[7590-01-P]

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ACTION: Proposed rule and draft guidance; public meeting; request for comment.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 **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

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.

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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 **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. 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 274 b. 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.

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

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

[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.

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 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.

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		

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):

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;	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.

Rule Amendments	Basis for No Significant Environmental Effects
61.51; 61.52; 61.55; 61.56; 61.58; and 73.67	(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 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.

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 [INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

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:

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.

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, Pub. L. 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.

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

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	7000
Sr-90	0.04	150	7000
Cs-137	1	44	4600

[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	1.85×10^6 gigabecquerel per

with half-life greater than 50 years in activated metal	cubic meter (50,000 curies per cubic meter)
Tc-99	1.85 x 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.

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