

STATEMENT OF BASIS
RADIOACTIVE MATERIAL LICENSE (RML) NO. UT 1900479

SUMMARY OF LICENSE CHANGES

March 2020

The following is a list of additional changes being made to the RML.

License Change Summary

License Condition ⁽¹⁾	Change Type ⁽²⁾	Description of Changes
9.1	Minor	Specified the exact location of the Mill facility. Added Sections 4, 5, 6, 8, 9 to T38S, R22 E.
9.5	Minor	Changed wording. Did not change the requirement. Also removed a due date that was no longer needed.
9.8	Minor	Changed wording. Did not change the requirement.
10.1.C	Minor	Changed wording. Did not change the requirement
10.1.D	Minor	Clarified how to account for feedstock in the annual surety estimate. Did not change the requirement.
10.1.E	Minor	Changed wording. Did not change the requirement.
10.2	Minor	Changed wording. Did not change the requirement.
10.3	Minor	Changed wording. Did not change the requirement.
10.5	Minor	Changed wording. Did not change the requirement.
10.5.A	Major	Changed the 5,000 cubic yards of 11e.(2) material from a single source In-Situ Recovery (ISR) (aka ISL) facility to an annual limit of 10,000 cubic yards per year to be placed in the Mill's tailings impoundments. It also allows an unlimited amount of 11e(2) material from ISR facilities owned by EFRI and uranium recovery facilities within the State of Utah provided there is adequate volume available in the tailings impoundments.
10.5.B	Minor	Changed wording. Did not change the requirement.
10.5.C	Minor	Changed wording. Did not change the requirement.
10.5.D	Minor	Changed wording. Did not change requirement. The specific requirement in the original language requires noting the location of the burial. This requirement is covered in more detail in Paragraph E of this condition. Also note that the material description is a requirement to be met prior to accepting the material for disposal, and so is redundant.
10.5.E	Major	Changed wording. Removed requirement for Director approval of

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- 1 License conditions not listed in the table are those that remain unchanged from the last License amendment.
 - 2 The Director deems minor changes as those that are insignificant in nature, or result in more protection of human health, safety, and/or the environment. Major changes are those found otherwise, and are only made after exposure of the License to public comment and resolution thereof.

License Condition ⁽¹⁾	Change Type ⁽²⁾	Description of Changes
		<p>the related SOP, as the requirement has already been met. Changing the reference from ISL to 11e.(2) byproduct material brings the license into conformity with 101 CFR 40 Appendix A Criterion 2 language.</p> <p>This change allows disposal of 11e.(2) material rather than the previously designated ISL decommissioning debris. The material change to this language is to include uranium mill tailings in addition to the decommissioning debris. This is done to capture any additional material disposed under License Condition 10.5.A.</p> <p>Removes language requiring segregation of 11e.(2) byproduct by source.</p>
10.5.F	Minor	Changed wording to align more closely with 10 CFR 40 Appendix A Criterion 2. Changed the due date of the Annual ISL report from November 1 to February 1 of the following year and required its inclusion in the Annual Technical Evaluation Report.
10.8	Minor	Removed the Sequoyah Fuels Alternate feed from the list of approved alternate feeds and put the License Condition in “Reserve”
10.10	Major	Adding the Silmet uranium bearing material to the list of approved alternate feeds.
10.12	Major	Adding the Moffat Tunnel uranium bearing material to the list of approved alternate feeds.
10.20	Minor	Removed the reference to the Utah Division of Radiation Control
11.2.B	Minor	Add Language for Th-232 and Ra-228 that was added to Environmental Protection Manual in Amendment 7.
11.3	Minor	Changed wording. Did not change the requirement.
11.4	Minor	Clarified when sampling feed material was needed.
11.7	Minor	Changed wording. Did not change the requirement.
11.7.B	Minor	Changed the requirement to maintain the area of the impoundment represented by each monitoring point, and to assure installation of a sufficient number of monitoring points. This change responds to the revision to License Condition 10.5.
11.7.H	Minor	Changed wording. Did not change the requirement.
11.8	Minor	Changed wording. Did not change the requirement.
12.2	Minor	Changed the submittal due date of the report. Did not change the requirement.

Explanation of Changes:

License Condition 9.1: It was brought to the attention of the Division during the license renewal process by a member of the public that Sections 4, 5, 6, 8 and 9 of T387S, R22 E were inadvertently excluded from Amendment 8. This change is to correct a clerical error and does not affect health and safety at the Mill. This is a considered a Minor change.

License Condition 9.5: Changed the word “waste” with 11e.(2) byproduct material and plant-generated waste. Changed the words “tailing disposal cell” to “conventional or nonconventional

impoundments.” These changes are made to use correct terminology in the License. Specifically, these changes reflect terminology in 40 CFR Part 61 Subpart W, which governs radon emission (conventional or nonconventional impoundment) and with the definition of 11e.(2) byproduct material in the Atomic Energy Act so as to avoid confusion with radioactive *wastes*, i.e. low-level, high-level, etc. Byproduct material as defined under 11e.(2) is not the same thing as *waste*, a term that has a specific and narrow meaning in the radiological regulatory lexicon, and proper usage will provide clarity. Removed the date March 4, 2018 from the last paragraph because the date is no longer needed. These are minor changes because the changes do not change the requirement of the license condition. Removed the acronym “UAC” at the recommendation of the State of Utah Attorney General’s Office because it is not needed.

License Condition 9.8: Replaced the word “waste” at two different locations with the word “mill” and “material” to use correct terminology in the License. This is a minor change because it does not change the requirement of the license condition.

License Condition 10.1.D: This condition has been modified to clarify how the licensee is to capture alternate feed and equivalent feed material disposal costs in the surety. This change is deemed minor because it is a clarification, and does not fundamentally change the requirement.

License Condition 10.1.E: Changes the words “the tailings” to “conventional and nonconventional”. These changes are made to use correct terminology in the license. These are minor changes because they do not change the requirement of the license condition.

License Condition 10.2: Changes the words “the tailings” to “conventional and nonconventional”. These changes are made to use correct terminology in the license. These are minor changes because they do not change the requirement of the license condition.

License Condition 10.3: Added the words conventional and nonconventional to the first sentence. Replaced the word “cell” with the word “impoundment” throughout the license condition. These changes were made to use proper terminology in the license. This is a minor change because it does not change the requirement in the license.

License Condition 10.5: The Licensee requested a change in the license to allow receipt of greater quantities of materials from in situ uranium recovery (ISR; also known as in situ leach, or ISL) facilities. The Director also chose this opportunity to add the other of 11e.(2) material, i.e., uranium mill tailings, to the list of materials acceptable for disposal at the mill site. Mill tailings must originate inside the boundaries of the State of Utah to qualify under the proposed amendment.

Upon examination, staff learned that the current license limits were not set in response to demonstrated health effects concerns or other scientific analysis. Given that the materials being received would conform to the definition of 11e.(2) material, which the license allows the

licensee to receive, possess and dispose, the Director, upon advice of staff, determined that changes in the quantities would not increase the impact to human health and the environment.

Moreover, on rare occasions, small quantities of uranium mill tailings have been discovered as backfill at home construction sites, or in other unexpected places in the state. Typically, robust efforts are made to find and remove all tailings from such public places during decommissioning of mill sites. These discoveries are uncommon. However, when these situations arise, disposal of the tailings becomes challenging. This license change provides a safe alternative means of responding to uncommon discoveries of tailings that were missed during previous cleanups. It should be noted that current regulations do not allow transporting tailings offsite for use as fill material as was sometimes done in the past. Inasmuch as the materials involved are virtually identical to material in the tailings impoundments, the risk to human health and the environment remains unchanged as a result of this revision. The condition is also consistent with Nuclear Regulatory Commission policy to reduce the proliferation of 11e.(2) byproduct disposal facilities 10 CFR 40 Appendix A Criterion 2.

License Condition 10.5.A: The disposal of 11e.(2) material from other uranium recovery facilities is in regulation in 10 CFR 40 Appendix A Criterion 2. The State of Utah adopted 10 CFR 40 Appendix A Criterion 2 in UAC R313-24-4.

Originally, the Mill owners requested (letter dated May 20, 1993), and the NRC proposed allowing the mill to receive 10,000 cubic yards of material from individual sources of ISR (a.k.a. ISL) decommissioning debris over the life of the mill. The NRC reduced the limit to 5,000 cubic yards at the request of the State of Utah. This all occurred prior to Utah being granted authority to manage the radioactive materials program as an Agreement State. No technical justification was provided at the time for either the 10,000 cubic yard limit or the 5,000 cubic yard limit.

As a matter of law, IRS waste material is classified as 11e.(2) byproduct material and is radiologically similar to the tailings produced at the mill. Furthermore, the material contains no RCRA material that would disqualify it from acceptance at the mill for disposal. Any waste stream containing forbidden RCRA components does not qualify as 11e.(2) byproduct material, but would be considered a mixed waste, requiring disposal elsewhere. Since 1993, the mill has received IRS waste material from several sources, most of which had a radiological signature at or near background.

The change to 10,000 cubic yards per year is consistent with the NRC original approval of ISR disposal as that approval relied on 10 CFR 20 Appendix A Criterion 2 (the desire to prevent proliferation of small disposal sites) for its justification. As long as the material meets the definition of 11e.(2) byproduct material, changing the requirement to an annual limit does not affect the health and safety at the Mill. Finally, the NRC, has a policy to prevent the proliferation of 11e.(2) facilities. This amendment is in accordance with NRC policy and will

facilitate the transfer of responsibility for this waste to the federal government upon decommissioning.

License Condition 10.5.B: Updated the reference to ISL (in situ leach recovery) to the more current ISR (in situ recovery). Both mean the same thing, but the NRC is changing its usage in its newer literature and on its website. The State of Utah is following suit. The NRC website includes a glossary of terms. The following is quoted from the entry for in situ recovery: “In situ recovery[:] One of the two primary recovery methods that are currently used to extract uranium from ore bodies where they are normally found underground (in other words, in situ), without physical excavation. Also known as ‘solution mining’ or in situ leaching” (see <https://www.nrc.gov/reading-rm/basic-ref/glossary/in-situ-recovery-isr.html>). The other primary recovery method is conventional milling, of which the White Mesa Mill is an example. No requirement is changed, and so this change has no effect on the health and safety at the mill.

License Condition 10.5.C: Replace ISL with ISR, waste with byproduct, and cell with impoundment. These changes update and tighten language. This is a minor change because it does not change the requirement in the license.

License Condition 10.5.D: Changed wording and removed redundancies. The revision did not change any requirement. The specific requirement in the original language requires noting the location of the byproduct burials. This requirement is covered in more detail in Paragraph E of this condition. Also note that the requirement to include the material description duplicates a requirement to be met prior to accepting the material for disposal, and so is redundant. This change does not affect health or safety at the mill.

License Condition 10.5.E: Except for the deletion of Paragraph (3), the changes to this condition involve updating language to be more consistent with the underlying State and Federal regulations. These changes do not affect any requirement, and thus do not affect the health and safety at the mill.

Changing the reference from ISL decommissioning debris to 11e.(2) byproduct material has the effect of adding mill tailings to the materials covered by this condition. This became necessary because of the changes made to Condition 10.5.A. Because there is little or no difference in the hazard between tailings and in situ recovery decommissioning debris, this change does not affect health and safety at the mill.

Paragraph 3 deals with segregation of buried material according to source. The Division now sees this requirement as counterproductive. The materials that are authorized for burial at the mill have the same hazard; i.e., uranium or its daughter products and, possibly, fluids associated with milling. These materials are already all present in the mill’s tailings. There is no health, safety, or environmental justification to require segregation. In fact, the opposite is true. Requiring segregation by source results in multiple excavations being open at any given time to receive byproduct material for disposal, which is both a safety concern for workers onsite and a

source of inefficiency. The removal of Paragraph 3, therefore, improves safety at the mill for Mill workers.

Inasmuch as this change removed a requirement, the change was deemed major.

License Condition 10.5.F: Changed wording to bring the license more in alignment with current NRC usage. These changes did not alter any requirements.

Removed the due date for submitting the annual summary of 11e.(2) byproduct material receipts, then required the report be included with the Annual Technical Evaluation Report. The report will be received annually, as before, but at a different time (March 1 as opposed to November 1 of each year). The revised submittal date makes the information in the report more useful to the Division because its new delivery date coincides with the annual surety review, which commences the following month. Including it with the Annual Technical Evaluation Report consolidates related work into an easier to track whole.

Inasmuch as the changes do not make a substantive change to requirements, they do not affect the health and safety at the mill. As a result, this part of the amendment is considered minor.

License Condition 10.8: The Sequoyah Fuels project is completed and all of the material has been processed. Therefore, this License Condition is no longer needed. The License Condition will be put into “Reserve” so the number can be reused a future licensing action. This change does not affect the health and safety at the Mill. This is considered a minor change.

License Condition 10.10: The License Condition is being taken out of “Reserve” and will be used for a new alternate feed. The Silmet uranium bearing material will be approved by License Condition. See the Technical Evaluation and Environmental Assessment for the Silmet uranium bearing material.

License Condition 10.12: The License Condition is being taken out of “Reserve” and will be used for a new alternate feed. The Moffat Tunnel uranium bearing material will be approved by License Condition. See the Technical Evaluation and Environmental Assessment for the Moffat Tunnel uranium bearing material.

License Condition 10.13: The License Condition is being taken out of “Reserve” and will be used for alternate feeds from water treatment facilities that are similar to the Moffat Tunnel and Dawn Mining alternate feeds. Applications to accept this type of the feed material will need to be submitted to the Division. The Division will have to review the application to confirm that the requested material meets the definition of an alternate feed and an equivalent feed. The Mill will not be allowed to receive the material until the Division responds in writing to the application. See the Technical Evaluation and Environmental Assessment for the Moffat Tunnel uranium bearing material.

License Condition 10.14: The License Condition is being taken out of “Reserve” and will be used for alternate feeds from rare earth mineral facilities that are similar to Silmet, Fansteel and Cabot alternate feeds. Applications to accept this type of the feed material will need to be submitted to the Division. The Division will have to review the application to confirm that the requested material meets the definition of an alternate feed. The Mill will not be allowed to receive the material until the Division responds in writing to the application. See the Technical Evaluation and Environmental Assessment for the Silmet uranium bearing material.

License Condition 11.2.B: Added Ra-228 and Th-232 to the list of isotopes to analyze for in surface water sampling. This is done to be consistent with the changes to environmental monitoring that was done in Amendment #7. This is a minor change.

License Condition 11.3: Replaced the word “cell” with “impoundment” throughout the license condition. This change is to use proper terminology in the license. This is Minor change because it does not change the requirement of the license condition.

License Condition 11.4: Clarified when sampling feed material is required at the Mill. To keep within ALARA goals at the Mill and to reduce the exposure to Mill personnel, this change only requires sampling of new feed material that has not been previously sampled. It does not require continued sampling of material that has been received and sampled.

License Condition 11.7: Replaced the words “tailings management cell” with “conventional impoundment”, “cell” with “impoundment”, and the acronym “ISL” with its equivalent, “ISR” throughout the license condition. This change is to use proper terminology in the license. This is minor change because it does not change a substantive requirement of the license condition.

License Condition 11.7.B: Replace “ISL” with “11e.(2) byproduct material” or “byproduct material.” This is done to bring the language in the license in line with the correct vocabulary, and to capture tailings in the areas where settlement is being monitored. This corresponds with changes to License Condition 10.5. The net effect is to require monitoring points as frequently on the surface after the changes to License Condition 10.5 as prior to those changes. This change is minor because it reaches the same end point in terms of areal coverage and number of settlement monitors as the original requirement.

License Condition 11.7.H: Replaced the words “tailings management cell” with “conventional impoundment”, “cell” with “impoundment”, and the acronym “ISL” with its equivalent, “ISR” throughout the license condition. This change is to use proper terminology in the license. This is Minor change because it does not change the requirement of the license condition.

License Condition 11.8: Replaced the words “tailings management cells” with “impoundments”. This change is to use proper terminology in the license. This is Minor change because it does not change the requirement of the license condition.

License Condition 12.2: The due date for submitting the Annual Technical Evaluation Report to the Division is changed from November 1 to March 1. The new due date will provide a tighter control on the surety review since the surety estimate uses some information from the Annual Technical Evaluation Report. The surety estimate is due March 4 annually.

The revised language in this section omits reference to a letter from the Division dated April 29, 2010 specifying a freeboard calculation method to use in the Annual Technical Evaluation Report. Subsequent approval of Impoundments 4A and 4B changed these requirements, rendering the calculation requirements in this letter irrelevant. The currently required freeboard calculation is reported in the Annual Technical Evaluation Report. As a result of the changes in the calculation made necessary to reflect the construction of Impoundments 4A and 4B, the only remaining relevance of the referenced letter pegged the timing of the report to the timing of performing the annual calculation. Revising the due date of the Report renders the letter entirely irrelevant.

Moving the due date of the Report does not compromise the calculation results. Performing the calculation in late winter after several weeks of reduced evaporation from the impoundments because of winter weather actually assures a better timing of performing the calculation than doing so prior to the elapse of those cold weeks.

The proposed changes include direct reference to License Conditions 11.7 and 11.87 rather than the circuitous reference to standard operating procedures that derive from those conditions.

In summary, the revisions to this license condition provide three improvements over the previous language. The revisions improve the surety review efficiency and quality by synchronizing submittal of the data used in both the Report and the surety estimate. By changing the due date of the Report, the date of performing the freeboard calculation represents a more accurate maximum freeboard limit measure than the previous requirements. Indirect implementation of other license conditions is replaced with direct implementation.