



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

December 20, 2017

Thomas Wohlford
Closure Manager
Homestake Mining Company of California
P.O. Box 98
Grants, NM 87020

**SUBJECT: NRC INSPECTION REPORT 040-08903/2017-002, HOMESTAKE MINING
COMPANY OF CALIFORNIA**

Dear Mr. Wohlford:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted from September 13-14, 2017, at your Grants reclamation project in Cibola County, New Mexico. The preliminary inspection findings were presented to you and your staff at the conclusion of the onsite inspection. The final inspection results were presented to you by telephone on November 22, 2017, after the NRC had completed its compliance review of the inspection findings. The inspection results are documented in the enclosure to this letter.

This inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm compliance with the Commission's rules and regulations, and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. Specifically, the inspectors reviewed management organization and controls; radiation protection and training; radioactive waste processing; effluent control; and a follow-up of requirements contained in the Confirmatory Order No. EA-16-114, (ADAMS Accession Package No. ML17060A752). No violations were identified and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

T. Wohlford

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Should you have any questions concerning this inspection, please contact Ms. Linda Gersey at 817-200-1299 or the undersigned at 817-200-1191.

Sincerely,

/RA/

Ray L. Kellar, PE, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket: 040-08903

License: SUA-1471

Enclosure:

NRC Inspection Report 040-08903/2017-002

cc w/encl:

Michelle Hunter, New Mexico Environment Dept.

Santiago Rodriguez, New Mexico Environment Dept.

Bernadette Tsosie, U.S. Department of Energy

**U.S. NUCLEAR REGULATORY COMMISSION
Region IV**

Docket: 040-08903

License: SUA-1471

Report: 040-08903/2017-002

Licensee: Homestake Mining Co. of California

Facility: Grants Reclamation Project

Location: Cibola County, New Mexico

Dates: September 13-14, 2017

Inspectors: Linda M. Gersey, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Martha R. Poston, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

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

Approved by: Ray L. Kellar, PE, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Homestake Mining Co.
NRC Inspection Report 040-08903/2017-002

This inspection was a routine, announced U.S. Nuclear Regulatory Commission (NRC) inspection of decommissioning activities being conducted at the former Homestake Mining mill in Cibola County, New Mexico.

Management Organization and Control

- The licensee had sufficient staff for the day-to-day work in progress; although, the licensee was evaluating whether additional staff would be needed to maintain daily operations and meet the requirements contained in the Confirmatory Order. (Section 1.2.a)
- Three violations from the previous inspection dealing with site procedures remain open and the licensee's corrective actions will be reviewed during a future inspection. (Section 1.2.b)

Radiation Protection/Training

- One unresolved item was identified by the inspectors related to regulatory compliance with 10 CFR Part 20 requirements for internal occupational dose monitoring. The licensee had provided additional radiation safety training to the radiation safety technicians (RSTs). (Section 2.2)

Follow-up of Confirmatory Action Letters or Orders

- Confirmatory Order Conditions 9, 11, and 13 have been evaluated and are determined to be satisfied. Confirmatory Order Conditions 1-8, 10, 13, and 14-16 remain open with pending actions. (Section 3.2)

Radioactive Waste Processing, Handling, Storage, and Transportation

- The licensee was maintaining the licensed area in accordance with license and regulatory requirements. The licensee continued to maintain site security with perimeter postings, gates, and fences. The inspectors conducted independent radiological surveys, and the results were consistent with previous surveys. No area required posting as a radiation area. (Section 4.2)

Effluent Control and Environmental Protection

- The licensee was performing the environmental monitoring program in accordance with license and regulatory requirements. (Section 5.2)

Report Details

Site Status

The Homestake facility was a conventional uranium mill that operated from 1958-1990. The mill was decommissioned in 1993-1994, and cleanup of the wind-blown tailings was completed in 1995. Tailings generated from milling operations were placed in two piles, a large tailings pile and a small tailings pile.

The side slopes of the large tailings pile have been covered with a permanent radon barrier and erosion protection layer. An interim cover is being maintained on top of the large tailings pile. Two lined evaporation ponds are situated on top of the small tailings pile. The remainder of the small tailings pile is covered with an interim cover. In addition, two water collection ponds were constructed adjacent to the small tailings pile. A third evaporation pond was constructed in 2011 to the north of the large tailings pile.

At the time of the inspection, the licensee continued to implement the groundwater corrective action program. The licensee operated injection and recovery wells as well as the reverse osmosis (RO) and zeolite cleanup systems. The licensee continued to dispose of wastewater through evaporation in three evaporation ponds.

1 Management Organization and Control (88005)

1.1 Inspection Scope

The inspectors reviewed the licensee's staffing and site procedures.

1.2 Observations and Findings

a. Site Staffing

The inspectors reviewed site staffing to ensure that the licensee had sufficient staff to implement licensed requirements. At the time of the inspection, site staffing consisted of nine Homestake employees including the closure manager/hydrogeologist, site supervisor, assistant site supervisor/RST, one RST-in-training, three environmental technicians, an administrative assistant, and a community relations specialist.

The licensee used contractors to supplement the site staff. The licensee used contract employees to fill the project engineer and radiation safety officer (RSO) positions. The RSO was a part-time contract consultant. Contractors were also used as necessary to implement the radiation protection, training, environmental monitoring, and annual audit programs as well as to implement portions of the groundwater corrective action program including collection of samples and installation of wells. Contractor resources were also used for construction work, electrical repairs, and routine site labor. The licensee estimated that it had about 20 contractors on site on any given day. In summary, the licensee had sufficient management oversight and site staffing to implement the day-to-day operations.

The licensee was evaluating whether or not to hire additional staff. The licensee stated that the current staffing levels would be challenged to ensure that the day-to-day regulatory operations of the facility remained in compliance and that sufficient resources

were available to meet the additional actions required in the Confirmatory Order (Order), issued by the NRC in March 28, 2017, (ADAMS Accession No. ML17060A753).

b. Site Procedures

During the previous inspection, the inspectors identified several examples where site activities were being conducted without written procedures. In particular, the licensee was disposing of wastes at the small tailings pile, operating the 1,200 gallon per minute (gpm) zeolite cleanup system, and operating the evaporation ponds without written procedures. The licensee's failure to establish standard procedures for all operational activities involving radioactive materials was identified as a violation of license condition (LC) 23 (VIO 040-08903/1701-01). In addition, the site staff were using written procedures to operate the RO treatment equipment, but these procedures were not controlled by licensee management. The licensee responded to this violation in letter dated August 3, 2017, (ADAMS Accession No. ML17223A189). The licensee committed to generating updated written procedures by November 3, 2017. Since the completion date for generating the updated written procedures was after the on-site inspection date, the updated procedures will be reviewed during a future inspection.

During the previous inspection, the inspectors also identified that the licensee failed to conduct an environmental evaluation and cultural resource inventory during the Safety and Environmental Review Process 15-01 evaluation, which was in violation of LCs 16 and 43, respectively (VIOs 040-08903/1701-02 and 040-08903/1701-03). The inspectors noted that a potential cause for these two non-compliances could be traced to the licensee's implementing procedure. The licensee responded to these violations in letter dated August 3, 2017, (ADAMS Accession No. ML17223A189). The licensee committed to generating updated written procedures by November 3, 2017. Since the completion date for generating the updated written procedures was after the on-site inspection date, the updated procedures will be reviewed during a future inspection.

1.3 Conclusions

The licensee had sufficient staff for the day-to-day work in progress; although, the licensee was evaluating whether additional staff would be needed to maintain daily operations and meet the requirements contained in the Confirmatory Order. Three violations from the previous inspection dealing with site procedures remain open and corrective actions will be reviewed during a future inspection.

2 Radiation Protection/Training (83822/88010)

2.1 Inspection Scope

The inspectors reviewed a limited portion of the licensee's radiation protection and training programs to verify compliance with Title 10 of the *Code of Federal Regulations* (CFR) Part 20 and license requirements.

2.2 Observations and Findings

The licensee's Manual of Standard Practices provides instructions for implementing the various aspects of the radiation protection program. At the time of the inspection, the radiation protection program consisted of monitoring of external occupational dose to

workers, bioassays, contamination surveys, a limited number of radiation work permits (RWPs), instrument calibrations, and worker training. The licensee had previously suspended the respiratory protection, breathing zone air sampling programs, and had discontinued internal dose assessments.

During the site tour, the inspectors observed several contractors performing embankment work on one of the zeolite beds located on the large tailings pile. The embankments were being raised and stabilized. The dried beds contained a dry residual crust of contaminated zeolite. The inspectors requested to view the RWP being used for this work. The licensee replied that the work was not being conducted under an RWP, nor was there an associated standard procedure. The licensee stated that the contractors had received radiation safety training prior to commencing work and were being monitored for external radiation exposure by optically-stimulated dosimeters.

License Condition 24 requires, in part, that the licensee shall be required to use an RWP for all work or non-routine maintenance jobs where a potential for significant exposure to radioactive materials exists and for which no standard written procedure already exists. The licensee stated that they interpret this LC to mean that an RWP was required only when handling tailings material, and because the work did not involve tailings material, no RWP was required. Since the licensee was not performing internal occupational dose monitoring, and had no recent data for concentrations of airborne uranium or radon progeny on top of the large tailings pile, it was unclear whether the licensee was in compliance with 10 CFR 20.1502(b)(1), which requires, in part, that a licensee must monitor employees for occupational intake of radiative material if they are likely to receive greater than 10 percent of the applicable annual limit on intakes from Table 1, columns 1 and 2, of Appendix B to 10 CFR 20. The inspectors concluded that there was not enough information to determine if the licensee was in compliance with regulatory requirements, and this issue was identified as an unresolved item (URI 040-08903/1702-01). The licensee has committed to perform a characterization of occupational exposure concentrations of all radionuclides of concern. The characterization will include data collection of internal and external exposures of workers performing routine and non-routine jobs. The inspectors will evaluate this information during a future inspection to determine if the licensee is in compliance with regulatory requirements.

During the previous inspection, the licensee committed to provide additional training to the RSTs. The inspectors reviewed and discussed the licensee's 2017 RST Training Log. The RSO and another contract consultant had provided ten training sessions to the RSTs since May 2017. Training sessions included a site walk over to identify areas with the potential need for additional occupational monitoring, review of the license and applicable regulations, hands-on training on conducting radiological surveys, and in-depth training on use of radiation detection instrumentation. The training program was being updated by the RSO at the time of the inspection and will be reviewed during a future inspection.

2.3 Conclusions

One unresolved item was identified by the inspectors related to regulatory compliance with 10 CFR Part 20 requirements for internal occupational dose monitoring. The licensee had provided additional radiation safety training to the RSTs.

3 Follow-up of Confirmatory Action Letters or Orders (92703)

3.1 Inspection Scope

The inspectors reviewed and verified the licensee's activities related to the Confirmatory Order were being performed as required.

3.2 Observations and Findings

On March 28, 2017, the licensee agreed to, and was issued, Order No. EA-16-114, (ADAMS Accession Package No. ML17060A752), as a result of Alternative Dispute Resolution mediation. Section V of the Order includes 16 Conditions with actions the licensee is required to implement. The following Condition actions were reviewed and verified by the inspectors to be completed as required:

Condition 1

Condition 1 requires, in part, that the licensee will submit its root cause protocol (RCP) to an independent third party consultant with expertise in root cause analysis (RCA) and provide a copy of the independent third party reviewed analysis protocol to the NRC within 120 days of issuance of the Order. The RCP submitted to the NRC will identify any changes made by the independent third party reviewer and include a qualification statement for the third party reviewer. This protocol will be used to complete Conditions 2, 3, and 4 of the Order.

On July 26, 2017, the licensee submitted a Draft RCP containing edits from an independent third party consultant, and a qualification statement from the consultant (ADAMS Accession No. ML17212A026). The NRC acknowledged the receipt of the RCP in letter dated August 1, 2017, (ADAMS Accession No. ML17213A291). The inspectors reviewed the RCP during the on-site inspection. The licensee and third party consultant stated that they will utilize the "Five Whys Method" to determine the underlying factor or condition contributing to a non-compliance or other identified problem. The inspectors determined that using the "Five Whys Method" is adequate for use as the RCP. The requirement under Condition 1 of the Order to submit the RCP is considered to be satisfied.

Conditions 2, 3, and 4 of the Order have not been completed in-full by the licensee; therefore, verification of the use of the RCP for these Conditions remains open.

Condition 2

Condition 2 requires, in part, that within 30 days of submitting the RCP to the NRC, the licensee will use the RCP to analyze the reasons for the apparent violations documented in NRC's October 4, 2016 letter (ADAMS Accession No. ML16251A526). In addition, the licensee will submit any proposed corrective actions to the NRC for review and approval within 60 days of completing the root cause analysis.

The licensee requested an extension in submission of the RCA of the five apparent violations in letter dated August 23, 2017, (ADAMS Accession No. ML17237C046). The NRC granted approval to extend the submittal due date to September 15, 2017, in an email dated August 24, 2017, (ADAMS Accession No. 17243A234). The NRC provided

a formal approval of the extension request by letter dated October 19, 2017, (ADAMS Accession No. ML17241A299). The October 19, 2017, letter also acknowledged receipt of the licensee's September 15, 2017 RCA of the five apparent violations, (ADAMS Accession No. ML17263A125). The licensee concluded that the common root cause for each of the five apparent violations was lack of communication by licensee management to other licensee staff and corporate managers, and a lack of understanding of regulatory compliance by the licensee's management.

The Licensee submitted the corrective action plan for the five apparent violations by letter dated November 14, 2017, (ADAMS Accession Package No. ML17320A118). Condition 2 of the Order will remain open until the NRC has reviewed and approved the licensee's proposed corrective actions.

Condition 3

Condition 3 of the Order requires that the licensee complete an assessment of all activities to determine whether all activities are authorized and are being conducted in compliance with NRC requirements.

During the inspection, the inspectors viewed a draft copy of the licensee's self-assessment. Discussions between the inspectors and licensee management identified areas of possible improvement for the self-assessment. Following additional discussions between the licensee management and the NRC, the licensee requested a due date extension for the self-assessment submittal. Licensee letter dated November 17, 2017, (ADAMS Accession No. ML17325B023), requests an extension until September 3, 2018, for the submittal of the self-assessment. A formal response to the licensee extension request from the NRC had not been provided to the licensee at the date of this inspection report. Condition 3 of the Order remains open.

Condition 4

Condition 4 of the Order requires the licensee to engage an independent third party consultant to review and evaluate the self-assessment as described in Condition 3 of the Order. Condition 4a states that the licensee must also submit the name and qualifications of the consultant for NRC approval within 30 days of issuance of the Order, Condition 4b requires the licensee to provide the consultant a copy of the self-assessment within 120 days of the self-assessment, and Condition 4c requires the licensee to provide the consultant's review of the self-assessment within 120 days of when the consultant received it for review. In addition, Condition 4d also states, that the NRC will perform an audit of the assessment and the contractor's report. The licensee will be required to incorporate any NRC audit findings.

The licensee submitted correspondence dated April 14, 18, and 24, 2017, to provide the names and qualifications of the third party consultant for NRC approval (ADAMS Accession Nos. ML17108A258, ML17108A207, and ML17115A424). NRC approved the consultants in correspondence dated April 19 and May 3, 2017, (ADAM Accession Nos. ML17114A106 and ML17138A303). The inspectors verified that Condition 4a has been satisfied and is considered completed.

The licensee has requested an extension of the due date for the self-assessment to September 3, 2018, (see Condition 3 above). Conditions 4b and 4c remain open and cannot be completed until the self-assessment has been completed.

Condition 5

Condition 5 of the Order requires that any changes or additions to the license or procedures resulting from this Order will be submitted to the NRC as a license amendment request for NRC approval or an update to the appropriate licensee procedure after notification of the NRC. All license amendment requests will be submitted to the NRC within 60 days of receiving the results of the NRC's audit.

The licensee has not submitted any license amendment requests or notified the NRC of any proposed updates to the procedures beyond the updated procedures directly required by the Order.

Condition 6

Condition 6 of the Order requires that the licensee submit a revised groundwater Corrective Action Program (CAP) to the NRC by the end of calendar year 2018, including amendments to the license approved by that date.

The licensee's November 17, 2017, letter (see Condition 3 above) expressed uncertainty in meeting the current due date of December 31, 2018, for submission of the revised CAP due to the extended time frame needed to complete the Self-Assessment discussed in Condition 3 of the Order. The letter states that "The need for and the length of any extension of the date for submittal of an updated CAP will depend on factors that will only be known by the parties as Homestake Mining Company (HMC) nears completion of the self-assessment." The letter further states that "...the NRC should be aware now that HMC may later make a request for an extension of the December 31, 2018, Confirmatory Order update submittal deadline dependent on the results of the self-assessment". Condition 6 remains open and cannot be completed until the revised CAP is submitted to the NRC. The NRC will review any future extension requests and respond accordingly.

Condition 7

Condition 7 of the Order requires that the licensee conduct initial and annual refresher training for all individuals (employees and vendors, commensurate with their duties) engaged in licensed activities. Section (a) of this condition required initial and annual training to address awareness and understanding of regulatory and license requirements, including but not limited to informing licensee employees of the jurisdiction of the NRC, the Environmental Protection Agency (EPA), and the New Mexico Environmental Department over the Grants site. Section (b) of this condition required that the licensee must maintain documentation for each training session conducted, which will include a summary of the contents of the training and individual attendance.

The inspectors reviewed several training documents conducted the previous inspection, including the radiation safety training for the contractors working on the zeolite embankments. In addition, inspectors reviewed the training conducted for the RSTs.

The inspectors found the training and documentation to be adequate. Condition 7 of the Order is an on-going requirement and will continue to be evaluated during future inspections.

Condition 8

Condition 8 of the Order requires that the licensee use the mass balance methodology described in the revised 2012 groundwater CAP submittal to complete an analysis of the re-injection system's impact to the time estimate for completion of the groundwater CAP. The analysis was to be completed within 120 days of issuance of the Order and the licensee was required to discuss the methodology, data, and analysis with the NRC, no less than 30 days prior to its finalization of the re-injection analysis.

The licensee and the NRC discussed the methodology, data, and analysis during a teleconference on June 26, 2017, and during a follow-up meeting on June 27, 2017. Notes summarizing the discussions during the meetings on June 26 and 27, 2017, as well as the licensee's presentation are publicly available (ADAMS Accession No. ML17352B067). The licensee submitted the impact analysis for the re-injection system by letter dated July 26, 2017, (ADAMS Accession Package No. ML17212A010). The NRC acknowledged receipt of the impact analyses for the re-injection program by letter dated August 1, 2017, (ADAMS Accession No. ML17213A29). The NRC is currently performing the audit of the licensee's submitted analysis and the NRC will provide the audit findings to the licensee once they are completed. Condition 8 of the Order remains open and can be reviewed once the licensee incorporates NRC's comments into the analysis.

Condition 9

Condition 9 of the Order requires within 30 days from issuance of this Order that the licensee perform adjustments to the operations of the RO plant to ensure compliance with the Groundwater Protection Standards (GWPS). The licensee was also required to evaluate the procedure required by LC 23 to ensure the process is adequate to reduce constituent concentrations to values below the GWPS listed in LC 35B before discharge.

The licensee notified the NRC by letter dated April 27, 2017, (ADAMS Accession No. ML17121A311) that adjustments were made to the treatment system to better ensure license compliance. The letter further states that the requirements prescribed by LC 23 were evaluated during the development of the adjustment, and the adjustment was determined to be effective at the RO plant by increasing the fresh water used for blending. The inspectors reviewed the revised procedure and determined that the operational adjustments made at the RO plant were adequate for reducing effluent discharge to below the GWPS. The requirement under Condition 9 of the Order to perform adjustments to the operations of the RO plant and evaluate the procedure required by LC 23 is considered to be satisfied.

Condition 10

Condition 10 of the Order requires an analysis by the licensee using the methodology described in NUREG-1620 the impact of exceedances discharged from the RO plant as documented in the NRC's October 4, 2016 letter (ADAMS Accession No. ML16251A526). The analysis was to be completed within 120 days of issuance of

the Order and the licensee was required to discuss the methodology, data, and analysis with the NRC, no less than 30 days prior to its finalization of the re-injection analysis. The NRC will then perform an audit of the analysis, and provide the licensee with the audit results, including any recommended changes. The licensee will incorporate NRC audit results in the actions described in Condition 5 of this section.

The licensee and the NRC discussed the methodology, data, and analysis with the NRC during a teleconference on June 26, 2017 and during a follow-on meeting on June 27, 2017. Notes summarizing the discussions during the meetings on June 26 and 27, 2017, as well as the licensee's presentation are publicly available (ADAMS Accession No. ML17352B067). The NRC acknowledged receipt of the impact analyses for the exceedances at the RO plant by letter dated August 1, 2017 (ADAMS Accession No. ML17213A29). The NRC is currently performing the audit of the analysis and will provide the audit results in writing once completed. Condition 10 of the Order remains open and can be reviewed once the licensee incorporates NRC's audit results into the analysis.

Condition 11

Condition 11 of the Order directly modified LC 35C of the licensee's license when the Order was issued on March 28, 2017. Condition 11 of the Order is considered to be satisfied.

Condition 12

Condition 12 of the Order requires that the licensee develop written procedures to ensure that monthly composite samples are obtained from Sampling Point 2 (SP2) and that results of those monthly composite samples are reported in the semi-annual and annual reports required by LCs 15 and 42. The licensee was required to submit these procedures to the NRC within 120 days of issuance of the Order.

Written procedures for monthly sampling of SP2 were submitted to the NRC by letter dated July 26, 2017, (ADAMS Accession No. ML17212A025). The inspectors were unable to review the procedures during this inspection due to the time constraints. The procedures will be reviewed during a future inspection.

Condition 13

Condition 13 of the Order directly modified LC 15 of the licensee's license when the Order was issued on March 28, 2017. The modification provides clarifying language for when the semi-annual effluent and environmental monitoring reports are due. Condition 13 of the Order is considered to be satisfied.

Condition 14

Condition 14 of the Order requires that the licensee identify sources of supply water, soil and groundwater data, and associated reports, and will use those data to develop a land application assessment of any impacts due to the use of the irrigation water containing byproduct material to past, current, or foreseeable future uses of the land application areas. The land application assessment will establish background concentrations, remedial action levels (radiological dose and non-radiological risk), and current

concentrations of the contaminants of concern in its license at all areas used for land application. The land application assessment will also identify and assess impacts from soil pore water data at the land application areas. Additionally, the licensee was required to take immediate action to ensure that the land application areas are not being used to produce crops for human consumption. The land application assessment was required to be submitted within 180 days of issuance of this Confirmatory Order.

The licensee submitted the land application assessment by letter dated September 25, 2017, (ADAMS Accession No. ML17270A066). A proposed final status survey plan for release of the former land application areas was submitted by letter dated November 14, 2017, (ADAMS Accession No. ML17340A406). The data obtained for the final status survey is intended to augment the existing soil data within the Land Application Impact Assessment report submitted on September 25, 2017. The NRC is currently reviewing the September 25, 2017, land application assessment report and is awaiting the results of the additional data obtained for the final status survey report. Once the final status survey data is received, the NRC will perform a confirmatory survey at the former land application areas to support the findings in the NRC staff Safety Evaluation Report.

By memorandum dated June 16, 2017, (ADAMS Accession No. ML17328A507), the licensee provided verification that they are not using the former irrigation areas to produce crops for human consumption.

Condition 14 of the Order remains open.

Condition 15

Condition 15 of the Order requires that if the results of the analysis discussed in Condition 14 of the Order indicates that radiological doses and non-radiological risks are in excess of the NRC-approved remedial action levels, the licensee will propose appropriate measures to control both use and access to the impacted areas, a corrective action plan, if necessary, to achieve the NRC-approved remedial action levels, and final status survey plans to demonstrate that the radiological doses and non-radiological risks are below NRC-approved remedial action levels.

Condition 15 of the Order remains open and can be reviewed once the NRC completes the Safety Evaluation Report for the land application assessment required by Condition 14 of the Order.

Condition 16

Condition 16 of the Order requires that the licensee provide an integrated table that sets forth all actions taken pursuant to the Order. An updated integrated table will be provided semi-annually, until all license and procedure changes under the Order are completed.

The licensee submitted the integrated table by letter dated September 27, 2017, (ADAMS Accession No. ML17272A137). Condition 16 of the Order will remain open until all license and procedure changes under the Order are completed.

2.3 Conclusions

Confirmatory Order Conditions 9, 11, and 13 have been evaluated and are determined to be satisfied. Confirmatory Order Conditions 1-8, 10, 13, and 14-16 remain open with pending actions.

4 Radioactive Waste Processing, Handling, Storage, and Transportation (88035)

4.1 Inspection Scope

The inspectors interviewed licensee representatives, toured the site, and reviewed applicable records to determine if the licensee was maintaining the licensed area in accordance with license and regulatory requirements.

4.2 Observations and Findings

The inspectors toured the site and observed the large tailings pile, small tailings pile, evaporation ponds, collection ponds, zeolite systems, and reverse osmosis building. No significant erosion problems were identified on the tailings cells or evaporation ponds. Site fences, gates, and perimeter postings were being maintained by the licensee. As noted in Section 2.2 of this inspection report, the inspectors identified an unresolved item (URI 040-08903/1702-01), that involved contract workers performing embankment improvements on the zeolite ponds without procedures or an RWP, and the contractors were being monitored for external occupational radiation exposure only. The inspectors will evaluate the unresolved item during a future inspection.

During site tours, the NRC inspectors conducted radiological surveys using a Ludlum Model 19 microRoentgen survey meter (NRC No. 015518, calibrated to radium-226, calibration due date of October 25, 2017). With a background of approximately 10 microRoentgen per hour ($\mu\text{R/hr}$), the ambient gamma radiation levels on top of the large tailings pile in the vicinity of the zeolite ponds were observed to be at or near background levels. The burial area on the small tailings pile measured approximately 30 $\mu\text{R/hr}$. The highest measurement, 500 $\mu\text{R/hr}$, was identified at the edge of EP-1. This pond is located within the radiologically restricted area and is not accessible to members of the public. These survey results were consistent with results identified during previous inspections. No area required posting as a radiation area (5,000 $\mu\text{R/hr}$).

4.3 Conclusions

The licensee was maintaining the licensed area in accordance with license and regulatory requirements. The licensee continued to maintain site security with perimeter postings, gates, and fences. The NRC inspectors conducted independent radiological surveys, and the results were consistent with previous surveys. No area required posting as a radiation area.

5 Effluent Control and Environmental Protection (88045)

5.1 Inspection Scope

The inspectors reviewed the licensee's effluent and environmental protection programs to ensure compliance with license and regulatory requirements.

5.2 Observations and Findings

The inspectors reviewed the licensee's control and operation of various site systems used to support the groundwater corrective action program. The licensee operated a number of extraction wells to collect groundwater from onsite and offsite locations. At the time of the inspection, the offsite groundwater was routed to the zeolite system for filtration, while the onsite groundwater was routed to the RO system. The filtered water was mixed with fresh water from a production well, and the combined flow was returned to the various offsite and onsite wells for injection into the subsurface aquifers.

The inspectors reviewed the licensee's environmental monitoring program. Standard Operating Procedure 20, "HC Environmental Monitoring Program Except Groundwater monitoring (EM-2)," provides information on the nine environmental monitoring stations. Seven of the monitoring stations have hi-volume particulate air samplers that collect uranium particulates, nine locations have radon gas track-etch cups for collecting radon and radon daughters, and eight locations have optically-stimulated dosimeters that determine direct gamma radiation. During the site tours, the inspectors observed several environmental monitoring stations which contained the correct monitors as specified in licensee procedures. The inspectors also had discussions with the licensee and reviewed environmental monitoring data. The inspectors concluded that the licensee was performing the environmental monitoring program in accordance with license and regulatory requirements.

License condition 15 requires, in part, that the licensee provide the NRC with semi-annual effluent and environmental monitoring reports on a semi-annual basis. At the time of the inspection, the semi-annual report was not due to the NRC for another several weeks, and thus will be reviewed during a future inspection.

5.3 Conclusions

The licensee was performing the environmental monitoring program in accordance with license and regulatory requirements.

6 Exit Meeting Summary

The inspectors presented the preliminary inspection results to the licensee's representatives at the conclusion of the onsite inspection on September 14, 2017. Following additional NRC compliance reviews, the final inspection results were presented to the licensee's representative by telephone on November 22, 2017. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary that was included in the report.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

W. Archuleta, Radiation Safety Technician-in-Training, Homestake Mining Co.
H. Burns, Environmental Director, Barrick
C. Farr, Consultant, Environmental Restoration Group, Inc.
K. Martinez, Radiation Safety Technician-in-Training, Homestake Mining Co.
A. Venable, Shift Supervisor, Homestake Mining Co.
R. Whicker, Radiation Protection Administrator, Environmental Restoration Group, Inc.
T. Wohlford, Closure Manager, Homestake Mining Co.
C. Zimmerman, Vice President, Brown & Caldwell

INSPECTION PROCEDURES (IPs) USED

IP 83822	Radiation Protection
IP 88005	Management Organization and Controls
IP 88010	Training
IP 88035	Radioactive Waste Processing, Handling, Storage, and Transportation
IP 88045	Effluent Control and Environmental Protection
IP 92703	Follow-up of Confirmatory Action Letters or Orders

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

040-08903/1702-01	URI	Regulatory compliance with 10 CFR Part 20 requirements for internal occupational dose monitoring
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Closed

None

Discussed

040-08903/1701-01	VIO	Failure to establish standard procedures for all activities involving radioactive materials
040-08903/1701-02	VIO	Failure to prepare and record environmental evaluation before engaging in any activity not previously assessed by NRC
040-08903/1701-03	VIO	Failure to administer a cultural resource inventory before engaging in any developmental activity not previously assessed by NRC

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
gpm	gallons per minute
GWPS	ground water protection standards
HMC	Homestake Mining Company
IP	Inspection Procedure
LC	license condition
NRC	U.S. Nuclear Regulatory Commission
RCA	root cause analysis
RCP	root cause protocol
RO	Reverse Osmosis
RSO	Radiation Safety Officer
RST	Radiation Safety Technician
RWP	radiation work permit
μR/hr	microRoentgen per hour
URI	unresolved item
VIO	violation

NRC INSPECTION REPORT 040-08903/2017-002, HOMESTAKE MINING COMPANY OF CALIFORNIA – DATED DECEMBER 20, 2017

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ADAMS ACCESSION NUMBER: ML17353A414

<input checked="" type="checkbox"/> SUNSI Review By: LMG		ADAMS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive	
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