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November 20, 2005

Chief, Rules Review and Directives Branch U.S. Nuclear Regulatory Commission Mail Stop T6-D59 Washington, DC 20555-0001

Gentlemen:

Subject: Kennecott Uranium Company's Comments on NUREG-1757 Supplement I Consolidated

NMSS Decommissioning Guidance Updates to Implement the License Termination Rule

Analysis Draft Report for Comment

Kennecott Uranium Company is the operator of the Sweetwater Uranium Project licensed under Source Material License #1350 located in the Great Divide Basin in Sweetwater County, Wyoming. The Sweetwater Uranium Project contains one of the four remaining conventional uranium mills in the United States.

Kennecott Uranium Company has reviewed NUREG-1757 Supplement I Consolidated NMSS Decommissioning Guidance Updates to Implement the License Termination Rule Analysis Draft Report for Comment. This document appears to allow certain licensees wide latitude in addressing waste materials similar to 11e.(2) byproduct material, while actual conventional uranium recovery licensees are required to use the very stringent criteria imposed on the reclamation of uranium mill tailings impoundments by the Nuclear Regulatory Commission (NRC) through 10 CFR Part 40 Appendix A for 11e.(2) byproduct material itself. Materials with similar associated radiological risks should be treated in the same manner in the course of reclamation. If the risks associated with 11e.(2)-byproduct material require reclamation under the stringent standards of 10 CFR Part 40 Appendix A then other materials that pose similar radiological risks should be handled in the same manner. As detailed below, the NUREG does not provide the same level of protection of the public heath and safety as the standards of 10 CFR 40 Appendix A.

THE STRINGENT NATURE OF 10 CFR PART 40, APPENDIX A

10 CFR Part 40 Appendix A imposes stringent requirements on the disposal and reclamation of uranium mill tailings (11e.(2)-byproduct material). These requirements include:

1000 Year Life and a Minimum of a 200 Year Life for Reclamation

10 CFR Part 40 Appendix A states:

Criterion 6--(1) In disposing of waste byproduct material, licensees shall place an earthen cover (or approved alternative) over tailings or wastes at the end of milling operations and shall close the waste disposal area in accordance with a design¹ which provides reasonable assurance of control of radiological hazards to (i) be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years,

This is a very stringent criterion and requires a substantial design that will account for damage to the cover by erosion for at least 200 years. This design is costly to implement.

• Inflation Adjusted Fee to Cover Long Term Care and Surveillance

10 CFR Part 40 Appendix A in Criterion 10 states:

Criterion 10--A minimum charge of \$250,000 (1978 dollars) to cover the costs of long-term surveillance must be paid by each mill operator to the general treasury of the United States or to an appropriate State agency prior to the termination of a uranium or thorium mill license.

If site surveillance or control requirements at a particular site are determined, on the basis of a site-specific evaluation, to be significantly greater than those specified in Criterion 12 (e.g., if fencing is determined to be necessary), variance in funding requirements may be specified by the Commission. In any case, the total charge to cover the costs of long-term surveillance must be such that, with an assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance. The total charge will be adjusted annually prior to actual payment to recognize inflation. The inflation rate to be used is that indicated by the change in the Consumer Price Index published by the U.S. Department of Labor, Bureau of Labor Statistics.

This stringent requirement requires that the site holder provide funds to cover any long-term costs related to the reclaimed site. This minimum amount is computed based upon the annual funds required to cover long-term costs related to the site earned at a 1-% real rate of return from the initial payment. The minimum amount is escalated on a site-specific basis if site surveillance or control requirements are determined to be significantly greater that those anticipated. For example, the minimum charge will be escalated if some degree of active care (e.g., vegetation control, maintenance of erosion control measures) is necessary to preserve the as-designed conditions of the site.

• Long Term Custodian

Consistent with Section 83 of the Atomic Energy Act, 10 CFR Part 40 Appendix A criterion 11 requires that reclaimed uranium mill tailings sites be transferred to a long term custodian such as the Department of Energy, another federal agency or a state. It is expected that the Department of Energy (DOE) will be the custodial agent for most, if not all, of these sites. The custodial agency pursuant to a perpetual NRC license implements the provisions of the long-term surveillance plan to ensure the integrity of the site. Since DOE is a perpetual licensee, there is always an agency in place to address any concerns about material control and accountability and site security, Section C of Criterion 11 states:

C. Title to the byproduct material licensed under this Part and land, including any interests therein (other than land owned by the United States or by a State) which is used for the disposal of any such byproduct material, or is essential to ensure the long term stability of such disposal site, must be transferred to the United States or the State in which such land is located, at the option of such State.

No Active Maintenance

Criterion 12 requires that no active/ongoing maintenance be required for reclaimed uranium mill tailings sites stating:

Criterion 12--The final disposition of tailings, residual radioactive material, or wastes at milling sites should be such that ongoing active maintenance is not necessary to preserve isolation.

Reclamation of uranium mill tailings impoundments rests upon four (4) legs, those being:

- Reclamation to last 1,000 years (minimum of 200 years)
- A long term custodian in the form of the Federal government or a State
- Payment of a fee (minimum of \$250,000. in 1978 dollars) that will earn interest at a 1-% real rate of return that will cover annual costs related to the site.
- Requirement that the reclaimed tailings require no active maintenance

• Protection of Groundwater

In addition, 10 CFR Part 40 Appendix A contains stringent requirements for the protection of groundwater. These are very stringent requirements that an entire industry is required to meet and are summarized in the beginning of Criterion 5 as follows:

Criterion 5--Criteria 5A-5D and new Criterion 13 incorporate the basic ground-water protection standards imposed by the Environmental Protection Agency in 40 CFR Part 192, Subparts D and E (48 FR 45926; October 7, 1983) which apply during operations and prior to the end of closure. Ground-water monitoring to comply with these standards is required by Criterion 7A.

In regards to the management and disposal of 11e.(2)-byproduct material the Commission prefers to consolidate these wastes in a few large easily managed and monitored impoundments as opposed to a number of scattered sites. This is summarized in 10 CFR Part 40 Appendix A Criterion 2 which states:

Criterion 2--To avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance obligations, byproduct material from in situ extraction operations, such as residues from solution evaporation or contaminated control processes, and wastes from small remote above ground extraction operations must be disposed of at existing large mill tailings disposal sites; unless, considering the nature of the wastes, such as their volume and specific activity, and the costs and environmental impacts of transporting the wastes to a large disposal site, such offsite disposal is demonstrated to be impracticable or the advantages of onsite burial clearly outweigh the benefits of reducing the perpetual surveillance obligations.

This philosophy is also used in addressing spent nuclear fuel, hence the construction of a single large storage/disposal facility near Yucca Mountain, Nevada.

The National Mining Association's and the Fuel Cycle Facilities Forum's White Paper on Direct Disposal of Non-11e.(2) Byproduct Materials in Uranium Mill Tailings Impoundments discusses non-proliferation of sites stating:

The use of existing mill tailings impoundments to dispose of non-11e.(2) byproduct material also is philosophically consistent with Criterion 2 of Appendix A which requires NRC "to avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance obligations" and would be consistent with NRC's long-standing policy favoring disposal over storage of LLRW wastes.

(See e.g., 58 Fed. Reg. 6730, 6731 (February 2, 1993), where the Commission explained that: "Although LL[R]W can be safely stored, NRC believes that the protection of the public health and safety and the environment is enhanced by disposal, rather than by long-term, indefinite storage of waste. Disposal of waste in a limited number of facilities licensed under 40 CFR Part 61 or compatible Agreement State regulations, will provide better protection of the public health and safety and the environment than long-term storage at hundreds or thousands of sites around the country.")

Criterion 2 clearly recognizes the benefit of the placement of radioactive material in large centralized sites as opposed to many small, scattered sites in order to reduce perpetual surveillance obligations and enhance long-term security. Clearly bases on the above citation from 58 Fed. Reg. 6730, 6731 (February 2, 1993), the Commission agrees with this concept and the concept that wastes should be placed for disposal rather than be stored for indefinite periods as is proposed in NUREG-1757. A small number of large monitored disposal sites poses far fewer risks that a large number of decentralized disposal sites.

10 CFR PART 40 APPENDIX A REGULATIONS ARE MORE COMPREHENSIVE AND STRINGENT THAN NUREG-1757 STANDARDS

The regulations addressing 11e.(2)-byproduct material are clear and specific. NUREG-1757 Supplement I Consolidated NMSS Decommissioning Guidance Updates to Implement the License Termination Rule Analysis addresses on site reclamation of other types of wastes which are in some cases similar to 11e.(2) byproduct material. NUREG-1757 Supplement I Consolidated NMSS Decommissioning Guidance Updates to Implement the License Termination Rule Analysis establishes certain definitions, which are as follows:

Durable institutional controls.

A legally enforceable mechanism for restricting land uses to meet the radiological criteria for license termination (10 CFR 20, Subpart E). Durable institutional controls are reliable and sustainable for the time period needed.

Reasonably foreseeable land use.

Land use scenarios that are likely within 100 years, considering advice from land use planners and stakeholders on land use plans and trends.

Robust engineered barrier.

A man-made structure that is designed to mitigate the effect of natural processes or human uses that may initiate or accelerate release of residual radioactivity through environmental pathways. The structure is designed so that the radiological criteria for license termination (10 CFR 20, Subpart E) can be met. Robust engineered barriers are designed to be more substantial, reliable, and sustainable for the time period needed without reliance on active ongoing maintenance.

These definitions, while establishing a certain level of protection, do not specify the same levels of protection that 10 CFR Part 40 Appendix A requires in regard to an earthen cover, long term institutional controls or a long term governmental site custodian that will own the site in perpetuity.

In addition, it describes a Long Term Control License stating:

The LTC license is preferred over the LA/RC option for institutional controls involving NRC, as NRC licensing and enforcement is a proven approach, and the LA/RC option has some limitations: it has not been implemented by the NRC or legally tested; NRC's ability to enforce the LA/RC depends on the laws of the jurisdiction where the site is located; and it would be more difficult for NRC to enforce the LA/RC, in comparison to the LTC license. The LTC license is preferred for sites that will require more complex monitoring or maintenance activities. Complex monitoring or maintenance activities could include maintenance of an engineered barrier and groundwater or radiological monitoring activities, which require the site owner to have necessary knowledge, expertise, or technical abilities to carry out these activities and comply with all provisions of the LTC license.

The NUREG does not require construction of covers with a 1,000-year life. It merely states:

In some cases, protection can be sustained for long time periods by using robust designs that do not rely on ongoing active maintenance. For example, erosion protection covers designed for up to 1000 years that have been used for uranium mill tailings sites may also have use at some decommissioning sites.

Regarding covers lasting 1, 000 years it only states that they "... may also have use..." It does not require them for materials posing a similar radiological risk to 11e(2)-byproduct material.

The NUREG discusses funding stating:

The LTR requires that sufficient financial assurance be established to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site. A trust fund, or other financial assurance mechanism, would be established independent from the custodian and managed by a trustee. Sufficient funds would need to be placed into the trust fund to produce an annual income that is sufficient to cover (1) the annual average costs of controls, maintenance, and monitoring, if needed; (2) independent third party oversight costs; and (3) trustee fees and expenses. Thus, the fund balance would be sustained over time and not depleted because the annual costs of controls and maintenance are provided by the annual interest income.

These funding requirements are nowhere near as stringent as those required for uranium mill tailings sites.

The NUREG discusses site oversight stating:

The LTR requires an independent third party to provide oversight to assure that the custodians' controls are performed and corrective actions are taken, as needed, to sustain the controls and maintenance. The independent third party also would act as a backup to the custodian to assume and carry out the responsibilities for control and maintenance, if needed. The independent third party could be a government entity, or even NRC (under its new policy for the LTC license or legal agreement/restrictive covenant) if other government entities do not accept this responsibility.

This language does not even approach the custodial requirements for uranium mill tailings sites. This language does not require a governmental long-term custodian such as a State or the Federal government.

The document clearly recognizes the inherent superiority of cover designs for uranium mill tailings impoundments stating:

It should be noted, however, that for those cases where an erosion control cover is designed in accordance with the uranium mill tailings guidance in NUREG-1623, a case might be made for a durable, long-lived engineered barrier that does not rely upon ongoing active maintenance (i.e., maintenance needed to assure that the design will meet specified longevity requirements) and associated future costs. For this case, no degradation of the erosion control cover would be assumed.

It does not however require a cover design as described in NUREG-1623 for material posing a similar radiological risk to 11e.(2)-byproduct material.

The NUREG does reference rock durability requirements for erosion protection covers for uranium mill tailings impoundments stating:

A procedure for determining the acceptability of a rock source is presented in NUREG-1623 and generally includes the following:

- Test results from representative samples are scored on a scale of 0-10.
- The score is multiplied by a weighting factor, which focuses the scoring on those tests that are the most applicable for the particular rock type being tested.
- The weighted scores are totaled, divided by the maximum possible score, and multiplied by 100 to determine the rating.
- The rock quality scores are then compared to the criteria, which determines acceptability.

The document essentially endorses the cover design requirements for uranium mill tailings impoundment stating:

The staff could approve an engineered barrier design that is effective and maintains control of the material for a period exceeding 1000 years. Using the guidance and rationale contained in NUREG-1623, the barriers should be designed to resist severe localized rainfall events and large floods on nearby streams. The design rainfall event should be the PMP, and the design flood should be the PMF. A design that meets the suggested flooding and erosion protection criteria of NUREG-1623 is acceptable. The rock quality score should be at least 85, and selection of input parameters to various models should account for the unknowns associated with a very long stability period and the high-risk site.

It does not however require the use of uranium mill tailings impoundment cover design for materials posing similar radiological hazards to uranium mill tailings.

In spite of the NUREG's reference to and endorsement of the requirements for the reclamation of uranium mill tailings sites and discussion of their applicability to onsite radioactive waste disposal it does not require them. In addition, it ignores an important tenet of radioactive waste disposal that being non-proliferation of sites.

This is an important issue because radioactive materials posing similar radiological risks should be regulated in the same fashion. This issue is addressed in the National Mining Association (NMA's) comments on Approaches to an Integrated Framework for Management and Disposal of Low-Activity

Radioactive Waste: Request for Comment Federal Register (FR) Vol. 68, No. 222 / Tuesday, November 18, 2003. The National Mining Association (NMA's) comments state:

If the underlying assumption ("ideally wastes with similar risks should be managed proportionately to the risk they represent") is valid the logic is equally applicable to 10 CFR Part 61 LLRW disposal facilities, 10 CFR Part 40 11e.(2) disposal facilities and Subtitle D and other landfills.

NUREG-1757 CREATES A DOUBLE STANDARD FOR THE RECLAMATION AND DISPOSAL OF RADIOACTIVE WASTES

The basis of these regulations is the protection of public health, safety and the environment, specifically protection from radiological risks. Implementation of NUREG 1757 as drafted would create a double standard for the reclamation/disposal of radioactive wastes. Uranium mill tailings would be subject to the very stringent requirements of 10 CFR Part 40 Appendix A while other similar materials would be subject to the less stringent requirements of this NUREG. In addition, this NUREG would allow disposal sites to proliferate.

This problem is not a hypothetical one. It is a real one. Shield Alloy Metallurgical Corporation has a site in Newfield, New Jersey. It lies essentially in the center of the Boro of Newfield. It contains wastes that comprise "20,000 cubic meters of high ratio and standard ferrocolumbian slag which contains about 400 pCi/g of uranium, a total of about 23 Curies." (Personal communication - State of New Jersey). 400 picoCuries per gram of natural uranium is approximately 0.6 milligrams per gram which is 0.06%. Given that its uranium content is greater than 0.05%, it is licensable source material. In fact, these materials are regulated under a source material license. It can only be assumed unless proven otherwise that this material is in radiometric equilibrium meaning that it has present within it isotopes from the entire uranium-238 and 235 decay chains in their naturally occurring activities.

This site and the materials contained in it are discussed in detail in a document located on the commission's web site at:

http://www.nrc.gov/info-finder/decommissioning/complex/shieldalloy-metallurgical-corporation-smc-html

This document discusses the material on site stating:

This material, called pyrochlore, is a concentrated niobium ore containing greater than 0.05 percent natural uranium and natural thorium. SMC was licensed by the NRC to ship, receive, possess, use and store source material under SMB-743. During the manufacturing process, the facility generated slag, and baghouse dust. Currently, there is approximately 18,000 m3 (635,580 ft3) of slag and approximately 15,000 m3 (529,650 ft3) of baghouse dust contaminated with natural uranium, thorium, and daughters stored on-site.

This document discusses the future plans for the site and the contained materials stating:

Consequently, the NRC staff developed guidance on the use of a possession only license for long term control (LTC) of the site and provided it to SMC in May 2004. A meeting between NRC and SMC was held on June 29, 2004 to ensure that SMC understands the guidance. NRC staff currently anticipates SMC's submittal of a revised decommissioning plan in October 2005.

Although the LTC approach is in the early stages of planning, State of New Jersey officials (e.g., New Jersey Department of Environmental Protection (NJDEP), Senator Corzine, State Senator Madden) have expressed concerns with the use of NRC's LTC license for the SMC site. Their concerns are: 1) the proposed approach would create an unlicensed low-level radioactive waste disposal facility; 2) that there has not been a meaningful opportunity for community discussion; and 3) the radioactive material should be disposed of and not left for future generations.

NRC addressed these concerns by explaining that the LTC license provides institutional controls after decommissioning of the site, and therefore is not a low-level radioactive waste disposal facility. The SMC site was never used for the disposal of radioactive materials from other sites, and it is not planned to be used for that purpose in the future. NRC also explained that this policy is the result of many years of NRC experience and that NRC's role enhances the assurance of proper restricted use. Furthermore, restricted use under the LTR has been a decommissioning option available since the LTR was finalized in 1997. Finally, opportunities for public involvement have already occurred during NRC's licensing meetings that are open to the public. Additionally, in the future, there will be many opportunities for community discussion, as required by the NRC regulations, during SMC's development of the decommissioning plan and NRC's review of the plan.

This material clearly possesses the activity of uranium mill tailings derived from ores containing 0.06% natural uranium. In fact, its activity should be slightly greater than tailings derived from a uranium ore in equilibrium containing 0.06% natural uranium, since the uranium is still present in the ShieldAlloy material while in uranium mill tailings most (usually greater than 90%) of the uranium has been removed by the milling process leaving primarily uranium decay progeny in the tailings. These materials are calculated to contain a maximum aggregate activity of 2.44E-09 curies per gram assuming no loss of radon from the material and presence of all decay products in equilibrium activities. This calculation is based on Determination of the Generic Waste Acceptance Criteria Used in The National Mining Association's and the Fuel Cycle Facilities Forum's White Paper on Direct Disposal of Non-11e. (2) Byproduct Materials in Uranium Mill Tailings Impoundments (Oscar Paulson - 2005)

This ShieldAlloy material is equivalent in activity and by extension radiological risk to some uranium mill tailings regulated under the stringent requirements of 10 CFR Appendix A. For example, the tailings at the Sweetwater Uranium Project represent wastes from the processing of uranium ore with an average grade of 0.029% natural uranium which is less than half of the uranium concentration (and by extension less than half of the activity) of the ShieldAlloy wastes. The tailings at the Sweetwater Uranium Project should represent roughly half of the radiological risk of the ShieldAlloy wastes yet they are regulated under the stringent requirements of 10 CFR Part 40 Appendix A while the ShieldAlloy materials may ultimately be allowed to be capped and left in the midst of a populated area under a Long Term Control License. Materials of similar risk should be regulated similarly. If in fact materials with these low activities are of truly low risk, than conventional uranium recovery licensees should be allowed the same latitude with their tailings as ShieldAlloy may be allowed with their wastes. If in fact these materials require the stringent reclamation requirements imposed by 10 CFR Part 40 Appendix A, then the requirements of 10 CFR Part 40 Appendix A should be imposed on the ShieldAlloy materials. It is also interesting to note that most uranium mill tailings sites are located in remote arid areas in the American West while the ShieldAlloy materials are located essentially in the center of a town in a reasonably wet area. Logic would dictate that materials located in the center of an inhabited area should be reclaimed to higher standards than materials located in arid uninhabited areas.

A solution exists to the problems posed by the ShieldAlloy material and materials like it. The National Mining Association (NMA) and the Fuel Cycle Facilities Forum submitted a white paper to the Commission entitled *The National Mining Association's and the Fuel Cycle Facilities Forum's White*

Paper on Direct Disposal of Non-11e.(2) Byproduct Materials in Uranium Mill Tailings Impoundments. This document proposes a solution to the conundrums posed by materials such as the ShieldAlloy material and to the issues of proliferation of sites, which would be created by NUREG 1757. This document is being included by reference. This document proposes disposal of materials similar to the ShieldAlloy materials in uranium mill tailings impoundments. In addition, waste materials containing extractable quantities of uranium such as the ShieldAlloy material could be processed by conventional uranium mills as alternate feed in which case the processing wastes following removal of the uranium would be by definition 11e.(2) byproduct material and be placed in the tailings impoundment.

Materials similar to 11e.(2) byproduct material currently placed in uranium mill tailings impoundments would include any materials that are licensable source material they either already contain all of the decay progeny present in uranium mill tailings or will in the future once the decay progeny fully ingrow (such as the ShieldAlloy materials), materials contaminated with source material which must be removed from a given site and any waste materials containing the decay chain progeny from source material from which the original source material has been either wholly or partially removed.

The Commission agrees in principle with this concept. Chairman Meserve (Commission Voting Record, SECY-99-0012: Use of Uranium Mill Tailings Impoundments for the Disposal of Waste Other than 11e.(2) Byproduct material and Reviews of Applications to Process Material Other than Natural Uranium Ores, July 26, 2000) agreed with the NRC Staff in that mill tailings sites may be used for the direct disposal of non-11e.(2) materials and stated that:

"Mill tailings sites can clearly provide appropriate disposal locations for materials that are physically, radiologically, and chemically similar to section 11e.(2) byproduct material. This might include non-AEA material (e.g., NORM/TENORM), as well as AEA material (i.e., source, 11e.(1) byproduct material, and special nuclear material). Moreover, in light of the fact that tailings impoundments must comply with requirements that are consistent with standards for the disposal of similar hazardous chemical wastes, see 42 USC §§ 2022(b)(2), 2114(a)(3), such impoundments offer the opportunity for safe disposal of certain materials that are regulated under RCRA, TSCA, and CERCLA. Thus, consistent with Commission policy of lowering the [cost of] decommissioning waste disposal and using existing mill tailings impoundments to dispose of materials in circumstances in which there is adequate protection of the public health and safety and the environment, I conclude that the Commission should allow for the disposal of material other than 11e.(2) byproduct material in tailings impoundments."

In addition, the Strategic Assessment Rebaselining Initiative (SARI) noted:

"Because several...sites [currently undergoing decommissioning] have large quantities of uranium-and thorium-contaminated waste with characteristics similar to those of mill tailings, it may be cost-effective to dispose of decommissioning waste at existing mill sites..." U.S. Nuclear Regulatory Commission, Strategic Planning Framework, 9-11 (September 16, 1996) (emphasis added).

CONCLUSION

Kennecott Uranium Company believes that the following reclamation and disposal standard should be created for the above-described classes of materials. Kennecott Uranium Company proposes the following regulatory language to be included in NUREG-1757:

Waste materials generated at any licensed site during operation, decommissioning, decontamination and/or reclamation that are either:

- 1. Licensable source material;
- 2. materials contaminated with source material that must be otherwise addressed during decommissioning and decontamination or;
- 3. waste materials containing the decay chain progeny from source material from which the original source material has been either wholly or partially removed or never was initially present;

shall either be

- 1. processed as alternate feed at a licensed uranium mill provided that the contained source material is uranium in its naturally occurring isotopic proportions and it is present in extractable quantities; or
- 2. placed for disposal in either an on-site or off-site impoundment constructed in accordance with 10 CFR Part 40 Appendix A and 40 CFR Subpart D—Standards for Management of Uranium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended.

Inclusion of this language will insure that materials of similar radiological risk to uranium mill tailings (11e.(2) byproduct material) will in be treated in an identical manner to 11e.(2) byproduct material thus insuring that materials posing similar risks are addressed in a similar manner.

Kennecott Uranium Company appreciates the opportunity to comments on this important issue. If you have any questions please do not hesitate to contact me.

Sincerely yours,

Oscar a Paulson

Oscar Paulson Facility Supervisor

cc:

Roger Strid

Katie Sweeney - National Mining Association (NMA)

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