

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and the applicable parts of Title 10, Code of Federal Regulations, Chapter I, Parts 19, 20, 30, 31, 32, 33, 34, 35, 36, 39, 40, 51, 70, and 71, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee 1. Rio Algom Mining LLC 2. P.O. Box 218 Grants, New Mexico 87020	3. License Number SUA-1473, Amendment 62##
	4. Expiration Date Until terminated (Applicable Amendment: 29)
	5. Docket No. 40-8905 Reference No.

6. Byproduct Source, and/or Special Nuclear Material

7. Chemical and/or Physical Form

8. Maximum amount that Licensee May Possess at Any One Time Under This License

Uranium

Any

Unlimited

9. Authorized Place of Use: The Licensee's Ambrosia Lake facility located in McKinley County, New Mexico.
10. This licensee shall maintain a ~~health physics radiation protection~~ (RPEM) program as described within ~~the submittals dated XX July 2021. August 30, 1990, January 31, 1991, and January 13, 1998. The programs described in these submittals will be reviewed in a manner consistent with the requirements of License Condition 14.~~

~~Any changes to the mill circuit as described in Section 6.2 of the August 30, 1990, submittal or as authorized by subsequent license conditions shall require approval by the NRC in the form of a license amendment.~~

- A. The RPEM program manual and all standard operating procedures (SOPs) shall be reviewed by the RSO annually to ensure that proper and current radiation protection principles are being applied. Revisions to SOPs, if needed, shall occur annually.
- B. Written SOPs shall be established for all activities related to the closure of the facility involving radioactive materials that are handled, disposed or stored and all surveillance activities including environmental monitoring and radiation monitoring instrument calibration. SOPs shall specify radiation safety practices to be followed. Occupational exposure calculations shall be performed in accordance with 10 CFR 19.13.b and 10 CFR Part 20, Subpart C and documented in accordance with 10 CFR 20.2106.
- C. An up-to-date copy of each SOP shall be kept in the area to which it applies for reference.

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- D. Release of equipment or packages from the restricted area shall be in accordance with the "Surface and Volume Radioactivity Standards for Clearance" (ANSI/HPS N13.12-2013).
- E. The licensee shall designate a Radiation Safety Officer (RSO) who will be responsible for the establishment and maintenance of a facility radiation protection program including personnel and environmental monitoring programs.
- F. Changes not previously assessed by the NRC or authorized by this license, as described in LC 10F(1) through LC 10F(3), will be evaluated by a Safety and Environmental Review Panel (SERP) against criteria defined in the RPEM program manual. If, based on its evaluation, the SERP concludes that the proposed change meets the criteria in the RPEM program manual and does not negatively impact the performance of licensed activities previously reviewed and approved by the NRC by means of a Safety Evaluation Report (SER), Technical Evaluation Report (TER) and Environmental Impact Statement (EIS) or Environmental Assessment (EA), the licensee may implement the proposed change(s) without a license amendment.

An annual report on SERP-related activities, if any, for the previous calendar year will be submitted to the NRC by May 31 and will include: (1) a description of any changes approved by a SERP, (2) a description of the implementation of any changes approved by a SERP, and (3) a summary of the applicable safety and environmental evaluation(s).

Via a SERP process, the licensee is authorized to implement:

- (1) Changes to the RPEM program,
- (2) Changes to facility operations or physical structures in support decommissioning, and
- (3) Studies, tests, or experiments in support of site decommissioning.

[Applicable Amendments: 4, 10, 11, 21, 28, 40, 52, ##]

11. ~~The licensee shall designate a Radiation Safety Officer (RSO) who will be responsible for the establishment and maintenance of a facility radiation protection program including personnel and environmental monitoring programs. The RSO shall possess minimum qualifications as specified in Section 2.4.1 of Regulatory Guide 8.31. [DELETED by Amendment ##]~~
12. The licensee is authorized to possess byproduct material in the form of uranium process tailings and other byproduct wastes generated by the licensee's uranium processing operations. Mill tailings, other than small samples for purposes such as research or analysis, shall not be transferred from the restricted area without prior approval of the NRC in the form of a license amendment.
13. [DELETED by Amendment 62]
14. ~~Written standard operating procedures (SOPs) shall be established for all activities related to the closure~~

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~~of the facility involving radioactive materials that are handled, disposed or stored. These procedures shall specify radiation safety practices to be followed. An up-to-date copy of each written procedure shall be kept in the area to which it applies for employee reference. All SOPs shall be reviewed annually to update procedures and be approved by the RSO to ensure that proper radiation protection principles are being applied.~~

~~[Applicable Amendments: 52, 62] [DELETED by Amendment ##]~~

15. The licensee shall be required to use a Radiation Work Permit (RWP) for all work where the potential for significant exposure to licensed radioactive material exists and for which no SOPs exist. All RWPs shall be approved by the RSO, or a designee qualified by way of specialized radiation protection training. The RWP shall describe the following:
- A. The scope of the work to be performed.
 - B. Any precautions necessary to reduce exposures to radioactive materials.
 - C. Supplemental monitoring required prior to, during, and after the completion of the work.

[Applicable Amendment: 62]

16. ~~The licensee shall establish written procedures for all surveillance activities including in-plant and environmental monitoring bioassay analysis and radiation monitoring instrument calibration. These procedures shall be reviewed and approved by the RSO annually to ensure that proper and current radiation protection principles are being applied. [DELETED by Amendment ##]~~
17. ~~Occupational exposure calculations shall be performed in accordance with 10 CFR 19.13.b and 10 CFR Part 20, Subpart C and documented in accordance with 10 CFR 20.2106.~~

~~[Applicable Amendment: 40, 53, 62] [DELETED by Amendment ##]~~

18. [DELETED by Amendment 4]

19. The results of all effluent and environmental monitoring required by this license shall be reported semiannually and in accordance with 10 CFR 40.65, with copies of the report sent to the NRC. ~~Monitoring data shall be reported in the format shown in Regulatory Guide 4.14, Revision 1, April 1980, Table 3.~~

[Applicable Amendments: 25, 52, ##]

20. The results of sample analyses, monitoring surveys, equipment calibration, reports of audits and inspections, meetings, and training sessions required by applicable regulations or this license and any subsequent reviews, investigations, and corrective actions shall be documented. Unless otherwise specified in this license or in NRC regulations, all documentation shall be maintained for a period of five (5) years.

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21. [DELETED by Amendment 52]

22. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criteria 9 and 10, adequate to cover the estimated costs, if accomplished by a third party, for decommissioning and decontamination of the mill and mill site, reclamation of any tailings or waste disposal areas, ground water restoration as warranted, and the long-term surveillance fee.

Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criteria 9 and 10, shall be submitted to the NRC by June 30 of each year. 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 NRC-approved reclamation/decommissioning plan as supplemented by NRC-approved revisions to the plan. Annual updates should follow Appendix C to NUREG-1620, Rev. I, "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978."

The licensee's currently approved surety, Irrevocable Letter of Credit issued by the Imperial Bank of Commerce, New York Branch, in favor of the NRC, shall be continuously maintained in an amount no less than \$16,000,000 for the purpose of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, until a replacement is authorized by the NRC.

[Applicable Amendments: 18, 19, 22, 24, 30, 32, 36, 39, 41, 46, 47, 48, 50, 52, 53, 54, 60, 62]

23. Prior to termination of this license, the licensee shall provide for transfer of title to byproduct material and land, including any interests therein (other than land owned by the United States or the State of New Mexico), which is used for the disposal of such byproduct material or is essential to ensure the long-term stability of such disposal site to the United States or the State of New Mexico, at the State's option.

24. [DELETED by Amendment 60]

25. ~~Release of equipment or packages from the restricted areas for unrestricted release or disposal shall be in accordance with the "Guidelines for Decontamination for Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated August 1987.~~

~~[Applicable Amendment: 62] [DELETED by Amendment ##]~~

26. ~~Before engaging in any activity other than reclamation and which is not authorized by the license, the licensee shall prepare and record an environmental evaluation of such activity. The licensee shall provide a written evaluation of the activity and obtain prior approval of the NRC in the form of a license amendment.~~

~~[Applicable Amendment: 52] [DELETED by Amendment ##]~~

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27. [DELETED by Amendment 52]
28. The licensee is hereby exempted from the posting requirements of 10 CFR 20.1902(e) for areas within the mill provided that all entrances to the mill are conspicuously posted in accordance with 10 CFR 20.1902(e) and with the words, "Any area within this mill may contain radioactive material."
29. [DELETED by Amendment 62]
30. [DELETED by Amendment 60]
31. [DELETED by Amendment 52]
32. The licensee is authorized to dispose of and bury contaminated waste materials resulting from past milling operations into the disposal areas in accordance with the submittal dated July 20, 1995. The licensee may also dispose of and bury within these areas, byproduct materials as authorized by License Condition 41. In addition, the licensee shall adhere to the following requirements.
- A. The licensee shall maintain detailed disposal records indicating quantities and locations of all waste material disposed in the disposal areas.
 - B. Prior to the disposal of any wastes, the licensee shall establish a detailed procedure to describe the handling, preparation, placement and covering of wastes in the specified disposal areas.
 - C. The final design of the disposal areas, including drawings, calculations, analyses, and a list of materials included in the disposal areas, will be submitted to the NRC for approval prior to placement of the final cover.
 - D. The licensee shall follow the approved soil decommissioning plan dated May 1, 2006 (ML18166A182), and additional information in transmittals dated June 15, 2005 (ML052060155), July 15, 2005 (ML052090175), September 26, 2005 (ML053000439), and July 25, 2006 (ML062080439).
- [Applicable Amendments: 6, 33, 37, 57, 61, 62]
33. [DELETED by Amendment 52]

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34. The licensee shall implement a groundwater compliance monitoring program. The monitoring wells presented in Paragraph A of this License Condition shall be sampled quarterly for the first two years if a replacement well is installed or following approval of the alternate concentration limits contained in Paragraph B of this License Condition. The licensee shall sample the aforementioned monitoring wells semiannually thereafter, until license termination. Wells in the monitoring network that have been replaced are designated with an "R" after the original name. The ground water compliance monitoring program shall consist of the following:

A. Sample Dakota Sandstone wells 17-01 KD, 30-02 KD, 30-48 KD-R, 32-45 KD-R, 36-06 KD, and 5-02 KD for antimony, arsenic, beryllium, cadmium, chloride, cyanide, lead, lead-210, molybdenum, nickel, nitrate, radium-226 & -228, selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water level.

Sample Tres Hermanos A wells 31-01 TRA-R, 30-01 TRA, & 33-01 TRA for chloride, cyanide, lead-210, molybdenum, nickel, nitrate, radium-226 & -228, selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water level.

Sample Tres Hermanos B wells 19-77 TRB, 31-02 TRB-R, 31-67 TRB, 36-01 TRB, and 36-02 TRB for chloride cyanide, lead-210, molybdenum, nickel, nitrate, radium-226 & -228 selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water level.

Sample alluvium wells 5-03 ALL-R, 5-04 ALL, 5-08 ALL-R, 5-73 ALL-R, 32-59 ALL, 31-61 ALL, 31-65 ALL, and MW-24 ALL, for chloride, lead-210, molybdenum, nickel, nitrate, radium-226 & -228, selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water levels.

B. Comply with the following ground water protection standards at Dakota Sandstone compliance wells 30-02 KD (old POC), 30-48 KD-R, 5-02 KD, 32-45 KD-R, and 36-06 KD: antimony = 0.05 mg/l; arsenic = 0.1 mg/l, beryllium = 0.01 mg/l; cadmium = 0.01 mg/l; cyanide = 0.04 mg/l; lead = 0.14 mg/l; molybdenum = 0.06 mg/l; and selenium = 0.04 mg/l. Comply with the following alternate concentration limits at the same compliance wells: lead-210 = 62 pCi/l; nickel = 6.8 mg/l; radium-226 & -228 = 218 pCi/l; natural uranium = 1.6 mg/l; thorium-230 = 945 pCi/l; chloride = 3,200 mg/l; nitrate (as N) = 22.8 mg/l; sulfate = 6,480 mg/l; total dissolved solids = 14,100 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 88 pCi/l. Background is recognized at well 17-01 KD.

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Comply with the following ground water protection standards at Tres Hermanos A compliance wells 31-01 TRA-R (old POC) and 30-01 TRA: cyanide = 0.01 mg/l; molybdenum = 0.03 mg/l; nickel = 0.05 mg/l; selenium = 0.03 mg/l; and natural uranium = 0.01 mg/l. Comply with the following alternate concentration limits at the same compliance wells: lead-210 = 62 pCi/l; radium-226 & -228 = 218 pCi/l; thorium-230 = 945 pCi/l; chloride = 1,070 mg/l; nitrate (as N) = 9.2 mg/l; sulfate = 2,584 mg/l; total dissolved solids = 6,400 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 88 pCi/l. Background is recognized as well 33-01 TRA.

Comply with the following ground water protection standards at Tres Hermanos B compliance wells, 31-02 TRB-R, 31-67 TRB, 36-01 TRB, and 36-02 TRB: cyanide = 0.01 mg/l; molybdenum = 0.08 mg/l; and selenium = 0.04 mg/l. Comply with the following alternate concentration limits at the same compliance wells: nickel = 6.8 mg/l; radium-226 & -228 = 218 pCi/l; natural uranium = 1.6 mg/l; thorium-230 = 945 pCi/l; lead-210 = 62 pCi/l; chloride = 2,810 mg/l; nitrate (as N) = 7.7 mg/l; sulfate = 4,760 mg/l; and total dissolved solids = 11,700 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 88 pCi/l. Background is recognized as well 19-77 TRB.

Comply with the following alternate concentration limits at alluvium compliance wells 32-59 ALL, 31-61 ALL, 31-65 ALL, MW-24 ALL, 5-04 ALL, 5-08 ALL-R, and 5-73 ALL-R: molybdenum = 176 mg/l; nickel = 98 mg/l; selenium = 49 mg/l; radium-226 & -228 = 3,167 pCi/l; thorium-230 = 13,627 pCi/l; natural uranium = 23 mg/l; lead-210 = 891 pCi/l, chloride = 7,110 mg/l; nitrate (as N) = 351 mg/l; sulfate = 12,000 mg/l; total dissolved solids = 26,100 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 1,274 pCi/l. Background is recognized as well 5-03 ALL-R.

Alternate concentration limits were specified in the technical evaluation report dated February 26, 2006 (ML060380387).

- C. [DELETED by Amendment 56]
- D. Submit, by February 1 and August 1 of each year ground water monitoring reports to include a minimum of the following: potentiometric surface maps for each aquifer; time vs. concentration plots for all parameters for which ACLs have been issued, hydrographs for the downgradient most trend well or POE well in each aquifer, hydraulic gradient calculations, and tabulated analytical data for each ACL parameter for each well.
- E. [DELETED by Amendment 42]

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- F. If the laboratory results indicate that the concentration of any constituent exceeds its associated ground water protection standard or ACL, the licensee shall collect a second sample within 7 calendar days of becoming aware of the aforementioned exceedance. If the results of this second sample confirm the aforementioned exceedance, the licensee shall increase the monitoring frequency to monthly and submit to NRC staff quarterly reports documenting the exceedance. If the exceedances continue for three consecutive months, the licensee shall submit to NRC staff a ground water corrective action designed to regain compliance with ground water protection standards and ACLs.

[Applicable Amendments: 9, 11, 13, 15, 25, 35, 40, 42, 56, 62]

35. [DELETED by Amendment 52]

36. [DELETED by Amendment 62]

37. [DELETED by Amendment 62]

38. [DELETED BY Amendment 52]

39. The licensee shall conduct an annual survey of land use (grazing, residences, water supply wells, etc.) in the area within two miles of the mill and submit a report of this survey annually to the NRC. This report shall indicate any differences in land use from that described in the licensee's previous annual report and shall specifically address occupancy of the Berryhill Ranch. The report shall be submitted by July 1 of each year.

[Applicable Amendment: 21]

40. [DELETED by Amendment 62]

41. In accordance with the licensee's submittals dated November 20, 1995 (ML16148A891), May 9, 1996, January 24, 1997, and February 13, 1997, the licensee is hereby authorized to dispose of 11e.(2) byproduct materials that are similar in physical, chemical, and radiological characteristics to the 11e.(2) byproduct material and associated wastes already within the impoundment subject to the following:

- A. Prior to the receipt of any material under this condition, the licensee shall provide an analysis of the costs of reclamation based on the disposal of the amount of byproduct authorized by this condition on a five (5) year forward basis and include that analysis into the annual surety update required by License Condition 22.

[Applicable Amendments: 37, 44]

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- B. [DELETED by Amendment 44]
- C. Total annual receipt and disposal of 11e.(2) byproduct material shall not exceed 100,000 cubic yards (76,500 m³) from all generators.
- D. The total 11e(2) byproduct material to be disposed of from all generators is limited to 5.3 million tons (3.8 million yds³).
- E. Average annual Ra-226 concentrations of disposed material shall not exceed 1100 pCi/g (41 Bq/g) from any generator.
- F. All contaminated equipment shall be dismantled, crushed, perforated or placed to minimize void spaces. Barrels shall be verified to be full prior to disposal. Barrels not completely full shall be filled or emptied and crushed prior to final disposal.
- G. Byproduct material shall be free of standing liquids.
- H. All disposal activities shall be documented. The documentation shall include a description of the byproduct material, the disposal locations, and the results of pre-acceptance testing. The licensee shall maintain documentation until license termination.
- I. The licensee shall submit a final reclamation report upon the end of receipt operations.
42. The licensee shall consolidate and transport evaporation pond materials and any associated soils impacted by milling related byproduct materials from the Section 4 Ponds and Pond 9 in accordance with Sections 4 and 5 of the Relocation Plan for Lined Evaporation Ponds, Rev. 0.1, submitted by letter dated January 28, 2005 (ML050820597).
- [Applicable Amendment: 55]
43. [DELETED by Amendment 62]

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FOR THE NUCLEAR REGULATORY COMMISSION

~~IRA~~Dated: 09/01/2020

Bill von Till, Chief
Uranium Recovery and Materials
Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards