC's continued emphasis on demonstrating compliance through site-specific technical analyses, including performance assessments, inadvertent intruder assessments, operational safety assessments, site stability evaluations, and supporting safety case documentation.

WCS has comments and suggestions on 11 areas of the proposed rule. We have attached other observations and comments on NUREG-2175 Rev.1, and responses to some of the questions posed in the Federal Register.

Dallas Office
Waste Control Specialists LLC
17103 Preston Road, Suite 200
Dallas, TX 75240
P. 682-503-0030
F. 214-853-5720

Andrews Facility
Waste Control Specialists LLC
P.O. Box 1129
Andrews, TX 79714
P. 432-525-8500

Comments:

1. **NRC Should Retain the Ability to Relinquish Regulation of GTCC Disposal to Agreement States**

Waste Control Specialists LLC (WCS) respectfully disagrees with the proposed rule's conclusion that licensing authority for disposal of Greater-Than-Class C (GTCC) waste cannot be relinquished to Agreement States and must remain exclusively with the Nuclear Regulatory Commission (NRC). WCS respectfully requests that the Commission:

1. Not adopt the proposed provision stating that regulation of GTCC disposal cannot be relinquished to Agreement States;

2. Restore the previously contemplated framework allowing Agreement State licensing of GTCC waste streams that satisfy the requirements for near-surface disposal;

3. Confirm that a facility licensed by an Agreement State pursuant to Section 274 meets the intent of the requirement in 42 U.S.C. § 2021c(b)(2) for disposal in a facility licensed by the Nuclear Regulatory Commission; and

4. Retain NRC authority only for those GTCC waste streams that present hazards warranting direct federal regulation.

WCS owns and operates a commercial low-level radioactive waste disposal facility in Andrews County, Texas, licensed by the State of Texas pursuant to its Agreement State authority under Section 274 of the Atomic Energy Act. As a current disposal facility licensee operating within the Agreement State framework, WCS has a direct interest in how the Commission allocates regulatory authority over GTCC disposal.

The proposed rule concludes that the Commission must retain sole licensing authority because Section 3(b)(2) of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (42 U.S.C. § 2021c(b)(2)) directs that GTCC waste be disposed of in a facility "licensed by the Nuclear Regulatory Commission." NRC now interprets this provision as prohibiting Agreement State licensing and requiring exclusive federal authority. However, the statutory text does not compel that conclusion.

NRC previously reached a different interpretation and directed staff to develop a framework that would allow Agreement State licensing of certain GTCC waste streams suitable for near-surface disposal. NRC's earlier position confirms that the statutory language is at a minimum susceptible to more than one reasonable interpretation.

Section 274 of the Atomic Energy Act expressly authorizes the Commission to enter into agreements under which a State assumes and exercises NRC's licensing authority over covered radioactive materials. Under this structure, an Agreement State license is not independent of NRC authority; it is NRC's relinquished authority exercised by the State within a federally established and federally overseen regulatory framework. Read in conjunction with Section 274, a facility licensed by an Agreement State pursuant to a Section 274 agreement can reasonably be understood as a facility licensed within NRC's regulatory program.

Nothing in Section 2021c(b)(2) states that a disposal facility must be licensed only by NRC, nor does it expressly exclude Agreement State participation.

Significantly, Congress demonstrated elsewhere in the Atomic Energy Act and related statutes that it knows how to prohibit Agreement State licensing when it intends to do so. The statute contains explicit limitations on Agreement State authority in other contexts, including certain spent fuel and reactor-related activities. By contrast, Section 2021c(b)(2) contains no comparable prohibition applicable to GTCC disposal. The omission of such limiting language is notable and weighs against interpreting the provision as imposing exclusive federal licensing authority.

The statutory structure further supports continued Agreement State participation. GTCC waste is defined as a subset of low-level radioactive waste exceeding the Class C concentration limits established by NRC. Low-level radioactive waste disposal has historically been regulated through the Agreement State program, and the Low-Level Radioactive Waste Policy Amendments Act was enacted against the backdrop of commercial disposal facilities already licensed and regulated by Agreement States. Removing a subset of low-level radioactive waste from that established regulatory structure would represent a significant departure from the framework Congress understood and preserved when it enacted the legislation.

The Commission's own prior interpretation further contradicts the conclusion that the statute plainly requires exclusive NRC authority. In directing development of the integrated rulemaking, the Commission previously supported a framework that would have allowed Agreement State licensing of GTCC waste streams meeting specified criteria for near-surface disposal while retaining NRC authority over other waste streams warranting direct federal oversight. NRC now proposes to reverse that position based on its revised statutory interpretation. The proposed rule does not identify any intervening statutory amendment, judicial decision, or safety-related development that necessitates a different reading of the same statutory language.

The proposed framework would also create a potentially inefficient dual-regulator structure at commercial disposal facilities. Under such a system, an Agreement State could regulate Classes A, B, and C waste disposed within a facility while NRC separately regulates GTCC waste disposed within the same engineered disposal system and physical site. Such bifurcated oversight could result in duplicative inspections, inconsistent regulatory expectations, overlapping reviews, and unnecessary administrative burdens without producing a corresponding improvement in public health and safety.

Beyond the legal issues, WCS is concerned that the proposed approach underestimates the demonstrated technical competence of Agreement State regulators and creates unnecessary regulatory complexity. Agreement States currently regulate disposal of Class A, B, and C waste, including waste streams containing significant concentrations of long-lived radionuclides, requiring sophisticated performance assessments. States such as Texas possess decades of experience evaluating site characterization data, hydrogeologic conditions, long-term performance analyses, and disposal facility operations. Agreement State regulators are often better positioned to evaluate site-specific conditions because they maintain direct familiarity with the local geology, hydrology, and environmental setting of the facilities they regulate.

Importantly, NRC's stated rationale for exclusive federal authority is not necessary to ensure protection of public health and safety. Section 2021c(b)(2) already requires the Commission to determine that disposal will be adequate to protect public health and safety. Likewise, NRC's adequate protection and compatibility requirements, technical criteria, performance objectives, and oversight of Agreement State programs provide substantial assurance that relinquished regulatory authority continues to meet federal standards. If NRC believes certain GTCC waste streams warrant direct federal oversight because of their unique hazards, Section 274 already provides a mechanism for NRC to retain authority over those specific waste streams while permitting Agreement State licensing of qualifying GTCC waste suitable for near-surface disposal.

2. WCS Support for a 10,000-Year Compliance Period for GTCC Waste Performance Evaluations

WCS strongly supports the proposed 10,000-year compliance period for site-specific performance assessments evaluating the disposal of Greater-Than-Class C (GTCC) waste and other wastes containing significant quantities of long-lived radionuclides and encourages the Commission to retain this requirement in the final rule. The proposed compliance period is consistent with the long-term hazards presented by GTCC waste, reflects sound scientific and regulatory practice, and represents an appropriate risk-informed approach for demonstrating protection of public health and safety. The proposed compliance period is also consistent with the Commission's broader objective of ensuring that disposal facilities evaluate the performance of site characteristics, engineered barriers, and waste forms over the period during which long-lived radionuclides may meaningfully contribute to risk.

WCS already operates under a regulatory framework that requires evaluation of long-term performance over a 10,000-year period and therefore has practical experience with the development, review, and implementation of long-duration compliance demonstrations. Based on that experience, WCS believes that a 10,000-year compliance period is both technically achievable and appropriate for disposal systems intended to manage radionuclides with long-lived hazard profiles.

Importantly, maintaining a 10,000-year compliance period also promotes public confidence in the regulatory framework governing GTCC disposal. Members of the public expect that disposal systems

intended to isolate long-lived radionuclides will be evaluated over a period commensurate with the duration of potential hazard. A 10,000-year compliance period demonstrates that both regulators and licensees have thoroughly considered long-term system performance and have evaluated the effects of degradation mechanisms, environmental change, and radionuclide transport over periods relevant to GTCC waste disposal.

WCS supports retaining the proposed 10,000-year compliance period without modification. The proposed timeframe provides a reasonable, scientifically justified, and risk-informed framework for evaluating long-term disposal system performance, ensures that potential peak radiological impacts are appropriately considered, supports robust uncertainty and sensitivity analyses, and provides a strong basis for demonstrating reasonable assurance of public health and safety. The 10,000-year compliance period should remain a central component of the final rule for disposal of GTCC waste and other long-lived radionuclide inventories.

3. **Misalignment of Part 61 and Part 72 Regarding GTCC**

The proposed ILLRWD rule appropriately modernizes the regulatory framework for Greater-Than-Class-C (GTCC) waste by recognizing that many GTCC waste streams, including certain transuranic (TRU)-bearing wastes, can be safely managed through site-specific performance assessments and risk-informed disposal criteria under 10 CFR Part 61. This shift represents a significant and positive evolution from the historical assumption that all GTCC waste lacked a viable commercial disposal pathway.

The corresponding storage framework has not been modernized to reflect these changes. As currently structured, a regulatory disconnect exists between the proposed revisions to Parts 61 and 72. While revised Part 61 removes the blanket exclusion of certain waste streams from commercial land disposal and treats GTCC as a subset of low-level radioactive waste subject to risk-informed evaluation, Part 72 continues to limit dry-cask storage authority to spent fuel, high-level radioactive waste, and "power reactor-related GTCC waste."

This misalignment creates an incomplete regulatory lifecycle for GTCC waste and risks producing uncertainty for waste generators, disposal facilities, Agreement States, and NRC regulators. As disposal pathways expand under a modernized Part 61 framework, corresponding storage pathways should be available, clearly defined, and predictable. Otherwise, waste streams that NRC has determined can be safely managed and ultimately disposed of under Part 61 could nevertheless become stranded because an appropriate interim storage pathway has not been clearly authorized.

The continued linkage between GTCC waste and the spent fuel storage framework also appears increasingly inconsistent with the fundamental policy direction reflected in the proposed ILLRWD rule. Historically, GTCC waste became associated with Part 72 because a commercial disposal pathway was unavailable. However, GTCC waste is not spent nuclear fuel, is not high-level radioactive waste, and is not necessarily technically analogous to the materials traditionally regulated under Part 72. As NRC moves toward a risk-informed, performance-based disposal framework capable of evaluating GTCC

waste on a site-specific basis, the Commission should also evaluate whether existing storage regulations appropriately reflect that evolution.

WCS recommends that the NRC ensure greater alignment between its storage and disposal regulations for GTCC waste.

Regarding specific recommended revisions to 10 CFR Part 72, including proposed amendments to § 72.2(a)(1) and (2), WCS refers the Commission to its separately submitted comments on the NRC's Modernizing Materials Licensing rulemaking (Docket ID NRC-2025-1370). Those comments provide detailed regulatory language and recommendations to remove GTCC waste from the scope of Part 72. WCS encourages the Commission to consider the two rulemakings together to ensure development of a coherent, integrated regulatory framework for the storage and disposal of GTCC waste.

4. Assumptions Regarding New Facility Construction

The proposed rule appears to assume that future GTCC disposal capacity will be provided through the development of new NRC-licensed facilities. By concluding that authority over GTCC waste disposal cannot be relinquished to Agreement States, the rule does not clearly address how existing commercial LLRW disposal facilities operating under Agreement State licenses could be considered for expanded GTCC disposal authority.

The NRC should clarify how it intends to accommodate GTCC disposal at existing commercial disposal facilities while avoiding the complexities associated with dual regulation. In Texas, for example, an existing disposal facility may have the technical capability and available disposal capacity to support GTCC disposal through expansion of an already licensed federal waste disposal unit. However, the proposed framework could result in overlapping NRC and Agreement State licensing and oversight responsibilities, creating regulatory uncertainty, duplicative requirements, and inefficiencies in both the licensing and operational processes. Historically, dual-regulation arrangements have proven difficult to administer and should be avoided wherever practicable. The NRC should explain how existing disposal facilities could pursue GTCC disposal authorization under the proposed rule and identify mechanisms to ensure a clear and efficient regulatory pathway that respects the established role of Agreement States.

5. NRC Should Clarify the Safety Case Requirement

WCS supports development of a safety case as a mechanism for communicating the overall basis for facility safety. The proposed rule specifically describes the safety case as the mechanism through which additional disposal pathways for GTCC waste and future waste streams may be evaluated.

WCS offers suggestions concerning the proposed rule and associated guidance that should more clearly define the scope, purpose, and acceptance criteria associated with a safety case. The NRC should explicitly state:

- The safety case is a reasonable-assurance demonstration;
- The safety case integrates quantitative and qualitative evidence;
- Long-term performance assessments should be evaluated within the broader context of defense-in-depth and multiple barriers;
- The safety case does not create independent performance objectives beyond those already established in Part 61;
- Regulatory reviews should focus on whether the totality of evidence demonstrates protection of public health and safety; and
- Provide an illustrative example safety case in an appendix to NUREG-2175 to improve consistency and transparency during implementation.

Such clarification would improve regulatory predictability, ensure consistent implementation across jurisdictions, and support the rule's stated objective of providing greater flexibility and clearer disposal pathways for future waste streams.

6. NRC Should Preserve Flexibility Regarding Defense-in-Depth

WCS supports defense-in-depth as a fundamental safety philosophy for radioactive waste disposal.

WCS recommends revising the definition of defense-in-depth to: "Defense-in-depth, with respect to low-level radioactive waste disposal means the use of multiple independent layers of defense against release of radioactive material such that no single layer, no matter how robust, is exclusively relied upon."

Disposal facilities differ fundamentally from active nuclear facilities such as reactors. Long-term performance depends primarily upon passive barriers including geology, disposal depth, engineered barriers, waste form performance, and site stability.

The proposed definition of defense-in-depth could be interpreted as requiring redundant barriers where redundancy may provide little additional safety benefit relative to multiple independent barriers.

The requirement for redundancy should be removed or clarified to avoid unnecessary regulatory uncertainty.

Additionally, in draft NUREG-2175 “where possible” is not explained and should be replaced with “where necessary” to align with technical assessments. The current “where possible” language creates ambiguity, because who will define what is possible.

7. NRC Should Reconsider Certain Public Dose Provisions

WCS supports NRC's transition to dose-based performance objectives and references to Part 20 standards. The proposed rule does not fully explain why disposal facilities should be subject to a public dose standard that is four times lower than the generally applicable NRC public dose limit. If the lower limit is intended to reserve dose allocation for other sources, NRC should explicitly explain the underlying assumptions and demonstrate that the more restrictive limit provides a meaningful safety benefit.

We suggest the NRC proposed rule should either (1) rely directly on the public dose limits established in 10 CFR 20.1301, where Total Effective Dose Equivalent (TEDE) to an individual member of the public shall not exceed 1 mSv/year (100 mrem/year), or (2) provide a clear technical and regulatory basis for establishing the more restrictive 0.25 mSv/year (25 mrem/year) limit in § 61.43.

8. Treatment of Short-Lived Table 2 Radionuclides

WCS supports the NRC's continued use of the Class A, B, and C waste classification framework as a useful screening and waste characterization tool.

Under the proposed rule, disposal facilities seeking to dispose of long-lived radionuclides, significant quantities of depleted uranium, or GTCC waste would be required to perform detailed site-specific technical analyses, including performance assessments and inadvertent intruder assessments, demonstrating compliance with §§ 61.41 and 61.42. These analyses are intended to evaluate actual projected doses based on facility design, waste form characteristics, engineered barriers, site conditions, and disposal configuration.

NRC should consider establishing a site-specific, performance-based pathway under which waste exceeding the Class C concentration limits in § 61.55 may remain eligible for disposal in a licensed near-surface disposal facility when the applicant demonstrates compliance with the performance objectives of §§ 61.41 and 61.42 and provides disposal measures commensurate with the projected hazard. Such an approach would be consistent with the risk-informed and performance-based principles that underlie the ILLRWD rulemaking and would allow disposal decisions to be based on demonstrated safety rather than concentration thresholds alone.

We propose that the NRC add a fifth condition to NRC 61.55(b)(2) as item (ii):

(2) Classification determined by radionuclide concentrations.
(i) Waste that is Class A pursuant to § 61.55(a)(6) because it does not contain any of the radionuclides in Table 1 or Table 2 of § 61.55(a) is Class A waste irrespective of the comparison of the radionuclide concentrations in the waste to the values in Table 3.

(ii) Waste that exceeds one or more Class C concentration limits in Table 2 of this section may be disposed of in a near-surface disposal facility licensed pursuant to this part or by an Agreement State, notwithstanding paragraph (b)(2)(iii), provided that:

(A) The disposal facility demonstrates compliance with the performance objectives of §§ 61.41 and 61.42;

(B) The performance assessment and inadvertent intruder assessment required by this part demonstrate that projected doses remain within applicable regulatory limits throughout the compliance period;

(C) The waste is disposed using engineered barriers, waste form requirements, or disposal methods commensurate with the projected hazard and sufficient to ensure compliance with the performance objectives of this part; and

(D) The disposal of such waste is specifically authorized in the facility license.

(iii) Waste with radionuclide concentrations that exceed the Class C limits under § 61.55(a) is Greater-Than-Class-C if the radionuclide concentrations in the waste do not exceed any of the values in Table 3.

(iv) Waste that exceeds one or more of the values in Table 3 in this section is not generally acceptable for land disposal unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are approved by the Commission.

(v) The concentration of a radionuclide may be determined by indirect methods as described in paragraph (a)(8) of this section.

The proposed revisions to § 61.55 continue to rely on generic concentration-based thresholds to determine when waste is classified as Greater-Than-Class-C (GTCC), while the broader ILLRWD rulemaking increasingly relies on site-specific performance assessments and inadvertent intruder analyses to evaluate the actual safety of disposal.

Despite this increased reliance on performance-based analyses, the proposed classification framework may continue to preclude near-surface disposal of certain waste streams solely because radionuclide concentrations exceed the generic Class C limits in § 61.55, even where the required performance assessment and inadvertent intruder assessment demonstrate compliance with the Part 61 performance objectives. This creates a disconnect between the rule's reliance on site-specific risk evaluations and the continued use of generic concentration limits as the ultimate determinant of disposal eligibility. This concern is particularly relevant for radionuclides such as Sr-90 and Cs-137, which are included in the Table 2 classification framework but are not specifically addressed in Table 3. As a result, the proposed rule does not clearly explain how waste exceeding a Table 2 Class C concentration limit solely due to

these relatively short-lived radionuclides should be classified when site-specific performance assessments and inadvertent intruder assessments demonstrate compliance with §§ 61.41 and 61.42.

The proposed rule already establishes that protection of the public and inadvertent intruders is demonstrated through compliance with §§ 61.41 and 61.42. As proposed, § 61.42 requires that annual doses to an inadvertent intruder not exceed 5 mSv (500 mrem) during the compliance period, as demonstrated through a site-specific inadvertent intruder assessment. Where a disposal facility can demonstrate compliance with these performance objectives, the basis for prohibiting disposal solely because a generic concentration threshold has been exceeded becomes less apparent.

Such an approach would better align waste classification requirements with the performance-based framework established elsewhere in the proposed rule and would ensure that disposal decisions are based on actual projected risk rather than concentration limits alone.

9. Clarification of Continued Disposal of Depleted Uranium at Existing Agreement State Facilities

The proposed rule appropriately recognizes that Agreement States may continue to license the disposal of significant quantities of long-lived radionuclides, including depleted uranium (DU), under the revised Part 61 framework.

The discussion in Section IV.B.i. of the FRN could be interpreted to suggest that continued DU disposal would be prohibited immediately upon the effective date of the final rule unless the Agreement State first adopts compatible regulations and the licensee completes a new performance assessment and licensing review under the revised Part 61 framework. If that interpretation is correct, the proposed rule could result in an unintended and highly disruptive interruption of ongoing disposal operations at existing licensed facilities. Such an outcome would be inconsistent with the Commission's stated objective of maintaining regulatory stability for existing disposal facilities.

Accordingly, the NRC should clarify in the final rule, Statements of Consideration, or associated guidance that:

1. Existing Agreement State licensees currently authorized and disposing of significant quantities of depleted uranium may continue conducting those activities under their existing licenses until such time as the Agreement State adopts compatible regulations and determines whether license amendments or updated technical analyses are necessary.

2. The effective date of the federal rule is not intended to automatically suspend, invalidate, or otherwise interrupt disposal activities authorized under an existing Agreement State license.

3. Any transition to the revised Part 61 requirements for depleted uranium disposal should occur through the normal Agreement State compatibility and licensing processes, including reasonable

implementation timeframes for regulatory adoption, performance assessment updates, and license amendments where required.

4. The NRC should explicitly state that the final rule is not intended to create a disposal moratorium or operational gap for existing DU disposal programs during the period between NRC rule issuance and Agreement State implementation.

Absent such clarification, stakeholders may reasonably conclude that ongoing DU disposal activities could be halted upon the effective date of the rule, pending future state regulatory action and license modifications. Such a result would represent a significant unintended consequence that could disrupt existing disposal capacity, adversely affect waste generators, and undermine the regulatory stability that the proposed rule otherwise seeks to preserve.

NRC should provide explicit transition provisions and implementation guidance confirming that existing licensed DU disposal operations may continue without interruption while Agreement States complete their rulemaking and licensing processes. This clarification would preserve regulatory certainty, avoid unnecessary operational disruptions, and remain fully consistent with the risk-informed and performance-based objectives of the Integrated Low-Level Radioactive Waste Disposal Rulemaking.

10. NRC should keep the proposed requirement to dispose of significant quantities of DU at a minimum depth of 5 meters below the surface

WCS strongly supports the use of disposal depth as an important component of the proposed regulatory framework for significant quantities of depleted uranium and other long-lived radionuclides. Burial depth provides a straightforward and effective means of enhancing long-term site stability, reducing the likelihood and consequences of inadvertent intrusion, and mitigating uncertainties associated with long-term geomorphological processes. The proposed requirement to dispose of significant quantities of depleted uranium at a minimum depth of 5 meters below the original land surface is a technically sound and risk-informed approach that supports compliance with the performance objectives of §§ 61.41, 61.42, and 61.44. Deeper disposal reduces the probability that future human activities or natural processes could disturb disposed waste and provides additional protection against long-term radionuclide release pathways. WCS also supports the guidance provided in Section 1.1.9 and Appendix H of Draft NUREG-2175 regarding disposal of significant quantities of depleted uranium. Because depleted uranium decays to radon-producing progeny and peak impacts may not occur for tens of thousands of years, disposal depth serves as an important passive barrier that helps address long-term uncertainties that are inherently difficult to model.

11. NRC should clarify that when referencing "new applicant" they are not meaning a new application for renewal.

The NRC should clarify that the term "new applicant" refers only to an applicant seeking an initial license for a new disposal facility and does not include existing licensees pursuing license renewal or routine

license amendments. As drafted, the proposed language could be interpreted as subjecting renewal applicants to technical and licensing requirements intended for new facilities, creating unnecessary regulatory uncertainty. Explicitly distinguishing between new facilities and existing licensed operations would improve clarity and avoid inconsistent implementation of the rule.

Attached to this letter, we provide responses to several of the Federal Register Notice (FRN) questions along with WCS comments on NRC's Modernizing Materials Licensing rulemaking. Once again, WCS appreciates the great work multiple staff members put into this proposal. We offer these comments and observations in the spirit of improving the proposal.

Please do not hesitate to contact us if you have any questions regarding these comments.

Sincerely,



David Carlson
President and Chief Operating Officer
Waste Control Specialists
dcarlson@wcstexas.com
865-201-3191

Attachments:

1. Other Observations and Comments on Draft NUREG-2175

2. Responses to Selected FRN Questions

Attachment 1

Other Observations and Comments on Draft NUREG-2175

A. Regarding site specific technical analysis, WCS supports the use of site-specific technical analyses to demonstrate that low-level radioactive waste can be safely disposed.

The current disposal regulations are based on generic concentration limits determined by NRC analyses using methods from the early 1980's. The current limits as to what constitutes waste generally acceptable for near-surface disposal (Class C and below) are based on facility designs employing shallow trenches. The inadvertent intruder was assumed and assessed to be someone who may build a residence on top of the disposal trenches directly excavating waste material. For some disposal facilities, such as the WCS facility in Andrews, Texas, the scenario is physically impossible because of the great depth at which waste is disposed. The proposed changes will better align suitable waste characteristics with facility design.

B. Regarding As Low As is Reasonably Achievable (ALARA), WCS agrees with the replacement of the (ALARA) requirements.

Establishing protective radiation exposure standards combined with independent regulatory review to determine that the requirements will be met is more than sufficient to protect public health and safety.

C. Regarding Compatibility Categories, the basis for some of the changes should be clarified:

WCS suggests expanded explanations of the basis for:

- The Performance Period Analyses (61.2) as a category C,
- The definitions for Performance Assessment, Operational Safety Assessment, and Inadvertent Intruder Assessment as H&S,
- The definition for Site Stability Assessment as D,
- 61.41(c) being moved from A to H&S,
- 61.42(c) being moved from H&S to C, and
- Section 61.52(a) providing some requirements pertaining to GTCC disposal, but the compatibility of the section being assigned to H&S.

These clarifications will assist effective and efficient agreement state regulation.

D. Regarding Specialized Land Disposal Facilities and Draft NUREG-2175 Rev.1 Guidance.

WCS believes Draft NUREG-2175 Rev. 1 can be improved in evaluating specialized land disposal facilities intended for disposal of GTCC waste or significant quantities of long-lived radionuclides.

While Sections 4.0 and G.5.5 provide useful guidance for traditional near-surface disposal facilities, development of inadvertent intruder scenarios for specialized land disposal facilities, demonstration of long-term performance of engineered intrusion barriers such as metal deflector plates, evaluation of natural barriers, assessment of seismic hazards, or durability analyses for reinforced concrete structures can be expanded. The guidance can address how site-specific inadvertent intruder assessments should be developed for specialized facilities, including consideration of realistic intrusion pathways, scenario development, and barrier performance demonstrations. The guidance can also provide a technology-neutral framework for evaluating the long-term performance of engineered and natural barriers and clarify expectations regarding seismic hazard evaluations.

In addition, NRC should revise statements concerning barrier performance. Barrier performance is highly dependent upon design, construction quality, service environment, and supporting technical analyses. NRC allows licensees to demonstrate barrier performance through site-specific durability evaluations and supporting technical evidence. For certain waste streams, the need for intruder barrier performance should also be evaluated relative to the period during which the waste remains hazardous, rather than assuming a barrier must remain functional throughout the full 10,000-year compliance period.

WCS recommends revising Draft NUREG-2175 Rev. 1 to provide additional guidance for specialized land disposal facilities, including inadvertent intruder assessment methodology, engineered and natural barrier performance evaluations, seismic hazard considerations, and barrier durability analyses. NRC should adopt a performance-based approach that allows licensees to demonstrate the effectiveness and longevity of intrusion barriers through site-specific technical evaluations rather than relying on generic assumptions regarding barrier degradation or service life.

E. Regarding NRC Agreement State Coordination for GTCC Disposal Licensing

If NRC retains direct licensing authority for GTCC waste disposal, we recommend draft NUREG-2175 provide additional guidance describing how NRC and Agreement States will coordinate licensing, technical reviews, inspections, and oversight activities, particularly where GTCC disposal is proposed within or adjacent to an existing disposal facility regulated by a compatible Agreement State program. Agreement States possess extensive licensing bases, technical analyses, operational experience, permitting histories, and regulatory knowledge developed through years of State oversight. The current discussion in Section 1.1.11 acknowledges Agreement State programs but provides limited guidance regarding how NRC will leverage State expertise, coordinate reviews,

evaluate previously approved technical information, or avoid duplicative regulatory activities. Without additional guidance, applicants may face regulatory uncertainty and inconsistent treatment of information previously reviewed and accepted by compatible State programs. NRC should establish a clear framework that promotes efficient and consistent regulation by leveraging existing information to the maximum extent practical, coordinating early and frequently with State regulators, considering State findings and technical reviews, and integrating inspection and oversight activities to avoid unnecessary duplication. Existing NRC approaches for programs involving overlapping Federal and State responsibilities, including Waste Incidental to Reprocessing (WIR) oversight, demonstrate that structured coordination can improve regulatory efficiency while maintaining independent regulatory decision-making. Guidance describing these expectations would improve predictability, enhance stakeholder confidence, and support the timely review of future GTCC disposal applications at existing commercial disposal facilities.

WCS recommends revising Draft NUREG-2175, or developing supplemental guidance, to define how NRC will coordinate with Agreement States when licensing and overseeing GTCC disposal facilities, particularly where disposal is proposed at existing State-regulated facilities. The guidance should establish expectations for leveraging existing State-reviewed information, coordinating technical reviews and inspections, addressing differences between NRC and State regulatory conclusions, and promoting efficient, non-duplicative oversight consistent with risk-informed regulation and Executive Order 14300.

Attachment 2

Responses to Selected FRN Questions

Question 2: Under the proposed rule, the NRC would license disposal of GTCC waste streams under Part 61.

a. What steps can the NRC take to ensure that states' insights are considered and received with respect to licensing GTCC facilities?

Response

If the NRC maintains sole regulatory authority over GTCC waste disposal and does not relinquish this authority to Agreement States, WCS recommends that the final rule explicitly protect state sovereignty, utilize local technical expertise, and ensure states are heard as more than general commenters in this arena.

The proposed rule could be amended and/or licensing guidance revised to include a three-way pre-application review process among the NRC staff, the license applicant, and host state environmental regulators. Further, the NRC should formalize its feedback loop to explicitly document how it evaluates state-submitted data.

b. Does Part 61, Subpart F, appropriately enable states to consider and provide input in NRC licensing of GTCC facilities?

Response

10 CFR Part 61 Subpart F should be strengthened and updated by transitioning to an integrated, co-regulatory model that grants Tribal and State governments earlier and better-funded influence.

The existing language places a heavy structural burden on local governments to apply for permission to participate. To make the rule more effective, several specific upgrades are recommended:

- Replace the proposal requirement with an automatic, mandatory invitation to partner on site reviews as soon as a letter of intent is filed by a waste developer.

- Involve states directly in drafting the customized rules for what waste a facility can take. Because the NRC's modernized framework relies on site-specific performance assessments rather than rigid waste classes, the NRC could establish a Joint NRC-State Technical Task Force for each proposed facility. This task force would collaboratively

develop and approve the site's unique Waste Acceptance Criteria (WAC), ensuring local environmental concerns are baked into the facility's operating boundaries from day one.

Question 3: Proposed section 61.58(e) requires licensees to undertake an annual review of the inputs to the site-specific performance analysis. Does the annual review provide sufficient flexibility to licensees?

Response

WCS does not believe that the proposed requirement in § 61.58(e) to perform an annual review of all inputs to the site-specific performance analysis provides sufficient flexibility within the risk-informed, performance-based framework established by the proposed rule.

WCS supports maintaining current and accurate technical analyses and agrees that performance assessments should be reviewed whenever new information or operational changes have the potential to affect compliance with the Part 61 performance objectives.

A mandatory annual review of all performance assessment inputs is unnecessarily prescriptive and may provide little additional safety value in circumstances where no material changes have occurred.

The proposed rule is founded on a risk-informed philosophy that relies on site-specific analyses, facility-specific designs, and waste-specific evaluations to demonstrate reasonable assurance of long-term safety. Consistent with that framework, oversight activities should focus on changes that have the potential to affect the conclusions of the performance assessment rather than requiring repetitive calendar-based reviews that may simply reconfirm previously established conclusions. The operating commercial disposal facilities licensed under Part 61 function under dynamic licensing programs that routinely evaluate changes in waste streams, facility design, operational practices, regulatory requirements, and licensing commitments. These facilities already maintain robust change-management, corrective action, and licensing processes that identify and evaluate conditions that could affect the technical basis supporting safe disposal.

For facilities such as WCS, modifications to waste acceptance criteria, new waste streams, facility expansion projects, engineered barrier changes, licensing amendments, or newly developed technical information are routinely reviewed through established regulatory processes. Any changes with the potential to impact the conclusions of a performance assessment would already be evaluated as part of those activities. Imposing a separate annual review requirement could therefore be duplicative and would direct resources toward administrative verification rather than safety-significant evaluations.

WCS believes a more risk-informed approach would require review and update of the site-specific performance analysis when a material change occurs that could reasonably affect the conclusions of the approved licensing basis. Examples include:

- Acceptance of a waste stream that was not previously evaluated in the approved performance assessment;
- Waste inventories, radionuclide concentrations, or waste characteristics outside the bounds of existing analyses;
- Significant changes to facility design, disposal configuration, engineered barriers, or operational practices;
- New site characterization information or monitoring results that materially affect key assumptions;
- New scientific or technical information that challenges the validity of existing analytical conclusions; or
- Conditions identified through corrective action, change-management, or licensing programs that could affect compliance with Part 61 performance objectives.

This approach would maintain regulatory oversight while ensuring that licensee resources remain focused on changes that are meaningful to long-term performance and public health and safety. In many years, an annual review may identify no new information requiring action, resulting in a purely administrative exercise with limited regulatory benefit.

Accordingly, WCS recommends that NRC revise proposed § 61.58(e) to require review and update of the site-specific performance analysis based on defined triggering events that could materially affect the validity of the existing analysis, rather than requiring a mandatory annual review. Such an approach would be more consistent with the overall risk-informed and performance-based objectives of the Integrated Low-Level Radioactive Waste Disposal rulemaking while continuing to ensure protection of public health and safety.

Question 7: The proposed rule would require an application for an LLRW disposal facility to include a safety case as newly defined in this proposed rule. The safety case is an integrated, concise, and transparent synthesis of technical analyses, site characteristics, facility design, and management/regulatory controls that collectively demonstrate how the facility will meet the performance objectives in Subpart C of part 61. The safety case is intended to support the licensee's demonstration that the land disposal facility will be constructed and operated safely and facilitate effective review by the NRC and public understanding. Recognizing that most of the technical elements are already required under current regulations, this proposed requirement seeks to ensure these elements are integrated and communicated in a coherent manner.

a. Is the guidance provided in draft NUREG-2175 sufficient to address the appropriate scope, structure, and level of detail that should be included in the safety case for land disposal facility license applications? If not, what additional guidance or clarifications would be beneficial to ensure the safety case provides a clear, integrated, and risk-informed basis for regulatory decision-making?

Response

WCS believes the guidance is generally sufficient but can be improved. WCS supports the proposed inclusion of a safety case as part of the Part 61 licensing framework, but additional clarification is needed regarding its purpose, scope, and implementation.

WCS agrees with NRC's objective of improving transparency and providing an integrated explanation of how a disposal facility will achieve the Part 61 performance objectives. The proposed definition appropriately recognizes that safe disposal is not demonstrated solely through technical modeling. Rather, safe disposal is achieved through a combined risk-informed framework that incorporates site characteristics, facility design, waste acceptance criteria, engineered barriers, natural barriers, operational controls, institutional controls, and site-specific technical analyses.

WCS supports the safety case as a mechanism for communicating the overall basis for facility safety and for integrating the numerous technical evaluations already required under Part 61 into a coherent demonstration of reasonable assurance. This is particularly important as the proposed rule creates new disposal pathways for long-lived radionuclides, GTCC waste, and future waste streams that will rely upon site-specific evaluations rather than generic assumptions.

However, the proposed rule and Draft NUREG-2175 do not yet clearly define how NRC intends the safety case to be used during licensing reviews. As currently written, portions of the proposed rule could be interpreted as suggesting that the safety case is either:

1. A high-level summary of the technical analyses; or

2. An additional licensing requirement requiring a separate demonstration beyond the technical analyses themselves.

WCS believes the second interpretation would create unnecessary regulatory uncertainty and could result in the safety case becoming a subjective licensing standard that extends beyond the established Part 61 performance objectives.

Instead, WCS believes the safety case should function as an integrated weight-of-evidence demonstration that brings together the technical analyses and supporting information already

required under Part 61. The safety case should not create independent performance objectives, separate acceptance criteria, or additional licensing hurdles beyond those established elsewhere in the regulations.

To improve implementation clarity, WCS recommends that NRC explicitly state that:

- The safety case is a reasonable-assurance demonstration supporting the findings required under Part 61;
- The safety case integrates both quantitative and qualitative evidence;
- Long-term performance assessments should be evaluated within the broader context of defense-in-depth, multiple barriers, and site-specific safety features;
- The safety case does not establish new or independent performance objectives beyond those already contained in Part 61; and
- NRC review should focus on whether the totality of evidence demonstrates protection of public health and safety rather than on the safety case as a stand-alone regulatory requirement.

In addition, WCS recommends that NRC expand Draft NUREG-2175 to include one or more illustrative safety case examples. A representative safety case for both a traditional near-surface disposal facility and a facility accepting significant quantities of long-lived radionuclides or GTCC waste would promote consistency among applicants, NRC reviewers, and Agreement States and reduce implementation uncertainty.

Such clarification would improve regulatory predictability, support consistent implementation across jurisdictions, and advance the rule's objective of providing more flexible and technically sound disposal pathways for future waste streams.

b. Are there international or domestic best practices regarding the scope of the safety case that NRC should consider?

Response

Yes. WCS believes NRC should consider both international and domestic experience regarding safety case development; however, the final implementation of the safety case should remain firmly grounded in the U.S. Part 61 regulatory framework.

WCS recognizes that the safety case concept is widely used internationally and has proven effective as a means of integrating technical analyses, facility design information, operational

controls, engineered barriers, natural barriers, institutional controls, and other supporting evidence into a single, coherent explanation of facility safety. In particular, International Atomic Energy Agency (IAEA) guidance emphasizes the importance of integrating multiple lines of evidence and communicating how the total disposal system functions to protect public health and safety over time. WCS believes these are valuable principles that are generally consistent with the objectives of the proposed rule.

At the same time, there are important differences between international safety case frameworks and the existing U.S. regulatory approach. Many international programs utilize a safety case as the primary regulatory demonstration throughout the entire lifecycle of a disposal facility. By contrast, the U.S. Part 61 framework has historically relied upon defined performance objectives, site-specific technical analyses, waste acceptance requirements, licensing conditions, and NRC findings of reasonable assurance. The technical analyses themselves have traditionally served as the primary basis for licensing decisions.

For that reason, WCS does not support creating a dual regulatory framework in which applicants must both demonstrate compliance with established Part 61 requirements and separately satisfy undefined international-style safety case expectations. Such an approach could create uncertainty regarding what constitutes an acceptable demonstration of safety and lead to inconsistent implementation among applicants, Agreement States, and NRC reviewers.

Instead, WCS believes NRC should selectively incorporate the strongest elements of international safety case practice while preserving the primacy of the existing Part 61 framework. Specifically, WCS supports using the safety case as:

- A transparent, integrated explanation of the overall basis for facility safety;
- A means of communicating how multiple barriers and defense-in-depth contribute to long-term performance;
- A framework for evaluating both quantitative analyses and qualitative considerations;
- A method for integrating multiple lines of evidence into a reasonable-assurance determination; and
- A tool for improving regulatory transparency and public understanding.

However, the underlying demonstration of compliance should continue to be based upon the technical analyses and performance objectives already established in Part 61. The safety case should function as a weight-of-evidence demonstration that integrates these elements rather than as a separate licensing standard or independent set of acceptance criteria.

WCS also recommends that NRC clearly identify in NUREG-2175 where international safety case principles have been adopted and how those principles are intended to be applied within the U.S. regulatory framework. This would help ensure that international guidance is used consistently and transparently rather than becoming an unwritten review standard.

From a domestic perspective, WCS believes the strongest practice is to maintain the risk-informed structure already proposed by NRC, where safety is demonstrated through the combined performance of:

- Site characteristics;
- Natural barriers;
- Engineered barriers;
- Waste acceptance criteria;
- Performance assessments;
- Inadvertent intruder assessments;
- Operational safety assessments;
- Institutional controls; and
- Other supporting technical analyses.

The safety case should serve as the integrated synthesis of these components and the mechanism through which NRC evaluates the totality of evidence supporting reasonable assurance of protection of public health and safety.

In summary, WCS supports consideration of international safety case principles and believes they can provide valuable insights regarding transparency, integration of evidence, and communication of facility safety. However, NRC should ensure that those principles are adapted to complement—not replace or complicate—the established U.S. Part 61 licensing framework. The safety case should enhance understanding of the technical basis for disposal safety while preserving the performance-based, risk-informed approach that forms the foundation of Part 61.

c. Are there additional guidance documents or supporting materials that should be updated or developed to facilitate effective implementation of the safety case requirement?

Response

Yes. While WCS supports the proposed safety case requirement, additional implementation guidance would improve regulatory clarity, consistency, and efficiency.

First, WCS recommends that NRC significantly expand the safety case discussion in NUREG-2175. The current guidance provides substantial direction regarding the individual technical analyses required under Part 61 but provides comparatively limited direction regarding how those analyses should be integrated into a safety case. Additional guidance should explain the purpose, organization, and expected content of the safety case and distinguish between information that belongs in the underlying technical analyses and information that belongs in the integrated safety case document.

Second, NRC should provide a recommended outline or template identifying the expected contents and organization of an acceptable safety case. Such a template would promote consistency among applicants and facilitate more efficient regulatory reviews.

Third, NRC should provide worked examples. Example safety cases would help applicants understand NRC's expectations regarding level of detail, treatment of uncertainties, discussion of defense-in-depth, presentation of supporting evidence, and integration of multiple technical analyses. Examples would also support consistent implementation by Agreement States that adopt equivalent requirements.

Finally, NRC should clarify lifecycle expectations for the safety case. Applicants and licensees would benefit from guidance describing when safety case updates are expected, how updates should be managed, and how the safety case should be maintained following license amendments, facility modifications, acceptance of new waste streams, closure activities, and other significant licensing actions.

In summary, WCS supports the safety case requirement and believes it has the potential to significantly improve transparency, regulatory communication, and public understanding. However, successful implementation will require additional guidance, examples, templates, and clarification regarding NRC's expectations for both initial submittals and lifecycle maintenance of the safety case.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 17, 2026
Tracking No. msx-nzjj-itcm
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0251
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Texas Commission on Environmental Quality

Submitter Information

Email: chikaodi.agumadu@tceq.texas.gov
Government Agency Type: State
Government Agency: Texas Commission on Environmental Quality

General Comment

Hello,

On behalf of the TCEQ, please see our comments attached on a Proposed Rule by the Nuclear Regulatory Commission: Integrated Low-Level Radioactive Waste Disposal.

If you have questions concerning the enclosed comments, please contact Chance Goodin, Deputy Director of the Radioactive Materials Division, at 512-239-1923 or at chance.goodin@tceq.texas.gov.

Thank you,
Chikaodi Agumadu
Texas Commission on Environmental Quality

Attachments

NRC-2011-0012 TCEQ Comments

Brooke T. Paup, *Chairwoman*
Catarina R. Gonzales, *Commissioner*
Tonya R. Miller, *Commissioner*
Kelly Keel, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

August 17, 2026

U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Re: Comments in Response to the Proposed Rulemaking *Integrated Low-Level Radioactive Waste Disposal*, Docket ID NRC-2011-0012

Dear Sir or Madam,

The Texas Commission on Environmental Quality (TCEQ) appreciates the opportunity to comment on the U.S. Nuclear Regulatory Commission's proposed rulemaking and request for comments concerning its regulations that govern the land disposal of low-level radioactive waste. The proposed rules were opened for public comment on July 1, 2026, and the comment period on this rulemaking ends on August 17, 2026.

Enclosed please find TCEQ's comments relating to the proposed rulemaking. If you have questions concerning the enclosed comments, please contact Chance Goodin, Deputy Director of the Radioactive Materials Division, at 512-239-1923 or at chance.goodin@tceq.texas.gov.

Sincerely,

Kelly Keel
Executive Director

Enclosure

Texas Commission on Environmental Quality's (TCEQ's) Comments on the U.S. Nuclear Regulatory Commission's (NRC's) Integrated Low-Level Radioactive Waste Disposal Proposed Rulemaking

Docket ID NRC-2011-0012

Background: The NRC has proposed to amend its regulations for disposal of low-level radioactive waste (LLRW) to allow a federal licensing pathway for near-surface disposal of LLRW classified as Greater-Than-Class C (GTCC) and is seeking comments regarding the proposed rules. The proposed rulemaking would change certain technical requirements, including for disposal of significant quantities of long-lived radionuclides.

Comments: TCEQ appreciates the opportunity to comment on the NRC's proposed rulemaking. Texas and its residents have a significant and unique stake in the proposed rulemaking and its implications. Our comments are outlined below:

1. **State Involvement and Party Status**

Under the proposed rule, the NRC would retain and exercise sole licensing authority over the disposal of all GTCC wastes in accordance with federal law. Given the potential impact to Texas, TCEQ reiterates concerns expressed in prior comments, such as those of November 19, 2019, that there must be meaningful state and local say in the GTCC disposal facility siting and licensing processes. Texas has a unique interest in this given that it, and the low-level radioactive waste disposal facility in Andrews County, have been evaluated as a potential GTCC disposal facility in the past as discussed in the proposed rulemaking. Texas will bear the risk from any siting and licensing action and thus merits a material say in the process.

If NRC finalizes the interpretation offered in its proposal, TCEQ strongly encourages the NRC to engage in robust public outreach and involvement in actions related to establishing a licensed near-surface GTCC disposal facility. Again, state and local stakeholders must have a meaningful say in the process, especially in consideration of the GTCC-specific waste stream hazard characteristics identified in proposed 10 Code of Federal Regulations (CFR) Section 61.56(c).

TCEQ requests that the NRC amend the proposed rule so that a host state for a GTCC disposal facility is excepted from the specific contention requirements of 10 CFR Sections 2.309(a) and (f) and is automatically admitted, upon written request, as a party to a GTCC disposal facility licensing proceeding. A state that will host a proposed GTCC disposal facility is materially impacted and should not be subject to the specific contention requirements of 10 CFR Sections 2.309(a) and (f) to intervene in this kind of licensing proceeding.

2. ***Performance Period***

The definition concerning *performance period* in proposed 10 CFR Section 61.2 does not specify a maximum period, instead it states it is the "timeframe…during which [the] waste…remains a radiological hazard." TCEQ requests that the NRC clarify the intended duration of the *performance period* for facilities that accept significant quantities of long-lived radionuclides. As written, the proposed rule could be interpreted as requiring analysis of radiological hazard on a geologic time scale. Using depleted uranium as an example, the peak dose from disposal of significant quantities of depleted uranium does not occur for tens of millions of years following disposal. In TCEQ's experience, providing radiological dose modeling beyond one million years is not practically meaningful and does not contribute to the protection of human health.

TCEQ requests that the NRC clarify the requirement in the proposed rule and specifically apply a reasonableness standard to *performance period* analyses for protecting human health. TCEQ also requests the NRC clarify the degree to which the *performance period* is intended to be a qualitative demonstration of site impact.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-oiy9-gp58
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0252
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from David Esh

Submitter Information

Name: David Esh
Address:
Frederick, MD, 21701
Email: deshconsulting@gmail.com
Phone: 3015140276

General Comment

Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from David Esh

Attachments

Part 61 Comment personal

I submit these comments as a member of the public. For full disclosure I retired from the NRC in 2025 and had previously worked extensively on the 10 CFR Part 61 rulemaking activities starting in approximately 2008.

One of the primary reasons this rulemaking was initiated was to provide requirements for the safe disposal of large quantities of depleted uranium. Compared to most low-level radioactive waste, depleted uranium has some unique characteristics. It is relatively benign on a relative basis initially (limited direct radiation exposure), but because of uranium decay and in-growth of daughter radionuclides, becomes much more difficult to contain in a shallow near-surface disposal facility over time. Uranium has limited solubility under some conditions but can cause difficult challenges to groundwater protection even with limited solubility because it has a very large specific surface area (surface area per unit mass of material). Uranium mill tailings, which only have ~0.2 weight percent uranium in the United States, have resulted in groundwater contamination requiring extensive remediation such as pump and treat systems. These systems are expensive to operate and have limited effectiveness from a long-term management perspective. Release of uranium to groundwater, especially at humid sites, from the disposal of large quantities of depleted uranium should be avoided.

At arid sites, the Rn-222 gas that is produced can be difficult to manage. Homes throughout the US experience elevated levels of Rn-222 that result in significant impacts to human health. The radon in homes is a result of naturally-occurring low concentrations of uranium in the environment. The concentration of uranium in a near-surface disposal facility that accepts large quantities of depleted uranium can be many orders of magnitude greater than natural concentrations. Many assessments will evaluate the impacts from Rn-222 with diffusion only calculations and box models to estimate receptor concentrations, but these methods do not align with empirical observations associated with Rn-222 impacts from naturally occurring uranium. When more accurate methods are used to calculate concentrations, thicker layers of protective media are needed.

The simplest and most effective way to mitigate the impacts of Rn-222 in the gas phase is to provide for a thick cover of material that retains moisture over all projected future environmental conditions. This in turn is a function of the geomorphological evolution of the disposal site. Disposal facilities for the disposal of depleted uranium that build cells and emplace waste above the land surface are severely inferior to those that place waste below the natural land surface in a stable geologic formation. The licensee of the only low-level waste disposal facility in the US that employs this above-grade design stated as much in their previous comments on the Part 61 rulemaking (ML15208A290; “there is no technical basis for a stability requirement of 10,000 years, *nor is it possible to credibly demonstrate compliance with such a requirement*”). This comment requires qualification, which is that for an unstable site/design it is not possible to demonstrate compliance with such a requirement. Geomorphologically stable sites should have no problem demonstrating the criteria can be met. Though NRC allows for the modeling and assessment of long-term radon concentrations, given the timeframes and persistence of the uranium source term, modeling of landform stability necessary to demonstrate that the required thickness is maintained for facilities built above the natural land surface is very likely to be scientifically intractable given current methods and knowledge. There are large uncertainties.

In any nuclear regulatory program uncertainty is never a justification to provide less rigorous requirements. This concept, expressed by some previous commenters, is at odds with the fundamental goal of nuclear safety and basic risk management. On the contrary, uncertainty is a reason to provide requirements to mitigate those uncertainties and provide protection of the public. Disposal depth is the most straightforward and robust requirement that may be used to mitigate the uncertainties associated with natural and anthropogenic alteration of the land surface environment. If the analyses to demonstrate safety are technically intractable it simply means that you are trying to place material in a disposal site that is not suitable for that material.

NRC has provided a step in the right direction in the proposed rule. The text is found in the citations below:

Page 40308 of the Federal Register Notice:

For GTCC waste or waste with significant quantities of long-lived radionuclides (e.g., depleted uranium) the reference point for the depth requirement is the land surface.

Page 40343 of the Federal Register Notice:

§ 61.52(a)(16) Significant quantities of uranium must be disposed so that the top of the waste is a minimum of 5 meters below the land surface.

The draft guidance in NUREG-2175 Rev. 1 then goes on to explain that the land surface is the natural land surface prior to development of the site. This is appropriate because it represents a configuration that is most aligned with long-term stability. However, this is guidance and it is not required to be followed or implemented by an Agreement State regulator. In addition, the 5 m requirement can be shown to be insufficient for the disposal of significant quantities of depleted uranium for many future system states (e.g., very dry sites, construction of below ground structures).

Recommendation: Increase the required disposal depth for significant quantities of depleted uranium to 10 m and specify in regulation the definition/interpretation of land surface that is currently found in NUREG-2175, Rev. 1.

This will avoid the challenges with review and approval of complex long-term landform evolution modeling. Instead of complex modeling being the norm, it should be the exception. Disposal depth is a simple method used throughout the world to mitigate uncertainties and ensure that waste is properly disposed. These changes will also ensure consistency of interpretation among Agreement State regulators and reduce ambiguity. There is an existing facility in the US already licensed to dispose of large quantities of depleted uranium that would likely meet the criteria described above; there would be minimal impacts to current and future generators of depleted uranium waste.

David Esh, PhD

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-ojam-3ehc
Comments Due: August 17, 2026
Submission Type: API

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0253
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Pamela Greenlaw

Submitter Information

Name: Pamela Greenlaw
Address:
West Columbia, SC, 29169
Email: pkgreenlaw2022@gmail.com
Phone: 8033945134

General Comment

US Nuclear Regulatory Commission

ATTN: Rule Making and Adjudication Staff
Re: Docket ID NRC 2011-0012
“Integrated Low-Level Radioactive Waste Disposal Rules”

August 17, 2026

Dear NRC Commissioners and Rulemaking & Adjudications Staff

Who I Am:

I AM a power utility stockholder and customer in the “nuclear” state of South Carolina. My interest with NRC issues today center stems from on the failings of both the NRC and the Westinghouse Fuel Fabrication Facility in Hopkins, South Carolina when NRC worked with Westinghouse to grant it a forty-year license after many years of Westinghouse’s violations. To this day underneath the main building is a plume of Technetium-99 which cannot be remediated until decommissioning.

PREFACE:
My concerns are about not only this proposed rule, but also the additional proposed rules to remake or “modernize” the NRC and the regulatory climate of the nuclear industry in the US. Even more concerning than the proposed rules themselves is the attempt by the NRC to rush the roll-out of several rules and technical documents to the public for comment within an unreasonably short period of time, The technical analyses

document is over 600 pages long! The “Modernizing Reactor Licensing Rule” on a different docket is over 500 pages long! These are complex documents, yet brief webinars and meetings with the public are all happening in the month of August. Comments on different rules are scheduled back-to-back. This rush smells of an undisguised attempt to shortchange the public on our receiving, reading, researching, and processing information so we can make productive and germane comments to the NRC. The NRC itself needs time to read, absorb, discuss substantive comments to improve the rules. The NRC is making many errors in the race to “modernize.” It is contradicting its own rules and is ignoring core responsibilities and purposes for which the agency was created.
is hat the timetable for all the modernization dockets be pulled and rescheduled to be spread evenly across 90 days from October 1 – Dec. 1 2026.

FIRST RECOMMENDATION AND REQUEST

Within a week of taking down the dockets, the NRC shall have set up a new, updated schedule for the processes. Webinars for each Rule must be set up.
No less that 2-hour time slots should be allotted for each webinar immediately followed by Q & A and discussion for each docketed topic. These should be scheduled in the evening swhen most people are home from work. . The NRC should also schedule in-person, public sessions.

Comments on and recommendations for Docket NRC-2011-0012

Nuclear waste disposal involves more that economics which favoring the nuclear industry.
In the proposed rule there appears to be a shift in control and oversight from the NRC to the disposal company. On page 1.24 is related to Agreement states which in which an LLW disposal facility is authorized to dispose of Class A, B, C or LLW. That is not so new. What is new is that these same disposal facilities/companies would be allowed by the NRC to set their own acceptance criteria for disposing of GTCC and GTCC-like waste. This violates legal NRC’s charge and its long-standing policies. Acceptance criteria should be spelled out in the rule.

SECOND RECOMMENDATION/REQUEST:
Eliminate any reference or plan to shallow burial of any nuclear waste whatsoever.

Another note -- in section 1-4, lines 44-45 the rule states “performance period analyses are required only if the disposal facility is accepting significant quantities of long-lived radionuclides and the licensee has a 10,000-year or longer compliance period.” Is the compliance period an insane illusion or a slip of the typist? Which disposal facilities need to be left off the responsibility hook??

THIRD RECOMMENDATION/REQUEST:
Define the term “significant quantities” noted above in the rule or at least have the definition footnoted.

FOURTH RECOMMENDATION/REQUEST:
Set a span of time of no more that 15 years for a compliance period.

FIFTH RECOMMENDATION:
Take seriously the comments sent by Carolyn Croom, Dianne D’Arrigo, and Karen Hadden, and Monica Perales.

FINAL NOTE:
There are environmental, justice, and legal implications for your own compliance and actions.

Thank you, and I trust you are listening!

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-pwb1-9lph
Comments Due: August 17, 2026
Submission Type: API

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0254
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from The Breakthrough Institute

Submitter Information

Email: pj@thebreakthrough.org
Organization: The Breakthrough Institute

General Comment

Attached please find the Comment of the Breakthrough Institute on the Integrated Low-Level Radioactive Waste Disposal Proposed Rule.

Attachments

Breakthrough Institute Comment on Integrated Low-Level Radioactive Waste Disposal

August 17, 2026

Subject: Breakthrough Institute Comment on Integrated Low-Level Radioactive Waste Disposal [Docket ID NRC—2011—0012].

The Breakthrough Institute (BTI) appreciates the opportunity to comment on the Nuclear Regulatory Commission's (NRC) proposed rule, *Integrated Low-Level Radioactive Waste Disposal* (Docket ID NRC—2011—0012; RIN 3150—AI92).[1] BTI is an independent 501(c)(3) global research center that advocates for appropriate regulation and oversight of nuclear reactors and radioactive materials to enable the new and continued use of safe and clean nuclear energy. BTI acts in the public interest and does not receive funding from industry.

Changes to Part 61 are needed to enable a more risk-informed approach to handling waste. The proposed rule closes a licensing gap that has persisted since 1989: the absence of a generic pathway for near-surface or specialized land disposal of waste exceeding Class C concentration limits ("Greater-Than-Class-C" or "GTCC" waste).[2] BTI supports this overall direction, including the shift toward risk-informed, dose-based waste acceptance criteria in proposed § 61.58 and the codification of a safety case and defense-in-depth expectations for land disposal facilities.

The preamble is explicit that the proposed rule "does not alter legal requirements or policies to dispose of high-level radioactive waste or spent fuel in a geological repository" under the Nuclear Waste Policy Act, 42 U.S.C. § 10101 et seq., and "would not redefine what constitutes high-level radioactive waste."[3] The recommendations below are intended to strengthen the rule's legal durability, administrability, and coordination with directly related rulemakings.

I. Summary of Recommendations

- Make a stronger determination of the statutory analysis for maintaining direct NRC licensing of GTCC waste, given historic Commission acknowledgement that Agreement States could regulate such waste.

[1] Nuclear Regulatory Commission, Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40,290 (proposed July 1, 2026) (Docket No. NRC—2011—0012; RIN 3150—AI92).

[2] 91 Fed. Reg. at 40,290—91; 10 C.F.R. § 61.55(a)(2)(iv) (2025). 54 Fed. Reg. 22,578 (May 25, 1989).

[3] 91 Fed. Reg. at 40,290; see also Staff Requirements—SECY-15-0094 (Dec. 22, 2015).

- Explain, in the final rule or Subpart F, how compact-region consent and host-state participation would be addressed if a compact-region facility sought to host an NRC-licensed GTCC disposal site.
- Broaden the regulatory analysis beyond the single waste stream currently used to quantify net cost savings before relying on it to support the rule's designation as an Executive Order 14192 deregulatory action, and reconcile the inconsistent net-savings figures reported in different sections of the preamble.
- Clarify that the generic screening concentrations in draft NUREG-2175 Appendix H are a presumptively acceptable, non-exclusive method for determining whether a 10,000-year compliance period is required, and separately clarify that the probabilistic dose thresholds in NUREG-2175 Chapter 7 are non-binding defense-in-depth benchmarks rather than compliance criteria.
- Confirm that proposed § 61.58 is intended as a generally available, technology-neutral performance-based waste acceptance pathway, while recognizing that waste exceeding Table 3 concentrations remains subject to Commission approval under proposed § 61.55(b)(2)(iii).
- Retain the safety case as a standalone application component, but clarify that it may incorporate the underlying § 61.13 technical analyses by reference.
- Commit to updating NUREG-2175's GTCC intruder-barrier guidance as ongoing engineered-barrier research matures.
- Explain how the § 61.13(a) performance assessment methodology and existing § 61.12(f) non-radiological substance requirements apply to co-occurring chemical hazards, such as the toxicity of depleted uranium, and describe how the NRC coordinates with the Environmental Protection Agency (EPA) on this category of waste stream.
- Clarify that the § 61.55 statement that Class A waste is "the least hazardous" and GTCC waste is "the most hazardous" describes escalating isolation and containment requirements, not the instantaneous radiological hazard of a given waste stream. This prevents confusion about terminology.
- Address how this framework satisfies the ADVANCE Act § 501 obligation that regulation "not unnecessarily limit" the benefits of civilian nuclear technology to society. A framework that can find that a facility needs another barrier but cannot find that a credited barrier does no work is unable to determine whether a limit it imposes is

necessary, and neither the proposed rule, draft NUREG-2175, nor the draft regulatory analysis addresses the obligation.

- Give the preamble's statement that "each layer of defense must make a definite contribution to the isolation of the waste" operative content by adding a paragraph to § 61.13(a) requiring, for each engineered barrier and design feature credited in the performance assessment, an analysis in which that feature's credited performance is neglected, reported in absolute dose units, with a stated basis in the safety case for retaining any feature whose removal does not significantly change the result.

II. Statutory Basis for Exclusive NRC Licensing of GTCC Disposal Facilities

Two statutes provide the statutory basis for the NRC to regulate GTCC waste: the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) and the Atomic Energy Act of 1954 (AEA). The LLRWPAA provides that GTCC waste resulting from NRC-licensed activities "shall be disposed of in a facility licensed by the Nuclear Regulatory Commission that the Commission determines is adequate to protect the public health and safety."[4] Separately, AEA § 274c(4) authorizes the Commission to retain licensing authority over disposal of material that, "because of the hazards or potential hazards thereof," should not be disposed of without a Commission license.[5]

However, in prior direction, the Commission concluded that some GTCC waste streams could be regulated by Agreement States per SRM-SECY-20-0098.[6] The proposed rule explains that the NRC staff's 2019 regulatory basis concluded that (based on the DOE's *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste*) most GTCC waste could be safely regulated by an Agreement State in accordance with AEA § 274c(4).[7] The Commission then directed staff in 2020 to pursue a rulemaking implementing that

[4] 42 U.S.C. § 2021c(b)(2).
[5] 42 U.S.C. § 2021(c)(4).
[6] Staff Requirements—SECY-20-0098—Path Forward and Recommendations for Certain Low-Level Radioactive Waste Disposal Rulemakings (Apr. 5, 2022), ML22095A227.
[7] *Approximately 60% of total GTCC volume was found potentially suitable for near-surface disposal by Agreement States.*

conclusion. The rulemaking at hand has now reexamined and reversed that direction based on the same statutory hazard-based standard in AEA § 274c(4).[8]

Because § 274c(4) commits the underlying hazard determination to the Commission's own regulatory judgment rather than a fixed statutory category, the NRC should strengthen the record with an explanation of what changed in the technical basis between 2019 and 2026, beyond the general statement that the Commission has reexamined the question. The 2026 supplement to the Commission's hazard analysis provides much of this technical basis for the near-surface and specialized land disposal provisions; the final rule should cite it directly in explaining the reversal, rather than relying solely on the general statement that the Commission has reexamined its prior direction.[9]

BTI encourages the Commission to consider, as a secondary matter, recommending that Congress clarify by statute whether GTCC disposal facilities may operate under Agreement-State licenses issued pursuant to Commission-approved programs. Doing so would remove the recurring discretionary determination that § 274c(4) otherwise requires each time the question is revisited.

III. Response to NRC's Specific Requests for Comment

1. Compliance-Period and Performance-Period Analyses (Specific Request for Comment #1)

Unlike the clearly defined ten-metric-ton depleted uranium threshold codified at proposed § 61.1(b)(1)(ii),[10] the "significant quantities of long-lived radionuclides" determination for other radionuclides are more complex. They depend on the three-tier screening approach and generic concentration table in draft NUREG-2175 Appendix H, which the guidance describes as a tool for determining whether a 1,000- or 10,000-year compliance period is appropriate rather than a

[8] 91 Fed. Reg. at 40,300—40,301; Nuclear Regulatory Commission, *"Disposal of Greater-than-Class C (GTCC) and Transuranic Waste," Draft Regulatory Basis for Public Comment* (RIN 3150-AK00, Docket NRC-2017-0081, July 22, 2019, 84 Fed. Reg. 35,037); Nuclear Regulatory Commission, Historical and Current Issues Related to Disposal of Greater-Than-Class C Low-Level Radioactive Waste, SECY-15-0094 (July 17, 2015), ML15162A849; Staff Requirements—SECY-20-0098, supra note 3.

[9] Nuclear Regulatory Commission, *Supplement to NRC's Technical Analysis of the Hazards of Disposal of Greater-Than-Class C (GTCC) and Transuranic Waste: Consideration of a Specialized Land Disposal Facility and Additional Waste Streams* (May 2026), ML26174A245.

[10] 91 Fed. Reg. at 40,333 (proposed § 61.1(b)(1)(ii)).

means of demonstrating compliance with the performance objectives themselves.[11] The NRC should clarify that Table H-1 is a presumptively acceptable screening method rather than the exclusive one, so that Agreement States and applicants can apply it consistently while retaining the flexibility the guidance appears to intend.

Separately, draft NUREG-2175 Chapter 7 states that licensees should demonstrate that the 95th percentile of probabilistic annual dose estimates remains below 1 mSv (100 mrem) for the public and 20 mSv (2 rem) for an inadvertent intruder, and identifies a 50 mSv (5 rem) peak-realization threshold that should prompt consideration of additional defense-in-depth layers.[12] These would function as uncertainty-management and defense-in-depth benchmarks applied after compliance with the performance objectives has been demonstrated, not as an independent compliance test; and the guidance frames its methods generally as acceptable rather than exclusive. The final rule or NUREG-2175 should confirm that the Chapter 7 percentile and peak-realization values are non-binding indicators supporting a defense-in-depth review, not hidden compliance criteria that operate independently of §§ 61.41 and 61.42.

Clarifying both points would reduce the risk of inconsistent application across Agreement States and would give applicants a clear basis for understanding which values are binding and which are illustrative.

Section IV below addresses a further consequence of these timeframes. As the horizon lengthens, a larger share of the governing uncertainty becomes irreducible by any feasible characterization or testing program, which increases the weight the rule places on defense-in-depth as an uncertainty-mitigation measure and correspondingly increases the need for a criterion capable of returning the conclusion that a credited feature is not needed.

2. State and Compact Participation in GTCC Licensing (Specific Request for Comment #2)

The LLRWPAA separately provides that nothing in that assignment "shall be deemed to prohibit a State, subject to the provisions of its compact, or a compact region from accepting for disposal"

[11] Nuclear Regulatory Commission, draft NUREG-2175, Rev. 1, Guidance for Conducting Technical Analyses for 10 CFR Part 61, App. H (2026), ML23255A282.
[12] Id., ch. 7.

GTCC-type material.[13] This voluntary compact-participation option does not obviously compel NRC to create a new consultation mechanism paralleling State and Tribal consultation under Subpart F, but it does create a coordination question that the final rule could usefully resolve. Congress established the compact system by statute, and this rulemaking's GTCC licensing determinations bear directly on where GTCC waste will actually be sited. This is the core subject the LLRWPAA compact structure was designed to govern.

On the specific request for comment, the most direct step the NRC can take toward ensuring States' insights are considered is to state plainly whether compact-region consent under § 2021c(a)(2) is intended to be sought through the existing Subpart F process or through some other mechanism specific to GTCC facilities. On whether Subpart F itself appropriately enables that participation, the record does not yet answer the question the agency is asking. The redline to Subpart F in this rulemaking makes only conforming changes from "shall" to "must" with no substantive revision to §§ 61.70 through 61.73 to account for GTCC licensing.[14] Subpart F was written in 1982 for a licensing landscape in which GTCC disposal facilities did not exist as a distinct category; the final rule should state whether the NRC has concluded that framework remains adequate for that purpose or intends to revisit it.

The final rule should explain how compact-region consent and host-state participation would be addressed if a compact-region facility sought to host an NRC-licensed GTCC disposal site. The final rule should be the process the NRC would go through for any new facility or changes to existing facilities within a host state that belongs to a compact, consistent with the voluntary-hosting option in 42 U.S.C. § 2021c(a)(2).

Existing near-surface disposal facilities operating under Agreement State licenses already report experience handling GTCC-type material and have represented publicly that such activities remain within State regulatory authority because the material is legally low-level waste.[15] Under the reversal described in Section II above, that representation would no longer hold for GTCC waste licensed after finalization. Neither the rule text nor NUREG-2175 explains what happens at

[13] 42 U.S.C. § 2021c(a)(2).

[14] Nuclear Regulatory Commission, *Redline/Strikeout Proposed Rule Language, Integrated Low-Level Radioactive Waste Disposal,* (2026), ML26174A243, at 46—47 (Subpart F).

[15] *See, e.g., Waste Control Specialists, Support WCS,* https://www.wcstexas.com/support-wcs/ *(last visited Aug. 11, 2026) ([WCS] "has been safely working with Greater Than Class C (GTCC) LLRW for over two decades" and "GTCC activities on the WCS site are regulated by the State of Texas").*

such a facility going forward: whether GTCC disposal would require a separate, NRC-issued license limited to the GTCC-accepting portion of the site while the Agreement State retains jurisdiction over the facility's Class A, B, and C operations, or whether any acceptance of GTCC waste would bring the entire facility under NRC's exclusive licensing jurisdiction. States and compact regions have long-standing relations with waste facilities and any possible transition should be made clear ahead of time for regulatory certainty.

3. Annual Waste Acceptance Criteria Review (Specific Request for Comment #3)

The NRC should tie the depth of the review to risk. A documented administrative check confirming no change in waste streams, inventory, or site conditions could satisfy the annual requirement in most years, while a substantive reanalysis would be required only when a licensee proposes to accept a new waste stream, experiences a significant inventory change, or identifies a significant change in site conditions. This would preserve the annual cadence NRC has proposed while directing the more resource-intensive review toward the years when it is most likely to matter.

4. Applicability of the Framework to Novel and Emerging Waste Streams (Specific Request for Comment #4)

Neither the LLRWPAA nor the Nuclear Waste Policy Act foreclose addressing chemical hazards. The NRC has separately maintained that its own case-by-case licensing judgment can independently ensure adequate protection against comparable hazards without a new generally applicable rule.[16] NEPA reinforces that NRC environmental reviews already require disclosure of nonradiological impacts, even where the Commission has historically deferred to State permitting programs rather than setting independent standards.[17]

The proposed significant-quantities provisions for depleted uranium are intended to facilitate disposal of larger volumes of a long-lived radionuclide at existing and future land disposal facilities. Proposed § 61.12(f) already requires applicants to describe methods for handling wastes containing chelating agents or other non-radiological substances that might affect meeting the

[16] 83 Fed. Reg. at 54,543
[17] Consumers Energy Co. (Palisades Nuclear Plant), 65 Fed. Reg. 66,781 (Nov. 7, 2000).

performance objectives of Subpart C: that is, substances whose main regulatory relevance is their effect on radionuclide mobility and containment.[18] Depleted uranium presents a different kind of non-radiological concern: it is a heavy metal with chemical toxicity, principally nephrotoxicity, that is independent of its radiological properties and that matters directly to human health rather than only to radionuclide performance. The EPA's drinking water standards for uranium reflect this chemical hazard pathway directly.[19] The performance assessment methodology in proposed § 61.13(a) and the corresponding technical analyses described in draft NUREG-2175 address radiological dose but do not describe a role for this kind of direct chemical toxicity screening.

Since this rulemaking is expected to increase the volume of depleted uranium disposed of at near-surface facilities with compliance periods extending to 10,000 years, the absence of an explicit mechanism addressing co-occurring chemical hazards in groundwater is a more consequential gap under this rule than under current practice. The final rule should clarify how NRC expects applicants to address co-occurring chemical hazards. This could be through qualitative acknowledgment, a parallel screening analysis, or reliance on EPA and State hazardous-waste programs. It should also describe how the Commission coordinates with EPA on this category of waste stream, consistent with the Commission's general obligation to cooperate with other agencies in formulating compatible standards for protection against radiation and related hazards.[20]

The NRC should not duplicate or displace the chemical-hazard authority that EPA and the States properly exercise under RCRA, the Safe Drinking Water Act, and comparable statutes for hazards to the general environment and off-site receptors. But the NRC's own precedent confirms that this division of labor does not extend to hazards on the NRC-licensed site itself arising from NRC-licensed material: under the Uranium Mill Tailings Radiation Control Act, NRC's regulations at 10 CFR Part 40, Appendix A, govern both radiological and non-radiological hazards at uranium and thorium mill tailings sites, and NRC has taken the position, in comments to EPA, that this

[18] 91 Fed. Reg. at 40,336 (proposed § 61.12(f)).
[19] See 40 C.F.R. pt. 141, Subpart G.
[20] AEA § 274g, 42 U.S.C. § 2021(g).

application of Part 40, Appendix A "meets the AEA standard of 'adequate protection' of public health and safety and the environment."[21]

5. Cost-Benefit Analysis (Specific Request for Comment #5)

The draft regulatory analysis quantifies net cost savings of $39.4 million (7 percent discount rate) and $69.9 million (3 percent discount rate) over a 30-year period.[22] The preamble's Executive Order 14192 discussion reports different figures for the same 30-year analysis ($39.2 million and $69.7 million), an internal inconsistency the final rule should reconcile regardless of the broader scope question addressed below.[23] NRC staff have described the underlying quantification as based on a single waste stream associated with the West Valley Demonstration Project site, extrapolated to the broader GTCC inventory on the reasoning that additional waste streams would only increase the net benefit.[24] The draft regulatory analysis itself acknowledges that it does not quantify the benefits of expanded disposal options for other GTCC waste streams, industry-generated GTCC waste, or reprocessing waste.[25]

Because the rule is tentatively designated a deregulatory action under Executive Order 14192 based on these net-savings figures,[26] a designation resting on a single-waste-stream extrapolation, and reported inconsistently within the preamble itself, may not adequately reflect the range of costs and benefits across the regulated population. Before finalizing that designation, the Commission should reconcile the figures, identify the waste streams and assumptions used in the quantified analysis, and either extend that analysis to a representative set of GTCC waste streams, including industry-generated and reprocessing-derived waste, or state clearly in the final rule

[21] 42 U.S.C. § 2022(a); 10 C.F.R. pt. 40, Appendix A; Nuclear Regulatory Commission, "NRC Staff's Comments on EPA Proposed Rulemaking for 40 CFR Part 192 Rule, 82 FR 7400" (July 17, 2017), ML17173A638; Environmental Protection Agency, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings; Withdrawal of Proposed Rule, 83 Fed. Reg. 54,543, 54,544 (Oct. 30, 2018)

[22] Nuclear Regulatory Commission, draft Regulatory Analysis for Integrated Low-Level Radioactive Waste Disposal (2026), ML26174A244; 91 Fed. Reg. at 40,290, 40,314.

[23] Compare 91 Fed. Reg. at 40,290, 40,314 (reporting net cost savings of $39.4 million and $69.9 million) with id. at 40,319 (reporting, in the Executive Order 14192 discussion, net cost savings of $39.2 million and $69.7 million for the same 30-year period).

[24] Nuclear Regulatory Commission, Executive Order 14300 Rulemaking Public Meeting — Integrated Low-Level Radioactive Waste Disposal — Proposed Rule, July 14, 2026, (Docket No. NRC—2011—0012), ML26182A244.

[25] Nuclear Regulatory Commission, draft Regulatory Analysis for Integrated Low-Level Radioactive Waste Disposal (2026), ML26174A244; 91 Fed. Reg. at 40,313.

[26] 91 Fed. Reg. at 40,319 (Executive Order 14192 discussion).

that the quantified savings reflect a single representative waste stream rather than a comprehensive accounting.

The analysis's benefit categories are also worth examining, apart from their precision. The draft regulatory analysis enumerates nonquantified benefits in terms of "public health (routine), improvements in knowledge, and regulatory efficiency," and separately notes that the rule advances Executive Order 14300 policies on nuclear leadership and on reducing the costs of nuclear operation. However, it does not identify the benefits of the licensed activity to society as a category, or connect its discussion to ADVANCE Act § 501.[27] The final regulatory analysis should identify that category and state the NRC's basis for concluding that the requirements adopted do not limit those benefits beyond what the performance objectives require.

6. Site-Specific Waste Acceptance Criteria Exceeding Generic GTCC Concentration Limits (Specific Request for Comment #6)

Proposed § 61.58 permits licensees to develop site-specific waste acceptance criteria, supported by the technical analyses required under § 61.13, in lieu of the generic classification tables in § 61.55 and the generic GTCC concentration limits described in the preamble.[28] This structure evaluates safety through dose-based performance criteria rather than technology- or concentration-specific proxies, and is the same type of mechanism relevant to other waste streams whose characteristics do not map cleanly onto generic classification tables developed decades earlier.[29] This pathway operates alongside, not in place of, proposed § 61.55(b)(2)(iii), which independently provides that waste exceeding the Table 3 values "is not generally acceptable for land disposal unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are approved by the Commission."[30] The Commission's supporting technical analyses indicate that even a waste stream deliberately modeled with radionuclide concentrations at the Table 3 ceiling remained

[27] Draft Regulatory Analysis, ML26174A244, at 23 (§ 4.4, Qualitative Analysis), 32 (§ 4.7.2, Nonquantified Benefits); *Id.* at 23; ADVANCE Act § 501(a)

[28] 91 Fed. Reg. at 40,346—47 (proposed § 61.58).

[29] Id. at 40,304—05 (discussing site-specific waste acceptance criteria as an alternative to generic concentration limits).

[30] 91 Fed. Reg. at 40,345 (proposed § 61.55(b)(2)(iii)).

substantially below the applicable dose limits for both an offsite individual and an inadvertent intruder within the compliance period.[31]

The final rule should confirm how these two provisions interact: specifically, whether an approved site-specific waste acceptance criteria program under § 61.58 itself satisfies the Commission-approval requirement in § 61.55(b)(2)(iii) for waste above Table 3, or whether a separate approval is required, and should specify what qualitative or quantitative outer bounds, if any, apply to a site-specific showing above those values.

7. Adequacy of Draft NUREG-2175 Guidance (Specific Request for Comment #7)

Safety Case

The NRC should consider whether a standalone safety case document duplicates the technical analyses already required under § 61.13.[32] The preamble explains that the safety case is intended, in part, to align with international practice and provide greater transparency of safety decisions with stakeholders. An integrated, plain-language synthesis makes these documents more accessible than navigational indices organized around the § 61.13 analyses for a license application.[33]

The Commission should retain the proposed safety case as a standalone, integrated component of the license application, and should clarify in NUREG-2175 that a safety case may incorporate the underlying § 61.13 technical analyses by reference rather than restating their contents. This would address the duplicative-drafting concern industry commenters have raised without eliminating the document's distinct function. The defense-in-depth discussion under § 61.10(c) should use the quantitative barrier-neutralization analysis previously discussed.

GTCC Intruder-Barrier Guidance

Draft NUREG-2175 discusses several candidate engineered barrier designs intended to deter inadvertent intrusion into GTCC disposal units over a 500-year period, and itself acknowledges

[31] Nuclear Regulatory Commission and Center for Nuclear Waste Regulatory Analyses, *Impact of Greater-than-Class C (GTCC) Radioactive Waste Disposal in a Specialized Land Disposal Facility* (June 25, 2026), ML26083A006, at 37, 49—51.
[32] NRC staff and industry remarks at the July 14, 2026 public meeting.
[33] 91 Fed. Reg. at 40,305.

that field experience with such barriers is limited and that testing of barrier performance against drilling is still underway.[34] The dose limits and inadvertent-intruder exposure scenarios underlying Part 61's classification tables, and this rulemaking's new Table 3 thresholds, trace back to intrusion modeling developed in the early 1980s and refined through technical position papers issued into the mid-1990s. This rulemaking substantially expands the range of waste streams and disposal configurations subject to that framework, and a separate pending rulemaking is proposing to rely on the same decades-old dose limit as the licensing basis for an entirely new category of byproduct material.[35]

Because this research is expected to continue evolving, and because guidance rather than codified rule text is the appropriate vehicle for barrier-specific technical detail, the Commission should commit to updating this guidance as the underlying research develops, rather than treating current barrier examples as a fixed technical baseline.

IV. Necessity Review for Barriers and Design Features

The preamble states a principle not effectuated by the rule: "The NRC continues to hold that each layer of defense must make a definite contribution to the isolation of the waste, so that the NRC can find with reasonable assurance that no single layer of defense will be relied upon exclusively to achieve the overall safety objectives over the compliance period."[36] That sentence sets out two distinct requirements. One governs *how many* layers of defense a disposal system must have: no single layer may be relied upon exclusively. The other governs *which* features may be counted as layers of defense in the first place: each must make a definite contribution. The first is codified, at the § 61.2 definition of defense-in-depth, and draft NUREG-2175 describes how to demonstrate it.[37]

---

[34] Nuclear Regulatory Commission, draft NUREG-2175, Rev. 1, App. G (2026), ML23255A282; G. Wittmeyer, Evaluating the Capacity of Engineered Human Intrusion Barriers to Deter Domestic Water Well Drilling Methods (2026), ML26043A236; Nuclear Regulatory Commission and Center for Nuclear Waste Regulatory Analyses, Impact of Greater-than-Class C (GTCC) Radioactive Waste Disposal in a Specialized Land Disposal Facility (June 25, 2026), ML26083A006, at 21.

[35] See, e.g., Nuclear Regulatory Commission, *Regulatory Framework for Fusion Machines*, 91 Fed. Reg. 9,476, 9,487 (proposed Feb. 26, 2026) (Docket No. NRC—2023—0071; RIN 3150—AL00).

[36] 91 Fed. Reg. at 40,306. Draft NUREG-2175 states the same proposition in the staff's voice. Nuclear Regulatory Commission, draft NUREG-2175, Rev. 1, *Guidance for Conducting Technical Analyses for 10 CFR Part 61* (2026), ML23255A282, at 7-16.

[37] 91 Fed. Reg. at 40,334 (*proposed § 61.2, defining defense-in-depth as "the use of multiple independent and, where possible, redundant layers of defense against release of radioactive material such that no single layer, no matter how robust, is exclusively relied upon"*); Draft NUREG-2175, Rev. 1, ML23255A282, at 7-14.

The second appears nowhere in the rule text, is defined nowhere in the rule or the guidance, and no regulatory consequence attaches to it.

Despite the difference in treatment, the two requirements are closely connected. A single calculation answers both: set aside the credited performance of one barrier, re-run the performance assessment, and compare the result to the base case. If the projected dose still meets the performance objective, then that layer is not being relied on exclusively, and the first requirement is satisfied as to it. If the projected dose does not change significantly, that barrier makes no definite contribution, and the second requirement is not satisfied by it. Running the same comparison for each credited feature in turn answers both questions; only the reading of the output differs.

Draft NUREG-2175 already specifies that calculation in detail as the "one-off" barrier analysis of Section 6.3.2.1, and Chapter 7 states that it is available for the compliance period and not only the performance period.[38] The guidance acknowledges what a null result can mean: a one-off analysis showing no change when a component is turned off "could show that the barrier or component truly does not contribute significantly to overall performance."[39] However, the guidance directs that one-off results be reported as relative quantities—a percent change, or a rank ordering of barriers against one another—and a relative quantity can establish that one barrier matters more than another but cannot be compared either to a dose limit or to zero. Every consequence the guidance attaches to a barrier analysis runs toward adding layers of defense; as set out below, nothing follows from the opposite finding.

The framework is asymmetrical: it can determine that a facility needs an additional barrier but it cannot determine that a facility has a barrier that does not work. Closing this gap requires (1) that the result already being computed be reported in units that can be compared against something, and (2) that the rule provide a place where a null result calls for an answer.

The asymmetry is also a statutory problem. Section 501 of the ADVANCE Act directs that licensing and regulation of the civilian use of radioactive materials and nuclear energy "be conducted in a manner that is efficient and does not unnecessarily limit— (1) the civilian use of radioactive materials and deployment of nuclear energy; or (2) the benefits of civilian use of radioactive

[38] Draft NUREG-2175, Rev. 1, ML23255A282, at 6-18 (§ 6.3.2.1); *id.* at 7-16.
[39] Draft NUREG-2175, Rev. 1, ML23255A282, at 6-18.

materials and nuclear energy technology to society."[40] That command is not a direction to conduct cost-benefit analysis, and BTI does not read it as one. It is a necessity test, and two features have bearing on this rule. First, it prohibits a defect rather than prescribing a maximum. It is violated where a regulatory design limits a covered benefit by more than the Commission's non-compensable obligations require, and where a less-limiting alternative would have delivered the same protection. A stringent requirement that is necessary is lawful under it, however burdensome. Second, it cannot operate to reduce protection: a limit that is necessary to adequate protection is by definition not unnecessary. What the test reaches is the space of regulatory choice above and around the safety threshold, including the means by which a given level of protection is secured..[41]

Thus, a credited feature whose neutralization does not significantly change the projected dose is not necessary based on performance objectives. Crediting and entrenching such a feature therefore limits the covered benefits by something other than what those objectives demand. The less-limiting alternative is not a hypothetical but the same facility without that feature, performing the same. The NRC is obligated to explain how a selected design does not unnecessarily limit benefits relative to the protection-adequate alternatives, and a failure to consider the question at all misses an important aspect of the problem.[42]

Neither the proposed rule, draft NUREG-2175, nor the draft regulatory analysis refer to ADVANCE Act § 501, the mission statement, or the non-limitation obligation. While the draft regulatory analysis identifies nonquantified benefits (public health, improvements in knowledge, and

[40] Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy Act of 2024 (ADVANCE Act), Pub. L. No. 118-67, § 501(a), codified at 42 U.S.C. § 2201 note. The directive operates on the Commission's mission statement, and Congress did not amend the Commission's licensing authority, having judged the existing authority sufficient. The obligation the provision makes explicit is therefore grounded in the policies of the Atomic Energy Act and the Energy Reorganization Act with which § 501 requires the updated mission to remain consistent, rather than created by § 501 itself. See A. Stein, *Considering Nuclear Energy's Benefits to Society: Update to the Mission Statement of the Nuclear Regulatory Commission as Required by the ADVANCE Act* (Breakthrough Institute, Nov. 25, 2024).

[41] ADVANCE Act § 501(a) conditions the updated mission on remaining consistent with those statutory policies, "including to provide reasonable assurance of adequate protection of the public health and safety, to promote the common defense and security, and to protect the environment."

[42] See *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (agency action is arbitrary and capricious where the agency has "entirely failed to consider an important aspect of the problem").

regulatory efficiency) it does not treat the benefits of the licensed activity to society as a category subject to a non-limitation obligation.[43]

1. Component Descriptions and Thresholds

Where the rule names a component or design feature, it requires description. Proposed § 61.10(c) requires the safety case to "describe the defense-in-depth protections that enhance the resiliency of the facility in complying with the performance objectives specified at §§ 61.41 and 61.43."[44] Proposed § 61.13(a)(8) requires the performance assessment to "[i]dentify and differentiate between the roles performed by the natural characteristics and the design features of the disposal site in limiting radiological releases to the general population."[45] Proposed § 61.13(e) requires the performance period analyses to "identify and describe disposal site design features and natural characteristics relied on to demonstrate compliance with the applicable performance objectives."[46] Each of these is a duty to identify, describe, or differentiate. None establishes a level that a description can fail.

Where the rule sets a threshold, the threshold applies to the total system. The performance objectives at proposed §§ 61.41 and 61.42 govern dose to a member of the public and to an inadvertent intruder from the disposal site as a whole.[47] No provision in the proposed rule is both feature-specific and threshold-bearing. A question of the form "does this feature earn its place" therefore has no home in the rule by construction rather than by oversight. The § 61.2 definition of defense-in-depth reinforces the asymmetry by requiring that "no single layer, no matter how robust, is exclusively relied upon" is a floor against under-reliance. Every additional layer satisfies it more completely, and there is no corresponding ceiling.

2. Part 63 as a Comparison

The NRC's historic decisions creating 10 CFR Part 63 in 2001 have relevance to this rulemaking. Part 63 requires an applicant to identify the design and natural features "considered barriers

[43] Nuclear Regulatory Commission, draft Regulatory Analysis for Integrated Low-Level Radioactive Waste Disposal (2026), ML26174A244, at 23, 32, (enumerating nonquantified benefits as public health (routine), improvements in knowledge, and regulatory efficiency). The searchable text of the proposed rule, draft NUREG-2175, and the draft regulatory analysis contains no reference to the ADVANCE Act, to § 501, or to the non-limitation obligation.

[44] 91 Fed. Reg. at 40,336 (proposed § 61.10(c)).

[45] 91 Fed. Reg. at 40,337 (proposed § 61.13(a)(8)).

[46] 91 Fed. Reg. at 40,338 (proposed § 61.13(e)).

[47] 91 Fed. Reg. at 40,340—40,341 (proposed §§ 61.41, 61.42).

important to waste isolation," to "[d]escribe the capability of barriers, identified as important to waste isolation, to isolate waste," and to provide the technical basis for that description.[48] It sets no level that any of those descriptions must reach. The quantitative standard operates on the system: the engineered barrier system must be designed so that, "working in combination with natural barriers," radiological exposures to the reasonably maximally exposed individual fall within the limits specified at § 63.311.[49] As in proposed Part 61, no provision is both barrier-specific and threshold-bearing. Commenters asked for quantitative per-barrier limits, and the NRC declined: "the final rule does not place quantitative limits on individual barriers," and "[t]he Commission continues to believe a qualitative approach, as proposed, is appropriate."[50]

The generic rule for geologic repositories, 10 CFR part 60 (repositories other than Yucca Mountain), contains bounded and satisfiable per-barrier requirements: containment of high-level waste within the waste packages "substantially complete for a period … not less than 300 years nor more than 1,000 years after permanent closure"; a release rate from the engineered barrier system that "shall not exceed one part in 100,000 per year of the inventory of that radionuclide calculated to be present at 1,000 years following permanent closure"; and pre-waste-emplacement groundwater travel time of "at least 1,000 years."[51]

The NRC gave three grounds for not carrying that approach into Part 63: design flexibility, common-mode uncertainty, and that better methods obviated the need for per-barrier consideration.[52] BTI shares the NRC's goal of not over-constraining designers, but the same bounded per-barrier requirements it removed to achieve that were also the only provisions capable of confirming a barrier had done enough. The Part 63 record does not establish that any particular engineered feature was unnecessary.

3. Draft NUREG-2175 Feature Analysis and Concerns

As noted above, the method that would answer the question is already in the draft guidance, and it is described there in detail. Section 6.3.2.1 sets out one-off, one-on, and factorial barrier

[48] 10 C.F.R. § 63.115(a)—(c).
[49] 10 C.F.R. § 63.113(b); *see also id.* § 63.311 (individual protection standard).
[50] Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada, 66 Fed. Reg. 55,732, 55,759 (Nov. 2, 2001).
[51] 10 C.F.R. § 60.113(a)(1)(ii)(A), (B), (a)(2).
[52] 66 Fed. Reg. at 55,759.

analyses: "In one-off analyses, the performance of a single barrier or component is neglected to understand the contribution of the barrier to performance when the system is operating under the anticipated range of conditions. Each barrier or component is analyzed in this manner, and the relative performance, such as the change in peak dose, is compared."[53] Barrier analyses are commonly performed as part of a performance assessment, and though the guidance in Section 6.3.2 is focused on the performance period, it applies to barrier analyses for the compliance period as well."[54]

However, three features of the guidance, each individually reasonable, jointly foreclose the finding that a credited feature contributes nothing: purpose, units, and consequence.

1. **Purpose:** Section 6.3.2.1 states the use to which one-off results are put: they "clearly identify which elements of the system are contributing the most to performance and, therefore, which elements should have the most technical basis and most rigorous review effort applied to them."[55] That is not a test of whether a credited feature belongs in the design.

2. **Units:** "The results are best expressed on a relative basis, such as percent change, as the analyses may be unphysical."[56] Reporting in fundamental units, like expected doses, is essential for understanding the utility of each individual barrier. If barriers are ranked by percent change that does not provide the essential information of whether even the lowest ranked barrier is critical, or conversely, if a barrier provides no additional benefit.[57]

3. **Consequence:** A null one-off result has two possible explanations: the barrier is redundant, or it was never relevant to what drives the dose. Chapter 7 only addresses redundancy, treating a null result as evidence that "another barrier is available to provide a similar and adequate function."[58] It doesn't address if a credited barrier is contributing no benefit, though the guidance acknowledges that possibility elsewhere. If a barrier turns out to be functionally irrelevant, the framework has no next step for it.

[53] Draft NUREG-2175, Rev. 1, ML23255A282, at 6-18 (§ 6.3.2.1).
[54] Draft NUREG-2175, Rev. 1, ML23255A282, at 7-16.
[55] Draft NUREG-2175, Rev. 1, ML23255A282, at 6-18.
[56] Id.
[57] Draft NUREG-2175, Rev. 1, ML23255A282, at 6-18 (methods); *id.* at 6-20 (Example 6.2).
[58] Draft NUREG-2175, Rev. 1, ML23255A282, at 7-14.

The result is a framework that can conclude a facility needs an additional layer of defense and has no path to concluding that a facility has credited one it does not need. Engineered features credited in a license application carry construction, materials, occupational safety, and long-term operational consequences and can be revised across the license term. Each such revisit can add to the credited set. None can subtract from it on the strength of an analysis.

4. Asymmetric Time Scales and Solutions

This matters more under the proposed rule than under current Part 61 because of the time horizons the rule establishes. A disposal site containing significant quantities of long-lived radionuclides faces a 10,000-year compliance period, and the performance period extends beyond it with no stated end.[59] The preamble is explicit about the function defense-in-depth serves across those horizons: diversity among components "compensates, in part, for uncertainties in the long-term estimation of performance of the disposal site," and defense-in-depth "is used to mitigate the effects of large uncertainties identified during the development of the technical analyses."[60]

That is the correct response when the uncertainty in question can be reduced. For a substantial part of what governs performance at 10,000 years and beyond, it cannot be.. For a disruptive process that recurs at some average rate, the probability that an observation or test program of finite duration ever exercises the mechanism is approximately the product of that rate and the duration. A process recurring on average once in 10,000 years has roughly a one-in-a-hundred chance of occurring during a century of monitoring. Even a century of non-observation revises the estimated rate correspondingly little. No site characterization program, no engineered-feature testing program, and no institutional control period resolves that uncertainty. So, at multiple stages (license application and subsequent revisions), there will always be pressure to continue to add further defenses against this unconstrainable uncertainty. This is a ratchet rather than a safety margin.

A barrier-neutralization analysis has the opposite property. It compares two runs of the same model rather than asking what will happen in the future, so it needs no new observation, no prototype, and no reduction in the underlying uncertainty. Because both runs share the same

[59] 91 Fed. Reg. at 40,334—40,335 (proposed § 61.2, defining "compliance period" and "performance period").
[60] 91 Fed. Reg. at 40,306.

models, parameters, and conservatisms, any error built into the model applies equally to both runs and largely cancels out when they are compared. It is answerable today, from the performance assessment the applicant has already built.

5. § 61.13(a)

BTI recommends that the NRC add the following paragraph to proposed § 61.13(a):

> (9) For each engineered barrier and design feature credited in the performance assessment, an analysis in which the credited performance of that barrier or feature is neglected, reporting the resulting change in the projected peak annual dose in absolute units. Where that change is not significant, the safety case required by § 61.10(c) must state the basis for crediting and retaining the barrier or feature.

This text is scoped to features the applicant itself credits and it creates no obligation to identify barriers beyond those the applicant has already identified under proposed § 61.13(a)(1) and (a)(8). It also requires a statement of basis, not removal. BTI recommends codifying this in rule text rather than addressing it in NUREG-2175 alone. The guidance already contains the method; what it lacks is a requirement and a consequence. Section 6.3.2.1 should direct that one-off results be reported in absolute dose units alongside relative measures, and Chapter 7 should state how a reviewer should treat a null one-off result for which the redundancy explanation does not hold. Conforming changes should be made to NUREG-2175.

This recommendation sets no independent floor for any barrier and so avoids the shared-uncertainty objection that led the NRC to reject subsystem performance standards in Part 63, requires no more than one additional run of a model the applicant has already built, and supplies exactly the record the necessity test requires without any new proceeding.

V. Additional Technical Recommendations

1. Waste Classification Language

The final rule should clarify the statement in proposed § 61.55 that Class A waste is "the least hazardous" and GTCC waste is "the most hazardous" to specify that this description refers to the escalating isolation and containment requirements associated with each waste class, not the

instantaneous radiological hazard of a specific waste stream.[61] As currently written, this framing could be read to imply a general hazard ranking, when a Class A waste stream can present a substantially greater near-term radiological hazard than a GTCC waste stream with a smaller total activity, depending on the specific radionuclides and quantities involved.

A related terminology problem exists between the NRC's and DOE's classification systems. The DOE defines transuranic waste, for its own facilities, as material containing more than 100 nCi/g of alpha-emitting transuranic isotopes with half-lives greater than 20 years.[62] Table 1 in § 61.55 draws the same 100 nCi/g concentration line for the Class C/GTCC boundary, but applies it to alpha-emitting transuranic radionuclides with half-lives greater than 5 years.[63] A radionuclide with, for example, an 8-year half-life above 100 nCi/g is GTCC under NRC's classification but does not meet DOE's own definition of transuranic waste.

A second gap involves "GTCC-like waste," a term DOE uses in its own environmental review documents to describe DOE-owned or DOE-generated waste with characteristics similar to GTCC waste but with no identified disposal path.[64] This term has no independent definition in NRC's regulations. The preamble explains that "GTCC-like waste would need to meet NRC requirements when an NRC licensee assumes responsibility for management of the material under its NRC license," and that, accordingly, "the NRC does not distinguish between GTCC and GTCC-like waste."[65] That approach is reasonable for licensing purposes, but it leaves the two agencies describing overlapping material with non-identical vocabularies up until the point of custody transfer, which complicates cross-agency planning for waste streams.

Finally, DOE's transuranic waste definition excludes "waste that the [NRC] has approved for disposal on a case-by-case basis" Because this rulemaking restructures that mechanism into the new Table 3 and § 61.55(b)(2)(iii) framework, DOE's own definition will, absent a corresponding update to DOE Order 435.1, continue to cross-reference a provision that no longer exists in its current form. The final rule should note this dependency and recommend that DOE update its

[61] 91 Fed. Reg. at 40,306—07 (proposed § 61.55).
[62] U.S. Department of Energy, DOE Manual 435.1-1, Radioactive Waste Management Manual, Change 1 (2001)
[63] 10 C.F.R. § 61.55, Table 1.
[64] U.S. Department of Energy, Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste (DOE/EIS-0375, Jan. 2016).
[65] 91 Fed. Reg. at 40,294—40,295.

Order 435.1 definitions to track the restructured provision, consistent with the Commission's general obligation to coordinate with other agencies on compatible radiation protection standards.

2. Branch Technical Position on Concentration Averaging

The NRC should specify a timeline for updating the Branch Technical Position on Concentration Averaging and Encapsulation to address GTCC waste streams.[66] The existing Branch Technical Position's general principles remain applicable to GTCC waste, but the document has not yet been updated to address GTCC-specific concentration averaging considerations, which bear directly on whether a given waste stream is classified as GTCC in the first instance.

VI. Cross-Rule Coordination and Executive Order 14300

This rulemaking is not self-contained, and its own preamble says so directly: the Commission grounds this proposal in Executive Order 14300's directive to undertake "a review and wholesale revision" of NRC's regulations and guidance, not in a standalone Part 61 initiative.[67] Before finalizing this rule, the NRC should verify that its amendments to Parts 20, 61, 73, and 150 are consistent with the operative and proposed text of the other rulemakings proceeding under that same directive, and should not finalize cross-references or shared definitions as though the provisions they touch are static.

1. The Proposed Removal of § 61.7 Conflicts With the Pending Fusion Machine Rulemaking

The proposed rule removes and reserves § 61.7, "Concepts."[68] The proposed *Regulatory Framework for Fusion Machines* (Docket ID NRC-2023-0071)[69] depends on that exact section for its core waste-disposal compliance mechanism. Proposed § 20.2008(a) in the fusion rulemaking would allow a fusion licensee to dispose of novel waste as low-level waste if the waste is "manifested and labeled for disposal consistent with the description of the applicable waste class in § 61.7,

[66] NRC staff remarks at the July 14, 2026 public meeting confirming the Branch Technical Position on Concentration Averaging and Encapsulation has not yet been updated to address GTCC waste.
[67] 91 Fed. Reg. at 40,292 (citing Executive Order 14300, § 5, 90 Fed. Reg. 22,587 (May 29, 2025)).
[68] 91 Fed. Reg. at 40,336; see also id. at 40,298—40,299.
[69] *Regulatory Framework for Fusion Machines*, supra note 35.

'Concepts,'" without a site-specific intrusion assessment.[70] If this rule finalizes as proposed, that cross-reference will point to a reserved, empty section.

The fusion rulemaking's preamble states that "[t]he draft proposed part 61 rule, if approved by the Commission, would not conflict with the fusion machine rule's proposed changes to § 20.2008," citing SECY-24-0045, the May 2024 draft version of this proposal.[71] That assurance predates, by over two years, the version of this rule now published for comment, which does remove § 61.7. The Commission should not allow a two-year-old no-conflict finding to stand uncorrected against current text that contradicts it.

The final rule should not eliminate § 61.7 without first resolving this dependency. The NRC should either (1) retain § 61.7, or a reduced pointer provision in its place, until the fusion machine rulemaking is finalized and its cross-reference can be corrected in parallel, or (2) coordinate the two rulemakings' finalization so that proposed § 20.2008(a) is amended concurrently to reference wherever the relevant waste-classification concepts are relocated in the restructured Part 61. NUREG-2175 should include a table or index cross-referencing the concepts previously addressed in § 61.7 to their current locations in revised § 61.55 and elsewhere in guidance; that same cross-reference would let both Part 61 applicants and reviewers of the fusion machine rulemaking trace where the classification concepts § 20.2008(a) depends on have relocated. At minimum, before finalizing either rule, the NRC should reconcile whether the fusion rulemaking's no-conflict finding remains accurate in light of this rule's current text.

2. ALARA Cross-References in §§ 61.41 and 61.43

The final rule should also include explicit coordination language addressing its relationship to the pending *Reforming and Modernizing the NRC's Radiation Protection Framework* rulemaking (Docket No. NRC—2025—1140; RIN 3150—AL47).[72]

Both rulemakings propose to amend §§ 61.41 and 61.43. This proposed rule restructures those sections into subsections (a) through (c), introduces a 0.25 mSv (25 mrem) total effective dose limit

[70] Id. at 9,487 (proposed § 20.2008(a)).

[71] Id. at 9,484 n.20 (citing Nuclear Regulatory Commission, SECY-24-0045, "Proposed Rule: Integrated Low-Level Radioactive Waste Disposal" (May 29, 2024), ML23242A249).

[72] Nuclear Regulatory Commission, *Reforming and Modernizing the NRC's Radiation Protection Framework*, 91 Fed. Reg. 43,456, 43,502—43,503 (proposed July 15, 2026) (Docket No. NRC—2025—1140; RIN 3150—AL47)

tied to the new compliance-period framework, and replaces the current ALARA sentence with a cross-reference to revised § 20.1101(b). The *Radiation Protection Framework* rulemaking, evaluated on its own proposed text, instead deletes the same ALARA sentence from the current, single-paragraph version of §§ 61.41 and 61.43, without incorporating this rulemaking's restructuring and without inserting replacement text.[73] This proposed rule preserves the current organ-dose limits only for licensees meeting the § 61.1(b) accommodation.[74]

This is not merely two rules editing the same sections; it is one rule's text depending on content the other rule is simultaneously rewriting. The *Radiation Protection Framework* rulemaking replaces ALARA requirements with a new "graded approach to dose management" that becomes § 20.1101(b)'s operative content.[75] This rulemaking's proposed cross-reference to "revised § 20.1101(b)" is therefore written to presume that rewrite is already in place. But the *Radiation Protection Framework* rulemaking's own amendment to §§ 61.41 and 61.43 does not insert the cross-reference this rulemaking depends on. Each rule assumes a coordination step the other does not perform.

If the *Radiation Protection Framework* rulemaking is finalized on its current schedule without accounting for the restructuring proposed here, its amendatory instruction would apply to text that this rulemaking will already have superseded. Depending on the order of finalization, §§ 61.41 and 61.43 could be left, at least temporarily, without any provision addressing dose optimization pending reconciliation between the two rules.

3. Convergent Amendments to Shared Part 20 Definitions

At least three Executive Order 14300 rulemakings are amending Part 20 concurrently, without cross-referencing one another. This rule revises the definition of "Waste" in § 20.1003 to remove the existing exclusion of transuranic waste.[76] The fusion machine rulemaking separately amends § 20.1003 in the same proceeding to add a definition of "fusion machine" and revise the definitions of "particle accelerator" and "byproduct material."[77] *Modernizing Materials Licensing* (Docket No.

[73] Compare 91 Fed. Reg. at 40,340—40,341 (proposed §§ 61.41, 61.43) *Reforming and Modernizing the NRC's Radiation Protection Framework*, 91 Fed. Reg. 43,456, 43,502—43,503..

[74] 91 Fed. Reg. at 40,340 (proposed § 61.41(c)).

[75] *Reforming and Modernizing the NRC's Radiation Protection Framework*, supra note 72, at 43,480—43,481 (proposed § 20.1101(b)).

[76] 91 Fed. Reg. at 40,332 (proposed § 20.1003).

[77] *Regulatory Framework for Fusion Machines*, supra note 35, at 9,482 (proposed § 20.1003)

NRC—2025—1370; RIN 3150—AL56) further relies on Part 20 for radiation-protection requirements applicable to the facilities it covers. None of these three rulemakings' Federal Register notices acknowledges the others' pending amendments to the same part. Because amendatory instructions operate on whatever CFR text is in effect when each rule is finalized, the sequence in which the Commission finalizes these proceedings will determine whether Part 20's definitions are correctly layered, silently overwritten, or left internally inconsistent.

4. Cumulative Effects of Regulation

Section IX, "Cumulative Effects of Regulation," proposes an effective date 30 days after publication of the final rule and asks whether there are "unintended consequences related to this rulemaking and how should they be addressed."[78] A cross-reference broken by this rule's removal of § 61.7, or a dose-optimization provision left incomplete by uncoordinated amendments to §§ 61.41, 61.43, and § 20.1101(b), are exactly such consequences, and the 30-day effective date proposed leaves little room to resolve them after the fact. The NRC should treat coordination with the fusion machine rulemaking, and with the other Executive Order 14300 proceedings identified above, as part of its answer to that question rather than as a matter external to this docket.

5. Recommended Coordination Mechanisms

The NRC should coordinate effective dates so that no licensee or applicant is subject, even temporarily, to a cross-reference pointing to a reserved or nonexistent provision, or to a provision whose substantive content has not yet been finalized. Supplemental notice should be provided if either this rulemaking or the fusion machine rulemaking materially changes the operative waste-classification text between now and finalization.

VII. Conclusion

The proposed rule advances a workable, risk-informed framework for GTCC disposal after an extended period in which no generic licensing pathway existed. The recommendations above are intended to help the Commission finalize a rule that is administrable across Agreement States and compact regions, coordinated with the NRC's concurrent Executive Order 14300 rulemakings, including the pending fusion machine and radiation protection framework proceedings, and

[78] 91 Fed. Reg. at 40,314—40,315 (Cumulative Effects of Regulation).

supported by a regulatory analysis and technical record adequate to its designation as a deregulatory action.

BTI appreciates the opportunity to comment and welcomes further engagement with NRC staff on the issues raised in this letter.

Sincerely,

PJ Seel
Radiological Health Analyst
The Breakthrough Institute

Adam Stein
Director, Nuclear Energy Innovation
The Breakthrough Institute

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-pwwe-dxlw
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0255
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Oregon Department of Energy

Submitter Information

Email: matt.hendrickson@energy.oregon.gov
Government Agency Type: State
Government Agency: Oregon Department of Energy

General Comment

Oregon Department of Energy comments on Integrated Low Level Waste Disposal

Attachments

ODOE Comments on Part 61 Low Level Waste Disposal

Oregon
Tina Kotek, Governor

OREGON DEPARTMENT OF ENERGY

550 Capitol St. NE
Salem, OR 97301
Phone: 503-378-4040
Toll Free: 1-800-221-8035
FAX: 503-373-7806
www.oregon.gov/energy

August 17th, 2026
Submitted via: https://www.regulations.gov/commenton/NRC-2011-0012-0205

Subject: Oregon Department of Energy Comments on Proposed Rule: 10 CFR Part 61, Proposed Rule for Integrated Low-Level Radioactive Waste Disposal (Docket ID No.: NRC-2011-0012)

The State of Oregon appreciates this opportunity to submit formal comments on the Nuclear Regulatory Commission's (NRC) proposed rule, "Integrated Low-Level Radioactive Waste Disposal." Oregon has maintained a consistent interest in the safety, containment, and long-term management of radioactive waste in the Pacific Northwest, driven by our commitment to protecting the Columbia River and our people, including risks from the Hanford nuclear site near Richland, Washington.

The proposed rule would result in a significant restructuring of the nation's low-level waste disposal regulations. Oregon supports joint state-federal regulatory authority over Greater-Than-Class C (GTCC) waste disposal and specifically advocates that states maintain authority over landfill siting for facilities that are considering accepting GTCC waste. States that are aligned in regional compacts for managing disposal of low-level radioactive waste and regulating low level radioactive waste disposal facilities, including Oregon, should maintain that authority. The State of Oregon strongly supports public health protections as the top priority in a regulatory structure in dealing with GTCC or other types of radioactive waste, and we encourage NRC to exercise caution before creating pathways for the near-surface land disposal of highly concentrated, long-lived waste streams. While Oregon state law bans the disposal of radioactive waste in our state, we support protective measures in neighboring states that host waste that could impact our people and environment. Such is the case at the Hanford site with the Northwest Interstate Compact landfill located therein and close to the Columbia River. Our concerns and policy objections are detailed below.

ODOE Opposes the current Pathway for Near-Surface Transuranic and High Activity Waste Disposal

The proposed expansion of 10 CFR Part 61 to permit the land disposal of transuranic (TRU) waste with alpha-emitting concentrations up to 10,000 nCi/g represents significant regulatory relaxation. Under the long-established waste classification system, defense related transuranic waste exceeding 100nCi/g was recognized as unsuitable for near-surface environments and was appropriately restricted to deep geologic isolation at the Waste Isolation Pilot Project (WIPP) facility in New Mexico. Raising this threshold a hundredfold in the proposed rule compromises public safety even though it would finally provide a location for commercial, industrial, and medically derived TRU to be disposed. The NRC should require that depleted uranium and other long-lived isotopes whose hazards increase over geologic time be completely excluded from near-surface disposal and instead be designated for deep geologic isolation.

The proposed 10,000-year compliance period is inadequate for very long-lived radionuclides like depleted uranium. As the radiological hazard of depleted uranium increases over time, the peak dose occurs millions of years after disposal. Limiting the enforceable compliance analysis to 10,000-years cuts off the safety assessment before the maximum risk is realized. Shallow surface environments cannot be modeled over such time with any degree of certainty due to unpredictable climate shifts, erosion, and even glacial cycles complicating the evaluation. These materials are better kept in deep underground

repositories that manage the uncertainty of time far better than any surface site. The use of the WIPP facility for defense-generated TRU waste is an appropriate analogy for this type of waste from commercially generated sources. Much like at WIPP, the 'reclassified' GTCC waste should be disposed of in a landfill under permanent federal control, jointly regulated with the host state.

This rule change is particularly concerning when combined with the Department of Energy's (DOE) ongoing efforts to reclassify high-level waste (HLW) resulting from spent fuel reprocessing. By establishing a 10,000 nCi/g near-surface disposal pathway, the NRC is risking a regulatory backdoor that will enable the DOE to permanently dispose of high-activity tank waste, vitrified canisters, and highly loaded ion-exchange columns in shallow land burial facilities. These columns, containing up to 60,000 Curies of cesium-137 and strontium-90, present radiological hazards that demand geologic isolation. These items require highly engineered containment and present hazards such as volatile gas generation via radiolysis or thermal output that were not previously evaluated for shallow disposal. NUREG 2175 barely addresses these risks: "For example, reviewers may need to evaluate whether radiation fields or thermal output from radioactive decay for certain higher activity waste streams would significantly compromise structural stability of the waste containers or degradation of the waste forms and lead to stability issues for the disposal unit. Reviewers should coordinate their review of the development of allowable limits from the technical analyses with their review of acceptable waste form characteristics and container specifications (see Section 9.1.2)" while associated NUREGs 1200, 1854, 1573 only tangentially touch on issues related to high activity wastes.

The financial benefit to DOE from the NRC rulemaking, as stated in the financial estimates, show that DOE expects to accrue 99.7% ($109,720,000) of the cost saving from this rule making from the West Valley Demonstration Project alone.[1] Basing the cost avoidance off the West Valley Demonstration Plant, a facility that reprocessed nuclear fuel, further reinforces the idea that HLW and future reprocessing wastes will be reclassified by the DOE's internal HLW interpretation. The NRC should explicitly revise the proposed rule to exclude any waste streams considered High Level Waste under the Nuclear Waste Policy Act (NWPA) and under control of DOE. The federal government should follow the WIPP model and honor the original mandate of the NWPA by establishing a dedicated, federally controlled repository for these unique, high-activity waste streams both defense-related and commercial.

ODOE remains concerned about Inadvertent Intruder Standard, use of probabilistic risk discounting, and loss of organ specific dose limits.

ODOE continues its 2019 objection[2] to using low probabilities of exposure to justify a significant reduction in conservatism. The NRC has an obligation to protect the public – even when there may be a low probability of exposure. Incorporating probability into a deterministic public health standard is speculative and assumes permanent institutional control over near-surface facilities - unlikely over a 10,000-year period. There is no model that can defensibly quantify the probability of an inadvertent intruder over that duration. A future driller who penetrates an engineered cap will receive a highly dangerous, potentially carcinogenic chronic dose, regardless of any mathematical model's low-probability prediction. Using nonconservative mathematical performance models ensures regulatory failure, where idealized physical parameters are substituted for realistic or worst-case material degradation and bio-intrusion events.

ODOE is also concerned about the deletion of the organ-specific dose limits in 10 CFR 61.41 and their replacement with the Total Effective Dose Equivalent (TEDE) system under 10 CFR Part 20. This change relaxes permissible release limits for highly toxic actinides and strontium-90 that selectively accumulate in specific organs. Removal of the organ specific dose limits creates unacceptable unregulated risk. ODOE urges NRC to retain the established, organ-specific dose limits of 25 mrem to the whole body, 75 mrem

[1] https://www.regulations.gov/document/NRC-2011-0012-0205 Table 1
[2] https://www.regulations.gov/comment/NRC-2017-0081-0048

to the thyroid, and 25 mrem to any other organ to ensure consistent, multi-organ protection.

Continue to refine the ruleset to protect the Interstate Compact System and Sited States

Oregon is a member of the Northwest Interstate Compact for low level radioactive waste disposal, and we question how the proposed rule changes could affect the agreement states and the existing landfills. State laws and compact agreements are deeply integrated with the traditional Class A, B, and C waste categories. States and NRC should have joint authority over GTCC waste and associated disposal sites. Low level radioactive waste landfill host states and associated Compact Members must be provided with discretion in permitting disposal facilities for GTCC wastes. ODOE suggests that landfill host state "veto" power should be enshrined with Subpart F for siting of these facilities so that Compact Articles, such as Article V of the Northwest Compact, retain primacy and legitimacy: "…it shall require a two-thirds vote of all such members, including the affirmative vote of the member of any party state in which a facility affected by such arrangement is located, for the committee to enter into such arrangement."[3]

The co-location of NRC-licensed GTCC units within commercial landfills that are also regulated under Agreement State licenses for Class A, B, or C wastes could create operational and regulatory confusion. Split jurisdiction and oversight of shared groundwater networks, monitoring wells, and corrective action programs may compromise state-level environmental protections, increasing the risk of uncoordinated responses to contamination plumes in sensitive river corridors. To encourage Federal and state cooperation we point to the WIPP facility as a model for consideration of GTCC waste streams. Ideally, GTCC waste would be disposed of in dedicated federally-managed facilities, with host state oversight.

Conclusion

We maintain that the mathematical modeling of near-surface natural, engineered, and human systems is not a substitute for the physical security represented by deep geologic disposal. Merely adding a 500-year cap over a 10-meter shallow trench does little to ameliorate this concern. The proposed rule fails to provide the necessary level of public protection and introduces pathways that could turn regional low-level waste landfills into shallow, high-activity de facto repositories.

NRC should revise the proposed rule by:

- Establishing a "Graded Waste Form" restriction, allowing near-surface non-defense TRU disposal only for solid, non-dispersible activated metals in a federal facility designed solely for that purpose, while requiring deep geologic disposal for dispersible non-defense TRU wastes.
- Maintaining the 100 nCi/g transuranic waste limit for near-surface disposal of disbursable and soluble non-defense waste forms.
- Continuing the inadvertent intruder dose standard of 100 mrem/yr that already allows flexibility to increase the limit to 500 mrem/yr if ***proven*** necessary.
- Restoring the organ-specific dose limits under 10 CFR 61.41.
- Ensuring regional compact and disposal facility host state authority for permitting and regulation of reclassified GTCC waste.
- Requiring that near-surface disposal of GTCC wastes and/or non-defense wastes containing more than 100 nCi/g of transuranic elements only be permissible in federal facilities designed and managed solely for that purpose with agreement of the host state and approval of the applicable regional compact.

[3] https://mca.legmt.gov/bills/mca/title_0500/chapter_0790/part_0050/section_0010/0500-0790-0050-0010.html

Oregon stands ready to work with the NRC and our regional partners to ensure that radioactive waste management is held to a rigorous, scientifically sound standard that protects human health and the environment.

Please contact me (matt.hendrickson@energy.oregon.gov or 503-806-7476) if you have any questions.

Thank you for your consideration,



Matt Hendrickson
Radioactive Waste Remediation Specialist
Oregon Department of Energy

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-qg7c-gpnp
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0256
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Carolyn Croom

Submitter Information

Name: Carolyn Croom
Address: United States,
Email: cbcroom@sbcglobal.net

General Comment

The proposed rule, “Integrated Low-level Radioactive Waste Disposal, NRC-2011-0012”, places the nuclear industry in the driver’s seat, ready to run over present and future generations and the environment. Proposing changes to allow for the permanent shallow burial of Greater-Than-Class C (GTCC), GTCC-like, and transuranic wastes, is quite dangerous and irresponsible. The high radioactivity and long-lived nature of these wastes requires deep geological disposal. The proposed changes would allow site-specific criteria for radioactive waste acceptance based on technical analyses created by the applicant, rather than uniform, national standards protecting human health and safety. This is not how a democracy should operate.

A rule such as this should not preempt state authority and should require consent from the impacted state(s) and nearby communities where a site is located, including national and local public hearings. There has not been a public hearing of any sort, only an informational webinar. The comment period should be extended, as other proposed rules being considered now would likely have an impact on this rule.

I concur with the comments of the Texas Nuclear Watchdogs (tracking # msp-pmcv-8s4x).

This proposed regulation should be withdrawn.

Sincerely,

Carolyn Croom

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-qquz-9g4c
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0257
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Northwest Interstate Compact (NWIC)

Submitter Information

Email: kristen.schwab@doh.wa.gov
Organization: Northwest Interstate Compact (NWIC)

General Comment

The Northwest Interstate Compact on Low-Level Radioactive Waste Management (NWIC) appreciates the opportunity to comment on the NRC's proposed revisions to 10 C.F.R. Part 61 and offers the following comments for your consideration.

Attachments

NWIC Docket ID NRC-2011-0012

NORTHWEST INTERSTATE COMPACT
On Low-Level Radioactive Waste Management

P.O. Box 47827, Olympia, Washington 98504-7827. Kristen Schwab, Executive Director, (360) 239-2358
www.nwcompact.org

August 17, 2026

Jody C. Martin
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Mail Stop O-16 B33
Washington, DC 20555-0001
ATTN: Rulemaking Staff

Submitted electronically via https://www.regulations.gov under **Docket ID NRC-2011-0012**.

Subject: **Comments on the Proposed Rule, Integrated Low-Level Radioactive Waste Disposal (Docket ID NRC-2011-0012; Federal Register Document No. 2026-13302, published July 1, 2026)**

The Northwest Interstate Compact on Low-Level Radioactive Waste Management (NWIC) appreciates the opportunity to comment on the NRC's proposed revisions to 10 C.F.R. Part 61. The NWIC is an interstate compact among the States of Alaska, Hawaii, Idaho, Montana, Oregon, Utah, Washington, and Wyoming. The NWIC operates within the federal statutory framework established by the Low-Level Radioactive Waste Policy Act of 1980 and the Low-Level Radioactive Waste Policy Amendments Act of 1985. Congress expressly consented to the NWIC and to each of its articles in the Omnibus Low-Level Radioactive Waste Interstate Compact Consent Act, enacted as Title II of Public Law 99-240. The Compact establishes the Northwest Low-Level Waste Compact Committee, consisting of an official designated by the Governor of each member state, to consider matters arising under the Compact and to carry out the responsibilities assigned to the Committee under its terms.

The NWIC offers the following comments for your consideration. These comments reflect positions approved by a majority of the Northwest Low-Level Waste Compact Committee. Individual member states may have additional or differing views and may submit separate comments on the proposed rule. Accordingly, these comments represent the position of the NWIC acting through its Compact Committee and do not necessarily represent the independent position of each member state.

U.S. Nuclear Regulatory Commission
Comments on Docket NRC-2011-0012
August 17, 2026

Comments on the Proposed Revision to 10 CFR Part 61 Regulations

Subpart A – General Provisions

§ 61.1 Purpose and Scope

Comment: Clarify that legacy facilities that will not accept significant quantities of long-lived radionuclides or Greater than Class C (GTCC) may continue to comply with the original Part 61.
Proposed § 61.1(b)(1) lists the new or revised regulations that originally licensed facilities need not comply with. Please clarify that, for originally licensed facilities that have not accepted significant quantities of long-lived radionuclides or intend to accept GTCC, the option to use the existing regulatory framework continues during license renewals through facility closure, assuming the waste streams remain within the boundaries established by the original Part 61. The addition of "originally licensed" in § 61.1(b)(1)(i) suggests that this is the case, but confirmation is requested.

Subpart F - Participation by State Governments and Indian Tribes

§ 61.70 Scope

Comment: The Commission should revise Subpart F to include Compacts.
The Low-Level Radioactive Waste Policy Amendments Act was not in place when 10 CFR Part 61 was promulgated. As such, § 61.70 needs to be updated to include Compacts. Compacts regulate the movement of low-level radioactive waste so must be included in the process.

§ 61.71 State and Tribal government consultation.

Comment: The Commission should revise § 61.71 to include Compacts.
The Low-Level Radioactive Waste Policy Amendments Act was not in place when 10 CFR Part 61 was promulgated. As such, § 61.71 needs to be updated to include Compacts. Compacts regulate the movement of low-level radioactive waste so must be included in the process.

§ 61.72 Filing of proposals for State and Tribal participation.

Comment: The Commission should revise § 61.72 to allow States, and Tribes to participate in the license review process without petitioning the Commission. Compacts must be included in this allowance.
Requiring the States and Tribal governments to formally request an opportunity to comment on a land disposal application is an outdated policy. The method for filing a request requires a comprehensive proposal signed by the Governor of the State or the official otherwise provided for by State or tribal law. This is an overly burdensome and outdated process. Compacts regulate the movement of low-level radioactive waste so must be included in the process. A more consistent and modern approach would allow States, Tribes and Compacts to participate without petitioning, consistent with NRC's current Tribal Policy Statement, longstanding State-consultation practices and implementation of the Low-Level Radioactive Waste Policy Act.

Please contact me at kristen.schwab@doh.wa.gov or (360) 239-2358 if you have any questions.

Sincerely,



Kristen Schwab, Chair
Northwest Interstate Compact

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-qxym-7k21
Comments Due: August 17, 2026
Submission Type: API

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0258
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Sam Jones

Submitter Information

Name: Sam Jones
Address:
Andrews, TX, 79714
Email: sjones@co.andrews.tx.us
Phone: 4325241401

General Comment

Comment 1: Specific Request for Comment No. 2: Require Meaningful Host-State and Host-Community Participation in SLDF Licensing

In Specific Request for Comment No. 2, the Commission asks what steps the NRC can take to ensure that States' insights are considered in the licensing of Greater-Than-Class-C (GTCC) disposal facilities and whether 10 C.F.R. Part 61, Subpart F appropriately enables States to provide input in NRC licensing of those facilities. The Commission should address an important gap in the proposed rule by expressly extending Subpart F to specialized land disposal facilities (SLDFs) and by establishing a direct role for the host local government and community in the licensing process.

Comment 2: Part 61, Subpart F: Require an NRC-Conducted Public Meeting in the Host Community for Every SLDF Application

The Commission should also amend Part 61, Subpart F to require at least one NRC-conducted public meeting in the host community for every application for a Part 61 license to receive, possess, and dispose of radioactive waste at a specialized land disposal facility.

These requirements would not alter the Commission's ultimate authority to determine whether a license satisfies the Atomic Energy Act and the applicable NRC regulations. They would ensure, however, that the Federal licensing process for a new category of long-term radioactive-waste disposal provides a meaningful and defined role for the State, local governments, Tribal governments, and residents who will bear the most direct consequences of the Commission's decision.

Attachments

SJ Comment NRC-2011-0012

Comment 1: Specific Request for Comment No. 2: Require Meaningful Host-State and Host-Community Participation in SLDF Licensing

In Specific Request for Comment No. 2, the Commission asks what steps the NRC can take to ensure that States' insights are considered in the licensing of Greater-Than-Class-C (GTCC) disposal facilities and whether 10 C.F.R. Part 61, Subpart F appropriately enables States to provide input in NRC licensing of those facilities. The Commission should address an important gap in the proposed rule by expressly extending Subpart F to specialized land disposal facilities (SLDFs) and by establishing a direct role for the host local government and community in the licensing process.

The proposed rule defines a "specialized land disposal facility" as a land disposal facility designed to prevent an inadvertent intruder from disrupting or contacting emplaced waste while the waste remains a radiological hazard. Critically, the proposed definition expressly provides that an SLDF "is not a near-surface disposal facility." Proposed 10 C.F.R. §61.2.

That distinction creates an ambiguity in the existing participation provisions. Section 61.70 broadly describes Subpart F as establishing mechanisms for State and Tribal participation in review of an application for a "land disposal facility." Section 61.72(a), however, specifically authorizes participation proposals from a State or Tribal governing body whose interest is affected by a "near-surface disposal facility at the proposed site." Because the proposed rule expressly provides that an SLDF is not a near-surface disposal facility, §61.72 as presently written does not clearly extend to SLDF licensing.

That ambiguity should not remain in the final rule, particularly when the Commission has specifically requested comment on whether Subpart F adequately enables State participation in GTCC licensing.

The Commission should amend §§61.70 through 61.73 to expressly apply to specialized land disposal facilities. In addition, those provisions should provide a direct participation mechanism for the local governmental body in which an SLDF is proposed to be located. Existing §61.72(c)(4) contemplates that a participating State or Tribe will describe its plans to facilitate local-government and citizen participation, but local participation should not depend entirely upon whether the State elects to submit a participation proposal or upon the scope of that proposal. A county or municipality asked to host an SLDF has interests distinct from, although complementary to, those of the State.

The need for direct participation is heightened by the regulatory structure applicable to GTCC waste. The proposed rule would clarify that disposal of GTCC waste must be licensed exclusively by the NRC. Agreement States may continue to regulate disposal of qualifying Class A, B, or C waste, but they may not assume the NRC's regulatory authority over GTCC disposal. Thus, where an SLDF is proposed for GTCC disposal, the NRC licensing process will be the principal nuclear-safety licensing proceeding in which the host community can address the proposed facility.

Pre-Application Host-Community Engagement

The Commission should also amend proposed §61.10, "Content of application," to require an SLDF applicant to demonstrate meaningful engagement with the proposed host jurisdiction before its application is accepted as complete for review.

At a minimum, an application for an SLDF license should include documentation demonstrating:

1. **Formal notice to host governments.** The applicant provided formal written notice of the proposed facility to the State, the governing body of the county in which the facility would be located, the governing body of any municipality in which the facility would be located, and any affected Federally recognized Indian Tribe no fewer than 180 days before submitting the application.

2. **A pre-application public meeting.** The applicant conducted at least one public meeting within the host county, and, where the proposed site is within a municipality, in or reasonably near that municipality, before submitting the application. Notice of the meeting should be provided no fewer than 60 days in advance through reasonable local publication, the applicant's website, direct notice to affected governmental entities, and other methods reasonably calculated to inform residents of the host community. Remote participation should be provided where reasonably practicable but should not substitute for an in-person meeting in the host community.

3. **Documentation of community input.** The application includes a written summary of oral and written comments received during the pre-application process and the applicant's response to substantive issues raised by the host State, host local governments, affected Tribal governments, and members of the public.

These requirements would not give a host government a veto over an SLDF license. They would ensure that the NRC receives an application developed with knowledge of local conditions and concerns and that the applicant cannot wait until the Federal licensing process is substantially underway before meaningfully engaging the community that would host the facility.

Federal nuclear-waste law already recognizes that host jurisdictions warrant a meaningful role in decisions involving long-term nuclear-waste disposal. The Nuclear Waste Policy Act, for example, establishes a formal process under which a host State or affected Indian Tribe may disapprove a recommended high-level-waste repository site, subject to congressional override. See 42 U.S.C. §§10135-10138. That statutory process is not directly applicable to an SLDF and need not be replicated here, but it reflects the broader principle that jurisdictions bearing the consequences of long-term nuclear-waste disposal should have a defined role in the governmental decision-making process.

The NRC's own adjudicatory regulations reflect the same principle. Under 10 C.F.R. §2.309(h)(3), the Commission must permit intervention by the State and local governmental body in which a proposed high-level-waste geologic repository would be located, as well as an affected Federally recognized Indian Tribe, when the entity satisfies the contention requirements of §2.309(f).

The Commission should provide comparable treatment for an SLDF proceeding. At a minimum, the host State, host county, host municipality, as applicable, and affected Federally recognized Indian Tribe should not be required to separately demonstrate standing under §2.309(d) in order to obtain party status in an SLDF licensing proceeding. If such an entity submits at least one admissible contention satisfying §2.309(f), the Commission should permit intervention in the same manner contemplated by §2.309(h)(3) for a high-level-waste repository proceeding.

Because Part 2 is not among the parts expressly proposed for amendment in this rulemaking, if the Commission determines that a conforming amendment to §2.309 cannot properly be adopted as part of this final rule, the Commission should initiate the necessary conforming rulemaking before accepting the first application for an SLDF license.

These changes would directly respond to Specific Request for Comment No. 2 and would ensure that State and local participation in an SLDF licensing proceeding is substantive rather than merely discretionary.

Comment 2: Part 61, Subpart F: Require an NRC-Conducted Public Meeting in the Host Community for Every SLDF Application

The Commission should also amend Part 61, Subpart F to require at least one NRC-conducted public meeting in the host community for every application for a Part 61 license to receive, possess, and dispose of radioactive waste at a specialized land disposal facility.

Existing NRC regulations provide avenues for public participation, but none clearly guarantees an NRC public meeting in the community where an SLDF would actually be located.

Under 10 C.F.R. §61.72(c)(6), a State or Tribal participation proposal may request educational or informational services from the Commission, including public meetings. That provision makes such a meeting dependent upon a State or Tribe first submitting a participation proposal and then requesting the meeting.

Similarly, the NRC's environmental-review regulations provide that the scoping process for an environmental impact statement "may include a public scoping meeting." 10 C.F.R. §51.26(b). Affected State and local agencies and affected Indian Tribes must be invited to participate in the scoping process under §51.28, but the regulations do not require the NRC to conduct an in-person public meeting in the host community.

For an SLDF, a host-community meeting should not be discretionary.

The proposed rule creates a new disposal category intended to accommodate waste streams containing radionuclide concentrations beyond those generally acceptable for near-surface disposal. It also provides a Federal licensing pathway for disposal of GTCC waste, over which the NRC would retain exclusive licensing authority. Communities proposed to host such facilities should be guaranteed a meaningful opportunity to address the NRC directly before a final licensing decision is made.

The Commission should add a new provision to Subpart F substantially as follows:

§61.74 Public participation for specialized land disposal facility applications.

(a) For any application for a license under this part to receive, possess, and dispose of radioactive waste at a specialized land disposal facility, the Commission shall conduct at least one public meeting within the county in which the proposed facility would be located. If the proposed facility would be located within an incorporated municipality, the meeting should be conducted within or reasonably near that municipality.

(b) The meeting shall occur sufficiently in advance of the Commission's final licensing decision to permit meaningful consideration of information received at the meeting and, in no event, fewer than 90 days before issuance of a final licensing decision.

(c) The Commission shall provide no fewer than 60 days' notice of the meeting. Notice should be provided through the NRC's public docket and website, by direct notice to the host State, county, municipality, and affected Federally recognized Indian Tribes, through publication in a newspaper of general circulation serving the host community where such a publication exists, and through other reasonable methods calculated to provide actual notice to residents of the host community.

(d) The meeting shall provide a reasonable opportunity for members of the public and representatives of State, local, and Tribal governments to make oral statements and submit written comments concerning the proposed facility. A transcript or meeting summary, written comments, and other substantive materials received shall be placed in the public licensing docket.

(e) The Commission shall identify and address material issues raised during the host-community meeting in the applicable licensing, safety-review, or environmental-review documents before issuing a final licensing decision.

(f) The public meeting required by this section is supplemental to, and does not replace or limit, any right to request a hearing or intervene under Part 2 of this chapter, any governmental participation authorized by §§61.70 through 61.73, or any public-participation requirement arising under Part 51 of this chapter.

The distinction between a public meeting and an adjudicatory hearing is important. This recommendation does not require the Commission to convert general public comment into an evidentiary hearing or to alter the contention requirements applicable to parties under 10 C.F.R. §2.309. Rather, it would guarantee that the residents and governmental entities most directly affected by an SLDF proposal can speak directly to NRC decision makers or staff in their own community and have their concerns included in the licensing record.

A mandatory host-community meeting would also complement the safety-case requirement proposed in §61.10(c). The Commission explains that the safety case is intended not only to support the regulatory decision but also to improve transparency and public understanding. That objective is better served if the information contained in the safety case is presented and discussed in the community that would host the proposed facility.

The Commission should therefore amend Subpart F to accomplish three related objectives:

1. expressly extend State and Tribal participation under §§61.70 through 61.73 to specialized land disposal facilities;
2. provide the host local governmental body with a direct participation mechanism rather than relying exclusively on State or Tribal facilitation of local participation; and
3. guarantee at least one NRC-conducted public meeting in the host community before any final decision on an SLDF license.

These requirements would not alter the Commission's ultimate authority to determine whether a license satisfies the Atomic Energy Act and the applicable NRC regulations. They would ensure, however, that the Federal licensing process for a new category of long-term radioactive-waste disposal provides a meaningful and defined role for the State, local governments, Tribal governments, and residents who will bear the most direct consequences of the Commission's decision.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-r8dd-lr3t
Comments Due: August 17, 2026
Submission Type: API

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0259
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from US Department of Energy-Office of Environmental Management

Submitter Information

Email: justin.marble@em.doe.gov
Government Agency Type: Federal
Government Agency: US Department of Energy-Office of Environmental Management

General Comment

See attached file(s)

Attachments

DOE-EM Letter to NRC on Proposed Rule Comments 2026 final signed

Department of Energy
Washington, DC 20585

August 17, 2026

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555
ATTN: Rulemakings and Adjudications
Staff
Staff Docket ID NRC-2011-0012

To Whom It May Concern:

The Department of Energy's (DOE's) Office of Environmental Management (EM) appreciates the opportunity to provide comments for this proposed rule (published on July 1, 2026, for revisions to the Nuclear Regulatory Commission's (NRC) 10 CFR Part 61*, Integrated Low-Level Radioactive Waste Disposal*). Revisions to Part 61 could expand DOE's ability to use commercial disposal facilities. We appreciate that some of the previous DOE comments (e.g., ML15208A235, ML17321A402) have been addressed in the updated proposed rule. While the NRC has made significant revisions, particularly on the inclusion of Greater-Than- Class C (GTCC) waste; several areas of concern previously identified by DOE have persisted from the 2015 proposed rule and draft guidance document (NUREG-2175). EM is providing additional (new) comments and summarizes previous key comments from the 2015 proposed rule below.

1. The proposed rule and draft guidance include prescriptive requirements that are not consistent with a risk-informed, performance-based regulatory framework, especially for the new concept of a specialized land disposal facility (e.g., Table 3 in 61.55, 5 m depth below land surface, requiring that an inadvertent intruder will not disrupt or contact emplaced waste). DOE also believes that more than 600 pages of prescriptive guidance (NUREG-2175, Rev. 1) is excessive and should be substantially shortened to better reflect a risk-informed, performance-based regulatory framework.
2. DOE does not agree that a 10,000-year compliance period is appropriate and recommends 1,000-year period be used for all LLW. There are also concerns about how the performance period results are interpreted and used for decisions. These concerns are well documented in prior DOE comments.
3. DOE is supportive of revising NRC's Low-Level Waste (LLW) definition to include GTCC, which can include transuranic waste.
4. NRC refers to 10 CFR Part 20.1402 for the dose standards in 61.41 rather than specifically identifying dose limits. Part 20.1402 refers to radioactivity that is "distinguishable from background radiation" (i.e., radon). As documented in previous comments, DOE believes the NRC should be clear that, consistent with

EPA, NRC, and DOE standards, radon should be excluded from calculations for the dose limits; use a separate concentration or flux standard for radon.

5. Including a specific dose limit for inadvertent intruders in 61.42 is inconsistent with previous United States and international implementation of inadvertent intrusion standards. DOE is opposed to a prescriptive requirement to demonstrate compliance for what is commonly recognized as a hypothetical construct. Inadvertent intruder analysis is of benefit and can inform decisions but should not be subject to a performance objective.
6. DOE plans to operate the Waste Isolation Pilot Plant and other DOE operated disposal facilities according to existing authorities. DOE will comply with disposal requirements established at commercial facilities. DOE requests speculation in the Preamble related to future Land Withdrawal Act actions be removed.
7. To support the DOE EM cleanup mission, clarification is needed regarding NRC authority over GTCC to reconcile the position of "exclusive NRC authority" (e.g., dual NRC and State authority).

We welcome the opportunity to meet with NRC Staff to discuss these and other concerns in detail.

JUSTIN MARBLE

Digitally signed by JUSTIN MARBLE
Date: 2026.08.17 17:34:23 -04'00'

Justin C. Marble
Acting Deputy Assistant Secretary for
Waste and Materials Management

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-rexj-pv5g
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0260
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from The Abundance Institute and Valar Atomics.

Submitter Information

Organization: The Abundance Institute and Valar Atomics.

General Comment

Attached please find the comments of the Abundance Institute and Valar Atomics.

Attachments

Comments of Abundance and Valar on Integrated LLW Disposal

August 17, 2026

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40,290 (July 1, 2026), Docket No. NRC–2011–0012, NRC–2015–0003, NRC–2017–0081, RIN 3150–AI92.

The Abundance Institute and Valar Atomics (collectively, Commenters) submit these comments on the Nuclear Regulatory Commission's (NRC) proposed rule, *Integrated Low-Level Radioactive Waste Disposal*, 91 Fed. Reg. 40,290 (July 1, 2026).

The Abundance Institute is a nonprofit organization that works to build regulatory environments that allow emerging technologies to scale. The Institute regularly participates in public-policy discussions concerning domestic energy infrastructure, including nuclear power and the back end of the nuclear fuel cycle.

Valar Atomics engineers high-temperature gas reactors designed to supply grid-independent industrial heat and clean synthetic hydrocarbons. Western civilization was built on abundant energy, and Valar's goal is to deploy nuclear power at unprecedented scale and density. DOE selected Valar for both its Reactor Pilot Program and its Fuel Line Pilot Program, the latter to support TRISO fuel fabrication for its Ward250 reactor and potentially other high-temperature gas reactors. On June 18, 2026, Ward250 completed a fueled criticality demonstration at the Utah San Rafael Energy Lab, becoming the first DOE-authorized reactor built outside a national laboratory.

Commenters share a direct interest in reforming the regulatory framework that governs the back end of the fuel cycle. The proposed rule modifies NRC part 61 regulations, which govern low-level waste (LLW). LLW is any radioactive waste that is not high-level radioactive waste, transuranic waste, spent nuclear fuel, or mill tailings or other byproduct material from extraction or concentration of uranium or thorium for source material. 42 U.S.C. § 2021b(9); 10 C.F.R. § 61.2. Waste qualifying as LLW runs from the gloves, filters, and syringes of

routine nuclear medicine to the activated steel of a decommissioned reactor core. This waste is sorted into four classes by radionuclide concentration: Classes A, B, C, and Greater-Than-Class C (GTCC), with Class A being the least hazardous and GTCC the most hazardous. Class A, which comprises the vast majority of LLW, contains radionuclide concentrations low enough that it is expected to pose no significant hazard to an inadvertent intruder once the 100-year period of institutional control ends. Class B carries higher radionuclide concentrations than Class A, but likewise does not require the added intruder protections applied to Class C waste, subject to more stringent waste-form stability requirements. Class C consists of LLW with radionuclide concentrations high enough that the regulations require additional protection against inadvertent intrusion, such as greater disposal depth or engineered intruder barriers designed to be effective for at least 500 years. LLW with still higher concentrations falls into the GTCC Class.

The classification determines how LLW is disposed of, with each class subject to increasingly stringent requirements. Class A, B, and C waste can be sent to one of four operating disposal facilities. But GTCC waste, including much of the novel waste that advanced reactors, advanced fuels, and emerging reprocessing technologies will generate, cannot, because its radionuclide concentrations exceed the Class C limits in the § 61.55 tables, which were built around the light-water reactor waste streams of the original classification scheme.

In 1985, Congress made GTCC disposal a federal responsibility and directed that this waste be disposed of in an NRC-licensed facility. Forty years later, however, that waste remains in storage at the sites that produced it: DOE has not collected it for disposal, and no licensed disposal facility, or generally applicable regulatory pathway to license one, yet exists. As a result, reactor operators and decommissioning projects hold GTCC waste onsite in dry storage alongside spent fuel, and a closed reactor site cannot finish decommissioning and terminate its license while that inventory has nowhere to go. The proposed rule sets out to correct this.

The proposed rule would do six major things:

1. **It finally gives GTCC waste somewhere to go.** Since 1989, 10 C.F.R. § 61.55(a)(2)(iv) has said that GTCC must go to a geologic repository unless the Commission approves disposal elsewhere on a case-by-case basis. 54 Fed. Reg. 22,578 (May 25, 1989). No repository exists, and in thirty-seven years that pathway has produced no disposals. The proposed rule replaces this dead end with a graded structure. Waste with long-lived transuranic alpha emitters at or below 10,000 nanocuries per gram could go in the near surface, under at least five meters of cover

and behind intruder barriers built to last 500 years. Proposed § 61.52(a)(3), 91 Fed. Reg. at 40,342–43. More concentrated waste would go to a new kind of facility, a "specialized land disposal facility," designed so that engineered barriers and the site's own geology together keep an intruder away from the waste. Proposed §§ 61.2, 61.51(b), *id.* at 40,335, 40,342. Table 3 would set the concentrations generally acceptable for each facility type, and the Commission could authorize departures from Table 3 on a case-by-case basis. Proposed § 61.55(b), *id.* at 40,345–46. The proposed rule also deletes the categorical exclusion of "transuranic waste" from the definition of waste in §§ 20.1003 and 61.2.

2. **It lets each disposal site set its own waste acceptance criteria.** Proposed § 61.58 would let a licensee decide what classes of LLW its facility can accept using either the existing generic classification tables or its own site-specific technical analyses, approved by the regulator and written into the license. *Id.* at 40,304–05, 40,346–47. As the Commission explains, the generic tables, promulgated in 1982, can be "overly restrictive based on actual site characteristics, facility design, and operational practices." *Id.* at 40,305.

3. **It scales the stringency of facilities' required analysis to the actual hazard level of stored waste.** A facility that does not accept significant quantities of long-lived radionuclides would analyze a 1,000-year compliance period, whereas a facility that does would analyze a 10,000-year compliance period and add qualitative "performance period analyses" for the time beyond. Proposed § 61.2, *id.* at 40,334; *id.* at 40,299–300. Proposed § 61.13 spells out five analyses: a performance assessment against a public dose limit of 25 mrem per year; an inadvertent intruder assessment against 500 mrem per year; an operational safety assessment; a site stability assessment; and the performance period analyses. *Id.* at 40,300–03; 40,337–38. Existing facilities that take no GTCC waste and no significant long-lived inventory could keep operating under the original part 61 requirements. Proposed § 61.1(b), *id.* at 40,333.

4. **It states the dose limits directly instead of demanding open-ended reduction below them.** The performance objectives in §§ 61.41 and 61.43 would no longer carry free-standing ALARA language. Instead, they would point to the dose limits in part 20, which the Commission explains will keep part 61 consistent with whatever part 20 becomes when the pending rulemaking amending part 20 is completed. *Id.* at 40,291, 40,312; *see Reforming and Modernizing the NRC's Radiation Protection Framework*, 91 Fed. Reg. 43,456 (proposed July 15, 2026).

5. **It asks every applicant for a "safety case."** Proposed §§ 61.10(c) and 61.23(m) would require each application to include a document containing a high-level synthesis of the technical analyses, the site, the design, and the controls, and would condition the license on that document being adequate. 91 Fed. Reg. at 40,305, 40,335–36, 40,339.

6. **It makes a set of risk-informed changes to criticality, security, and who licenses what.** Reversing its 2020 position, the Commission now reads the Low-Level Radioactive Waste Policy Amendments Act (LLRWPAA), Pub. L. No. 99-240, 99 Stat. 1842 (1986) (codified at 42 U.S.C. §§ 2021b–2021j), to mean that GTCC disposal licensing cannot be handed to Agreement States, and would amend § 150.15(a)(8) accordingly. *Id.* at 40,298, 40,311–12, 40,348. It would adopt the physics-based fissile-material exemption of § 71.15(c) for disposal operations, *id.* at 40,309–11, relax fixed-site physical protection for waste holding dilute and inseparable special nuclear material, § 73.67(b)(1)(iv), *id.* at 40,348, and add flexibility on preoperational environmental data and commencement of construction, *id.* at 40,312.

This would be the most consequential modernization of the Commission's waste-disposal regulations in its history, and it implements Executive Order 14,300, which directs a wholesale revision of NRC regulations to support expanding American nuclear capacity from roughly 100 GW to 400 GW by 2050. Exec. Order No. 14,300, §§ 2(c), 5, 90 Fed. Reg. 22,587, 22,588–89 (May 29, 2025).

The final rule, however, should complete what the proposal begins. A recurring weakness in the Executive Order 14,300 rulemakings is that prescriptive requirements give way to undefined case-by-case discretion instead of objective performance standards. Unbounded discretion recreates the old regime through requests for additional information, license conditions, guidance, and fees. This rule has that problem in several places.

Commenters therefore ask the Commission to do three things in the final rule. First, adopt the proposal's central reforms without dilution: the graded GTCC disposal pathway, the removal of the "transuranic waste" exclusion, site-specific waste acceptance criteria under § 61.58, analytical burdens scaled to hazard, the deletion of free-standing ALARA, and the risk-informed treatment of criticality and physical protection. Second, convert the proposal's absolutes and generic ceilings into performance-based standards: reasonable assurance in place of a guarantee against intrusion, safe harbors rather than ceilings for the 10,000 nCi/g and Table 3 values, demonstrated equivalents to the prescriptive cover, barrier, and depth figures, a determinate 25 mrem per year in § 61.41(a), and rule-text definitions of "effectively managed"

and "significant quantities." Third, bound the discretion the proposal creates: benchmark § 61.58 equivalence to subpart C, approve site-specific criteria in one review rather than three, replace hearing-track review of routine waste-acceptance changes with a § 70.72-style change-evaluation provision, confirm that the safety case and defense-in-depth add no independent acceptance criteria, protect availability of the § 61.58 pathway as an essential compatibility objective, and align NUREG-2175 with the rule as adopted.

These comments proceed in three parts. **Part I** explains the statutory framework that governs low-level waste disposal under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 et seq., and the LLRWPAA. **Part II** takes up the rule's major actions by topic, beginning with the disposal pathway for GTCC waste and site-specific waste acceptance criteria. For each, it explains what the rule proposes, why the core of the proposal is correct, and what the final rule should fix. **Part III** turns to the draft guidance that accompanies the rule, NUREG-2175, and identifies places where the guidance would convert the rule's deliberate flexibilities back into requirements and recommends a comprehensive scrub of the guidance before finalization.

Commenters urge the Commission to finalize this rule promptly, with the revisions identified below.[1] Doing so would faithfully execute the AEA and the LLRWPAA, implement

---

[1] Despite what other commenters may urge, the 45-day comment period was sufficient here. The Commission published a detailed preamble, an unofficial redline, and Draft NUREG-2175 alongside the proposed rule, giving Commenters what they needed to comment comprehensively within the window. The Commission should decline requests to extend it. Extension would push the final rule past Executive Order 14,300's November 2026 deadline for completing the wholesale revision of NRC regulations, and each additional year under the current part 61 is another year in which GTCC and other long-lived waste has no available licensed disposal pathway.

Nor should the Commission credit the broader objection that the number and simultaneity of the Executive Order 14,300 rulemakings render this rule procedurally infirm. The APA's obligations attach rule by rule: notice of each proposal, an opportunity to comment on it, and a reasoned response to significant comments in a statement of basis and purpose. 5 U.S.C. § 553. Nothing in the statute caps the number of rulemakings an agency may conduct at once, prescribes a minimum comment period, or conditions any one rule's validity on a program-wide analysis of all the others. *See Petry v. Block*, 737 F.2d 1193, 1201 (D.C. Cir. 1984). Nor could comprehensive reform of an interconnected code proceed on any other terms: a single omnibus rule would be less digestible and would draw the identical objection, while strictly sequential rulemaking would stretch the reform over decades. Agencies enjoy "broad discretion in determining how best to handle related, yet discrete, issues in terms of procedures and priorities," *Mobil Oil Exploration & Producing Se., Inc. v. United Distribution Cos.*, 498 U.S. 211, 230 (1991) (citation omitted), and "do not generally resolve massive problems in one fell regulatory swoop," *Massachusetts v. EPA*, 549 U.S. 497, 524 (2007); *see City of Las Vegas v. Lujan*, 891 F.2d 927, 935 (D.C. Cir. 1989) (explaining agencies "have great discretion to treat a problem partially"). Inconsistencies among related final rules, if any emerge, are resolved the way they always are: through conforming amendments.

Congress's directions in the Nuclear Energy Innovation and Modernization Act (NEIMA), Pub. L. No. 115–439, and the ADVANCE Act, Pub. L. No. 118–67, carry out the President's Executive Orders, and give the American nuclear buildout the back end it now lacks.

The demand that the Commission produce a cumulative, cross-rulemaking "defense in depth" analysis before finalizing any rule is a procedural requirement found nowhere in the APA or AEA, and neither courts nor commenters may graft new procedures onto the statute. *Vt. Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 543–45 (1978); *Perez v. Mortg. Bankers Ass'n*, 575 U.S. 92, 102 (2015).

Finally, the objection refutes itself: the same commenters who declare meaningful comment "impossible" acknowledge the abundance of thoughtful feedback the agency has received on every rule published, which is the statutory measure of a functioning comment process. If a particular analysis in this docket is deficient, the remedy is a targeted comment here, not a moratorium on the reform Congress's statutes and the Executive Order direct.

Table of Contents

I. The Statutes Require Right-Sized Regulation of Low-Level Waste Disposal 8
A. The AEA Requires Reasonable Assurance Against Unreasonable Risk 8
B. The LLRWPAA Presumes That Disposal Will Actually Occur 9
C. The Current Framework Cannot Deliver the Disposal the Statutes Require 10
II. The Final Rule Should Complete the Proposed Rule's Right-Sizing 11
A. The GTCC Disposal Pathway (§§ 20.1003, 61.2, 61.13(b)(4), 61.42(a)(2), 61.51–61.56) 11
B. Site-Specific Waste Acceptance Criteria and Change Control (§§ 61.58, 61.24(l), 61.25) 13
C. Which Facilities Carry Which Analytical Burden (§§ 61.1(b), 61.2, 61.13) 15
D. The Performance Objectives and Dose Limits (§§ 61.41–61.44) 16
E. The Safety Case and Defense-in-Depth (§§ 61.10(c), 61.23(m)) 17
F. Criticality, Physical Protection, and Agreement State Authority (§§ 61.16(b), 73.67, 150.15) 18
G. The Final Rule Should Contain a Severability Provision 19
III. The Guidance for Conducting Technical Analyses Must Be Aligned with the Rule 19
A. The Performance-Period Guidance Converts "Effectively Managed" Into the ALARA Requirement the Commission Removed 19
B. The Guidance Requires an Exemption to Use the Dosimetry the Rule Authorizes 21
C. The Intruder-Assessment Guidance Takes Back the Flexibility the Rule Grants 21
D. Advisory Language in the Rule Becomes Prohibition in the Guidance 22
E. Review Expectations Reach Beyond What the Rule Requires 23
Conclusion 24

I. The Statutes Require Right-Sized Regulation of Low-Level Waste Disposal

A. The AEA Requires Reasonable Assurance Against Unreasonable Risk

The AEA opens by directing that atomic energy "shall be directed so as to make the maximum contribution to the general welfare." 42 U.S.C. § 2011(a). Congress declared the statutory purpose to be a program encouraging widespread participation in the development and use of atomic energy "to the maximum extent consistent with the common defense and security and with the health and safety of the public." 42 U.S.C. § 2013(d). Safety in this scheme is a requirement for a nuclear energy program that Congress wants to expand and succeed; it is not an instruction to drive radioactivity as low as possible.

The AEA's licensing standard is built the same way. A license issues on a finding of "adequate protection to the health and safety of the public," 42 U.S.C. § 2232(a), a standard that has never been understood to require zero risk. Safety measures beyond that floor are discretionary, and the Commission may weigh them against their costs. *Union of Concerned Scientists v. NRC*, 824 F.2d 108, 114 (D.C. Cir. 1987). "Adequate" is also a term of sufficiency, and terms of sufficiency bound in both directions. *FCC v. Consumers' Rsch.*, 606 U.S. 656, 681 (2025) ("the word 'sufficient' sets a floor and a ceiling alike"); *see Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 475–76 (2001) (reading "requisite" to mean neither more nor less than necessary). Nor must the Commission "adopt wholesale the worst case scenario that a party may gloomily frame." *Carstens v. Nuclear Regul. Comm'n*, 742 F.2d 1546, 1557 (D.C. Cir. 1984). That latitude in structuring safety findings goes back to the Commission's earliest years. *Power Reactor Dev. Co. v. Int'l Union of Elec., Radio & Mach. Workers*, 367 U.S. 396 (1961).

Part 61 translates that standard into a licensing system for land disposal of radioactive waste. The Commission promulgated its waste disposal standards in 1982, covering every phase of a disposal facility's life: site selection, design, licensing, operations, closure, postclosure stabilization, and the end of active institutional controls. 47 Fed. Reg. 57,446 (Dec. 27, 1982); 91 Fed. Reg. at 40,293. To grant a license, the NRC must conclude there is "reasonable assurance" that the performance objectives of subpart C will be met, and applicants carry that burden through the technical analyses required by § 61.13. 91 Fed. Reg. at 40,293. Subpart C sets four objectives: (1) releases must keep doses to the general population below specified limits, currently 25 mrem per year to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ, 10 C.F.R. § 61.41; 91 Fed. Reg. at 40,303; (2) inadvertent intruders must be protected, 10 C.F.R. § 61.42; (3) operations must meet the part 20 standards for workers and the public, *id.* § 61.43; and (4) the site must remain stable after closure without ongoing active maintenance, *id.* § 61.44. Part 61 relies primarily on passive safety features,

allowing licensees to take credit for institutional controls for only 100 years after closure, and requires them to rely instead on site characteristics, facility design, and waste form. 91 Fed. Reg. at 40,292–93.

Reasonable assurance is a performance-based standard that requires the Commission to weigh the costs of additional safety, not just its benefits. Congress has twice reaffirmed that approach to licensing. NEIMA directs the Commission toward risk-informed, performance-based licensing techniques, Pub. L. No. 115-439, §§ 3, 103(a), 132 Stat. 5565 (2019), and the ADVANCE Act directs the Commission to update its mission so that licensing is efficient and does "not unnecessarily limit" the civilian use of radioactive materials or "the benefits of civilian use of radioactive materials and nuclear energy technology to society," Pub. L. No. 118-67, div. B, § 501, 138 Stat. 1447 (2024).

B. The LLRWPAA Presumes That Disposal Will Actually Occur

Congress passed the Low-Level Radioactive Waste Policy Act in 1980 and strengthened it in 1985 because waste was accumulating faster than disposal capacity was being built. The Act established a machinery of state responsibility, regional compacts, milestones, and surcharges designed to bring waste disposal capacity into existence. Pub. L. No. 99-240, 99 Stat. 1842 (1986) (codified at 42 U.S.C. §§ 2021b–2021j); *see New York v. United States*, 505 U.S. 144, 149–51 (1992) (describing the system).

Section 61.55 sorts LLW into Classes A, B, and C by radionuclide concentration, using Table 1 for long-lived radionuclides and Table 2 for short-lived ones. These tables were originally developed based on a 1982 survey of waste generators, published in NUREG-0945, and reflect the streams then expected for commercial disposal through the year 2000. 91 Fed. Reg. at 40,293. The concentration limits were derived from a range of critical organ doses to a hypothetical intruder, including an annual whole-body dose of 500 mrem. *Id.*

Controls scale with class. Class A waste is the least hazardous and needs the fewest controls; it is the great bulk of LLW volume, the lightly contaminated trash, clothing, and equipment of routine nuclear operations. Class B waste, typically resins and filters from reactor coolant cleanup, must be stable, with waste forms designed to hold their physical properties for roughly 300 years, the period over which its principal radionuclides substantially decay. Class C waste, including higher-activity resins and activated hardware, requires burial at least 5 meters deep or an engineered barrier that deters intrusion for 500 years. 91 Fed. Reg. at 40,293. Four operating facilities accept Class A, B, and C waste today, all licensed by Agreement States: EnergySolutions in Clive, Utah; US Ecology in Richland, Washington; Waste Control Specialists in Andrews, Texas; and EnergySolutions in Barnwell, South Carolina. *Id.* at 40,294.

Waste exceeding the Class C limits is GTCC. The national inventory of GTCC and GTCC-like waste identified by DOE projects totals of about 12,000 cubic meters holding roughly 160 million curies through 2083.[2] Activated metals from reactor decommissioning, such as core shrouds and core support plates, are about 17 percent of the volume and 98 percent of the activity, and disused sealed sources from medicine and industry are about another 25 percent of the volume. The remaining 58 percent of volume is contaminated equipment, debris, scrap metal, resins, and solidified sludges from molybdenum-99 production, plutonium-238 radioisotope power systems, and the West Valley cleanup.

The Act makes each State responsible for disposal of Class A, B, and C waste, 42 U.S.C. § 2021c(a)(1), and the Federal Government responsible for GTCC waste, which "shall be disposed of in a facility licensed by the Nuclear Regulatory Commission that the Commission determines is adequate to protect the public health and safety." *id.* § 2021c(b)(2).

C. The Current Framework Cannot Deliver the Disposal the Statutes Require

The Commission's current framework cannot deliver the disposal these statutes require for two reasons.

The first is the GTCC pathway. In 1989, the Commission adopted 10 C.F.R. § 61.55(a)(2)(iv), which prescribes disposal in a geologic repository as defined in part 60 or part 63 unless the Commission approves a part 61 proposal on a case-by-case basis. 54 Fed. Reg. 22,578 (May 25, 1989). No such repository exists, and in thirty-seven years the case-by-case pathway has produced no disposals. DOE accepted responsibility for commercial GTCC waste in 1987, but its preferred destination, the Waste Isolation Pilot Plant, may lawfully accept only defense-generated transuranic waste. 91 Fed. Reg. at 40,294. The waste therefore sits where it was generated, at reactor sites, hospitals, universities, and DOE facilities, including the sealed sources that the security agencies would most like underground. The Commission's own 2019 regulatory basis concluded that roughly 80 percent of GTCC volume is potentially suitable for near-surface disposal with appropriate controls and site-specific analysis. *Id.* at 40,295. The obstacle to disposing of that material is therefore regulatory rather than technical.

The second is the classification tables, which were created in 1982 and made a number of assumptions in specifying expected disposal methods. NRC staff told the Commission in 2013 that streams differing significantly from those assumptions, including significant

---

[2] Dep't of Energy, *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste*, DOE/EIS-0375 (Feb. 2016); 81 Fed. Reg. 11,550, 11,550–51 (Mar. 4, 2016).

quantities of depleted uranium, blended waste, and the streams advanced reactors will generate, warranted an update. *Id.* at 40,294–95. Generic limits also have to be safe at the most limiting site, which means they overprotect at every other one, *id.* at 40,300, and the current regulations give licensees no site-specific alternative.

Finishing this rule is therefore a statutory obligation. Section 2021c(b)(2) directs that GTCC waste "shall be disposed of" in a facility the NRC licenses and "determines is adequate to protect the public health and safety." The Commission now reads Section 3(b) of the LLRWPAA to vest licensing of GTCC disposal exclusively in the NRC. *Id.* at 40,298. The ADVANCE Act adds a second obligation, since licensing must be efficient and must "not unnecessarily limit … the benefits of nuclear energy technology," Pub. L. No. 118-67, div. B, § 501, 138 Stat. 1447 (2024), and a default that has produced zero disposals in thirty-seven years fails that test.

Part II addresses how the Commission ought to further modify the proposed rule to achieve statutory goals and imperatives, and shows that the statutes themselves supply most of the answers. First, the AEA's "adequate protection" standard, translated by regulation to "reasonable assurance," supplies the correction for provisions written as absolutes, such as the requirement that an intruder "will not disrupt or contact" the waste. Second, because the LLRWPAA presumes that disposal will actually occur, the generic ceilings need written criteria and deadlines behind them; a pathway that ends in open-ended case-by-case review repeats the 1989 mistake. Third, NEIMA's risk-informed direction means that analytical burdens should turn on hazard rather than license date, and the Commission's already-approved dose limits should govern in place of ALARA language, which reenters through cross-references.

II. The Final Rule Should Complete the Proposed Rule's Right-Sizing

A. The GTCC Disposal Pathway (§§ 20.1003, 61.2, 61.13(b)(4), 61.42(a)(2), 61.51–61.56)

Commenters support this part of the proposed rule because it replaces a required destination that does not exist with a workable path to near-surface GTCC disposal. The Commission's 2019 study found that about 80 percent of GTCC waste could probably go in the near surface. 91 Fed. Reg. at 40,295.

Anti-nuclear commenters will doubtless say the proposed rule opens the near surface to waste that is too hazardous for it. But that misreads the proposal. Under NRC's proposed framework, no one disposes of anything until they show, at a specific site, that the performance objectives are met, which makes this a demonstration requirement rather than a general

authorization to dispose. The alternative to finalizing the rulemaking is worse: leaving this material in storage means relying on someone to keep watching it indefinitely, which is what part 61 was written to avoid. *Id.* at 40,292, 40,306–07.

Commenters also support the definitional change in §§ 20.1003 and 61.2 to eliminate the arbitrary exclusion of "transuranic waste" from the definition of waste. How dangerous waste is depends on the details of its composition and volume. That sort of case-by-case variability calls out for a safety analysis, not a categorical exclusion. Removing the exclusion will allow the § 61.13 analyses to answer a technical question that the current definition answers by assumption. *Id.* at 40,299. Commenters would leave this provision as proposed.

Three features of the proposed pathway should be improved. The first is the intruder standard. Proposed §§ 61.2, 61.13(b)(4), 61.42(a)(2), and 61.51(b)(2) all require that an intruder "will not disrupt or contact" the waste. *Id.* at 40,335, 40,338, 40,341–42. Read literally, a facility applying to dispose of significant quantities of long-lived radionuclides must prove a negative for 10,000 years. That is the "worst case scenario that a party may gloomily frame," which the AEA does not ask fo*r. See Carstens v. Nuclear Regul. Comm'n*, 742 F.2d 1546, 1557 (D.C. Cir. 1984). As a result, the most protective category in the rule is the one no applicant can license.

The second problem is that the proposed rule puts generic ceilings on top of the site-specific analysis it otherwise trusts. The 10,000 nCi/g near-surface value and the Table 3 values are generic screens. *Id.* at 40,342–43, 40,345–46. Used as safe harbors they are unobjectionable. The trouble is using them as ceilings, since going above them drops an applicant into a case-by-case process with no criteria and no deadline. That recreates the 1989 pathway, which has produced no disposals in thirty-seven years.

The third issue is depth. The proposed rule would require specialized land disposal facilities to dispose of waste at "a minimum of 30 meters below the ground surface," *id.* at 40,308, but the proposed rule's text does not state this directly. It instead imposes this requirement by defining "Specialized land disposal facility" as "not a near-surface disposal facility," and defining "Near-surface disposal facility" as one "in which radioactive waste is disposed … within the upper 30 meters of the earth's surface." Proposed § 61.2, *id.* at 40,335. This new category of "specialized" facilities is what would open part 61 to the borehole and intermediate-depth designs the preamble mentions, and a 30-meter minimum depth requirement would close that door again. *Id.* at 40,307. Similarly, the proposed rule mandates that eligible GTCC waste be disposed of at a minimum depth of five meters with a 500-year intrusion barrier, regardless of whether an applicant can demonstrate equivalent assurance at a lesser depth. Proposed § 61.52(a)(3), *id.* at 40,343.

Commenters ask for four changes to address these issues. (1) Restate the intruder standard as reasonable assurance, not absolute assurance, and state plainly that an applicant may rely on how implausible intrusion is at a given site, with an alternative path where credible intrusion would still keep doses under 500 mrem. Proposed §§ 61.13(b)(4), 61.42(a)(2), 61.51(b)(2), *id.* at 40,338, 40,341–42. (2) Turn the concentration values from ceilings into safe harbors, with a written pathway for waste above them and a decision within eighteen months. Proposed § 61.55(b)–(c), *id.* at 40,345–46. (3) If the Commission wants a 30-meter minimum depth requirement for specialized land disposal facilities, state it directly in the rule's text with an equivalent-protection alternative rather than announcing it in the preamble and then hiding it in a definition in the rule's text. *Id.* at 40,308. (4) Allow equivalents to the five-meter cover and the 500-year barrier requirement for eligible GTCC waste where an applicant can demonstrate them. Proposed § 61.52(a)(3), *id.* at 40,343.

Two of the Commission's questions bear on this. On Request for Comment 4 regarding waste streams from advanced reactors, advanced fuels, and new isotope production, values derived from waste generated decades ago cannot govern the streams that these new nuclear technologies will create. *Id.* at 40,312–13. NUREG-2175 should let applicants use process knowledge and activation modeling when a first-of-a-kind stream has no sampling history. On Request for Comment 6 regarding quantitative or qualitative limits for GTCC specialized land disposal, site-specific criteria should be able to authorize disposal above the generic values. *Id.* at 40,313, 40,335. A hard cap would create an incentive to dilute waste rather than to characterize it. If the Commission wants a boundary, make it a functional one: nothing that meets the statutory definition of high-level waste or spent fuel.

B. Site-Specific Waste Acceptance Criteria and Change Control (§§ 61.58, 61.24(l), 61.25)

Proposed § 61.58 is the heart of the risk-informed and performance-based modernizations of the proposed rule. The § 61.55 tables came from a 1982 survey of the waste expected through the year 2000, and because they had to be safe everywhere, they assumed the worst conditions anywhere. The Commission now concedes that these assumptions are "overly restrictive based on actual site characteristics, facility design, and operational practices." *Id.* at 40,293, 40,305. A facility in desert alluvium with hundreds of feet to groundwater is regulated today as though it sat on a shallow aquifer. The proposed § 61.58 replaces this prescriptivism with performance objectives and sets reasonable lines for what evidence a licensee may use to prove compliance.

Two improvements are necessary to make this new process useful. First, proposed § 61.58(a)(2) measures equivalence against the prescriptive requirements of § 61.56 instead of

the performance objectives in subpart C. This benchmarks the new pathway against the rules it was written to improve on. And §§ 61.58(a) through (c) each call for separate Director approval of the acceptance criteria, the characterization methods, and the certification program. That requires three separate approvals for a single system. *Id.* at 40,304.

Second, the proposed change control system makes this multiple-reviews problem worse. Proposed § 61.25 sends every change to the acceptance criteria down the hearing track, the same track as site closure and license termination. *Id.* at 40,340. Meanwhile § 61.58(e) requires an annual review, and the criteria will change routinely. The practical result is that the site-specific route will take longer than using the generic tables, so licensees will stay with the tables, leaving the site-specific route unused. Separately, "inconsistent with the technical analyses" shows up as an enforceable standard in two separate places, §§ 61.24(l) and 61.52(a)(15). *Id.* at 40,339, 40,343.

Commenters ask the Commission to address the first problem by benchmarking equivalence to subpart C, to treat generic criteria as approved when the license issues, and to review site-specific criteria as one action instead of three. The Commission should address the second problem by adding to the final rule a change-evaluation provision along the lines of § 70.72, limiting § 61.25(a)(1), *id.* at 40,340, to changes that fall outside the envelope of the approved analyses, and stating the operating-consistency standard once rather than twice.

Compatibility with Agreement State programs matters as well. The proposed designation for § 61.58's waste acceptance criteria would allow a State to deny facilities the use of those criteria, blocking the reform from reaching the market. The final rule should not allow this. The proposed rule designates § 61.58 as Compatibility Category C/D*: Category C for States that regulate LLW disposal facilities, Category D for everyone else. *Id.* at 40,325–26. All four operating disposal facilities are in Agreement States, so only Category C applies. "Under Category C, Agreement State program elements may be more restrictive than NRC program elements" so long as they "embody the essential objectives of the Category C program elements." *Id.* at 40,320. The preamble, in turn, describes the essential objectives a State must adopt as ensuring the information in the waste acceptance criteria "is adequate to characterize the waste and certify its acceptability for disposal." *Id.* at 40,321. That protects the quality of the criteria without protecting facilities' access to them, so a State could adopt the rule and still leave the site-specific pathway closed.

The Commission has invited comment on the compatibility designations, *id.* at 40,326, and it should say that the availability of the pathway is itself an essential objective, so a State can implement it more strictly but cannot do away with it. Failing that, the Commission should

make availability Category B, which would practically mandate that States that adopt the rule protect availability. *See id.* at 40,320.

On Request for Comment 3, regarding whether to increase the flexibility of proposed § 61.58(e)'s annual review of site-specific waste acceptance criteria, the annual review is fine so long as the final rule confirms that it is a documented internal review of *implementation* of the waste acceptance criteria, not a resubmission or a re-derivation of the criteria themselves. *Id.* at 40,312. The preamble speaks of an annual review of "inputs," *id.*, whereas the text requires review of "implementation," *id.* at 40,347. The text has it right.

C. Which Facilities Carry Which Analytical Burden (§§ 61.1(b), 61.2, 61.13)

Commenters support scaling the required analysis timeframe to the hazard of the waste a facility accepts. The longer, 10,000-year analysis timeframe applies "only … when it is necessary due to the risks." *Id.* at 40,300. Exempting existing facilities that take only ordinary Class A, B, and C waste from performance period analysis and letting them stay where they are respects backfitting principles, since those facilities' activities "already have a clear safety basis." *Id.* at 40,314.

There are several places, however, in which the proposal can be improved. One issue is the proposed rule's requirement that analysis span the time period during which waste in a facility contains "significant quantities of long-lived radionuclides." Proposed § 61.2, *id.* at 40,335. The proposed rule explains that "[s]ignificant quantities" means an amount that "could, if released, result in the performance objectives … not being met." *Id.* Whether a quantity is significant therefore depends on the analyses the definition is supposed to scope. The preamble points to NUREG-2175, *id.* at 40,300, but a definition that lives in guidance can be rewritten without a rulemaking.

Further, the proposed rule never says how the performance period is judged or when it ends. Releases must be "effectively managed," an undefined phrase, for a period whose end the proposed rule never fixes. *Id.* at 40,338, 40,340–41. Nothing stops a reviewer from asking for projections out to 100,000 years, which would turn a deliberate decision not to set a dose limit into a dose limit in practice. The Commission's instinct is right here: "the precision typically assigned to a dose limit is not warranted." *Id.* at 40,303. Commenters therefore recommend that the final rule define "effectively managed" in § 61.2, keyed to the calculated peak impact rather than to an open-ended projection horizon, and that the Commission revise NUREG-2175 in parallel to explain how it will apply that definition and the related "significant quantities" threshold.

Commenters ask the Commission to make the streamlined option turn on hazard alone, available whenever a facility is licensed. If it will not go that far, it should build an intermediate track for new Class A through C facilities: the § 61.13(a) through (d) analyses at 1,000 years, *id.* at 40,337–38, generic criteria deemed approved, and no performance period analyses. The final rule should also codify a backfitting provision in part 61, put objective screening values in § 61.2 or an appendix (the 10-metric-ton depleted-uranium figure is a good one), and promise a binding determination within 90 days. Proposed § 61.52(a)(16) needs the same treatment, since it refers to uranium without saying anything about enrichment, form, or quantity. *Id.* at 40,343. And the final rule should define "effectively managed" in text and let the analyses stop at calculated peak impact.

D. The Performance Objectives and Dose Limits (§§ 61.41–61.44)

Commenters support removing free-standing ALARA from the licensing performance objectives. Their concern is with how the proposed text accomplishes that removal, not with the removal itself. It ends an open-ended demand for margin below limits the Commission has already found protective. *Id.* at 40,291. The Commission also deserves credit for setting the intruder limit at 500 mrem instead of 25, on the grounds that an intruder scenario is unlikely to occur. *Id.* at 40,302.

But the proposed text eliminates ALARA only by cross-referencing part 20, which is not the ideal way to do it. Proposed § 61.41(a) states the objective by cross-reference to § 20.1402, which currently carries its own ALARA requirement, and then adds a sentence requiring releases to be managed "consistent with 10 CFR 20.1101(b)," the ALARA program provision. Proposed § 61.43 does the same thing. *Id.* at 40,340–41. If those cross-references pull an ALARA demonstration back into the § 61.13 analyses, the rule ends up with a broader open-ended requirement than the one it deleted, because "reasonably achievable" means nothing across ten thousand years. Granted, if the Commission's proposed rule reforming its radiation-protection framework becomes final, it will remove ALARA from §§ 20.1402 and 20.1101(b) and insert a determinate dose limit of 0.25 mSv (25 mrem) per year into § 20.1402. *Reforming and Modernizing the NRC's Radiation Protection Framework*, 91 Fed. Reg. 43,456, 43,493, 43,495 (July 15, 2026). But, as Commenters will explain in their forthcoming comment on that proposed rule, it requires major changes before finalization, and, in any event, the cross-references to part 20 in this proposed rule are not contingent upon the radiation-protection rulemaking's completion, creating a risk that ALARA will not be eliminated from part 61.

The Commission has itself said that its existing limits are sufficient to provide reasonable assurance of adequate protection, and that dose reduction below those limits is not itself necessary to ensure public health and safety. *Id.* at 43,470. A part 61 requirement to drive

releases below a limit the Commission has found adequately protective cannot rest on the adequate-protection standard. Commenters will urge the same deletion in the radiation-protection rulemaking, but part 61 should not depend on that outcome. If the ALARA amendments to §§ 20.1402 and 20.1101(b) are never finalized, or are vacated on judicial review, a determinate limit written into part 61 itself would still stand.

Commenters ask for four changes. (1) State the § 61.41(a) objective as a determinate number, 0.25 mSv (25 mrem) per year, instead of a cross-reference. Proposed §§ 61.41(a), 61.43, 91 Fed. Reg. at 40,340–41. Executive Order 14,300 directs the Commission to "specifically consider adopting determinate radiation limits," Exec. Order No. 14,300 § 5(b), 90 Fed. Reg. at 22,589, and stating the number in the rule text is how that is done. (2) Delete the § 20.1101(b) sentences, or confirm that they reach operations only. (3) Make the part 61 criteria self-standing rather than contingent: the § 61.41(a) limit should take effect on this rule's terms and remain in force whether or not the radiation-protection rulemaking is finalized or survives judicial review. 91 Fed. Reg. 43,456 (July 15, 2026). If the Commission also wishes part 61 to track that rulemaking, the conformity should run in one direction only, so that a later part 20 amendment can tighten the part 61 limit but cannot reinstate ALARA in part 61. (4) Confirm that compliance rests on best-estimate results with characterized uncertainty.

E. The Safety Case and Defense-in-Depth (§§ 61.10(c), 61.23(m))

On the preamble's description, the safety case is a synthesis document, because, as the Commission explains, "most of the technical elements are already required," and the requirement "seeks to ensure these elements are integrated and communicated in a coherent manner." *Id.* at 40,313.

But proposed § 61.23(m) makes it more than that. It turns the safety case into an independent licensing standard, so an application that satisfies every performance objective could still stall over the quality of its summary. *Id.* at 40,339. Defense-in-depth has the same problem. It is a sensible way to handle uncertainty, but as a standalone criterion it lets a reviewer fault an applicant whose analyses already show compliance with margin. *Id.* at 40,334. Requirements above the statutory floor are discretionary and have to be weighed against their cost. *Union of Concerned Scientists v. NRC*, 824 F.2d 108, 114 (D.C. Cir. 1987). The adequacy of that summary should not be an independent basis for denying a license.

Commenters ask the Commission to say in § 61.10(c), *id.* at 40,336, that the safety case adds no substantive requirements beyond §§ 61.11 through 61.16 and subparts C and D, to make § 61.23(m) satisfied when the safety case accurately summarizes the underlying analyses, and to confirm that defense-in-depth is not an independent acceptance criterion. On Request for Comment 7 regarding the sufficiency of the draft NUREG–2175 guidance, the planned

guidance covers the right ground; the clarification needed is legal rather than technical. *Id.* at 40,313.

F. Criticality, Physical Protection, and Agreement State Authority (§§ 61.16(b), 73.67, 150.15)

Commenters support the proposed rule's risk-informed approach to criticality, physical protection, and licensing. The § 71.15(c) criticality exemption rests on a bounding analysis that assumed unlimited accumulation, optimum moderation, and worst-case geometry, and still found "a large safety margin." It applies across waste classes "because radionuclides are fissile or non-fissile regardless of waste class." *Id.* at 40,309–11. The § 73.67 accommodation is just as well grounded: an adversary would need something like 40 metric tons of waste, on the order of 100 drums, to get near a useful quantity of special nuclear material. *Id.* at 40,309. Commenters also support § 150.15(a)(4) on reprocessing waste, which turns on risk class rather than on where the waste came from. *Id.* at 40,311–12.

Two provisions still need work. The 0.01 percent criterion in § 73.67 is a fixed threshold that does not measure attractiveness to an adversary: a 0.02 percent stream locked in activated metal may be a less attractive target than a 0.009 percent stream in something friable. *Id.* at 40,348. And the reconcentration requirement in § 61.16(b)(3) rests on a physically implausible scenario. Container degradation disperses material, and dispersal moves a system away from criticality. *Id.* at 40,338–40.

On GTCC licensing, the Commission now reads § 3(b) of the LLRWPAA to require exclusive NRC licensing, reversing the direction staff recommended in 2020. That reversal is a legal judgment, not a safety one: the 2019 regulatory basis found that roughly 75 percent of GTCC volume could be safely regulated by an Agreement State, and the preamble re-examines only the statutory question while leaving that safety finding undisturbed. *Id.* at 40,295. All four operating disposal facilities hold Agreement State licenses, so exclusive federal licensing will sit on top of State-regulated sites, and the thing to prevent is dual regulation.

Commenters ask the Commission to keep the § 73.67 criteria as a safe harbor and add a performance-based alternative keyed to accessibility and processing difficulty, and to require the reconcentration showing only where the performance assessment identifies a credible mobilization pathway, satisfied qualitatively. On GTCC licensing, staff should be directed to credit an Agreement State's site-characterization and environmental record unless it is found deficient, and the Commission should execute a memorandum of understanding allocating inspection responsibility. On Request for Comment 2, subpart F is structurally adequate. *Id.* at 40,312.

G. The Final Rule Should Contain a Severability Provision

If this rule is challenged in court, the likelier outcome is that a court strikes down one piece of it rather than the whole rule. As drafted, nothing limits the damage when that happens. The final rule should state that each of its reforms is separate and severable.

The D.C. Circuit evaluates severability under a two-prong framework: (1) whether there is substantial doubt that the agency would have adopted the same disposition regarding the unchallenged portion if the challenged portion were subtracted; and (2) whether the surviving parts of the regulation can function sensibly without the stricken provision. *See Nasdaq Stock Mkt. LLC v. SEC*, 38 F.4th 1126, 1144 (D.C. Cir. 2022); *Nat. Res. Def. Council v. Wheeler*, 955 F.3d 68, 81–82 (D.C. Cir. 2020).

The D.C. Circuit's decision in *Am. Fuel & Petrochemical Mfrs. v. EPA* shows how the Commission can protect the independent portions of this rule. 3 F.4th 373 (D.C. Cir. 2021). In that case, the court gave controlling weight to the agency's preamble statements regarding severability in both directions. Where EPA declared that certain provisions established a single, unified program, the court honored that intent by vacating those provisions together; where the agency stated that a section operated independently, the court severed accordingly. *Id.* at 384.

The preamble should state that each major change is an independent determination and explain why the Commission would have adopted each on its own.

III. The Guidance for Conducting Technical Analyses Must Be Aligned with the Rule

Much of what the proposed rule accomplishes will turn on NUREG-2175, the draft guidance on technical analyses under part 61. *See* Office of Nuclear Material Safety & Safeguards, U.S. Nuclear Regulatory Comm'n, Draft NUREG-2175, Rev. 1, Guidance for Conducting Technical Analyses for 10 CFR Part 61 (2026) (hereinafter Draft Guidance). In several places, the Draft Guidance converts the proposed rule's deliberate flexibilities back into requirements—reviving analytical constructs the Commission chose not to carry forward, layering in numeric criteria that appear nowhere in the rule text, and restating the proposed rule's advisory language as prohibitions. The examples below are illustrative rather than exhaustive. The Commission should direct a comprehensive scrub of NUREG-2175 before finalization.

A. The Performance-Period Guidance Converts "Effectively Managed" Into the ALARA Requirement the Commission Removed

The proposed rule is unambiguous about what it asks for after the compliance period. Releases of radioactivity and exposures to an inadvertent intruder "must be effectively managed during the performance period"—there is no dose limit. Proposed 10 C.F.R.

§§ 61.41(b), 61.42(b), 91 Fed. Reg. at 40,340–41. The preamble explains the requirement "is not a dose limit" because, over these timeframes, "the precision typically assigned to a dose limit is not warranted," and effective management "allows socioeconomic information to be considered in a risk-informed manner." 91 Fed. Reg. at 40,303. No ending time is specified, and analyses may stop once peak impact is demonstrated. *Id.* The proposed rule also strikes the ALARA references from the performance objectives, replacing them with references to 10 C.F.R. § 20.1101(b). 91 Fed. Reg. at 40,291, 40,312. And the Commission's own summary describes performance period analyses as "potentially more qualitative." 91 Fed. Reg. at 40,291.

The Draft Guidance rebuilds nearly all of this. Licensees "should perform a quantitative assessment" whose objective is to demonstrate that releases "have been reduced to the extent reasonably achievable," including "the range of peak annual doses that are projected to occur after 10,000 years following site closure." Draft Guidance § 2.3.2.1, at 2-30 to 2-31. The analyses "should cover the period of geologic stability at the disposal site, limited to a maximum of 1 million years or the peak dose." Draft Guidance § 2.3.2.1, at 2-33. The features, events, and processes (FEP)-screening chapter states that a licensee "must demonstrate that effort has been made to reduce releases to the extent reasonably achievable." Draft Guidance § 2.5.3.1.2.1, at 2-44. Chapter 6 directs "performance analyses to demonstrate that releases from disposal of long-lived waste will be reduced to the extent reasonably achievable," Draft Guidance § 6.3, at 6-11, and then adds a cost-justification exercise: licensees "should provide … a description of the additional resources needed to achieve a greater reduction in releases during the performance period, or why further reductions are not possible" and "a discussion of why additional resource usage is not warranted." Draft Guidance § 6.3.1, at 6-15. For higher-hazard inventories, "[i]ndependent, formal peer review of the analyses, results, and model support should be performed." Draft Guidance tbl. 6-2, at 6-3. The glossary then codifies the rewrite, defining "performance period analyses" as demonstrating that releases "are reduced to the extent reasonably achievable during the performance period." Draft Guidance at 12-5. Compare Proposed 10 C.F.R. § 61.2 (defining the same term by reference to effective management), 91 Fed. Reg. at 40,335.

"Reduced to the extent reasonably achievable" restates the ALARA requirement the proposed rule removes from the performance objectives. A mandatory quantitative dose projection out to a million years, a demonstration that further spending is not warranted, and compulsory peer review together reconstruct the open-ended optimization regime the rule's text declined to impose. Guidance cannot demand reduction that the Commission has said is unnecessary for adequate protection, and it cannot supply an authority the rule text withholds.

B. The Guidance Requires an Exemption to Use the Dosimetry the Rule Authorizes

One of the proposed rule's principal modernizations is updated dosimetry: analyses must "use a dose methodology consistent with the dose methodology specified in the standards for radiation protection set forth in part 20," with TEDE limits, and the preamble counts "up-to-date dosimetry methodology" among the proposed rule's core benefits. 91 Fed. Reg. at 40,291, 40,298, 40,301, 40,304. The Draft Guidance carries forward current-rule text that negates this. It advises that a licensee wanting alternative weighting factors "may request an exemption through 10 CFR 61.6 … from the definition of 'weighting factor' as defined in 10 CFR 20.1003," giving as its examples "the latest dose conversion factors (e.g., ICRP Publication 72 …)" and FGR No. 13. A footnote goes further, stating that "licensees must request an exemption through 10 CFR 61.6 … to use the alternative dose methodology"; and it warns that a licensee "may need to request an exemption through 10 CFR 61.6 to use the latest dose conversion factors" for operational dose analyses under § 61.43. Draft Guidance § 3.4.2 & n.2, at 3-33 to 3-34. The recommended defaults remain FGR Report No. 11 and ICRP Publication 30—dose systems dating to the late 1970s through early 1990s. *Id.*

Requiring an exemption reads the modernization out of the proposed rule. Section 3.4.2 should be rewritten to reflect the new § 61.13(a) and § 61.41(a).

C. The Intruder-Assessment Guidance Takes Back the Flexibility the Rule Grants

The proposed rule anchors intruder scenarios to activities "occurring in and around the site at the time of development of the inadvertent intruder assessment." Proposed 10 C.F.R. § 61.13(b)(1), 91 Fed. Reg. at 40,337. The preamble adds that "[t]he NRC is not proposing that licensees or applicants should assume that contact with the LLW by an inadvertent intruder is certain to occur," offering the example that with a 5-meter cover it "would not be reasonable" to assume a residential-excavation scenario. 91 Fed. Reg. at 40,302.

The Draft Guidance pulls in the other direction on each point. It repeatedly re-anchors scenarios to the time of closure: Table 4-1 defines the less-likely scenario category against "activities occurring in and around the site at the time of closure," Draft Guidance tbl. 4-1, at 4-3, and reviewers are told to evaluate site-specific scenarios against "the activities expected in and around the disposal site at the time of closure," with new applicants expected to "provide a basis to support future site conditions at the time of closure, which could be many decades away," Draft Guidance at 4-13 to 4-14.

Table 4-1 also presumes "the loss or significant degradation of the capabilities of intruder barriers" in declaring the generic scenarios plausible. Draft Guidance tbl. 4-1, at 4-3. The driller scenario becomes quasi-mandatory: "At a minimum, licensees should describe the results if drilling were to occur, even if drilling is not anticipated based on locally used technology." Draft Guidance ex. 4.8, at 4-36. Site-specific justifications are also time-limited: licensees "should not rely on cultural information as a basis for using more permissive intruder scenarios beyond a few hundred years" and "should limit consideration of cultural information to the operating lifetime of the disposal facility," Draft Guidance § 4.2.2, at 4-15—which, over a 1,000- or 10,000-year compliance period, forces generic scenarios for nearly the entire analysis. And the analysis frame drifts past the compliance period: licensees are to assess site physical characteristics "for the entire time period over which a significant hazard from the disposed waste will persist," Draft Guidance § 4.2.2.1.2, at 4-17, and Example 4.5 requires justifying a 5-meter cover "over the time period for which the long-lived hazard will persist," Draft Guidance ex. 4.5, at 4-18, while Example 4.6 correctly bounds the same inquiry to the compliance period, Draft Guidance ex. 4.6, at 4-18. Climate-cycling analysis is likewise injected into the intruder dose assessment. Draft Guidance at 2-64.

D. Advisory Language in the Rule Becomes Prohibition in the Guidance

The proposed rule's institutional-controls provision states that, for technical analyses, licensees "should not take credit for institutional controls for more than 100 years following transfer of control of the disposal site to the owner." Proposed 10 C.F.R. § 61.59(b), 91 Fed. Reg. at 40,347. The Draft Guidance restates this as flat prohibition. Controls "may not be relied upon for more than 100 years," Draft Guidance at 4-6; the institutional control period "cannot be relied on for more than 100 years unless otherwise authorized by the Commission," with longer credit available only through "an exemption under 10 CFR 61.6," Draft Guidance § 4.5, at 4-36; and again, controls "cannot be relied upon for more than 100 years," with an exemption as the sole path, Draft Guidance at 9-4. One passage also runs the clock from the wrong trigger—"100 years following closure" rather than following transfer of control. Draft Guidance at 7-16.

Site stability gets the same treatment. The Draft Guidance asserts that "[t]he regulation at 10 CFR 61.44 requires that site stability must be demonstrated for the long-term." Draft Guidance at 5-3. The preamble says nearly the opposite: the Commission "is not proposing to specify that stability of the disposal site must be demonstrated for the compliance period," in part because such a demonstration "out to potentially 10,000 years is difficult to support with modeling tools currently available," and "[s]ome instability may be tolerable." 91 Fed. Reg. at 40,304.

So too with defense-in-depth. The proposed rule asks for "multiple independent and, *where possible*, redundant layers of defense." Proposed 10 C.F.R. § 61.2, 91 Fed. Reg. at 40,334 (emphasis added). The Draft Guidance directs reviewers to "confirm that the licensee has identified at least one redundant and one independent layer of defense" and to confirm that the identification "clearly associates a redundant layer with each primary layer of defense." Draft Guidance § 7.3.1, at 7-10. "Where possible" becomes a default obligation, with the burden on the licensee to prove redundancy impossible. And even after the performance objectives are met, "licensees and reviewers should strongly consider additional inventory limits as added controls or alternative siting." Draft Guidance § 7.3.3.2, at 7-18. Guidance instructing reviewers to press for alternative siting after a compliant demonstration would allow reviewers to reopen a demonstration that already satisfies the performance objectives.

E. Review Expectations Reach Beyond What the Rule Requires

Review expectations elsewhere in the Draft Guidance reach beyond what the proposed rule requires. First, site suitability: the proposed rule requires certain adverse site characteristics to be absent "[f]or at least 500 years following closure." Proposed 10 C.F.R. § 61.50(a)(2), 91 Fed. Reg. at 40,341. The Draft Guidance converts that into a sum-of-fractions tier—below 0.1, evaluate 500 years; between 0.1 and 1, evaluate 10,000 years; above 1, evaluate the performance period—so that in Example 2.3 a licensee that qualifies for a 1,000-year compliance period is nonetheless told to characterize site behavior over 10,000 years, and "[t]he NRC staff should ask for additional information." Draft Guidance § 2.3.2.2 & ex. 2.3, at 2-33 to 2-34. Neither the tier nor the 10,000-year demand on a 1,000-year facility appears in the proposed rule.

Second, operational safety: § 61.13(c) allows qualitative assessments that credit administrative controls, adding quantitative analyses only for unlikely accidents involving GTCC waste. Proposed 10 C.F.R. § 61.13(c), 91 Fed. Reg. at 40,339. The Draft Guidance escalates, stating that for some GTCC wastes and for specialized land disposal facilities "a complete quantitative operational safety assessment comparable to that done for nuclear facilities handling dangerous amounts of nuclear materials is needed." Draft Guidance § 1.1.5.3, at 1-13.

Third, performance confirmation: the Draft Guidance constructs a full program—verification of site conditions, barrier construction, natural-barrier performance, facility monitoring, and "verification of the safety case"—while conceding that "the regulation does not use the terminology 'performance confirmation.'" Draft Guidance § 9.2, at 9-7. The preamble mentions performance confirmation only as a topic the Guidance covers. 91 Fed. Reg. at 40,326. If the staff considers such a program useful, the Guidance should present it as

one acceptable approach, not as a set of "should" expectations that reviewers will apply as requirements.

Conclusion

The proposed rule is a real step toward a low-level waste framework that can support a modern nuclear industry. Commenters respectfully request that the Commission finalize the rule promptly, with the revisions described above.

Specifically, Commenters request that the final rule:

(i) complete the GTCC disposal pathway—retaining the graded near-surface and specialized land disposal structure and the removal of the "transuranic waste" exclusion—by restating the intruder standard in §§ 61.2, 61.13(b)(4), 61.42(a)(2), and 61.51(b)(2) as reasonable assurance rather than absolute assurance, with an alternative path where credible intrusion would still keep doses below 500 mrem;

(ii) turn the 10,000 nCi/g and Table 3 concentration values into safe harbors rather than ceilings, with a written pathway for waste above them and a decision within eighteen months; state any minimum-depth requirement for specialized land disposal facilities directly in the rule text with an equivalent-protection alternative; and allow demonstrated equivalents to the five-meter cover and 500-year barrier of § 61.52(a)(3);

(iii) make the § 61.58 site-specific waste acceptance pathway usable by benchmarking equivalence to the subpart C performance objectives, approving the criteria in a single review rather than three, adding a § 70.72-style change-evaluation provision in place of hearing-track review of routine changes, and confirming that availability of the pathway is itself an essential objective for Agreement State compatibility;

(iv) scale analytical burden to hazard alone rather than to license date, codify a backfitting provision in part 61, place objective screening values for "significant quantities" in the rule text or an appendix, and define "effectively managed" in text while allowing analyses to stop at calculated peak impact;

(v) state the § 61.41(a) performance objective as 0.25 mSv (25 mrem) per year instead of a cross-reference, delete or confine the § 20.1101(b) sentences to operations, and make the part 61 criteria self-standing, so that they remain in force whether or not the radiation-protection rulemaking is finalized or survives

judicial review, with any conformity to that rulemaking running in one direction only;

(vi) confirm that the safety case and defense-in-depth are integration and communication requirements, not independent acceptance criteria;

(vii) keep the § 73.67 0.01 percent criterion as a safe harbor with a performance-based alternative keyed to accessibility and processing difficulty, require the § 61.16(b)(3) reconcentration showing only where a credible mobilization pathway is identified, and prevent dual regulation of the Agreement State–licensed facilities that exclusive GTCC licensing will overlay;

(viii) include a severability provision; and

(ix) direct a comprehensive scrub of NUREG-2175 before finalization, so that the guidance does not reimpose ALARA under another name, condition modern dosimetry on an exemption, re-anchor intruder scenarios to closure, or restate the rule's advisory language as prohibition.

For Valar and the advanced reactor, advanced fuel, and reprocessing companies that will follow it, the practical question is whether the waste their technologies generate has a licensed destination or only a storage pad. A nuclear golden age cannot be built on a back end that has produced no GTCC disposals in thirty-seven years. Commenters urge the Commission to finish this rule by making waste-disposal regulation demanding about credible hazards, precise about the standards an applicant must meet, and predictable enough that new disposal capacity can actually be licensed and built.

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-rfko-8icn
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0261
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Clean Air Task Force

Submitter Information

Email: ebarry@catf.us
Organization: Clean Air Task Force

General Comment

Clean Air Task Force respectfully submits these comments to the U.S. Nuclear Regulatory Commission on its proposed rule, “Integrated Low-Level Radioactive Waste Disposal,” Docket ID NRC-2011-0012, 91 Fed. Reg. 40290 (July 1, 2026).

Attachments

CATF Comments on Integrated Low-Level Radioactive Waste Disposal

August 17, 2026

Clean Air Task Force
114 State Street, 6th Floor
Boston, MA 02109

U.S. Nuclear Regulatory Commission
11555 Rockville Pike One White Flint
North Rockville, MD 20852

Submitted via www.regulations.gov

Re: Docket ID NRC-2011-0012, Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40290 (July 1, 2026)

Clean Air Task Force ("CATF") respectfully submits these comments to the U.S. Nuclear Regulatory Commission ("NRC") on the proposed rule "Integrated Low-Level Radioactive Waste Disposal," 91 Fed. Reg. 40290 (July 1, 2026).

CATF is a nonprofit organization dedicated to advancing the policy and technology changes necessary to achieve a low-emissions, high-energy planet at an affordable cost. With more than 30 years of internationally recognized expertise in energy policy and a commitment to exploring all potential solutions, including advanced nuclear power and fusion energy, CATF is a pragmatic, non-ideological advocacy group committed to improving the global energy system. CATF has offices in Boston and Washington, D.C., with staff working remotely around the world.

Effective management of low-level radioactive waste is critical to the successful deployment of both advanced nuclear power and fusion energy. The proposed rule incorporates changes that were proposed by staff in the 2010s and early 2020s and are intended to provide both greater regulatory certainty for certain waste streams (e.g., greater-than-class C ("GTCC") waste) as well as greater flexibility for disposal of radioactive waste.[1] In general, the changes in the proposed rule will help create a more predictable regulatory framework for management of radioactive waste and can enable subsequent discussions with waste producers and disposal sites operators to identify the site-specific conditions and requirements necessary for the safe and responsible management and disposal of radioactive wastes.

CATF provides both general comments on the proposed rule and responses to several of the specific requests for comments.

---

[1] Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40290, 40294-95 (July 1, 2026) (see "III. Background D. Previous Rulemaking Activities").

I. General Comments

Advanced nuclear reactors may produce low-level waste streams that were not historically considered when the NRC developed and promulgated existing waste characterization tables, site-specific waste acceptance criteria, and disposal requirements. This proposed rulemaking would help create a risk-informed and performance-based regulatory framework for certain low-level wastes that enables consideration of the specific radiological hazards instead of relying on prescriptive, radionuclide-specific limits.

While materials produced from fusion machines will not be classified as low-level waste based on the definitions in the Atomic Energy Act,[2] some waste disposal sites will classify the materials produced by particle accelerators and fusion machines using the waste classification tables in Part 61.[3] The specific radionuclide inventories and concentrations of byproduct material produced by fusion machines are not known at this time because they are a function of machine design, material selection and impurity control, and operation.

While it is premature to codify specific radionuclides of interest for fusion machines, it is expected that ^{3}H, ^{14}C, ^{54}Mn, ^{60}Co, ^{63}Ni, and ^{94}Nb may be of particular interest based on historically analyzed fusion machines. Though many of these isotopes are already covered by the existing waste classification tables (^{3}H, ^{14}C, ^{60}Co, ^{63}Ni, and ^{94}Nb)[4], some radioisotopes produced by neutron activation in fusion machines may not be fully characterized. And while moving towards a more risk-informed and performance-based regulatory framework for certain low-level wastes can alleviate the need to include any fusion relevant radionuclides in the waste classification tables, future revisions to the tables should consider whether it would be helpful to include fusion-relevant radionuclides to promote regulatory certainty.

Promulgation of regulatory requirements for the classification and disposal of GTCC waste is an important step toward providing regulatory certainty for potential waste producers and other stakeholders. There are currently no commercial facilities capable of disposing of GTCC waste and this rule would create a regulatory process for the management of these wastes. Development of usable disposal pathways for GTCC waste will enable accurate characterization of design and operational cost trade-offs that affect waste production. This will both create clear incentives to minimize and optimize the production of GTCC waste while also ensuring that there are pathways to dispose of any GTCC waste.

[2] 42 U.S.C. § 2021b (9).
[3] 10 C.F.R. § 61.55, tbl. 1-2.
[4] *Id.*

II. Conflicts with On-Going Rulemakings

The proposed rule removes and reserves section 61.7 based on the overall restructuring of the rule.[5] This change conflicts with changes in the proposed regulatory framework for fusion machines (Docket ID NRC-2023-0071).[6] Specifically, the proposed regulatory framework for fusion machines updates section 20.2008 to enable disposal of "waste resulting from fusion machines" if the waste is "manifested and labeled for disposal consistent with the description of the applicable waste class in § 61.7".[7] The changes in this proposed rule would create an invalid regulatory cross reference in the proposed fusion rules. The NRC staff should coordinate internally to determine the most efficient and effective changes to align the intent and implementation of this proposed rule and the proposed regulatory framework for fusion machines.

III. Specific Requests for Comment

CATF provides comments on the NRC's specific requests for comments on questions 3, 4, and 7. CATF does not have any comment on the other specific requests for comment currently.

3. Proposed section 61.58(e) requires licensees to undertake an annual review of the inputs to the site-specific performance analysis. Does the annual review provide sufficient flexibility to licensees?

CATF believes that the annual review process will provide sufficient flexibility to licensees while still ensuring that the programs and underlying regulatory assumptions will meet the performance objectives in subpart C of the proposed rule.[8] Changes or updates to meteorological, hydrological, geological, and other inputs to the site-specific performance analysis could all directly affect facility compliance with the performance objectives in subpart C. While it is expected that the licensing bases for the facility will have sufficient margin to accommodate any foreseeable changes in these inputs, an annual review provides an opportunity to verify that the site design, operation, and closure will provide adequate protection to workers, the public, and the environment. Clear documentation and public availability of the reviews in accordance with proposed section 61.80 will ensure transparency and help increase public confidence in the safe operation of low-level waste disposal facilities.

[5] 91 Fed. Reg. at 40366.
[6] Regulatory Framework for Fusion Machines, 91 Fed. Reg. 9476 (February 26, 2026).
[7] 91 Fed. Reg. at 9489.
[8] 91 Fed. Reg. at 40340-41 (revisions to 10 C.F.R. § 61.41-44).

4. Advanced reactors, advanced reactor fuels, emerging reprocessing approaches, and expanded medical and industrial uses of radioisotopes will potentially generate novel GTCC streams. A clear disposal pathway for these emerging waste streams is essential.

- ***a. Do the proposed concentration limits, performance assessment methodology and waste characterization expectations remain valid for these emerging waste streams?***
- ***b. Are there alternatives or other considerations that should be addressed to accommodate novel GTCC waste streams?***

The existing regulations for low level waste disposal are based on characterization of the waste based on a prescriptive list of radionuclides in Part 61. The proposed rule refocuses the regulatory framework in Part 61 to be more performance-based and instead rely on the applicant preparation and NRC approval of a facility-specific safety case. The proposed revisions to the requirements would help ensure public protection (radioactive release analyses in 61.41 and inadvertent intruder assessment in 61.42), worker protection (operational safety assessment in 61.43), and long-term environmental protection (post-closure site stability assessment in 61.44). These technology- and hazard-inclusive analyses will remain valid for future waste streams from emerging novel nuclear technologies.

The updates to the radionuclide classification tables are appropriate for the wastes that are expected in the near term for many advanced nuclear reactors and other emerging waste streams. There are, however, some emerging technologies such as spent nuclear fuel reprocessing, nuclear waste transmutation, and fusion machines that could create substantial inventories of radionuclides that are not adequately characterized in the updated tables. CATF does not recommend updating the radionuclide classification tables to address these radionuclides, however, because the specific radionuclides of interest may not be known.

Instead, CATF believes that the proposed update to 61.55(c) provides an adequate interim solution, as it allows applicants to request that the Commission authorize management of waste on a case-by-case basis. This will provide a pathway for applicants to manage novel waste forms before the significant radionuclides can be incorporated into the waste classification tables through future Commission directed, staff initiated, or petitioned rulemaking. An alternative pathway or process for applicant classification of wastes is not likely needed at this time.

7. The proposed rule would require an application for a LLW disposal facility to include a safety case as newly defined in this proposed rule. The safety case is an integrated, concise, and transparent synthesis of technical analyses, site characteristics, facility design, and management/regulatory controls that collectively demonstrate how the facility will meet the performance objectives in subpart C of part 61. The safety case is intended to support the licensee's demonstration that the land disposal facility will be constructed and operated safely and facilitate effective review by the NRC and public understanding. Recognizing that most of the technical elements are already required under current regulations, this proposed

requirement seeks to ensure these elements are integrated and communicated in a coherent manner.

> ***a. Is the guidance provided in draft NUREG-2175 sufficient to address the appropriate scope, structure, and level of detail that should be included in the safety case for land disposal facility license applications? If not, what additional guidance or clarifications would be beneficial to ensure the safety case provides a clear, integrated, and risk-informed basis for regulatory decision-making?***
>
> ***b. Are there international or domestic best practices regarding the scope of the safety case that NRC should consider?***
>
> ***c. Are there additional guidance documents or supporting materials that should be updated or developed to facilitate effective implementation of the safety case requirement?***
>
> ***Provide the basis for your responses, including any relevant experience, best practices, or suggestions for further clarifying the safety case requirement in the final rule.***

CATF supports the development of a technology- and hazard-inclusive safety case for LLW disposal facilities and does not have any specific comments on the draft NUREG at this time.

Conclusion

This proposed rule supports the effective management of low-level waste that is critical to the successful deployment of both advanced nuclear power and fusion energy. In general, the changes in the proposed rule will help create a more predictable regulatory framework for management of radioactive waste and can enable subsequent discussions with waste producers and disposal sites to identify the site-specific conditions and requirements necessary for the safe and responsible management and disposal of radioactive wastes. The NRC should work to ensure that the proposed changes to Part 61 do not create inconsistencies with other ongoing rulemaking activities such as the proposed regulatory framework for fusion energy.

We look forward to engaging the NRC further on important regulatory updates for these and other ongoing rulemaking activities.

Respectfully submitted,

Clean Air Task Force

Contact

Patrick White
Group Lead, Fusion Safety and Regulation
pwhite@catf.us
114 State Street, 6th Floor
Boston, MA 02109

PUBLIC SUBMISSION

As of: 8/19/26 3:00 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-rip1-s20m
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0262
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Elaine Cooper

Submitter Information

Name: Elaine Cooper
Address:
Columbia, SC, 29204
Email: ecohillbilly@gmail.com
Phone: 8033480911

General Comment

To those concerned :

I am a SC citizen , and have lived here for about 45 years . I have recently become aware about these changes in the rules include removal of citizens' right to seek information and oversight, limitations to our voices and input into NRC actions concerning proposed rules governing nuclear waste.

There are "Agreement states", those who agree to take nuclear waste and contract private companies to handle the wastes for storage. For them a proposed rule change includes enabling these contractors to create their own regulations, even including allowing them to be able to store transuranic waste in shallow ground, or in "special" landfills. These rules will serve the utilities and hurt communities.

I hope that SC is not an “ agreement state “ -but I really do not want transuranic waste to be stored in any other state -without any strict regulations and thus harm those communities .

So with that said - i am asking you to extend the deadline by another 60 days to give the public time to digest technical and all other information.

Sincerely ,
Elaine Cooper

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-rqvo-rtu3
Comments Due: August 17, 2026
Submission Type: API

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0263
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from American Nuclear Society

Submitter Information

Email: jstarkey@ans.org
Organization: American Nuclear Society

General Comment

See attached file(s)

Attachments

08.17.26 - ANS Comments on NRC PR ILLRWD Part 61

American Nuclear Society

1901 Pennsylvania Ave NW
Suite 701
Washington, DC 20006

800-323-3044
askanything@ans.org
ans.org

August 17, 2026

Jody C. Martin
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

Subject: American Nuclear Society Comments on Proposed Rule, "Integrated Low-Level Radioactive Waste Disposal" [Docket ID NRC-2011-0012]

Reference: Integrated Low-Level Radioactive Waste Disposal Proposed Rule, Federal Register Vol. 91, No. 125, July 1, 2026, pp. 40290 – 40348.

Dear Mr. Martin:

The American Nuclear Society (ANS) represents the nuclear professional community – serving as the premier nonprofit organization for those who embrace nuclear science and technology for their vital contributions to improving people's lives and preserving the planet. ANS serves as the forum for scientific exchange across America's nuclear sector – fostering technical collaboration, hosting scientific meetings, and publishing peer-reviewed research to guide the development of nuclear technologies, from energy, medicine, and healthcare to agriculture, industry, and space exploration. ANS remains committed to advancing, fostering, and promoting the development and application of nuclear sciences and technologies to benefit society.

On behalf of our more than 12,000 members, ANS is pleased to provide comments as requested by the U.S. Nuclear Regulatory Commission (NRC) in 91 Fed. Reg. 40290 on the Proposed Rule, "Integrated Low-Level Radioactive Waste (LLRW) Disposal." We appreciate the NRC staff's efforts in developing this proposed rule that will hopefully lead to improved framework for the disposal of the many types of radioactive wastes that are or will be generated from a wide variety of industrial activities.

The origins of this proposed rule date back to the Commission's October 19, 2005, decision in the Louisiana Energy Services adjudication, CLI-05-20. In that decision, the Commission directed the NRC staff, "...outside of the Louisiana Energy Services adjudication, to consider whether the quantities of depleted uranium (DU) at issue in the waste stream from uranium enrichment facilities warrant amending section 61.55(a)(6) or the section 61.55(a) waste classification tables." Since then, the NRC has pursued revisions to 10 CFR

Part 61, but those efforts have not resulted in a final rule. ANS commends the NRC for returning to this important rulemaking and encourages the Commission to maintain a sustained effort to bring the modernization of Part 61 to completion.

Modernization of 10 CFR Part 61 is long overdue. The current framework should make greater use of risk-informed and performance-based approaches and should be updated to address important issues such as the disposal of depleted uranium, Greater-Than-Class-C (GTCC) waste, and waste incidental to reprocessing. These issues have evolved considerably since Part 61 was originally developed, and the regulatory framework should evolve accordingly.

The need for a modernized framework is particularly pressing as the United States anticipates the deployment of new nuclear facilities and technologies over the coming decades. The expected growth in nuclear energy – including new reactors and other nuclear facilities – will create new and potentially different radioactive waste streams and present new challenges for waste management. In addition, initiatives such as the Department of Energy's Nuclear Lifecycle Innovation Campuses could have significant implications for the back end of the nuclear fuel cycle and the management of radioactive materials and waste.

However, the need to modernize Part 61 does not depend on the success or timing of these future developments. The existing regulatory framework has remained largely unchanged while the nuclear industry, waste streams, technologies, and approaches to risk-informed regulation have evolved. Modernizing Part 61 is therefore necessary regardless of how quickly new nuclear facilities and fuel-cycle initiatives advance.

The Requirement for a Safety Case

For certain facilities, including those involving the disposal of GTCC waste, the NRC proposes to require under 10 CFR 61.10(c) that a license application include a Safety Case that:

demonstrates that the land disposal facility will be constructed and operated safely, provides a summary of the safety basis that the disposal site will meet the performance objectives in subpart C of this part, and describes the defense-in-depth protections that enhance the resiliency of the facility in complying with the performance objectives specified at §§ 61.41 and 61.43.

ANS supports this requirement. The concept of a Safety Case is well established internationally and has become an important element of radioactive waste disposal safety

frameworks. The International Atomic Energy Agency (IAEA) defines a Safety Case as "a collection of arguments and evidence in support of the safety of a facility or activity."[1] Formal documentation of a Safety Case is particularly valuable for facilities subject to complex regulatory requirements and specialized performance analyses, as would be the case under the proposed Part 61 framework. A well-developed Safety Case can provide an integrated explanation of the facility's safety basis, including the relationship among the performance assessment, waste acceptance criteria, engineered and natural barriers, and defense-in-depth measures.

A clearly documented Safety Case could also significantly enhance public participation in the licensing and oversight of LLRW disposal facilities. ANS believes that meaningful public participation is an important component of the long-term acceptance of such facilities by host communities and surrounding regions.

ANS recognizes the counterargument that providing information addressing the specific requirements of 10 CFR 61.10(a) and (b) may be sufficient to support an application. However, addressing individual requirements on a disconnected basis does not necessarily provide an integrated evaluation of facility safety or demonstrate how the various elements of the safety case work together to provide defense-in-depth. This integrated perspective is particularly important when evaluating facilities using performance analyses that necessarily incorporate significant uncertainty over long time periods.

Regulatory Authority for Greater-Than-Class-C Waste

Additionally, the proposed framework for GTCC disposal would benefit from clearly defined roles for the states in which such facilities are located. ANS believes that the NRC should remain the sole licensing authority for GTCC disposal facilities to ensure a consistent federal regulatory framework. However, states hosting GTCC disposal facilities should have a clearly defined role in appropriate aspects of facility regulation and oversight, including licensing participation, operational oversight, facility closure, and long-term monitoring. Clearly defining these roles would provide host states with meaningful opportunities to participate in decisions affecting their communities while maintaining the NRC's responsibility for licensing and ensuring nationally consistent safety standards.

Long-term Regulation Expectations

The objective of regulations such as 10 CFR Part 61 is to provide reasonable assurance of adequate protection of public health and safety. Achieving that objective for facilities that must maintain safety functions over long periods presents unique challenges. These

[1] IAEA Nuclear Safety and Security Glossary – Terminology Used in Nuclear Safety, Nuclear Security, Radiation Protection and Emergency Preparedness and Response, 2022 (Interim) Edition.

challenges can be addressed, but the regulatory framework should remain realistic about what can – and cannot – be demonstrated or assured many years into the future.

The proposed language concerning inadvertent intrusion illustrates this issue. For example, 10 CFR 61.13(b) states "An inadvertent intruder assessment demonstrates protection of an inadvertent intruder for the duration of the compliance period. An inadvertent intruder assessment demonstrates that any inadvertent intruder will not receive a dose that exceeds the limits in the performance objective set forth in § 61.42 (a) for the duration of the compliance period. The term "demonstrates" coupled with "will not" conveys a high degree of certainty that is not appropriate in this instance. An inadvertent intruder assessment necessarily relies on stylized scenarios and assumptions about future human activities, site conditions, and the performance of engineered barriers. Those assumptions are appropriate and necessary for purposes of regulatory analysis, because the applicant cannot fully capture the range of conditions that may exist over such extended periods. The regulatory language should acknowledge this inherent uncertainty rather than imply a level of predictive certainty that cannot reasonably be achieved.

ANS therefore recommends that the NRC consider language in 10 CFR 61.13(b) such as: "An inadvertent intruder assessment projects doses to an inadvertent intruder during the compliance period, consistent with certain assumptions, for comparison with the regulatory limits established for such analyses."

There is no need to include a statement in 10 CFR 61.13(b) about the value of the regulatory limits. Those values are addressed in 10 CFR 61.42 (a), which states "the inadvertent intruder assessment must demonstrate that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. The inadvertent intruder assessment must also demonstrate that the annual dose to any inadvertent intruder within the compliance period from any onsite releases … will not exceed 5 milliSieverts (500 millirems).

Again in 10 CFR 61.42(a), the combination of "demonstrate" and "will not" implies a certainty that cannot exist. Accordingly, ANS recommends that the NRC consider language for 10 CFR 61.42(a) such as: "the inadvertent intruder assessment must demonstrate a low likelihood that an inadvertent intruder will disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. The results of the inadvertent intruder assessment within the compliance period from any onsite releases … will not exceed 5 milliSieverts (500 millirems)."

Similarly, 10 CFR 61.13(b) states that an inadvertent intruder assessment "demonstrates protection of an inadvertent intruder for the duration of the compliance period" and that "any inadvertent intruder" will not receive a dose exceeding the applicable performance objective during that period. The term "demonstrates" may inadvertently convey a high degree of certainty that is not appropriate in this instance.

An inadvertent intruder assessment necessarily relies on stylized scenarios and assumptions about future human activities, site conditions, and the performance of engineered barriers. Those assumptions are appropriate and necessary for purposes of this regulatory analysis, because the applicant cannot fully capture the range of conditions that may exist over such extended periods. The regulatory language should acknowledge this inherent uncertainty rather than imply a level of predictive certainty that cannot reasonably be achieved.

ANS therefore recommends that the NRC consider language such as: “An inadvertent intruder assessment projects doses to an inadvertent intruder during the compliance period for comparison with the regulatory limits established for such analyses.”
A similar concern applies to 10 CFR 61.42(a)(2), which states that, for specialized land disposal facilities, the inadvertent intruder assessment “must demonstrate” that an inadvertent intruder will not disrupt or contact emplaced waste during the applicable compliance period and that annual doses will not exceed 5 mSv (500 mrem). Again, the NRC should consider whether “demonstrate” appropriately characterizes the nature of an analysis that necessarily relies on assumptions and projections extending well beyond the period for which empirical evidence is available.

The issue is not whether the NRC should establish performance objectives or require rigorous analyses of long-term performance. It should. Rather, the regulatory language should accurately characterize what those analyses can establish and avoid conveying a level of certainty that is inconsistent with the inherent uncertainties associated with predicting conditions over very long time periods. Clear and appropriately calibrated language would strengthen, rather than weaken, public confidence in the regulatory framework.

Clarification of EPA’s Role in the Regulation of Transuranic Waste

The proposed rule also raises important questions regarding the relationship between NRC and EPA regulatory authorities over certain radioactive waste streams. Because EPA currently has regulatory authority over transuranic (TRU) waste disposal under 40 CFR Part 191, and specifically establishes requirements applicable to the Waste Isolation Pilot Plant (WIPP) under 40 CFR Part 194, the NRC should clarify how the proposed classification of certain TRU waste as low-level radioactive waste would affect EPA’s existing regulatory role.

A clear delineation of federal regulatory responsibilities will be particularly important if materials currently subject to EPA requirements could be classified as LLW under the proposed framework. The NRC should explain how such a classification would interact with EPA’s authorities and requirements, including whether and to what extent EPA requirements would continue to apply.

ANS recommends that the NRC coordinate with EPA and obtain EPA concurrence on this clarification before finalizing the rule. Coordination between the agencies would help ensure that the final framework does not create overlapping, inconsistent, or ambiguous regulatory requirements and would provide licensees and stakeholders with a clear understanding of the applicable regulatory authorities.

A Performance-Based Approach to Disposal Depth

ANS also recommends that the NRC reconsider the proposed mandatory five-meter burial depth requirement for GTCC and waste streams with significant long-lived radionuclides. A fixed burial depth may provide a straightforward regulatory criterion, but it may not be appropriate for every disposal site or waste stream under a modern, risk-informed and performance-based Part 61 framework.

Instead, burial depth should be determined based on the characteristics and demonstrated performance of the disposal facility. Relevant factors should include site-specific performance assessments, geology and hydrology, engineered barriers, and waste characteristics. These factors collectively provide a more technically meaningful basis for determining whether a disposal configuration will meet applicable performance objectives than a uniform minimum burial depth.

ANS therefore recommends replacing the fixed five-meter requirement with a performance-based standard that allows applicants to demonstrate compliance through appropriate technical analyses. This approach would provide greater flexibility to account for site-specific conditions while maintaining the NRC’s performance objectives and standards for protection of public health and safety.

In closing, ANS supports the NRC's proposed modernization of 10 CFR Part 61 as an important step toward a more risk-informed, performance-based framework for the disposal of radioactive waste. ANS encourages the NRC to carefully consider and address stakeholder comments, retain the Safety Case in the final rule, modify language to avoid overselling the certainty associated with long-term performance analyses, and provide more thorough, plain English explanations and bases for the provisions in the rule.
If you have questions, please contact ANS Director of Public Policy, John Starkey: jstarkey@ans.org.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-s0p6-lh9t
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0264
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Battelle Energy Alliance

Submitter Information

Email: rob.black@inl.gov
Organization: Battelle Energy Alliance

General Comment

See attached file(s)

Attachments

CCN 261150 BEA Comments on U.S. NRC Proposed Rule Integrated LLRW Disposal Docket ID NRC-2011-0012

Idaho National Laboratory

August 17, 2026 CCN 261150

Jody Martin
Secretary, U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: Battelle Energy Alliance Comments on U.S. Nuclear Regulatory Commission Proposed Rule: Integrated Low-Level Radioactive Waste Disposal, Docket ID NRC-2011-0012

Dear Mr. Martin:

BEA, the management and operating contractor for the Idaho National Laboratory (INL), supports the Nuclear Regulatory Commission's (NRC's) Integrated Low-Level Radioactive Waste Disposal proposed rule, 91 Fed. Reg. 40,290 (July 1, 2026), because it establishes a viable statutory and regulatory disposal approach for Greater-Than-Class-C (GTCC) waste. BEA provides further evaluation and recommendations below.

BEA considers the proposed action highly positive for the following key reasons:

- The proposed rule provides a clear disposal pathway which ultimately supports the goal of managing GTCC waste to ensure the safety of workers and the public and to protect the environment. The lack of a regulatory pathway for the development of licensed disposal facilities for GTCC waste has resulted in temporary storage of GTCC waste streams at operating reactors, sealed-source facilities, and Department of Energy (DOE) facilities. Disposal of GTCC waste in centralized, properly designed and secure disposal facilities will preclude unnecessary personnel radiation exposure for continual operational activities at current storage locations.
- By allowing the use of risk-informed, site-specific criteria rather than strictly classifying waste by generic prescriptive limits, the proposed rule encourages development of disposal facilities based on the actual radiological hazard while still protecting human health and the environment. The flexibility to use site-specific considerations (e.g., greater depth to disposal, more robust waste forms, greater distance to groundwater, engineered barriers, etc.) as the basis for waste acceptance criteria will allow for disposal of waste containing higher concentrations of transuranic radionuclides that currently do not have a regulatory pathway for disposal. For example, there are several waste streams containing transuranic radionuclides across the DOE complex that are not considered "defense related" and therefore are not eligible for disposal at the Waste Isolation Pilot Plant. The proposed rule and associate guidance, if finalized, would be expected to improve environmental stewardship by providing a path to permanent disposal for waste that currently can only be temporarily stored and are subject to operational and environmental risks. Permanent disposal would also provide benefit to the U.S. taxpayer

by avoiding costs associated with continued surveillance and maintenance of storage facilities. This cost savings would be in addition to the DOE cost savings identified in the proposed rule regulatory analysis because the NRC cost analysis only considered waste stored at the West Valley Demonstration Project.

Evaluation

- The proposed rule provides specific concentration limits for alpha-emitting and beta-emitting radionuclides for specialized land disposal facilities. The proposed rule does not provide suggested specific concentration limits for beta-emitting radionuclides (C-14, Ni-59, Nb-94, Tc-99, or I-129) for near surface disposal facilities.
- The proposed rule does not provide clarification or guidance for radionuclides with multiple decay modes (Am-242m, Cm-250, and Np-236) in the alpha-emitter calculations, specifically whether the full radionuclide activity or only the alpha-decay branch will be included in the calculation.
- Cm-242 is an alpha emitter with a half-life less than five years and decays to Pu-238. The Pu-238 in-growth should be included in the appropriate decay-chain and performance analyses, but Cm-242 should be evaluated separately in the sum for alpha-emitting TRU radionuclides.
- Pu-241 is predominantly a beta emitter and decays to Am-241. The Am-241 in-growth should be included in the appropriate decay-chain and performance analyses, but Pu-241 should be evaluated separately in the sum for alpha-emitting TRU radionuclides.
- The proposed rule does not provide clarification or guidance when combined radionuclides values exceed the specialized land disposal facility scenarios if technical analyses demonstrate compliance with the Part 61 performance objectives. Future DOE and commercial operations may generate waste streams that may exceed the specialized land disposal facility limits.

Recommendations

- Provide suggested limits for C-14, Ni-59, Nb-94, Tc-99, and I-129 limits for the near surface disposal facilities.
- Provide additional clarification or guidance for radionuclides with multiple decay modes (Am-242m, Cm-250, and Np-236) in the alpha-emitter calculations, specifically whether the maximum radionuclide activity or only the alpha-decay branch value will be included in the calculation for the near-surface disposal facility and specialized land disposal facility scenarios.
- Clarify that the full activity value of Cm-242 will not be included in the sum of alpha-emitting TRU radionuclides for the near-surface disposal facility and specialized land disposal facility scenarios.
- Clarify that the full activity value of Pu-241 will not be included in the sum of alpha-emitting TRU radionuclides for the near-surface disposal facility and specialized land disposal facility scenarios.

- Provide additional clarification or guidance when combined radionuclides values exceed the specialized land disposal facility scenarios if a technical analysis demonstrates compliance with the Part 61 performance objectives. Future DOE and commercial operations may generate waste streams that may exceed the specialized land disposal facility limits.

Conclusion

The NRC's Integrated Low-Level Radioactive Waste Disposal proposed rule is a positive action because it establishes a viable statutory and regulatory disposal approach for GTCC waste. Incorporating the recommendations above will provide clearer requirements for calculating radionuclide limits and demonstrating compliance with performance objectives. This will strengthen disposition planning and execution at DOE sites and lower costs to the U.S. taxpayer in a safe and environmentally sound manner.

Sincerely,

ROBERT BLACK
(Affiliate)

Digitally signed by ROBERT BLACK (Affiliate)
Date: 2026.08.17 15:50:48 -06'00'

Robert L. Black, Program Manager
Waste Management Program

RLB: SWM

cc: P. K. Bowers, DOE-ID
S. J. Burdick, INL
J. C. Fogg, DOE-ID
N. J. Lawson, INL
J. Medeiros, INL
M. J. McAnulty, DOE-ID
S. M. Olson, DOE-ID
E. W. Papaioannou, INL
D. F. Teter, INL
G. J. Tomlinson, DOE-ID
K. S. Vogel, DOE-ID
W. R. Watson, DOE-ID
G. H. Wilson, INL
DOE-ID Admin Support Center, email: DOEADMINSC@id.doe.gov
DOE-ID Records Management, email: RMCENTER@id.doe.gov

bcc: H. D. Buckland
S. A. Butler
M. C. Hall
C. D. Morgan
S. M. Nottestad
A. J. Sondrup
R. T. Stoor
J. B. Yedica
Environmental Correspondence, email: ENVAFF@inl.gov
INL Correspondence Control, email: BEACC@inl.gov
INL Prime Contracts, email: GRP-PrimeContractManagement@inl.gov
R. B. Black Letter File (RBB-12-26)

Uniform File Code: 6150
Disposition Authority: ENV2-e-2
Retention Schedule: Cut off files annually. Destroy 75 years after cut off.

NOTE: Original disposition authority, retention schedule, and Uniform Filing Code applied by the sender may not be appropriate for all recipients. Make adjustments as needed.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-sxg4-sefp
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0265
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Healthy Environment Alliance of Utah (HEAL Utah)

Submitter Information

Email: carmen@healutah.org
Organization: Healthy Environment Alliance of Utah (HEAL Utah)

General Comment

See attached file(s)

Attachments

HEAL Utah Comments re NRC-2011-0012

HEAL UTAH
HEALTHY ENVIRONMENT ALLIANCE OF UTAH

HEAL Utah
824 S 400 W, Suite B111
Salt Lake City, UT 84101

Nuclear Regulatory Commission
Docket NRC-2011-0012

August 17, 2026

Re: Docket NRC-2011-0012: Integrated Low-Level Radioactive Waste Disposal

Healthy Environment Alliance of Utah (HEAL Utah) and Nuclear Information and Resource Service (NIRS) appreciates the opportunity to submit the following comments on the U.S. Nuclear Regulatory Commission (NRC) proposed rule, "Integrated Low-Level Radioactive Waste Disposal."

For more than 25 years, The Healthy Environment Alliance of Utah (HEAL Utah) has worked to protect Utah's air, land, environment, and communities from the impacts of radioactive contamination. Throughout the country and here in Utah, we are experiencing an unprecedented push for reviving the nuclear industry, including proposals for new reactors, expanded and revived uranium mining and milling, initiation of uranium enrichment, nuclear fuel reprocessing testing, and other related activities. Because of this unique history and existing radioactive waste facilities, the proposed changes to the NRC's low-level radioactive waste (LLW) disposal regulations have significant implications for Utah's communities today and in the future.

Utah has long borne a disproportionate share of the nation's radioactive legacy. For decades, our state has accepted radioactive waste generated across the United States, and more recently we are expecting waste from Canada[1]. At the same time, communities across Utah continue to live with the lasting health, environmental, cultural, and economic consequences of uranium mining and milling, atmospheric nuclear weapons testing, and radioactive waste disposal. These impacts are neither theoretical nor confined to the past. Congress recently reaffirmed the enduring harm caused by radiation exposure through the expansion of the Radiation Exposure Compensation Act (RECA)[2], recognizing that generations of affected communities continue to experience the consequences of radioactive contamination. This history demonstrates that there is no justification for weakening the regulatory framework governing radioactive

[1]https://www.exchangemonitor.com/northwest-regional-group-backs-energysolutions-plan-to-import-ontario-waste-2/
[2] https://www.justice.gov/civil/reca

waste disposal, a waste stream that requires serious oversight and regulation to protect communities for generations to come.

Low-level radioactive waste poses risks to human health and the environment, especially if it is not properly characterized, transported, managed, and isolated for as long as it remains hazardous, which can be hundreds of thousands of years. Any revisions to the NRC's land disposal regulations must therefore strengthen, not weaken, public health and environmental protections. HEAL is particularly concerned that the proposed rule could reduce regulatory oversight by allowing site-specific waste acceptance criteria that are less protective than existing requirements, while expanding disposal pathways for long-lived radionuclides without sufficient scientific justification or independent review.

Given Utah's existing permitted and de facto radioactive waste facilities, the approval of a federal nuclear innovation lifecycle campus within the Great Salt Lake watershed, and the related burdens already borne by surrounding communities, the NRC has a heightened responsibility to ensure that LLW disposal decisions fully account for cumulative impacts. In addition, this consequential proposed rulemaking must also address the realities of climate change over the lifespan of disposal facilities, ensure that under-resourced communities are not disproportionately impacted, and provide meaningful transparency and opportunities for public participation.

Although the proposed rules do not at this time explicitly redefine high-level radioactive waste or spent nuclear fuel, a broader disposal framework could increase the volume, types, and longevity of radioactive waste eligible for land disposal in Utah. The current push for deregulation that we see in tandem with this rulemaking disproportionately benefits private industry while leaving families and the environment to bear the costs, both financially and through potential impacts to public health. The following comments explain why the proposed rule falls short of these fundamental responsibilities.

Site-specific waste acceptance criteria should not become less protective. The proposed rule would allow disposal facilities to establish waste acceptance criteria based on site-specific technical analyses rather than relying on consistent federal limits informed by decades of scientific evidence and lived experience. While site-specific evaluations can provide important information about local conditions and potential risks, they should supplement, not replace, consistent federal health and environmental protections.

This approach is particularly concerning because waste disposal companies already use site-specific exemptions, variances, and facility-specific waste acceptance criteria to accept materials that may not otherwise meet broadly applicable standards. These decisions can occur with limited public awareness or without meaningful opportunities for public engagement, making it difficult for affected communities to understand what types and quantities of radioactive waste are being accepted or how to evaluate the cumulative risks. The NRC should not expand opportunities for site-specific criteria without ensuring robust, transparent, and enforceable public oversight and participation.

Long-lived radionuclides require greater, not lesser, oversight and the proposal would expand the regulatory framework to include certain transuranic waste streams and provide new pathways for disposal of waste containing higher concentrations of long-lived radionuclides where technical analyses demonstrate compliance with performance objectives. These materials remain hazardous far longer than the period during which institutional controls can reasonably be expected to remain effective. Combining radionuclides and other materials could also lead to unforeseen chemical reactions that could impact proper storage.

The Commission should recognize that predictive modeling becomes increasingly uncertain over geologic timescales. Disposal decisions involving plutonium, americium, neptunium, and other long-lived radionuclides should therefore apply conservative assumptions, multiple independent analyses, and substantial safety margins.

Cumulative impacts must be evaluated but the proposed framework largely evaluates disposal facilities individually. For states such as Utah, this approach fails to capture the cumulative burden resulting from multiple radioactive industries operating simultaneously. This is especially important when the federal government is deciding on routes to transport low-level and high-level radioactive waste streams to nuclear campuses.

Communities already experience multiple exposure risks from uranium mining, milling, transportation, disposal facilities, reactor development, fuel cycle facilities, and legacy contamination. Changing the limitations and definitions of radioactive waste streams could open up communities to greater risks of radioactive contamination, both today and in the future. These changes should be evaluated in the context of cumulative impacts of all sorts, including increased radiological exposure risks, transportation risks and accidents, groundwater and environmental contamination, economic consequences, and disproportionate burdens placed upon nearby communities. The NRC should explicitly require cumulative impact analyses as part of any licensing action involving expanded waste acceptance criteria or disposal of long-lived radionuclides.

As part of cumulative impact analysis, climate change must be fully considered in decisions regarding the storage, treatment, transportation, and disposal of radioactive waste, including low-level radioactive waste. The classification of waste as “low-level” does not mean it is short-lived or environmentally benign; some low-level waste contains radionuclides that remain hazardous for decades, thousands, or even millions of years. Long-term disposal performance therefore cannot be evaluated using historical climate conditions alone. Increasing temperatures, drought, extreme precipitation, flooding, wildfire, erosion, and changing groundwater recharge and flow could all affect the performance of disposal facilities and the movement of radionuclides.

These concerns are particularly relevant to Utah, where current radioactive waste facilities operate in an arid and semi-arid environment already experiencing significant changes in temperature, drought, snowpack, runoff, and extreme weather. In June of 2026, the Hastings Fire at Hastings Pass Road, 2 Miles

East of Aragonite Road, Hastings Pass, Tooele County, UT burned over 26,000 acres[3]. This fire was on the mountain range less than 15 miles directly east of the existing EnergySolutions low-level radioactive waste facility and near the proposed Utah nuclear campus.

Assumptions that arid conditions will indefinitely limit water infiltration or radionuclide migration may not remain valid over the long timeframes relevant to radioactive waste disposal. Climate-driven changes to groundwater and surface-water systems, as well as increased wildfire and erosion risks, could undermine engineered and institutional controls relied upon in long-term performance assessments. This is especially true around the Great Salt Lake watershed, which would be at increased risk of contamination if regulation of LLW is loosened.

The NRC should require applicants to evaluate multiple plausible future climate scenarios over the full period during which the waste could pose a risk, including those involving prolonged drought, increased precipitation, extreme precipitation and flooding, wildfire, erosion, and changes in groundwater conditions. Many federal agencies require up to date climate modeling to be incorporated into their planning and permitting, and this should absolutely be the case here. Applicants should also be required to account for uncertainty in climate projections, and demonstrate that disposal systems remain protective under reasonably foreseeable adverse conditions rather than relying on a single or historically based climate scenario. This should be done before accidents occur.

Finally, climate change should be incorporated into site characterization, performance assessments, waste acceptance criteria, monitoring, and long-term stewardship requirements. Where uncertainty exists about how future climate conditions could affect a disposal facility, that uncertainty should result in greater protective measures and oversight, not less. The NRC must ensure that today's disposal decisions do not transfer the risks of radioactive contamination and climate uncertainty to future generations.

Greater transparency and public participation are essential to democratic processes. Without these provisions, the public will not be confident in its decision makers and industry. Because this proposal would provide licensees even greater flexibility to establish site-specific waste acceptance criteria, meaningful public participation required by federal law becomes even more important. Every time EnergySolutions makes a site-specific variance request to the Utah Division of Waste Management and Radiation Control (UTDWMRC) the proposed rule changes to the minimum requirements are posted, but most members of the general public do not have the time or expertise to give input during the short comment periods or attend the public hearings during work hours. Public access to decision-making processes that could impact their lives is already limited and this proposed rule would exacerbate the problem, leading to prioritization of private industry over the people our government is meant to represent and protect.

Communities should have access to the technical analyses supporting disposal decisions well before licensing determinations are made. Independent experts, Tribal governments, local governments,

[3] https://app.watchduty.org/i/103763

emergency responders, and affected residents should have sufficient opportunity and resources to review and understand these analyses. The NRC should require public disclosure of all key modeling assumptions, uncertainty analyses, monitoring data, and supporting technical documents.

Fairness and equal protection are critical to decisions regarding the transportation of radioactive waste. Expanding the types and concentrations of radioactive waste eligible for disposal will inevitably affect not only communities surrounding disposal facilities, but also the communities along the transportation routes used to move that waste. Radioactive waste may travel across multiple states and through rural, Tribal, and low-income communities before reaching a disposal facility. These communities bear the risks associated with routine transportation, accidents, delays, and emergency response, while receiving little or no benefit from the waste being transported through their communities. The NRC should therefore require onsite containment of waste at its present location whenever possible. If waste is to be moved, transportation risks and potential disparate impacts to communities should be analyzed as a core part of the decision-making framework.

This concern is particularly significant for Utah, which has long served as a destination for radioactive waste generated elsewhere in the country. Private companies profit from this movement of waste, but the public, on the whole, does not. Expanding disposal options for long-lived or higher-concentration radioactive waste could increase the volume and types of radioactive materials transported into Utah and through communities along those routes. Rural and Tribal communities may have fewer resources to participate in licensing proceedings, conduct independent technical review, or prepare for a potential transportation incident. The cumulative burden of radioactive waste transportation should be evaluated alongside existing uranium mining, milling, waste disposal, and other industrial activities affecting these communities.

The NRC should require applicants to identify and evaluate affected transportation corridors, including potential impacts on rural, Tribal, low-income, and historically overburdened communities. This analysis should consider cumulative transportation impacts, accident risks, emergency response capacity, environmental consequences, and the ability of affected communities to meaningfully participate in decision-making. Communities should not be expected to bear additional radioactive waste transportation risks simply because they have historically received a disproportionate share of the nation's radioactive waste.

Finally, this rule should not seek to remove “As Low As Reasonably Achievable” (ALARA) language. While we are engaged in the separate NRC rulemaking process around the Radiation Protection Framework, it bears repeating here that we do not support the removal of ALARA. This is based on the sound science that even low levels of radiation have potential human health impacts, and that in fact, current standards need to be updated to better reflect radiation impacts on women and children.

HEAL Utah respectfully recommends that the NRC revise the proposed rule to:

- Ensure that site-specific analyses cannot lower or weaken existing minimum federal waste acceptance standards.

- Require cumulative impact analyses for facilities proposing to accept additional long-lived radionuclides or transuranic waste.
- Require climate resilience analyses using multiple credible future climate scenarios, and mandate their incorporation into planning and permitting.
- Apply conservative assumptions and explicit uncertainty analyses to all long-term performance assessments for waste storage.
- Require enhanced groundwater monitoring, institutional controls, and comprehensive financial assurance for facilities managing long-lived radionuclides.
- Strengthen opportunities for public participation and Tribal consultation before approval of new waste streams.
- Ensure that environmental and health analyses meaningfully evaluate disproportionate impacts on historically affected and economically disadvantaged communities.
- Require periodic reevaluation of performance assessments as new scientific information becomes available.
- Retain ALARA standards in order to minimize exposure to workers and to the public at large.

HEAL Utah supports modernizing the NRC's low level radioactive waste regulations where doing so results in stronger protection of public health and the environment and a prohibition on storing any higher level radioactive waste in Utah. Radioactive waste of any sort should not be dumped in our state under the guise of a “nuclear lifecycle innovation campus.” Modernization should not become synonymous with increased regulatory flexibility for the benefit of an industry with serious risks and a spotty track record. At a minimum, pathways for disposal of more hazardous and longer-lived radioactive wastes should absolutely not be opened without corresponding increases in stringent regulatory oversight, transparency, and public accountability.

Given Utah's long history with radioactive contamination and its potential to serve a rapidly expanding role in the nation's nuclear industry, the Commission should ensure that any revisions to 10 CFR Part 61 maintain conservative, science-based protections that remain protective not only for current generations but also for those who will inherit these disposal sites centuries and millennia into the future. The burden of uncertainty should rest with those proposing disposal, not with future communities who may bear the consequences of what our government decided today.

Sincerely

Carmen Valdez, Senior Policy Associate
Healthy Environment Alliance of Utah (HEAL Utah), www.healutah.org
carmen@healutah.org

Diane D’Arrigo, Radioactive Waste Project Director
Nuclear Information and Resource Service, www.nirs.org
dianed@nirs.org

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-sxz6-2c1u
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0266
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Savannah River Mission Completion, LLC

Submitter Information

Organization: Savannah River Mission Completion, LLC

General Comment

Savannah River Mission Completion, LLC (SRMC) is deeply committed to a strategic, risk-based cleanup of the legacy environmental footprint at the Savannah River Site (SRS). In alignment with this mission, SRMC strongly supports the proposed rulemaking for Integrated Low-Level Radioactive Waste Disposal (10 CFR Parts 20, 61, 73, and 150).

Implementing a risk-informed strategy at SRS has already driven substantial progress in accelerating tank waste removal, stabilizing high-level waste, and enhancing overall environmental protection. The site-specific performance assessment methodologies proposed in the recommended safety case are similar to the proven practices employed by both the U.S. Department of Energy (DOE) and international nuclear waste management authorities.

Furthermore, adopting a graded approach to the disposal of Greater-Than-Class-C (GTCC) waste is highly beneficial. Beyond enhancing safety and operational flexibility, this framework is projected to yield substantial economic efficiencies and lifecycle cost savings.

edit:

Under section iii. New and Revised Technical Analyses; 1 Performance Assessment: The licensee or applicant would be required to use a dose methodology consistent with the dose methodology specified in the standards for radiation protection set forth in part 20 of this chapter. While 10 CFR Part 20 does provide various weighting factors and annual limits on intake (ALIs), it does not really specify a “dose methodology” for calculating actual doses.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-t9xq-lnen
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0267
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Organization of Agreement States

Submitter Information

Email: phillip.peterson@state.co.us
Organization: Organization of Agreement States

General Comment

See attached file(s)

Attachments

OAS Comment Letter 10 CFR 61

Sarah Sanderlin, Chair, New Jersey
Becki Harisis, Chair-Elect, Tennessee
Beth Shelton, Past Chair, Tennessee
J. Niki Minnick, Treasurer, Pennsylvania
Shatavia Walker, Secretary, Georgia
Meghan Cromie, Director, Colorado
Phillip Peterson, Director, Colorado
David Matos, Champion, Georgia

August 17, 2026

George Tartal
U.S. Nuclear Regulatory Commission
Washington, DC 20555–0001

Dear Mr. Tartal,

The OAS Executive Board (Board) appreciates the opportunity to comment on the draft regulation changes to 10 CFR Parts 20, 61, 73, and 150 proposed by the U.S. Nuclear Regulatory Commission (NRC), published as Docket ID NRC-2011-0012 in the Federal Register dated July 1, 2026 and communicated to Agreement States in STC-26-040. After reviewing the draft regulation changes to 10 CFR Parts 20, 61, 73, and 150, and after receiving comments from our Agreement State partners, the Board has the following comments:

1. The Board received comments from the State of Tennessee and supports the comments made by the State of Tennessee, as submitted to the NRC in comment ID NRC-2011-0012-0246.

Once again, the Board appreciates this opportunity to comment. We are available should you have any questions or need clarifications to our responses.

Sincerely,

Sarah Sanderlin

Digitally signed by Sarah Sanderlin
Date: 2026.08.17 18:29:29 -04'00'

Sarah Sanderlin, Chair
Organization of Agreement States
Radiation Physicist 2 | Agreement State Program
New Jersey Bureau of Environmental Protection
Mail Code 25-01, 420, Trenton, NJ 08625
Sarah.Sanderlin@dep.nj.gov

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-tywf-ap17
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0268
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from New Mexico Department of Justice

Submitter Information

Email: ejamison@nmdoj.gov
Government Agency Type: State
Government Agency: New Mexico Department of Justice

General Comment

Comments of the Attorney General of New Mexico. See attached letter.

Attachments

NM AG Comment Letter Low Level Waste Comment - 8.17.2026 - FINAL

COMMENTS OF THE ATTORNEY GENERAL OF NEW MEXICO

August 17, 2026

Via Electronic Submission
The Honorable David A. Wright, Chairman
Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Integrated Low-Level Radioactive Waste Disposal, 91 Fed. Reg. 40,290 (July 1, 2026) Docket ID No. NRC-2011-0012; NRC-2015-0003; NRC-2017-0081.

Dear Chairman Wright:

The Attorney General of New Mexico submits these comments on the Nuclear Regulatory Commission's (NRC) proposed rulemaking, *Integrated Low-Level Radioactive Waste Disposal*, 91 Fed. Reg. 40,290 (July 1, 2026) ("Proposed Rule"), which the NRC published in the Federal Register on July 1, 2026.

While New Mexico appreciates that the problem of where to store the nation's transuranic waste is a significant one, any solutions must be developed multilaterally between the federal government, Agreement States, local governments, and tribes, and with the full support of Congress. Importantly, these developments must proceed in keeping with the NRC's mission to protect the public and the environment.

BACKGROUND

In the Nuclear Waste Policy Act (NWPA), Congress defined "low-level radioactive waste" as "radioactive material that . . . is not high-level radioactive waste, spent nuclear fuel, *transuranic waste*, or by-product material" and that is classified by the Commission as such. 42 U.S.C. § 10101(16) (emphasis added). Because of this statutory directive, current regulations exclude transuranic waste from the definition of low-level radioactive waste (LLW). The EPA describes transuranic waste as "composed of man-made radioactive materials that are heavier than uranium (i.e. have an atomic number greater than 92), contain alpha-emitting radionuclides with half-lives greater than 20 years, and emit greater than 100 nanocuries per gram (nCi/g)."[1] Transuranic waste is produced from spent nuclear fuel reprocessing, and from the nation's nuclear defense programs.[2] It includes depleted uranium.

The NRC states that "[i]t is typical for LLW to contain transuranic radionuclides in limited concentrations, and up to 100 nanocuries per gram (nCi/g) of transuranic radionuclides is permitted

[1] EPA, *Transuranic Radioactive Waste (TRU)*, https://iwaste.epa.gov/guidance/radiological-nuclear/transuranic-waste.

[2] *Id.*

for disposal within the 10 CFR 61.55 limits." 91 Fed. Reg. at 40,299. Almost all LLW decays to background levels within 100 years or less, and a small subset of that decays in under 500 years.[3]

Under current regulations, Greater-Than-Class-C (GTCC) waste (that has radionuclide concentrations beyond LLW) cannot be stored in a "near-surface disposal facility," which is a "land disposal facility in which radioactive waste is disposed of in or within the upper 30 meters of the earth's surface." 10 C.F.R. § 61.2; *see* 10 C.F.R. § 61.55(a). Such waste must be stored in a deep geologic repository. 10 C.F.R. § 61.55(a)(2)(iv). There is currently no geologic repository that can accept commercial GTCC waste. The only deep geologic repository in the United States is the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, where DOE's transuranic waste is interred.

Although New Mexico does not generate nuclear power, it is the only state which handles nuclear material from cradle to grave. In addition to legacy impacts from the Manhattan Project and uranium mining, several companies are trying to restart uranium mining and production here. New Mexico is also home to two National Laboratories which conduct significant nuclear weapons and energy research, and the State has been identified as a potential location for the "interim" storage of spent nuclear fuel from nuclear reactors. The exponential increase in deployment of nuclear reactors that NRC's recent and pending regulatory changes are designed to incentivize are likely to create much more nuclear waste, adding to the decades-long problem of where to store such waste. Among other uses, developers are proposing to use advanced nuclear reactors in New Mexico for the desalination of produced water in oil and gas fields and from deep, ancient aquifers to combat drought. New Mexico has also become the chosen state for several large data center projects, which have also proposed the possibility of using nuclear reactors. Combined with WIPP, the cumulative environmental and human health impacts of past, present, and future nuclear development and waste disposal in New Mexico are already extremely high.

In short, New Mexico is already playing its part in contributing towards the nation's nuclear goals. At the very least, this and other pending and anticipated rulemakings should not put any additional strain on New Mexico's environment, or on the health of its residents. Any future licensing pathway for the storage of transuranic waste in LLW facilities should preserve the current safeguards the NRC has in place to protect the public and the environment, in particular in areas and communities that are already vulnerable to the exploitation of their natural resources.

NEW MEXICO'S COMMENTS

New Mexico is concerned that this Proposed Rule violates Congress' intent that an agency provide sufficient procedural and substantive notice of its regulatory changes and violates Congress' statutory provisions regarding the disposal of transuranic waste. New Mexico also calls upon the NRC to clarify its intent to keep the distinction between DOE and commercial GTCC waste intact, and to preserve full notice and comment and National Environmental Policy Act (NEPA) review for any licensing of significant amounts of transuranic waste, particularly in areas where cumulative radiological and other environmental impacts are already high. New Mexico also requests that the NRC conduct a complete analysis that fully accounts for the costs and other

[3] Rocky Mountain Low-Level Radioactive Waste Board, *About Low-Level Waste*, https://www.rmllwb.us/about-low-level-waste.

burdens, including socio-economic burdens, of this Proposed Rule on Agreement States, tribes, and local communities, rather than focusing solely on the benefit to industry.

I. THE NRC HAS NOT PROVIDED ADEQUATE NOTICE OF THE PROPOSED CHANGES IN LIGHT OF NRC'S WHOLESALE REVISION OF ITS REGULATORY SCHEME.

A. Inadequate Time for Notice and Comment

First, New Mexico echoes the request submitted by Texas Nuclear Watchdogs for a three-month extension of the public comment deadline;[4] or, at a minimum, the 45-day extension requested by the Attorney Generals of Illinois and Massachusetts,[5] to ensure that States and their agencies, local governments, tribes, and other stakeholders have sufficient time to review and analyze the Proposed Rule. This extension is especially important and necessary in light of the NRC's "wholesale revision" of its regulatory framework,[6] which includes multiple recent, pending, and forthcoming regulatory changes, whose interactions the NRC has not yet fully analyzed or explained, for example:

- *The Sunset Rule*, 91 Fed. Reg. 553 (Jan. 8, 2026) (direct final rule);
- *Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors*, 91 Fed. Reg. 15,696 (Mar. 30, 2026);
- *Categorical Exclusions From Environmental Review*, 91 Fed. Reg. 15,519 (Mar. 30, 2026) (final rule, effective Apr. 29, 2026);
- *Modernizing Requirements Relating to the Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material*, 91 Fed. Reg. 17,893 (Apr. 9, 2026) (proposed rule);
- *Licensing Requirements for Microreactors and Other Reactors with Comparable Risk Profiles*, 91 Fed. Reg. 23, 628 (May 1, 2026) (proposed rule);
- *Implementation of the National Environmental Policy Act*, 91 Fed. Reg. 42,086 (July 7, 2026) (proposed rule);
- *Modernizing Reactor Licensing, Safety Oversight, and Siting Practices*, 91 Fed. Reg. 44,560 (July 16, 2026);
- *Reforming and Modernizing the NRC's Radiation Protection Framework*, 91 Fed. Reg. 43,456 (July 15, 2026) (proposed rule);
- *Planned Rulemaking Activities – Rule: Modernizing Materials Licensing*[7] (stating that this planned rulemaking would amend numerous sections, subparts, and appendices of Title 10, Chapter 1 of the Code of Federal Regulations);
- *Planned Rulemaking Activities – Rule: In Situ Recovery Monitoring and Decommissioning Timelines*,[8] (stating that "[t]his rulemaking would amend the NRC's regulations to codify risk-informed groundwater protection standards for ISR facilities and reduce post-restoration monitoring, and risk-informed decommissioning timeliness regulations and increase licensing flexibility to allow site-specific extensions for both reactors and materials facilities");

[4] NRC-2011-0012-0216.
[5] NRC-2011-0012-0205.
[6] NRC, *Wholesale Revision of Regulations Under Executive Order 14300*, https://www.nrc.gov/about-nrc/governing-laws/advance-act/wholesale-revision-regs.
[7] https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/ruledetails?id=2244
[8] https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/ruledetails?id=2248

- *Planned Rulemaking Activities – Rule: Modernizing Security Requirements*[9] (same); and
- *Planned Rulemaking Activities – Rule: Exemptions from Materials Licensing*[10] (planned rulemaking which "aims to modernize the NRC's Schedule B exempt quantity licensing thresholds and the Department of Energy (DOE) exemptions for material use").

Given the sheer volume and scope of the NRC's regulatory changes, and given the lack of substantive analysis by the agency on these overlapping and interrelated changes in this or any other proposed rulemaking, *see* § I(B), *infra*, a 47-day comment period is woefully insufficient under the Administrative Procedure Act, *see generally* 5 U.S.C. § 553(b)(3).

B. Inadequate Notice of Regulatory Changes

In addition to New Mexico's procedural concerns that the NRC does not give sufficient time for the public to understand, analyze, and formulate comments on these broad changes, the Proposed Rule fails in significant substantive respects to give sufficient notice of the changes it makes to the federal regulatory scheme. Neither the Proposed Rule nor its accompanying draft Regulatory Analysis (RA) analyze or explain the interactions between, or cumulative effects of, the numerous recent, pending, and anticipated regulatory changes promulgated by the NRC (let alone related rulemakings promulgated by the Department of Energy and Department of Defense).

One example of the NRC's failure to explain and analyze the cumulative effects of regulatory changes is the interaction between this Proposed Rule and the pending *Reforming and Modernizing the NRC's Radiation Protection Framework* proposed rule. 91 Fed. Reg. 43,456 (July 15, 2026). In this Proposed Rule, NRC states that it "replaces the ALARA references in § 61.41 and 61.43 with a reference back to 10 CFR 20.1101(b)" to "provide consistency across NRC's regulatory framework." 91 Fed. Reg. at 40,312.

But the NRC does not disclose that the simultaneous rulemaking—*Reforming and Modernizing the NRC's Radiation Protection Framework*—is effecting sweeping changes to NRC's Radiation Protection Framework that the Proposed Rule cross-references. Nor does the Proposed Rule include any substantive cumulative effects of regulation analysis, other than the conclusory statement that "[t]he NRC believes that the de-regulatory impacts of this rulemaking activity are unlikely to cause implementation challenges for stakeholders." 91 Fed. Reg. at 40,315. This statement is limited to assessing the de-regulatory impacts for those stakeholders who are implementing the regulated action, but does not assess the impacts to stakeholders who are no longer protected by regulation. In light of an unanalyzed plethora of regulatory change, the NRC's "belie[fs]" regarding any challenges should be given no credence.

The closest the Proposed Rule comes to acknowledging the cross-over effects of both rulemakings is the following statement: "The proposed cross-refence will provide consistency across NRC's regulatory framework and allow part 61 ***to remain consistent with any changes to part 20.***" 91 Fed. Reg at 40,312 (emphasis added). The phrasing "any changes" misleadingly suggests that changes to 10 CFR Part 20 are not presently contemplated, when, in fact, NRC is concurrently proposing significant revisions to that Part, as outlined in *Reforming and Modernizing the NRC's Radiation Protection Framework*—a relevant consideration that the Proposed Rule does

[9] https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/ruledetails?id=2242
[10] https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/ruledetails?id=2251

not even recognize by citation to that other rulemaking. The draft RA does not contain any cumulative effects of regulation analysis or even reference other recent and pending rulemakings.

Another potentially indirect reference to the changes in its radiation protection framework is the NRC's statement that the Proposed Rule "will also better align the requirements [for LLW and GTCC waste disposal] with ***current health and safety standards*** by allowing the application of new dosimetry models (e.g., as used in 10 C.F.R. part 20)." 91 Fed. Reg. at 40,298 (emphasis added). But these "new dosimetry models" are not promulgated in this rulemaking—they are subject to a proposed rulemaking that is still in its own public comment period and has yet to be finalized. The Proposed Rule does not explain what the "new dosimetry methods" are, and the parallel rulemaking changing the NRC's radiation protection framework does not discuss "new" dosimetry methods so much as "*alternative* dosimetry methods" that may include the option for an applicant to use a dosimetry method that is not listed by the NRC in the forthcoming Appendix H to part 10. *See* 91 Fed. Reg at 43,493. The NRC does not explain how the new regulatory pathway in the Proposed Rule for the licensing of LLW disposal including transuranic waste will rely on, or be facilitated by, the more relaxed radiation protection standards for the public that the NRC is contemporaneously promulgating. The Proposed Rule implies that it is aligning with improved, or more rigorous, "health and safety standards," while examination of the *Reforming and Modernizing the NRC's Radiation Protection Framework* suggests otherwise.

Another example of inadequate substantive notice of the cumulative impacts of regulatory change: the Proposed Rule fails to explain the combined impact of this Proposed Rule with NRC's pending changes to its National Environmental Policy Act (NEPA) regulations, outlined in *Implementation of the National Environmental Policy Act*, 91 Fed. Reg. 42,086 (July 7, 2026) (for which comments are due just a few days after comments on this Proposed Rule are due). New Mexico further notes that NRC withdrew its Environmental Justice Policy Statement and Environmental Justice Strategy in response to Executive Order 14173. 90 Fed. Reg. 17,887. The pending NEPA rulemaking would remove codified environmental justice references in 10 C.F.R. § 51.53 and Table B–1 of Appendix B to Part 51, which currently apply to license-renewal environmental reports. 91 Fed. Reg. at 42,095. New Mexico understands that the pending rulemaking would, among other things, also constrain NRC's NEPA review to radiological impacts, allow for categorical exclusions for site decommissioning, license renewals, and microreactor licensing, 91 Fed. Reg. at 42,087, allow for categorical exclusions from other agencies, and allow for the submission of proposed "categorical exclusions" on a web-based portal that could rob the public of notice and comment opportunities, as well as limit public participation more broadly, *id.* at 42,091. The pending rulemaking's narrowed definition of "effects" combined with the absence of any surviving definition of "cumulative impacts" following CEQ's 2025 rescission of its own NEPA regulations, *see* 90 Fed. Reg. 10,610 (Feb. 25, 2025), raises a serious question whether cumulative impacts analysis will continue in any form at the NRC, a question the Proposed Rule does not address. New Mexico requests that, at minimum, NRC clarify that it will continue to consider cumulative radiological impacts.

Further, the Proposed Rule fails to explain the combined impact of these three proposed rulemakings on Agreement States and their agencies in terms of the proposed rulemakings' mandatory regulatory changes, enforcement, and licensing activities. For example, the Proposed Rule does not explain how these new LLW regulations will interact with the NRC's proposed rules eliminating ALARA standards and environmental justice analysis. Without a full explanation and analysis of these interrelated impacts, it appears that the Proposed Rule's more lenient transuranic

waste disposal standards, combined with the agency's relaxation of its radiation protection framework and the elimination of any requirement to review cumulative and disparate impacts on vulnerable communities through environmental justice review, signals the NRC's intention to ignore, if not sacrifice, the wellbeing of this country's most vulnerable communities.

In light of these unexamined sweeping and interrelated changes, the NRC fails to "fairly apprise interested persons of the subjects and issues before the Agency."[11] Because of this, States and other stakeholders and interested parties are unable to identify all the potential practical, technical, environmental, and legal impacts that the Proposed Rule will have. This violation of the Administrative Procedure Act's (APA) notice and comment provision is fundamental; as a result, New Mexico's ability to identify any technical, legal, or factual issues this Proposed Rule poses may be hampered and the identified issues underinclusive. New Mexico preserves its right to challenge this Proposed Rule based on any injuries to its environment or residents that may arise due to the NRC's implementation of the Proposed Rule that are not discussed in the Proposed Rule.

II. THE NRC's NEW DEFINITION OF LOW-LEVEL RADIOACTIVE WASTE VIOLATES THE NWPA AND APA.

A. The NRC's reinterpretation of the NWPA goes against the statute's plain meaning and is not entitled to deference.

In the Nuclear Waste Policy Act (NWPA), Congress defined "low-level radioactive waste" as "radioactive material that . . . is not high-level radioactive waste, spent nuclear fuel, *transuranic waste*, or by-product material" and that is classified by the Commission as such. 42 U.S.C. § 10101(16) (emphasis added). Because of this statutory directive, current regulations exclude transuranic waste from the definition of LLW: transuranic waste "must be disposed of in a geologic repository as defined in part 60 or 63 of this chapter unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are approved by the Commission." 10 C.F.R. § 61.55. However, transuranic *radionuclides* are not excluded, and it is typical for LLW to contain transuranic radionuclides in limited concentrations—up to 100 nanocuries per gram (nCi/g) under 10 C.F.R. § 61.55.

In the Proposed Rule, the NRC does not merely reinterpret the NWPA's definition of "low-level radioactive waste," it completely rewrites Congress' definition. *See* 91 Fed. Reg. at 40,298 ("The proposed rule will also amend 10 CFR parts 20 and 61 to revise the definition of 'waste' such that LLW that is acceptable for disposal under 10 CFR part 61 no longer excludes 'transuranic waste.'"); *id.* at 40,299 ("Specifically, the NRC proposes to delete the term 'transuranic waste' from the second sentence of the 'waste' definition paragraph in 10 CFR 20.1003 and 10 CFR 61.2, which currently excludes transuranic waste from what constitutes LLW.").

In the NWPA, Congress has "directly spoken to the precise question at issue," *Loper Bright Enters. v. Raimondo*, 603 U.S. 369, 396 (2024), that transuranic waste, as a category, is not low-level radioactive waste, 42 U.S.C. § 10101(16)(A). NRC may respond that the NWPA leaves the boundary between "transuranic waste" and ordinary LLW undefined in concentration terms, and that setting or adjusting a numeric threshold is the kind of technical gap-filling *Loper Bright* leaves to the expert agency's reasoned judgment. But the Proposed Rule does not adjust a threshold within

[11] *Nat. Res. Def. Council v. E.P.A.*, 279 F.3d 1180, 1186 (9th Cir. 2002) (citation omitted).

the existing statutory category—it deletes the term "transuranic waste" from the operative definition of "waste" in 10 C.F.R. §§ 20.1003 and 61.2 entirely, 91 Fed. Reg. at 40,299, so that an entire class of material Congress placed outside the definition of LLW would be licensed as LLW without any amendment to the NWPA itself. That is not gap-filling at the margins of an undefined term; it is the elimination of the very distinction Congress drew in 42 U.S.C. § 10101(16)(A). By promulgating a regulatory definition that includes transuranic waste, the NRC contravenes congressional intent, exceeds its statutory authority, and violates the NWPA. Because congressional intent in the NWPA is "'clear,' that is the end of the inquiry." *Loper Bright*, 603 U.S. at 379. The NRC's proposed redefinition thus also contravenes the APA because it is "otherwise not in accordance with law." 5 U.S.C. § 706(2)(A).

The NRC's redefinition of LLW through rulemaking also defies the Supreme Court's major-questions-doctrine jurisprudence: "Agencies have only those powers given to them by Congress, and enabling legislation is generally not an open book to which the agency may add pages and change the plot line." *West Virginia v. Envtl. Prot. Agency*, 597 U.S. 697, 723 (2022) (cleaned up). Courts "presume that 'Congress intends to make major policy decisions itself, not leave those decisions to agencies.'" *Id.* (citation omitted). The NRC must "point to 'clear congressional authorization' for the power" to redefine LLW to include transuranic waste. *Id.* (citation omitted). It has not done so in this rulemaking.

At a minimum, to the extent the NRC maintains this is a permissible exercise of delegated technical discretion rather than a departure from the statute's text (which New Mexico does not concede), it must say so and explain why—a reasoned explanation the NRC has not provided and that is independently required. *See Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983). This is particularly true given the NRC's own 2019 conclusion that concentrations above 10,000 nCi/g could not reliably be shown to be protective of an inadvertent intruder. *See* 91 Fed. Reg. at 40,307; *see also* § II.B, *infra*.

B. The NRC fails to sufficiently justify its change of position on the record.

The Proposed Rule would allow transuranic waste up to 10,000 nCi/g—100 times the concentration currently permitted in ordinary LLW for the purpose of near-surface disposal. 91 Fed. Reg. at 40,299 ("[U]p to 100 nanocuries per gram (nCi/g) of transuranic radionuclides is permitted for disposal within the 10 CFR 61.55 limits."). This is not a marginal adjustment to an existing limit. This proposed change creates an entirely new disposal pathway, at a concentration well above the level at which material is currently excluded from LLW altogether under 42 U.S.C. § 10101(16)(A). The Proposed Rule introduces a risk-informed approach to transuranic waste (TRU) disposal, so that disposal sites can develop site-specific waste acceptance criteria (WAC) based on performance assessments, rather than prescriptive concentration limits currently codified in 10 C.F.R. § 61.55.

Given the substantial record justifying the current exclusion of transuranic waste up to 10,000 nCi/g from the definition of LLW, the NRC fails to justify its change of position on the record.[12] The NRC's own 2019 draft regulatory basis found that, as waste approaches 10,000 nCi/g, "it can be very difficult to establish that an intruder who inadvertently drills a well into the waste in the future would not receive an acute dose more than 0.5 mSv (500 mrem)." 91 Fed. Reg

[12] *See* Comment by Fred Schofer § II, NRC-2011-0012-0213.

at 40,307 (quoting 84 Fed. Reg. 35,037 (July 22, 2019)). The Proposed Rule now adopts that same figure as an upper limit for near-surface disposal, retaining the 2019 draft's recommended 500-year intruder barrier and 5-meter minimum depth as codified requirements. *Id.* at 40,308. The NRC does not explain, however, why a threshold its own analysis found difficult to justify from a dose-protection standpoint six years ago is now the appropriate generic ceiling. Further, the Proposed Rule establishes a new, non-case-by-case "specialized land disposal facility" pathway at proposed 10 C.F.R. § 61.55(b)(1)(iii) for waste above that threshold—a shift from the individualized review the 2019 analysis contemplated, even though a case-by-case option remains available as an alternative. *See id.*at 40,345.[13]

This gap in the record is not cured by the 2026 supplement (ML26174A245) to NRC's 2019 technical analysis, whose substantive methodology and conclusions are not disclosed or summarized in the Proposed Rule or the draft RA. Even if the NRC is not bound by its 2019 draft conclusions, it must disclose the technical basis for departing from them now.

III. THE NRC MUST CLARIFY THAT ITS WHOLESALE REGULATORY REVISIONS WILL MAINTAIN THE DISTINCTION BETWEEN COMMERCIAL AND DOE GTCC WASTE.

The Proposed Rule cites extensively the Department of Energy's (DOE) 2016 *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste*, including "stat[ing] that [DOE's] preferred alternative for the disposal of GTCC waste is disposal in the DOE's Waste Isolation Pilot Plant (WIPP) geologic repository near Carlsbad, New Mexico." 91 Fed. Reg. at 40,294. DOE's Final Environmental Impact Statement stated that DOE-owned GTCC-like waste and commercial GTCC waste shared similar characteristics, "suggesting that a common disposal approach may be appropriate." *Id.* The NRC reluctantly acknowledges that, despite this preference, "WIPP is authorized to accept only defense generated transuranic (TRU) waste pursuant to the Waste Isolation Pilot Plant Land Withdrawal Act (WIPPLWA)," which Congress would have to amend before WIPP could accept commercial GTCC waste. *Id*.

The NRC must clarify that, under the Proposed Rule (either standing alone or in combination with any recent, pending, or anticipated rulemakings of the NRC, Department of Defense, or DOE), commercial TRU waste would only be disposed of or stored in commercial facilities with the consent of the relevant Agreement States, and not sent to DOE sites such as WIPP, contrary to legislative intent.[14]

IV. ANY PLAN TO STORE THE NATION'S GTCC AT WCS IN TEXAS MUST BE SUBJECT TO NOTICE AND COMMENT AND FULL NEPA REVIEW.

By citing the DOE's 2018 *Environmental Assessment for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste at Waste Control*

[13] *See also* State of Washington Department of Ecology's Comments at 2, NRC-2011-0012-0205 ("Ecology disagrees with the inclusion of a 'generic pathway' to disposal under Section 61.58. Such a pathway is inconsistent with the necessary site-specific thoroughness and could allow waste streams to be evaluated without sufficient consideration of local environmental conditions, regulatory constraints, and established cleanup commitments.").

[14] *See id.* ("Ecology emphasizes the importance of maintaining the distinction between GTCC waste, which is regulated by the NRC as commercial waste and GTCC-like waste, which is regulated by the United States Department of Energy as defense related waste.").

Specialists, Andrews County, Texas, the NRC suggests that storing GTCC at the Waste Control Specialists (WCS) facility in Andrews County, Texas, would be the next best choice after WIPP. Storing commercial GTCC including transuranic waste on the border between Texas and New Mexico would be a major federal action that should require full NEPA review and an environmental impact statement.

The NRC must confirm that any plans to do so will be subject to full APA notice and comment, and subject to full NEPA review: because of the numerous nuclear projects and current radiological impacts in New Mexico, any environmental review must consider the cumulative impacts of increased radiation from near-surface disposal of TRU at WCS against the backdrop of other nuclear projects in that area.

As explained above, in addition to legacy impacts from the Manhattan Project, and past and future uranium mining radiological impacts, New Mexico hosts Urenco's uranium enrichment facility in Eunice, New Mexico, and two National Laboratories which conduct significant nuclear weapons and energy research. The cumulative environmental and human health impacts of past, present, and future nuclear development and waste disposal in New Mexico are already extremely high. Authorizing a GTCC waste disposal site that would receive the nation's depleted uranium and transuranic waste on New Mexico's southeastern border would exacerbate the impacts of nuclear power generation and waste storage on New Mexico's already burdened population and environment.

Because NRC offers no assurance that full environmental review of such projects will survive the contemporaneous NEPA changes it is making, New Mexico is concerned that the future environmental review of projects under the new Part 61 LLW licensing pathway will be severely curtailed. The NRC must preserve environmental review that considers the cumulative radiological impacts of a proposed project in combination with pre-existing projects and impacts in any future licensing proceeding.

V. THE PROPOSED RULE FAILS TO COMPLY WITH NEPA AND NRC'S CURRENT NEPA REGULATIONS.

The Proposed Rule was promulgated before NRC's proposed rulemaking implementing changes to NEPA will come into effect. Therefore, the NRC's current NEPA regulations—as of the Proposed Rulemaking's publication date, July 1, 2026—apply here. *See, e.g.*, 10 C.F.R. §§ 51.25, 51.30, 51.22.

The Proposed Rule claims that many of the rule amendments are covered under the categorical exclusion listed in 10 C.F.R. § 51.22(a)(1). *See* 91 Fed. Reg. at 40,315–16. But for the rule amendments to be categorically excluded from NEPA review, the Commission must "first find[] that the actions within the category do not individually or cumulatively have a significant effect on the human environment." 10 C.F.R. § 51.22. The NRC identifies its proposed change to 10 C.F.R. § 20.1003 as meeting the criteria for a categorical exclusion under 10 C.F.R. § 51.22(a)(1). *See* Table B-2, 91 Fed. Reg. at 40,316. It states that those purely "administrative and procedural changes . . . . clarify NRC regulations and would not change radiation protection and emergency preparedness requirements." 91 Fed. Reg. at 40,316. But the NRC's proposed change to include transuranic waste within the definition of "low-level radioactive waste" in 10 C.F.R. § 20.1003 is one of the key substantive changes in this rulemaking. To say that such a definitional change will not create any real-world impact on the human environment strains

credulity. Certainly, if the NRC has determined that changing this regulatory definition to allow transuranic waste to be disposed of as LLW would not have any significant cumulative effect on the human environment, per 10 C.F.R. § 22, the NRC must show how it arrived at this conclusion.

The Proposed Rule further justifies the use of categorical exclusions by stating that those amendments "would not authorize any site-specific action on the part of the NRC or licensee," implying that environmental review will be available at a later licensing stage. 91 Fed. Reg. at 40,316. In summarizing the effect of the rulemaking, NRC similarly concludes that, "[s]ince no physical changes would occur in the human environment, the proposed agency action (rulemaking) would not affect any threatened or endangered species or historic properties." 91 Fed. Reg at 40,318. Yet, the Proposed Rule does not acknowledge the pending NEPA regulatory changes that would affect the future licensing procedures to which it defers environmental review. For example, the NRC does not explain or analyze how the pending changes to the NRC's categorical exclusion regulations in its NEPA rulemaking—which would allow, for example, for the adoption of other agencies' categorical exclusions, or applicant-proposed categorical exclusions, 91 Fed. Reg. at 42,091—might affect the environmental impact analysis that would be performed for future LLW facility license applications. Given the sweeping changes the NRC is enacting to its NEPA regulations, it is contrary to NEPA and to current NRC NEPA regulations for the NRC to defer environmental impact analysis of the LLW rulemaking as a whole to future site-specific environmental review that may be all-but eliminated.

For the changes that the NRC flags as substantive, thus requiring an environmental assessment, the Proposed Rule minimizes the rule's environmental impact. First, NRC states that the Proposed Rule would provide "amendments" that would "involve safety requirements that differ from those under the existing regulatory framework." 91 Fed. Reg. at 40,316. Then, NRC examines whether those amendments would create "different environmental effects" than under current regulations. *Id*. Because the changes would purportedly only "clarify NRC regulations," and "provide reasonable assurance of adequate protection of public health and safety," NRC claims there would be "no new or different environmental effects." *Id.* Based on this purported absence of any qualitative change in environmental impacts, the NRC arrives at a finding of "no significant environmental effects," ignoring that the Proposed Rule cross-references proposed changes to 10 C.F.R. part 20 removing the ALARA standard. The NRC also ignores that the Proposed Rule would "create a pathway, and waste characteristic and classification requirements for land disposal of [GTCC] waste streams," in addition to "technical requirements for specialized land disposal facilities" for GTCC waste. *Id.* at 40,316–17 (Table B-3). These are the very heart of the NRC's proposed changes, which would allegedly save industry and the NRC $69.7 million over 30 years at a 3-percent discount rate. 91 Fed. Reg. at 40,319. Once again, it seems highly unlikely that these changes will not significantly affect the environment.

Moreover, the draft Regulatory Analysis, in its qualitative discussion of non-quantified benefits under OMB Circular A-4 acknowledges that "the magnitude of the effects of this rulemaking are uncertain." Draft RA § 4.4. While the environmental assessment is a NEPA conclusion about environmental significance, and the draft RA's statement concerns the size of the rule's net economic and public health benefits, the NRC has not explained how a rule it acknowledges may have public health effects of uncertain magnitude can simultaneously be certain to have no significant environmental effect. At minimum, the NRC should reconcile these two conclusions on the record.

VI. THE PROPOSED RULE'S INADEQUATE COST-BENEFIT ANALYSIS IGNORES FINANCIAL, REGULATORY, ENVIRONMENTAL, AND PUBLIC HEALTH BURDENS ON AGREEMENT STATES.

The Proposed Rule and accompanying draft Regulatory Analysis (RA) fail to provide an adequate and thorough quantification of all the anticipated financial, regulatory, environmental, and public health burdens that will be carried by Agreement States and other local governments that will be affected by newly licensed GTCC or transuranic waste disposal sites.

The Proposed Rule states that "net cost savings to the industry, the NRC, and Agreement States [are] $39.4 million using a 7-percent discount rate." 91 Fed. Reg. at 40,313. But neither the Proposed Rule nor the draft RA disaggregate these alleged savings based on which savings benefit private industry, and which benefit Agreement States. The draft RA makes it clear that NRC has not considered the cost-benefit analysis for Agreement States in isolation from the cost-savings to industry, which conclusion it obfuscates with the passive voice:

> The primary cost drivers in the proposed rule are rulemaking costs for the NRC and the Agreement States. However, as can be seen in the net results, these costs are exceeded by the cost savings from the efficiencies gained from the new regulations that would result from the proposed rule language, and in particular are greatly exceeded by the cost savings of earlier disposal of GTCC due to no longer paying for storage. As previously stated, this analysis is conservative—if all the costs for stored GTCC were included, the rule would be far more cost beneficial. The costs of the rulemaking are necessary in order to provide the cost savings to licensees and the NRC. Therefore, the rule is cost justified and disaggregation does not lead to any separable requirements.

Draft RA § 4.6. In other words, even though most of the costs and burdens of this rulemaking will fall to the NRC and Agreement States, the benefits and cost savings to industry from not having to store the GTCC are so great that the NRC states that it does not need to "disaggregate" those costs in light of the great benefits to industry.

The Draft RA thus contravenes OMB Circular A-4's guidance that "[a] good analysis is transparent. It should be possible for a qualified third party reading the report to see clearly how you arrived at your estimates and conclusions." It also contradicts OMB Guidance that a cost-benefit analysis be symmetrical: instead of explaining all the costs to Agreement States and balancing that with cost-savings to Agreement States, the draft RA asymmetrically balances costs to States with savings to industry. Further, the Draft RA ignores OMB Guidance warning against externalizing costs on another party: "An externality occurs when one party's actions impose uncompensated benefits or costs on another party. Environmental problems are a classic case of externality." The draft RA has entirely identified with cost-savings to industry and failed to consider the externalized costs on Agreement States and communities that will have to live near facilities that become licensed to store transuranic waste.

The Proposed Rule concedes that "[t]he disposal of GTCC waste could, under certain accident conditions, result in increased offsite impacts to a member of the public." 91 Fed. Reg. at 40,308. But neither the Proposed Rule nor the draft RA analyze or quantify these impacts or the

costs of emergency response planning and accident preparedness by local jurisdictions, in violation of OMB Circular A-4 and NEPA. If GTCC waste disposal in near-surface sites creates additional danger to the public due to the risk of accidents, these impacts must be analyzed and fully studied in an Environmental Impact Statement. NRC solicits comment on the adequacy of its cost-benefit analysis—but NRC may not rely on commentors for undertaking a full cost-benefit analysis that NRC should conduct itself.

CONCLUSION

For the reasons above, New Mexico respectfully requests that the NRC withdraw the Proposed Rule, address these fundamental flaws, and re-propose the rule with a sufficient comment period of at least 90 days.

FOR THE STATE OF NEW MEXICO
RAÚL TORREZ
ATTORNEY GENERAL

/s/ Esther C. Jamison
Esther C. Jamison
Assistant Attorney General
New Mexico Department of Justice
Environmental Protection Bureau
408 Galisteo Street
Santa Fe, NM 87501
(505) 627-3474
ejamison@nmdoj.gov

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-u28r-usn5
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0269
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Utah Department of Environmental Quality

Submitter Information

Email: alovato@utah.gov
Government Agency Type: State
Government Agency: Utah Department of Environmental Quality

General Comment

See attached file(s)

Attachments

DRC-2026-002973

State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Tim Davis
Commissioner

DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL

Ted H. Sonnenburg, P.E., L.E.H.S.
Director

August 17, 2026

Office of Administration Attn: Secretary
Mail Stop TWFN-7-A60M
United States Nuclear Regulatory Commission
Washington, D.C. 20555-0001
Sent via Email Only:
https://www.regulations.gov/document/NRC-2011-0012-0205

RE: Comments on the Proposed Rule, "Integrated Low-Level Radioactive Waste Disposal" (10 CFR Parts 20, 61, 73, and 150) — Docket ID No. NRC-2011-0012-0205 / RIN 3150-AI92

Dear Secretary:

The State of Utah is an Agreement State with the Nuclear Regulatory Commission (NRC) for low-level radioactive waste, uranium recovery, and radioactive materials. These programs are administered by the Utah Department of Environmental Quality (UDEQ), Division of Waste Management and Radiation Control (Division). Utah is somewhat unique in its program breadth and scope, being the only state with an active conventional uranium mill, as well as one of only two states with a large, commercial low-level radioactive waste disposal facility. The Division directly employs a substantial professional staff and participates extensively in NRC training, workshops, and other Agreement State outreach programs. The Division's Director serves as the representative of the State of Utah to the Organization of Agreement States (also known as OAS), the Conference of Radiation Control Program Directors (also known as the CRCPD), and the Northwest Interstate Compact. This rulemaking is of particular interest to Utah. The Division is one of the few Agreement State programs regulating commercial low-level radioactive waste (LLW) disposal operations.

The Division writes to address one discrete but consequential feature of the proposed rule: the Commission's determination that "regulation of GTCC waste disposal is not an area of regulation that can be relinquished to Agreement States," such that "the NRC would retain authority over GTCC waste disposal." The Division respectfully submits that this determination rests on a faulty legal premise. These comments make two connected points:

195 North 1950 West • Salt Lake City, UT
Mailing Address: P.O. Box 144880 • Salt Lake City, UT 84114-4880
Telephone (801) 536-0200 • Fax (801) 536-0222 • T.D.D. 711
www.deq.utah.gov
Printed on 100% recycled paper

First, the Atomic Energy Act (AEA) and the Low-Level Waste Policy Amendments Act (LLRWPAA) permit, and do not prohibit the NRC from allowing Agreement States to regulate the management and disposal of GTCC waste, by regulation or order. The NRC's new legal position denies its own discretion to indirectly regulate the management of GTCC waste by regulation or order, consistent with the Agreement State program and the expansive capabilities of current Agreement State programs.

Second, even assuming that the regulation of GTCC waste is a preempted field, the NRC should affirmatively promote the interests of cooperative federalism by extending the scope of its own Management Directive 5.2 (MD 5.2) to preempted fields, including the management of GTCC wastes.

Comment No. 1 —Retention of Exclusive NRC Authority is a Discretionary Policy Choice, not a Statutory Command.

A. The AEA Commits the Retention of GTCC Disposal Authority to the Commission's Discretion, and the LLRWPAA Does Not Alter or Limit That Discretion.

The structure of Section 274 of the AEA confirms that the retention of GTCC authority is discretionary. Section 274(b) makes Agreement State authority the relinquishable default: "[e]xcept as provided in subsection (c)," the Commission "is authorized to enter into agreements" with a State's Governor for discontinuance of the Commission's regulatory authority over byproduct materials, source materials, and special nuclear material in quantities insufficient to form a critical mass, and the State shall have authority to regulate the materials covered by the agreement for the protection of the public health and safety from radiation hazards. 42 U.S.C. § 2021.

Subsection (c) then lists the categories the Commission must retain. Three of them are absolute and self-executing: the construction and operation of production or utilization facilities, import and export, and ocean disposal. AEA §§ 274(c)(1)–(3). 42 U.S.C. § 2021(c)(1)-(3). This is different in kind. Section 274(c)(4) reserves to the Commission only the disposal of such other byproduct, source, or special nuclear material as the Commission determines by regulation or order should, because of the hazards or potential hazards thereof, not be so disposed of without a license from the Commission. 42 U.S.C. § 2021. Unlike the categorical carve-outs in paragraphs (1) through (3), paragraph (4) does not itself withdraw any material from Agreement State authority. It withdraws material only to the extent, and for so long as, the Commission has affirmatively determined by regulation or order that a federal license is required because of the material's hazards. Thus, the retention is a product of the Commission's discretionary action, not a fixed statutory boundary.

The Commission's own regulations confirm this reading. 10 C.F.R. § 150.15(a)(5) tracks Section 274(c)(4) verbatim, reserving federal authority over "[t]he disposal of such other byproduct, source, or special nuclear material as the Commission determines by regulation or order should, because of the hazards or potential hazards thereof, not be so disposed of without a license from the Commission." The retained authority thus lives in a *regulation* — one the Commission promulgated and one the Commission may amend through the same notice-and-comment process it is using here. What the Commission determined by rule, it may revisit and revise by rule. Section 274(c)(4) does not lock the current determination in place; it makes the determination the Commission's to make.

The Supreme Court has long understood Section 274 in exactly these terms. In *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 104 S.Ct. 615 (1984), the Court explained that the 1959 amendments authorized the Commission "to turn some of its regulatory authority over to any state which would adopt a suitable regulatory program," while retaining exclusive authority over "the disposal of such . . . material as the Commission determines . . . should, because of the hazards or potential hazards thereof, not be disposed

of without a license from the Commission." 464 U.S. at 250. The retained category, in the Court's own description, is defined by what "the Commission determines" — a discretionary determination, not a static rule of law.

The proposed rule's core error is interpretive. The Commission reads the LLRWPAA's reference to a facility "licensed by the Nuclear Regulatory Commission" as though it imposed a substantive limitation on — or a reservation against — Agreement State authority. It does not. Section 3 of the LLRWPAA does not address the allocation of regulatory authority between the NRC and its Agreement States at all. It answers a different question: it allocates stewardship and legal responsibility for the disposal of low-level radioactive waste as between the States and the Federal Government, assigning the Class A, B, and C waste streams to the States and the GTCC and enumerated government-generated wastes to the Federal Government. 42 U.S.C. § 2021c. That division of responsibility says nothing about whether a facility that disposes of federal-responsibility waste must be regulated by the Commission directly, or may instead be regulated indirectly through a compatible Agreement State program under full NRC oversight.

Read in that light, the phrase "licensed by the Nuclear Regulatory Commission" in Section 3(b)(2) is satisfied by both direct and indirect NRC licensing. When an Agreement State licenses a disposal facility under a program the Commission has found compatible with its own — applying NRC-derived health-and-safety standards under continuing NRC oversight — that facility is licensed under the Commission's authority in every sense that matters to the statute's health-and-safety purpose. Section 3(b)(2) requires only that GTCC waste be disposed of in a facility the Commission "determines is adequate to protect the public health and safety." 42 U.S.C. § 2021c. It does not provide that the Commission alone may issue the operative license, and it does not purport to displace the Agreement State mechanism Congress created in AEA § 274. To read "licensed by" the Commission to exclude indirect licensing through the Agreement State program would imply that the health-and-safety standards applied in an Agreement State program are somehow inferior to those applied at directly licensed facilities. They are not. By statute, an Agreement State program must be "coordinated and compatible" with the Commission's own, and adequate to protect public health and safety. 42 U.S.C. § 2021(g).

The structure of the AEA confirms that the only limits on the Agreement State program appear in the Agreement State provision itself. Congress placed every restriction on relinquishment in AEA § 274(c) — and nowhere else. 42 U.S.C. § 2021(c). When Congress wished to withhold a category of authority from the Agreement States, it said so expressly, and it did so in that section. And for the disposal of hazardous materials, Congress did not impose a fixed statutory bar; it vested the Commission with discretion to determine, "by regulation or order," which materials are too hazardous to be disposed of without a Commission license. 42 U.S.C. § 2021(c)(4). Had Congress intended the LLRWPAA's later-enacted licensing reference to carve GTCC disposal out of the Agreement State program categorically, it knew exactly how and where to do so — by limiting § 274(c). It did not. The Commission should not read into the LLRWPAA a limitation that Congress declined to place in the one provision that governs the scope of Agreement State authority.

Congress's broader design points the same way. In the AEA's statement of purpose, Congress expressly recognized "that, as the States improve their capabilities to regulate effectively such materials, additional legislation may be desirable." 42 U.S.C. § 2021(a)(6). Congress thus contemplated an Agreement State program that would expand over time as state programs matured, and it directed the Commission to cooperate with the States so that federal and state programs would be "coordinated and compatible." 42 U.S.C. § 2021(g). That forward-looking design is the opposite of a static, categorical reservation of GTCC authority to the Commission. It confirms that Congress intended the Commission

to retain discretion to maximize Agreement State authority as state capabilities grow — a discretion the Commission exercises "by regulation or order" under § 274(c)(4) — rather than to be locked into perpetual exclusivity by an incidental licensing reference in the LLRWPAA.

For the same reason, "responsibility" is not the same as perpetual exclusive licensing. Section 3(b)(1) makes the Federal Government "responsible for" GTCC disposal, 42 U.S.C. § 2021c, but responsibility for the long-term liability and perpetual stewardship of this waste stream is distinct from the regulatory licensing mechanism used to ensure its safe disposal. The LLRWPAA's health-and-safety objective — that GTCC waste be disposed of in a facility "adequate to protect the public health and safety," 42 U.S.C. § 2021c — is fully served by a co-regulatory model in which the Commission sets every health-and-safety standard and retains complete oversight while an Agreement State administers the license. So long as the Agreement State manages the program at least as well as the Commission would, and the Commission continues to set all applicable health-and-safety standards, every policy underlying the LLRWPAA is satisfied.

The NRC retains a complete safety backstop even if it relinquishes disposal authority. Section 274(j) authorizes the Commission, on its own initiative, to "terminate or suspend all or part of its agreement" and "reassert the licensing and regulatory authority vested in it" whenever it finds that action necessary "to protect the public health and safety," and requires the Commission to "periodically review such agreements." 42 U.S.C. § 2021(j). The Commission is likewise "authorized and directed, by regulation or order, to grant such exemptions" and to enter cooperative inspection and assistance agreements as it "finds necessary or appropriate." 42 U.S.C. §§ 2021(f), (i). These tools mean that relinquishment is never irrevocable and never unsupervised, undercutting any premise that Agreement State regulation of GTCC waste is inherently unsafe.

The Commission's new reading is also inconsistent with its own prior practice, prior interpretations, and exemption history. As recently as 2019 and 2020, the Commission construed these same statutes to permit Agreement State licensing of GTCC waste. Proposed Part 61 Rule, pages 24, 29-30. And for more than twenty years the Commission has used the AEA § 274f exemption process to allow Agreement States to exercise authority over special nuclear material greater than a critical mass at commercial LLW sites "that are safe under certain prescribed conditions," supported by an effective NRC Exemption Order — including at Utah's own commercial disposal facility, EnergySolutions-Utah, effective 2003, and at Waste Control Specialists in Texas, effective 2014. Proposed Part 61 Rule, page 76. That exemption history demonstrates that the AEA framework already accommodates carefully bounded, hazard-specific sharing of authority over materials that would otherwise be federally reserved. The Commission's recognition, in the depleted-uranium context, that "the appropriate state or federal regulatory authority, such as an Agreement State, will conduct any necessary site-specific evaluation" of a disposal site reflects the same understanding. In re La. Energy Servs., L.P. (Nat'l Enrichment Facility), 63 N.R.C. 687 (2006).

That the Commission has historically used a § 274f exemption process does not make such a process a necessary precondition to Agreement State regulation of GTCC waste. Congress did not condition the Commission's discretion to maximize Agreement State authority on any particular procedural vehicle, still less on a State first clearing an exemption hurdle keyed to the maturity of its program. The Commission may exercise its § 274(c)(4) discretion "by regulation or order," 42 U.S.C. § 2021(c)(4), and this rulemaking is the appropriate vehicle to do so. For these reasons, the Division urges the Commission to recognize that it is *authorized*, though not *required*, to permit Agreement State regulation of qualifying GTCC waste — in particular, the near-surface-suitable, non-reactor-origin GTCC waste streams the staff previously found could be safely regulated by an Agreement State, Proposed Part 61 Rule, page 24 — and to exercise that authority in the final rule.

B. The proposed rule inappropriately reframes a discretionary judgment as a statutory mandate, inconsistent with NRC precedents.

The proposed rule presents continued NRC preemption over GTCC waste as the product of "the plain language reading of the LLRWPAA, where the Federal Government must retain sole authority over the regulation of GTCC waste." Proposed Part 61 Rule, page 30. The Commission concludes that this reading is "the better interpretation" and that, "consistent with the best reading of LLRWPAA, this proposed rule would retain NRC sole authority over licensing GTCC waste disposal facilities." *Id.*

One difficulty with this framing is that the Commission itself reached the opposite conclusion only a few years ago, on the same statutory text. In 2015, the NRC staff recommended that the Commission allow the State of Texas to license the disposal of GTCC waste, and the Commission directed the staff to analyze — in accordance with Section 274c.(4) of the AEA — whether the disposal of GTCC waste presents a hazard such that the NRC should retain authority over its disposal. Proposed Part 61 Rule, pages 22-23. Notably, in its 2019 regulatory basis, the staff concluded that most GTCC waste identified in the Department of Energy's environmental impact statement — approximately 75 percent of the total volume analyzed — could be safely regulated by an Agreement State. *Id.*, page 24. And in 2020, the Commission directed that this rulemaking provide for Agreement State licensing of those GTCC waste streams that meet the regulatory requirements for near-surface disposal and do not present a hazard such that the NRC should retain disposal authority. *Id.*, pages 29-30. The Commission expressly "determined that the better interpretation of LLRWPAA was that authority to license a disposal facility for GTCC waste can be relinquished to Agreement States." *Id.*

The Commission's own deliberative record demonstrates that the LLRWPAA reasonably bears more than one reading, and that the choice between them is a policy judgment — precisely the kind of judgment the Commission directed the staff to make "in accordance with Section 274c.(4) of the AEA . . . ." *Id.* page 23. In short, the Division urges the Commission to describe its determination as a discretionary interpretive and policy choice it is authorized to make, not as a conclusion forced upon it by unambiguous statutory text.

C. The LLRWPAA's GTCC mandate is narrower than the proposed rule assumes.

The proposed rule grounds its reversal principally in Section 3 of the LLRWPAA. That statute is more limited than the categorical conclusion drawn from it. Section 3(b)(1)(D) designates as a federal "responsib[ility]" GTCC waste — that is, LLW "with concentrations of radionuclides that exceed the limits established by the Commission for class C radioactive waste." 42 U.S.C. § 2021c. Section 3(b)(2) then provides that all radioactive waste designated a Federal responsibility pursuant to subparagraph (b)(1)(D) *that results from activities licensed by the Nuclear Regulatory Commission under the Atomic Energy Act* shall be disposed of in a facility licensed by the Nuclear Regulatory Commission that the Commission determines is adequate to protect the public health and safety. 42 U.S.C. § 2021c.

Two features of this text matter. First, the Section 3(b)(2) licensing mandate is expressly limited to GTCC waste "that results from activities licensed by the Nuclear Regulatory Commission." 42 U.S.C. § 2021c. GTCC waste generated under an *Agreement State* license — rather than an NRC license — is not addressed by Section 3(b)(2) at all. For that category, the statutory command the Commission invokes simply does not operate, and nothing in the LLRWPAA prohibits Agreement State regulation of its disposal.

Second, the Commission's own regulation draws the retained-authority line far more narrowly than the proposed rule's across-the-board statement suggests. 10 C.F.R. Section 150.15(a)(7) and (a)(8) render Agreement State persons non-exempt only as to GTCC waste that "originates in, or is used by, a facility licensed under part 50, part 52, or part 53" — that is, reactor-origin GTCC waste. GTCC waste that is neither generated under an NRC license nor tied to a Part 50, 52, or 53 reactor facility falls outside both the Section 3(b)(2) mandate and the current 10 C.F.R. Section 150.15 exclusions. The proposed rule's unqualified statement that GTCC disposal regulation categorically "regulation of GTCC waste disposal is not an area of regulation that can be relinquished to Agreement States." Proposed Part 61 Rule, page 8. This position therefore sweeps more broadly than either the statute or the Commission's existing rules support—and to the detriment of the Commission's own discretionary authority and the important Agreement State program created by Congress.

D. Utah law is aligned with, and ready to exercise, the authority the AEA permits the Commission to relinquish.

Utah's statutory framework is expressly designed to obtain and exercise the broadest Agreement State authority the federal framework allows. The Utah Radiation Control Act authorizes the Governor, on behalf of the State, to "enter into agreements with the federal government providing for discontinuation of the federal government's responsibilities with respect to sources of ionizing radiation and the assumption thereof by the state," and extends that authority, "[s]ubject to authorization by the United States Nuclear Regulatory Commission," to the regulation and licensing of nuclear fuel cycle activities including "waste management." Utah Code § 19-3-113. The Board is directed to adopt rules "to meet the requirements of federal law relating to radiation control to ensure the radiation control programs under this part are qualified to maintain primacy from the federal government." Utah Code § 19-3-104.

Utah's more recent Nuclear Energy Regulation Act, Title 19, Chapter 14, reinforces this intent. It defines "Agreement State" by direct reference to Section 274 of the AEA, 42 U.S.C. § 2021. Utah Code § 19-14-101. It creates a Nuclear Energy Regulatory Office to serve as "the primary liaison between the state and the Nuclear Regulatory Commission" regarding "the state's Agreement State status on all levels of the nuclear fuel cycle." Utah Code § 19-14-102. And it directs the Division to "evaluate the feasibility and benefit of pursuing expanded Agreement State status with the Nuclear Regulatory Commission" and, where feasible and beneficial, to "pursue expanded Agreement State status." Utah Code § 19-14-104. The Legislature has thus made clear its intent that Utah obtain and exercise the fullest regulatory authority the AEA permits the NRC to devolve. To be candid about the boundaries of that intent, Utah's default is to regulate in a manner no more stringent than the corresponding federal requirements absent a record-based finding of inadequacy, Utah Code § 19-3-104 — meaning Utah seeks authority to administer a program that is compatible with, not divergent from, the NRC's. Utah's request is for the opportunity to co-regulate on compatible terms, not to depart from federal safety standards.

Comment No. 2 — The NRC Should Extend the Cooperative-Federalism Principles of Management Directive 5.2 to GTCC Waste and Abandon Its All-or-Nothing Regulatory Posture

A. MD 5.2 is the NRC's own commitment to cooperative federalism — and it operates within a fully preempted field

The Commission has already articulated a considered framework for state involvement in a domain of exclusive federal jurisdiction. NRC Management Directive 5.2, *Cooperation with States at Commercial Nuclear Power Plants and Other Nuclear Production or Utilization Facilities* (MD 5.2), states that "[i]t is the policy of the U.S. Nuclear Regulatory Commission to cooperate fully with State governments,"

and that "[t]he NRC and the States have complementary responsibilities in protecting public health and safety and the environment." MD 5.2, at 2. To that end, MD 5.2 establishes concrete mechanisms for state engagement: exchanging information with States on matters relating to the safe operation of nuclear facilities; allowing state representatives to observe public meetings between the NRC and its licensees; allowing knowledgeable state representatives to observe inspections; and developing a specific "instrument of cooperation" for qualified state participation in NRC inspections. MD 5.2, at 2-3.

What makes MD 5.2 instructive here is that it operates in the *reactor* context — an area of complete federal preemption. The Supreme Court has held that "the Federal Government has occupied the entire field of nuclear safety concerns, except the limited powers expressly ceded to the States," so that only "the Federal Government should regulate the radiological safety aspects involved in the construction and operation of a nuclear plant." Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n, 461 U.S. 190, 103 S. Ct. 1713, 75 L. Ed. 2d 752 (1983). The reactor program is the paradigmatic occupied field. Yet the NRC does not treat preemption of that field as a reason to exclude the states from meaningful participation. To the contrary, MD 5.2 reflects the Commission's own judgment that cooperative federalism and full federal preemption coexist — that the NRC can "cooperate fully" with the states, MD 5.2, at 2, precisely where its regulatory authority is exclusive. The Division has previously described MD 5.2 as a "base framework to build a collaborative environment between States and the NRC and cultivate healthy and adaptable cooperative federalism." State of Utah Part 53 Comments, at 6.

B. The proposed rule applies the NRC's cooperative-federalism framework inconsistently — cooperation for reactors, exclusion for GTCC

The proposed rule exposes an inconsistency in the Commission's application of its own federalism principles. In the reactor field, where preemption is total, the NRC embraces structured, ongoing state involvement through MD 5.2. In the GTCC field, the NRC has adopted a binary posture — either full NRC preemption or full Agreement State authority — and, having chosen preemption, forecloses any state role at all. The proposed rule frames the question as all-or-nothing: because the Commission concludes it "may not relinquish its regulatory authority" over GTCC disposal, Proposed Part 61 Rule, page 76, it treats the states as having no cognizable part to play.

That inconsistency is difficult to justify. The Commission has not explained why the collaborative model it considers appropriate — indeed, affirmatively beneficial — for the exclusively federal reactor program is inappropriate for GTCC waste, another area the Commission asserts is exclusively federal. If cooperative federalism is compatible with field preemption in the reactor context, it is equally compatible with whatever measure of federal preemption the Commission ultimately concludes applies to GTCC waste. The Commission cannot embrace MD 5.2's premise — that preemption of a field does not require exclusion of the states from that field — for reactors while rejecting the same premise for GTCC waste, without a reasoned basis for the distinction.

C. Preemption of a field does not require exclusivity of administration

The premise underlying MD 5.2 is sound as a matter of federalism doctrine, and it applies with equal force to GTCC waste. The AEA has always been a statute of *dual* and *cooperative* regulation. The 1959 amendments that created the Agreement State program were enacted to clarify the respective responsibilities of the States and the Federal Government and "generally to increase the States' role," authorizing the Commission to discontinue federal regulatory authority over certain materials by agreement with state governors, subject to the requirement that state programs be "coordinated and compatible" with the NRC's. *Eng. v. Gen. Elec. Co.*, 496 U.S. 72, 110 S. Ct. 2270, 110 L. Ed. 2d 65

(1990); *Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n*, 461 U.S. 190, 103 S. Ct. 1713, 75 L. Ed. 2d 752 (1983). The Supreme Court has confirmed that Section 2021 allows the NRC to "devolve certain of its regulatory powers to the States" and "to share with the States some of the powers previously reserved to the federal government." *Virginia Uranium, Inc. v. Warren*, 587 U.S. 761, 139 S. Ct. 1894, 204 L. Ed. 2d 377 (2019). Even within the occupied field of nuclear safety, the Court has recognized "the limited powers expressly ceded to the States." *Eng. v. Gen. Elec. Co.*, 496 U.S. 72, 110 S. Ct. 2270, 110 L. Ed. 2d 65 (1990); *Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n*, 461 U.S. 190, 103 S. Ct. 1713, 75 L. Ed. 2d 752 (1983).

The Court has also cautioned against expanding preemption beyond what the statute commands. Ordering preemption on a doubtful extension of a questionable judicial gloss would represent both "a serious intrusion into state sovereignty" and "a significant judicial intrusion into Congress's authority to delimit the preemptive effect of its laws"; the Court has expressly noted "the costs to cooperative federalism" of reading preemption too aggressively. *Virginia Uranium, Inc. v. Warren*, 587 U.S. 761, 139 S. Ct. 1894, 204 L. Ed. 2d 377 (2019). Where Congress has "left sufficient authority in the states," the allocation of regulatory authority "is for Congress to rethink," and the agency should not expand exclusivity beyond the statute's terms. *Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n*, 461 U.S. 190, 103 S. Ct. 1713, 75 L. Ed. 2d 752 (1983). These principles counsel the Commission to read its GTCC authority no more expansively than the statute requires, and to preserve the cooperative state role the AEA framework contemplates.

D. Cooperation with the Agreement States in the GTCC context serves clear practical and policy interests

Extending cooperative-federalism principles to GTCC waste is not merely doctrinally available; it is sound policy. The nation's operating LLW disposal facilities are already licensed and regulated by Agreement States — EnergySolutions in Clive, Utah; U.S. Ecology in Richland, Washington; Waste Control Specialists in Andrews, Texas; and EnergySolutions in Barnwell, South Carolina — under programs the NRC has found "adequate to protect public health and safety and compatible with the NRC's program," and each has adopted regulations equivalent to 10 CFR Part 61. Proposed Part 61 Rule, page 18. The Agreement States possess the site-specific technical expertise, the operational proximity, and the community relationships that effective GTCC disposal regulation requires. Utah's ongoing evaluation of a concentrated depleted-uranium disposal application, Integrated Rulemaking Preliminary Comment Letter, at 1, reflects exactly the kind of specialized, site-specific competence that a cooperative GTCC framework would draw upon rather than displace.

A cooperative approach also avoids the practical costs of the all-or-nothing posture. Where GTCC waste streams the NRC's own analysis found suitable for near-surface disposal and safe for Agreement State regulation, Proposed Part 61 Rule, page 24, would be disposed of at facilities already regulated by Agreement States under compatible Part 61 programs, excluding those states from any role duplicates federal effort, forgoes state expertise, and creates a bifurcated regulatory structure at a single site. A cooperative model — whether Agreement State licensing subject to NRC oversight, or, if the Commission retains licensing authority, structured state involvement modeled on MD 5.2 — better serves the shared federal-state objective of safe disposal.

E. Requested action on cooperative federalism

The Division requests that the Commission:

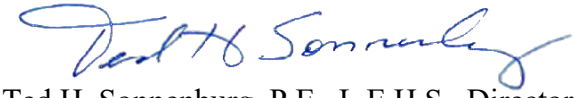
1. Abandon the binary framing of GTCC regulation as either exclusively federal or exclusively state, and expressly recognize a cooperative middle ground;
2. Extend the cooperative-federalism principles of MD 5.2 to GTCC waste in the final rule and in the associated revisions to 10 CFR Part 150, including defined mechanisms for information exchange, consultation, and a structured instrument of cooperation with Agreement States; and
3. At a minimum — if the Commission retains exclusive licensing authority over some or all GTCC waste — establish a defined, substantive Agreement State consultation and participation role, analogous to MD 5.2 and to EPA's meaningful-state-involvement and ARAR models, rather than excluding the states entirely.

Conclusion

The Division respectfully urges the Commission, in the final rule, to (1) recognize that the AEA and LLRWPAA authorize — and do not prohibit — Agreement State regulation of qualifying GTCC waste, and that continued NRC exclusivity is a discretionary policy choice the Commission should decline to make for near-surface-suitable, non-reactor-origin GTCC waste; and (2) apply the cooperative-federalism principles the Commission has embraced in MD 5.2 to GTCC waste, abandoning the all-or-nothing posture in favor of a collaborative federal-state framework. Doing so would honor the AEA's cooperative design, the Commission's own recent and long-standing precedent, and the substantial regulatory expertise the Agreement States bring to the safe disposal of low-level radioactive waste.

The Division appreciates the opportunity to comment and stands ready to work with the Commission and the staff on these issues.

Sincerely,



Ted H. Sonnenburg, P.E., L.E.H.S., Director
Division of Waste Management and Radiation Control

THS/BFR/al

c: rulemaking.comments@nrc.gov
Tim Davis, Commissioner, Utah Department of Environmental Quality
Bret F. Randall, Assistant Attorney General, Division Director,
Environment, Health & Human Services Division

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-ucbw-xbma
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0270
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from JOHN` LAFORGE

Submitter Information

Name: JOHN` LAFORGE
Address:
LUCK, WI, 54853
Email: johnmichaellaforge@gmail.com
Phone: 715-472-4185

General Comment

To the NRCRegarding NRC-2011-001200205

I oppose NRC-2011-0012-0205, which would modify current regulations for radioactive waste disposal and redefine low-level radioactive waste to cover some Greater-Than-Class C (GTCC) waste including "... certain transuranic wastes." If this proposal is approved, the modifications to Part 61 of Title 10 (Energy) of the Code of Federal Regulations (CFR) would allow these transuranics, including plutonium to be disposed of as Low Level Waste (LLW), while at the same time allowing " ... higher concentrations of waste, providing new alternatives for safe low-level waste management." This must not be permitted.

Redefining GTCC waste makes the problem of radioactive contamination in the environment worse, not better, and these "new alternatives" should be abandoned now (rather than losing track of the waste's location and composition 500 (or 10,000 or more) years from now).

Existing and proposed Part 61 regulations are supposed to protect the environment for AT LEAST 10,000 years, but only require the waste to be protected from "intrusion" for the first 500 years. The oldest pyramids are nearly 5,000 years old. One would think a society with five millennia to perfect containment, that ALSO chooses to work with plutonium — the most toxic (carcinogenic, mutagenic, etc.) and insidious

(human senses cannot detect radiation) — element ever conceived, discovered, or created — could — and would — be able to create and guarantee the workability of 10,000-year containment. Or know not create the mess in the first place.

Plutonium-239 has a half-life of 24,100 years and radioactive materials are considered dangerous for at least 10-20 half-lives. The possibility of using low-level radioactive waste facilities to store GTCC waste that includes transuranics means that the waste would remain hazardous for hundreds of millennia. By then any "near-surface" containment might well be fully exposed through surface erosion, earthquakes, thermonuclear war, or under water, or in the middle of a city or farm. The proposed regulation ignores this reality, and states that: "The disposal depth will need to be maintained for as long as the waste is hazardous."

What are the design criteria for something that needs to contain lethal poison essentially forever, and what types of intrusion will it be protected from? The regulations describe intrusion by humans (whether deliberate on inadvertent), but it's easy to envision an animal intruding into a structure where concrete was cracked (perhaps by a tree root and/or an earthquake and/or the degradation of the containment caused by the radioactivity contained within) in far less than 500 years. The proposed regulations defer actual rules with vague statements such as: "Depending on the characteristics of the GTCC waste, an applicant would be able to identify in the technical analyses those additional barriers or performance characteristics that are necessary to provide protection, such as a greater disposal depth or an intruder barrier of greater longevity."

One reason the Nuclear Regulatory Commission (NRC) is proposing changes to Part 61 is: " ... GTCC waste streams are stranded at operating reactors, sealed-source facilities, and Department of Energy (DOE) facilities." At the same time, the NRC describes the proposed changes to Part 61 as providing: " ... a clear licensing pathway for the back end of the fuel cycle." and a solution for: "... all nuclear waste except spent nuclear fuel and high-level radioactive waste." This statement makes it clear that the NRC recognizes that there is not even a plan for disposing of spent nuclear fuel and yet, the agency continues to promote its role in "... activities [that] will help reestablish the United States as a global nuclear energy leader".

America can lead the world in nuclear technology by properly guarding future generations against the mistakes the government has already made, and by not continuing to make more radioactive waste without a safe containment solution possible.

I incorporate by reference and adopt as our my the comments submitted by Fred Schofer (https://www.regulations.gov/comment/NRC-2011-0012-0213 tracking #: msi-z9bz-26ms)

John LaForge, Luck, Wisconsin USA
(All quotes are from the docket materials at:
https://www.regulations.gov/document/NRC-2011-0012-0205)

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-vsuu-0eor
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0271
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Linda Hanratty

Submitter Information

Name: Linda Hanratty
Address:
Fort Worth, TX, 76109
Email: LLSWENARD47@GMAIL.COM
Phone: 8178005922

General Comment

This is a horrible idea. Private waste companies have no incentive to store nuclear waste in a responsible manner because if something goes wrong they will just walk away. They are organized as limited liability companies so they will profit from the loose regulations, but leave the cost of clean-up or human harm to governmental bodies ie. the taxpayers. This is particularly personal since the nuclear waste repositories are in my home state of Texas, which could be left holding the bag.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-w9ze-g5vw
Comments Due: August 17, 2026
Submission Type: API

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0272
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from American Nuclear Society

Submitter Information

Email: jstarkey@ans.org
Organization: American Nuclear Society

General Comment

See attached file(s) and please use this revised submission to replace the submission made by the American Nuclear Society earlier today. The comment tracking number for that submission is msx-rqvo-rtu3

Attachments

08.17.26 - ANS Comments on NRC PR ILLRWD Part 61

American Nuclear Society

1901 Pennsylvania Ave NW
Suite 701
Washington, DC 20006

800-323-3044
askanything@ans.org
ans.org

August 17, 2026

Jody C. Martin
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

Subject: American Nuclear Society Comments on Proposed Rule, "Integrated Low-Level Radioactive Waste Disposal" [Docket ID NRC-2011-0012]

Reference: Integrated Low-Level Radioactive Waste Disposal Proposed Rule, Federal Register Vol. 91, No. 125, July 1, 2026, pp. 40290 – 40348.

Dear Mr. Martin:

The American Nuclear Society (ANS) represents the nuclear professional community – serving as the premier nonprofit organization for those who embrace nuclear science and technology for their vital contributions to improving people's lives and preserving the planet. ANS serves as the forum for scientific exchange across America's nuclear sector – fostering technical collaboration, hosting scientific meetings, and publishing peer-reviewed research to guide the development of nuclear technologies, from energy, medicine, and healthcare to agriculture, industry, and space exploration. ANS remains committed to advancing, fostering, and promoting the development and application of nuclear sciences and technologies to benefit society.

On behalf of our more than 12,000 members, ANS is pleased to provide comments as requested by the U.S. Nuclear Regulatory Commission (NRC) in 91 Fed. Reg. 40290 on the Proposed Rule, "Integrated Low-Level Radioactive Waste (LLRW) Disposal." We appreciate the NRC staff's efforts in developing this proposed rule that will hopefully lead to improved framework for the disposal of the many types of radioactive wastes that are or will be generated from a wide variety of industrial activities.

The origins of this proposed rule date back to the Commission's October 19, 2005, decision in the Louisiana Energy Services adjudication, CLI-05-20. In that decision, the Commission directed the NRC staff, "...outside of the Louisiana Energy Services adjudication, to consider whether the quantities of depleted uranium (DU) at issue in the waste stream from uranium enrichment facilities warrant amending section 61.55(a)(6) or the section 61.55(a) waste classification tables." Since then, the NRC has pursued revisions to 10 CFR

Part 61, but those efforts have not resulted in a final rule. ANS commends the NRC for returning to this important rulemaking and encourages the Commission to maintain a sustained effort to bring the modernization of Part 61 to completion.

Modernization of 10 CFR Part 61 is long overdue. The current framework should make greater use of risk-informed and performance-based approaches and should be updated to address important issues such as the disposal of depleted uranium, Greater-Than-Class-C (GTCC) waste, and waste incidental to reprocessing. These issues have evolved considerably since Part 61 was originally developed, and the regulatory framework should evolve accordingly.

The need for a modernized framework is particularly pressing as the United States anticipates the deployment of new nuclear facilities and technologies over the coming decades. The expected growth in nuclear energy – including new reactors and other nuclear facilities – will create new and potentially different radioactive waste streams and present new challenges for waste management. In addition, initiatives such as the Department of Energy's Nuclear Lifecycle Innovation Campuses could have significant implications for the back end of the nuclear fuel cycle and the management of radioactive materials and waste.

However, the need to modernize Part 61 does not depend on the success or timing of these future developments. The existing regulatory framework has remained largely unchanged while the nuclear industry, waste streams, technologies, and approaches to risk-informed regulation have evolved. Modernizing Part 61 is therefore necessary regardless of how quickly new nuclear facilities and fuel-cycle initiatives advance.

The Requirement for a Safety Case

For certain facilities, including those involving the disposal of GTCC waste, the NRC proposes to require under 10 CFR 61.10(c) that a license application include a Safety Case that:

demonstrates that the land disposal facility will be constructed and operated safely, provides a summary of the safety basis that the disposal site will meet the performance objectives in subpart C of this part, and describes the defense-in-depth protections that enhance the resiliency of the facility in complying with the performance objectives specified at §§ 61.41 and 61.43.

ANS supports this requirement. The concept of a Safety Case is well established internationally and has become an important element of radioactive waste disposal safety

frameworks. The International Atomic Energy Agency (IAEA) defines a Safety Case as "a collection of arguments and evidence in support of the safety of a facility or activity."[1] Formal documentation of a Safety Case is particularly valuable for facilities subject to complex regulatory requirements and specialized performance analyses, as would be the case under the proposed Part 61 framework. A well-developed Safety Case can provide an integrated explanation of the facility's safety basis, including the relationship among the performance assessment, waste acceptance criteria, engineered and natural barriers, and defense-in-depth measures.

A clearly documented Safety Case could also significantly enhance public participation in the licensing and oversight of LLRW disposal facilities. ANS believes that meaningful public participation is an important component of the long-term acceptance of such facilities by host communities and surrounding regions.

ANS recognizes the counterargument that providing information addressing the specific requirements of 10 CFR 61.10(a) and (b) may be sufficient to support an application. However, addressing individual requirements on a disconnected basis does not necessarily provide an integrated evaluation of facility safety or demonstrate how the various elements of the safety case work together to provide defense-in-depth. This integrated perspective is particularly important when evaluating facilities using performance analyses that necessarily incorporate significant uncertainty over long time periods.

Regulatory Authority for Greater-Than-Class-C Waste

Additionally, the proposed framework for GTCC disposal would benefit from clearly defined roles for the states in which such facilities are located. ANS believes that the NRC should remain the sole licensing authority for GTCC disposal facilities to ensure a consistent federal regulatory framework. However, states hosting GTCC disposal facilities should have a clearly defined role in appropriate aspects of facility regulation and oversight, including licensing participation, operational oversight, facility closure, and long-term monitoring. Clearly defining these roles would provide host states with meaningful opportunities to participate in decisions affecting their communities while maintaining the NRC's responsibility for licensing and ensuring nationally consistent safety standards.

Long-term Regulation Expectations

The objective of regulations such as 10 CFR Part 61 is to provide reasonable assurance of adequate protection of public health and safety. Achieving that objective for facilities that must maintain safety functions over long periods presents unique challenges. These

[1] IAEA Nuclear Safety and Security Glossary – Terminology Used in Nuclear Safety, Nuclear Security, Radiation Protection and Emergency Preparedness and Response, 2022 (Interim) Edition.

challenges can be addressed, but the regulatory framework should remain realistic about what can – and cannot – be demonstrated or assured many years into the future.

The proposed language concerning inadvertent intrusion illustrates this issue. For example, 10 CFR 61.13(b) states "An inadvertent intruder assessment demonstrates protection of an inadvertent intruder for the duration of the compliance period. An inadvertent intruder assessment demonstrates that any inadvertent intruder will not receive a dose that exceeds the limits in the performance objective set forth in § 61.42 (a) for the duration of the compliance period. The term "demonstrates" coupled with "will not" conveys a high degree of certainty that is not appropriate in this instance. An inadvertent intruder assessment necessarily relies on stylized scenarios and assumptions about future human activities, site conditions, and the performance of engineered barriers. Those assumptions are appropriate and necessary for purposes of regulatory analysis, because the applicant cannot fully capture the range of conditions that may exist over such extended periods. The regulatory language should acknowledge this inherent uncertainty rather than imply a level of predictive certainty that cannot reasonably be achieved.

ANS therefore recommends that the NRC consider language in 10 CFR 61.13(b) such as: "An inadvertent intruder assessment projects doses to an inadvertent intruder during the compliance period, consistent with certain assumptions, for comparison with the regulatory limits established for such analyses."

There is no need to include a statement in 10 CFR 61.13(b) about the value of the regulatory limits. Those values are addressed in 10 CFR 61.42 (a), which states "the inadvertent intruder assessment must demonstrate that an inadvertent intruder will not disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. The inadvertent intruder assessment must also demonstrate that the annual dose to any inadvertent intruder within the compliance period from any onsite releases … will not exceed 5 milliSieverts (500 millirems).

Again in 10 CFR 61.42(a), the combination of "demonstrate" and "will not" implies a certainty that cannot exist. Accordingly, ANS recommends that the NRC consider language for 10 CFR 61.42(a) such as: "the inadvertent intruder assessment must demonstrate a low likelihood that an inadvertent intruder will disrupt or contact emplaced waste during any part of the compliance period in which the waste remains a radiological hazard. The results of the inadvertent intruder assessment within the compliance period from any onsite releases … will not exceed 5 milliSieverts (500 millirems)."

The issue is not whether the NRC should establish performance objectives or require rigorous analyses of long-term performance. It should. Rather, the regulatory language should accurately characterize what those analyses can establish and avoid conveying a level of certainty that is inconsistent with the inherent uncertainties associated with predicting conditions over very long time periods. Clear and appropriately calibrated

language would strengthen, rather than weaken, public confidence in the regulatory framework.

Clarification of EPA's Role in the Regulation of Transuranic Waste

The proposed rule also raises important questions regarding the relationship between NRC and EPA regulatory authorities over certain radioactive waste streams. Because EPA currently has regulatory authority over transuranic (TRU) waste disposal under 40 CFR Part 191, and specifically establishes requirements applicable to the Waste Isolation Pilot Plant (WIPP) under 40 CFR Part 194, the NRC should clarify how the proposed classification of certain TRU waste as low-level radioactive waste would affect EPA's existing regulatory role.

A clear delineation of federal regulatory responsibilities will be particularly important if materials currently subject to EPA requirements could be classified as LLW under the proposed framework. The NRC should explain how such a classification would interact with EPA's authorities and requirements, including whether and to what extent EPA requirements would continue to apply.

ANS recommends that the NRC coordinate with EPA and obtain EPA concurrence on this clarification before finalizing the rule. Coordination between the agencies would help ensure that the final framework does not create overlapping, inconsistent, or ambiguous regulatory requirements and would provide licensees and stakeholders with a clear understanding of the applicable regulatory authorities.

A Performance-Based Approach to Disposal Depth

ANS also recommends that the NRC reconsider the proposed mandatory five-meter burial depth requirement for GTCC and waste streams with significant long-lived radionuclides. A fixed burial depth may provide a straightforward regulatory criterion, but it may not be appropriate for every disposal site or waste stream under a modern, risk-informed and performance-based Part 61 framework.

Instead, burial depth should be determined based on the characteristics and demonstrated performance of the disposal facility. Relevant factors should include site-specific performance assessments, geology and hydrology, engineered barriers, and waste characteristics. These factors collectively provide a more technically meaningful basis for determining whether a disposal configuration will meet applicable performance objectives than a uniform minimum burial depth.

ANS therefore recommends replacing the fixed five-meter requirement with a performance-based standard that allows applicants to demonstrate compliance through appropriate technical analyses. This approach would provide greater flexibility to account

for site-specific conditions while maintaining the NRC’s performance objectives and standards for protection of public health and safety.

In closing, ANS supports the NRC's proposed modernization of 10 CFR Part 61 as an important step toward a more risk-informed, performance-based framework for the disposal of radioactive waste. ANS encourages the NRC to carefully consider and address stakeholder comments, retain the Safety Case in the final rule, modify language to avoid overselling the certainty associated with long-term performance analyses, and provide more thorough, plain English explanations and bases for the provisions in the rule.
If you have questions, please contact ANS Director of Public Policy, John Starkey: jstarkey@ans.org.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-wc5o-ligp
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0273
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Zeno Power Systems

Submitter Information

Email: talya@zenopower.com
Organization: Zeno Power Systems

General Comment

See attached comment

Attachments

Zeno Comments on NRC-2011-0012 Integrated LLW Disposal

Zeno Power Systems, Inc.
709 G St. NW, Suite 300
Washington, DC 20001
info@zenopower.com

To: Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

August 17, 2026

Docket ID: NRC-2011-0012

SUBJECT: Zeno Power Systems, Inc. Comments on NRC-2011-0012 Integrated Low-Level Radioactive Waste Disposal

1. Executive Summary

Zeno Power Systems, Inc. (Zeno) supports the U.S. Nuclear Regulatory Commission (NRC)'s proposed Integrated Low-Level Radioactive Waste Disposal rule and its transition toward a more risk-informed, performance-based framework for commercial Greater-Than-Class C (GTCC) waste disposal.

Demand for advanced nuclear technologies that use recovered radioisotopes is rapidly growing. For example, radioisotope power systems (RPSs), including those under development by Zeno, can beneficially reuse radioactive material that might otherwise remain in long-term storage or require disposal. These systems will themselves eventually reach end of life and require a viable commercial disposal pathway. As these technologies mature toward commercial deployment, a clear disposal pathway is essential.

While the proposed rule creates a disposal pathway for many GTCC waste streams, the framework leaves an important gap for certain short-lived radionuclides like strontium-90 (Sr-90), and could benefit from guidance as to its practical application toward americium-241 (Am-241). Both Sr-90 and Am-241 are essential for the burgeoning RPS market, and clear disposal pathways are essential for this industry. This clarity will also materially support the reprocessing industry, which relies on the sale of these isotopes from used nuclear fuel as levers for growth.[1,2]

Zeno therefore offers the following targeted comments:

- **Recommendation: Disposal pathway for short-lived radionuclides –** Extend the proposed land disposal framework to include short-lived radionuclides, such as Sr-90 (with a 28.9 year half-life), that exceed the existing Class C concentration limits.

[1] Oklo, Inc. "Atomic Alchemy, Oklo's Proposed Acquisition Target, Signs MOU with Zeno Power to Provide Fuel for Commercial Radioisotope Power Systems." 21 November 2024. https://oklo.com/newsroom/news-details/2024/Atomic-Alchemy-Oklos-Proposed-Acquisition-Target-Signs-MOU-with-Zeno-Power-to-Provide-Fuel-for-Commercial-Radioisotope-Power-Systems/default.aspx. Accessed 17 August 2026.
[2] Zeno Power Systems, Inc. "Zeno Power and Orano Unlock Americium-241 Supply Through Strategic Agreement to Fuel Space Nuclear Batteries." 24 September 2025. https://www.zenopower.com/announcements/zeno-power-and-orano-unlock-americium-241-supply. Accessed 17 August 2026.

© 2026 Zeno Power Systems, Inc.

- **Recommendation: Provide guidance on Am-241 land disposal –** Update NUREG 2175 in future versions to contain guidance on specialized land disposal of transuranic (TRU) waste containing Am-241.

These targeted changes would strengthen the proposed rule; help unlock the RPS market, which is important to national security; and strengthen the market for used nuclear fuel recycling, all while preserving its risk-informed, performance-based approach and the NRC's existing performance objectives.

2. About Zeno

Zeno is a U.S.-based company developing innovative RPS technologies for national security, civil, and commercial applications to provide reliable thermal and electrical power in remote and challenging environments, including subsea deployment, space, and lunar missions. Zeno employs nearly 100 team members located across Washington, D.C.; Seattle, Washington; and the Bay Area in California. It has raised nearly $150 million through private investments and government contracts.

Zeno currently has multiple government contracts to develop first-of-a-kind RPSs to support national security and scientific needs where conventional power systems are impractical or unable to meet operational requirements. For maritime applications, Zeno is developing a radioisotope Stirling generator that combines a novel Sr-90 heat source with Stirling power conversion to provide persistent electrical power in subsea environments. Pursuant to the Department of War's Distributed Energy Provided Throughout the Seas (DEPTHS) program, Zeno is advancing this system toward a subsea demonstration currently planned for 2027, with deployment of additional units to government and commercial customers anticipated beginning in 2028.[3]

In parallel, Zeno and industry partners are developing an Am-241 heat source and Stirling generator technology for integration with lunar landers and surface systems. A terrestrial demonstration of an electrically heated Stirling generator integrated with a lunar lander simulator is expected in early 2027.[4] NASA has recently issued incentive awards to those lunar missions in support of America's new moon base to survive the lunar night (in which extreme-cold conditions destroy all unheated systems).[5]

[3] Zeno Power Systems, Inc. "Zeno Awarded $7.5M Contract to Build a Nuclear Battery for Use by the U.S. Navy." 31 October 2023. https://www.zenopower.com/announcements/zeno-awarded-contract-to-build-and-demonstrate-radioisotope-power. Accessed 06 August 2026.

[4] Zeno Power Systems, Inc. "Zeno Power Completes Final Design Review for Space Nuclear Battery to Power Lunar Missions." 21 April 2026. https://www.zenopower.com/announcements/zeno-power-completes-final-design-review-for-space-nuclear-battery. Accessed 05 August 2026.

[5] NASA has included a performance bonus for contractors who successfully demonstrate "survive-the-night" capabilities by deploying a radioisotope device and transmitting signals from the lunar surface after enduring a full lunar night. See https://www.nasa.gov/ignition/.

© 2026 Zeno Power Systems, Inc.

Zeno is also progressing the country's first commercial facility to build RPSs at scale, at the Vallecitos Nuclear Center (VNC) in Sunol, California.[6] Zeno's nuclear battery production at VNC—the site of America's first privately owned nuclear power plant—addresses a strategic national need: ensuring domestic radiological infrastructure to meet the burgeoning demand for nuclear power. The effort aligns with the White House's Executive Order 14302 to usher in the American nuclear renaissance.[7] Zeno is reinvigorating the nuclear industrial base to provide decades of reliable energy for America's most critical missions.

3. The Waste Disposal Gap for RPS

Recovering and repurposing radioactive material can extend the useful life of existing radioactive materials, reducing the volume of waste requiring disposal while enabling critical national security, civil, space, and commercial applications.

For example, in 2024, Zeno secured access through a public–private partnership with the U.S. Department of Energy (DOE) to Sr-90 that will be used to fabricate their initial RPSs. This material originates from a radioisotope thermoelectric generator (RTG), built in the 1980s, that was never deployed. The RTG remained in storage for nearly 40 years and was expected to remain in storage for an additional 30 years before it would be eligible for disposal.[8] The systems that reuse the radioactive material, in addition to the engineered barriers from the disposal site, eventually reach end of life and will require disposal. Even after their useful life is complete, RPSs may contain GTCC amounts of byproduct material, some of which have relatively short half-lives.

While certain federally owned or generated waste remains Federal responsibility under Section 3(b)(1) of the Low-Level Radioactive Waste Policy Amendments Act of 1985, commercial waste streams depend on the availability of a commercial disposal pathway. The NRC's proposed rulemaking acknowledges the scale of this problem, stating that "many GTCC waste streams are stranded at operating reactors, sealed-source facilities, and DOE facilities" under the current regulatory framework. While the proposed rule addresses part of that need by establishing new GTCC disposal pathways, gaps remain for certain commercial waste streams.

Even after their useful life, systems like RPSs can contain concentrations of Sr-90 that exceed the Class C concentration limits under the existing 10 CFR 61.55.2. The proposed Table 3 concentration limits in this rulemaking only address radionuclides with half-lives of greater than 50 years, excluding radionuclides like Sr-90 (which has a 28.9 year half-life). This leaves RPS-related waste (and other wastes from Sr-90 applications) without a commercial disposal pathway once Class C concentrations are exceeded. As stated in the rulemaking, the NRC recognizes that Class C waste may be adequately

[6] Zeno Power Systems, Inc. "Zeno Power Industrializes Nuclear Battery Production at Historic Vallecitos Nuclear Center." 18 June 2026. https://www.zenopower.com/announcements/zeno-power-industrializes-nuclear-battery-production-at-historic-vallecitos-nuclear-center. Accessed 05 August 2026.
[7] Office of the President. "Executive Order 14302: Reinvigorating the Nuclear Industrial Base." 23 May 2025.
[8] Foust, J., "Zeno to recycle decades-old radioactive material to fuel its radioisotope power systems." *SpaceNews*. 03 May 2023. https://spacenews.com/zeno-to-recycle-decades-old-radioactive-material-to-fuel-its-radioisotope-power-systems/. Accessed 05 August 2026.

© 2026 Zeno Power Systems, Inc.

protected by "an engineered barrier that will deter inadvertent intrusion for 500 years." Sr-90, with a half-life of 28.9 years, decays quickly enough to fall well within the 500-year period the NRC treats as sufficient for safe containment of Class C waste.

Am-241, by contrast, is an alpha emitter with a half-life of approximately 432 years. The revised § 61.55 establishes two separate concentration pathways for transuranic radionuclides depending on concentration. Further guidance can help ensure appropriate implementation where the radionuclides must be disposed of in a specialized land disposal facility. This distinction is discussed further in Section 5.2 and further clarity can help implementation.

4. Zeno Supports the Rulemaking and Current Proposed Changes for Integrated Low-Level Radioactive Waste Disposal

Consistent with Executive Order 14300, the proposed Integrated Low-Level Radioactive Waste Disposal rule represents a significant step toward a more risk-informed, performance-based framework for commercial radioactive waste disposal.[9] Zeno supports the NRC's effort to supplement radionuclide concentration limits with site-specific technical evaluations that better reflect the actual characteristics of the waste, the disposal facility, and the engineered natural barriers protecting public health and safety.

The proposed rule establishes a meaningful commercial disposal pathway for many GTCC waste streams that today have no practical commercial disposal option, including waste generated from new technologies that differ from those originally considered during the development of Part 61.

Zeno specifically supports the following aspects of the proposed rule:

- **Risk-Informed, Performance-Based Disposal Framework**: This framework recognizes that waste streams with different physical and radiological characteristics should not necessarily be evaluated using a single set of generic concentration limits.
- **Commercial GTCC Disposal Pathways**: Establishing a defined pathway for commercial GTCC disposal provides greater regulatory certainty for emerging waste streams.
- **Site-Specific Waste Acceptance Criteria (WAC)**: Allowing disposal facilities to establish site-specific WAC enables disposal decisions to account for waste form, engineered barriers, and facility performance rather than relying exclusively on generic concentration limits.
- **Expanded Table 3 Concentration Limits**: Increasing the concentration limits for long-lived alpha emitters, together with site-specific WAC, better accommodates engineered waste forms and reduces the need for unnecessary processing, concentration averaging, or fragmentation of intact components to satisfy prescriptive disposal classifications.

[9] Office of the President. "Executive Order 14300: Ordering the Reform of the Nuclear Regulatory Commission." 23 May 2025.

© 2026 Zeno Power Systems, Inc.

5. Targeted Recommendation and Request for Clarification

The proposed rule substantially advances the NRC's goal of creating a more flexible, risk-informed disposal framework for commercial radioactive waste disposal.

While it addresses many of the longstanding limitations of the current Part 61 framework, one important gap remains. Zeno's first recommendation below is intended to preserve the NRC's overall approach while ensuring that commercially generated waste containing short-lived radionuclides is treated consistently with the technical basis of the proposed rule.

Zeno's second recommendation is to provide guidance on the framework's application to Am-241.

5.1. Recommendation: Disposal Pathway for Short-Lived Radionuclides

While the proposed rule establishes a comprehensive framework for commercial GTCC disposal, short-lived beta/gamma-emitting radionuclides such as Sr-90 remain outside that framework. As a result, commercial waste streams that exceed the existing Class C concentration limits due solely to short-lived radionuclides are left without a corresponding commercial disposal pathway under the proposed rule.

The relationship between the proposed 50-year eligibility criterion and the technical basis of the revised framework is not immediately apparent. As discussed in the NRC's Statements of Consideration, the proposed rule recognizes that engineered barriers supporting Class C disposal are intended to deter inadvertent intrusion for approximately 500 years. The proposed 50-year eligibility criterion therefore appears to introduce a distinction that is not otherwise reflected in the technical basis supporting the revised disposal framework, leaving radionuclides such as Sr-90 outside the new disposal pathway despite their apparent consistency with the framework's underlying performance objectives.

This is particularly apparent for radionuclides such as Sr-90 and Cs-137, which are addressed through the Table 2 classification framework but are not specifically considered in § 61.55(b). The proposed rule appears to abandon the existing decay-based logic applicable to these relatively short-lived radionuclides without clearly explaining why exceedance of a Table 2 Class C concentration limit should automatically preclude commercially available near-surface disposal when site-specific performance assessments and inadvertent intruder assessments demonstrate compliance with §§ 61.41 and 61.42. As written, the rule provides no clear rationale for elevating such waste to GTCC solely on the basis of concentration, despite analyses showing that the disposal system satisfies the applicable Part 61 performance objectives.

For technologies such as RPSs, this distinction has practical consequences. When they reach end of life, RPSs may contain Sr-90 concentrations that exceed the existing Class C concentration limits while remaining in engineered forms specifically designed to safely contain radioactive material, in addition to the engineered barriers from the disposal site. For example, Zeno's Sr-90 RPSs are intended to be deployed in sealed sources for extended periods, speaking to technical

© 2026 Zeno Power Systems, Inc.

capabilities to contain large amounts of Sr-90 in environments potentially more demanding than disposal.

However, under the proposed rule, these Sr-90 systems would not appear to have access to the same site-specific disposal framework available to comparable long-lived waste streams, despite the technical characteristics of the waste form and the disposal system (both central to the NRC's revised approach) being satisfied in practice.

Because the proposed rule already requires existing disposal facilities to demonstrate protection of both the public and inadvertent intruders through compliance with §§ 61.41 and 61.42, Zeno believes the NRC should provide a performance-based pathway allowing for disposal of waste that exceeds generic Class C concentration limits when site-specific technical analyses demonstrate that all applicable performance objectives are met. Accordingly, Zeno recommends adding a fifth provision (as provision (v) to § 61.55(b)(2)) as follows:

> "Waste that exceeds the Table 2 Class C concentration limits solely due to radionuclides with half-lives less than 50 years shall remain eligible for disposal in a near-surface disposal facility licensed pursuant to this part or by an Agreement State, provided the disposal facility demonstrates compliance with §§ 61.41 and 61.42 and implements disposal measures equivalent to or greater than those required for Class C waste."

If the NRC retains the 50-year eligibility criterion, Zeno requests that the NRC explain the technical and safety basis for excluding shorter-lived radionuclides from the site-specific disposal framework where the applicable Part 61 performance objectives can otherwise be met.

5.2 Treatment of Am-241 GTCC Waste Under § 61.55(b)(1)(iii) and Table 3

As Zeno understands, the proposed framework introduces two concentration-based provisions that are both relevant to GTCC waste containing Am-241:

- GTCC waste streams with long-lived alpha emitting TRU ≤ 10,000 nCi/g and within Table 3 limits may be acceptable for near surface disposal or for specialized land disposal facilities based on site-specific analyses.
- GTCC waste streams with long-lived alpha emitting TRU > 10,000 nCi/g are not generally acceptable for near surface disposal under § 61.55(b)(1)(iii) but may be considered for specialized land disposal facilities if they remain within the Table 3 limits and the facility demonstrates compliance with Part 61 performance objectives.

Certain Am-241 waste streams from RPS manufacturing may contain Am-241 at concentrations exceeding 10,000 nCi/g of long-lived alpha emitting TRU. These nonetheless could be appropriate candidates for disposal in specialized land disposal facilities provided their total long-lived alpha concentrations remain within the Table 3 limit and the facility meets all applicable performance objectives.

© 2026 Zeno Power Systems, Inc.

To support consistent implementation of this framework, Zeno respectfully requests that NRC provide guidance in a future revision NUREG 2175 on how licensees should evaluate such Am-241 waste sources in specialized land disposal facilities, considering the following:

- Appropriate treatment of encapsulation and canister design in intruder and offsite dose analyses;
- Consideration of small-volume, high-specific activity TRU devices versus large volume TRU bearing waste streams; and
- Use of site-specific waste acceptance criteria under § 61.58 for these types of waste.

Zeno is ready and eager to support any development of this guidance, as a planned user of Am-241 for RPS production and deployment.

6. Conclusion

Zeno appreciates the NRC's continued efforts to modernize the commercial low-level radioactive waste disposal framework. The proposed rule establishes an important foundation for commercial GTCC disposal, and Zeno supports its overall direction.

Providing guidance as to Am-241 disposal in future guidance would further strengthen the proposed framework while preserving its underlying technical basis and performance objectives. Zeno welcomes continued engagement with the NRC as this rulemaking progresses.

Sincerely,

/S/ Talya Langbaum

Talya Langbaum
Nuclear Regulatory Associate
Zeno Power Systems, Inc.

CC:

Steve McKee, Zeno Power Systems, Inc.

Patrick Snouffer, Zeno Power Systems, Inc.

Sachin Desai, Zeno Power Systems, Inc.

© 2026 Zeno Power Systems, Inc.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-y53v-e4tz
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0274
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Lake Barrett

Submitter Information

Name: Lake Barrett
Address:
Venice, FL, 34292
Email: Lake@Lbarrett.com
Phone: 2404263754

General Comment

See attached file(s)

Attachments

Lake Barrett Comments on Proposed 10CFR61 26-08-17

August 17, 2026

Lake Barrett Comments on Proposed LLW 10CFR61 Regulation

Dear NRC,

I support the risk informed general direction of the proposed 10CFR61 regulation governing the disposal of Low-Level Radioactive Wastes in the United States. However, I recommend further scientific justification before adopting such a significant national policy shift that will allow, or encourage, near surface disposal of significant quantities of diluted long lived fission product, transuranic, and activated metal wastes, which for 50 plus years have been destined worldwide for deep geologic disposal.

As clearly expressed by Congress and this Administration, the NRC needs to improve its safety regulations to better balance the important need for increased amounts of nuclear energy for societal needs while maintaining appropriate safety and environmental protection for our generation as well as for future generations far into the future.

This is a challenging regulatory policy balance as there are immediate important free market economic decisions for the disposal of Greater Than Class C (GTCC) wastes, especially with the currently renewed possibility of used nuclear fuel reprocessing/recycling, which have to be balanced against the uncertainties of future public risks from greatly increased, likely irreversible, large quantities of newly emplaced GTCC into new near surface disposal sites. This is a difficult intergenerational policy balance of near-term costs and benefits against potential significant large low level radiation exposure risk to likely large populations thousands of years into the future.

With the hoped-for significant expansion of nuclear energy there will need to be a national geologic disposal program to support that nuclear fuel cycle. And a key aspect of what that system will be depends upon the requirements of 10CFR61. Given our competitive free market economy, it is to be expected that the nuclear fuel cycle licensees will select the most cost competitive back end nuclear waste disposal options up to, but not over, whatever the NRC regulatory requirements are. The 10CFR Part 61 requirements will likely be upper limit of the environmental impacts of that system.

As nuclear energy expands, there will likely be an increase in new GTCC wastes being created. And if reprocessing/recycling becomes economically feasible and widespread, there will be significant increase in GTCC wastes, both in radioactive and volumetric quantity putting more radioactive waste into the near surface environment.

The proposed 10CFR 61 rule will now allow for these additional radioactive materials to be disposed in near surface disposal sites. Such wastes, in the past, were traditionally designated for deep geologic disposal radioactive wastes per the Nuclear Waste Policy Act and international norms. In fact, other leading nuclear countries, such as Finland, Sweden, France, Canada, and UK only dispose of GTCC like materials in deep geologic disposal sites. No country, like the USA, is considering large quantities of these radioactive materials for disposal in near surface disposal sites.

The proposed 10CFR61 rule does have an appropriate 25mr/yr individual exposure criterion, but it does not have any restriction that limits the long-term population dose to large groups of people beyond the 25mr/yr site boundary limit. If the disposal site, while it could meet the 25mr/yr criteria and the 500mrem intrusion requirement, is sited in an upstream watershed above large downstream population groups could result in substantially larger population doses than ever in the past. In addition, there is no regulatory prohibition of intentional dilution of very high radioactivity wastes down to meet the proposed Part 61 concentration requirements. To minimize their disposal costs, licensee's may intentionally dilute their wastes to be able to meet the requirements as there is nothing to prevent that action. Thus, the proposed 10CFR Part61 rule, intentionally or not, may bring back the 1960's waste disposal culture of "The solution to pollution is dilution."

Further NRC consideration of the above shift is warranted due to the finality and irreversibility once large GTCC near surface disposal commences.

To address this issue, I recommend that NRC further evaluate, possibly with a programmatic environmental impact statement, the impact of dilution and shift to near surface disposal of GTCC creating increased long term population dose impacts relative to the more traditional deep geologic disposal of these radioactive wastes.

In addition to the above, the following comments are provided:

- As proposed, the NRC should be the sole regulator of GTCC waste and not agreement states. State regulations are appropriate for many regulatory activities, however cross-state boundary issues and long-term analyses are appropriately regulated by a national level regulator.

Lake H. Barrett

Venice, FL

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-ysjw-mri1
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0275
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Bret Leslie

Submitter Information

Name: Bret Leslie
Address: United States,
Email: bretleslie@aol.com

General Comment

See attached file

Attachments

Integrated Low Level Waste

1. Integrated Low-Level Radioactive Waste Disposal—NUREG-2175, Rev. 1
   a) The validity of the entire guidance, which is attributed to NRC staff, is called into question by NRC's listing the first three authors who were not NRC employees when the manuscript was completed (2026). Esh, Grossman, and Arlt may have authored a previous version of NUREG-2175, but they were not NRC employees in 2026.

2. Integrated Low-Level Radioactive Waste Disposal—Supplement To Hazards of Disposal … Consideration of A specialized land-disposal facility and additional waste streams.
   a) Waste streams 18-20 are required, by the Nuclear Waste Policy Act, to be disposed of in a geologic repository.

   b) Both the Hanford and Savannah River Site vitrified high-level radioactive wastes are included in a suspended hearing of the Yucca Mountain construction authorization and NRC's inclusion in the low-level waste guidance and proposed rule seems to be contrary to NRC's existing position in the Yucca Mountain safety evaluation reports.

3. Integrated Low-Level Radioactive Waste Disposal—Proposed Rule
   a) The proposed rule usurps Congressional authority by redefining waste streams (#18-20, i.e., high-level radioactive waste) required by the Nuclear Waste Policy Act to be disposed of in a geologic repository and the prescribed requirements for siting, safety, transportation, and involvement of affected units of local government and affected tribes for such a repository.

   b) The proposed rule has a regulatory gap that NRC did not identify related to the requirement for a standard contract, required under Section 302 of the Nuclear Waste Policy Act (42 U.S.C. 10222), for the delivery of high-level radioactive waste (and spent nuclear fuel) to the Secretary of Energy (DOE) for disposal.[1] To ensure compliance with the Nuclear Waste Policy Act and 10 CFR 960, NRC's licensing under Part 61 would require an applicant to be in good faith negotiations with DOE prior to NRC approving a construction authorization for a low-level waste facility and for a signed standard contract with DOE before NRC could authorize operations. The proposed Part 61 changes are silent regarding waste disposal of high-level radioactive waste by DOE and a standard contract with a non-DOE entity and are

[1] Because the proposed rule contemplates disposal of high-level radioactive that is defined by statute (Nuclear Waste Policy), in low-level waste facilities, NRC will need to address all aspects of NRC licensing DOE LLW facilities that could contain high-level radioactive waste. Also, the proposal for commercial low-level waste facilities is contrary to established US policy in the Nuclear Waste Policy Act, which assigns solely DOE the responsibility for disposal of high-level radioactive waste in a repository and requires a site recommendation for any disposal facility for high-level radioactive waste.

contrary to law (42 U.S.C. 10222). This gap applies to any facility that would consider “a specialized land disposal facility” and additional waste streams 18-20.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-z5uv-dim5
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0276
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Sharon Richey

Submitter Information

Name: Sharon Richey
Address:
Ft Worth, TX, 76133
Email: srichey7@gmail.com

General Comment

I concur with statements made by representative from Lone Star Chapter of the Sierra Club, Tracking No: mss-in7s-x65r

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-zviu-l7xu
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0277
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Neptune and Company, Inc.

Submitter Information

Email: smccandless@neptuneinc.org
Organization: Neptune and Company, Inc.

General Comment

Please see the attached file.

Attachments

Part 61 rulemaking comments from Neptune and Company Inc

Neptune and Company, Inc. appreciates the opportunity to comment on docket ID NRC-2011-0012, Integrated Low-Level Radioactive Waste

1. GTCC
    a. Neptune supports the allowance for GTCC to be disposed in the near surface, when supported by an approved safety case and accompanying performance assessment. This can open disposal pathways for materials that are otherwise stranded, which can facilitate cleanup and closure at sites like West Valley.
2. Measurement of the 5 m minimum burial depth for GTCC and DU
    a. 61.52(a)(3) states “Wastes designated as Greater-Than-Class C pursuant to §61.55… may be disposed in the near-surface provided that the top of the waste is a minimum of 5 meters below the land surface…”
        i. Consider specifying the burial depth criteria to be “a minimum of 5 meters below the cover surface” when supported by the safety case with its accompanying performance assessment and site stability analysis. The draft point of reference of the “land surface” apparently presumes a facility would be sited in an eroding geological setting; however, a thick cover and aggrading geologic setting can provide comparable protection.
        ii. Complementary changes should be made to NUREG-2175, rev. 1.
    b. 61.52(a)(16) states: “Significant quantities of uranium must be disposed so that the top of the waste is a minimum of 5 meters below the land surface.”
        i. Frame in terms of “significant quantities of long-lived radionuclides” rather than “significant quantities of uranium” to be consistent with the definition in 61.2.
        ii. The burial depth criteria should be “a minimum of 5 meters below the cover surface” when supported by the safety case with its accompanying performance assessment and site stability analysis. The draft point of reference of the “land surface” apparently presumes a facility would be sited in an eroding geological setting; however, a thick cover and aggrading geologic setting can provide comparable protection.
        iii. Complementary changes should be made to NUREG-2175, rev. 1. This document conflates the terms “significant quantities of long-lived radionuclides”; “significant quantities of uranium”; and “significant quantities of depleted uranium”; however, these are not synonymous. In all cases, the term should be “significant quantities of long-lived radionuclides” for consistent application of Appendix H of NUREG-2175, rev. 1.
3. Site-specific WAC
    a. 61.58(a)(2) introduces an allowance for site-specific waste acceptance criteria. Neptune supports this change, as it will directly link wastes acceptable at a site to its own site-specific performance assessment. The generic waste acceptance criteria set forth in 61.55 and 61.56 are based generally on a humid eastern site.

This overstates environmental transport compared with an arid site; and thus limits wastes acceptable for disposal with no risk reduction benefit.

4. 10,000 year compliance period
    a. 61.2 defines the compliance period: “Compliance period means the time from the completion of site closure to 1,000 years after site closure for disposal sites that do not contain significant quantities of long-lived radionuclides. For disposal sites that contain significant quantities of long-lived radionuclides, the compliance period ends 10,000 years after closure of the disposal site.”
        i. NRC should specify a uniform 1,000 year compliance period, with evaluation beyond this timeframe as required by 61.13(e). Figure H-4 of NUREG-2175, rev. 1 contemplates scenarios where significant quantities of depleted uranium could be evaluated against a 1,000 year compliance period. The performance period analysis will provide data to assess whether dose is expected to remain flat; or increase; or decrease during the interval between 1,000 and 10,000 years as well as further into the future. This information can then be applied by the regulator and licensee to determine the need for additional controls, design changes, or inventory restrictions.
        ii. Even for a compliance period of 1,000 years, compliance assessments are forced to rely on an assumption that current technological and societal conditions persist effectively unchanged. Considered more realistically, the uncertainties associated with technological and societal conditions over long time periods will overwhelm uncertainties associated with natural and engineered systems. A shorter compliance period would be more defensible when paired with routine review of actual performance and the licensing basis similar to the PA maintenance program specified by DOE under its Order 435.1.
5. 61.1(b) should apply per disposal unit for sites with multiple disposal cells
    a. The allowance provided under 61.1(b) should be applied at the level of the individual disposal unit; rather than at the level of the site license. Each of the operating LLRW disposal sites has multiple distinct disposal units, including units that have been closed well before publication of this rule. Future disposal of GTCC or significant quantities of long-lived radionuclides in a dedicated disposal unit should have a distinct licensing basis from the remainder of the site.
    b. Contiguous facilities that have multiple disposal units should complete an analysis that integrates impacts of multiple disposal units, to include those licensed under 61.1(a) and those licensed under 61.1(b). This could be similar to composite analysis performed under DOE Order 435.1.
6. 61.1(b)(1)(ii) states in its second sentence: “For purposes of this paragraph, an amount greater than or equal to 10 metric tons of depleted uranium is considered a significant quantity of long-lived radionuclides.”
    a. This statement introduces internal inconsistency, since NUREG-2175, Appendix H provides a definition of ‘significant quantities of long-lived radionuclides’ that is

applied to much more than DU. Table H-1 of Appendix H derives a concentration-based rather than mass-based threshold.

b. How does the concentration-based threshold compare with the mass-based threshold? Could a site meet one but not the other? This seems likely; in such a case one would presume that 61.1(b)(1)(ii) governs.
c. The rule and guidance are silent on how 10 metric tons will be measured. U3O8 will have a different density than UO3 than DU metal.
d. It would be more straightforward, defensible, and consistent with NRC's intent to provide a risk-informed regulatory framework to do a site-specific performance assessment that develops the facility's waste acceptance criteria; regardless of the quantity of long-lived radionuclides.

7. Specialized land disposal facility
    a. 61.2 introduces the concept of a specialized land disposal facility: "Specialized land disposal facility means a land disposal facility that is designed to prevent an inadvertent intruder from disrupting or contacting emplaced waste while it remains a radiological hazard. A specialized land disposal facility is not a near-surface disposal facility."
    b. NUREG-2175, rev 1 specifically includes a specialized land disposal facility within its scope.
        i. Neptune supports these changes, particularly that NUREG-2175 provides for similar technical analysis among GTCC, significant quantities of long-lived radionuclides, and specialized land disposal facilities. Given the similar radionuclides and processes of concern, the technical analyses should be consistent across these approaches.
8. NUREG-2175, rev 1, Table H-1 presents "generic screening values" for a number of long-lived radionuclides, but does not include certain long-lived radionuclides such as Th-230 and Th-232. A description of the basis for the listed radionuclides, and by extension radionuclides not included in the table, would be useful to assist users in its application.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msx-zvwp-lzvu
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0278
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Monica Perales

Submitter Information

Name: Monica Perales
Address:
MIDLAND, TX, 79707
Email: monicap@forl.com
Phone: 4326871777

General Comment

See attached file(s)

Attachments

Comments on NRC proposed regulatory change - 2011-0012

Fasken Land and Minerals Ltd and The Permian Basin Coalition jointly submit the following comments regarding NRC-2011-0012

August 17, 2026

The Nuclear Regulatory Commission's proposal amending 10 CFR parts 20, 61, 73 and 150.

The U.S. Nuclear Regulatory Commission's proposal to implement new regulatory guidelines on the permanent disposal of Greater than Class C (GTCC), GTCC-like and Transuranic Waste (TRU) was published July 1. The deadline for public comment is August 17, the Final Rule Publication Date is December 15, and the Effective Date is January 15, 2027.

The proposal would substantially revise the Code of Federal Regulations which entrusts the NRC to license the storage and disposal of radioactive waste and set policy and regulations to achieve this objective while providing adequate protection for the health and safety of the public and environment. According to the NRC, their proposal to amend the regulations governing radioactive waste disposal is meant to satisfy Executive Order 14300, issued by the Executive Office of President Trump on May 29, 2025.

The NRC's purported objective does not align with the directives of the Trump Administration. Contrary to the Executive Order meant to enhance nuclear power development, the agency has instead proposed a sweeping mandate that lacks disqualifiers and fails to eliminate the agency's operational inefficiency.

I. Executive Order 14300 – a Literal Reading Versus NRC's Disingenuous Interpretation

NRC's Purported Objectives

The NRC disingenuously claims their proposal to change the regulations governing radioactive waste disposal comes at the behest of Executive Order 14300. In reality, the Executive Order is critical of the NRC for having stifled nuclear power development by their own hand. The President's directive to "draft new regulations" seeks to end the agency's inadequacies, and the NRC has determined that their responsive course of action is to resurrect a failed waste disposal regulation that pre-dates even the first Trump administration.

The NRC's proposed regulatory change abandons secure, deep geologic disposal of one of the most radioactive forms of low-level waste for unproven shallow disposal, but this change does not come by the Order of the President. The proposal actually emanated from a private waste company's 2014 petition for rulemaking, and it bears no regard for the oil companies, ranchers, and farmers that oppose that private company's pursuit to expand their waste streams.

The NRC also claims their proposal goes hand-in-hand with the DOE's plans to build the industrial base for the nuclear lifecycle through programs such as the Nuclear Lifecycle Innovation Campuses.

This claim is also disingenuous because the proposed regulation fails to incorporate that guideline. The NRC's proposal is detailed and voluminous, but it makes no mention of collocating the subject waste with a Nuclear Campus. And because the Department of Energy

in 2018 identified only one site to dispose of the subject waste and because that one site is nowhere near the footprint of any of the proposed Nuclear Campuses, one could logically conclude that this regulatory oversight is intentional.

II. NRC's Proposed Changes to the Code of Federal Regulations

a. Among the NRC's proposed regulatory changes there exists language which allows the applicant seeking a waste disposal license to establish its own Waste Acceptance Criteria.

The flaws in the proposed regulation are worsened by the NRC's methodology of allowing the license applicant to conduct its own technical analyses and develop Waste Acceptance Criteria based on its own assessment. This harks back to the Executive's critique of the NRC for neglecting their obligations. Here, the NRC is failing to implement independent, objective standards and instead allowing subjective assessments performed by financially incentivized license applicants to govern. Such a conflict of interest degrades public trust. Good sense expects that the license applicant will downplay risks in order to accept as much waste as allowed.

b. The NRC's proposed "compliance periods" for waste streams ranges from one-thousand years to ten-thousand years or more, depending upon various characteristics.

Here, again, the NRC looks to the licensee to ensure public safety for multiple millennia. Humans cannot know what tomorrow holds. By comparison, a look-back of ten thousand years at the DOE's preferred site shows that region coming out of an ice age. Nothing is certain but uncertainty.

It is irrational to expect any guarantee of security and stability against radiological hazards for periods in the thousands of years when the disposal is near the surface. This is scientifically, legally and financially impossible. For these reasons, the requirement of deep geologic disposal should remain in place, and the proposed regulation should be denied.

c. The NRC's proposed changes to §61.50 fail to account for fluctuating regional aquifers and both horizontal and downward mixing.

The proposal fails to include sufficient controls in the language to account for horizontal and downward mixing and migration of waters. It fails to ensure accountability for any potential presence of waters – including areas that may presently appear dry but may fluctuate and recharge. It fails to account for any possible hydraulic communication and fails to require an independent review of possible hydraulic communication. As noted above, it is irrational to expect the waste facility to objectively evaluate their own site. Undoubtedly, the licensee will guarantee long-term containment.

d. The NRC's proposed changes to §61.50 are deficient in public health and safety protection because of a lack of specific technical guidance.

This same section, §61.50, proposes that a *land disposal facility must not be located in, or in the immediate vicinity of an area . . . where seismic activity may occur with such frequency and*

extent to significantly affect the ability of the disposal site to meet the performance objectives of subpart C or to preclude defensible modeling results due to large uncertainties. This proposed licensing standard is left to the discretionary judgment of the waste facility licensee which stands to gain a lucrative sum and is to do so without any sort of baseline. Instead of requiring specific technical guidance and objective criteria, the NRC's proposed language is basic and unscientific. What are "large uncertainties?" How "large" is "large?" What on earth are "defensible modeling results?" What constitutes a "significant effect?" The NRC is creating opportunities for disagreement and failing to establish clear, technical regulatory guidance that the public would expect in order to ensure that the agency is not relying upon undefined qualitative concepts but is instead relying upon hard and fast data. Without clear, measurable factors, the NRC might as well flip a coin.

III. The NRC is Acting Ultra Vires.

a. By proposing this Administrative Action, which exceeds their governance over health and safety and permeates authoritative territory not specifically granted to them, the agency is acting ultra vires.

b. The agency's proposal to license near surface disposal of the subject waste streams falls under the formulation of the Major Questions Doctrine and requires Congressional authority under the Energy Policy Act of 2005.

The NRC's proposed regulatory changes are a major policy shift with potential for significant consequences on a national scale. The highly charged political matter of what to do with nuclear waste has upended disposal programs such as Yucca Mountain to the tune of fourteen billion wasted dollars. America's waste problem is a public policy problem and inherently political. It is also of economic significance because it creates a windfall for a licensee, ends related storage costs and imposes multi-billion dollar liabilities upon the host community and host state.

The Energy Policy Act of 2005 requires that the Department of Energy submit a report to Congress that includes disposal paths – not one path – but alternatives to disposal and instructs the DOE to "await action by Congress."

IV. The Proposal Violates Public Trust.

a. For their lack of consent language, the NRC's proposed regulation is procedurally and ethically flawed.

For their failure to include consent language in the proposed regulation, the NRC is demonstrating their indifference to the communities and state(s) that would be directly affected by the NRC's regulatory plan. The agency intends to impose a multi-generational burden that puts the environment, health, safety and economic viability of communities at risk. To force a community to bear the risk and consequences of a national waste problem without their consent is a fundamental breach of regulatory equity and violates public trust.

b. The DOE put the answer before the question.

The Department of Energy conducted a site-specific analysis for the near-surface disposal of GTCC and GTCC-like waste in 2018 - long before the regulatory change presently at issue.

Therefore, the currently proposed regulatory change should mandate that any site-specific analysis that was conducted before implementation of new criteria should be reevaluated based upon the final regulatory criteria. How can an analysis completed in 2018 demonstrate compliance with safety requirements and analytical criteria formulated years later? The NRC's proposed regulatory changes should mandate that any application will be evaluated anew.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msy-02pq-io8r
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0279
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Jose Cruz

Submitter Information

Name: Jose Cruz
Address: United States,

General Comment

The best analogy to the concentrations at which NRC states federal authority is necessary compared to Agreement State authority is Little Jerry. In Season 8 Episode 11 of Seinfeld, Kramer buys a chicken because he wants fresh eggs. However, he unwittingly buys a rooster instead of a hen. NRC's definition of GTCC waste, and thereore authority, is unwittingly based on the purchase of a rooster instead of a hen. The concentrations defining GTCC waste in Table 1 and 2 are based on shallow trench disposal. This corresponds to a level of acceptable/unacceptable radiation dose. If these are applied to deeper disposal the concentrations that correspond to the same radiation dose are higher, therefore the dividing line between state and federal responsibility is higher. If you knowingly want to call a rooster a hen, then you should state as much. Otherwise you may be expecting eggs from Little Jerry and not get any.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msy-1om7-zcx2
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0280
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from KY Resources Council, Inc.

Submitter Information

Email: audrey@kyrc.org
Organization: KY Resources Council, Inc.

General Comment

Please find KY Resources Council, Inc. comments attached

Attachments

Docket ID NRC20110012 KRC comments

Kentucky Resources Council

Post Office Box 1070
Frankfort, Kentucky 40602
502-875-2428
hello@kyrc.org
www.kyrc.org

August 17, 2026

U.S. Nuclear Regulatory Commission
Washington D.C. 20555-0001
Docket ID NRC-2011-0012

submitted electronically via https://www.regulations.gov

Re: Comments on Proposed Rule "Integrated Low Level Radioactive Waste Disposal,"
Docket ID NRC-2011-0012

Dear Commissioners,

The Kentucky Resources Council, Inc. ("KRC") submits these comments regarding the regulatory changes in the Nuclear Regulatory Commission's ("Commission") proposed rule, "Integrated Low Level Radioactive Waste Disposal," Docket ID NRC-2011-0012. KRC requests that the Commission withdraw the proposed rule for the reasons stated hereinbelow.

KRC is a statewide environmental law and advocacy organization that provides legal and technical assistance without charge to individuals and communities concerning environmental and energy matters, including radiological and mixed waste contamination. KRC has members who live, work, and recreate throughout the Commonwealth and who will be directly affected by this rule.

Maxey Flats in Kentucky is on the National Priorities List, and the Commonwealth has at great public expense maintained the site since commercial operations ended in 1977, which equates to nearly fifty years of public liability following fourteen years of private operation. The historic record suggests that the principles guiding our regulations concerning the disposal of radioactive materials should be imbued with caution and humility. The NRC's proposed rule, which would expand the categories and concentrations of waste eligible for near-surface disposal, reflects a lack of both.

For the reasons set forth below, KRC urges the NRC to withdraw the proposed rule.

I. ***The Definition of Low-Level Waste would now include transuranic waste***

The NRC proposes to delete "transuranic waste" from the exclusion in the definition of "waste" at 10 C.F.R. §§ 20.1003 and 61.2. It characterizes this as a conforming change, reasoning that because low-level waste already contains transuranic radionuclides at

concentrations up to 100 nCi/g under the § 61.55 limits, excluding "transuranic waste" while permitting transuranic radionuclides creates an inconsistency.

This proposed rule would remove the categorical bar that prevented transuranic waste from being disposed of via near-surface burial and replaces it with case-by-case analysis performed by the company that wants to accept the waste. Before this rule, transuranic waste was directed to be buried deep in geologic repositories. The NRC now proposes that commercial transuranic waste can go into engineered facilities in the upper 30 meters of the ground instead if a licensee's modeling supports it. The preamble gives no radiological basis for the conclusion that such wastes can be properly managed for the requisite time frame without environmental or human exposure, impermissibly deferring the question of acceptability for near-surface disposal to site-specific analysis. The NRC states that the reason for the change is the lack of a disposal path. Greater-Than-Class- C waste (GTCC waste), some of which is transuranic, is stranded because the current disposal path, WIPP, is limited by statute to defense-generated transuranic waste. The categorical reclassification and downgrading of the waste is legally and scientifically inappropriate to address this concern. Instead of opening the door to increased risks of improper disposal in order to reduce stockpiles of stranded wastes, investment in proper containment and disposal sites, monitored and controlled for the period during which the waste risk endures, is the proper solution.

This change also compounds the existing problem created by the stockpiles of depleted uranium wastes. Depleted uranium is disposed of at the facilities subject to this regulation as Class A waste, the classification carrying the fewest controls, because no uranium isotope appears in either table of § 61.55 and the waste defaults to Class A under § 61.55(a)(6). In the preamble, the NRC acknowledges that depleted uranium is long-lived and that its hazard increases over time, so that the classification is questionable and came about as a matter of default rather than a risk-informed judgment. The rule would now add transuranic waste to the same disposal units at concentrations the licensee addresses. The result is one shallow disposal environment holding two kinds of long-lived alpha-emitting material whose hazard rises across the compliance period in a manner not accounted for in the design of controls. Further, the limits exist but are inadequately supported, and none of them governs *cumulative* alpha loading where bulk depleted uranium and transuranic are disposed of together. The § 61.55 tables were built on the assumption, stated in this notice, that only a fraction of the waste disposed would approach the classification limits. Bulk depleted uranium already defeats that assumption. The proposed rule is irrational and inconsistent with the science concerning the radiological behavior of depleted uranium over time. Absent a stated scientific basis for the proposal, the rule is arbitrary and should be withdrawn.

The Paducah Gaseous Diffusion Plant in Kentucky holds the largest depleted uranium inventory in the country; more than 40,000 cylinders of depleted uranium hexafluoride out of a national total of approximately 700,000 metric tons. Depleted uranium oxide from Paducah has shipped to the Waste Control Specialists facility in Andrews County, Texas, one of the operating sites this rule governs. Many of the enrichment tails held at Paducah are also contaminated with transuranic and fission-

product isotopes, including neptunium-237, plutonium-239, and technetium-99, because the plant processed uranium recycled from spent reactor fuel. The NRC should say whether it has evaluated transuranic contamination in enrichment tails headed for commercial disposal, and how site-specific waste acceptance criteria need to identify and limit it.

KRC requests that the NRC strike this portion of the rule.

II. Do Not Remove the ALARA Standard

The ALARA standard requires licensees to keep exposures as low as reasonably achievable below the applicable limit taking into account "taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest" See 10 C.F.R. § 20.1003. The proposed rule deletes ALARA from the performance objectives in §§ 61.41 and 61.43 and substitutes cross-references to the dose limits in 10 C.F.R. Part 20. That leaves only a ceiling; a licensee has every incentive to design its site and operations to sit right at the dose limit rather than continue driving exposures down. It does so without offering sufficient justification relating to public health; the NRC's regulatory and cost-benefit analysis for this rule accounts for costs and benefits to industry and government but does not quantify the costs the public will bear from increased radiation exposure including cancer, cardiovascular effects, reduced immune function, and neurodevelopmental impacts, which are disproportionately borne by children and pregnant women. KRC requests that the NRC strike this portion of the proposed rule. The clear weight of the science suggests that there is no "safe" or "acceptable" dose at which adverse physiological changes do not occur, and ALARA remains the only approach consistent with the precautionary principle and sound science.

III. Withdrawal of Agreement State Authority

In this rule, the NRC proposes to withdraw licensing authority over Greater-Than-Class C waste disposal from Agreement States entirely, departing from the Commission's 2020 direction to staff, which contemplated Agreement State licensing of waste streams meeting the requirements for near-surface disposal. And the rule appears to leave the choice between site-specific waste acceptance criteria and the existing classification system with the licensee rather than the state regulator.

KRC requests that the Commission state plainly that Agreement States retain authority to impose requirements more protective than the federal floor, and that the choice between site-specific and generic criteria rests with the regulator, not the licensee. KRC further requests that the Commission consult substantively with Agreement State radiation control programs before finalizing changes affecting their authority.

IV. Extension of the Comment period is appropriate

By the Conference of Radiation Control Program Directors account, this is the most significant revision to Part 61 since the framework was first promulgated in 1982. Other commenters in this docket, including CRCPD, several state Attorneys General, and coalitions of public interest organizations, have to date separately requested extensions on the grounds that the technical complexity and overlapping, concurrent rulemakings (including the related NEPA rule) do not leave adequate time for substantive public and state input. KRC agrees with these comments and joins in requesting that NRC extend the comment period for this rule by at least another 15 days to allow for meaningful review and comment. The failure to have extended the comment period, particularly in light of the cumulative burden of responding to numerous substantive rulemakings proposed concurrently by the agency, is arbitrary and otherwise inconsistent with law, and makes a mockery of the Commission's oft-stated assertion that public participation "is a vital ingredient to the open and full consideration of licensing issues and in establishing public confidence in the sound discharge of the important duties which have been entrusted to us.'' N. States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), CLI–75–1, 1 NRC 1, 2 (1975). The Commission should reopen the comment period and invite additional comment on the wide-ranging proposals in the rule.

V. ***Other Comments***

In addition to the comments above, and those of the CRCPD, Mark Donham, NIRS, and Will Herrick, which are adopted and incorporated herein by reference as if fully set forth below, KRC has these concerns:

1. Concerning the classes of wastes, the Commission regulations should assure that all disposal of radioactive waste should be based not merely on classification, but on site-specific Radionuclide Specific Waste Acceptance Criteria (WAC) that is developed regardless of the waste class. The WAC for each radionuclide should be developed using acceptable modeling computer programs using site-specific input parameter. The WAC should be developed in compliance with Sections 6.41 through 61.44. The reason for this is that meeting the dose requirements is the critical factor in any and all radioactive waste disposal. The use of extended time frames (of thousands of years) in modeling should be coupled with additional conservatism, since the uncertainty in modeling out to thousands of years minimizes the value in a radiation dose regulatory setting.

2. KRC questions the scientific basis for the derivation of the limits in table on page 19 of the document (40307). There doesn't appear to be sufficient justification for the values in the table.

3. The disposal of any waste (including LLW and greater than Class C) must require a detail analytical analysis using an approved and documented model. Key factors in disposal are not just activity of waste but site-specific environment relating to dissociation constant (Kd), etc., and horizontal and vertical influx of water. Many radionuclides may not move for significant time frames based on Kd so this becomes a critical factor in disposal of waste. Proper site assessment and consideration of fate and transport mechanisms is as important if not more important than the focus solely on radionuclide activity.

4. Since the Commission is evaluating LLW disposal requirements, they should move towards the goal of minimizing exposure (dose) using WAC rather than primarily relying on the waste classification system used in the original 10 CFR Part 61. Computer modeling systems at the time of development of the waste classification system were not sophisticated enough to enable development of site-specific WAC. That has changed, and provided that sufficient site-specific information and assessment and consideration of the fate and transport is undertaken, a site-specific WAC should be primarily used to determine acceptability of management options.

VI. Conclusion

For the reasons stated above, KRC urges the NRC to withdraw the proposed rule. In the alternative, KRC requests that the NRC extend the comment period, retain the transuranic waste exclusion at §§ 20.1003 and 61.2, retain the ALARA requirements in §§ 61.41 and 61.43, and confirm that Agreement States retain authority to impose requirements more protective than the federal floor.

Respectfully submitted,



Audrey Ernstberger
Staff Attorney
Kentucky Resources Council, Inc.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msy-1wjt-6e0m
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0281
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Neptune and Company, Inc.

Submitter Information

Email: pblack@neptuneinc.org
Organization: Neptune and Company, Inc.

General Comment

Please note that Neptune and Company had comments submitted by Sean McCandless. Below are three additional comments submitted by Paul Black.
1. I guess I do not expect substantial change in regulatory approach, and the current draft version makes relatively minor changes compared to changes that could be made and could be far more beneficial to LLRW disposal and the Country in general. Most of our regulations and guidance were written at a time where computers had only just become readily available, or perhaps were even written on a typewriter. It is understandable why constructs such as Waste Classification and Inadvertent Human Intrusion were needed at that time. However, with 40-50 years of experience with risk assessment, vast advances in technology, and even understanding of better ways to make decisions through optimization, decision analysis, ALARA (when performed as intended), we could, or even should, reset our regulations and guidance. Instead, we keep tinkering with them, and that tinkering often takes us down paths that complicate and obfuscate when the opposite is intended.

Waste classification is a primary example of something that is not useful any more, and seems to run against the concept of site-specific performance assessments that NRC also advocates. If a site-specific PA can be conducted, then why is waste classification necessary? I realize the potential challenges with not only making such a large change (requiring a change in the law), and also how it might be implemented (would there be a need to revisit sites that have been closed, or have grand-father clauses), but if we do not do this we will be faced with the same questions again next decade, and the next, and perhaps for another 100 years or more. And, in the meantime, we will keep tinkering, and we will continue to make waste disposal unnecessarily difficult. If we want real money-changing updating of our regulations and guidance, this should be part of it.

2. Inadvertent Human Intrusion (IHI) is another unnecessary complication. It might work for humid sites in areas that have fairly dense population (i.e., east of the Mississippi River), but what is the point of default scenarios like this in western desert environments where no human has ever lived, and is extremely unlikely to do so (and we project current conditions into the long distant future in our PAs, in which case we should not be adding a

population to places that have never had one). Similar to above, we have 40-50 years of doing risk assessment including exposure assessment – we know how to do this, and do not need to apply artificial default IHI scenarios broadly, but instead should allow site-specific conditions to dictate the needs of a site-specific PA. We should be approaching disposal decisions from a more holistic perspective that accommodates decision attributes besides radioactive dose (e.g., Appendix N of NUREG 1757), and the needs of the PA should come from the objectives and site-specific circumstances, and if a IHI scenario is necessary then so be it, but it should not be forced.

3. Waste incidental to reprocessing (WIR) is also an unfortunate consequence of tinkering with existing regulatory structures instead of making more wholesale changes. The forced interplay between NRC and DOE on WIR, and the massive complications that arise on how to evaluate, and select a disposal option causes complications and delays, when a performance assessment could replace WIR in its entirety. Ultimately the intent is to protect the public and the environment from unnecessary radioactive contamination and hence radioactive dose. Why are we not simply doing that evaluation, and subsequently making decisions (based on optimization in a decision analysis context, much like OMB requires for major financial decisions (Capital Asset Budgeting and Planning), and NUREG 1757 suggests for application of ALARA for management of radioactive contamination, remediation, and disposal. This is another big ticket item that costs the Country unnecessary financial resources.

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msy-3jam-1kld
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0282
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from NIRS, DWM, CAN, SRA, OCF, Sowing Justice

Submitter Information

Email: dianed@nirs.org
Organization: NIRS, DWM, CAN, SRA, OCF, Sowing Justice

General Comment

See attached file(s)

Attachments

2026-8-17 NRC2011-0012 NIRS DWM CAN OCF SRA Sowing Justice comments

Comments on Nuclear Regulatory Commission (NRC) Proposed Rule
Integrated Low-Level Radioactive Waste Disposal NRC 2011-0012

Comments of
Nuclear Information and Resource Service (NIRS)
Don't Waste Michigan (DWM)~Oregon Conservancy Foundation (OCF)
Snake River Alliance (SRA)~Sowing Justice~Citizens Awareness Network (CAN)

NRC 2011-0012
Integrated Low-Level Radioactive Waste Disposal
[[91 FR 125: 40290-40327, 7/1/2026]]
August 17, 2026

"Low-Level" Radioactive Waste is far from low risk. Some can give a lethal dose unshielded in less than a half hour, according to the Government Accounting Office. Over the decades many efforts have been made by promoters of waste sites to minimize concern or understanding of this largely nuclear power waste stream. Over 90% of the radioactivity in so-called "low-level" radioactive waste comes from nuclear power, and this is the major source of the more-concentrated Classes B and C. The changes in this proposed rule are clearly for the sake of new nuclear power, which could generate hotter, more concentrated high and "low-level" nuclear waste, and for cheaper management of existing GTCC which is currently on a track to accompany high level waste to whatever permanent repository is established. The rule change opens the door to any level of waste getting into so-called "low-level" radioactive waste trenches and holes, shallow land burial with the swipe of a pen and a run through a probabilistic performance assessment. This is a clear effort to allow as much of the waste without a destination and future waste that might be generated to have a path into the 10CFR61/ agreement-state-licensed disposal sites…sites that already operate in 4 states and sites that could be started up as part of the proposed Nuclear Innovation Campuses or Hubs being dangled before 5 states as these rules move to finalization. It may seem convenient but it is not justified by safety, security, environmental and public health.

Laws being violated by this proposal include the Atomic Energy Act, Energy Reorganization Act, Nuclear Waste Policy Act and Amendments, Low-Level Radioactive Policy Act and Amendments Act, Administrative Procedures Act, National Environmental Policy Act, Safe Drinking Water Act, Clean Water Act, Clean Air Act, Endangered Species Act.

A Little "Low-Level" History

At the dawn of the nuclear age, there was a massive push (Manhattan Project) to build the first atomic bombs in the United States. The mission, the excitement and focus were on the amazing power and force of atomic technology, the bombs and reactors that resulted. The waste was an afterthought shunted aside. The waste that could go critical or cause immediate deaths got some respect. High level waste was identified as the irradiated or "spent" fuel that came from the reactor core, the liquid and sludge from reprocessing it and the solid into which it was converted. The other stuff was treated like dishwater–thrown in ditches, "cribs," industrial waste sites and released into slag and into streams. Eventually it was named "low-level" waste even though some is more concentrated than DOE weapons high level waste. Concern arose about that waste

at nuclear weapons sites and the nuclear fuel chain facilities. Some Department of Energy (DOE) sites dug their own waste pits or sent radioactive, hazardous and mixed waste to other DOE sites. Nuclear power sites buried some on site but then 6 commercial so-called low-level waste sites opened, licensed by the Atomic Energy Commission and then Agreement States (WA, NV, IL, KY, NY, SC). In the 1970s once it was known that all the sites were leaking (later documented in a Conference of Radiation Control Program Directors [CRCPD] report by the E-5 team led by Paul Merges, NYS DEC), the US Congress (many Senators not realizing it was mostly from the nuclear power fuel chain, some completely aware of it) passed the Low-Level Radioactive Waste Policy Act and its amendments in 1980 and 1985 (PL 99-240). In 1980, states were tasked with providing disposal for the radioactive waste commercially generated within its borders, even though they did not license or necessarily approve of its production. In 1992, the Supreme Court ruled that states cannot be forced to take liability for that waste, which had been a motivator for states to find new waste disposal sites in the 1980s and 90s.

Leaky Dumps, Site Searches, Institutional Control, State and DOE responsibilities, GTCC

The dozens of siting efforts in at least 30 states over decades ended up with Waste Control Specialists (for Classes A, B and C and a DOE pit) licensed by Texas, and EnergySolutions licensed in Utah (Class A only) as the 2 new sites since the original 6, 4 of which closed. US Ecology in Washington and ChemNuclear in South Carolina, continue operations. The Barnwell, SC site has been found by a court to be leaking–it ruled that new waste disposed there should not be allowed to leak but it does not appear there is any effort underway to prevalent or recapture the waste that has been leaking since the 1970s. The public and native nations have been watchdogging the Hanford US Ecology site. At least one organization expressed opposition to this proposed rule change because it will “update” the dosimetry allowing the site to give 25 millrems per year to members of the public but with the “updated” dosimetry it will allow 25 millrems effective dose equivalent (mr ede) which allow more radioactivity per rem for 87% of the radionuclides. Communities and public interest groups in Utah do not want Depleted Uranium brought in and buried at the EnergySolutions Clive facility. There is a long history of battles over allowing DU which gets more radioactive as it decays, to be treated like the least concentrated Class A which is only supposed to be dangerous for 100 years or less.

There was sizable public opposition to many of the 1980 LLRWPA provisions, including the expectation that waste that is hazardous much longer than 100 years (including portions of Classes A, B and C) could be buried in the 10 CFR 61/agreement-state-licensed trenches, because they are only required to have 100 years of institutional control. Put another way, the NRC can only take credit for 100 years of institutional control when calculating the doses to people that might encounter the waste site in the future. The growing public demand on Congress members and decision makers was to limit waste that can be dumped at the licensed sites to that which only remains hazardous for 100 years–that is it undergoes 10-20 half lives in 100 years. Since the regulations allow burial in the unlined soil trenches there is obvious concern that it will leak out, like at every other waste burial site, radioactive or not.

Congress addressed the question of which wastes would go into state licensed waste sites. The 1985 LLRW Policy Act Amendments (PL 99-240) clarified that Classes A, B and C, as defined in 10 CFR § 61.55, are the responsibility of the states in which they are generated. The United States Department of Energy was given responsibility for disposal of commercial radioactive wastes that have concentrations of radionuclides “Greater Than Class C” or GTCC.

Whether GTCC is licensed by the NRC or Agreement States, it must **not** be buried in soil trenches with a 100 year institutional control period, or even a 10,000 performance period, mainly because it will be dangerous for much longer. The NON-solution to bury it deeper is inadequate and ignores the risk to aquifers and the water supply.

Depleted uranium DU actually gets more dangerous over time– it decays to progeny that are longer lasting than the previous radionuclides in the decay chain. Since Class A has a 100 year institutional control period, waste that becomes more dangerous after that time should not be permitted in a Class A facility such as EnergySolutions in Utah, or in the portion of other license facilities that is for Class A. We support the comments of HEAL Utah on this rulemaking.

The Waste Control Specialists site in Texas is licensed for Classes A, B and C. Due to the presence of water in the burial areas, it should be re-assessed for its adequacy in isolating the Classes A, B, C waste being disposed there, not considered for additional, even more deadly GTCC wastes. We support the comments of the Lone Star Chapter of Sierra Club regarding this rulemaking.

Current Sites and Regulations for Classes A, B and C are already not fully protective.

Allowing GTCC, DU, Reprocessing waste and more will make it worse.

Institutional Control, Compliance and Performance Periods, PPAs

Instead of pretending all is well with the current regulatory scheme and proposing to make it worse, NRC should tighten the controls at the existing sites and guarantee better goals for isolation of waste at new sites.

There are many who would argue that current 10 CFR Part61 and Agreement State regulations are inadequate for Classes A, B, and C because the reality is that the waste will still be radioactive and potentially harmful for much longer than the time periods used to designate the Classes, or the various Institutional Control, Compliance and Performance Periods. Even the NRC's own Advisory Committees on Nuclear Waste and on Reactor Safety have struggled with staff and waste generators over the inability to predict or promise controls or protection from waste in future centuries and millenia. Simply naming a time range as Compliance or Performance Period does nothing to isolate waste. They simply give the illusion of control where none exists.

The assumptions by NRC in the proposed rule that the current regulations and existing sites are adequate require verification. NRC wants to assume it's all okay now, so expanding a bit more for GTCC, DU, reprocessing wastes and any other wastes outside the 10 CFR § 61.55 limits can be managed, as long as a performance assessment is done to say so. There is an additional concern that it is possible the performance assessments could be kept secret to protect corporate confidentiality so the public cannot even question the assumptions and equations, computer codes and models that will be used to claim hotter, longer lasting waste can be disposed at shallow-land burial sites.

NRC should not accept the current assumptions, and should not stretch those assumptions in the proposed rule and in the accompanying probabilistic performance assessments that claim that radioactive exposures will be acceptable hundreds, thousands, tens of thousands of years from now….not to mention that some of the waste will remain radioactive and potentially dangerous

for much longer. Whatever rules result from this process, it is important that NRC require public access to all analysis, inputs, assumptions, expert elicitations and data that will be used for site specific assessment or PPAs seeking to expand the waste site inventory, seeking permission to take GTCC, DU and all other additional wastes.

Although it is clear that some of the radionuclides in the Classes A, B and C waste streams will be radioactively dangerous for hundreds, thousands, and literally millions of years, NRC claims that isolating them for much shorter time periods is all that is needed. Now, the proposed rule pushes the envelope even further, claiming that GTCC, Depleted Uranium (DU), reprocessing waste and more can go into the trenches–albeit deeper down, without providing any analysis for the proximity of underground water resources deeper down. NRC says that can be safely isolated– A waste for 100 years, B waste for 300 years and C waste 500 years. Class A waste can have plutonium 239 (half life 24,000 years) and iodine 129 (half life 16 million years) as well as strontium 90 (half life 28 yrs) and cesium 137 (half life 30 years). Of course multiply the half life by 10 or 20 for general length of hazard

It doesn't matter whether creative, magical new “Compliance Periods” and “Performance Periods" are written about or calculated, there is no physical way to isolate waste for those periods of time–especially in shallow land burial facilities.

Inadequate Cost Benefit Analysis

The cost benefit analysis in the proposed rule and RA completely ignore costs to members of the public and communities potentially impacted by the waste sites. Then this is balanced against minimal and questionable benefits to nuclear generators and regulators. These should be redone. NRC should watch what is happening now in Niagara County, NY where radioactive and hazardous waste buried decades ago is surfacing in peoples homes, businesses, parks and communities. Look at the potential costs, which NY and the federal agencies clearly don't want to pay.

What are those costs? What are the costs to people exposed in the future? How far into the future to care? We call on the calculations to use a zero discount rate as future values are valid and should not be minimized. We support critiques of this by other commenters including Fred Schofer.

We ask that the proposed rule and RA be withdrawn because

-they do not honestly assess the risks and costs to the environment and public,

-they allow unaccountable probabilistic performance assessments to be used by the very entities that would profit from taking additional waste, creating a clear conflict of interest, with an inability for public review or oversight,

-they predict unrealistic future scenarios, risks, exposures and doses, that could cause significant health, environmental and economic harm

- they fail to provide an honest cost-benefit analysis using existing guidance including NUREG-1530. Part of the materials needed for the analysis have in fact been deleted,

HUBS- Nuclear Innovation Campuses-next generation of LLRW dumps

This rule impacts states with existing nuclear waste burial sites (WA, SC, TX, UT) and proposed nuclear innovation campuses or hubs, specifically Idaho, Utah, Tennessee, Louisiana and Oklahoma. Public input is being stymied.

Regarding just one of the 5 potential hub states, Tennessee, we provide these preliminary observations:

>The proposal destroys anything remaining of ALARA

> By shifting responsibility to states, there will be no NEPA compliance demanded or expected as disposal or burial projects are changed, moved, expanded or modified as to wastes being disposed. The same is true for the National Historic Preservation Act and the Endangered Species Act. The only environmental impact assessment will be that required by state regulatory agencies applying their weak and variable regulations.

Regarding access to records, shifting responsibility to states means a shift from fixed federal standards to site-specific performance-based practices. So in Tennessee, for example, there will be a need to get access to records which no longer are reachable through the federal Freedom of Information Act, but are covered exclusively by TN public records laws. All the new mandatory technical documentation required to be maintained by the operator will get moved behind shields in TN law of corporate confidentiality, business secrecy, and technical means of record keeping.

Again using Tennessee as an example, primary erosion of records access will occur as follows:

1. Trade secret shield on Waste Acceptance Criteria (WACs) and performance assessments. Under the current system, waste definitions are hardcoded in NRC's public tables (Classes A, B, C). Under the new rules, facility operators will engineer their own site-specific WACs. And commercial operators will be able to treat their custom blending formulas, chemical binding grouts, and proprietary safety algorithms as protected commercial data. Commercial operators will be able to heavily redact records requests under state-law protections for trade secrets and privileged commercial and financial info. In the particular case of Tennessee, the state's Public Records Act restricts records requests exclusively to Tennessee citizens, blocking national environmental watchdogs, out-of-state journalists, and downstream communities from inspecting the files. Tennessee public records laws will severely limit records access to day to day operational logs, facility manifests, routine state inspections, etc. all records generated and held by TDEC.

2. There'll be a lot of black box modeling and technical obfuscation. Commercial operators will justify taking in GTCC waste by submitting thousands of pages of complex, computerized groundwater migration and intruder simulations. It'll be difficult to impossible for someone from the public to decipher or understand. Even if a public record requester successfully pries loose a summary of the performance assessment, the underlying source code, active assumptions, and specific software tools used to build the models are likely – highly likely – to remain as commercial, proprietary secrets. Imagine trying to get TDEC to intercede and make a giant waste handler hand over secrets. often commercial property. The public will get tons of data but no functional way to audit for manipulation of inputs or evaluation of results.

3. Even in situations where federal FOIA might apply, GTCC and transuranic wastes possess significantly higher levels of radioactivity than standard Class A trash. Since such concentrated radioactive materials present viable dirty-bomb or proliferation risks, operators can easily claim that detailed inventories, shipping logs, and deep-trench engineering maps must be withheld under FOIA Exemption 7 (Law Enforcement and Critical Infrastructure) or categorized as Sensitive Unclassified Non-Safeguards Information (SUNSI) to prevent sabotage.

4. There would be a shift to site-specific WACs. Operators would develop localized WACs based on Tennessee's specific geology, hydrology, and climate factors. In designing safety models, operators will transition away from federal standards and create new dosimetry frameworks under 10 CFR Part 20, which is arguably also being gutted.

To justify these new customized disposal limits, an existing operator will have to provide updated technical reviews. They'll be required to simulate future scenario risks like someone ignorantly building a home on the site 500 years from now, using localized parameters to prove long-term safety. Enhanced modeling will be required to track how long-lived radionuclides migrate through local water tables over thousands of years. What's to keep a great deal of AI slop modeling from being submitted to an overwhelmed TDEC whose staff members are looking to go through the revolving door to waste generators which have triple the salary and who aren't particularly interested in getting to the truth? And even if they get to the truth, the record of public TDEC enforcement is not illustrious or strict. While this same obscurity arguably pertains at the NRC, there is a slightly better capability for enforcement up to and including criminal referrals.

5. TDEC is accused of being weak on enforcement. TN handles a very large share of the nation's low-level waste and so extensive dependence has built up over decades on TDEC being financed largely because of regulatory fees per pound of waste disposed of. Cutting down waste streams or reduction of private operators' business viability will cause TDEC to lose income for operations.

6. Then there's the whole concept of commodifying GTCC. Previously, highly concentrated GTCC wastes like decommissioning hardware or large sealed industrial sources lacked a commercial disposal pathway and remained stranded at reactor sites. Now, if an operator can provide (real or fictionalized) technical analyses to satisfy safety goals, they can expand operations to construct near-surface or specialized deep-trench disposal units to take in GTCC waste.

This whole scheme shifts enormous responsibility to TDEC (in TN), where there is a perception that radioactive waste disposal is a business opportunity and where there is pre-existing resistance to "overregulation." The Tennessee legislature will more than ever see lobbying for restrictions on what TDEC can and cannot do in this brave new delegated world. TDEC will have to do a very complicated and lengthy rulemaking that will include not just waste tracking, and determination of transportation routes, but also tying this new waste disposal phase into TN's push for a nuclear lifecycle innovation campus.

Summary of Issues of Concern

We oppose the proposed rule NRC 2011-0012 Integrated Low Level Radioactive Waste Disposal. Withdraw it.

Don't allow GTCC, DU, reprocessing waste and other long lasting and/or intensely radioactive wastes into 10CFR61/Agreement state licensed burial grounds.

Compliance and Performance periods—the illusion of long term protection—claiming isolation for 1000s or 10s of thousands of years with no provision or possibility to verify or enforce—open door to higher concentration and longer lasting waste without real changes in methods of isolation, monitoring and reporting; no plans or guarantees that future leakage will not exceed projected levels. NRC Advisory Committees raised serious concern. Rather than heed their advice, the Advisory Committees are being eliminated.

Probabilistic performance assessments PPAs are already black box, blank checks for waste disposal operators to claim their facilities will never exceed given doses and dose ranges, thus can allegedly manage GTCC, DU, reprocessing and other wastes.

Implications for nuclear energy campuses or hubs which, if they happen, are likely to be the next generation of nuclear waste burial grounds.

We protest the very short comment periods on major rulemaking running simultaneously and failure to provide any extensions. We request an additional 30 days to continue our assessment of the LLRW Rule changes in NRC 2011-0012

Tim Judson, Executive Director
Diane D'Arrigo, Radioactive Waste Project Director
Nuclear Information and Resource Service (NIRS)
PO Box 2, Mount Rainier, MD 20712
www.nirs.org

Kevin Kamps, Executive Director
Michael Keegan, CoChair
Don't Waste Michigan (DWM)
Michigan
https://dontwastemichigan.org

Deb Katz
Citizens Awareness Network (CAN)

PO Box 83, Shelburne Falls, MA 01370
https://www.nukebusters.org

Marquita Bradshaw, Executive Director
Sowing Justice
Memphis, TN
www.sowingjustice.org

Leigh Ford, Executive Director
Snake River Alliance (SRA)
Idaho
www.snakeriveralliance.org

Cathryn Chudy, Board Member
Oregon Conservancy Foundation (OCF)
PO Box 982, Clackamas, OR 97015
Oregon/Washington

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msy-3vdt-w6vq
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0283
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Thomas Smith

Submitter Information

Name: Thomas Smith
Address:
Austin, TX, 78748
Email: citizen.smitty@gmail.com
Phone: 5127978468

General Comment

I have multiple myeloma, a cancer that may be caused by exposure to radiation. I oppose the weaking of standards for safe disposal of transuranic waste l and wastes that are greater than class C. These changes portend disaster. I predict a lot of people are going to get sick or die as a result of exposure during transport, burial and operations of sites built to meet these weak standards. The accelerated construction deadlines ensure poor quality assurance. The most toothless NRC imaginable will not be adequately funded to be rigorously inspect these sites after operations begin. These sites will continue with corporate self-reporting, the billionaires will have their way while the citizens who live around them will pay for these lax regulations in poor health.
This proposal makes the historically lax NRC regulatory practices look like a gold standard.
Thomas E. Smith (Smitty)

PUBLIC SUBMISSION

As of: 8/19/26 3:01 PM
Received: August 17, 2026
Status: Posted
Posted: August 18, 2026
Tracking No. msy-4nhs-vo5d
Comments Due: August 17, 2026
Submission Type: Web

Docket: NRC-2011-0012
Integrated Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0205
Integrated Low-Level Radioactive Waste Disposal

Document: NRC-2011-0012-0284
Comment on FR Doc # 2026-13302, NRC-2011-0012-0205, from Oregon Conservancy Foundation

Submitter Information

Email: chudyca@gmail.com
Government Agency Type: Regional
Government Agency: Oregon Conservancy Foundation

General Comment

I live in Vancouver, WA and am a board member with the Oregon Conservancy Foundation. We are greatly concerned about actions under way by the federal administration and now the NRC with this Proposed Rule: Integrated Low-Level Radioactive Waste Disposal NRC 2011-0012 and it's potential to negatively effect the primary mission of legacy toxic nuclear waste cleanup at Hanford. We incorporate as reference comments submitted today, August 17, 2026 by HEAL, Utah and by Nuclear Information Resource Service (NIRS)

Washington has one of 6 commercial Atomic Energy Commission and Agreement State licensed landfills in the US that will be significantly affected by any changes to Nuclear Regulatory Commission (NRC) Proposed Rule: Integrated Low level Radioactive Waste Disposal NRC 2011-0012. This landfill is located at the Hanford Reservation on the Columbia River, between Oregon and Washington, where decades of legacy toxic waste continue to threaten the health of the river itself and the people living on both sides of the river. Hanford is the 586-square-mile cleanup site in southeast Washington state, where the nation produced plutonium during World War II and the Cold War, and is the nation's largest toxic waste cleanup site. Legislation introduced in the WA state legislature during the 2026 session (HB WA HB 2634) notes that "the commercial radioactive waste disposal facility operated by the state at Hanford is a leaking, unlined soil landfill. A state investigation confirmed the site is releasing significant levels of chemical and radioactive contamination into the soil and groundwater. The groundwater under the it flows to the Columbia River."
In the meantime, the current federal administration is cutting staff and budgets for Hanford cleanup, while at the same time removing the local and state boards that provide advisory recommendations for the cleanup: Big changes are coming to the Hanford Advisory Board.
That group, which includes environmental watchdogs, the state of Oregon, municipalities and tribal sovereign nations — all with keen interests in Hanford cleanup — will be significantly whittled down.
https://www.nwpb.org/local/2026-08-14/us-department-of-energy-whittles-down-hanford-board-that-gives-feds-state-advice-on-cleanup

According to Nikolas Peterson, executive director of Hanford Challenge, a watchdog organization based in Seattle, restructuring guts transparency and oversight.
“What remains is a DOE-controlled forum with no sovereign tribal representation, no state regulators, no labor voices and no independent organizations,” he said. “DOE didn’t modernize the Hanford Advisory Board; they wiped out the voices that hold them accountable. They got rid of anyone and everyone who ever pushes back, who asks hard questions, who doesn’t just say ‘Yes, sir’ to DOE.”
One particular concern raised is the loss of sovereign tribal nations’ ability to speak with one voice. In the new system, Indigenous people could be selected to be on the board, but they’d only be speaking as an individual. Traditionally, the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation and the Nez Perce Tribe have all participated as board members.

OCF specifically endorses the concluding recommendations in the HEAL, Utah public comment submission of today, that the rule be revised to: Ensure that site-specific analyses cannot lower or weaken existing minimum federal waste acceptance standards.
Require cumulative impact analyses for facilities proposing to accept additional long-lived radionuclides or transuranic waste.
Require climate resilience analyses using multiple credible future climate scenarios, and mandate their incorporation into planning and permitting.
Apply conservative assumptions and explicit uncertainty analyses to all long-term performance assessments for waste storage.
Require enhanced groundwater monitoring, institutional controls, and comprehensive financial assurance for facilities managing long-lived radionuclides.
Strengthen opportunities for public participation and Tribal consultation before approval of new waste streams.
Ensure that environmental and health analyses meaningfully evaluate disproportionate impacts on historically affected and economically disadvantaged communities.
Require periodic reevaluation of performance assessments as new scientific information becomes available.
Retain ALARA standards in order to minimize exposure to workers and to the public at large.

And, specifically: ... “the Commission should ensure that any revisions to 10 CFR Part 61 maintain conservative, science-based protections that remain protective not only for current generations but also for those who will inherit these disposal sites centuries and millennia into the future. The burden of uncertainty should rest with those proposing disposal, not with future communities who may bear the consequences of what our government decided today.”