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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Mr. Ron Linton, Project Manager
Project Manager, Materials Decommissioning Branch
Decommissioning, Uranium Recovery & Waste Programs
Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
MS T-5A10, 11545 Rockville Pike
Rockville, MD 20852

**RE: Homestake Mining Company of California – Grants Reclamation Project –
Response to NRC Request for Additional Information, Request for
Amendment to License No. SUA-1471, Docket 040-08903: Modification of
License Condition 16 to Use Safety and Environmental Review Panel
to Evaluate Proposed Changes**

Dear Mr. Linton,

Homestake Mining Company of California (HMC) is submitting this response to a November 12, 2020 request for additional information (RAI) from the U.S. Nuclear Regulatory Commission (NRC) regarding HMC's August 12, 2020 request (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20225A280) to amend NRC License SUA-1471 for the Grants Reclamation Project (Site). Specifically, HMC requested to modify License Condition 16 to allow the use of a Safety and Environmental Review Panel (SERP) to evaluate if proposed changes, tests or experiments at the Grants Reclamation Project would not compromise the operational performance, health and safety or environmental protection requirements afforded by the current license conditions, and if not, the licensee may implement the proposed change, test or experiment without a license amendment. The licensee also requested a change to License Condition 42 to add a reporting requirement to include completed SERP's into the Annual Report for the site.

In your letter of November 12, 2020, NRC identified information needed in order to be able to complete the technical review of the license amendment request. The

information comprised four specific RAIs and responses were requested within 60 days from the date of the letter (January 11, 2021). Attached, please find HMC's responses to the RAIs and an updated application text and attachments 1 and 2.

Thank you for your time and attention on this matter. If you have any questions, please contact me via e-mail at bbingham@homestakeminingcoca.com or via phone at 505.290.8019.

Respectfully,



Brad R. Bingham

Closure Manager

Homestake Mining Company of California

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BB/tw

Enclosures

CC: M. McCarthy, Barrick, Salt Lake City, Utah (electronic copy)
G. George, Davis, Wright and Tremaine, San Francisco, California (electronic copy)
D. Lattin, Barrick, Elko, Nevada (electronic copy)
R. Whicker, ERG, Albuquerque, New Mexico (electronic copy)

Homestake Responses to Request for Additional Information

NRC RAI-1

a) For each Safety and Environmental Review Panel (SERP) that was conducted under the existing License Condition 16, provide a list and short description of each SERP conducted after January 1, 2016.

b) Provide a list and short description of any SERP that was cited with a violation, including any non-cited violations, occurring from U.S. Nuclear Regulatory Commission (NRC) inspections that occurred after January 1, 2016.

c) For any cited violations, including non-cited violations, listed in RAI-1 b, provide a description of corrective actions completed to address the violations.

HMC Responses to RAI-1

- a) Table 1 provides a list and short description of each SERP action that has been conducted since January 1, 2016.
- b) Table 1 identifies which SERP actions were cited with a violation or identified in “non-cited” violations. Table 2 identifies all violations noted in in Post-2016 NRC inspection reports and the associated corrective actions taken.
- c) Table 1 identifies the corrective actions completed to address the violations identified in RAI-1b

NRC RAI-2

a) Provide a description in the application as to when additional members of the SERP will be used.

b) Provide a definition in the application of what would constitute a radiation safety officer (RSO) or equivalent.

HMC Responses to RAI-1

- a) Attachment 1 the August 12, 2020 License Amendment Request states:

“Additional members may be included in the SERP as appropriate, to address technical aspects such as groundwater and/or surface-water hydrology, specific earth sciences, and other technical disciplines. Aside from the Closure Manager, SERP members may be qualified employees and/or consultants with relevant experience and expertise.”

This language has been expanded (red text) to clarify when additional members of the SERP will be used, as follows.

“Additional members may be included in the SERP as appropriate, to address technical aspects such as groundwater and/or surface-water hydrology, specific earth sciences, and other technical disciplines. **When the Site Closure Manager and/or any two other members of the minimum three person SERP identify that additional technical expertise is reasonable and appropriate to address the potential environmental, radiation safety, historical and cultural resources, or technical scope and impacts of the proposed action, the Site Closure Manager or**

their designee will identify and engage additional SERP members who have the appropriate experience, level of education and/or relevant certifications to support assessment of the proposed action. Aside from the Closure Manager, SERP members may be qualified employees and/or consultants with relevant experience and expertise.”

b) Attachment 1 the August 12, 2020 License Amendment Request states:

“...one member shall be the radiation safety officer (RSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements.”

This language has been expanded (red text) to clarify what would constitute a radiation safety officer (RSO) or equivalent.

“...one member shall be the radiation safety officer (RSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. The RSO shall have the qualifications identified in the most recent version of the Homestake Grants Reclamation Project Radiation Protection Program Manual (current version dated June 3, 2019) and, if the RSO is not able to participate, the equivalent SERP member must meet or exceed the qualifications for the Alternate RSO as identified in the Radiation Protection Program Manual referenced above.”

NRC RAI-3

Provide a statement in the SERP license condition or Attachment I that HMC will verify that changes, tests, or experiments may be implemented without obtaining a license amendment pursuant to 10 CFR 40.44, so long as the change, test, or experiment does not amend an existing license condition.

HMC Responses to RAI-3

Attachment 1 to the updated LAR, Item a) iii has been amended as follows (red text).

“iii Conduct test or experiments not described in the current license conditions. The Licensee will verify that changes, tests, or experiments may be implemented without obtaining a license amendment pursuant to §40.44, so long as the change, test, or experiment does not amend an existing license condition.”

NRC RAI-4

Provide a description of how SERP evaluations will be conducted and recorded.

HMC Responses to RAI-4

The following language (red text) has been added to Attachment 1 under the heading SERP Documentation and Recordkeeping, also provided below.

“The SERP will document its findings, recommendations, and conclusions in a written report per SOP-10 (Procedure for Conducting a Safety and Environmental Review Panel), which identifies the report format and minimum content. All members of the SERP shall

sign the final report. For SERPs consisting of more than six members, a simple majority (i.e., greater than fifty percent) is required to approve a SERP report. However, under no circumstances will a SERP report be approved, if either of the Closure Manager (or the Closure Manager's designee), RSO (or the RSO's designee), or SHEC Officer does not agree with the conclusion.

SERP proceedings are considered documents associated with the NRC-issued Radioactive Materials License and will be maintained until license termination. SERP reports may be inspected by the NRC staff, and SERP reports may become public records.”

ATTACHMENT 1

CRITERIA AND REQUIREMENTS FOR SERP EVALUATIONS

Proposed changes in operations, systems, equipment, infrastructure or procedures not previously assessed by the Nuclear Regulatory Commission (NRC) or authorized under current license conditions, including any related tests or experiments not described in the license, shall be evaluated by a Safety and Environmental Review Panel (SERP) based on the criteria defined in this Attachment.

The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management (e.g., Site Closure Manager) and shall be responsible for financial approval for changes; one member shall have expertise in Site operations and/or construction and shall have responsibility for implementing any operational changes; and, one member shall be the radiation safety officer (RSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. When the Site Closure Manager and/or any two other members of the minimum three person SERP identify that additional technical expertise is reasonable and appropriate to address the potential environmental, radiation safety, historical and cultural resources, or technical scope and impacts of the proposed action, the Site Closure Manager or their designee will identify and engage additional SERP members who have the appropriate experience, level of education and/or relevant certifications to support assessment of the proposed action. Aside from the Closure Manager, SERP members may be qualified employees and/or consultants with relevant experience and expertise.

The RSO shall have the qualifications identified in the most recent version of the Homestake Grants Reclamation Project Radiation Protection Program Manual (current version is dated June 3, 2019) and, if the RSO is not able to participate, the equivalent SERP member must meet or exceed the qualifications for the Alternate RSO as identified in the Radiation Protection Program Manual referenced above.

Evaluation Criteria for Proposed Changes, Tests or Experiments:

- a) The licensee may, without obtaining a license amendment pursuant to Title 10 of the Code of Federal Regulations Part 40.44 and subject to conditions specified in (b) of this condition:
 - i. Make changes in the facility.
 - ii. Make changes in the procedures.
 - iii. Conduct test or experiments not described in the current license conditions.
The Licensee will verify that changes, tests, or experiments may be implemented without obtaining a license amendment pursuant to §40.44, so long as the change, test, or experiment does not amend an existing license condition.
- b) The licensee shall obtain a license amendment pursuant to §40.44 prior to implementing a proposed change, test or experiment if the change, test, or experiment would:
 - i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in support of the current license conditions.
 - ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in support of the current license conditions.
 - iii. Result in any appreciable increase in the consequences of an accident previously evaluated in support of the current license conditions.

- iv. Result in any appreciable increase in the consequences of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in support of the current license conditions.
- v. Create a possibility for an accident of a different type than any previously evaluated in support of the current license conditions.
- vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in support of the current license conditions.
- vii. Result in a departure from the method of evaluation described in the current license conditions used in establishing the Safety Evaluation Report (SER), the Environmental Assessment (EA), Technical Evaluation Reports (TERs), or other analysis and evaluations in support of amendments resulting in the current license conditions.
- viii. For purposes of this paragraph as applied to this license, SSC important to safety means any SSC which has been referenced in a staff SER, TER, EA, or Environmental Impact Statement (EIS) and supplements and amendments thereof.

SERP Documentation and Recordkeeping:

The SERP will document its findings, recommendations, and conclusions in a written report per SOP-10 (Procedure for Conducting a Safety and Environmental Review Panel), which identifies the report format and minimum content. All members of the SERP shall sign the final report. For SERPs consisting more than six members, a simple majority (i.e., greater than fifty percent) is required to approve a SERP report. However, under no circumstances will a SERP report be approved, if either of the Closure Manager (or the Closure Manager's designee), RSO (or the RSO's designee), or SHEC Officer does not agree with the conclusion.

SERP proceedings are considered documents associated with the NRC-issued Radioactive Materials License and will be maintained until license termination. SERP reports may be inspected by the NRC staff, and SERP reports may become public records.

Table 1 Summary of HMC Grants Reclamation Project SERP Reviews and Reports Since 1/1/2016

SERP Report Title	SERP Report No.	Date	Description of Action	Related Citation (V= Violation) (NC= Non-Cited)	Corrective Action for Citation (if any)
Geochemistry Testing	18-01	5/2018	Collection of environmental samples of tailings solids and waters using sonic drilling from locations within and under the tailings piles, of alluvial aquifer solids and waters from locations away from the tailings pile both within and outside of the NRC licensed area, and experimental testing of these tailings and aquifer solids to assess the long-term source of contaminants to the groundwater system. Experimental column testing of tailings (11e. (2) Byproduct Material) will be conducted in a shed located on the GRP Large Tailings Pile (LTP). Environmental samples of the tailings and aquifer solids and waters will be analyzed by a licensed third-party laboratory. All wastes other than test samples sent to laboratories with radioactive materials licenses will be disposed of on-site.	None applicable	None. Collection of samples for testing and experiment. Proposed Action was determined to require a Radiation Work Permit but no License Amendment. Followed updated SERP SOP-10 rev. 5. Documented decision basis in SERP Evaluation Report 18-01.
Evaporation Pond No. 1 Re-Lining	18-02	9/2018	<p>The re-lining of EP-1 is proposed at the Grants Reclamation Project site.</p> <p>The GRP Water Management Prefeasibility Study (PFS; CH2M, 2018) consisted of evaluating the feasibility of re-lining pond EP-1 (Option 1) or replacing EP-1 by constructing a new evaporation pond 4 (Option 2) near EP-3. CH2M also included four options for salt management to re-line EP-1 (Options 1A through 1D). These four options included:</p> <ul style="list-style-type: none"> • staged liner replacement/mechanical salt removal (1A), • one phase liner replacement/mechanical salt removal (1B), • one phase liner replacement/hydraulic salt removal (1C), and • one phase liner replacement/stabilized salt (1D). <p>Based on the costs, permitting, preliminary engineering, and top risks, the preferred option selected by CH2M was to re-line EP-1 in one phase with salt stabilization (Option 1D). The advantages of this option are avoiding double-handling of material, limited personnel exposure, avoiding equipment traffic on top of the new liner and relative ease of permitting, as compared to the other options.</p> <p>Salts and sediments in EP-1 will have to be dewatered and stabilized to create a stable liner subgrade. A geogrid/geotextile liner system may be placed beneath, within and or on top of the soil matrix to aid in stabilization as needed. Once EP-1 has been dewatered, water and or dust suppressant will be applied the salts and sediments for dust abatement to prevent wind-blown transport outside the perimeter of EP-1 as needed.</p> <p>Approximately 100,000 cubic yards of material are proposed to be excavated, hauled and placed within EP-1 for salts and sediments stabilization and for grading the pond bottom. The soil will be excavated from HMC's soil borrow area and transported on HMC's access roads to EP-1. Dust suppression activities will be performed during excavation, hauling and placement of soil.</p>	None applicable	None. <i>This action has not been performed.</i> Followed updated SERP SOP-10 rev. 5. Documented decision basis in SERP Evaluation Report 18-02.

Table 1 Summary of HMC Grants Reclamation Project SERP Reviews and Reports Since 1/1/2016

SERP Report Title	SERP Report No.	Date	Description of Action	Related Citation (V= Violation) (NC= Non-Cited)	Corrective Action for Citation (if any)
Polymer Injection into RO Clarifiers	18-04	8/2018	<p>High Transmembrane Pressures (TMPs) at its micro-filtration unit within the Reverse Osmosis (RO) system at the Grants Reclamation Project is an operational problem. The TMPs start to spike (increase dramatically) when-ever the RO is operated at a rate of 900 gallons per minute (gpm) or greater. The spike in TMPs causes the microfiltration to shut down which leads to the RO plant shutting down. An evaluation of the microfiltration unit by the vendor, Pall Corporation, and a consulting firm, Engineering Analytics, has determined that partial fouling of the microfiltration membranes has occurred over time. This partial fouling may be attributable to effluent from the clarifiers that have had an elevated turbidity. Normal turbidity levels in the clarifier effluent should not exceed 10 nephelometric turbidity units (NTUs) but typical operations have seen turbidity levels ranging from 40-50 NTUs.</p> <p>HMC determined that the use of a polymer to enhance flocculation would reduce the clarifier effluent (Engineering Analytics, 2018). EA performed jar testing, where they mixed clarifier effluent water with different polymers, coagulants and flocculants in February and March 2018, which indicated that Neo Solutions NS 6250 liquid emulsion polymer reduced turbidity from 26.4 NTU to 1.46 NTU and was the most effective.</p> <p>HMC desires to conduct pilot testing of the emulsion polymer (neat solution) at approximately 35% or 350,000 parts per million (ppm) active polymer. The polymer must be activated by high-shear mixing with water to uncoil the polymer chains to effectively enhance settling of the clarifier Flocculant (known as a make-down system). The make-down system for clarification at the WTP will mix a 0.20% solution using neat polymer and dilution water in a solution mix tank. A secondary dilution (i.e., push water) to carry the polymer from the make-down system will provide for better distribution in the clarifiers and is accomplished using plant water to push the 0.20% (0.5 ppm) solution to the injection point at the clarifier center-well.</p> <p>The polymer feed system will be a skid mounted system that will provide a neat polymer pump, a solution mix tank with mixer for batch mixing and activation of neat polymer, and two chemical delivery pumps to deliver the polymer solution into each of the clarifiers. Each chemical delivery pump will inject the polymer solution into a pipe where push water will be added and subsequently sent to the respective clarifier center well. The polymer will be stored in two 55-gallon drums located at the polymer injection skid. The polymer solution flow rate will be paced based on the WTP flow rate using the Programmable Logic Control (PLC) system. The polymer make-down skid will come equipped to automatically batch polymer solution when the solution mix tank level reaches a minimum level. The system will also shut down on loss of water flow to the system and provide local controls for manual operation as needed. The polymer skid controls will be tied into the main plant PLC and allow for remote shutoff capability for the system.</p>	None applicable	<p>None.</p> <p>This action has not been performed.</p> <p>As per LC 16 the proposed change/modification does not cause a negative effect to the environment. The proposed work did not require an RWP as indicated in LC 24.</p> <p>The proposed changes/modifications meet all the SERP evaluation criteria in Section 4.0 of this report. Followed SERP SOP-10 rev. 5. Documented decision basis in SERP Evaluation Report 18-04.</p>

Table 2 Summary of Post-2016 NRC Inspection Reports

Letter Date	Inspection Report No.	Inspection Date Start	Inspection Date End	Violation Severity	Number of Violations	Violation Description	Corrective Action
7/6/2017	2017-001	4/24/2017	4/26/2017	IV	3	<p>(1) establish standard procedures for all activities involving radioactive materials that are handled, processed, or stored; Specifically, the licensee failed to establish standard procedures for disposal of wastes in the onsite small tailings pile, operation of the 1,200 gallon per minute zeolite system, and operation of the evaporation ponds.</p> <p>(2) prepare and record an environmental evaluation of all activities not previously assessed by the NRC; Specifically, the licensee reviewed and approved a change, via SERP 15-01, which expanded the onsite and offsite groundwater corrective action program and approved a new methodology for injection of groundwater. However, the licensee failed to prepare and record an environmental evaluation of this activity or obtain prior approval of the NRC in the form of a license amendment.</p> <p>(3) conduct a cultural resources survey. Specifically, the licensee reviewed and approved a change, via Safety and Environmental Review Panel 15-01, which expanded the onsite and offsite groundwater corrective action program and approved a new methodology for injection of groundwater. However, the licensee failed to administer a cultural resource inventory before engaging in this developmental activity, an activity which was not previously assessed by the NRC.</p>	<p>(1) SOP-22 (Procedure for On-Site Disposal of Radiologically-Impacted Waste) was developed on 9/29/2017. Performed regulatory training with HMC staff regarding license compliance obligations and SOPs.</p> <p>(2) SOP-10 (Procedure for Conducting a Safety and Environmental Review Panel), Rev. 4 (12/23/2016) was updated to specifically address the requirement to prepare and record an environmental evaluation of the proposed activity or obtain prior approval of the NRC in the form of a license amendment. Performed regulatory training with HMC staff regarding license compliance obligations and SOPs.</p> <p>(3) SOP-10 (Procedure for Conducting a Safety and Environmental Review Panel), Rev. 4 (12/23/2016) was updated to specifically address the requirement to prepare and record an evaluation of the a cultural resource inventory before engaging in developmental activity not previously assessed by the NRC. Performed Staff regulatory training regarding license compliance obligations and SOPs.</p>
12/20/2017	2017-002	9/13/2017	9/14/2017		none	NA	NA
5/3/2018	2018-001	3/26/2018	3/28/2018	IV	1	Failure to initiate plans within one week to survey for leakage and repair the liner as needed to stop evaporation pond leakage in excess of the action leakage rate on several occasions in 2016-2017. This violation is being treated as a Non-Cited Violation (NCV)	Developed SOP-23 (Collection and Evaporation Pond Operations & Tailings Inspections) to specifically address appropriate corrective action plans in a timely manner for addressing leakage and repair as needed to stop evaporation pond leakage in excess of the action leakage rate. Performed Staff regulatory training regarding license compliance obligations and SOPs.

Table 2 Summary of Post-2016 NRC Inspection Reports

Letter Date	Inspection Report No.	Inspection Date Start	Inspection Date End	Violation Severity	Number of Violations	Violation Description	Corrective Action
6/12/2019	2019-001	3/18/2018	3/21/2018	IV	3	<p>(1) conduct an environmental evaluation prior to engaging in an activity not previously assessed by the NRC; licensee failed to prepare and record an environmental evaluation before engaging in an activity not previously assessed by the NRC. Specifically, the licensee added approximately 12-15 gallons of an algacide to the microfiltration break tank in the reverse osmosis system over the course of approximately 1.5 days without preparing and recording an environmental evaluation.</p> <p>(2) implement the guidance in Regulatory Guide 8.31 as required by your license, with three examples; licensee failed to follow the guidance set forth in Regulatory Guide 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposure at Uranium Recovery Facilities will be As Low As is Reasonably Achievable (ALARA)," or NRC-approved equivalent. Specifically, the licensee failed to conduct weekly inspections of all facility areas and daily walk-through inspections of all work and storage areas to observe general radiation practices, provide three months of specialized training to its radiation safety technicians, and conduct fire drills on a semi-annual basis, as required by Sections C.2.3.1, C.2.4.2.2, and C.3.4 of Regulatory Guide 8.31 respectively.</p> <p>(3) have procedures to evaluate the consequences of an incident/event against reporting requirements. licensee failed to have procedures which will evaluate the consequences of an incident/event against 10 CFR 20, Subpart M, and 10 CFR 40.60 reporting criteria.</p>	<p>(1) SOP-10 (Procedure for Conducting a Safety and Environmental Review Panel), Rev. 5 (15/10/2018) was updated to better address the requirement to prepare and record an environmental evaluation of the proposed activity or obtain prior approval of the NRC in the form of a license amendment. Performed Staff additional regulatory training regarding license compliance obligations and SOPs.</p> <p>(2) Daily RST walkthrough and weekly RSO/ARSO inspections initiated (07/12/2019) (NOV reply ML19198A064); RML Amendment 56 approved 06/24/2020 modifying LC 32 for daily RST walkthrough inspections (ML20147A107); Initiated biannual fire drills 03/22/2019 (NOV reply ML19198A064).</p> <p>(3) Developed SOP 21 (Spill Response and Reporting Procedure) to specifically evaluate the consequences of an incident/event against 10 CFR 20, Subpart M, and 10 CFR 40.60 reporting criteria. Performed Staff additional regulatory training regarding license compliance obligations and SOPs.</p>
11/22/2019	2019-002	10/22/2019	10/24/2019	IV	2	<p>(1) ensure that an instrument used for quantitative radiation measurements was properly calibrated; licensee failed to ensure that instruments and equipment used for quantitative radiation measurements were properly calibrated for the radiation measured. Specifically, a Ludlum Model 3030 scaler was returned from the vendor with a calibration label and calibration certificate for a different instrument. The licensee did not verify that the instrument returned to them had been calibrated by the vendor, nor request corrected paperwork from the vendor. Further, the licensee returned the potentially uncalibrated instrument to service and used the instrument.</p> <p>(2) licensee failed to establish a standard procedure for an activity involving the handling, processing, and storage of radioactive materials. Specifically, the licensee failed to establish a standard procedure for startup of the reverse osmosis water treatment system, which filters radioactive contaminants from groundwater.</p>	<p>(1) The typographical error transposing two digits on the calibration sticker was verified and corrected, the instrument calibration record was provided to NRC in response to NOV (12/20/2019) to prove the instrument was properly calibrated before onsite use, NRC recharacterized as a minor violation rather than Severity Level IV, and NOV was closed out on 01-17-2020).</p> <p>(2) SOP-32 (Reverse Osmosis Water Treatment Plant Startup and Shutdown Procedures) was updated to include a startup procedure to address the violation and comply with License Condition 23 requirements.</p>