# ATTACHMENT 2

7590-01-P

NUCLEAR REGULATORY COMMISSION

# Notice of Availability of a Standard Review Plan (Nureg–1620) for Staff Reviews of Reclamation Plans for Mill Tailings Sites under Title II of the Uranium Mill Tailings Radiation Control Act

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Notice of availability.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) has developed a Standard Review Plan (NUREG–1620) to provide guidance for staff reviews of reclamation plans for uranium mill tailings sites covered by Title II of the Uranium Mill Tailings Radiation Control Act. Under the provisions of Title 10 of the Code of Federal Regulations, Part 40 (10 CFR Part 40), Domestic Licensing of Source Material, an NRC Materials License is required in conjunction with uranium or thorium milling, or with byproduct material at sites formerly associated with such milling. The licensee's site Reclamation Plan documents how the proposed activities demonstrate compliance with the criteria in Appendix A of 10 CFR Part 40. This information, combined with the licensee's Environmental Report, is used by the NRC staff to determine whether the proposed activities will be protective of public health and safety and the environment. The purpose of the Standard Review Plan (NUREG–1620) is to provide the NRC staff with guidance on performing reviews of information provided by licensees. The use of the Standard Review Plan is also intended to ensure a consistent quality and uniformity of staff reviews. Each section in the review plan provides guidance on what is to be reviewed, the basis for the review, how the staff review is to be accomplished, what the staff will find acceptable in a demonstration of compliance with the regulations, and the conclusions that are sought regarding

the applicable sections in 10 CFR Part 40, Appendix A. NUREG–1620 will also assist in improving the understanding of the staff review process by interested members of the public and the uranium recovery industry. The review plan provides general guidance on acceptable methods for compliance with the existing regulatory framework. As described in an NRC white paper on risk-informed, performance-based regulation (SECY–98–144), however, the licensee has the flexibility to propose other methods as long as it demonstrates how it will meet regulatory requirements.

A draft of NUREG–1620 was issued in January 1999 for public comment. A final NUREG–1620, which incorporated NRC staff responses to the comments received on the draft, was issued in June 2000. On February 5, 2002 (FR5348), the NRC made the revised second draft of NUREG–1620 available for a 75-day public comment.

In preparing the final version of NUREG–1620, the NRC staff carefully reviewed and considered about 120 written comments received by the close of the public comment period on April 22, 2002. To simplify the analysis, the NRC staff grouped all comments into the following major topic areas:

(1) Editorial and Organizational Comments (31 comments)

(2) Policy Issues (including administrative, quality assurance, and surety/financial issues) (51 comments)

(3) Geotechnical Stability (17 comments)

(4) Ground water (15 comments)

(5) Environmental aspects related to NRC responsibilities under NEPA (4 comments)

ADDRESSES: Electronic copies of this document are available for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (The Public Electronic Reading Room). NUREGs 1569 and 1620 are under ADAMS Accession Number ML012990062. The documents are also available for inspection or copying for a fee at the NRC's Public Document Room, 11555 Rockville Pike, Room O1-F21, Rockville, Maryland, 20852. These guidance documents are not copyrighted, and Commission approval is not required to reproduce them.

FOR FURTHER INFORMATION CONTACT: John Lusher, Office of Nuclear Material Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards, Mail Stop T-8 A33, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Telephone (301) 415-7694, or e-mail jhl@nrc.gov .

The following provides a more detailed discussion of the NRC evaluation of the major topic areas and the NRC responses to comments.

## 1. Editorial and Organizational Comments

Issue: The standard review plan has a number of redundancies and editorial errors.

Comment: Several commenters identified editorial concerns, text omissions, or areas where the organization of the standard review plan could be improved. Most of the organizational comments addressed perceived redundancies in the standard review plan or opportunities to streamline the style. Most editorial comments addressed inconsistent terminology, identified typographical and grammatical mistakes, or questioned the accuracy of reference documents.

Response: NUREG–1620 is structured consistent with NRC practice for standard review plan style and format. While the style and format may be considered complex or redundant by some commenters, no substantive changes have been made. This will preserve consistency with other NRC standard review plans. The commenters have provided numerous suggestions for improving the readability and clarity of the review plan. Most editorial comments that addressed inconsistent terminology, typographical and grammatical mistakes, or the accuracy of reference documents were accepted and incorporated in preparing the final standard review plan. The individual editorial comments are not addressed in this comment summary document.

## 2. Policy Issues (Including Administrative, Quality Assurance, and Surety/Financial Issues)

Issue: NRC is inappropriately examining economic assessments that are the prerogative of the applicant.

Comment: The draft standard review plan asked the reviewer to examine the economic benefits when slopes steeper than 5h:1v are proposed by an applicant. The NRC staff should be concerned only with whether the slope design will be stable enough to protect the tailings.

Resolution: The NRC agrees with the commenter. The final standard review plan has been edited to remove consideration of economic factors in slope design.

Issue: Guidance provided on alternate feed materials and non-11e.(2) byproduct material is not informative.

Comment: Commenters stated that information presented in Appendix I [Guidance on Disposal of Alternate Feed Materials and Non-11e.(2) Byproduct Materials in Uranium Mill Tailings Impoundments] of the draft standard review plan was not useful. The commenter suggested that additional guidance was not needed and recommended that the appendix be deleted from the review plan.

Resolution: The NRC staff agrees with the commenters to some extent. Appendix I did not contain sufficient information to assist the reviewers in examining requests for disposal of these materials in mill tailings impoundments. However, recent guidance from the Commission on these subjects is relevant to such reviews. Accordingly, Regulatory Issue Summary 2000-23, which presents Commission guidance on these matters has been included in the appendix to facilitate staff reviews.

Issue: NUREG–1620 should present guidance on examining multi-site problems.

Comment: One commenter noted that guidance on review of multi-site problems should be included in the final standard review plan. The reviewer stated that if a group of licensees raise a common issue, it would be cost effective to address it generically.

Response: The NRC staff agrees that addressing multi-site problems in an integrated manner could be cost effective and potentially beneficial to public health and safety and the environment. Omitting this information from NUREG–1620 is not meant to reflect a lack of staff interest in multi-site problems. Rather, the standard review plan is meant to address licensing reviews that can be completed using well-accepted techniques. The staff believes that the technical and regulatory aspects of multi-site problems are such that it is best to examine them on a case-by-case basis.

Issue: The long-term custodian must accept transfer of property at termination of the specific license.

Comment: One commenter expressed concern regarding language in NUREG–1620 that there must be assurance that the long-term custodian will accept the property necessary to protect public health and safety. The commenter was concerned that the language in the standard review plan implied that the long-term custodian has the option to refuse transfer of the property.

Response: The language in the standard review plan is included to ensure that the reviewer verifies that the long-term custodian is aware of the full extent of required land transfer prior to termination of the specific license. The intent is to avoid delays in license termination because

the licensee and the long-term custodian may not have a mutual understanding on the extent of land transfer, and the text has been clarified.

Issue: NUREG–1620 guidance on consideration of reasonably attainable corrective actions and economic constraints is unclear.

Comment: One commenter was concerned that standard review plan guidance to not eliminate potential corrective actions because of economic constraints is inconsistent with guidance to assess three reasonably attainable, practicable corrective actions. The commenter notes that in some cases there may not be three reasonably attainable, practicable corrective actions to assess.

Resolution: While the NRC understands the commenter's concern, the language in the standard review plan on this matter is appropriate to the intent of the guidance and needs no further detail. The guidance to evaluate three reasonably attainable, practicable corrective actions is not a regulatory requirement. The NRC expects that an applicant will present corrective action alternatives that are reasonable and practicable for a specific site and a specific set of circumstances.

Issue: Guidance that equipment owned by the licensee not be considered in reducing surety cost evaluations is inappropriate.

Comment: One commenter expressed concern that in estimating costs to complete reclamation by a third-party independent contractor, direction that the equipment owned by the licensee and

the availability of licensee staff should not be considered in reducing costs was inappropriate. The commenter added that extreme interpretations of this approach could lead to extravagantly expensive or even unattainable surety requirements.

Resolution: It is appropriate not to consider equipment owned by the licensee and the availability of licensee staff in calculating costs for surety. The purpose of the surety to ensure that there will be adequate funds available to complete site reclamation in the event that the licensee is unable to do so. The most likely circumstance that would result in the licensee being unable to complete reclamation is bankruptcy by the licensee. Unless the licensee can show that the equipment and staff would be available during and after a bankruptcy, credit for such can not be taken. The text has been clarified to address this issue.

Issue: NUREG–1620 should be used as a tool for public education.

Comment: Several commenters suggested that discussions could be expanded in various sections of the standard review plan to improve public understanding of regulatory issues at Title II uranium mill tailings sites.

Response: Discussions in several sections of the standard review plan were revised to improve clarity and to correct editorial errors. Although it is made available to the public, the primary intent of the Standard Review Plan is to provide guidance to the NRC staff, not to serve as a tool for public education. The staff believes that the standard review plan contains the appropriate level of detail for its intended purpose as a guide for staff reviews of reclamation plans for Title II mill tailings sites.

**3. Geotechnical Stability**

Issue: NUREG–1620 requires additional flexibility in criteria for selection of rock erosion protection materials.

Comment: One commenter suggested that criteria in the standard review plan should provide more flexibility in selecting a less durable rock for erosion protection when obtaining more durable rock is not practical.

Response: Flexibility in selecting rock types for erosion protection is implicitly provided in several locations in NUREG–1620 (e.g., Section 3.5.3) as long as the applicant can demonstrate with reasonable assurance that the radon barrier will be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years. Clarifying text has been added to indicate explicitly that this option is available.

Issue: Terminology for erosion protection covers needs to be clarified.

Comment: One commenter requested clarification in use of the terms “unprotected soil cover” and “vegetative soil cover.”

Response: The staff agrees with the commenter. Section 3.5 of the standard review plan has been retitled “Design of Erosion Protection,” and the review guidance in that section has been clarified to avoid confusion in the use of terms.

Issue: The NRC is requiring detailed seismic hazard analysis, even in zero seismic risk areas identified in the Uniform Building Code.

Comment: One commenter noted that for cases where a given site is located in a "zero" seismic risk area as identified in the Uniform Building Code, no further seismic characterization, explanation, or description should be needed for the licensee or applicant.

Response: Maps for the maximum considered earthquake ground motion for the United States in the most recent version of the building code (2000 International Building Code) are based on probabilistic seismic hazard maps with additional modifications incorporating deterministic ground motions in selected areas and the application of engineering judgement. These maps were prepared for the National Earthquake Hazards Reduction Program by the United States Geological Survey. Because it is based on probabilistic methods, within the new update, the "zero" seismic risk areas no longer exist.

The NRC is currently establishing risk-informed and performance-based regulations. One example of this philosophy is the application of a risk-graded approach in developing seismic design requirements for nuclear facilities. Under this approach for example, nuclear power plants have to meet the most stringent design requirements because they pose the greatest radiological risk to public health and safety. Other nuclear facilities like dry cask and canister storage facilities or uranium mining operations could be designed to less stringent design criteria because they pose substantially less radiological risk to public health and safety. This type of graded approach to radiological hazard is described in U.S. Department of Energy (DOE) Standard 1020–2002, "Natural Phenomena Hazards Design and Evaluation Criteria for Department of

Energy Facilities." In that guidance, the DOE developed five performance categories according to the relative risks posed by the potential failure of a structure, system, or components (SSCs) to perform its intended safety function. Performance Category (PC)–2 is intended for occupational safety and the design requirements for this category match those in the IBC–2000. PC–3 SSCs are for hazard confinement and the design requirements go beyond those within IBC–2000. Given the potential radiological hazards posed by Mill Tailing sites, evaluations of seismic hazards should therefore exceed those prescribed in the IBC–2000 for buildings. In addition, the National Earthquake Hazards Reduction Program maps do not take site effects into account. Local site effects, such as soil amplification, can greatly increase the level, spectral frequency content, and duration of vibratory ground motions at a site that is produced during an earthquake. Therefore, these effects need to be understood in order to accurately predict the seismic hazard at any site.

Based on these two considerations (graded risk approach and possible site amplification effects), staff conclude that site-specific seismic evaluations are necessary for all sites.

Issue: The NRC has not provided an adequate definition of the intent of using probabilistic seismic hazard analysis to satisfy the consideration of the maximum credible earthquake.

Comment: One commenter noted that the draft standard review plan indicates that licensees can use an alternative to the maximum credible earthquake, such as probabilistic seismic hazard analysis, but does not indicate whether the intent is to allow probabilistic analyses to satisfy 10 CFR Part 40, Appendix A, Criterion 4(e) or it is being considered as an alternative requirement.

Response: The application of a probabilistic seismic hazard analysis in place of a deterministic approach is not intended to be an alternative requirement to, as defined in the question, but another way of satisfying the existing move toward risk-informed and performance-based regulations. In addition, other NRC regulations clearly recommend the use a probabilistic approach as an acceptable way to account for uncertainties [e.g., 10 CFR 100.23(d)(1)].

Issue: The NRC has provided only general guidance to seismic hazard analysis, rather than guidance specific to certain geographic provinces.

Comment: One commenter noted that references cited in the standard review plan did not provide useful guidance with regard to site-specific seismicity issues, and suggested other references specific to Wyoming and the intermountain region of the western United States.

Response: The standard review plan is intended to provide general guidance to the NRC staff on reviewing license applications, license renewals, and amendment requests. The standard review plan does not preclude licensees from providing additional site-specific information as necessary in their license application or amendment requests, and identifying how this information supports a specific licensing action.

**4. Ground Water**

Issue: NUREG–1620 should be consistent in use of terminology related to ground water.

Comment: The term “constituent of concern” seems to be used interchangeably with the term

"hazardous constituent." Constituents of concern are not necessarily hazardous constituents unless they have migrated into "non-exempted" aquifers.

Response: Section 4.2.1 of the standard review plan was revised to delete a sentence equating constituents of concern with hazardous constituents. The term "hazardous constituent" is now used consistent with the definition in 10 CFR Part 40, Appendix A, Criterion 5B(2)

Issue: The difference in an As Low As Reasonably Achievable (ALARA) analysis for radiological and nonradiological parameters needs to be more clearly presented.

Comment: An ALARA analysis for a nonradiological parameter differs from that for a radiological parameter in that once the concentration of a nonradiological parameter falls below the maximum concentration limit, the licensee has no obligation to further reduce the parameter's concentration. NRC should distinguish between the two types of ALARA studies.

Response: The NRC concurs with the commenter. A sentence was added to Section 4.3.3.3 of the standard review plan to indicate that, when a nonradiological hazardous constituent concentration is below its regulatory maximum concentration level, the licensee has no further obligation to reduce the constituent concentrations.

Issue: The benefits of ground-water corrective action requirements at remote sites are questionable.

Comment: Two commenters noted that NRC should provide further guidance on addressing instances where the benefits of ground-water correction action may not justify the cost. One comment referred to circumstances where restrictions on site access or site-specific physical characteristics may make it infeasible for members of the public to access ground water. Another comment suggested that the future value of the ground water removed and evaporated during corrective actions may exceed any risk posed by the contaminant.

Response: No changes to the standard review plan were made to address these comments. In such site-specific circumstances as described by the commenters, the burden is on the licensee to demonstrate that termination of ground-water corrective actions would pose no significant threat to human health and the environment. Licensees may propose alternate concentration limits that meet the requirements of 10 CFR Part 40, Appendix A, Criterion 5B(6). Consideration of the remoteness of a site, potential future water uses, and future value may be included in a licensee's basis for determining that alternate concentration limits are protective of human health and the environment, and that limits are as low as reasonably achievable. These and other factors for consideration by the Commission are specifically mentioned in 10 CFR, Part 40, Appendix A, Criterion 5B(6), which is appropriately cited in the standard review plan.

**5. Comments related to NRC Responsibilities under the National Environmental Policy Act**

Issue: The NRC is reviewing information that is outside its areas of regulatory authority.

Comment: Several commenters noted that NRC is asking for information that appears to be beyond its regulatory authority. This includes information on nonradiological hazardous constituents and review of restoration plans for borrow areas.

Response: As a federal agency, the NRC is subject to the National Environmental Policy Act (NEPA). This requires the NRC to consider impacts to the human environment as a part of its decision making process. The regulations governing NRC implementation of NEPA are described in 10 CFR Part 51. Guidance to the NRC staff on conducting environmental reviews is also provided in NUREG–1748 "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." With regard to NEPA, the NRC must consider the environmental impacts of both radiological and nonradiological aspects of a proposed action, particularly with regard to assessment of direct, indirect, and cumulative impacts of the proposed action. The exact nature of the information to be provided by a licensee, and the level of NRC staff review will be determined on a site-specific basis. The standard review plan is intended as general guidance to the staff on the type of information that is commonly acceptable for evaluating the environmental impact of a proposed licensing action. Under the risk-informed, performance-based licensing philosophy used by the NRC, the licensee is free to present alternative approaches for NRC consideration.

With regard to restoration plans for borrow areas, the intent of the section of the standard review plan identified by the commenter is to have staff review restoration plans for borrow areas as part of characterizing the stratigraphy and materials at a given site, and fulfilling NRC requirements

under NEPA. The NRC also needs to consider the cumulative impacts of both radiological and nonradiological hazardous constituents to meet its obligations under NEPA. General guidance to NRC staff for the evaluation of cumulative impacts is provided in Section 4.2.5 of NUREG–1748 "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs."

Dated at Rockville, Maryland this day of November, 2002.

For the Nuclear Regulatory Commission

Robert C. Pierson, Director
Division of Fuel Cycle Safety
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**ATTACHMENT 3**

**ATTACHMENT 4**