June 17, 2005

Mr. Peter Luthiger, Manager
Radiation Safety and
Environmental Affairs
Rio Algom Mining, LLC
P.O. Box 218
Grants, NM 87020

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION PLAN - LINED EVAPORATION PONDS AT RIO ALGOM MINING, LLC'S AMBROSIA LAKE FACILITY (TAC LU0078)

Dear Mr. Luthiger:

In a letter dated November 1, 2004, Rio Algom Mining, LLC, (Rio Algom) submitted to the U.S. Nuclear Regulatory Commission (NRC), a *Closure Plan-Lined Evaporation Ponds* (*Relocation Plan*) for its Ambrosia Lake uranium mill facility. In a follow-up to the proposed plan, Rio Algom submitted, under letter dated January 28, 2005, a response to a request for additional information and a Revised Relocation Plan. Rio Algom requested that the Revised Relocation Plan be considered initially by NRC so that work can commence at the site. The NRC staff has developed the enclosed environmental assessment (EA) for this proposed action. The EA concludes with a finding of no significant impact. A notice of this finding will be published shortly in the Federal Register.

If you have any questions, please call Mr. Robert Nelson of my staff at (301) 415-7298 or via electronic mail at ran@nrc.gov.

In accordance with 10 CFR 2.390 of NRC's Rules of Practice, a copy of this letter will be available electronically from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Sincerely,

/RA/

Gary S. Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-8905
License No.: SUA-1473

Enclosure: Environmental Assessment

cc: G. Cibas, NMED

ENVIRONMENTAL ASSESSMENT
FOR THE RELOCATION PLAN - LINED EVAPORATION PONDS
AT RIO ALGOM MINING LLC'S URANIUM MILL FACILITY,
AMBROSIA LAKE, NEW MEXICO

June 2005

DOCKET NO. 40-8905

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
DIVISION OF FUEL CYCLE SAFETY AND SAFEGUARDS
FUEL CYCLE FACILITIES BRANCH

Enclosure

INTRODUCTION

Under letter dated November 1, 2004, Rio Algom Mining, LLC (Rio Algom) submitted to the U.S. Nuclear Regulatory Commission (NRC), a *Closure Plan-Lined Evaporation Ponds* (*Relocation Plan*) for its Ambrosia Lake uranium mill facility. In a follow-up to the proposed plan, Rio Algom submitted, under letter dated January 28, 2005, a Response to a Request for Additional Information and a Revised Relocation Plan. The Revised Relocation Plan would allow site work to begin prior to NRC approval of the Final Status Survey Plan, which will be included in the Soil Decommissioning Plan. Rio Algom requested that the Revised Relocation Plan be considered initially by NRC so that work can commence at the site.

The plan addresses the methods and procedures to be implemented to ensure that the consolidation and transport of evaporation pond material from the areas referred to as “Section 4 Ponds” and “Pond 9" are performed in a manner that is protective of human health and the environment. The Uranium Mill Tailings Radiation Control Act and regulations in Title 10 Code of the Federal Regulations (CFR), Part 40 require material at uranium mill tailings sites be disposed of in a manner that protects human health and the environment.

The Ambrosia Lake site is located in the Ambrosia Lake mining district in New Mexico, approximately 20 miles north of Grants, New Mexico. The site began processing ore in 1958 and the facility processed approximately 33 million tons of ore through 1985. At that time, the facility was placed on deferred production status pending more favorable market conditions. The facility continued to actively extract uranium from water recovered as part of its ground water corrective action plan through December 2002. Reclamation of the tailings management facilities commenced in 1989 with the initiation of consolidating the top surface of the largest tailings impoundment. Ongoing reclamation activities have occurred including excavation and disposal of unlined evaporation pond residues, contaminated soil clean up, reclamation of the tailings impoundments, construction of surface water erosion protection features, and demolition of the mill buildings.

Section 4 Ponds are located along the northeastern portion of the site and were used to evaporate liquid wastes generated from Rio Algom’s acid leach uranium ore processing mill. The Section 4 Ponds provide an overall evaporative area of 256 acres with a total holding capacity of 1570 acre-feet. Additional wastewater streams evaporated at the Section 4 Ponds include wastewater from the ion exchange plant consisting of backwash solutions and resin regeneration solutions. Groundwater collected as part of the alluvial remediation plan, as well as other mill process solutions, were also disposed via evaporation at the Section 4 Ponds. The ponds remained in active service through April 2004.

The lined evaporation ponds at Section 4 were built during two construction phases between 1976 and 1979. Initial construction used medium plastic clays as bed for the evaporation ponds. Bedding material was then covered with synthetic liner material. The berms and outer slopes of the ponds beneath the liners were constructed of local alluvial materials. All soils used in pond construction were compacted to 95 percent proctor dry density. The center of the pond embankments consisted of compacted clay core. The synthetic liner was placed directly onto the compacted soils. The pond bottom liner was covered with a one foot layer of alluvial soil upon completing construction. A diversion channel was constructed along the eastern and southeast boundary of the Section 4 Ponds to redirect surface flow. Pond 9, which is located

adjacent to the tailings impoundment, provides an evaporative area of 25 acres. Pond 9 is also lined, and was constructed in a similar manner to the Section 4 Ponds.

NEED FOR THE PROPOSED ACTION

The proposed action of decommissioning the Section 4 Ponds and Pond 9 is required by regulation in 10 CFR Part 40. Consolidating and transporting the materials associated with the lined ponds would begin the final decommission process. The material located at the ponds is considered byproduct to uranium milling activities and, as such, is required to be disposed of in a manner to protect human health and the environment. The removal of the material to the tailings impoundment at the site allows for consolidation of radioactive material and promotes the non-proliferation of waste sites (10 CFR part 40 Appendix A, Criterion 2). The proposed action would update Source Materials License, SUA-1473 to include this plan.

THE PROPOSED ACTION

The proposed action is the relocation of the lined evaporation ponds (Section 4 Ponds and Pond 9) at the Ambrosia Lake facility. The action includes the consolidation and removal of byproduct material, including the pond liners, transport of the material to the disposal site and disposal of material in accordance with NRC regulations. The sediments from the lined evaporation ponds at Section 4 and Pond 9 would initially be consolidated at their current location and then transported to the disposal area located at the north end of Tailings Impoundment 2. The total estimated volume of material to be relocated is 1,966,200 cubic yards, which amount includes the evaporation ponds, impacted berm material, sub-liner material, and a contingency for hot spots and wind blown material. A detailed discussion of this estimate is included in Section 4.3 of the Relocation Plan.

The project is anticipated to last approximately 18-24 months, depending on weather and material volumes. The contractor has projected a work force of 30 individuals would be needed to perform the relocation project in a safe and effective manner. Included within this total is a Project Manger and a full time Health and Safety Specialist. Wages for these 30 jobs would be well above the average wage for the general population in the Grants/Milan area.

Material consolidation would consist of a two pronged process with the objective being to reduce overall material that requires relocation and to obtain a material that will be amenable to hauling. This consists of evaporation of pond liquids and consolidation of dry contaminated materials with the high moisture content pond sediments. Evaporation of liquids is being accomplished by pumping and/or diverting liquids that are present and accessible within the pond sediment material onto the crust layer present on the ponds in order to take advantage of the 50+ inch net evaporation loss due to the desert environment.

Pond sediment consolidation would be performed using heavy equipment such as loaders and trackhoes to mix the high moisture content with the low moisture content materials and allowing the material to dry out to the desired consistency for hauling. Depending on moisture content, multiple mixes may be needed. Upon achieving the desired consistency, the material will be stockpiled within the pond footprint until hauling commences.

The contractor plans on using standard construction equipment (graders, dozers, water wagons, compactors, track hoes, loaders, etc.) for the majority of the project tasks. The one exception to this is the haul trucks that would be used to transport the consolidated pond sediments. Utilizing Caterpillar 773 Trucks, which can haul approximately 40 cubic yards per load, results in fewer trips and would provide a safer transport option than typical over-the-road end dump trucks, especially during the dumping phase. Approximately 25-30 individual pieces of equipment would be available for use on the project.

A dedicated haul road would be utilized to transport the materials by truck from Section 4 to the disposal site. A highway overpass will be constructed to avoid crossing the state highway that transects the northeast corner of the site (NM 509). The overpass will be designed and constructed to ensure safe travel for the haul trucks transporting the pond sediments from Section 4 to the disposal site. The overpass will be 150 feet wide and 700 feet long. The overpass will be in use for the duration of the project and will be removed when the hauling operation is completed. Additional information concerning the overpass is contained in Appendix F to the Closure Plan.

Once at the disposal site, the material would be disposed of in a manner that is in accordance with the site's approved reclamation plan and source materials license. Sediments and contaminated materials from Pond 9 would be moved by truck along the same dedicated haul road coming from Section 4. A short road connecting Pond 9 to the haul route would be constructed. This relocation of material is expected to encompass 18-24 months.

Rio Algom proposes to remove the pond residues and liners but to leave the deeper contamination because most of it resulted from mine drainage and is not byproduct material (NRC licensed material). This aspect of the pond closure will be addressed in a separate licensing action associated with the review of Rio Algom's Soil Decommissioning Plan.

After completion of the relocation of pond sediment and other associated soils to Tailings Impoundment 2, Rio Algom would request a license amendment to include procedures to verify that the area is no longer contaminated with byproduct material. The area would eventually be regraded and re-vegetated.

ALTERNATIVES TO THE PROPOSED PLAN

Three alternatives to the proposed action include the no action alternative, disposal off site, and in-place stabilization. The no action alternative would leave the contaminated ponds, berms and sub-liner material in place with no remediation. This alternative would significantly expand the contaminated portion of the site and offers no long-term controls for the materials. This alternative would not provide an adequate long-term solution for the uranium byproduct material but would require active maintenance for the life of the waste site. Finally, this alternative would not comply with the reclamation requirements outlined within 10 CFR 40, Appendix A for disposition of byproduct material.

The off site disposal alternative does not recognize that the Ambrosia Lake site has a licensed disposal location approved by NRC as Amendment #37 to the facility license. Only limited off site disposal locations exist (e.g., Envirocare of Utah). Off site disposal would involve both truck and rail transportation of significantly greater distances than the proposed action at much

greater cost. Given that Tailings Impoundment 2 is already licensed to receive the material, there are no environmental benefits of off-site disposal.

The third alternative would stabilize the pond material in place by constructing an engineered barrier to meet the requirements of 10 CFR Part 40. The Section 4 site is not currently a licensed disposal facility, whereas the Tailings Impoundment 2 location is so licensed. The licensee estimates that the in-situ alternative would be approximately $2M cheaper than relocation to Tailings Impoundment 2. However, the Tailings Impoundment 2 location is preferred over stabilization in place for several reasons. First, the Tailings Impoundment 2 location has already been the subject of extensive groundwater modeling and stability characterization for 1,000 year flood conditions. Second, consolidation of the area of land to be deeded to the U.S. Department of Energy (DOE) for perpetual care into just one location from two, is also preferred due to lower demands on DOE's resources to monitor the site in perpetuity. Third, should in-situ closure of the Section 4 ponds have been chosen, the regulatory approval process for the licensing of Section 4 as a disposal site would likely have been extensive, lasting several years. This delay is not justified based on the overall reclamation schedule for the site. The decision to relocate the materials eliminates future groundwater concerns that would remain if in-situ closure was pursued. Finally, his option does not work toward the goal of non-proliferation of waste sites.

As a variant to hauling the Section 4 pond contents to Tailings Impoundment 2, transportation in slurry form to Tailings Impoundment 2 by pipeline, with liquids returned to Section 4 for evaporation, was considered. The additional $2.5 million net cost of this pipeline alternative, resulted in this option being rejected when combined with plans to construct an overpass at the highway to eliminate the hazard to the public.

AFFECTED ENVIRONMENT

Local Environment

The facility is located approximately 20 miles due north of Grants, New Mexico, in the Ambrosia Lake Valley. The solid portions from the milling process were disposed through a slurry transfer system to the tailings impoundments. Section 4 Ponds and Pond 9 were used as evaporation ponds. The area that surrounds the project area is private land where ranching is the primary land use. A two lane state highway transects the site on the northeast side of the site. This is the feature which separates Section 4 from the remainder of the site.

Surface Water

The principal surface water feature for the mill site is located within the boundary of the uranium mill facility, the Arroyo del Puerto. The channel is an alluvial channel that was dry prior to mining activities. The channel serves as a discharge for dewatering of the local mines. The channel has been diverted from its natural course when an interceptor trench was constructed that was intended to prevent tailings seepage to the groundwater. An ephemeral drainage through the pond area and a paleochannel join the Arroyo del Puerto approximately one half mile down-gradient from the Section 4 Ponds.

Groundwater

The mill and tailings impoundment are located on the weathered Mancos Formation or on alluvium overlying the Mancos Formation. The attenuation capacity of the alluvial material removes constituents from groundwater along its flow path storing constituent mass near areas of surface infiltration and reducing constituent concentration in any resulting groundwater. Groundwater levels at the Section 4 Ponds have declined drastically and most of the monitoring wells have been dry since up-gradient mine de-watering ceased in the mid-1980s.

Wildlife Habitat

The site is located in McKinley County, New Mexico, where the U.S. Fish and Wildlife Service (FWS) has listed the following as threatened or endangered species that may be located in this county: bald eagle, black footed ferret, Mexican spotted owl, southwestern willow flycatcher, and the Zuni fleabane.

ENVIRONMENTAL IMPACTS

The NRC staff has reviewed the Relocation Plan as contained in the Closure Plan-Lined Evaporation Ponds, as amended, and examined the impacts of the request. The potential impacts of the proposed action are limited to the land surface and are temporary due to construction activities.

The site Health, Safety and Environment Management Program provides adequate assurances to control impacts to the environment. The Program includes: an overall project Safety Program; an As Low As Reasonably Achievable (ALARA) Program; a Health Physics Monitoring Schedule; an Environmental Monitoring Program; a Waste Management Program; and Quality Assurance. The ALARA Program addresses: management control; radiation safety administration; radiation safety training; standard operating procedures and radiation work permits; radiation monitoring; a bioassay program; personnel contamination control and protective clothing; contamination surveys and control; respiratory protection; instrument control; and security. The Health Physics Monitoring Schedule includes: airborne dust surveys; radon daughter surveys; surface contamination surveys; personnel contamination surveys; and external gamma radiation surveys. The Environmental Monitoring Program involves routine monitoring and sampling of air, water, soil, and vegetation in the vicinity of the site. The Waste Management Program addresses: gaseous effluents; liquid effluents; and solid waste. The Health, Safety and Environmental Management Program has previously been reviewed and approved by NRC.

The direct impacts to the surface would primarily be dust generation due to the removal of the material at Section 4 Ponds and Pond 9 and hauling it to the disposal area. Fugitive dust would be mitigated through the use of dust suppression methods on active disturbed areas associated with the proposed action.

This action would result in increased traffic to and from the project site and increased on-site activities. However, increased traffic levels resulting from site employees would be below historic traffic levels observed during the full operation of the facility and would be of short duration. The project design minimizes the potential for traffic accidents occurring among project personnel as a result of dedicated haul roads (i.e., used only for machinery and not publicly accessible) to maintain segregation of traffic.

The construction of the overpass: will not impact any threatened or endangered species; will not involve any discharges into the ground water; will not require a new right of way; will disturb less than 0.4 hectares (1 acre) of earth; and will not impact air quality. No noise issues have been identified. There are no unusual or rare plant species within the project area; and there are no wetlands or aquatic areas within the project area. No cultural resources were discerned within the project area. The construction will disturb some wildlife, affecting the habitat of a few birds, small mammals, and reptiles. The project is expected to have minimal impact on wildlife habitat because the area is already disturbed by fences, mowing, vehicles, and other human activities. Rio Algom will obtain all necessary permits and authorizations required by the State Highway Administration prior to constructing and using the overpass. The overpass has the substantive positive benefit of reducing the interaction with traffic from the general public, thereby significantly reducing the possibility of accidents involving local traffic.

The proposed action temporarily would result in an increase to the employment levels and a resultant benefit to the local economy of the Grants, New Mexico area. The proposed action would involve approximately 30 new workers.

The proposed action would be confined to existing disturbed areas and would not result in adverse impacts to cultural and historic properties or impact any threatened or endangered species. The overall aesthetics of the area would improve.

The proposed action will result in an overall improvement to the land use in the Ambrosia Lake area. The activities proposed are temporary and are not expected to damage the environment in the long term. The proposed action will include restoration and re-vegetation of disturbed areas.

MONITORING

An environmental surveillance program for the facility includes routine monitoring and sampling of air, water, soil and vegetation in the vicinity of the site. The monitoring programs would include air particulate, ambient gamma radiation, ambient radon, soil sediment, and vegetation monitoring on a frequency previously approved by the NRC. This program would be expanded during relocation to include the installation and operation of two continuous operating particulate air monitoring samplers that would be incorporated into the existing air monitoring program for the duration of the lined pond closure activities.

AGENCIES AND PERSONS CONSULTED

As required by NRC guidance, the State of New Mexico and the FWS were contacted to provide input regarding the impacts of this action and threatened and endangered species. The FWS responded in a letter dated September 20, 2004. However, the land in the vicinity of Rio Algom's mill site does not contain suitable habitat to attract colonization of any of the threatened or endangered species (see Wildlife Habitat under Affected Environment).

The New Mexico State Historic Preservation officer was not contacted because most of the proposed action would occur on previously disturbed areas of the licensed site. The construction of the highway overpass would disturb new areas. The licensee conducted a cultural resource survey (Appendix F to the Closure plan) and determined that no cultural resources would be impacted by this portion of project.

In a letter dated April 22, 2005, the New Mexico Environment Department (NMED) commented on the draft EA. NMED commented on the need for a National Pollutant Discharge Elimination System Construction General Permit and stated that the EA should address the potential of contaminated dust blowing from the facility and ponds during the closure project. Finally, the NMED letter stated that the Department's Water Quality Bureau supports the planned relocation of the Section 4 evaporation ponds and Pond 9. Rio Algom has committed to obtaining all required permits. Although the high moisture content in the pond sediment material would act to minimize the likelihood of dusting to occur, dust control practices would be used throughout the project, when needed.

CONCLUSION

NRC has prepared this EA in support of the proposed licensing action for Rio Algom Mining LLC's uranium mill facility at Ambrosia Lake, New Mexico. On the basis of this EA, NRC has concluded that there will be no significant environmental impacts from the proposed action. Accordingly, the staff has determined that there is no need to prepare an environmental impact statement for the proposed action.

LIST OF PREPARERS

This EA was prepared by Jill Caverly, Project Manager, Uranium Processing Section, Fuel Cycle Facilities Branch, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards; reviewed by Robert Nelson, Chief, Uranium Processing Section; and approved by Gary Janosko, Chief, Fuel Cycle Facilities Branch.

REFERENCES

NUREG-1748, "Environmental Review Guidance for Licensing Actions associated with NMSS Programs - Final Report," Nuclear Regulatory Commission, Washington, DC, 2003.
[ADAMS Accession No. ML031000403]

NUREG-1620, Rev. 1, "Standard Review Plan for Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978," Nuclear Regulatory Commission, Washington, DC, 2003.
[ADAMS Accession No. ML040560561]

Rio Algom Mining LLC, 2004, "Closure Plan-Lined Evaporation Ponds," submitted under cover letter dated November 1, 2004.
[ADAMS Accession No. ML050240058]

Rio Algom Mining LLC, 2005, "Response to Request for Addition Information for Closure Plan - Lined Evaporation Ponds at Rio Algom Mining LLC's Ambrosia Lake Facility", submitted January 28, 2005.
[ADAMS Accession No. ML050730258 and ML050820597]

U.S. Fish and Wildlife Service Letter to J. Caverly dated September 20, 2004.
[ADAMS Accession No. ML042780480]

State of New Mexico Environment Department Letter to G. Janosko, dated April 22, 2005.
[ADAMS Accession No. ML051570252]

Rio Algom Mining, LLC, 2005, “Response to Request for Addition Information for Relocation Plan for Lined Evaporation Ponds at the Ambrosia Lake Site,” June 15, 2005. [ADAMS Accession No. ML051670429]

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Sincerely,

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Docket No.: 40-8905
LicenseNo.: SUA-1473

Enclosure: Environmental Assessment

cc: G. Cibas, NMED

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