

**UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF RADIATION CONTROL  
RADIOACTIVE MATERIALS LICENSE**

Pursuant to Utah Code Ann. Title 19, Chapter 3 and the Radiation Control Rules, Utah Administrative Code R313, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material designated below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This licensee is subject to all applicable rules, and orders now or hereafter in effect and to any conditions specified below.

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	LICENSEE )	
	) 3. License Number UT1900479	
	) Amendment # <u>43</u>	
1. Name	Denison Mines (USA) )	*****
	Corp. )	
	) 4. Expiration Date	
2. Address	6425 Highway 191 )	March 31, 2007 ( <u>under timely renewal</u> )
	P.O. Box 809 )	*****
	Blanding, UT 84511 )	5. License Category 2-b
	)	

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6. Radioactive material (element and mass number)	7. Chemical and/or physical form	8. Maximum quantity licensee may possess at any one time
Natural Uranium	Any	Unlimited

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**SECTION 9: ADMINISTRATIVE CONDITIONS**

9.1 The authorized place of use shall be the licensee's White Mesa uranium milling facility, located in San Juan County, Utah.

9.2 All written notices and reports to the Executive Secretary required under this license, with the exception of incident and event notifications under R313-15-1202 and R313-19-50 requiring telephone notification, shall be addressed to the Executive Secretary, Utah Radiation Control Board, Utah Department of Environmental Quality, 168 North 1950 West, P.O. Box 144850, Salt Lake City, UT 84114-4850.

Incident and event notifications that require telephone notification shall be made to the Executive Secretary at (801)536-4250 during normal business hours or after hours to the DEQ Duty Officer at (801)536-4123.

9.3 The licensee shall conduct operations in accordance with statements, representations, and conditions contained in the license renewal application submitted by letter to the NRC dated August 23, 1991, as revised by submittals to the NRC dated January 13, 1992 and April 7, 1992,

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November 22, 1994, July 27, 1995. December 13, 1996, and December 31, 1996, and January 30, 1997, which are hereby incorporated by reference, and for the Standby Trust Agreement, as amended, except where superseded by license conditions below.

Whenever the word “will” is used in the above referenced documents, it shall denote a requirement.

*[Applicable NRC Amendment: 2]*

- 9.4 A. The licensee may, without prior Executive Secretary-approval, and subject to the conditions specified in Part B of this condition:
- (1) Make changes in the facility or process, as presented in the application.
  - (2) Make changes in the procedures presented in the application.
  - (3) Conduct tests or experiments not presented in the application.
- B. The licensee shall file an application for an amendment to the license, unless the following conditions are satisfied.
- (1) The change, test, or experiment does not conflict with any requirement specifically stated in this license, or impair the licensee’s ability to meet all applicable regulations.
  - (2) There is no degradation in the essential safety or environmental commitments in the license application or provided by the approved reclamation plan.
  - (3) The change, test, or experiment is consistent with the conclusions of actions analyzed and selected in the Environmental Assessment dated February 1997.
- C. The licensee's determinations concerning Part B of this condition shall be made by a “Safety and Environmental Review Panel (SERP).” The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management and shall be responsible for managerial and financial approval changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and, one member shall be the corporate radiation safety officer (CRSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. Additional members may be included in the SERP as appropriate, to address technical aspects such as health physics, groundwater hydrology, surface-water hydrology, specific earth sciences, and other technical disciplines. Temporary members or permanent members, other than the three above-specified individuals, may be consultants.

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D. The licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations, made by the SERP, that provide the basis for determining that changes are in compliance with the requirements referred to in Part B of this condition. The licensee shall furnish, in an annual report to the Executive Secretary, a description of such changes, tests, or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee shall annually submit to the Executive Secretary changed pages to the Operations Plan and Reclamation Plan of the approved license application to reflect changes made under this condition. Annual reports shall address the previous calendar year and be submitted no later than March 31 each year.

The licensee's SERP shall function in accordance with the standard operating procedures submitted by letter to the NRC dated June 10, 1997.

*[Applicable NRC Amendments: 3] [Applicable UDRC Amendment 3]*

9.5 The licensee shall at all times maintain a financial surety, [approved by the Executive Secretary](#), consistent with UAC R313-24-4 (10CFR 40, Appendix A, Criteria 9 and 10, as incorporated by reference), [that is](#) adequate to cover the estimated costs, accomplished by a third party, for decommissioning and decontamination of the mill and mill site, reclamation of any tailings or waste disposal areas, groundwater restoration as warranted, and the long-term surveillance fee. [The Licensee is prohibited from use and/or operation of any tailings disposal cell, or related new permanent fixture or facility not already accounted for by the currently approved surety, without prior submittal and Executive Secretary approval of written evidence of adequate financial surety.](#) Within 60 [calendar](#) days of Executive Secretary approval of a revised reclamation/decommissioning plan, the licensee shall submit written evidence of an adequate surety regarding the newly approved plan.

Annual updates to the surety amount, required by UAC R313-24-4 (10 CFR 40, Appendix A, Criteria 9 and 10, as incorporated by reference), shall be submitted for Executive Secretary approval by March 4 of each year. Within 30 [calendar](#) days of Executive Secretary approval of [an the](#) annual update of surety cost estimates, the licensee shall submit written evidence of [an](#) adequate surety [for Executive Secretary approval](#).

Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes in engineering plans, activities performed and any other conditions affecting estimated costs for site closure. The basis for the cost estimate is the current Executive Secretary-approved reclamation/decommissioning plan or Executive Secretary-approved revisions to the plan and guidance contained in NUREG-1620, "Standard Review Plan for the Review of a Reclamation

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Plan for Mill Tailings Sites under Title II of the Uranium Mill Tailings Radiation Control Act of 1978.”

The currently approved surety instrument, a Performance Bond issued by National Union Fire Insurance Company in favor of the Executive Secretary, and the associated Standby Trust Agreement, shall be continuously maintained by the Licensee in an amount not less than the amount currently approved by the Executive Secretary pursuant to the requirements of \$12,576,428 for the purpose of complying with UAC R313-24-4 (10 CFR 40, Appendix A, Criteria 9 and 10 as incorporated by reference), ~~until a replacement is authorized by the Executive Secretary.~~

*[Applicable NRC Amendments: 2, 3, 5, 13, 15, 19, 21, 23, 24, 25]*

*[Applicable UDRC Amendment: 1][Applicable UDRC Amendment 3]*

- 9.6 Standard operating procedures shall be established and followed for all operational process activities involving radioactive materials that are handled, processed, or stored. SOPs for operational activities shall enumerate pertinent radiation safety practices to be followed. Additionally, written procedures shall be established for non-operational activities to include in-plant and environmental monitoring, bioassay analyses, and instrument calibrations. An up-to-date copy of each written procedure shall be kept in the mill area to which it applies.

All written procedures for both operational and non-operational activities shall be reviewed and approved in writing by the radiation safety officer (RSO) before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RSO shall perform a documented review of all existing operating procedures at least annually.

- 9.7 As per the Memorandum of Agreement (MOA) negotiated by the Utah State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), the NRC and Energy Fuels Nuclear Inc. (EFN) and ratified on August 20, 1979 and as amended on May 3, 1983 and substantially as implemented in NRC License SUA-1358.

Before engaging in any activity not previously assessed by the Executive Secretary, the licensee shall administer a cultural resource inventory. All disturbances associated with the proposed development will be completed in compliance with the National Historic Preservation Act (as amended) and its implementing regulations, and the Archaeological Resources Protection Act (as amended) and its implementing regulations.

In order to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with the National Historic Preservation Act (as

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amended), and no disturbance shall occur until the licensee has received authorization from the Executive Secretary to proceed.

The licensee shall avoid by project design, where feasible, the archeological sites designated “contributing” in the report submitted by letter to the NRC dated July 28, 1988. When it is not feasible to avoid a site designated “contributing” in the report, the licensee shall institute a data recovery program for that site based on the research design submitted by letter from C. E. Baker of Energy Fuels Nuclear to Mr. Melvin T. Smith, Utah State Historic Preservation Officer (SHPO), dated April 13, 1981.

The licensee shall recover through archeological excavation all “contributing” sites listed in the report which are located in or within 100 feet of borrow areas, stockpile areas, construction areas, or the perimeter of the reclaimed tailings impoundment. Data recovery fieldwork at each site meeting these criteria shall be completed prior to the start of any project related disturbance within 100 feet of the site, but analysis and report preparation need not be complete.

Additionally, the licensee shall conduct such testing as is required to enable the Executive Secretary to determine if those sites designated as “Undetermined” in the report and located within 100 feet of present or known future construction areas are of such significance to warrant their redesignation as “contributing.” In all cases, such testing shall be completed before any aspect of the undertaking affects a site.

Archeological contractors shall be approved in writing by the Utah SHPO. The Utah SHPO will approve an archeological contractor who meets the minimum standards of the State of Utah as the principal investigator.

- 9.8 The licensee is hereby authorized to possess byproduct material in the form of uranium waste tailings and other uranium byproduct waste generated by the licensee's milling operations authorized by this license. Mill tailings shall not be transferred from the site without specific prior approval of the Executive Secretary in the form of a license amendment. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.
- 9.9 The licensee is hereby exempted from the requirements of R313-15-902(5) for areas within the mill, provided that all entrances to the mill are conspicuously posted in accordance with R313-15-902(5) and with the words, “Any area within this mill may contain radioactive material”.
- 9.10 Release of equipment or packages from the restricted area shall be in accordance with the NRC ~~“”~~Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material,” dated May

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1987, or suitable alternative procedures approved by the Executive Secretary prior to any such release.

- 9.11 Updated Reclamation Plan and Specifications - the licensee shall complete and submit an updated Reclamation Plan and Specifications for the White Mesa Mill Facility, for Executive Secretary approval on or before June 1, 2010. The plan and specifications shall include information identified in this condition and information that is adequate for determining financial surety requirements for the White Mesa Mill with all tailings management cells, including Cells 4A and 4B, and any new features or facilities that are constructed in conjunction with operation of Cells 4A and 4B. Said Reclamation Plan and specifications shall be approved by the Executive Secretary before disposal of any tailings or wastewater in Cell 4B. The final updated reclamation plan shall ~~be in accordance with~~ revise the information contained in the ~~May 1999~~ Reclamation Plan ~~Revision 2.0, Attachment A, submitted to the NRC on June 22, 1999, and~~ Revision 3.0 submitted to the NRC on July 17, 2000., and an update to Rev 3.0 of the Reclamation Plan that was prepared by the Licensee July 25, 2008, and approved on August 4, 2008 (now referred to as Rev. 3.1). After revision of Rev. 3.1, the updated Reclamation Plan shall be referred to as Rev. 3.2, and shall contain the following information:
- A. Information pertaining to the design and use of Cells 4A and 4B for tailings management/disposal, including information on the design of the final top cap(s), and design of the final cap side slopes including rock sizing and fill depth, and the estimated quantities of materials required for final cover construction and final erosion protection, adequate for assessing the needs of the associated financial surety based on the currently approved cover design extended to include Cell 4B;
  - B. Estimated costs for constructing the final cover system and for installing final stormwater control systems for the tailings management cells, including Cells 4A and 4B, following completion of tailings management operations;
  - C. Information on reclamation activities required for reclaiming any new permanent fixtures or facilities that have been installed or are contemplated to be constructed in conjunction with construction and operation of Cells 4A and 4B, and the financial surety needs associated therewith; and
  - D. Information demonstrating the adequacy of the long-term care fund with respect to the White Mesa Mill Facility that includes consideration of Cells 4A and 4B, the final cover and drainage systems associated with these cells and any other new structure or facility

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installed or contemplated to be constructed in conjunction with the construction and operation of these two cells.

[Applicable UDRC Amendment: 4]

**SECTION 10: OPERATIONAL CONTROLS, LIMITS, AND RESTRICTIONS**

- 10.1 A. The mill production rate shall not exceed 4380 tons of yellowcake per year.
- B. The licensee may not dispose of any material on site that is not “byproduct material,” as that term is defined in 42 U.S.C. Section 2014(e)(2) (Atomic Energy Act of 1953, Section 11(e)(2)).
- C. The licensee may not receive or process any alternate feed material without first applying for and obtaining approval of a license amendment. For any such proposal, the licensee shall demonstrate that it will comply with Condition 10.1(B). Any such demonstration shall include:
- (1) Demonstration of compliance with the NRC Regulatory Summary 2000-23 Recent Changes to Uranium Recovery Policy, November 30, 2000; and
  - (2) Demonstration of compliance with the November 22, 1999 Protocol for Determining Whether Alternate Feed Materials are Listed Hazardous Wastes, as approved by the Utah Division of Solid and Hazardous Waste on December 7, 1999.
- D. Maximum quantities of feed material stored on the mill site, including alternate feed materials or other ores, shall not exceed the total material storage quantity found in the currently approved mill surety pursuant to License Condition 9.5, without prior approval of the Executive Secretary.
- E. The licensee may not receive any alternate feed materials or other ores if those materials would cause the facility to exceed the tailings cell disposal capacity established by the currently approved reclamation plan and/or the annual surety report required by License Conditions 9.11, and 9.5, respectively, without prior approval of the Executive Secretary.

[Applicable UDRC Amendment: 2]

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10.2 All liquid effluents from mill process buildings, with the exception of sanitary wastes, shall be returned to the mill circuit or discharged to the tailings impoundment.

10.3 Freeboard limits, stormwater and wastewater management for the tailings cells shall be determined as follows:

A. The Freeboard limit for Cell 1 shall be set annually in accordance with the procedures set out in Section 3.0 to Appendix E of the previously approved NRC license application, including the January 10, 1990 Drainage Report. Discharge of any surface water or wastewater from Cell 1 is expressly prohibited.

B. The freeboard limit for Cells ~~3, 4A, and 4B~~ shall be recalculated annually in accordance with the procedures approved by the Executive Secretary set in the October 13, 1999 revision to the Drainage Report. Said calculations for freeboard limits shall be submitted as part of the Annual Technical Evaluation Report (ATER), as described in Condition 12.3 below.

C. The discharge of any surface water, stormwater or wastewater from Cells 3, 4A, and 4B shall only be through an Executive Secretary authorized spillway structure.

~~Said report shall be submitted for Executive Secretary approval no later than September 1, of each year.~~

*[Applicable NRC Amendment: 16] [Applicable UDRC Amendment 3] [Applicable UDRC Amendment: 4]*

10.4 Disposal of material and equipment generated at the mill site shall be conducted as described in the licensee's submittals to the NRC dated December 12, 1994 and May 23, 1995, with the following addition:

A. The maximum lift thickness for materials placed over tailings shall be less than 4-feet thick. Subsequent lifts shall be less than 2-feet thick. Each lift shall be compacted by tracking of heavy equipment, such as a Cat D-6, at least 4 times prior to placement of subsequent lifts.

10.5 In accordance with the licensee's submittal to the NRC dated May 20, 1993, the licensee is hereby authorized to dispose of byproduct material generated at licensed in-situ leach (ISL) facilities, subject to the following conditions:

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- A. Disposal of ISL waste is limited to 5000 cubic yards from a single source.
- B. All ISL contaminated equipment shall be dismantled, crushed, or sectioned to minimize void spaces. Barrels containing waste other than soil or sludges shall be emptied into the disposal area and the barrels crushed. Barrels containing soil or sludges shall be verified by the Licensee to be full prior to disposal. Barrels not completely full shall be filled with tailings or soil prior to disposal.
- C. All ISL waste shall be buried in Cell No. 3 unless prior written approval is obtained from the Executive Secretary for alternate burial locations.
- D. All disposal activities shall be documented and records thereof maintained on-site. The documentation shall include descriptions of the ISL waste and the disposal locations, as well as all actions required by this License condition.
- E. The licensee shall also submit for Executive Secretary approval a revised written Standard Operating Procedure (SOP) for ISL disposal on or before December 1, 2010. The revised SOP shall describe the documentation required for ISL disposal, which shall include but is not limited to the following:
- (1) The material disposal area must be located on a tailings beach area of the disposal cell or on an area of the cell that is underlain by tailings sands;
  - (2) The elevation of the material disposal area will not exceed the plane or grade of the elevations of the uppermost flexible membrane liner of the tailings cell;
  - (3) Such ISL byproduct material will be segregated from any mill material and equipment disposed of in the cells pursuant to License Condition 10.4, and the ISL byproduct material from each in-situ leach source will be segregated from the byproduct material from all other in-situ leach sources;
  - (4) Absence of void space inside barrels disposed, including physical verification before disposal; and
  - (5) Detailed engineering drawings which demonstrate:
    - a. There are at least 4 feet of tailings sands under the bottom of each disposal area; and
    - b. The bottom of each disposal area is located at least 12 feet from the sides or dikes of the tailings cell.
- F. The Licensee shall notify the Executive Secretary in writing at least 7 calendar days prior to the proposed scheduled date for disposal of any byproduct material generated at ISL facilities in the tailings cells.

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An annual summary of the amounts of waste disposed of from off-site ISL generators shall be sent to the Executive Secretary on or before November 1 of each calendar year.  
[Applicable UDRC Amendment: 4]

- 10.6 The licensee is authorized to receive and process source materials from the Allied Signal Corporation's Metropolis, Illinois, facility in accordance with the amendment request to the NRC dated June 15, 1993.
- 10.7 The licensee is authorized to receive and process source material from Allied Signal, Inc. of Metropolis, Illinois, in accordance with the amendment request to the NRC dated September 20, 1996, and amended by letters to the NRC dated October 30, 1996 and November 11, 1996.
- 10.8 The licensee is authorized to receive and process source material, in accordance with the amendment request to the NRC dated March 5, 1997.  
*[Applicable NRC Amendments: 1]*
- 10.9 The licensee is authorized to receive and process source material from Cabot Performance Materials' facility near Boyertown, Pennsylvania, in accordance with the amendment request to the NRC dated April 3, 1997, as amended by submittals to the NRC dated May 19, 1997 and August 6, 1997.  
*[Applicable NRC Amendments: 4]*
- 10.10 The licensee is authorized to receive and process source material from the Ashland 2 Formerly Utilized Sites Remedial Action Program (FUSRAP) site, located near Tonawanda, New York, in accordance with the amendment request to the NRC dated May 8, 1998, as amended by the submittals to the NRC dated May 27, 1998, June 3, 1998, and June 11, 1998.  
*[Applicable NRC Amendments: 6]*
- 10.11 The licensee is authorized to receive and process source material from Cameco Corporation's Blind River and Port Hope facilities, located in Ontario, Canada, in accordance with the amendment request to the NRC dated June 4, 1998, and by the submittals to the NRC dated September 14, 1998, September 16, 1998, September 25, 1998, October 7, 1998, and October 8, 1998.

However, the licensee is not authorized to receive or process from these facilities, the crushed carbon anodes identified in these submittals, either as a separate material or mixed in with material already approved for receipt or processing.

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10.12 The licensee is authorized to receive and process source material from the Ashland 1 and Seaway Area D Formerly Utilized Sites Remedial Action Program (FUSRAP) site, located near Tonowanda, New York, in accordance with statements, representations, and commitments contained in the amendment request to the NRC dated October 15, 1998, as amended by letters to the NRC dated November 23, 1998, November 24, 1998, December 23, 1998, January 11, 1999, January 27, 1999, and February 1, 1999.

*[Applicable NRC Amendment: 10]*

10.13 The licensee is authorized to receive and process source material from the St. Louis Formerly Utilized Sites Remedial Action Program (FUSRAP) site, in accordance with statements, representations, and commitments contained in the amendment request to the NRC dated March 2, 1999, and as amended and supplemented by submittals dated June 21, 1999; June 29, 1999 (2); and July 8, 1999. Prior to the licensee receiving materials from the St. Louis FUSRAP site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on a SERP approved internal procedure.

*[Applicable NRC Amendments: 13, 14]*

10.14 The licensee is authorized to receive and process source material from the Linde Formerly Utilized Sites Remedial Action Program (FUSRAP) site, in accordance with statements, representations, and commitments contained in the NRC amendment request dated March 16, 2000, and as amended and supplemented by submittals dated April 26, 2000, May 15, 2000, June 16, 2000, June 19, 2000, and June 23, 2000.

Prior to the licensee receiving materials from the Linde FUSRAP site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on a SERP-approved internal procedure. Design changes to the cells or the reclamation plan require the licensee to submit an amendment request for Executive Secretary review and approval.

Prior to the licensee receiving materials from the Linde FUSRAP site, the licensee must require that the generator of the material certify that the material does not contain listed hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) per a Radioactive Material Profile Record.

*[Applicable NRC Amendment: 14]*

10.15 The licensee is authorized to receive and process source material from the W.R. Grace site located in Chattanooga, Tennessee, in accordance with statements, representations, and commitments contained in the amendment request to the NRC dated April 12, 2000, as

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amended and supplemented by submittals dated April 24, 2000, April 26, 2000, May 5, 2000, November 16, 2000, and December 18, 2000.

Prior to the licensee receiving materials from the W.R. Grace site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on the SERP-approved standard operating procedure for determination of tailings capacity. Design changes to the cells or the reclamation plan require the licensee to submit an amendment request for Executive Secretary review and approval.

Prior to the licensee receiving materials from the W.R. Grace site, the licensee must require that the generator of the material certify that the material does not contain listed hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) per a Radioactive Material Profile Record.

*[Applicable NRC Amendment: 17]*

- 10.16 The licensee is authorized to receive and process source material from the Heritage Minerals Incorporated site, in accordance with statements, representations, and commitments contained in the amendment request to the NRC dated July 5, 2000, and as supplemented by submittals dated November 16, 2000, and December 18, 2000.

Prior to the licensee receiving materials from the Heritage Minerals Incorporated site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on the SERP-approved standard operating procedure for determination of tailings capacity. Design changes to the cells or the reclamation plan require the licensee to submit an amendment request for Executive Secretary review and approval.

Prior to the licensee receiving materials from the Heritage Minerals Incorporated site, the licensee must require that the generator of the material certify that the material does not contain listed hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) per a Radioactive Material Profile Record.

*[Applicable NRC Amendment: 18]*

- 10.17 The licensee is authorized to receive and process source material from the Molycorp site located in Mountain Pass, California, in accordance with statements, representations, and commitments contained in the amendment request to the NRC dated December 19, 2000, and supplemental information in letters dated January 29, 2001, February 2, 2001, March 20, 2001, August 15, 2001, October 17, 2001, and November 16, 2001.

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Prior to the licensee receiving materials from the Molycorp site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on a SERP-approved internal procedure. Design changes to the cells or the reclamation plan require the licensee to submit an amendment request for Executive Secretary review and approval.

*[Applicable NRC Amendment: 20]*

- 10.18 The licensee is authorized to receive and process source material from the Maywood site located in Maywood, New Jersey, in accordance with statements, representations, and commitments contained in the amendment requests to the NRC dated June 15, 2001, June 22, 2001, August 3, 2001, and supplemented by letters dated November 19, 2001, December 6, 2001, December 10, 2001, March 11, 2002, and July 1, 2002.

Prior to the licensee receiving materials from the Maywood site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on a SERP-approved internal procedure. If such determination requires the licensee to make design changes to the cells or the reclamation plan, the licensee shall submit an amendment request for Executive Secretary review and approval.

Prior to the licensee receiving materials from the Maywood site, the licensee must require that the generator of the material certify that the material does not contain listed hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) per a Radioactive Material Profile Record.

*[Applicable NRC Amendment: 22]*

- 10.19 The licensee is authorized to receive and process source material from Ponds 2 and 3 of the FMRI's Muskogee Facility located in Muskogee, Okalahoma, in accordance with statements, representations, and commitments contained in the amendment requests and submittals to the Executive Secretary dated March 7, 2005, June 22, 2005, and April 28, 2006.

*[Applicable UDRC Amendment: 2]*

**SECTION 11: MONITORING, RECORDING, AND BOOKKEEPING REQUIREMENTS**

- 11.1 The results of sampling, analyses, surveys and monitoring, the results of calibration of equipment, reports on audits and inspections, all meetings and training courses required by this license and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in the State of Utah regulations all such documentation shall be maintained for a period of at least five (5) years.

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11.2 The licensee shall implement the effluent and environmental monitoring program specified in Section 5.5 of the renewal application, as amended by the submittal to the NRC dated June 8, 1995, and as revised with the following modifications or additions:

- A. Stack sampling shall include a determination of flow rate.
- B. Surface water samples shall also be analyzed semiannually for total and dissolved U-nat, Ra-226, and Th-230, with the exception of the Westwater Creek, which shall be sampled annually for water or sediments and analyzed as above. A sediment sample shall not be taken in place of a water sample unless a water sample was not available.
- C. Groundwater sampling shall be conducted in accordance with the requirements in the Utah Ground Water Discharge Permit No UGW370004.
- D. With the exception of groundwater sampling the licensee shall utilize lower limits of detection in accordance with Section 5 of the NRC Regulatory Guide 4.14, as amended, for analysis of effluent and environmental samples.
- E. The inspections performed semiannually of the critical orifice assembly committed to in the submittal to the NRC dated March 15, 1986, shall be documented. The critical orifice assembly shall be calibrated at least every 2 years against a positive displacement Roots meter to obtain the required calibration curve.  
*[Applicable NRC Amendment: 5][Applicable UDRC Amendment 3]*

11.3 The licensee shall implement a monitoring program of the leak detection systems for disposal Cells 4A and 4B in accordance with requirements of the Ground Water Discharge Permit. The licensee shall implement a monitoring program of the leak detection systems for disposal Cells 1, 2, and 3 as follows:

- A. The licensee shall measure and record the “depth to fluid” in each of the tailings disposal cell standpipes on a weekly basis. If sufficient fluid is present in the leak detection system (LDS) of any cell, the licensee shall pump fluid from the LDS, to the extent reasonably possible, and record the volume of fluid recovered. Any fluid pumped from an LDS shall be returned to a disposal cell.

If fluid is pumped from an LDS, the licensee shall calculate the flow rate by dividing the recorded volume of fluid recovered by the elapsed time since fluid was last pumped or increases in the LDS fluid levels were recorded, whichever is the more recent. The licensee shall document the results of this calculation.

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- B. Upon the initial pumping of fluid from an LDS, the licensee shall collect a fluid sample and analyze the fluid for pH and the parameters listed in paragraph A of this license condition. The licensee shall determine whether the LDS fluid originated from the disposal cell by ascertaining if the collected fluid contains elevated levels of the constituents listed in paragraph A of this license condition or has a pH level less than 5.0. If either elevated constituent levels or a pH less than 5.0 is observed, the licensee shall assume that the disposal cell is the origin of the fluid.

If the LDS fluid is determined not to have originated from the disposal cell, the licensee shall continue with weekly measurements of “depth to fluid” in the LDS standpipes. The licensee shall confirm, on an annual basis, that fluid from the disposal cell has not entered the LDS by collecting (to the extent possible) and analyzing an LDS fluid sample for the above stated parameters.

- C. Upon indication that the LDS fluids originated from the disposal cell, the licensee shall determine the flow rate through the liner by the calculation method in paragraph B of this license condition. If the flow rate is equal to or greater than one gallon per minute, the licensee shall:
- (1) Evaluate the cause of the liner distress and take appropriate and timely actions to mitigate the leak and any consequent potential impacts;
  - (2) Continue to measure and record LDS “depth to fluid” measurements weekly; and
  - (3) Notify the Executive Secretary by telephone within 48 hours, in accordance with License Condition 9.2, and submit a written report within 30 calendar days of notifying the Executive Secretary by telephone, in accordance with License Condition 9.2. The written report shall include a description of the mitigative action(s) taken and a discussion of the mitigative action results.

If the calculated flow rate is less than one gallon per minute, the licensee shall continue with weekly measurements of “depth to fluid” in the LDS standpipes.

- D. All sampling, analysis, and evaluation of LDS fluids shall be documented and retained onsite until license termination for Executive Secretary inspection.  
*[Applicable NRC Amendment: 8] [Applicable UDRC Amendment 3] [Applicable UDRC Amendment: 4]*

- 11.4 Annually, the licensee shall collect, during mill operations, a set of air samples covering eight hours of sampling, at a high collection flow rate (i.e., greater than or equal to 40 liters per minute), in routinely or frequently occupied areas of the mill. These samples shall be analyzed

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for gross alpha. In addition, with each change in mill feed material or at least annually, the licensee shall analyze the mill feed or production product for U-nat, Th-230, Ra-226, and Pb-210 and use the analysis results to assess the fundamental constituent composition of air sample particulates.

*[Applicable NRC Amendment: 7]*

- 11.5 Calibration of in-plant air and radiation monitoring equipment shall be performed as specified in the license renewal application, under Section 3.0 of the “Radiation Protection Procedures Manual,” with the exception that in-plant air sampling equipment shall be calibrated at least quarterly and air sampling equipment checks shall be documented.
- 11.6 The licensee shall perform an annual ALARA audit of the radiation safety program in accordance with the NRC Regulatory Guide 8.31.
- 11.7 Settlement Monitoring Standard Operating Procedure - the licensee shall submit for Executive Secretary approval a written Settlement Monitoring Standard Operating Procedure (SOP) on or before December 1, 2010. The proposed SOP shall describe methods for monitoring vertical settlement in the tailings management cell areas and for recording and documenting settlement monitoring data and comparing such data to previous data to track potential settlement. All data collected by the Licensee for these purposes shall be included in an annual report to be submitted to the Executive Secretary, pursuant to License Condition 12.3. The SOP shall also:
- A. Require that settlement monitors (e.g., settlement stands) be promptly installed following placement of temporary cover over placed tailings;
  - B. Require installation of one or more representative settlement monitoring stand(s) above each ISL source disposal area that has been closed to further disposal pursuant to License Condition 10.5.A. There shall be at least one settlement monitoring stand for each ISL source disposal area, estimated to be about 22,500 square feet. Installation of said settlement monitoring stand and initial elevation survey shall be completed by the Licensee within 30 calendar days of completion of each ISL source disposal area. For ISL source disposal areas or trenches completed before April 1, 2010 the Licensee shall install the required settlement stand(s) and complete the initial elevation survey prior to June 1, 2010;
  - C. Indicate that the licensee will utilize settlement monitoring devices and methods that are resistant to shifting in their positions as a result of such forces as frost heave, erosion, burrowing animals, or other environmental factors;

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- D. Include provisions to prevent man-caused damage to settlement monitoring devices, including, but not limited to vehicle and construction traffic damage. Such measures will include: 1) all equipment, procedures, and provisions needed to protect said settlement monitoring devices, 2) schedules for rapid verbal and written reporting of any such damage, and 3) corrective actions taken or to be taken by the Licensee to replace and/or repair said devices;
- E. Indicate that settlement monitors will be:
- (1) Initially surveyed by a Utah Licensed Professional Land Surveyor within, 30 calendar days of installation;
  - (2) Surveyed monthly; and
  - (3) Surveyed annually by a Utah Licensed Land Surveyor. Review of the data and analysis shall be performed and certified by a Utah Licensed Professional Engineer submitted annually as part of the ATER required by License Condition 12.3;
- F. Include procedures requiring that such settlement monitors be placed, surveyed, mapped, and maintained; that corrective action and maintenance activities be performed to maintain existing monitoring devices in a reliable, good working condition, as needed; that the addition, surveying and mapping of new settlement monitoring devices installed be documented; and that records be made of observations of site conditions as they relate to the conditions at and in the vicinity of the installed monitoring devices;
- G. Provide quantitative performance criteria and describe how such criteria will be used to evaluate vertical movement;
- H. Indicate that any settlement monitoring device that is irreparably damaged as a result of environmental stresses or through man-caused contact, including but not limited to cell construction or other operational equipment, shall be promptly replaced with an identical or equivalent monitoring device; and provisions provided to guide the interpretation of data from both the former and the replacement device;
- I. Indicate that where survey evidence suggests that significant apparent movement in a settlement monitor has occurred, in excess of the approved performance criteria, that the departure(s) will be investigated and explained, and errors corrected and resolved in a timely manner, subject to Executive Secretary approval;
- J. Indicate that photographs shall be taken of the monitoring areas at least annually to document site and device conditions. Additionally, the SOP shall indicate that

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photographs shall be taken following any instances of unusually severe weather or incidents involving equipment if they result in physical damage or disturbance to any settlement monitoring device, or significant changes to the ground surface areas adjacent to or surrounding a settlement or displacement monitoring device;

- K. Include a list of records that will be prepared for documenting settlement data for each settlement monitoring device and related site observations and activities; and
- L. Indicate that results and records of settlement monitoring shall be submitted annually as part of the ATER required by License Condition 12.3.  
[Applicable UDRC Amendment: 4]

11.8 Movement (Displacement) Monitoring Standard Operating Procedure - the licensee shall submit for Executive Secretary approval a written Movement Monitoring Standard Operating Procedure (SOP) on or before December 1, 2010. The proposed SOP shall describe methods for monitoring potential vertical and horizontal movements in the constructed dike portions of the tailings management cells, and for recording and documenting displacement monitoring data and comparing such data to previous data to track potential movement (displacement). All data collected by the Licensee for these purposes shall be included in an annual report to be submitted to the Executive Secretary, pursuant to License Condition 12.3. The SOP shall also:

- A. Require that movement monuments be promptly installed following completion of construction of cell dikes;
- B. Indicate that the licensee will utilize movement monuments and monitoring methods that are resistant to shifting in their positions as a result of such forces as frost heave, erosion, burrowing animals, or other environmental factors;
- C. Include an obligation for the Licensee to prevent man-caused damage to movement monuments, including, but not limited to vehicle and construction traffic damage. Such measures will include: 1) all equipment, procedures, provisions need to protect said settlement monitoring devices, 2) schedules for rapid verbal and written reporting of any such damage, and 3) corrective actions taken or to be taken by the Licensee to replace and/or repair said devices;
- D. Indicate that movement monuments will be:
  - (1) Initially surveyed by a Utah Licensed Land Surveyor within 30 calendar days of installation;
  - (2) Surveyed semi-annually for the first three years following installation by a Utah Licensed Land Surveyor.

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- (3) Surveyed annually after the first three years by a Utah Licensed Land Surveyor
- (4) Subjected to accelerated monitoring conducted under certain circumstances, at a frequency and in a manner approved by the Executive Secretary; and
- (5) Reviewed annually by a Utah Licensed Professional Engineer, who shall perform and certify an analysis of all survey data. This analysis shall be submitted pursuant to License Condition 12.3;
- E. Include procedures requiring that such movement monuments be placed, surveyed, mapped, and maintained; that corrective action and maintenance activities be performed to maintain existing movement monuments in a reliable, good working condition, as needed; that the addition, surveying and mapping of new movement monuments installed be documented; and that records be made of observations of site conditions as they relate to the conditions at and in the vicinity of the installed monuments;
- F. Provide quantitative performance criteria and describe how such criteria will be used to evaluate movements (displacements);
- G. Indicate that any movement monument that is irreparably damaged as a result of environmental stresses or through man-caused contact, including but not limited to cell construction or other operational equipment, shall be promptly replaced with an identical or equivalent movement monument; and provisions provided to guide the interpretation of data from both the former and the replacement device;
- H. Include a list of records that will be prepared for documenting movement (displacement) data for each movement monument and related site observations and activities; and
- I. Indicate that results and records of movements (displacements) shall be submitted annually as part of the ATER required by License Condition 12.3.  
[Applicable UDRC Amendment: 4]

**SECTION 12: REPORTING REQUIREMENTS**

- 12.1 DELETED by NRC Amendment 13.  
*[Applicable NRC Amendment: 13]*
- 12.2 The licensee shall submit a detailed decommissioning plan to the Executive Secretary at least twelve (12) months prior to planned final shutdown of mill operations that includes a detailed Quality Assurance Plan. The plan will be in accordance with NRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs" and NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" or equivalent most current guidance.

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*[Applicable NRC Amendment: 13]*  
*[Applicable UDRC Amendment: 1]*  
*[Applicable UDRC Amendment: 2]*

- 12.3 Annual Technical Evaluation Report (ATER): The licensee shall submit an ATER for Executive Secretary approval no later than September 1, of each year. Each ATER shall incorporate all documents and attachments, including applicable updates to previously submitted documents with attachments that support information presented in the ATER, including, but not limited to maps, drawings, tables, and figures. The licensee shall include, as part of the ATER, results of tailings cell temporary cover settlement and dike displacement monitoring activities. The content of the tailings cell temporary cover settlement and displacement monitoring program related information shall include those records required under the Settlement Monitoring and Movement Monitoring SOPs (License Conditions 11.7 and 11.8), as approved by the Executive Secretary.  
*[Applicable UDRC Amendment: 4]*

**UTAH RADIATION CONTROL BOARD**

Craig W. Jones, Acting Dane L. Finerfrock, Executive Secretary

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Date