



Homestake Mining Company of California

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Closure Manager

5 December 2018

Director, Office of Enforcement (OE)
U.S. Nuclear Regulatory Commission
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Rockville, MD 20852-2738

40-8903

Deputy Director, Division of Decommissioning, Uranium Recovery and Waste Programs
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RE: Homestake Mining Company of California – Grants Reclamation Project – March 28, 2017 Confirmatory Order Modifying License No. SUA-1471, EA-16-114, Condition 6 Groundwater Corrective Action Program (CAP) Additional Justification for Relaxation of Schedule

Dear Mrs. Ann Boland:

Homestake Mining Company of California (HMC) is providing this letter in response to an e-mail received from Mr. Ron Linton of the Nuclear Regulatory Commission (NRC) on November 28, 2018 requesting additional written justification from HMC demonstrating good cause for its request for extension of time for submission of the revised Groundwater Corrective Action Plan (GCAP) for the Grants Reclamation Project. In its previous letter dated October 11, 2018, HMC requested relaxation of the current confirmatory order (CO), due date of January 1, 2019 for submission of the GCAP to the NRC with a proposed revised due date of December 18, 2019.

The additional information requested by the NRC is as follows:

- A. Explanation of (1) efforts to meet the existing due date(s), and (2) what matters caused the expected delay beyond the existing due date and the lack of time to make necessary adjustments for meeting the due date.
- B. Explanation of how (1) public health and safety impacts were examined relative to the time period requested and (2) public health and safety is assured during both the extension time period and the time period beyond the due date.
- C. Explanation addressing (1) why the duration of the requested extension time period is reasonable for compliance and (2) specific assurances that delays will be identified in time to adjust for compliance with both a new due date and the requirements of public health and safety.

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HMC responses to the additional information requested by the NRC are as follows:

- A(1) Prior to the September 13-14, 2017 NRC site inspection, HMC had been on track to meet the existing due date of December 31, 2018 for the GCAP by relying on the existing 2012 site groundwater model created by Hydro-Engineering. This model used 1996 MODFLOW software to simulate groundwater flow and contaminant transport in the alluvial and bedrock aquifers for the Grants site, producing a predicted time to remediate the site of 2022, with two years of post-remediation monitoring and decommissioning to be completed by 2024. Had HMC not undertaken the efforts described below, we believe these efforts would have been adequate to meet the December 31, 2018 deadline.
- A(2) The fundamental reason for the delay is the need to update the groundwater flow model used to prepare the revised GCAP. Additionally, the work to prepare the model was delayed by our focus on responding to the requirements of the March 28, 2017 Confirmatory Order. Each of these factors is explained in detail below.

The March 28, 2017 Confirmatory Order (CO) also required HMC to perform a self-assessment of all site activities, which was due by December 29, 2017. During the September 13-14, 2017 NRC site inspection, the draft of this self-assessment was reviewed by the NRC and found to be unsatisfactory. Feedback received from the inspectors concerning the draft self-assessment indicated that substantial additional work would be required beyond that incorporated in the initial draft, and that the assessment would benefit from input from consultants with expertise with the NRC and its regulations and guidance. HMC immediately began the process necessary to screen and select the right consultant. Recognizing that additional time would be needed to complete a critical self-assessment, HMC submitted a letter requesting an extension of time for submission by means of a letter dated November 17, 2017. In this letter, HMC requested that the date for the submission of the self-assessment be moved to September 3, 2018. This request for extension of the self-assessment due date was granted by the NRC in a letter dated December 26, 2017.

During this period, personnel at the Grants Site were also implementing changes previously identified as necessary to effectively accomplish site activities authorized by the NRC license. Part of these changes involved a review of existing practices and planning tools to ensure the revised GCAP would provide an accurate depiction of the impacts of remediation actions to a level of detail necessary to satisfy not only the standards of the NRC license, but to also ensure that completion of remediation would satisfy EPA and NMED requirements necessary to remove the site from the National Priorities List (NPL). As part of this review, HMC identified that a significant revision would be needed to the groundwater flow model to provide a more accurate simulation of the effects of remediation efforts at the site. The existing groundwater model was created using an outdated (1996) version of the MODFLOW open-source groundwater flow model and it only covered the immediate area of the Grants Reclamation Project. This model also used partition coefficients (Kd) for fate and transport of Uranium and Molybdenum that were not developed from site specific geochemistry.

In order to provide the level of detail and realism necessary to satisfy all interested parties, this new model would use the latest updated MODFLOW software and be larger, showing groundwater flow within the entire San Mateo Creek Basin including the potential for migrating upgradient off-site impacts to impact the Grants reclamation time frame. This updated model should also use site-specific geochemical data to support fate and transport modeling of site constituents of concern.

Prior to completing this new revised groundwater flow model, a hydrogeology site conceptual model for the San Mateo Creek Basin needed to be generated followed by a groundwater work plan showing how the model was to be constructed and calibrated. This hydrogeology site conceptual model for the San Mateo Creek Basin was submitted to the NRC on January 8, 2018 (ADAMS Accession No. ML18025B339). The groundwater model work plan was submitted to the NRC on March 27, 2018 (ADAMS Accession No. ML18093A641).

Additionally, HMC identified that updated site-specific geochemistry data was needed to be used in the groundwater model fate and transport calculations. Potential rebound of contaminant concentrations in the groundwater underneath the Large Tailings Pile following cessation of the former tailings flushing program in 2015 also needed to be further evaluated. Therefore, a geochemistry study was initiated with the work plan (completed in November 2017) and the field work commencing in April 2018. Soil borings in the tailings and alluvium were performed, followed by well installation. Discreet soil and tailings samples were collected and submitted for laboratory and humidity cell testing. At that time, sufficient site-specific geochemical data had been obtained to provide initial starting parameters for the fate and transport modeling.

Development of the new groundwater model was initiated in April 2018. Initial attempts to construct the groundwater model simulating all 17 alluvial and bedrock formations caused failures with modeling simulation convergence. A simplified model with only 10 layers depicting the alluvial and bedrock units in the lower San Mateo Creek Basin proved successful in model convergence. This simplified groundwater model for the lower San Mateo Creek Basin was calibrated in October 2018. Fate and transport simulations of the Grants Reclamation Project were subsequently initiated and are currently on-going.

In summary, development of a revised GCAP is dependent upon the analytical capabilities of a representative groundwater model in order to accurately analyze the impact of proposed remediation strategies and potential alternative treatment technologies. HMC believes the existing groundwater model was too simplistic to correctly reflect the complex aquifer structure present at the Grants Site and has initiated development of a basin-wide model encompassing the entire San Mateo watershed. Development of this new model is well underway but will not produce the preliminary results needed for development of the revised GCAP until March of 2019.

- B(1) With respect to public health and safety impacts relative to the time period requested, the time extension will have minimal impact on safety, particularly in light of other corrective actions either already completed or currently in progress to ensure that HMC is in compliance with NRC requirements.

- B(2) With respect to the assurance of public health and safety relative to both the extension time period and the time period beyond the due date, the consideration of groundwater flow and transport on a regional scale using an updated model is expected to result in a revised GCAP that provides the most efficient and effective remediation plan. This GCAP would also contain the most accurate prediction of remediation timeframes possible. Having a GCAP which provides those elements will result in a remediation effort that best meets the needs of the NRC, EPA, and NMED, and which promotes public trust and confidence in the process.
- C(1) HMC has evaluated the duration of the requested extension time period and has determined that the December 18, 2019 due date will provide sufficient time to complete the new revised groundwater model and has proposed interim milestones to effectively demonstrate to the NRC the groundwater modeling and GCAP completion process. Our confidence in our ability to meet the requested end date comes from having created a detailed project schedule with realistic interim milestones. Furthermore, as indicated below, we already have met the first two interim milestones of the proposed schedule.
- C(2) As provided in the original October 11, 2018 request for due date extension (ADAMS Accession No. ML18289A400), HMC has proposed the following interim milestones to provide assurances that any delays will be identified in time to adjust for compliance with both a new due date and the requirements of public health and safety. Each of the work products produced at these interim milestones will be available for NRC inspection to provide further assurance that HMC is progressing towards satisfying the requested end date. Some of these proposed milestones have already been completed as indicated:
1. Submittal of Hydrogeology Site Conceptual Model: COMPLETED January 8, 2018 – Technical Memorandum, *San Mateo Creek Basin and HMC Mill Hydrogeologic Site Conceptual Models*, January 8, 2018, Brown & Caldwell (ML18025B339);
 2. Submittal of Groundwater Model Work Plan: COMPLETED March 2018 – *Groundwater Flow and Transport Modeling Work Plan*, Homestake Mining Company of California, March 2018 (ML18093A641);
 3. Calibration of the Simplified Groundwater Model – October 2018
 4. Groundwater CAP contractor selection – December 18, 2018;
 5. Groundwater CAP Table of Contents – January 31, 2019;
 6. Preliminary Groundwater Modeling Results, Lower San Mateo Creek Basin, Grants Reclamation Project – March 4, 2019;
 7. Preliminary Groundwater Modeling Results, Upper San Mateo Creek Basin – June 03, 2019; and
 8. Draft Groundwater CAP – September 03, 2019.

HMC appreciates this opportunity to clarify the basis for this request for extension to complete and submit the revised GCAP for the Grants Reclamation Project. Should you wish to schedule a conference call to discuss further this issue, I am available via e-mail at twohlford@homestakeminingco.com or phone at 505.290.2187.

Respectfully,



Thomas P. Wohlford, CPG

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