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February 28, 2022

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ATTN: Ms. Anne Maurer
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RE: 2nd Half 2021 Semi-Annual Environmental Monitoring Report for Period July - December 2021, In Accordance with Nuclear Regulatory Commission Docket No. 40-8903, License No. SUA 1471, and New Mexico Environmental Department DP-200 Ground Water Discharge Plan

Mr. Linton and Ms. Maurer:

Pursuant to US Nuclear Regulatory Commission License SUA-1471, Docket 40-8903, License Condition 35(E) and in accordance with the ground water discharge permit DP-200 issued by the New Mexico Environment Department, please find a below a hyperlink to the Semi-Annual Environmental Monitoring Report for the second half of 2021 (July-December) for Homestake Mining Company's Grants Reclamation Project.

https://app.box.com/s/koj9dgvvd54qtpqpdkr5vod8um2id5p9

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,

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HOMESTAKE MINING COMPANY OF CALIFORNIA

Grants Reclamation Project

SEMI-ANNUAL
ENVIRONMENTAL MONITORING REPORT

Reporting Period
July- December 2021

U.S. Nuclear Regulatory Commission License SUA-1471
State of New Mexico DP-200

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1.0 INTRODUCTION

This Semi-Annual Environmental Monitoring Report summarizes effluent monitoring data recorded for Homestake Mining Company of California - Grants Project (Homestake) from July through December 2021. The submittal of this report to the appropriate Nuclear Regulatory Commission (NRC) Regional Office and State of New Mexico within 60 days after January 1, and July 1 for each year of operation is required for all uranium mill facilities pursuant to 10 CFR Part 40.65. The monitoring data and the report format have been selected by Homestake representatives to satisfy the requirements of 10 CFR Part 40.65 and Discharge Permit No. 200, dated September 18, 2014

Homestake's monitoring and surveillance program for radioactive effluent releases have been designed to ensure the project's compliance with 10 CFR Part 40, and Part 20 U.S. NRC Standards for Protection Against Radiation and closely approximates programs as described in NRC's Regulatory Guide 4.14, Radiological Effluent and Environmental Monitoring at Uranium Mills. Some effluent monitoring activities differ from those presented in the Regulatory Guide 4.14 as required by Homestake's Radioactive Materials License (SUA-1471).

Recontouring reclamation activities began in September 1993 and mill demolition commenced in late October 1993 and was completed December 10, 1995. A mill decommissioning completion report was submitted in February 1996 (ML12293A170) and approved by the NRC on January 28, 1999 (ML080030067). The large tailings pile (LTP) has been re-contoured and covered with an interim cover on the top and radon barrier on the outslopes. Bedding and erosion protection was placed on the outslopes after placement of the radon barrier. Soil cleanup verification of the off-pile contaminated soil (windblown tailings) is complete; the completion report was submitted December 18, 1995 (ML12291A911) and approved by the NRC on January 28, 1999 (ML080030067).

A summary of the operations of groundwater treatment technologies, as required by DP-200 is provided in Section 3.0.

Homestake's groundwater monitoring program, as outlined in license Condition No. 35, continued throughout the report period. The requirements set forth in Condition No. 35 include the reporting of both radiological and non-radiological water quality parameters for specified wells, as well as the documentation of water injection and collection volumes of the groundwater cleanup system. The performance review of the groundwater corrective action program (GCAP) is submitted annually as a separate document and contains the groundwater monitoring information for January 1 through December 31 of each year. In order to meet NRC's requirement for semi-annual reporting, groundwater-monitoring data for the point-of-compliance (POC) wells, pond monitoring wells DD, DD2 and X and background well P are included.

2.0 ENVIRONMENTAL MONITORING PROGRAMS

The monitoring requirements for the site are summarized in Table 2-1, Table 2-2, and Table 2-3 attached. Details of the monitoring program are discussed in the following sections:

2.1 Air Particulate Monitoring

Homestake continuously samples total suspended particulates at seven locations around the reclamation site (see Figure 1). Those locations identified as HMC-1, HMC-1A, HMC-2 and HMC-3 are areas at the property boundary expected to have the highest predictable concentrations of radionuclides in airborne particulates. The predominant wind direction with windspeeds high enough to suspend soil particulates in air [exceeding an estimated emission threshold of 7 m/s (Whicker et al., 2002; Webb et al., 2016)] is from the west or southwest; accordingly, HMC-1, HMC-1A, HMC-2 and HMC-3 are generally located downwind from potential sources of particulate emissions). The location identified as HMC-6 represents upwind background conditions for air particulates and is located due west of the large tailings pile at the western most side of the property boundary. Locations HMC-4 and HMC-5 are site proximal to the nearest, and maximally exposed, residences. HMC-7 is a blank Whatman filter that is analyzed as a lab and filter manufacturer quality check sample.

Homestake uses Hi-Q HVP-4300 AFC High Volume Air Samplers (or equivalent) to continuously sample the ambient air at the locations shown in Figure 1. The samples are collected on 8-inch by 10-inch Whatman glass fiber filters (or equivalent), which are changed weekly or more frequently as required by dust loading. Pace Analytical (PACE) analyzes the collected samples quarterly for Natural Uranium, Radium-226 and Thorium-230. Air sampling flow volumes and run times are recorded by HMC and the data are reported to PACE for calculation of average radionuclide concentrations in air particulates.

The results of environmental air particulate monitoring for 2nd half 2021 are provided in Attachment 1.

2.2 Radon Gas Monitoring

Radon-222 gas concentrations in ambient outdoor air are monitored on a continuous basis at the nine locations identified in Figure 1. The background location for radon gas is HMC-16, located northwest of the site. Due to characteristic nocturnal drainage flow with low windspeeds prevailing from the northeasterly direction, monitoring station locations HMC-4 and HMC-5 have the highest effluent radon levels along HMC Site boundaries. With respect to radon gas, these stations are considered "downwind" from primary sources of radon emissions at the Site (LTP and STP). Rapidos high-sensitivity track-etch passive radon monitors (PRM) from Radonova, or equivalent, are used to continuously monitor radon gas at each sampling location. Homestake personnel place new PRMs quarterly at the monitoring locations and the exposed detectors are retrieved and returned to the vendor for analysis. The PRM detectors measure radon gas concentrations in ambient outdoor air by exposing a special alpha-particle sensitive plastic chip mounted inside a chamber with a membrane filter on one end that is permeable to air and radon gas, but not to dust or solid phase particulate radionuclides. Radon-222 gas from ambient air diffuses through the membrane, and the subsequent decay of radon gas inside the chamber causes imprint tracks on the alpha-sensitive plastic chip that can be enhanced by a chemical etching process and counted after collection. The radon gas concentration is calculated by determining the number of tracks per unit area of the plastic chip. The semi-annual average results are presented in Attachment 2.

2.3 Effluent and Radon Flux Monitoring

Regulations in 10 CFR 40.65 require licensees to estimate and report the quantities of principal radionuclides released to unrestricted areas in gaseous effluents every six months.

Radon-222 was the only gaseous-phase effluent radionuclide released to unrestricted areas in the 2nd half 2021. The principal sources of radon-222 at the site are the large tailings pile (LTP) and Small Tailings Pile (STP). Radon-222 releases from components of the water treatment system (the Reverse Osmosis [RO] building, clarifier tanks, and spray evaporators on the evaporation ponds) are insignificant relative to those of the LTP and STP.

Annual flux measurements for calendar year 2021 were conducted as two separate deployments in May and June, consisting of 100 canisters per deployment on the LTP and STP respectively. Deployments were conducted in accordance with the methods proposed in HMC's response to the NRC's 2017 notice of violation (NOV) regarding an average radon flux rate from the LTP that exceeded the 20 picocuries per square meter per second (pCi m^{-2} s^{-1}) standard given in 10 CFR 40, Appendix A (ERG, 2017 and NRC, 2017). The Radon Flux report for 2021 is provided in the 1st half Semiannual Report (ADAMS Accession No. ML21243A100).

On April 20, 2017, the NRC issued a notice of violation for the manner in which average radon flux was measured and calculated for 2015. The 2016 annual flux report, dated January 2017, utilized previously existing protocols pending NRC resolution of a regulatory decision on these matters. On April 24-26, 2017 the NRC conducted an onsite inspection, and in associated discussions indicated that side slopes of the LTP, upon which final cover was completed in 1995 (including flux measurements followed by placement of final erosion control material), cannot be used for annual flux estimates unless new flux measurements on the side slopes are conducted. NRC indicated that 100 annual measurements across the top of the LTP, and calculation of the arithmetic mean of the 100 measurements, would be an acceptable approach to meet the requirements of License Condition 36(E) with respect to the LTP. Although the 2017 radon flux NOV was recently withdrawn by NRC staff (ML21124A358), this protocol, utilized since 2017, continues to be followed as detailed in radon flux reports provided with corresponding semi-annual environmental monitoring reports.

As indicated in the staff's May 5, 2021 withdrawal of the 2017 radon flux NOV (ML21124A358), HMC and NRC staff are continuing to work on resolution of the proper method for determination of the average radon flux from the LTP based on annual flux measurements on top of the LTP in accordance with License Condition 36E (see correspondences in ML21217A166, ML21257A126, and HMC, 2021). Until this issue is resolved, HMC will continue with the survey and reporting practices utilized since 2017.

With respect to the STP, it is an operational facility as Evaporation Pond 1 (EP1) operations and disposal of additional materials in the STP will continue. This interpretation is currently in conflict with NRC staff's October 20, 2021 interpretation that the STP is not an operational tailings impoundment (ML21257A126). HMC continues to contend that the STP is still operational (HMC, 2021), and with this understanding of applicable regulations, the STP is

broken into regions in accordance with EPA Method 115, with the pond being one region of zero flux (20.55 acres), and the remaining areas (earthen surfaces) representing a second region (32.67 acres). Section 2.1.7 of EPA Method 115 provides an explicit mathematical formula for area-weighted averaging of various regions to determine the overall weighted average flux for the entire pile. Under Method 115, calculation of effluent release of radon from the STP is based on the flux measurement data noted above (100 flux measurements), and a calculated overall area-weighted average flux for the two regions as follows (excerpted from EPA Method 115):

(b) The mean radon flux for the total uranium mill tailings pile shall be calculated as follows.

$$J_s = \frac{J_1A_1 + J_2A_2 + \ldots + J_iA_i}{A_t}$$

where:

J_s = Mean flux for the total pile (pCi/m^2-s)
J_i = Mean flux measured in region i (pCi/m^2-s)
A_i = Area of region i (m^2)
A_t = Total area of the pile (m^2)

The radon flux emission rate for the 2nd half of 2021 is assumed equivalent to that measured in the 1st half of 2021 (see Attachment 4 in ML21243A100). Based on 2021 flux monitoring results, the calculated average radon flux effluent value for the LTP in 2021 was 47.5 pCi m^{-2} s^{-1}. With respect to the STP, the arithmetic mean flux for the earthen region of the pile (132,240 m^2 area) in 2021 was 39.0 pCi m^{-2} s^{-1}. The area of EP1 is approximately 83,155 m^2, and this pond area was assigned a value of zero flux. The overall area-weighted average radon flux for the STP in 2020 was calculated as follows:

STP Radon Flux = [(39.0 pCi/m^2-s)(132,240 m^2) + (0 pCi/m^2-s)(83,155 m^2)] / (83,155 m^2 + 132,240 m^2) = 23.9 pCi/m^2-s

Thus, average Rn-222 flux values of 47.5 and 23.9 pCi m^{-2} s^{-1} for the LTP and STP respectively are assumed for 2021. Based on the 2021 average flux values (47.5 and 23.9 pCi m^{-2} s^{-1} for the LTP and STP, respectively), along with the approximate areal extent of the applicable surfaces including the top of the LTP (≈ 106 acres) and the entire STP (≈ 54.7 acres), the annual radon emissions from the tailings piles in 2021 were calculated to be 643 Ci and 162 Ci respectively. For the 2nd half 2020 semi-annual reporting period only, effluent radon releases are assumed equivalent to half of these values, or 321.5 Ci and 81 Ci for the LTP and STP respectively. Detailed results of the 2021 radon flux measurements are provided in Attachment 4 in the 1st half Semiannual Report (ML21243A100).

3.0 OPERATIONS

3.1 Flow Rates

The monthly influent totals to each of the evaporation ponds are presented in Table 3.1-1 for the 2nd half 2021. Inputs to Evaporation Pond 2 were RO brine, zeolite regeneration, tailings sumps, and transfers from the collection pond. Transfers from Evaporation Pond 2 to Evaporation Pond 1 or Evaporation Pond 3 and transfers from Evaporation Pond 1 to Evaporation Pond 3 are presented in this table as well. The influent into the collection ponds was from miscellaneous flow from the RO plant which includes any diverted flow, flow from the RO sumps, backwash from the microfiltration system and blow down from the clarifiers and flow from the zeolite regeneration. The freeboard measurements taken from the evaporation and collection ponds are tabulated in Table 3.1-2. The freeboard measurements missing from August to October in EP3B are a result of a malfunctioning meter with a significant delay in repair due to supply chain issues for a replacement. Freeboard was not exceeded during this time since the water level overtops the berm between the A cell and B cell at 2.4 feet of freeboard, and A cell remained below that level throughout the second half of the year. The leak detection volumes pumped for from Evaporation Ponds 2 and 3 are presented in Tables 3.1-3 through 3.1-5. These three tables give the gallons per day per acre (GPD/AC) with values that exceed 775 GPD/AC highlighted in blue. Pumps in these cells or adjacent cells were adequate to keep up with these rates.

The tailings sump volume for the LTP are presented in Table 3.1-6. Injection into the LTP ceased in July 2015 and dewatering well collection ceased after 2017. The monthly collection totals broken out by aquifer and restoration area are shown in Table 3.1-7. The monthly injection totals broken out by aquifer and area are presented in Table 3.1-8. The On-Site, South Off-Site, and North Off-site injection water is a combination of San Andres water, zeolite treated water, and RO Product water. The low concentration re-injection ceased operation in July of 2016 and therefore not presented in this monitoring report.

Table 3.1-9 presents the influent totals for the active treatment systems. The inflow to the RO plant averaged 619 gpm in the 2nd half 2021 while the inputs to the 300 zeolite and 1200 zeolite cells were 0 and 102 gpm respectively. Table 3.1-10 presents the total volumes of treated effluent. It also presents the regeneration and brine effluents that were discharged into Evaporation Pond 2 from the treatment systems. The fresh water injection totals from each of the three restoration areas are also presented in this table.

3.2 Reversal Wells

The depth to water measurements for the Reversal Wells are presented in Table 3.2-1. Water levels in alluvial reversal pair wells B-BA, DZ-KZ, SM-SN and S2-S5 are presented in this table.

3.3 Pond and Pipeline Maintenance

No repairs to the evaporation/collection ponds were completed from July through December of 2021.

3.4 Well Drilling and Closures

No new wells were drilled during the period from July through December of 2021, as indicated in Table 3.4-1, while numerous wells were abandoned.

3.5 Facilities Inspections and Maintenance

Facilities, structures, contaminated fluid pipelines, equipment, diversion structures and diversion channels associated with groundwater treatment, and drainages were inspected during the period from July through December of 2021. Minor surface water erosion rilling was identified originating on top of the LTP after several rain events. The erosional rilling was addressed in second half of 2021 to prevent further erosion in this area. Minor surface water erosion rilling was also identified on the STP and was repaired at the same time as the LTP rilling. As part of the repair effort, straw waddles were installed to help control future erosion and additional material was brought in, graded and compacted on both the LTP and STP.

In addition, the following significant maintenance activities were performed during this semi-annual reporting period on the groundwater treatment systems:

Zeolite Groundwater Treatment

- No significant maintenance activities were performed on the zeolite system in the 2nd half 2021.

Reverse Osmosis Groundwater Treatment

- Annual scale cleaning occurred in August 2021.

4.0 WATER QUALITY MONITORING

4.1 Groundwater Quality Monitoring

Table 2-2 outlines the water quality sampling frequency and parameters monitored which was approved in November 2019 (ML19217A353). In addition, the volumes of water injected and recovered as part of the ground-water cleanup program are monitored on a weekly frequency and the rates documented. A performance review report is submitted by March 31 of each year according to License Condition 35E. The groundwater monitoring data for the POC wells, as required to comply with 10 CFR 40.65, are reported in Tables 4.1-1 through 4.1-6 A sample was not collected from background well P in the 2nd half of 2021 (see Table 4.1-4). The water quality of POC wells is currently not representative of steady state aquifer conditions and the concentration levels are not compared to 10 CFR 20 effluent limits. A hydraulic barrier forces the water in the aquifer near these POC wells to move in the direction of the collection wells where the water is withdrawn and treated. Due to these conditions, water level data on these wells are also not reflective of steady state conditions, and therefore are not reported here.

4.2 Pond Water Quality Monitoring

Table 4.2-1 presents the water quality data associated with the collection and evaporation ponds. The water quality data for the Evaporation Pond alluvial monitoring wells are presented in Table 4.2-2. This table highlights the concentrations that exceed the alluvial site standards in blue.

The sulfate and TDS concentrations naturally exceed the site standard in well DD. The uranium concentrations in well DD2 naturally exceed the alluvial site standard as they have since this well was drilled. Total concentrations for manganese, selenium, molybdenum and uranium are presented for the ponds and are generally similar to the dissolved concentrations. Table 4 from the Discharge Permit DP-200 requests uranium activity as one of the analytes for monitoring but is not included because it is a calculated value from the uranium concentrations.

4.3 Treated Water Quality Monitoring

Table 4.3-1 presents the effluent water quality analysis from the Post Treatment Tank (SP2). The SP2 sample is collected after mixing of RO product, zeolite treated and fresh water. This table also shows that all SP2 concentrations in the 2nd half 2021 were less than all alluvial site standards for each of these samples.

Table 4.3-2 presents the treated water quality data for the RO product (ROSP1) and the zeolite treated water (300Z, 1200Z Trains 1 & 2, and 1200Z Trains 3 & 4) with sample constituent concentrations that exceed the alluvial site standards highlighted in blue. All RO product constituent concentrations measured in the 2nd half 2021 were less than or equal to the corresponding alluvial site standards. Table 4.3-2 also presents the treated water quality for the zeolite treatment process. In the 2nd half 2021, zeolite treatment water was less than or equal to the corresponding alluvial site standards treat for the 1200 zeolite systems. The zeolite treated water is monitored for the discharge from the 300 zeolite and Trains 1 & 2 and Trains 3 & 4 from the 1200 systems.

5.0 DIRECT RADIATION

Gamma dose rates are continuously monitored using optically stimulated luminescence (OSL) dosimeter badges placed at each of the eight locations identified in Figure 1. HMC #16 is currently considered the background location for direct radiation. Each OSL badge consists of an aluminum oxide detector within a plastic holder. The plastic provides adequate protection from weather for these badges to be used outdoors. The OSLs are exchanged semiannually and analyzed by an approved independent laboratory (currently Landauer). The levels of direct environmental radiation are recorded for each of the eight locations. Pertinent sample data are reported in Attachment 3.

6.0 SURFACE CONTAMINATION

The Occupational Monitoring Program requirements are summarized in Table 2-3. The aspects related to contamination control are discussed briefly below.

6.1 Personnel Skin and Clothing

The monitoring of personnel for alpha contamination may be required by the Radiation Safety Officer (RSO) depending on the nature of the work being performed as specified in the Radiation Protection Program (RPP) Manual (HMC, 2022). The applicable procedure is found in SOP 12 (Contamination Surveys) which may or may not be conducted under a radiation work permit (RWP) at the discretion of the RSO. Documentation for personnel contamination surveys is maintained in

RWP or miscellaneous surveys folders as applicable. For the 2nd half of 2021, no personnel contamination surveys showed evidence of elevated activity in excess of the upper range of background levels.

6.2 Survey of Equipment Prior to Release for Unrestricted Use

Equipment surveys are required for all equipment that is to be removed from Restricted Areas as specified in the RPP (HMC, 2022). Depending on the equipment use and potential for contact with tailings or other licensed radioactive material (e.g. residual solids from water treatment operations), the RSO may require equipment release surveys for projects that don't require an RWP. Standard Operating Procedures are used for all equipment release surveys. No surface contamination above NRC release criteria was observed during this reporting period.

7.0 LOWER LIMIT OF DETECTION

Homestake representatives have calculated the Lower Limit of Detection (LLD) for field survey instrumentation systems, where applicable, to better inform evaluation of survey results. The lower limit of detection is defined in U.S. Nuclear Regulatory Guide 8.30 – Appendix B as the smallest concentration of radioactive material that has a 95% probability of being detected. Radioactive material is "detected" if the value measured on an instrument is high enough to conclude that activity above the system background is present at a given level of confidence. Since the LLD is a function of sample volume, counting efficiency, radiochemical yield, etc., it varies for different sampling and analysis procedures.

For the individual measurement systems for which Homestake calculates LLDs, the following formula is utilized:

$$LLD = \frac{3+4.66\ S_b}{3.7\ E+4\ EVY \exp(-\lambda t)}$$

Where:

LLD	is the lower limit of detection (microcuries per milliliter [μCi/mL]);
S_b	is the standard deviation of the instrument background counting rate (counts per second);
3.7 E+4	is the number of disintegrations per second per microcurie;
E	is the counting efficiency (counts per disintegration);
V	is the sample volume (mL);
Y	is the fractional radiochemical yield (when applicable);
λ	is the radioactive decay constant for the particular radionuclide; and;
t	is the elapsed time between sample collection and counting

The value of S_b used in the calculation of the LLD for a particular measurement system will be based on the actual observed variance of the instrument background counting rate. The laboratory has been instructed to report the LLD, minimum detectible concentration (MDC), or reporting

limit (RL) as applicable for each measurement considering all of the parameters associated with the measurement system and the sample size.

The vendor laboratory that performed the analyses reported herein has documented that the LLD, MDC or RL as applicable for air and water samples will meet the specifications in Regulatory Guide 4.14. This assumes a minimum water sample size of 1 liter and an air sample volume of 2 E+9 mL. Radonova (track-etch detector vendor lab) reports the LLD for radon-222. The LLDs for the constituents are:

Ra-226, Th-230 in air	1 E-16 µCi/mL
Rn-222 in air	3.4 E-10 µCi/mL
U-nat in air	1 E-16 µCi/mL
U-nat in water	2 E-10 µCi/mL
Ra-226, Th-230 in water	2 E-10 µCi/mL

8.0 DATA SUMMARY AND CONCLUSIONS

The summaries of Homestake's effluent monitoring program included in this submittal contain data for applicable radiological parameters that could be released to unrestricted areas. DP-200 and 10 CFR Part 40.65 requires that Homestake submit effluent release monitoring data to the State of New Mexico and the NRC within 60 days of the end of the six-month period ending January 1 and July 1 of each year. Homestake is submitting this report to satisfy the regulatory requirements cited above. The attachments included in this report summarize the results of the effluent monitoring activities conducted by Homestake for the required monitoring period.

The data collected for Homestake's effluent monitoring program parameters can be readily compared to 10 CFR Part 20 Appendix B effluent concentration (EC) values, not for determinations of public dose, but as a qualitative indicator for identifying effluent levels or trends that could pose a concern in terms of compliance with public dose limits given in 10 CFR 20.1301. During the current reporting period (2nd half 2021), Homestake has not exceeded 10 CFR Part 20 EC values in any terrestrial effluents covered by this report. As discussed earlier, this does not include groundwater values at POC wells.

REFERENCES

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Homestake Mining Company of California (HMC). 2022. Radiation Protection Program Manual, Revision 4. Homestake Grants Reclamation Project, Cibola County, New Mexico. February 1.

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Webb, Nicholas P.; Magda S. Galloza; Ted M. Zobeck; Jeffrey E. Herrick. 2016. Threshold wind velocity dynamics as a driver of aeolian sediment mass flux. Aeolian Research 20 (2016) 45–58.

Whicker, Jeffrey J.; David D. Breshears, Piotr T. Wasiolek, Thomas B. Kirchner, Rebecca A. Tavani, David A. Schoep, and John C. Rodgers J. 2002. Temporal and Spatial Variation of Episodic Wind Erosion in Unburned and Burned Semiarid Shrubland. J. Environ. Qual. 31:599–612 (2002).

Table 2-1
Environmental Monitoring Program Excluding Groundwater Monitoring

Table 2-1 - Environmental Monitoring Program Excluding Groundwater Monitoring

Type of Sample	Number	Locations	Method	Frequency	Analytical Parameters
Air Particulates	4	HMC1, HMC1A, HMC2, and HMC3 at or near the site boundary (sectors with highest predicted levels of airborne radioactive particulates).	Continuous (High Vol.)	Weekly filter change, or as needed. Samples composited and analyzed quarterly.	U-nat, Ra-226, Th-230
Air Particulates	2	HMC4 and HMC5 (points of compliance for maximally exposed member of public)	Continuous (High Vol.)	Weekly filter change, or as needed. Samples composited and analyzed quarterly.	U-nat, Ra-226, Th-230
Air Particulates	1	HMC6 as a background location	Continuous (High Vol.)	Weekly filter change, or as needed. Samples composited and analyzed quarterly.	U-nat, Ra-226, Th-230
Radon Gas	24	2 each at the locations described above, plus HMC1OFF, HMC6OFF, HMC7, and HMC16 as a background location. Indoor locations in office and RO plant (1 each).	Continuous Track-etch	Quarterly	Rn-222
Direct Radiation	8 + 2 transit control badges	Locations described in Air - Particulates plus HMC1OFF, HMC6OFF, and HMC16 as a background location	Continuous OSL	Semi-Annually	Gamma Dose Rate

Table 2-2
Groundwater Monitoring Program (2019, as modified by Amendment 54)

Table 2-2. Groundwater Monitoring at the Grants Site (2019 as modified by Amendment 54)		
Well	**Parameter List Code**	**Frequency of Monitoring**
Alluvial Background Wells		
P, Q, 921	B, F	Annual
Operational Monitoring		
Collection system wells Injection system wells	Total Volume Total Volume	Monthly Monthly
Reversal wells B, BA, KZ, DZ, SM, SN, S2, S5	Water Level	Weekly
San Andres Wells		
Deep #1R, Deep #2R, 943M, 951R	B, F H	Annual Semi-annual
Alluvial Compliance Monitoring Wells		
On-Site Monitoring Wells (Evap. Ponds) DD, DD2, X	B, F plus Mn H	Annual Quarterly
Additional On-Site Monitoring Wells 1A, 1K, 639, 802, B11, D1, F, FB, GH, GN, L, L5, K9, M3, MX, MB, MQ, NC, S4, SUB3, T2, T19, T23, T41, T54	B, F	Annual
South Off-Site Wells 490, 497, 540, 631, 643#, 644, 864, 869, Q5, R3, SUB2	B, F	Annual
Section 34 Land application wells 555, 556, 557, 844, 845, 846	B, F	Annual
North Off-Site Wells(includes Section 28 Land application wells) 688, 881, 882, 883, 884, 886, 888, 893, 659, H2A, MR, H55, MO	B, F	Annual
Western Portion of North Off-Site Wells (Includes Section 33 Land application wells) 541, 551, 647, 649, 654, 899, 996	B, F	Annual
Chinle Compliance Monitoring Wells		
Upper Chinle Wells 494, CE2, CE8, CE9, CE15, CF4, CW3, CW13#, CW18, CW25#	B, F	Annual
Middle Chinle Wells 493, ACW, CW17, CW2, CW28, CW45, CW55, CW62, CW76, R3, Y7	B, F	Annual
Lower Chinle Wells CW29, CW32, CW41, CW42, CW43, V6	B, F	Annual

Note: # Monitoring will start after well ceasing to be used for injection

Table 2-2. Groundwater Monitoring at the Grants Site (2019 as modified by Amendment 54), con't

Parameter List Code	Included Parameters (Dissolved)	Method	Reporting Limits	Units
B	Water level			
	pH	Field	0.01	s.u.
	Total dissolved solids (TDS)	A2540 C	20	mg/L
	Sulfate (SO_4)	E300.0	4	mg/L
	Chloride (Cl)	E300.0	1	mg/L
	Bicarbonate (HCO_3)	A2320 B	5	mg/L
	Carbonate (CO_3)	A2320 B	5	mg/L
	Sodium (Na)	E200.7	0.9	mg/L
	Calcium (Ca)	E200.7	0.5	mg/L
	Magnesium (Mg)	E200.7	0.5	mg/L
	Potassium (K)	E200.7	0.5	mg/L
	Nitrate (NO_3)	E353.2	0.1	mg/L
	Uranium (U)	E200.8	0.0003	mg/L
	Selenium (Se)	E200.8	0.005	mg/L
	Molybdenum (Mo)	E200.8	0.03	mg/L
	Radium-226 (Ra-226)	E903.0	Precision Variable	pCi/L
F	Vanadium (V)	E200.8	0.01	mg/L
	Radium-228 (Ra-228)	RA-05	Precision Variable	pCi/L
	Thorium-230 (Th-230)	E908.0	Precision Variable	pCi/L
H	Water Level			
	TDS	A2540 C	20	mg/L
	SO_4	E300.0	4	mg/L
	U	E200.8	0.0003	mg/L
	Se	E200.8	0.005	mg/L
	Mo	E200.8	0.03	mg/L
	Cl	E300.0	1	mg/L

Table 2-3
Occupational Monitoring Program

Table 2-3 Occupational Exposure/Dose Monitoring Program

Type of Sample	Number	Locations	Procedure	Frequency	Analytical Parameters
Lapel Personal Air Sample	As required by RWP or at RSO discretion	As required by RWP (2-3 L/min or equivalent)	SOP 11 (HP-1)	As required by RWP or at RSO discretion	Alpha, U-nat
Lapel Air Sampler Calibration	All units in current use	N/A	Manufacturer Specifications	As required by RWP	Flow rate
Release of Equipment	As required by RWP	Potentially Contaminated Equipment and Materials	SOP 12 (HP-4)	As required by RWP	Alpha, beta gamma
ALARA	N/A	As required by RSO	Section 4.2 RPP Manual [A]	N/A	As required by RSO
Respiratory Protection [B]	As required by RWP	As required by RWP	N/A[B]	N/A	N/A
Bioassay	Entry/exit and routine semiannual samples, and as required by RWP	Routine Site workers and as required by RSO for RWP workers	SOP 14 (HP-8)	Entry/exit and routine semiannual samples, and as required by RWP	U-nat in urine
Instrument Calibration	Variable	Radiation Detection Instruments in use	SOP 16 (HP-10)	6 months or less	N/A
Dosimetry	Variable	Personnel onsite > 5 days per year	SOP 13 (HP-3)	Quarterly	Gamma
Personnel Contamination	As required by RWP	As required by RWP	SOP 12 (HP-12)	As required by RWP	Alpha
Radiation Protection Training	As required	HMC GRP site	Taught by RSO or RST designee. [C]	Initial & annual refresher for personnel that work in Controlled Areas.	Training class & written test

[A] In 2022 HP-6 was replaced with Section 4.2 of the Radiation Protection Program (RPP) Manual.

[B] Respiratory protection not expected to be necessary for current site decommissioning and reclamation activities. Procedure HP-7 has been inactivated and is not included in current RPP Manual or in the HMC Manual of Standard Practices.

[C] Annual refresher training is given by the RSO for all regular HMC employees that work in Controlled Areas. Temporary contractors are generally trained by the Radiation Safety Technician (RST) as a designee of the RSO, with the aid of a previously developed radiation safety video followed by testing.

Tables 3.1-1 through 3.1-10
Flow Rates

Table 3.1-1. Evaporation and Collection Pond Monthly Influent Totals

Evap Pond 1

July	Interval Gallons
Transfer EP-2 to EP-1	0

August	Interval Gallons
Transfer EP-2 to EP-1	0

September	Interval Gallons
Transfer EP-2 to EP-1	0

October	Interval Gallons
Transfer EP-2 to EP-1	0

November	Interval Gallons
Transfer EP-2 to EP-1	0

December	Interval Gallons
Transfer EP-2 to EP-1	0

Evap Pond 2

July	Interval Gallons
R.O. Flow to Evaporation Ponds	4,565,831
Tailings Sumps	103,630
Tailings Pile	0
Zeolite Regeneration & Overflow	0
W Coll Pond to EP-2	25,808
August	Interval Gallons
R.O. Flow to Evaporation Ponds	5,426,628
Tailings Sumps	220,380
Tailings Pile	0
Zeolite Regeneration & Overflow	0
W Coll Pond to EP-2	0
September	Interval Gallons
R.O. Flow to Evaporation Ponds	1,772,466
Tailings Sumps	133,020
Tailings Pile	0
Zeolite Regeneration & Overflow	0
W Coll Pond to EP-2	0
October	Interval Gallons
R.O. Flow to Evaporation Ponds	4,362,460
Tailings Sumps	121,120
Tailings Pile	0
Zeolite Regeneration & Overflow	0
W Coll Pond to EP-2	0
November	Interval Gallons
R.O. Flow to Evaporation Ponds	5,008,230
Tailings Sumps	146,510
Tailings Pile	0
Zeolite Regeneration & Overflow	1,151,700
W Coll Pond to EP-2	0
December	Interval Gallons
R.O. Flow to Evaporation Ponds	3,708,595
Tailings Sumps	122,190
Tailings Pile	0
Zeolite Regeneration & Overflow	0
W Coll Pond to EP-2	0

Evap Pond 3

July	Interval Gallons
Transfer EP-1 to EP-3	0
Transfer EP-2 to EP-3	0

August	Interval Gallons
Transfer EP-1 to EP-3	0
Transfer EP-2 to EP-3	0

September	Interval Gallons
Transfer EP-1 to EP-3	0
Transfer EP-2 to EP-3	16,865,058

October	Interval Gallons
Transfer EP-1 to EP-3	0
Transfer EP-2 to EP-3	0

November	Interval Gallons
Transfer EP-1 to EP-3	0
Transfer EP-2 to EP-3	0

December	Interval Gallons
Transfer EP-1 to EP-3	0
Transfer EP-2 to EP-3	0

Collection Ponds

July	Interval Gallons
Miscellanous RO and Clarifier Flow	1,776,077
Tailings Sumps	0
Zeolite Regeneration	0

August	Interval Gallons
Miscellanous RO and Clarifier Flow	4,032,281
Tailings Sumps	0
Zeolite Regeneration	0

September	Interval Gallons
Miscellanous RO and Clarifier Flow	11,909,516
Tailings Sumps	0
Zeolite Regeneration	0

October	Interval Gallons
Miscellanous RO and Clarifier Flow	2,745,978
Tailings Sumps	0
Zeolite Regeneration	0

November	Interval Gallons
Miscellanous RO and Clarifier Flow	4,185,530
Tailings Sumps	0
Zeolite Regeneration	0

December	Interval Gallons
Miscellanous RO and Clarifier Flow	380,028
Tailings Sumps	0
Zeolite Regeneration	0

Table 3.1-2. Evaporation and Collection Pond Weekly Freeboard Measurements (feet)

	EP1	EP2	EP3A	EP3B	W Coll	E Coll
7/5/2021	10.7	10.19	4.87	5.54	5.02	-
7/12/2021	11	10.07	4.96	5.57	5.4	-
7/19/2021	10.7	9.84	4.90	5.17	5.3	-
7/26/2021	10.7	9.48	4.71	4.64	5.1	-
8/2/2021	10.7	9.84	4.73	-	5.08	-
8/9/2021	10.7	9.36	4.87	-	5.4	-
8/16/2021	10.7	9.18	4.95	-	5.87	-
8/23/2021	11.8	9.05	5.04	-	6.2	-
8/30/2021	11.72	8.5	5.10	-	6.7	-
9/6/2021	11.72	9.94	5.16	-	5	-
9/13/2021	11.72	12.33	4.24	-	5	-
9/20/2021	11.72	12.6	3.36	-	6.5	-
9/27/2021	11.75	12.6	3.15	-	6.32	-
10/4/2021	11.75	12.39	3.13	-	5.2	-
10/11/2021	11.75	12.13	3.18	-	5.4	-
10/18/2021	11.72	12	3.40	3.33	7	-
10/25/2021	11.72	11.84	3.40	3.33	7.05	-
11/1/2021	11.72	11.72	3.40	3.33	7.2	-
11/8/2021	11.72	11.56	3.40	3.33	7.3	-
11/15/2021	11.72	11.42	3.40	3.33	7.05	-
11/22/2021	13.96	11.25	3.40	3.33	7.25	-
11/29/2021	13.96	10.77	3.42	3.53	7.12	-
12/6/2021	13.96	10.07	3.45	3.63	6.45	-
12/13/2021	13.96	10.07	3.49	3.63	6.25	-
12/20/2021	13.96	9.94	3.53	3.48	6.17	-
12/27/2021	13.96	9.73	3.54	3.48	5.93	-

Note: Missing EP3B freeboard readings are due to malfunctioning meter

Table 3.1-3. Evaporation Pond 2 Leak Detection

Date	No. 1			No. 2			No. 3			No. 4			No. 5		
	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC
Previous Reading	174,220			2,133,290			957,690			1,191,250			1,413,780		
7/5/2021	174220	0	0	2133290	0	0	957690	0	0	1191250	0	0	1427570	13,790	558
7/12/2021	174220	0	0	2133300	10	0	957690	0	0	1191250	0	0	1427590	20	1
7/19/2021	174220	0	0	2133300	0	0	957690	0	0	1191250	0	0	1427600	10	0
7/26/2021	174220	0	0	2133310	10	0	957690	0	0	1191250	0	0	1427610	10	0
8/2/2021	174220	0	0	2133310	0	0	957690	0	0	1191250	0	0	1427630	20	1
8/9/2021	174220	0	0	2133320	10	0	957690	0	0	1191250	0	0	1431440	3,810	154
8/16/2021	174220	0	0	2133330	10	0	957690	0	0	1191250	0	0	1431450	10	0
8/23/2021	174220	0	0	2133330	0	0	957690	0	0	1191250	0	0	1431450	0	0
8/30/2021	174220	0	0	2133330	0	0	957690	0	0	1191250	0	0	1431460	10	0
9/6/2021	174220	0	0	2133330	0	0	957690	0	0	1191250	0	0	1431460	0	0
9/13/2021	174220	0	0	2133340	10	0	957690	0	0	1191250	0	0	1431470	10	0
9/20/2021	174220	0	0	2133340	0	0	957690	0	0	1191250	0	0	1431490	20	1
9/27/2021	174220	0	0	2133340	0	0	957690	0	0	1191250	0	0	1431500	10	0
10/4/2021	174220	0	0	2133340	0	0	957690	0	0	1191250	0	0	1431520	20	1
10/11/2021	174220	0	0	2135930	2,590	117	957690	0	0	1191250	0	0	1431530	10	0
10/18/2021	174220	0	0	2135940	10	0	957690	0	0	1191250	0	0	1431540	10	0
10/25/2021	174220	0	0	2135940	0	0	957690	0	0	1191250	0	0	1431550	10	0
11/1/2021	174220	0	0	2135930	-10	0	957690	0	0	1191250	0	0	1431550	0	0
11/8/2021	174220	0	0	2135930	0	0	957690	0	0	1191250	0	0	1431560	10	0
11/15/2021	174220	0	0	2135940	10	0	957690	0	0	1191250	0	0	1431560	0	0
11/22/2021	174220	0	0	2135940	0	0	957690	0	0	1191250	0	0	1431570	10	0
11/29/2021	174220	0	0	2135940	0	0	957690	0	0	1191250	0	0	1431580	10	0
12/6/2021	174220	0	0	2135930	-10	0	957690	0	0	1191250	0	0	1431580	0	0
12/13/2021	174220	0	0	2135930	0	0	957690	0	0	1191250	0	0	1431580	0	0
12/20/2021	174220	0	0	2135930	0	0	957690	0	0	1191250	0	0	1431580	0	0
12/27/2021	174220	0	0	2135930	0	0	957690	0	0	1191250	0	0	1431580	0	0

NOTE: Totalizer readings that result in minor positive or negative volumes should not be given any significance.
GPD/AC = Gallons per day per acre; those that exceed 775 are in bold.
 # = Pump not installed due to collapsed standpipe

Table 3.1-4. Evaporation Pond 3A Leak Detection

Cell A Sumps	A-1			A-2			A-3			A-4			A-5		
	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC
Previous Reading	70			1,159,980			303,160			29,990			671,870		
7/5/2021	70	0	0	1,160,160	180	10	303,160	0	0	29,990	0	0	671,910	40	2
7/12/2021	70	0	0	1,160,300	140	8	303,160	0	0	29,990	0	0	671,910	0	0
7/19/2021	70	0	0	1,161,320	1,020	56	303,160	0	0	29,990	0	0	672,170	260	14
7/26/2021	70	0	0	1,162,110	790	44	303,160	0	0	29,990	0	0	672,180	10	1
8/2/2021	70	0	0	1,162,140	30	2	303,160	0	0	29,990	0	0	672,200	20	1
8/9/2021	70	0	0	1,162,190	50	3	303,160	0	0	29,990	0	0	672,200	0	0
8/16/2021	70	0	0	1,162,200	10	1	303,160	0	0	29,990	0	0	672,780	580	32
8/23/2021	70	0	0	1,162,200	0	0	303,160	0	0	29,990	0	0	672,500	-280	-16
8/30/2021	70	0	0	1,163,010	810	45	303,160	0	0	29,990	0	0	672,500	0	0
9/6/2021	70	0	0	1,164,820	1,810	100	303,160	0	0	29,990	0	0	672,500	0	0
9/13/2021	70	0	0	1,166,880	2,060	114	303,160	0	0	29,990	0	0	672,520	20	1
9/20/2021	70	0	0	1,166,890	10	1	303,160	0	0	29,990	0	0	672,540	20	1
9/27/2021	70	0	0	1,167,210	320	18	303,160	0	0	29,990	0	0	675,930	3,390	188
10/4/2021	70	0	0	1,170,290	3,080	171	303,160	0	0	29,990	0	0	679,830	3,900	216
10/11/2021	70	0	0	1,173,200	2,910	161	303,160	0	0	29,990	0	0	682,610	2,780	154
10/18/2021	70	0	0	1,177,720	4,520	250	303,160	0	0	29,990	0	0	690,050	7,440	412
10/25/2021	70	0	0	1,181,600	3,880	215	303,160	0	0	29,990	0	0	690,340	290	16
11/1/2021	70	0	0	1,184,000	2,400	133	303,160	0	0	29,990	0	0	690,360	20	1
11/8/2021	70	0	0	1,184,530	530	29	303,160	0	0	29,990	0	0	690,370	10	1
11/15/2021	70	0	0	1,185,210	680	38	303,160	0	0	29,990	0	0	690,390	20	1
11/22/2021	70	0	0	1,186,270	1,060	59	303,160	0	0	29,990	0	0	690,400	10	1
11/29/2021	70	0	0	1,186,270	0	0	303,160	0	0	29,990	0	0	690,410	10	1
12/6/2021	70	0	0	1,187,080	810	45	303,160	0	0	29,990	0	0	690,430	20	1
12/13/2021	70	0	0	1,189,640	2,560	142	303,160	0	0	29,990	0	0	690,440	10	1
12/20/2021	70	0	0	1,189,690	50	3	303,160	0	0	29,990	0	0	690,450	10	1
12/27/2021	70	0	0	1,189,930	240	13	303,160	0	0	29,990	0	0	690,460	10	1

NOTE: Totalizer readings that result in minor positive or negative volumes should not be given any significance
GPD/AC = Gallons per day per acre; those that exceed 775 are in bold.
@ = Totalizer not connected

Table 3.1-5. Evaporation Pond 3B Leak Detection

Cell B Sumps	B-1			B-2			B-3			B-4			B-5		
	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC	Reading	Gallons	GPD/AC
Previous Reading	191,300			516,060			1,793,480			534,900			443,960		
7/5/2021	195,500	4,200	233	516,130	70	4	1,793,530	50	3	534,900	0	0	443,980	20	1
7/12/2021	198,630	3,130	173	516,170	40	2	1,793,580	50	3	534,900	0	0	444,000	20	1
7/19/2021	201,640	3,010	167	516,210	40	2	1,793,620	40	2	534,900	0	0	444,010	10	1
7/26/2021	204,590	2,950	163	516,280	70	4	1,793,680	60	3	534,900	0	0	444,030	20	1
8/2/2021	207,580	2,990	166	516,350	70	4	1,793,740	60	3	534,900	0	0	444,060	30	2
8/9/2021	207,790	210	12	516,410	60	3	1,793,790	50	3	534,900	0	0	444,080	20	1
8/16/2021	217,690	9,900	548	517,600	1,190	66	1,793,880	90	5	534,900	0	0	444,800	720	40
8/23/2021	221,940	4,250	235	518,480	880	49	1,799,060	5,180	287	534,900	0	0	444,820	20	1
8/30/2021	226,220	4,280	237	518,550	70	4	1,803,810	4,750	263	534,900	0	0	444,830	10	1
9/6/2021	230,210	3,990	221	520,240	1,690	94	1,807,430	3,620	200	534,900	0	0	444,850	20	1
9/13/2021	235,360	5,150	285	520,220	-20	-1	1,810,740	3,310	183	534,900	0	0	446,070	1,220	68
9/20/2021	240,750	5,390	298	520,240	20	1	1,814,500	3,760	208	534,900	0	0	446,090	20	1
9/27/2021	247,220	6,470	358	520,260	20	1	1,817,020	2,520	140	534,900	0	0	446,720	630	35
10/4/2021	252,080	4,860	269	520,260	0	0	1,821,110	4,090	226	534,900	0	0	446,750	30	2
10/11/2021	252,280	200	11	521,690	1,430	79	1,825,550	4,440	246	534,900	0	0	446,770	20	1
10/18/2021	252,280	0	0	524,770	3,080	171	1,831,170	5,620	311	534,900	0	0	446,790	20	1
10/25/2021	252,280	0	0	528,990	4,220	234	1,838,170	7,000	388	534,900	0	0	446,800	10	1
11/1/2021	252,280	0	0	534,480	5,490	304	1,848,540	10,370	574	534,900	0	0	446,800	0	0
11/8/2021	252,280	0	0	538,960	4,480	248	1,856,390	7,850	435	534,900	0	0	446,820	20	1
11/15/2021	252,280	0	0	544,550	5,590	310	1,860,320	3,930	218	534,900	0	0	446,820	0	0
11/22/2021	252,280	0	0	551,080	6,530	362	1,862,040	1,720	95	534,900	0	0	446,820	0	0
11/29/2021	252,280	0	0	557,890	6,810	377	1,863,750	1,710	95	534,900	0	0	446,830	10	1
12/6/2021	252,280	0	0	562,640	4,750	263	1,868,100	4,350	241	534,900	0	0	446,830	0	0
12/13/2021	252,280	0	0	566,530	3,890	215	1,868,710	610	34	534,900	0	0	446,830	0	0
12/20/2021	252,280	0	0	566,530	0	0	1,868,790	80	4	534,900	0	0	446,830	0	0
12/27/2021	252,280	0	0	566,530	0	0	1,869,200	410	23	534,900	0	0	446,830	0	0

NOTE: Totalizer readings that result in minor positive or negative volumes should not be given any significance.
GPD/AC = Gallons per day per acre; those that exceed 775 are in bold.
 # = Pump Maintenance; pumps off line.

Table 3.1-6. Monthly Tailings Collection and Injection Totals

	Sumps (gallons)
July	43,630
August	163,380
September	116,020
October	121,120
November	146,510

Table 3.1-7. Monthly Collection Totals by Aquifer and Area (gallons)

	On-Site Collection			South Off-Site Collection				North Off-Site Collection
	Alluvial	Upper Chinle	Middle Chinle	Alluvial	Upper Chinle	Middle Chinle	Lower Chinle	Alluvial
July	15,766,808	7,297,370	1,188,200	3,357,760	0	726,130	0	1,160,000
August	19,178,891	8,712,185	1,473,900	3,210,195	0	1,289,805	0	304,000
September	6,975,367	3,337,075	593,800	4,752,505	630	1,154,765	0	4,000
October	15,229,871	7,038,635	1,317,200	6,232,200	370	1,083,630	0	0
November	20,486,309	8,573,355	1,614,600	3,506,420	0	2,136,750	0	0
December	14,711,672	8,284,940	1,215,400	697,680	0	637,480	0	0

Table 3.1-8. Monthly Injection Totals by Aquifer and Area (gallons)

	On-Site Injection			South Off-Site Injection				North Off-Site Injection
	Alluvial	Upper Chinle	Middle Chinle	Alluvial	Upper Chinle	Middle Chinle	Lower Chinle	Alluvial
July	20,517,336	2,255,740	352,430	4,805,830	0	645,570	0	7,601,500
August	22,520,169	1,677,960	379,500	5,448,350	0	956,650	0	10,002,800
September	12,749,459	1,736,750	271,040	6,573,870	0	457,030	0	6,076,100
October	25,843,361	1,572,550	302,735	1,563,880	0	621,020	0	9,396,800
November	32,121,122	3,474,560	365,350	1,107,086	0	185,290	0	10,604,700
December	15,934,351	765,680	203,000	8,941,654	0	791,570	0	7,908,200

Table 3.1-9. Treatment System Influents Monthly Totals (gallons)

	300 GPM Zeolite	1200 GPM Zeolite	RO Plant
July	0	3,828,000	27,242,914
August	0	4,192,200	33,959,436
September	0	5,911,900	12,718,070
October	0	6,246,800	27,017,616
November	0	5,044,700	34,293,886
December	0	1,578,400	27,078,978

Table 3.1-10. Treatment System Effluent and Fresh Water Monthly Totals (gallons)

	Treatment Systems				Fresh Water Injection		
	Zeolite		RO Plant				
	Treated	Regeneration	Treated	Brine	On-Site	South Off-Site	North Off-Site
July	3,828,000	0	20,901,006	4,565,831	7,728,126	1,554,149	2,167,125
August	4,192,200	0	24,500,527	5,426,628	7,748,609	1,773,846	2,770,247
September	5,911,900	0	9,036,088	1,772,466	7,568,570	2,865,321	2,471,970
October	6,246,800	0	19,909,178	4,362,460	10,288,412	538,779	2,317,177
November	3,893,000	1,151,700	25,100,126	5,008,230	15,826,771	329,716	2,704,494
December	1,578,400	0	22,990,355	3,708,595	6,956,732	1,665,642	1,353,326

Table 3.2-1
Reversal Wells

Table 3.2-1. Depth to Water in Reversal Wells

Well Name	B	BA	DZ	KZ	S2	S5	SM	SN	SO	SP
MP Elev.	**6570.9**	**6571.58**	**6590.53**	**6571.72**	**6573.72**	**6574.69**	**6578.74**	**6579.26**	**6578.79**	**6578.66**
7/5/2021	42.08	44.6	58.4	36.76	46.45	47.5	45.3	45.25	45.96	45.56
7/12/2021	42.2	44.74	58.03	36.87	42.05	47.66	45.34	45.4	45.5	45.95
7/19/2021	42.6	44.91	58.09	35.88	42.11	47.69	45.42	45.41	45.52	45.99
7/26/2021	42.31	44.79	58.19	36.91	41.84	47.59	45.41	45.53	46.01	46.04
8/2/2021	43.45	45.5	57.32	36.97	41.63	47.63	45.36	45.54	45.93	45.97
8/9/2021	42.57	44.43	58.17	37.03	41.88	47.65	45.28	45.56	45.91	45.89
8/16/2021	42.35	42.13	58.2	37.5	42.1	47.65	45.2	45.45	46.8	45.85
8/23/2021	42.25	44.1	58.4	37.05	42.35	47.65	45.2	45.48	45.82	45.88
8/30/2021	42.27	44.3	58.35	37.1	41.63	48.76	45.2	44.6	46.72	46.3
9/6/2021	42.12	43.16	56.6	37.2	41.71	47.45	44.96	45.18	45.66	45.6
9/13/2021	41.96	42.87	56.11	37.36	41.82	47.3	44.92	45.06	45.65	44.56
9/20/2021	41.96	42.87	56.32	37.04	42.8	47.29	44.91	45.11	45.56	44.9
9/27/2021	41.94	44.17	57.75	36.98	42.77	44.33	44.98	45.23	45.71	45.7
10/4/2021	42.34	44.61	58.1	36.52	41.76	47.5	45.76	47.5	45.16	45.42
10/11/2021	42.25	44.6	57.95	36.86	41.53	47.54	44.93	45.26	45.56	45.68
10/18/2021	42.48	44.96	58.2	36.9	41.5	47.53	44.92	45.45	45.54	45.6
10/25/2021	45.63	45.26	58.42	36.95	41.36	47.45	44.82	45.12	45.46	45.48
11/1/2021	42.77	45.45	58.67	37.05	41.43	47.45	44.81	45.11	45.46	45.46
11/8/2021	42.61	45.43	58.86	37.08	41.37	47.44	44.7	45.03	45.41	45.38
11/15/2021	42.9	45.6	59.05	37.01	41.34	47.24	45.62	44.96	45.35	41.25
11/22/2021	43.03	45.73	59.25	37.25	41.48	47.59	44.64	45	45.36	45.34
11/29/2021	43.1	45.77	59.34	37.35	41.45	47.48	44.55	44.95	45.32	45.3
12/6/2021	43.17	45.8	59.15	37.4	41.45	47.4	44.5	44.8	45.32	45.25
12/13/2021	43.2	45.9	59.45	37.47	41.45	47.45	44.5	44.85	45.35	45.2
12/20/2021	43.89	46.54	59.56	42.28	42.63	47.51	44.58	44.96	45.38	45.46
12/27/2021	43.48	46.14	59.32	37.74	41.68	47.53	44.51	44.84	45.37	45.31
1/3/2022	43.52	46.16	59.9	37.77	41.78	47.56	44.66	44	45.44	45.47

Table 3.4-1
Wells Drilled

Table 3.4-1. Wells Drilled and Abandoned

Wells Drilled		Wells Abandoned		Wells Abandoned	
Well Name	**Restoration Area**	**Well Name**	**Restoration Area**	**Well Name**	**Restoration Area**
None Drilled		WB14	Tailings	WE11	Tailings
		WB15	Tailings	WE12	Tailings
		WB16	Tailings	WE13	Tailings
Wells Abandoned		WB17	Tailings	WE14	Tailings
Well Name	**Restoration Area**	WB18	Tailings	WE15	Tailings
CF1	Tailings	WB2	Tailings	WE16	Tailings
CF2	Tailings	WB3	Tailings	WE17	Tailings
CN1	Tailings	WB4	Tailings	WE18	Tailings
CN2	Tailings	WB5	Tailings	WE2	Tailings
CS2	Tailings	WB6	Tailings	WE3	Tailings
CS4	Tailings	WB7	Tailings	WE4	Tailings
CS6	Tailings	WB8	Tailings	WE5	Tailings
CS7	Tailings	WB9	Tailings	WE6	Tailings
CS8	Tailings	WC1	Tailings	WE7	Tailings
EP12	Tailings	WC10	Tailings	WE8	Tailings
EP15	Tailings	WC11	Tailings	WE9	Tailings
EP21	Tailings	WC13	Tailings	WF11	Tailings
ES2	Tailings	WC14	Tailings	WF14	Tailings
NW1	Tailings	WC15	Tailings	WF15	Tailings
NW2	Tailings	WC17	Tailings	WF16	Tailings
NW3	Tailings	WC18	Tailings	WF17	Tailings
NW4	Tailings	WC19	Tailings	WF18	Tailings
SW1	Tailings	WC21	Tailings	WF2	Tailings
SW2	Tailings	WC22	Tailings	WF4	Tailings
SW3	Tailings	WC23	Tailings	WF5	Tailings
SW4	Tailings	WC24	Tailings	WF8	Tailings
WA1	Tailings	WC25	Tailings	WI3	Tailings
WA10	Tailings	WC3	Tailings	WJ3	Tailings
WA11	Tailings	WC4	Tailings	WJ4	Tailings
WA12	Tailings	WC6	Tailings	WJ5	Tailings
WA13	Tailings	WC7	Tailings	WJ6	Tailings
WA14	Tailings	WC8	Tailings	WJ7	Tailings
WA2	Tailings	WC9	Tailings	WK10	Tailings
WA3	Tailings	WD1	Tailings	WK4	Tailings
WA4	Tailings	WD10	Tailings	WK5	Tailings
WA5	Tailings	WD2	Tailings	WK6	Tailings
WA6	Tailings	WD3	Tailings	WK7	Tailings
WA7	Tailings	WD4	Tailings	WL4	Tailings
WA8	Tailings	WD5	Tailings	WM1	Tailings
WA9	Tailings	WD6	Tailings	WM4	Tailings
WB1	Tailings	WD7	Tailings	WM4A	Tailings
WB10	Tailings	WD8	Tailings	WM4B	Tailings
WB11	Tailings	WD9	Tailings	WM4C	Tailings
WB12	Tailings	WE1	Tailings	WM4D	Tailings
WB13	Tailings	WE10	Tailings	WME-1	Tailings

Table 3.4-1. Wells Drilled and Abandoned (con't)

Wells Abandoned		Wells Abandoned		Wells Abandoned	
Well Name	**Restoration Area**	**Well Name**	**Restoration Area**	**Well Name**	**Restoration Area**
WN1	Tailings	WT5	Tailings		
WN2	Tailings	WU10	Tailings		
WN5A	Tailings	WU11	Tailings		
WN5B	Tailings	WU12	Tailings		
WN7	Tailings	WU7	Tailings		
WO10	Tailings	WW10	Tailings		
WO15	Tailings	WW19	Tailings		
WO21	Tailings	WW2	Tailings		
WO30	Tailings	WW3	Tailings		
WO32	Tailings	WW4	Tailings		
WO42	Tailings	WW5	Tailings		
WO5	Tailings	WW6	Tailings		
WO8	Tailings	WW7	Tailings		
WP10	Tailings	WW8	Tailings		
WP11	Tailings	WW9	Tailings		
WP12	Tailings				
WP14	Tailings				
WP16	Tailings				
WP17	Tailings				
WP20	Tailings				
WP21	Tailings				
WP25	Tailings				
WP28	Tailings				
WP29	Tailings				
WP30	Tailings				
WP35	Tailings				
WP36	Tailings				
WP39	Tailings				
WP40	Tailings				
WQ10	Tailings				
WQ12	Tailings				
WQ13	Tailings				
WQ14	Tailings				
WQ15	Tailings				
WQ5	Tailings				
WS1	Tailings				
WS2	Tailings				
WS3	Tailings				
WS4	Tailings				
WS5	Tailings				
WS6	Tailings				
WS7	Tailings				
WT13	Tailings				
WT15	Tailings				
WT19	Tailings				

Table 4.1-1
Water Quality Analysis for Well D1

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 9/9/2021
Report ID S2107371001

ProjectName: HMC GRP
Lab ID: S2107371-002
ClientSample ID: D1
COC: 190395
PWS ID:
Comments

WorkOrder: S2107371
CollectionDate: 7/21/2021 2:09:00 PM
DateReceived: 7/23/2021 10:19:00 AM
FieldSampler: EA
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
pH	7.17	s.u.			Field	07/21/2021 1409	
Anions/Cations							
Alkalinity, Total (As CaCO3)	348	mg/L		5	SM 2320B	07/27/2021 335	ACE
Alkalinity, Bicarbonate as HCO3	419	mg/L		5	SM 2320B	07/27/2021 335	ACE
Alkalinity, Carbonate as CO3	<5	mg/L		5	SM 2320B	07/27/2021 335	ACE
Chloride	111	mg/L		1	EPA 300.0	07/26/2021 2112	AB
Nitrogen, Nitrate+Nitrite (as N)	1.1	mg/L		0.1	EPA 353.2	07/28/2021 1001	AMB
Sulfate	544	mg/L		2	EPA 300.0	07/26/2021 2112	AB
Calcium	165	mg/L		2	EPA 200.7	07/23/2021 1629	MS
Magnesium	36	mg/L		2	EPA 200.7	07/23/2021 1629	MS
Potassium	5	mg/L		2	EPA 200.7	07/23/2021 1629	MS
Sodium	261	mg/L		3	EPA 200.7	07/23/2021 1629	MS
General Parameters							
Total Dissolved Solids (180)	1420	mg/L		20	SM 2540	07/23/2021 1147	SMA
Metals - Dissolved							
Manganese	<0.005	mg/L		0.005	EPA 200.8	07/23/2021 1919	MS
Molybdenum	0.97	mg/L		0.01	EPA 200.8	07/23/2021 1919	MS
Selenium	0.031	mg/L		0.005	EPA 200.8	07/23/2021 1919	MS
Uranium	0.623	mg/L		0.0003	EPA 200.8	07/23/2021 1919	MS
Vanadium	<0.02	mg/L		0.02	EPA 200.8	07/23/2021 1919	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 9/9/2021
Report ID S2107371001

ProjectName: HMC GRP
Lab ID: S2107371-002
ClientSample ID: D1
COC: 190395
PWS ID:
Comments

WorkOrder: S2107371
CollectionDate: 7/21/2021 2:09:00 PM
DateReceived: 7/23/2021 10:19:00 AM
FieldSampler: EA
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Dissolved							
Radium 226	<0.2	pCi/L		0.2	SM 7500 Ra-B	08/26/2021 1653	WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/26/2021 1653	WN
Radium 228	<1	pCi/L		1	Ga-Tech	08/25/2021 1614	WN
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	08/25/2021 1614	WN
Thorium 230	<0.3	pCi/L		0.3	ACW10	09/03/2021 1452	AEF
Thorium 230 Precision (±)	0.04	pCi/L			ACW10	09/03/2021 1452	AEF

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan
Jessica Gillan, Project Manager

Table 4.1-2
Water Quality Analysis for Well DD

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/18/2021
Report ID S2110182002
(Replaces S2110182001)

ProjectName: HMC GRP
Lab ID: S2110182-004
ClientSample ID: DD
COC: WEB
PWS ID:
Comments

WorkOrder: S2110182
CollectionDate: 10/11/2021 2:08:00 PM
DateReceived: 10/14/2021 12:21:00 PM
FieldSampler: EA
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
pH	7.13	s.u.			Field	10/11/2021 1408	
Anions/Cations							
Chloride	68.2	mg/L	D	2.24	EPA 300.0	10/14/2021 1540	AB
Sulfate	1890	mg/L	D	5	EPA 300.0	10/15/2021 1454	AB
General Parameters							
Total Dissolved Solids (180)	3550	mg/L		20	SM 2540	10/15/2021 1047	SMA
Metals - Dissolved							
Molybdenum	<0.01	mg/L		0.01	EPA 200.8	10/18/2021 2248	MS
Selenium	0.063	mg/L		0.005	EPA 200.8	10/18/2021 2248	MS
Uranium	0.109	mg/L		0.0003	EPA 200.8	10/18/2021 2248	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/11/2021
Report ID S2108127001

ProjectName: HMC GRP
Lab ID: S2108127-001
ClientSample ID: DD
COC: WEB
PWS ID:
Comments EA

WorkOrder: S2108127
CollectionDate: 8/3/2021 10:16:00 AM
DateReceived: 8/6/2021 10:55:00 AM
FieldSampler:
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
pH	7.09	s.u.			Field	08/03/2021 1016	
Anions/Cations							
Chloride	66	mg/L		1	EPA 300.0	08/09/2021 2015	AB
Sulfate	1800	mg/L	D	5	EPA 300.0	08/10/2021 1331	AB
General Parameters							
Total Dissolved Solids (180)	3440	mg/L		20	SM 2540	08/06/2021 1423	SMA
Metals - Dissolved							
Molybdenum	<0.01	mg/L		0.01	EPA 200.8	08/09/2021 1948	MS
Selenium	0.052	mg/L		0.005	EPA 200.8	08/09/2021 1948	MS
Uranium	0.111	mg/L		0.0003	EPA 200.8	08/09/2021 1948	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by:
Jessica Gillan, Project Manager

Table 4.1-3
Water Quality Analyses for Well DD2

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/18/2021
Report ID S2110182002
(Replaces S2110182001)

ProjectName: HMC GRP
Lab ID: S2110182-003
ClientSample ID: DD2
COC: WEB
PWS ID:
Comments

WorkOrder: S2110182
CollectionDate: 10/11/2021 1:28:00 PM
DateReceived: 10/14/2021 12:21:00 PM
FieldSampler: EA
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
pH	7.03	s.u.			Field	10/11/2021 1328	
Anions/Cations							
Chloride	57	mg/L		1	EPA 300.0	10/14/2021 1511	AB
Sulfate	1470	mg/L		2	EPA 300.0	10/15/2021 1444	AB
General Parameters							
Total Dissolved Solids (180)	2730	mg/L		20	SM 2540	10/15/2021 1046	SMA
Metals - Dissolved							
Molybdenum	<0.01	mg/L		0.01	EPA 200.8	10/18/2021 2242	MS
Selenium	<0.005	mg/L		0.005	EPA 200.8	10/18/2021 2242	MS
Uranium	0.244	mg/L		0.0003	EPA 200.8	10/18/2021 2242	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/11/2021
Report ID S2108127001

ProjectName: HMC GRP
Lab ID: S2108127-002
ClientSample ID: DD2
COC: WEB
PWS ID:
Comments EA

WorkOrder: S2108127
CollectionDate: 8/3/2021 12:04:00 PM
DateReceived: 8/6/2021 10:55:00 AM
FieldSampler:
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
pH	7.04	s.u.			Field	08/03/2021 1204	
Anions/Cations							
Chloride	54	mg/L		1	EPA 300.0	08/09/2021 2027	AB
Sulfate	1430	mg/L		2	EPA 300.0	08/10/2021 1343	AB
General Parameters							
Total Dissolved Solids (180)	2680	mg/L		20	SM 2540	08/06/2021 1424	SMA
Metals - Dissolved							
Molybdenum	<0.01	mg/L		0.01	EPA 200.8	08/09/2021 1954	MS
Selenium	<0.005	mg/L		0.005	EPA 200.8	08/09/2021 1954	MS
Uranium	0.225	mg/L		0.0003	EPA 200.8	08/09/2021 1954	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by:
Jessica Gillan, Project Manager

Table 4.1-4
Water Quality Analyses for Well P

Well P was not sampled in the 2nd half of 2021

Table 4.1-5
Water Quality Analyses for Well S4

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 9/7/2021
Report ID S2107331001

ProjectName: HMC GRP
Lab ID: S2107331-002
ClientSample ID: S4
COC: WEB
PWS ID:
Comments

WorkOrder: S2107331
CollectionDate: 7/19/2021 12:17:00 PM
DateReceived: 7/21/2021 10:32:00 AM
FieldSampler:
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
pH	7.39	s.u.			Field	07/19/2021 1217	
Anions/Cations							
Alkalinity, Total (As CaCO3)	334	mg/L		5	SM 2320B	07/21/2021 2002	ACE
Alkalinity, Bicarbonate as HCO3	408	mg/L		5	SM 2320B	07/21/2021 2002	ACE
Alkalinity, Carbonate as CO3	<5	mg/L		5	SM 2320B	07/21/2021 2002	ACE
Chloride	195	mg/L	D	2.24	EPA 300.0	07/24/2021 209	AB
Nitrogen, Nitrate+Nitrite (as N)	0.2	mg/L		0.1	EPA 353.2	07/23/2021 1301	AMB
Sulfate	1130	mg/L		2	EPA 300.0	07/23/2021 1221	AB
Calcium	315	mg/L		2	EPA 200.7	07/22/2021 1549	SRH
Magnesium	83	mg/L		2	EPA 200.7	07/22/2021 1549	SRH
Potassium	8	mg/L		2	EPA 200.7	07/22/2021 1549	SRH
Sodium	342	mg/L		3	EPA 200.7	07/22/2021 1549	SRH
General Parameters							
Total Dissolved Solids (180)	2440	mg/L		20	SM 2540	07/21/2021 1446	SMA
Metals - Dissolved							
Manganese	<0.005	mg/L		0.005	EPA 200.8	07/22/2021 058	MS
Molybdenum	0.34	mg/L		0.01	EPA 200.8	07/22/2021 058	MS
Selenium	0.014	mg/L		0.005	EPA 200.8	07/22/2021 058	MS
Uranium	0.235	mg/L		0.0003	EPA 200.8	07/22/2021 058	MS
Vanadium	<0.02	mg/L		0.02	EPA 200.8	07/22/2021 058	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 9/7/2021
Report ID S2107331001

ProjectName: HMC GRP
Lab ID: S2107331-002
ClientSample ID: S4
COC: WEB
PWS ID:
Comments

WorkOrder: S2107331
CollectionDate: 7/19/2021 12:17:00 PM
DateReceived: 7/21/2021 10:32:00 AM
FieldSampler:
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Dissolved							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	08/26/2021 1436	WN
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/26/2021 1436	WN
Radium 228	<1	pCi/L		1	Ga-Tech	08/24/2021 1551	WN
Radium 228 Precision (±)	1.7	pCi/L			Ga-Tech	08/24/2021 1551	WN
Thorium 230	<0.3	pCi/L		0.3	ACW10	09/02/2021 955	AEF
Thorium 230 Precision (±)	0.1	pCi/L			ACW10	09/02/2021 955	AEF

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by:
Jessica Gillan, Project Manager

Table 4.1-6
Water Quality Analyses for Well X

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 10/27/2021
Report ID S2110243001

ProjectName: HMC GRP
Lab ID: S2110243-002
ClientSample ID: X
COC: WEB
PWS ID:
Comments

WorkOrder: S2110243
CollectionDate: 10/13/2021 2:19:00 PM
DateReceived: 10/18/2021 9:39:00 AM
FieldSampler: EA
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
pH	7.41	s.u.			Field	10/13/2021 1419	
Anions/Cations							
Chloride	87	mg/L		1	EPA 300.0	10/18/2021 2343	AB
Sulfate	302	mg/L		2	EPA 300.0	10/18/2021 2343	AB
General Parameters							
Total Dissolved Solids (180)	910	mg/L		20	SM 2540	10/18/2021 1405	SMA
Metals - Dissolved							
Molybdenum	0.11	mg/L		0.01	EPA 200.8	10/21/2021 142	MS
Selenium	0.008	mg/L		0.005	EPA 200.8	10/21/2021 142	MS
Uranium	0.0454	mg/L		0.0003	EPA 200.8	10/21/2021 142	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Table 4.2- 1
Lined Pond Water Quality

Table 4.2-1. Lined Pond Water Quality

Sample Point Name	Date	Temp (deg.C)	pH (f) (std. units)	Conductivity (micromhos/cm)	CO3 (mg/L)	Ca (mg/L)	CL (mg/L)	HCO3 (mg/L)	Mg (mg/L)	K (mg/L)	Na (mg/L)	SO4 (mg/L)	TDS (mg/L)
E Coll Pond	7/13/21	20.90	9.70	19.01	636	5	1150	980	179	28	6060	8990	16900
	10/11/21	12.10	9.39	23.42			1370					10900	25600
Evap Pond 1	7/19/21	24.70	9.31	74.61	1570	36	6930	2060	1310	169	24300	59100	1120
	10/25/21	16.50	9.31	84.34			10400					322	82500
Evap Pond 2	7/10/21	22.50	9.09	24.85	205	104	1690	585	379	51	8040	13600	28400
	10/25/21	16.60	9.17	26.91			1690					13700	26800
Evap Pond 3A	7/12/21	23.60	9.61	107.7	7330	20	35600	8150	529	779	51300	35600	152000
	10/13/21	11.80	9.68	58.95			11300					22200	70900
Evap Pond 3B	7/12/21	22.70	9.58	93.34	8340	17	2270	8840	508	546	41700	2980	129000
	10/13/21	14.30	9.60	70.66			14900					17600	87800
W Coll Pond	7/12/21	21.30	9.46	7461	259	25	391	216	89	9	1810	2970	5470
	10/13/21	12.60	9.06	5949			297					2420	4610

f = field measurement
t = analyte, total

Sample Point Name	Date	NO3 (mg/L)	Mn(t) (mg/L)	Se (mg/L)	Se (t) (mg/L)	Mo (mg/L)	Mo (t) (mg/L)	Unat (mg/L)	Unat (t) (mg/L)	Ra226 (pCi/L)	Ra228 (pCi/L)	Ra226+ Ra228 (pCi/L)	Th230 (pCi/L)	V (mg/L)
E Coll Pond	7/13/21	<.1	179	0.136			53.8		32	2.9	0	2.9	1.1	0.5
				0.261			67.2		36.9					
Evap Pond 1	7/19/21	<0.1	0.02	0.995	1.25	119	119	84.1	84.1	5	4	9	6.4	0.034
	10/25/21			1.37	1.37	172	292	70.7	7.7					
Evap Pond 2	7/10/21	3.4	0.04	1.2	1.21	65.3	65.7	24.4	25.4	4.5	-0.6	3.9	0.5	0.005
	10/25/21			0.57	1.29	35.6	58.9	13.6	24.9					
Evap Pond 3A	7/12/21	<0.1	<0.02	0.56	1.09	1010	1060	352	371	0.5	2.2	2.7	67.8	0.005
	10/13/21			2.25	7.04	500	4010	163	1410					
Evap Pond 3B	7/12/21	<0.1	<0.02	0.276	0.36	609	725	337	3392	4.7	-0.7	4	69.8	0.005
	10/13/21			8.99	1.35	532	508	272	2740					
W Coll Pond	7/12/21	6.00	0.11	0.588	0.798	15.7	17.8	5.99	7.1	0.16	-2.9	-2.74	0.04	0.5
	10/13/21			0.367	0.405	13.7	14.3	5.3	5.56					

f = field measurement
t = analyte, total

Table 4.2- 2
Evaporation Pond Monitoring Wells Water Quality

Table 4.2-2. Evaporation Pond Monitoring Wells Water Quality

Sample Point Name	Date	WL (feet)	Temp (deg.C)	pH (f) (std. units)	Conductivity (micromhos/cm)	CO3 (mg/L)	Ca (mg/L)	CL (mg/L)	HCO3 (mg/L)	Mg (mg/L)	K (mg/L)	Na (mg/L)
Site Standard Qal aquifer								250				
D1	7/21/21	46.96	13.20	7.17	1974.00	0	165	111	419	36	5	261
DD	8/3/21	**>45**	13.4	7.09	3749			66				
	10/11/21	47.47	13.4	7.13	3820			68.2				
DD2	8/9/21							54				
	10/14/22				3102	<7		57				
P	No Sample in the First Half of 2021											
S4	7/21/22	45.33	14.20	7.39	3163.00	0.00	315.00	195.00	408.00	83.00	8.00	342.00
X	7/19/217/	32.61	15.40	7.47	1476	<5		104	346	33	6	149
	10/13/21	32.51	15.50	7.41	1353			87				

= Quality Control Sample

Concentrations greater than site standards are in **bold**.

f = field measurement

Sample Point Name	Date	SO4 (mg/L)	TDS (mg/L)	NO3 (mg/L)	Se (mg/L)	Mo (mg/L)	Unat (mg/L)	Ra226 (pCi/L)	Ra228 (pCi/L)	Ra226+ Ra228 (pCi/L)	Th230 (pCi/L)	V (mg/L)
Site Standard Qal aquifer		1500	2734	12	0.32	0.1	0.16			5	0.3	0.02
D1	7/21/21	544	1420	1.1	0.031	0.97	**0.623**	0.15	-0.4	-0.25	<.3	0
DD	8/3/21	**1800**	**3440**		0.052	<0.01	0.111					
	10/11/21	**1890**	**3550**		0.063	<0.01	0.109					
DD2	8/3/21		2680	<0.1		<0.01	**0.225**					
	10/14/21		2730	<0.1		<0.01	**0.244**					
P	No Sample in the First Half of 2021											
S4	7/19/21	1130	2440	0.2	0.014	0.34	0.235	0.2	0.5	0.7	0.07	0
X	7/19/21	337	1030	0.1	0.012	**0.110**	0.0512	0.2	-0.8	-0.6	0	<.02
	10/13/21	302	910		0.088	**0.110**	0.0454					

= Quality Control Sample

Concentrations greater than site standards are in **bold**.

f = field measurement

Table 4.3-1
Compliant Water Quality

Table 4.3-1. Compliant Water Quality

Sample Point Name	Date	Temp (deg.C)	pH (f) (std. units)	Conductivity (micromhos/cm)	CO3 (mg/L)	Ca (mg/L)	CL (mg/L)	HCO3 (mg/L)	Mg (mg/L)	K (mg/L)	Na (mg/L)
Site Standard Qal aquifer							250				
					Post Treatment Tank						
SP2	7/29/2021	18.9	6.13	1166	< 5	83	7	164	28	5	126
	8/31/2021	21.9	8.42	1489	< 5	61	67	171	25	5	10
	9/27/2021	18.1	6.49	1498	< 5	111	107	182	32	7	166
	10/26/2021	16.9	6.87	1200	< 5	80	75	165	23	5	119
	11/22/2021	13	7.22	801.3	< 5	58	59	174	20	4	83
	12/28/2021	13.9	6.65	740.1	< 5	54	57	146	17	3	72

Concentrations greater than site standards are in **bold**.

f = field measurement

Sample Point Name	Date	SO4 (mg/L)	TDS (mg/L)	NO3 (mg/L)	Se (mg/L)	Mo (mg/L)	Unat (mg/L)	Ra226 (pCi/L)	Ra228 (pCi/L)	Ra226+ Ra228 (pCi/L)	Th230 (pCi/L)	V (mg/L)
Site Standard Qal aquifer		1500	2734	12	0.32	0.1	0.16			5	0.3	0.02
							Post Treatment Tank					
SP2	7/29/2021	315	800	1	0.005	0.01	0.0380	0.01	1.4	1.41	0.04	< 0.02
	8/31/2021	204	580	0.6	0.012	0.01	0.0169	0.12	-2.1	<0.01	0.02	< 0.02
	9/27/2021	466	1060	0.9	0.007	0.01	0.0221	0.13	-1.6	<0.01	0.02	< 0.02
	10/26/2021	303	760	0.8	0.008	0.01	0.0203	0.11	0.2	0.31	0	< 0.02
	11/22/2021	164	500	0.3	<0.005	0.01	0.0052	0.08	0	0.08	0.01	< 0.02
	12/28/2021	150	460	0.3	<0.005	0.01	0.0051	0.2	1	1.20	0.3	< 0.02

Concentrations greater than site standards are in **bold**.

f = field measurement

Table 4.3-2
Treated Water Quality

Table 4.3-2. Treated Water Quality

Sample Point Name	Date	Temp (deg.C)	pH (f) (std. units)	Conductivity (micromhos/cm)	CO3 (mg/L)	Ca (mg/L)	CL (mg/L)	HCO3 (mg/L)	Mg (mg/L)	K (mg/L)	Na (mg/L)
Parameter Code		12	109	51	6	1	7	5	2	3	4
Site Standard Qal aquifer							250				
RO Product											
RO SP1	7/29/2021	17.6	6.75	17.68	< 5	< 2	2	< 5	< 2	< 2	<3
	8/31/2021	17.2	7.35	18.29	< 5	< 2	2	6	< 2	< 2	4
	9/27/2021	17.9	5.63	23.48	< 5	< 2	3	< 5	< 2	< 2	3
	10/26/2021	16.8	5.98	62.15	< 5	< 2	2	< 5	< 2	< 2	4
	11/22/2021	13.1	6.42	26.01	< 5	< 2	2	6	< 2	< 2	3
	12/28/2021	14	7.32	44.14	< 5	< 2	6	< 5	< 2	< 2	6
Zeolite Treated Water											
LP RO3	9/7/2021	15.50	6.22	20.13	1.00						
	11/3/2021	14.90	7.32	20.19	1.00						
300Z		NO 2021 OPERATION									
1200Z Trains 1&2	8/31/2021	19.1	5.58	2546	<5	207	153	67	56	12	376
	9/28/2021	11.1	5.46	2533	<5	204	157	72	53	10	322
	10/27/2021	11.1	5.95	2394	<5	183	149	111	44	9	346
300Z		NO 2021 OPERATION									
1200Z Trains 3&4	5/26/2021	17.1	6.33	2469	< 5	191	147	62	54	9	326

Concentrations greater than site standards are in **bold**.

f = field measurement

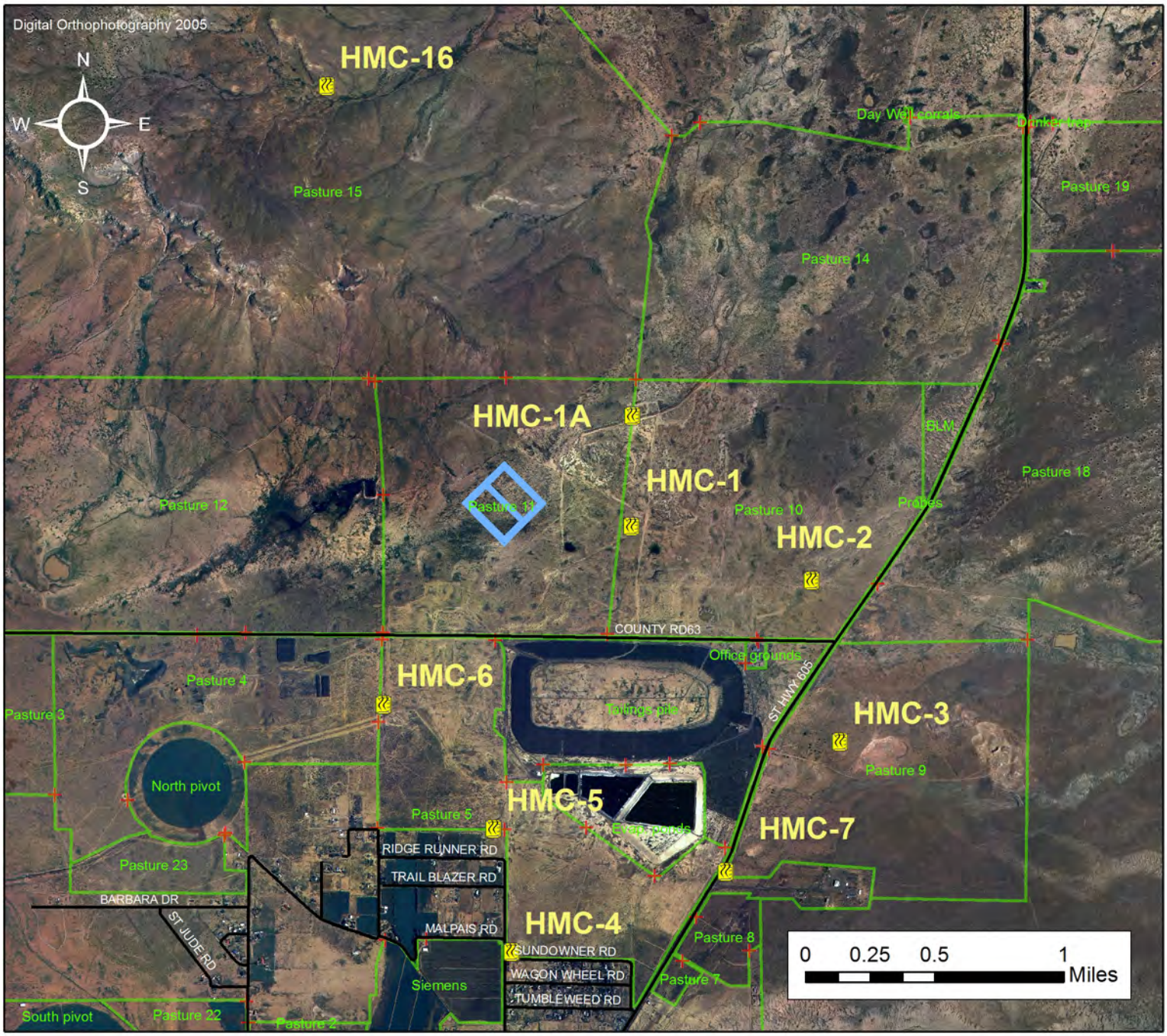
Sample Point Name	Date	SO4 (mg/L)	TDS (mg/L)	NO3 (mg/L)	Se (mg/L)	Mo (mg/L)	Unat (mg/L)	Ra226 (pCi/L)	Ra228 (pCi/L)	Ra226+ Ra228 (pCi/L)	Th230 (pCi/L)	V (mg/L)
Parameter Code		8	10	39	40	36	15	45	57	372	48	42
Site Standard Qal aquifer		1500	2734	12	0.32	0.1	0.16			5	0.3	0.02
RO Product												
RO SP1	7/29/2021	<2	< 20	0.2	< 0.005	<0.01	0.0007	0.02	-2.4	<0.02	0.01	< 0.02
	8/31/2021	<2	< 20	0.3	< 0.005	<0.01	0.0004	0.13	1.5	1.63	0.02	< 0.02
	9/27/2021	<2	40	0.4	< 0.005	<0.01	0.0009	0	1.2	1.2	0.04	< 0.02
	10/26/2021	<2	< 20	0.3	< 0.005	<0.01	<0.0003	0.02	-1.9	<0.02	0.01	< 0.02
	11/22/2021	<2	30	0.4	< 0.005	<0.01	0.0004	0.2	1.5	1.7	0.01	< 0.02
	12/28/2021	3	< 20	0.5	< 0.005	0.01	0.0017	0.2	1	1.2	<0.3	< 0.02
Zeolite Treated Water												
LP RO3	9/7/2021	<2	<20		<0.005	0.01	0.0004					
	11/3/2021	<2	<20		<0.005	0.01	0.0006					
300Z		NO 2021 OPERATION										
1200Z Trains 1&2	8/31/2021	1050	2030	2	0.037	207	153	0.09	-1.5	<0.01	0	<0.02
	9/28/2021	1080	2040	2.6	0.038	204	157	0.04	0.2	0.24	0.01	
	10/27/2021	1090	2050	2.1	0.035	183	149	0.08	2.9	2.98	0.07	
1200Z Trains 3&4	5/26/2021	939	1980	1.4	0.030	0.01	0.0906	0.11	1.1	1.21	0.01	< 0.02

Concentrations greater than site standards are in **bold**.

f = field measurement

Figure 1 – Monitoring & Sampling Locations

FIGURE 1 : HMC Air Monitoring & Sampling Locations - Grants, NM



Location ID	Sampling Unit	Northing	Easting
HMC-1	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL Badge (Gamma)	1547458.8	491370.5
HMC-1A	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL Badge (Gamma)	1549715.8	491387.7
HMC-2	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL Badge (Gamma)	1546349.5	495053.2
HMC-3	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL Badge (Gamma)	1543048.7	495640.5
HMC-4	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL Badge (Gamma)	1538751.1	488918.0
HMC-5	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL Badge (Gamma)	1541268.4	488546.3
HMC-6	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL Badge (Gamma)	1543813.1	486297.3
HMC-7	Track-Etch Cup (Radon)	1540395.7	493293.8
HMC-16	Track-Etch Cup (Radon), OSL Badge (Gamma)	1556470.5	485135.1

Location
Road
Gate
EP-3
Fence Line
Section Line

HOMESTAKE

Attachment 1
High Volume Air Sampling Results
(Second half of 2021)

Pace Analytical
Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -

All shaded fields must be completed.
This is a legal document; any misrepresentation may be construed as fraud.

#WEB

Client Name	Project Identification	Sampler (Signature/Attestation of Authenticity)	Telephone #
Homestake Mining Company	HMC GRP		(505) 287-1606

Report Address	Contact Name
560 Anaconda Rd Route 605 Milan, NM 87201	Kyle Martinez Email: kmartinez1@barrick.com Phone: (505) 287-1606

Invoice Address	Purchase Order #	Quote #
Same	4500094065	

ITEM	LAB ID (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE IDENTIFICATION	Matrix	# of Containers	Total Uranium	Total RA-226	Total TH-230	Total Vanadium	REMARKS
1	92104095-001			HMC- 1	FT	1	x	x	x	x	1.31E + 08
2	002			HMC- 1A	FT	1	x	x	x	x	1.26E + 08
3	003			HMC- 2	FT	1	x	x	x	x	8.97E + 07
4	004			HMC- 3	FT	1	x	x	x	x	1.34E + 08
5	005			HMC- 4	FT	1	x	x	x	x	1.15E + 08
6	006			HMC- 5	FT	1	x	x	x	x	1.34E + 08
7	007			HMC- 6	FT	1	x	x	x	x	1.25E + 08
8	008			HMC- 7	FT	1	x	x	x	x	N/A
9											
10											Units are in Liters
11											
12											
13											
14											

LAB COMMENTS	Relinquished By (Signature/Printed)	DATE	TIME	Received By (Signature/Printed)	DATE	TIME
16.4 °C custody seal ✓	Kyle Martinez	3-31-21	1000	Kathy Boyd	4.7.21	12:15

SHIPPING INFO	MATRIX CODES		TURN AROUND TIMES	COMPLIANCE INFORMATION	ADDITIONAL REMARKS
☐ UPS	Water	WT	Check desired service	Compliance Monitoring ? Y (N)	
☒ FedEx	Soil	SL	☑ Standard turnaround	Program (SDWA, NPDES,...) —	
☐ USPS	Solid	SD	☐ RUSH - 5 Working Days	PWSID / Permit # —	
☐ Hand Carried	Filter	(FT)	☐ URGENT - < 2 Working Days	Chlorinated? Y (N)	
☐ Other	Other	OT	*Rush & Urgent Surcharges will be applied*	Sample Disposal: Lab ✓ Client	

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Date: 5/17/2021

CLIENT: Barrick Homestake Company
Project: HMC GRP
Lab Order: S2104095

CASE NARRATIVE

Report ID: S2104095001

Samples HMC-1, HMC-1A, HMC-2, HMC-3, HMC-4, HMC-5, HMC-6 and HMC-7 were received on April 7, 2021.

All samples were received and analyzed within the recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

NRC radiological air particulate filters, animal, vegetation, soil and sediment samples may be composited by date and location per client's monitoring program requirements. Highly carbonaceous samples may require ashing. Samples are subjected to a modified USEPA SW-846 Method 3050B mineral acid digestion as appropriate. Analysis of the resulting solutions and digestates is performed using approved TNI, USEPA, and industry recognized analytical techniques. Where client-provided air volumes corresponding to the air filter composites exist, aqueous digestate results are converted to radiological particulate concentrations in air (e.g. µCi/mL). Quality control parameters acceptance criteria are defined by USEPA programs, and in USNRC Regulatory Guide 4.14 (Radiological Effluent and Environmental Monitoring at Uranium Mills), USNRC Regulatory Guide 4.15 (Quality Assurance for Radiological Monitoring Programs – Effluent Streams and the Environment), the TNI Standard EL-V1-2009, and Pace Analytical (Formerly Inter-Mountain Laboratories) internal quality procedures.

All Quality Control parameters met the acceptance criteria defined by EPA, NRC guidance, and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 5/17/2021
Report ID S2104095001

ProjectName: HMC GRP
Lab ID: S2104095-001
ClientSample ID: HMC-1
COC: WEB
PWS ID:
Comments 2021 First Qtr

WorkOrder: S2104095
CollectionDate:
DateReceived: 4/7/2021 12:15:00 PM
FieldSampler: KM
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	131000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.9	pCi/Filter		0.2	SM 7500RAB	05/04/2021 1359	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	05/04/2021 1359	WN
Radium 226	2.2E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Radium 226 Precision (±)	2.3E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Thorium 230	1.0	pCi/Filter		0.2	ACW10	05/13/2021 1101	AEF
Thorium-230 Precision (±)	0.3	pCi/Filter			ACW10	05/13/2021 1101	AEF
Thorium 230	7.3E-18	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Thorium 230 Precision (±)	2.3E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Uranium	16.9	pCi/Filter		0.2	EPA 200.8	04/30/2021 158	MS
Uranium	1.3E-16	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Metals - Total							
Vanadium	<0.02	mg/Filter		0.02	EPA 200.8	04/30/2021 158	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

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1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 5/17/2021
Report ID S2104095001

ProjectName: HMC GRP
Lab ID: S2104095-002
ClientSample ID: HMC-1A
COC: WEB
PWS ID:
Comments 2021 First Qtr

WorkOrder: S2104095
CollectionDate:
DateReceived: 4/7/2021 12:15:00 PM
FieldSampler: KM
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	126000000	Liters			Field		
Radionuclides - Filter							
Radium 226	1.5	pCi/Filter		0.2	SM 7500RAB	05/04/2021 1359	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	05/04/2021 1359	WN
Radium 226	1.2E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Radium 226 Precision (±)	2.4E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Thorium 230	0.7	pCi/Filter		0.2	ACW10	05/13/2021 1101	AEF
Thorium-230 Precision (±)	0.3	pCi/Filter			ACW10	05/13/2021 1101	AEF
Thorium 230	5.3E-18	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Thorium 230 Precision (±)	2.4E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Uranium	14.7	pCi/Filter		0.2	EPA 200.8	04/30/2021 221	MS
Uranium	1.2E-16	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Metals - Total							
Vanadium	0.02	mg/Filter		0.02	EPA 200.8	04/30/2021 221	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 5/17/2021
Report ID S2104095001

ProjectName: HMC GRP
Lab ID: S2104095-003
ClientSample ID: HMC-2
COC: WEB
PWS ID:
Comments 2021 First Qtr

WorkOrder: S2104095
CollectionDate:
DateReceived: 4/7/2021 12:15:00 PM
FieldSampler: KM
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	89700000	Liters			Field		
Radionuclides - Filter							
Radium 226	3.5	pCi/Filter		0.2	SM 7500RAB	05/04/2021 1359	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	05/04/2021 1359	WN
Radium 226	3.9E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Radium 226 Precision (±)	4.5E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Thorium 230	1.4	pCi/Filter		0.2	ACW10	05/13/2021 1101	AEF
Thorium-230 Precision (±)	0.4	pCi/Filter			ACW10	05/13/2021 1101	AEF
Thorium 230	1.6E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Thorium 230 Precision (±)	4.5E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Uranium	23.3	pCi/Filter		0.2	EPA 200.8	04/30/2021 227	MS
Uranium	2.6E-16	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Metals - Total							
Vanadium	0.04	mg/Filter		0.02	EPA 200.8	04/30/2021 227	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	5/17/2021
		Report ID	S2104095001
ProjectName:	HMC GRP	**WorkOrder:**	S2104095
Lab ID:	S2104095-004	**CollectionDate:**	
ClientSample ID:	HMC-3	**DateReceived:**	4/7/2021 12:15:00 PM
COC:	WEB	**FieldSampler:**	KM
PWS ID:		**Matrix:**	Filter
Comments	2021 First Qtr		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	134000000	Liters			Field		
Radionuclides - Filter							
Radium 226	4.6	pCi/Filter		0.2	SM 7500RAB	05/04/2021 1359	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	05/04/2021 1359	WN
Radium 226	3.5E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Radium 226 Precision (±)	3.0E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Thorium 230	1.7	pCi/Filter		0.2	ACW10	05/13/2021 1101	AEF
Thorium-230 Precision (±)	0.5	pCi/Filter			ACW10	05/13/2021 1101	AEF
Thorium 230	1.3E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Thorium 230 Precision (±)	3.7E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Uranium	53.2	pCi/Filter		0.2	EPA 200.8	04/30/2021 245	MS
Uranium	4.0E-16	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Metals - Total							
Vanadium	0.10	mg/Filter		0.02	EPA 200.8	04/30/2021 245	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank	C	Calculated Value
D	Report limit raised due to dilution	E	Value above quantitation range
G	Analyzed at IML Gillette laboratory	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
U	Analyte below method detection limit	X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 5/17/2021
Report ID S2104095001

ProjectName: HMC GRP
Lab ID: S2104095-005
ClientSample ID: HMC-4
COC: WEB
PWS ID:
Comments 2021 First Qtr

WorkOrder: S2104095
CollectionDate:
DateReceived: 4/7/2021 12:15:00 PM
FieldSampler: KM
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	115000000	Liters			Field		
Radionuclides - Filter							
Radium 226	12.2	pCi/Filter		0.2	SM 7500RAB	05/10/2021 1204	WN
Radium 226 Precision (±)	0.6	pCi/Filter			SM 7500RAB	05/10/2021 1204	WN
Radium 226	1.1E-16	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Radium 226 Precision (±)	5.2E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Thorium 230	6.6	pCi/Filter		0.2	ACW10	05/13/2021 1101	AEF
Thorium-230 Precision (±)	1.2	pCi/Filter			ACW10	05/13/2021 1101	AEF
Thorium 230	5.7E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Thorium 230 Precision (±)	1.0E-17	µCi/mL			Calculation	05/17/2021 1618	WN
Uranium	48.0	pCi/Filter		0.2	EPA 200.8	04/30/2021 251	MS
Uranium	4.2E-16	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Metals - Total							
Vanadium	0.41	mg/Filter		0.02	EPA 200.8	04/30/2021 251	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 5/17/2021
Report ID S2104095001

ProjectName: HMC GRP
Lab ID: S2104095-006
ClientSample ID: HMC-5
COC: WEB
PWS ID:
Comments 2021 First Qtr

WorkOrder: S2104095
CollectionDate:
DateReceived: 4/7/2021 12:15:00 PM
FieldSampler: KM
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	134000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.8	pCi/Filter		0.2	SM 7500RAB	05/10/2021 1204	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	05/10/2021 1204	WN
Radium 226	2.1E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Radium 226 Precision (±)	2.2E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Thorium 230	2.6	pCi/Filter		0.2	ACW10	05/13/2021 1521	AEF
Thorium-230 Precision (±)	0.7	pCi/Filter			ACW10	05/13/2021 1521	AEF
Thorium 230	2.0E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Thorium 230 Precision (±)	5.2E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Uranium	15.5	pCi/Filter		0.2	EPA 200.8	04/30/2021 257	MS
Uranium	1.2E-16	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Metals - Total							
Vanadium	0.12	mg/Filter		0.02	EPA 200.8	04/30/2021 257	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	5/17/2021
		Report ID	S2104095001
ProjectName:	HMC GRP	**WorkOrder:**	S2104095
Lab ID:	S2104095-007	**CollectionDate:**	
ClientSample ID:	HMC-6	**DateReceived:**	4/7/2021 12:15:00 PM
COC:	WEB	**FieldSampler:**	KM
PWS ID:		**Matrix:**	Filter
Comments	2021 First Qtr		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	125000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.3	pCi/Filter		0.2	SM 7500RAB	05/10/2021 1204	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	05/10/2021 1204	WN
Radium 226	1.8E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Radium 226 Precision (±)	2.4E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Thorium 230	1.6	pCi/Filter		0.2	ACW10	05/13/2021 1521	AEF
Thorium-230 Precision (±)	0.5	pCi/Filter			ACW10	05/13/2021 1521	AEF
Thorium 230	1.3E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Thorium 230 Precision (±)	4.0E-18	µCi/mL			Calculation	05/17/2021 1618	WN
Uranium	8.9	pCi/Filter		0.2	EPA 200.8	04/30/2021 303	MS
Uranium	7.1E-17	µCi/mL		1.0E-16	Calculation	05/17/2021 1618	WN
Metals - Total							
Vanadium	0.07	mg/Filter		0.02	EPA 200.8	04/30/2021 303	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank	C	Calculated Value
D	Report limit raised due to dilution	E	Value above quantitation range
G	Analyzed at IML Gillette laboratory	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
U	Analyte below method detection limit	X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 5/17/2021
Report ID S2104095001

ProjectName: HMC GRP
Lab ID: S2104095-008
ClientSample ID: HMC-7
COC: WEB
PWS ID:
Comments 2021 First Qtr

WorkOrder: S2104095
CollectionDate:
DateReceived: 4/7/2021 12:15:00 PM
FieldSampler: KM
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Filter							
Radium 226	0.3	pCi/Filter		0.2	SM 7500RAB	05/10/2021 1204	WN
Radium 226 Precision (±)	0.2	pCi/Filter			SM 7500RAB	05/10/2021 1204	WN
Thorium 230	0.4	pCi/Filter		0.2	ACW10	05/13/2021 1521	AEF
Thorium-230 Precision (±)	0.2	pCi/Filter			ACW10	05/13/2021 1521	AEF
Uranium	0.4	pCi/Filter		0.2	EPA 200.8	04/30/2021 309	MS
Metals - Total							
Vanadium	<0.02	mg/Filter		0.02	EPA 200.8	04/30/2021 309	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 5/17/2021
Work Order: S2104095 **Report ID:** S2104095001
Project: HMC GRP

Uranium, Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MBLK (04/30/21 01:46)	RunNo: 188712						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	ND	0.2					

Uranium, Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS (04/30/21 01:52)	RunNo: 188712						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	68.4	0.2	67.7		101	85 - 115	

Uranium, Air Filter Analysis Sample Type **MS** Units: pCi/Filter

S2104095-001AS (04/30/21 02:10)	RunNo: 188712						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	1490	0.2	1490	16.9	98.7	70 - 130	

Uranium, Air Filter Analysis Sample Type **MSD** Units: pCi/Filter

S2104095-001AMSD (04/30/21 02:15)	RunNo: 188712						
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Uranium	1520	0.2	1490	2.38	101	20	

Uranium, Air Filter Analysis Sample Type **DUP** Units: pCi/Filter

S2104095-001AD (04/30/21 02:04)	RunNo: 188712						
Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Uranium	17.1	0.2	16.9	0.905		20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Report limit raised due to dilution
E	Value above quantitation range	G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
L	Analyzed by another laboratory	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits	X	Matrix Effect

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 5/17/2021
Work Order: S2104095 **Report ID:** S2104095001
Project: HMC GRP

Radium 226 Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MB-2246 (05/04/21 11:33)	RunNo: 188820	PrepDate: 04/26/21 0:00				BatchID: 18298	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

MB-2247 (05/10/21 12:04)	RunNo: 188982	PrepDate: 04/29/21 0:00				BatchID: 18311	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS-2246 (05/04/21 11:33)	RunNo: 188820	PrepDate: 04/26/21 0:00				BatchID: 18298	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	7.5	0.2	7.81		95.4	67 - 129	

LCS-2247 (05/10/21 12:04)	RunNo: 188982	PrepDate: 04/29/21 0:00				BatchID: 18311	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	7.3	0.2	7.81		93.2	67 - 129	

Radium 226 Air Filter Analysis Sample Type **LCSD** Units: pCi/Filter

LCSD-2246 (05/04/21 11:33)	RunNo: 188820	PrepDate: 04/26/21 0:00				BatchID: 18298	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	7.1	0.2	7.5	5.23	90.5	20	

LCSD-2247 (05/10/21 12:04)	RunNo: 188982	PrepDate: 04/29/21 0:00				BatchID: 18311	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	8.0	0.2	7.3	9.33	102	20	

Thorium Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MB-786 (05/13/21 11:01)	RunNo: 189145						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Thorium-230	ND	0.2					

Thorium Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS-786 (05/13/21 11:01)	RunNo: 189145						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Thorium-230	15.5	0.2	12.5		124	72 - 142	

Thorium Air Filter Analysis Sample Type **LCSD** Units: pCi/Filter

LCSD-786 (05/13/21 11:01)	RunNo: 189145						
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Thorium-230	14.7	0.2	15.5	5.08	118	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Report limit raised due to dilution
E	Value above quantitation range	G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
L	Analyzed by another laboratory	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits	X	Matrix Effect

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 5/17/2021
Work Order: S2104095 **Report ID:** S2104095001
Project: HMC GRP

Total (3050) Metals by EPA 200.8-Soil Sample Type **MBLK** Units: mg/Filter

MBLK (04/30/21 01:46) RunNo: 188713

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	ND	0.02					

Total (3050) Metals by EPA 200.8-Soil Sample Type **LCS** Units: mg/Filter

LCS (04/30/21 01:52) RunNo: 188713

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	0.10	0.02	0.1		104	85 - 115	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MS** Units: mg/Filter

S2104095-001AS (04/30/21 02:10) RunNo: 188713

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	2.20	0.02	2.2	ND	100	70 - 130	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MSD** Units: mg/Filter

S2104095-001AMSD (04/30/21 02:15) RunNo: 188713

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Vanadium	2.27	0.02	2.20	3.00	103	20	

Total (3050) Metals by EPA 200.8-Soil Sample Type **DUP** Units: mg/Filter

S2104095-001AD (04/30/21 02:04) RunNo: 188713

Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Vanadium	0.02	0.02	ND			20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Report limit raised due to dilution
E	Value above quantitation range	G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
L	Analyzed by another laboratory	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits	X	Matrix Effect

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1

Lab ID: S2104095-001 **Sample Air Volume: 131000000 Liters**

2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.9	0.3	2.2E-17	2.3E-18	1E-16	9 E-13	Week	0.0024
Thorium 230	1.0	0.3	7.3E-18	2.3E-18	1E-16	3 E-14	Year	0.024
Uranium	16.9		1.3E-16		1E-16	9 E-14	Year	0.14

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1-A

Lab ID: S2104095-002 **Client Sample ID: HMC-1A** **Sample Air Volume: 126000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	1.5	0.3	1.2E-17	2.4E-18	1E-16	9 E-13	Week	0.0013
Thorium 230	0.7	0.3	5.3E-18	2.4E-18	1E-16	3 E-14	Year	0.018
Uranium	14.7		1.2E-16		1E-16	9 E-14	Year	0.13

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-2

Lab ID: S2104095-003 **Sample Air Volume: 89700000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	3.5	0.4	3.9E-17	4.5E-18	1E-16	9 E-13	Week	0.0043
Thorium 230	1.4	0.4	1.6E-17	4.5E-18	1E-16	3 E-14	Year	0.053
Uranium	23.3		2.6E-16		1E-16	9 E-14	Year	0.29

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical®
Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-3

Lab ID: S2104095-004 **Sample Air Volume: 134000000 Liters**

2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.6	0.4	3.5E-17	3.0E-18	1E-16	9 E-13	Week	0.0039
Thorium 230	1.7	0.5	1.3E-17	3.7E-18	1E-16	3 E-14	Year	0.043
Uranium	53.2		4.0E-16		1E-16	9 E-14	Year	0.44

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-4

Lab ID: S2104095-005 **Sample Air Volume: 115000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	12.2	0.6	1.1E-16	5.2E-18	1E-16	9 E-13	Week	0.012
Thorium 230	6.6	1.2	5.7E-17	1.0E-17	1E-16	3 E-14	Year	0.19
Uranium	48.0		4.2E-16		1E-16	9 E-14	Year	0.47

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-5

Lab ID: S2104095-006 **Sample Air Volume: 134000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.8	0.3	2.1E-17	2.2E-18	1E-16	9 E-13	Week	0.0023
Thorium 230	2.6	0.7	2.0E-17	5.2E-18	1E-16	3 E-14	Year	0.067
Uranium	15.5		1.2E-16		1E-16	9 E-14	Year	0.13

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-6

Lab ID: S2104095-007 **Sample Air Volume: 125000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.3	0.3	1.8E-17	2.4E-18	1E-16	9 E-13	Week	0.0020
Thorium 230	1.6	0.5	1.3E-17	4.0E-18	1E-16	3 E-14	Year	0.043
Uranium	8.9		7.1E-17		1E-16	9 E-14	Year	0.079

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-7

Lab ID: S2104095-008 **Sample Air Volume:**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
	0.3	0.2				9 E-13	Week	
	0.4	0.2				3 E-14	Year	
	0.4					9 E-14	Year	

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical

Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -

Page 1 of 1

All shaded fields must be completed.

This is a legal document; any misrepresentation may be construed as fraud.

#WEB

Client Name	Project Identification	Sampler (Signature/Attestation of Authenticity)	Telephone #
Homestake Mining Company	HMC GRP		(505) 238-4172

Report Address	Contact Name
560 Anaconda Rd Route 605 Milan, NM 87201	Kyle Martinez Email: kmartinez1@barrick.com Phone: (505) 287-1606

Invoice Address	Purchase Order #	Quote #
Same	4500094065	2546/2547

ITEM	LAB ID (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE IDENTIFICATION	Matrix	# of Containers	Total Uranium	Total Ra-226	Total TH-230	REMARKS
1	S2107150-001			HMC-1	FT	1	X	X	X	Total Volume: 1.31E8 L
2	002	Q	2	HMC-1A	FT	1	X	X	X	Total Volume: 1.28E8 L
3	003			HMC-2	FT	1	X	X	X	Total Volume: ~~9.89E7~~ 1.42E8 L
4	004	2021		HMC-3	FT	1	X	X	X	Total Volume: 1.13E8 L
5	005			HMC-4	FT	1	X	X	X	Total Volume: ~~1.86E8~~ 1.10E8 L
6	006	Composite		HMC-5	FT	1	X	X	X	Total Volume: 1.34E8 L
7	007			HMC-6	FT	1	X	X	X	Total Volume: ~~1.30E8~~ 1.12E8 L
8	008			HMC-7	FT	1	X	X	X	
9										
10										
11										
12										
13										
14										

SEE ATTACHED

LAB COMMENTS	Relinquished By (Signature/Printed)	DATE	TIME	Received By (Signature/Printed)	DATE	TIME
	Chain of custody signed	7/6/2021	12:00	Kathy Boss	7.9.21	7:42

SHIPPING INFO	MATRIX CODES		TURN AROUND TIMES	COMPLIANCE INFORMATION	ADDITIONAL REMARKS
☐ UPS	Water	WT	Check desired service	Compliance Monitoring ? Y / (N)	
☒ FedEx	Soil	SL	☒ Standard turnaround	Program (SDWA, NPDES,...)	
☐ USPS	Solid	SD	☐ RUSH - 5 Working Days	PWSID / Permit #	
☐ Hand Carried	(Filter)	FT	☐ URGENT - < 2 Working Days	Chlorinated? Y / (N)	
☐ Other	Other	OT	*Rush & Urgent Surcharges will be applied*	Sample Disposal: Lab ✓ Client	

INTER-MOUNTAIN LABS

Survey Meter # Model 2241-2; SN 182115
pH strip lot # HC904495
Thermometer SN# 27130475

Condition Upon Receipt (Attach to COC)

Sample Receipt

1 Number of ice chests/packages received: 1 ROI? Yes (No)
*Note as "**OTC**" if samples are received over the counter, unpackaged*

2 Temperature of cooler/samples. *(If more than 8 coolers, please write on back)*

Temps Observed (°C):	→						
Temps Corrected (°C):	←						

***Acceptable is: 0.1° to 10°C** for Bacteria; and 0.1° to 6°C for most other water parameters. Samples may not have had adequate time to cool following collection. Indicate ROI (Received on Ice) for iced samples received on the same day as sampled, in addition to temperature at receipt.*

Client contact for temperatures outside method criteria must be documented below.

3 Emission rate of samples for radiochemical analyses < 0.5mR/hr?	(Yes)	No	N/A
4 COC Number (If applicable): WRB			
5 Do the number of bottles agree with the COC?	(Yes)	No	N/A
6 Were the samples received intact? *(no broken bottles, leaks, etc.)*	(Yes)	No	N/A
7 Were the sample custody seals intact?	Yes	No	(N/A)
8 Is the COC properly completed, legible, and signed?	(Yes)	No	

Sample Verification, Labeling & Distribution

1 Were all requested analyses understood and appropriate?	(Yes)	No
2 Did the bottle labels correspond with the COC information?	(Yes)	No
3 Samples collected in method-prescribed containers?	(Yes)	No

4 Sample Preservation:

pH at Receipt:	Final pH (if added in lab):	Preservative/Lot#	Date/Time Added:
_____ Total Metals	_____ Total Metals	HNO_3 _____	_____
_____ Diss Metals	_____ Diss Metals	*Filtered and preserved in metals*	*Filtered and preserved in metals*
_____ Nutrient	_____ Nutrient	H_2SO_4 _____	
_____ Cyanide	_____ Cyanide	NaOH _____	
_____ Sulfide	_____ Sulfide	ZnAcet _____	
_____ Phenol	_____ Phenol	H_2SO_4 _____	
_____ SDWA Rads	_____ SDWA Rads	HNO_3 _____	_____

Preserved samples for Rad analysis accompanied by Field Blank?	Yes	No	
5 VOA vials have <6mm headspace?	Yes	No	N/A
6 Were all analyses within holding time at the time of receipt?	(Yes)	No	
7 Specially requested detection limits (RLs) assigned?	Yes	No	N/A
8 Have rush or project due dates been checked and accepted?	Yes	No	N/A
9 Do samples require subcontracted analyses?	Yes	(No)	

If "Yes", which type of subcontracting is required? **General** **Customer-Specified** **Certified**

Sample Receipt, Verification, Login, Labeling & Distribution completed by *(initials)*: RB

Set ID: S21071501

Discrepancy Documentation *(use back of sheet for notes on discrepancies)*

Any items listed above with a response of "No" or do not meet specifications must be resolved.

Person Contacted: _____ Method of Contact: __ Phone: _____

Initiated By: _____ Date/Time: _____ __ Email: _____

Problem:

Resolution:

Total Sampling Volume for Quarter (L)							
1	1A	2	3	4	5	6	7
1.31E+08	1.28E+08	1.42E+08	1.13E+08	1.12E+08	1.34E+08	1.10E+08	n/a

HMC 2021 Q2

flow volumes

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Date: 8/30/2021

CLIENT: Barrick Homestake Company
Project: HMC GRP
Lab Order: S2107150

CASE NARRATIVE

Report ID: S2107150001

Samples HMC-1, HMC-1A, HMC-2, HMC-3, HMC-4, HMC-5, HMC-6 and HMC-7 were received on July 9, 2021.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition
40 CFR Parts 136 and 141
40 CFR Part 50, Appendices B, J, L, and O
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Reviewed by:

Jessica Gillan, Project Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/30/2021
Report ID S2107150001

ProjectName: HMC GRP
Lab ID: S2107150-001
ClientSample ID: HMC-1
COC: WEB
PWS ID:
Comments Q2 2021 Composite

WorkOrder: S2107150
CollectionDate:
DateReceived: 7/9/2021 7:42:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	131000000	Liters			Field		
Radionuclides - Filter							
Radium 226	7.1	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1436	WN
Radium 226 Precision (±)	0.5	pCi/Filter			SM 7500RAB	08/26/2021 1436	WN
Radium 226	5.4E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Radium 226 Precision (±)	3.8E-18	µCi/mL			Calculation	08/30/2021 813	WN
Thorium 230	5.9	pCi/Filter		0.2	ACW10	08/29/2021 1220	AEF
Thorium-230 Precision (±)	1.0	pCi/Filter			ACW10	08/29/2021 1220	AEF
Thorium 230	4.5E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Thorium 230 Precision (±)	7.6E-18	µCi/mL			Calculation	08/30/2021 813	WN
Uranium	168	pCi/Filter		0.2	EPA 200.8	08/24/2021 1930	MS
Uranium	1.3E-15	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Metals - Total							
Vanadium	0.13	mg/Kg		0.02	EPA 200.8	08/24/2021 1930	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/30/2021
Report ID S2107150001

ProjectName: HMC GRP
Lab ID: S2107150-002
ClientSample ID: HMC-1A
COC: WEB
PWS ID:
Comments Q2 2021 Composite

WorkOrder: S2107150
CollectionDate:
DateReceived: 7/9/2021 7:42:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	128000000	Liters			Field		
Radionuclides - Filter							
Radium 226	4.7	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1436	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	08/26/2021 1436	WN
Radium 226	3.7E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Radium 226 Precision (±)	3.1E-18	µCi/mL			Calculation	08/30/2021 813	WN
Thorium 230	3.7	pCi/Filter		0.2	ACW10	08/29/2021 1626	AEF
Thorium-230 Precision (±)	0.8	pCi/Filter			ACW10	08/29/2021 1626	AEF
Thorium 230	2.9E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Thorium 230 Precision (±)	6.3E-18	µCi/mL			Calculation	08/30/2021 813	WN
Uranium	84.0	pCi/Filter		0.2	EPA 200.8	08/24/2021 2004	MS
Uranium	6.6E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Metals - Total							
Vanadium	0.11	mg/Kg		0.02	EPA 200.8	08/24/2021 2004	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/30/2021
Report ID S2107150001

ProjectName: HMC GRP
Lab ID: S2107150-003
ClientSample ID: HMC-2
COC: WEB
PWS ID:
Comments Q2 2021 Composite

WorkOrder: S2107150
CollectionDate:
DateReceived: 7/9/2021 7:42:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	142000000	Liters			Field		
Radionuclides - Filter							
Radium 226	4.2	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1436	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	08/26/2021 1436	WN
Radium 226	2.9E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Radium 226 Precision (±)	2.8E-18	µCi/mL			Calculation	08/30/2021 813	WN
Thorium 230	4.0	pCi/Filter		0.2	ACW10	08/29/2021 1626	AEF
Thorium-230 Precision (±)	0.8	pCi/Filter			ACW10	08/29/2021 1626	AEF
Thorium 230	2.8E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Thorium 230 Precision (±)	5.6E-18	µCi/mL			Calculation	08/30/2021 813	WN
Uranium	42.7	pCi/Filter		0.2	EPA 200.8	08/24/2021 2010	MS
Uranium	3.0E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Metals - Total							
Vanadium	0.12	mg/Kg		0.02	EPA 200.8	08/24/2021 2010	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/30/2021
Report ID S2107150001

ProjectName: HMC GRP
Lab ID: S2107150-004
ClientSample ID: HMC-3
COC: WEB
PWS ID:
Comments Q2 2021 Composite

WorkOrder: S2107150
CollectionDate:
DateReceived: 7/9/2021 7:42:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	113000000	Liters			Field		
Radionuclides - Filter							
Radium 226	7.1	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1436	WN
Radium 226 Precision (±)	0.6	pCi/Filter			SM 7500RAB	08/26/2021 1436	WN
Radium 226	6.3E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Radium 226 Precision (±)	5.3E-18	µCi/mL			Calculation	08/30/2021 813	WN
Thorium 230	5.6	pCi/Filter		0.2	ACW10	08/29/2021 1626	AEF
Thorium-230 Precision (±)	1.0	pCi/Filter			ACW10	08/29/2021 1626	AEF
Thorium 230	5.0E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Thorium 230 Precision (±)	8.8E-18	µCi/mL			Calculation	08/30/2021 813	WN
Uranium	63.5	pCi/Filter		0.2	EPA 200.8	08/24/2021 2016	MS
Uranium	5.6E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Metals - Total							
Vanadium	0.12	mg/Kg		0.02	EPA 200.8	08/24/2021 2016	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/30/2021
Report ID S2107150001

ProjectName: HMC GRP
Lab ID: S2107150-005
ClientSample ID: HMC-4
COC: WEB
PWS ID:
Comments Q2 2021 Composite

WorkOrder: S2107150
CollectionDate:
DateReceived: 7/9/2021 7:42:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	112000000	Liters			Field		
Radionuclides - Filter							
Radium 226	23.8	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1436	WN
Radium 226 Precision (±)	0.9	pCi/Filter			SM 7500RAB	08/26/2021 1436	WN
Radium 226	2.1E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Radium 226 Precision (±)	8.0E-18	µCi/mL			Calculation	08/30/2021 813	WN
Thorium 230	16.1	pCi/Filter		0.2	ACW10	08/29/2021 1626	AEF
Thorium-230 Precision (±)	2.6	pCi/Filter			ACW10	08/29/2021 1626	AEF
Thorium 230	1.4E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Thorium 230 Precision (±)	2.3E-17	µCi/mL			Calculation	08/30/2021 813	WN
Uranium	92.8	pCi/Filter		0.2	EPA 200.8	08/24/2021 2022	MS
Uranium	8.3E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Metals - Total							
Vanadium	0.86	mg/Kg		0.02	EPA 200.8	08/24/2021 2022	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

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Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/30/2021
Report ID S2107150001

ProjectName: HMC GRP
Lab ID: S2107150-006
ClientSample ID: HMC-5
COC: WEB
PWS ID:
Comments Q2 2021 Composite

WorkOrder: S2107150
CollectionDate:
DateReceived: 7/9/2021 7:42:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	134000000	Liters			Field		
Radionuclides - Filter							
Radium 226	6.3	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1653	WN
Radium 226 Precision (±)	0.5	pCi/Filter			SM 7500RAB	08/26/2021 1653	WN
Radium 226	4.7E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Radium 226 Precision (±)	3.7E-18	µCi/mL			Calculation	08/30/2021 813	WN
Thorium 230	4.2	pCi/Filter		0.2	ACW10	08/29/2021 1626	AEF
Thorium-230 Precision (±)	0.8	pCi/Filter			ACW10	08/29/2021 1626	AEF
Thorium 230	3.1E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Thorium 230 Precision (±)	6.0E-18	µCi/mL			Calculation	08/30/2021 813	WN
Uranium	122	pCi/Filter		0.2	EPA 200.8	08/24/2021 2028	MS
Uranium	9.1E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Metals - Total							
Vanadium	0.19	mg/Kg		0.02	EPA 200.8	08/24/2021 2028	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

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1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 8/30/2021
Report ID S2107150001

ProjectName: HMC GRP
Lab ID: S2107150-007
ClientSample ID: HMC-6
COC: WEB
PWS ID:
Comments Q2 2021 Composite

WorkOrder: S2107150
CollectionDate:
DateReceived: 7/9/2021 7:42:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	110000000	Liters			Field		
Radionuclides - Filter							
Radium 226	5.0	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1653	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	08/26/2021 1653	WN
Radium 226	4.6E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Radium 226 Precision (±)	3.6E-18	µCi/mL			Calculation	08/30/2021 813	WN
Thorium 230	3.9	pCi/Filter		0.2	ACW10	08/29/2021 1626	AEF
Thorium-230 Precision (±)	0.8	pCi/Filter			ACW10	08/29/2021 1626	AEF
Thorium 230	3.5E-17	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Thorium 230 Precision (±)	7.3E-18	µCi/mL			Calculation	08/30/2021 813	WN
Uranium	68.4	pCi/Filter		0.2	EPA 200.8	08/24/2021 2034	MS
Uranium	6.2E-16	µCi/mL		1.0E-16	Calculation	08/30/2021 813	WN
Metals - Total							
Vanadium	0.15	mg/Kg		0.02	EPA 200.8	08/24/2021 2034	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan, Project Manager

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	8/30/2021
		Report ID	S2107150001
ProjectName:	HMC GRP	**WorkOrder:**	S2107150
Lab ID:	S2107150-008	**CollectionDate:**	
ClientSample ID:	HMC-7	**DateReceived:**	7/9/2021 7:42:00 AM
COC:	WEB	**FieldSampler:**	
PWS ID:		**Matrix:**	Filter
Comments	Q2 2021 Composite		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Filter							
Radium 226	0.5	pCi/Filter		0.2	SM 7500RAB	08/26/2021 1653	WN
Radium 226 Precision (±)	0.2	pCi/Filter			SM 7500RAB	08/26/2021 1653	WN
Thorium 230	0.19	pCi/Filter		0.2	ACW10	08/29/2021 1626	AEF
Thorium-230 Precision (±)	0.1	pCi/Filter			ACW10	08/29/2021 1626	AEF
Uranium	0.3	pCi/Filter		0.2	EPA 200.8	08/24/2021 2039	MS
Metals - Total							
Vanadium	<0.02	mg/Kg		0.02	EPA 200.8	08/24/2021 2039	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: Jessica Gillan

Jessica Gillan, Project Manager

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1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 8/30/2021
Work Order: S2107150 **Report ID:** S2107150001
Project: HMC GRP

Uranium, Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MBLK (08/24/21 19:19) RunNo: 192579

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	ND	0.2					

Uranium, Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS (08/24/21 19:25) RunNo: 192579

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	66.0	0.2	67.7		97.5	85 - 115	

Uranium, Air Filter Analysis Sample Type **MS** Units: pCi/Filter

S2107150-001AS (08/24/21 19:54) RunNo: 192579

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	1620	0.2	1490	168	97.5	70 - 130	

Uranium, Air Filter Analysis Sample Type **MSD** Units: pCi/Filter

S2107150-001AMSD (08/24/21 19:59) RunNo: 192579

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Uranium	1630	0.2	1620	0.460	98.0	20	

Uranium, Air Filter Analysis Sample Type **DUP** Units: pCi/Filter

S2107150-001AD (08/24/21 19:48) RunNo: 192579

Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Uranium	167	0.2	168	0.655		20	

Radium 226 Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MB-2275 (08/26/21 14:36) RunNo: 192667 PrepDate: 08/26/21 8:14 BatchID: 18657

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS-2275 (08/26/21 14:36) RunNo: 192667 PrepDate: 08/26/21 8:14 BatchID: 18657

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	8.0	0.2	7.81		103	67 - 129	

Radium 226 Air Filter Analysis Sample Type **LCSD** Units: pCi/Filter

LCSD-2275 (08/26/21 14:36) RunNo: 192667 PrepDate: 08/26/21 8:14 BatchID: 18657

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	7.4	0.2	8.0	7.90	94.8	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Report limit raised due to dilution
E	Value above quantitation range	G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
L	Analyzed by another laboratory	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits	X	Matrix Effect

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ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 8/30/2021
Work Order: S2107150 **Report ID:** S2107150001
Project: HMC GRP

Total (3050) Metals by EPA 200.8-Soil Sample Type **MBLK** Units: mg/Kg

MBLK (08/24/21 19:19) RunNo: 192577

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	ND	0.02					

Total (3050) Metals by EPA 200.8-Soil Sample Type **MS** Units: mg/Kg

S2107150-001AS (08/24/21 19:54) RunNo: 192577

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	2.23	0.02	2.2	0.13	95.6	70 - 130	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MSD** Units: mg/Kg

S2107150-001AMSD (08/24/21 19:59) RunNo: 192577

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Vanadium	2.23	0.02	2.23	0.187	95.8	20	

Total (3050) Metals by EPA 200.8-Soil Sample Type **DUP** Units: mg/Kg

S2107150-001AD (08/24/21 19:48) RunNo: 192577

Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Vanadium	0.12	0.02	0.13	1.91		20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Report limit raised due to dilution
E	Value above quantitation range	G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
L	Analyzed by another laboratory	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits	X	Matrix Effect

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1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1

Lab ID: S2107150-001 **Sample Air Volume: 131000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	7.1	0.5	5.4E-17	3.8E-18	1E-16	9 E-13	Week	0.0060
Thorium 230	5.9	1.0	4.5E-17	7.6E-18	1E-16	3 E-14	Year	0.15
Uranium	168		1.3E-15		1E-16	9 E-14	Year	1.4

Lab ID: S2104095-001 **Sample Air Volume: 131000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.9	0.3	2.2E-17	2.3E-18	1E-16	9 E-13	Week	0.0024
Thorium 230	1.0	0.3	7.3E-18	2.3E-18	1E-16	3 E-14	Year	0.024
Uranium	16.9		1.3E-16		1E-16	9 E-14	Year	0.14

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1-A

Lab ID: S2107150-002 Client Sample ID: HMC-1A Sample Air Volume: 128000000 Liters
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.7	0.4	3.7E-17	3.1E-18	1E-16	9 E-13	Week	0.0041
Thorium 230	3.7	0.8	2.9E-17	6.3E-18	1E-16	3 E-14	Year	0.097
Uranium	84.0		6.6E-16		1E-16	9 E-14	Year	0.73

Lab ID: S2104095-002 Client Sample ID: HMC-1A Sample Air Volume: 126000000 Liters
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	1.5	0.3	1.2E-17	2.4E-18	1E-16	9 E-13	Week	0.0013
Thorium 230	0.7	0.3	5.3E-18	2.4E-18	1E-16	3 E-14	Year	0.018
Uranium	14.7		1.2E-16		1E-16	9 E-14	Year	0.13

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-2

Lab ID: S2107150-003 **Sample Air Volume: 142000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.2	0.4	2.9E-17	2.8E-18	1E-16	9 E-13	Week	0.0032
Thorium 230	4.0	0.8	2.8E-17	5.6E-18	1E-16	3 E-14	Year	0.093
Uranium	42.7		3.0E-16		1E-16	9 E-14	Year	0.33

Lab ID: S2104095-003 **Sample Air Volume: 89700000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	3.5	0.4	3.9E-17	4.5E-18	1E-16	9 E-13	Week	0.0043
Thorium 230	1.4	0.4	1.6E-17	4.5E-18	1E-16	3 E-14	Year	0.053
Uranium	23.3		2.6E-16		1E-16	9 E-14	Year	0.29

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-3

Lab ID: S2107150-004 **Sample Air Volume: 113000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	7.1	0.6	6.3E-17	5.3E-18	1E-16	9 E-13	Week	0.0070
Thorium 230	5.6	1.0	5.0E-17	8.8E-18	1E-16	3 E-14	Year	0.17
Uranium	63.5		5.6E-16		1E-16	9 E-14	Year	0.62

Lab ID: S2104095-004 **Sample Air Volume: 134000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.6	0.4	3.5E-17	3.0E-18	1E-16	9 E-13	Week	0.0039
Thorium 230	1.7	0.5	1.3E-17	3.7E-18	1E-16	3 E-14	Year	0.043
Uranium	53.2		4.0E-16		1E-16	9 E-14	Year	0.44

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-4

Lab ID: S2107150-005 **Sample Air Volume: 112000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	23.8	0.9	2.1E-16	8.0E-18	1E-16	9 E-13	Week	0.023
Thorium 230	16.1	2.6	1.4E-16	2.3E-17	1E-16	3 E-14	Year	0.47
Uranium	92.8		8.3E-16		1E-16	9 E-14	Year	0.92

Lab ID: S2104095-005 **Sample Air Volume: 115000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	12.2	0.6	1.1E-16	5.2E-18	1E-16	9 E-13	Week	0.012
Thorium 230	6.6	1.2	5.7E-17	1.0E-17	1E-16	3 E-14	Year	0.19
Uranium	48.0		4.2E-16		1E-16	9 E-14	Year	0.47

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-5

Lab ID: S2107150-006 **Sample Air Volume: 134000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	6.3	0.5	4.7E-17	3.7E-18	1E-16	9 E-13	Week	0.0052
Thorium 230	4.2	0.8	3.1E-17	6.0E-18	1E-16	3 E-14	Year	0.10
Uranium	122		9.1E-16		1E-16	9 E-14	Year	1.0

Lab ID: S2104095-006 **Sample Air Volume: 134000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.8	0.3	2.1E-17	2.2E-18	1E-16	9 E-13	Week	0.0023
Thorium 230	2.6	0.7	2.0E-17	5.2E-18	1E-16	3 E-14	Year	0.067
Uranium	15.5		1.2E-16		1E-16	9 E-14	Year	0.13

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-6

Lab ID: S2107150-007 **Sample Air Volume: 110000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	5.0	0.4	4.6E-17	3.6E-18	1E-16	9 E-13	Week	0.0051
Thorium 230	3.9	0.8	3.5E-17	7.3E-18	1E-16	3 E-14	Year	0.12
Uranium	68.4		6.2E-16		1E-16	9 E-14	Year	0.69

Lab ID: S2104095-007 **Sample Air Volume: 125000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.3	0.3	1.8E-17	2.4E-18	1E-16	9 E-13	Week	0.0020
Thorium 230	1.6	0.5	1.3E-17	4.0E-18	1E-16	3 E-14	Year	0.043
Uranium	8.9		7.1E-17		1E-16	9 E-14	Year	0.079

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-7

Lab ID: S2107150-008 **Sample Air Volume:**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
	0.5	0.2				9 E-13	Week	
	0.19	0.1				3 E-14	Year	
	0.3					9 E-14	Year	

Lab ID: S2104095-008 **Sample Air Volume:**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
	0.3	0.2				9 E-13	Week	
	0.4	0.2				3 E-14	Year	
	0.4					9 E-14	Year	

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical
Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -

All shaded fields must be completed.
This is a legal document; any misrepresentation may be construed as fraud.

#WEB

Client Name	Project Identification	Sampler (Signature/Attestation of Authenticity)	Telephone #
Homestake Mining Company	HMC GRP		(505) 287-1606

Report Address	Contact Name	
560 Anaconda Rd Route 605 Milan, NM 87201	Kyle Martinez	
	Email: kmartinez1@barrick.com	
Invoice Address	Phone: (505) 287-1606	
Same	Purchase Order #: 4500094065	Quote #: 2456/2547

ANALYSES / PARAMETERS

ITEM	LAB ID (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE IDENTIFICATION	Matrix	# of Containers	Total Uranium	Total Ra-226	Total Th-230						REMARKS
1	S2110106-001			HMC- 1	FT	1	x	x	x						
2	002	Q	3	HMC- 1A	FT	1	x	x	x						
3	003			HMC- 2	FT	1	x	x	x						
4	004	20	21	HMC- 3	FT	1	x	x	x						
5	005			HMC- 4	FT	1	x	x	x						See attached
6	006			HMC- 5	FT	1	x	x	x						air volumes
7	007	Composite		HMC- 6	FT	1	x	x	x						
8	008			HMC- 7	FT	1	x	x	x						
9															
10															
11															
12															
13															
14															

LAB COMMENTS	Relinquished By (Signature/Printed)	DATE	TIME	Received By (Signature/Printed)	DATE	TIME
Custody Seal ✓	Kyle Martinez	10-4-21	1100	Kathy Boyd	10.7.21	11:53

SHIPPING INFO	MATRIX CODES		TURN AROUND TIMES	COMPLIANCE INFORMATION	ADDITIONAL REMARKS
☐ UPS	Water	WT	Check desired service	Compliance Monitoring ? Y / N	
☑ FedEx	Soil	SL	☑ Standard turnaround	Program (SDWA, NPDES,...) —	
☐ USPS	Solid	SD	☐ RUSH - 5 Working Days	PWSID / Permit #	
☐ Hand Carried	Filter	FT	☐ URGENT - < 2 Working Days	Chlorinated? Y / N	
☐ Other	Other	OT	*Rush & Urgent Surcharges will be applied*	Sample Disposal: Lab ✓ Client	

L	M	N	O	P	Q	R	S
Total Sampling Volume for Quarter (L)							
1	1A	2	3	4	5	6	7
1.33E+08	9.23E+07	1.50E+08	1.40E+08	1.07E+08	1.19E+08	1.07E+08	n/a

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Date: 11/30/2021

CLIENT: Barrick Homestake Company
Project: HMC GRP
Lab Order: S2110106

CASE NARRATIVE

Report ID: S2110106001

Samples HMC-1, HMC-1A, HMC-2, HMC-3, HMC-4, HMC-5, HMC-6 and HMC-7 were received on October 7, 2021.

All samples were received and analyzed within the recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

NRC radiological air particulate filters, animal, vegetation, soil and sediment samples may be composited by date and location per client's monitoring program requirements. Highly carbonaceous samples may require ashing. Samples are subjected to a modified USEPA SW-846 Method 3050B mineral acid digestion as appropriate. Analysis of the resulting solutions and digestates is performed using approved TNI, USEPA, and industry recognized analytical techniques. Where client-provided air volumes corresponding to the air filter composites exist, aqueous digestate results are converted to radiological particulate concentrations in air (e.g. µCi/mL). Quality control parameters acceptance criteria are defined by USEPA programs, and in USNRC Regulatory Guide 4.14 (Radiological Effluent and Environmental Monitoring at Uranium Mills), USNRC Regulatory Guide 4.15 (Quality Assurance for Radiological Monitoring Programs – Effluent Streams and the Environment), the TNI Standard EL-V1-2009, and Pace Analytical (Formerly Inter-Mountain Laboratories) internal quality procedures.

All Quality Control parameters met the acceptance criteria defined by EPA, NRC guidance, and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	11/30/2021
		Report ID	S2110106001
ProjectName:	HMC GRP	**WorkOrder:**	S2110106
Lab ID:	S2110106-001	**CollectionDate:**	
ClientSample ID:	HMC-1	**DateReceived:**	10/7/2021 11:53:00 AM
COC:	WEB	**FieldSampler:**	
PWS ID:		**Matrix:**	Filter
Comments	2021 Q3 Composite		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	133000000	Liters			Field		
Radionuclides - Filter							
Radium 226	3.1	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Radium 226	2.4E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Radium 226 Precision (±)	3.0E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Thorium 230	3.0	pCi/Filter		0.2	ACW10	11/11/2021 1526	AEF
Thorium-230 Precision (±)	1.0	pCi/Filter			ACW10	11/11/2021 1526	AEF
Thorium 230	2.3E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Thorium 230 Precision (±)	7.5E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Uranium	256	pCi/Filter		0.2	EPA 200.8	10/27/2021 130	MS
Uranium	1.9E-15	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Metals - Total							
Vanadium	0.06	mg/Filter		0.02	EPA 200.8	10/27/2021 130	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank	C	Calculated Value
D	Report limit raised due to dilution	E	Value above quantitation range
G	Analyzed at IML Gillette laboratory	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
U	Analyte below method detection limit	X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/30/2021
Report ID S2110106001

ProjectName: HMC GRP
Lab ID: S2110106-002
ClientSample ID: HMC-1A
COC: WEB
PWS ID:
Comments 2021 Q3 Composite

WorkOrder: S2110106
CollectionDate:
DateReceived: 10/7/2021 11:53:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	92300000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.9	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Radium 226	3.2E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Radium 226 Precision (±)	3.3E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Thorium 230	3.1	pCi/Filter		0.2	ACW10	11/11/2021 1526	AEF
Thorium-230 Precision (±)	0.9	pCi/Filter			ACW10	11/11/2021 1526	AEF
Thorium 230	3.3E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Thorium 230 Precision (±)	9.8E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Uranium	315	pCi/Filter		0.2	EPA 200.8	10/27/2021 204	MS
Uranium	3.4E-15	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Metals - Total							
Vanadium	0.08	mg/Filter		0.02	EPA 200.8	10/27/2021 204	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/30/2021
Report ID S2110106001

ProjectName: HMC GRP
Lab ID: S2110106-003
ClientSample ID: HMC-2
COC: WEB
PWS ID:
Comments 2021 Q3 Composite

WorkOrder: S2110106
CollectionDate:
DateReceived: 10/7/2021 11:53:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	150000000	Liters			Field		
Radionuclides - Filter							
Radium 226	3.2	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Radium 226	2.1E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Radium 226 Precision (±)	2.0E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Thorium 230	3.8	pCi/Filter		0.2	ACW10	11/11/2021 1526	AEF
Thorium-230 Precision (±)	1.0	pCi/Filter			ACW10	11/11/2021 1526	AEF
Thorium 230	2.5E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Thorium 230 Precision (±)	6.7E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Uranium	83.2	pCi/Filter		0.2	EPA 200.8	10/27/2021 210	MS
Uranium	5.5E-16	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Metals - Total							
Vanadium	0.08	mg/Filter		0.02	EPA 200.8	10/27/2021 210	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/30/2021
Report ID S2110106001

ProjectName: HMC GRP
Lab ID: S2110106-004
ClientSample ID: HMC-3
COC: WEB
PWS ID:
Comments 2021 Q3 Composite

WorkOrder: S2110106
CollectionDate:
DateReceived: 10/7/2021 11:53:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	140000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.4	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Radium 226	1.7E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Radium 226 Precision (±)	2.1E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Thorium 230	2.5	pCi/Filter		0.2	ACW10	11/11/2021 1526	AEF
Thorium-230 Precision (±)	0.7	pCi/Filter			ACW10	11/11/2021 1526	AEF
Thorium 230	1.8E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Thorium 230 Precision (±)	5.0E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Uranium	110	pCi/Filter		0.2	EPA 200.8	10/27/2021 216	MS
Uranium	7.8E-16	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Metals - Total							
Vanadium	0.07	mg/Filter		0.02	EPA 200.8	10/27/2021 216	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/30/2021
Report ID S2110106001

ProjectName: HMC GRP
Lab ID: S2110106-005
ClientSample ID: HMC-4
COC: WEB
PWS ID:
Comments 2021 Q3 Composite

WorkOrder: S2110106
CollectionDate:
DateReceived: 10/7/2021 11:53:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	107000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.1	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Radium 226	1.9E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Radium 226 Precision (±)	2.8E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Thorium 230	1.7	pCi/Filter		0.2	ACW10	11/11/2021 1526	AEF
Thorium-230 Precision (±)	0.6	pCi/Filter			ACW10	11/11/2021 1526	AEF
Thorium 230	1.6E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Thorium 230 Precision (±)	5.6E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Uranium	83.0	pCi/Filter		0.2	EPA 200.8	10/27/2021 222	MS
Uranium	7.8E-16	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Metals - Total							
Vanadium	0.05	mg/Filter		0.02	EPA 200.8	10/27/2021 222	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/30/2021
Report ID S2110106001

ProjectName: HMC GRP
Lab ID: S2110106-006
ClientSample ID: HMC-5
COC: WEB
PWS ID:
Comments 2021 Q3 Composite

WorkOrder: S2110106
CollectionDate:
DateReceived: 10/7/2021 11:53:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	119000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.5	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Radium 226	2.1E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Radium 226 Precision (±)	2.5E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Thorium 230	2.0	pCi/Filter		0.2	ACW10	11/12/2021 1115	AEF
Thorium-230 Precision (±)	0.7	pCi/Filter			ACW10	11/12/2021 1115	AEF
Thorium 230	1.7E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Thorium 230 Precision (±)	5.9E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Uranium	202	pCi/Filter		0.2	EPA 200.8	10/27/2021 228	MS
Uranium	1.7E-15	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Metals - Total							
Vanadium	0.06	mg/Filter		0.02	EPA 200.8	10/27/2021 228	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 11/30/2021
Report ID S2110106001

ProjectName: HMC GRP
Lab ID: S2110106-007
ClientSample ID: HMC-6
COC: WEB
PWS ID:
Comments 2021 Q3 Composite

WorkOrder: S2110106
CollectionDate:
DateReceived: 10/7/2021 11:53:00 AM
FieldSampler:
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	107000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.0	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Radium 226	1.9E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Radium 226 Precision (±)	2.8E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Thorium 230	1.3	pCi/Filter		0.2	ACW10	11/12/2021 1115	AEF
Thorium-230 Precision (±)	0.5	pCi/Filter			ACW10	11/12/2021 1115	AEF
Thorium 230	1.2E-17	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Thorium 230 Precision (±)	4.7E-18	µCi/mL			Calculation	11/30/2021 1646	WN
Uranium	137	pCi/Filter		0.2	EPA 200.8	10/27/2021 234	MS
Uranium	1.3E-15	µCi/mL		1.0E-16	Calculation	11/30/2021 1646	WN
Metals - Total							
Vanadium	0.06	mg/Filter		0.02	EPA 200.8	10/27/2021 234	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
D	Report limit raised due to dilution
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
U	Analyte below method detection limit
C	Calculated Value
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
L	Analyzed by another laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	11/30/2021
		Report ID	S2110106001
ProjectName:	HMC GRP	**WorkOrder:**	S2110106
Lab ID:	S2110106-008	**CollectionDate:**	
ClientSample ID:	HMC-7	**DateReceived:**	10/7/2021 11:53:00 AM
COC:	WEB	**FieldSampler:**	
PWS ID:		**Matrix:**	Filter
Comments	2021 Q3 Composite		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Filter							
Radium 226	0.6	pCi/Filter		0.2	SM 7500RAB	11/29/2021 1150	WN
Radium 226 Precision (±)	0.2	pCi/Filter			SM 7500RAB	11/29/2021 1150	WN
Thorium 230	0.26	pCi/Filter		0.2	ACW10	11/12/2021 1115	AEF
Thorium-230 Precision (±)	0.2	pCi/Filter			ACW10	11/12/2021 1115	AEF
Uranium	0.4	pCi/Filter		0.2	EPA 200.8	10/27/2021 240	MS
Metals - Total							
Vanadium	<0.02	mg/Filter		0.02	EPA 200.8	10/27/2021 240	MS

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank	C	Calculated Value
D	Report limit raised due to dilution	E	Value above quantitation range
G	Analyzed at IML Gillette laboratory	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
U	Analyte below method detection limit	X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

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ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 11/30/2021
Work Order: S2110106 **Report ID:** S2110106001
Project: HMC GRP

Uranium, Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MBLK (10/27/21 01:18) RunNo: 194487

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	ND	0.2					

Uranium, Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS (10/27/21 01:24) RunNo: 194487

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	66.2	0.2	67.7		97.8	85 - 115	

Uranium, Air Filter Analysis Sample Type **MS** Units: pCi/Filter

S2110106-001AS (10/27/21 01:54) RunNo: 194487

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	1650	0.2	1490	256	93.4	70 - 130	

Uranium, Air Filter Analysis Sample Type **MSD** Units: pCi/Filter

S2110106-001AMSD (10/27/21 01:59) RunNo: 194487

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Uranium	1700	0.2	1650	2.87	96.7	20	

Uranium, Air Filter Analysis Sample Type **DUP** Units: pCi/Filter

S2110106-001AD (10/27/21 01:48) RunNo: 194487

Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Uranium	260	0.2	256	1.76		20	

Radium 226 Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MB-2309 (11/29/21 11:50) RunNo: 195403 PrepDate: 11/16/21 13:29 BatchID: 18927

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS-2309 (11/29/21 11:50) RunNo: 195403 PrepDate: 11/16/21 13:29 BatchID: 18927

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	7.7	0.2	7.84		98.0	76 - 129	

Radium 226 Air Filter Analysis Sample Type **LCSD** Units: pCi/Filter

LCSD-2309 (11/29/21 11:50) RunNo: 195403 PrepDate: 11/16/21 13:29 BatchID: 18927

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	7.1	0.2	7.7	7.52	90.9	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Report limit raised due to dilution
E	Value above quantitation range	G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
L	Analyzed by another laboratory	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits	X	Matrix Effect

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ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 11/30/2021
Work Order: S2110106 **Report ID:** S2110106001
Project: HMC GRP

Thorium Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MB-821 (11/11/21 15:26)	RunNo: 195065						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Thorium-230	ND	0.2					

Thorium Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS-821 (11/11/21 15:26)	RunNo: 195065						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Thorium-230	13.7	0.2	12.5		110	72 - 142	

Thorium Air Filter Analysis Sample Type **LCSD** Units: pCi/Filter

LCSD-821 (11/11/21 15:26)	RunNo: 195065						
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Thorium-230	13.6	0.2	13.7	0.436	109	20	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MBLK** Units: mg/Kg

MBLK (10/27/21 01:18)	RunNo: 195419						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	ND	5					

Total (3050) Metals by EPA 200.8-Soil Sample Type **LCS** Units: mg/Kg

LCS (10/27/21 01:24)	RunNo: 195419						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	ND	5	0.1		99.1	85 - 115	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MS** Units: mg/Filter

S2110106-001AS (10/27/21 01:54)	RunNo: 195419						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	2.11	0.02	2.2	0.06	93.3	70 - 130	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MSD** Units: mg/Filter

S2110106-001AMSD (10/27/21 01:59)	RunNo: 195419						
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Vanadium	2.10	0.02	2.11	0.612	92.7	20	

Total (3050) Metals by EPA 200.8-Soil Sample Type **DUP** Units: mg/Filter

S2110106-001AD (10/27/21 01:48)	RunNo: 195419						
Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Vanadium	ND	0.02	0.06			20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Report limit raised due to dilution
E	Value above quantitation range	G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
L	Analyzed by another laboratory	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits	X	Matrix Effect

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1

Lab ID: S2110106-001 **Sample Air Volume: 133000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	3.1	0.4	2.4E-17	3.0E-18	1E-16	3 E-10	Week	0.0000080
Thorium 230	3.0	1.0	2.3E-17	7.5E-18	1E-16	6 E-12	Year	0.00038
Uranium	256		1.9E-15		1E-16	2 E-11	Year	0.0095

Lab ID: S2107150-001 **Sample Air Volume: 131000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	7.1	0.5	5.4E-17	3.8E-18	1E-16	3 E-10	Week	0.000018
Thorium 230	5.9	1.0	4.5E-17	7.6E-18	1E-16	6 E-12	Year	0.00075
Uranium	168		1.3E-15		1E-16	2 E-11	Year	0.0065

Lab ID: S2104095-001 **Sample Air Volume: 131000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.9	0.3	2.2E-17	2.3E-18	1E-16	3 E-10	Week	0.0000073
Thorium 230	1.0	0.3	7.3E-18	2.3E-18	1E-16	6 E-12	Year	0.00012
Uranium	16.9		1.3E-16		1E-16	2 E-11	Year	0.00065

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1-A

Lab ID: S2110106-002 Client Sample ID: HMC-1A Sample Air Volume: 92300000 Liters
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.9	0.3	3.2E-17	3.3E-18	1E-16	3 E-10	Week	0.000011
Thorium 230	3.1	0.9	3.3E-17	9.8E-18	1E-16	6 E-12	Year	0.00055
Uranium	315		3.4E-15		1E-16	2 E-11	Year	0.017

Lab ID: S2107150-002 Client Sample ID: HMC-1A Sample Air Volume: 128000000 Liters
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	4.7	0.4	3.7E-17	3.1E-18	1E-16	3 E-10	Week	0.000012
Thorium 230	3.7	0.8	2.9E-17	6.3E-18	1E-16	6 E-12	Year	0.00048
Uranium	84.0		6.6E-16		1E-16	2 E-11	Year	0.0033

Lab ID: S2104095-002 Client Sample ID: HMC-1A Sample Air Volume: 126000000 Liters
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	1.5	0.3	1.2E-17	2.4E-18	1E-16	3 E-10	Week	0.0000040
Thorium 230	0.7	0.3	5.3E-18	2.4E-18	1E-16	6 E-12	Year	0.000088
Uranium	14.7		1.2E-16		1E-16	2 E-11	Year	0.00060

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-2

Lab ID: S2110106-003 **Sample Air Volume: 150000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	3.2	0.3	2.1E-17	2.0E-18	1E-16	3 E-10	Week	0.0000070
Thorium 230	3.8	1.0	2.5E-17	6.7E-18	1E-16	6 E-12	Year	0.00042
Uranium	83.2		5.5E-16		1E-16	2 E-11	Year	0.0028

Lab ID: S2107150-003 **Sample Air Volume: 142000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	4.2	0.4	2.9E-17	2.8E-18	1E-16	3 E-10	Week	0.0000097
Thorium 230	4.0	0.8	2.8E-17	5.6E-18	1E-16	6 E-12	Year	0.00047
Uranium	42.7		3.0E-16		1E-16	2 E-11	Year	0.0015

Lab ID: S2104095-003 **Sample Air Volume: 89700000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	3.5	0.4	3.9E-17	4.5E-18	1E-16	3 E-10	Week	0.000013
Thorium 230	1.4	0.4	1.6E-17	4.5E-18	1E-16	6 E-12	Year	0.00027
Uranium	23.3		2.6E-16		1E-16	2 E-11	Year	0.0013

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-3

Lab ID: S2110106-004 **Sample Air Volume: 140000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.4	0.3	1.7E-17	2.1E-18	1E-16	3 E-10	Week	0.0000057
Thorium 230	2.5	0.7	1.8E-17	5.0E-18	1E-16	6 E-12	Year	0.00030
Uranium	110		7.8E-16		1E-16	2 E-11	Year	0.0039

Lab ID: S2107150-004 **Sample Air Volume: 113000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	7.1	0.6	6.3E-17	5.3E-18	1E-16	3 E-10	Week	0.000021
Thorium 230	5.6	1.0	5.0E-17	8.8E-18	1E-16	6 E-12	Year	0.00083
Uranium	63.5		5.6E-16		1E-16	2 E-11	Year	0.0028

Lab ID: S2104095-004 **Sample Air Volume: 134000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	4.6	0.4	3.5E-17	3.0E-18	1E-16	3 E-10	Week	0.000012
Thorium 230	1.7	0.5	1.3E-17	3.7E-18	1E-16	6 E-12	Year	0.00022
Uranium	53.2		4.0E-16		1E-16	2 E-11	Year	0.0020

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-4

Lab ID: S2110106-005 **Sample Air Volume: 107000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.1	0.3	1.9E-17	2.8E-18	1E-16	3 E-10	Week	0.0000063
Thorium 230	1.7	0.6	1.6E-17	5.6E-18	1E-16	6 E-12	Year	0.00027
Uranium	83.0		7.8E-16		1E-16	2 E-11	Year	0.0039

Lab ID: S2107150-005 **Sample Air Volume: 112000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	23.8	0.9	2.1E-16	8.0E-18	1E-16	3 E-10	Week	0.000070
Thorium 230	16.1	2.6	1.4E-16	2.3E-17	1E-16	6 E-12	Year	0.0023
Uranium	92.8		8.3E-16		1E-16	2 E-11	Year	0.0042

Lab ID: S2104095-005 **Sample Air Volume: 115000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	12.2	0.6	1.1E-16	5.2E-18	1E-16	3 E-10	Week	0.000037
Thorium 230	6.6	1.2	5.7E-17	1.0E-17	1E-16	6 E-12	Year	0.00095
Uranium	48.0		4.2E-16		1E-16	2 E-11	Year	0.0021

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-5

Lab ID: S2110106-006 **Sample Air Volume: 119000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.5	0.3	2.1E-17	2.5E-18	1E-16	3 E-10	Week	0.0000070
Thorium 230	2.0	0.7	1.7E-17	5.9E-18	1E-16	6 E-12	Year	0.00028
Uranium	202		1.7E-15		1E-16	2 E-11	Year	0.0085

Lab ID: S2107150-006 **Sample Air Volume: 134000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	6.3	0.5	4.7E-17	3.7E-18	1E-16	3 E-10	Week	0.000016
Thorium 230	4.2	0.8	3.1E-17	6.0E-18	1E-16	6 E-12	Year	0.00052
Uranium	122		9.1E-16		1E-16	2 E-11	Year	0.0046

Lab ID: S2104095-006 **Sample Air Volume: 134000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.8	0.3	2.1E-17	2.2E-18	1E-16	3 E-10	Week	0.0000070
Thorium 230	2.6	0.7	2.0E-17	5.2E-18	1E-16	6 E-12	Year	0.00033
Uranium	15.5		1.2E-16		1E-16	2 E-11	Year	0.00060

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-6

Lab ID: S2110106-007 **Sample Air Volume: 107000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.0	0.3	1.9E-17	2.8E-18	1E-16	3 E-10	Week	0.0000063
Thorium 230	1.3	0.5	1.2E-17	4.7E-18	1E-16	6 E-12	Year	0.00020
Uranium	137		1.3E-15		1E-16	2 E-11	Year	0.0065

Lab ID: S2107150-007 **Sample Air Volume: 110000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	5.0	0.4	4.6E-17	3.6E-18	1E-16	3 E-10	Week	0.000015
Thorium 230	3.9	0.8	3.5E-17	7.3E-18	1E-16	6 E-12	Year	0.00058
Uranium	68.4		6.2E-16		1E-16	2 E-11	Year	0.0031

Lab ID: S2104095-007 **Sample Air Volume: 125000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
Radium 226	2.3	0.3	1.8E-17	2.4E-18	1E-16	3 E-10	Week	0.0000060
Thorium 230	1.6	0.5	1.3E-17	4.0E-18	1E-16	6 E-12	Year	0.00022
Uranium	8.9		7.1E-17		1E-16	2 E-11	Year	0.00036

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-7

Lab ID: S2110106-008 **Sample Air Volume:**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
	0.6	0.2				3 E-10	Week	
	0.26	0.2				6 E-12	Year	
	0.4					2 E-11	Year	

Lab ID: S2107150-008 **Sample Air Volume:**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
	0.5	0.2				3 E-10	Week	
	0.19	0.1				6 E-12	Year	
	0.3					2 E-11	Year	

Lab ID: S2104095-008 **Sample Air Volume:**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Occupational Limit	Effluent Class	% DAC Conc.
	0.3	0.2				3 E-10	Week	
	0.4	0.2				6 E-12	Year	
	0.4					2 E-11	Year	

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical

Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -

All shaded fields must be completed.

This is a legal document; any misrepresentation may be construed as fraud.

#WEB

Client Name	Project Identification	Sampler (Signature/Attestation of Authenticity)	Telephone #
Homestake Mining Company	HMC GRP		(505) 238-4172

Report Address	Contact Name	
560 Anaconda Rd Route 605 Milan, NM 87201	Esperanza Aguilar	
	Email	esperanza.aguilar@barrick.com
Invoice Address	Phone	(505) 238-4172
Same	Purchase Order #	Quote #
	4500094065	2546/2547

ITEM	LAB ID (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE IDENTIFICATION	Matrix	# of Containers	Total Uranium	Total Ra-226	Total Th-30						REMARKS
							ANALYSES / PARAMETERS								
1	52112376-001			HMC-1	FT	1	X	X	X						Total Volume: 8.59E7 L
2	002			HMC-1A	FT	1	X	X	X						Total Volume: 1.26E8 L
3	003	Q	4	HMC-2	FT	1	X	X	X						Total Volume: 1.45E8 L
4	004			HMC-3	FT	1	X	X	X						Total Volume: 1.06E8 L
5	005	2021		HMC-4	FT	1	X	X	X						Total Volume: 6.92E7 L
6	006			HMC-5	FT	1	X	X	X						Total Volume: 1.04E8 L
7	007	Composite		HMC-6	FT	1	X	X	X						Total Volume: 8.38E7 L
8	008			HMC-7	FT	1	X	X	X						
9															
10															
11															
12															
13															
14															

LAB COMMENTS	Relinquished By (Signature/Printed)	DATE	TIME	Received By (Signature/Printed)	DATE	TIME
	/Esperanza Aguilar	12/30/21	12:00	Kathy Boyd	12.31.21	11:25

SHIPPING INFO	MATRIX CODES		TURN AROUND TIMES	COMPLIANCE INFORMATION	ADDITIONAL REMARKS
☐ UPS	Water	WT	Check desired service	Compliance Monitoring ? (Y) / N	
☒ FedEx	Soil	SL	☒ Standard turnaround	Program (SDWA, NPDES,...)	
☐ USPS	Solid	SD	☐ RUSH - 5 Working Days	PWSID / Permit #	
☐ Hand Carried	Filter	(FT)	☐ URGENT - < 2 Working Days	Chlorinated? Y / N	
☐ Other	Other	OT	*Rush & Urgent Surcharges will be applied*	Sample Disposal: Lab Client	

Total Sampling Volume for Quarter (L)							
1	1A	2	3	4	5	6	7
8.59E+07	1.26E+08	1.45E+08	1.06E+08	6.92E+07	1.04E+08	8.38E+07	n/a

Survey Meter # Model 2241-2; SN 182115
pH strip lot # HC904495
Thermometer SN# 27130475

Condition Upon Receipt (Attach to COC)

Sample Receipt

1 Number of ice chests/packages received: 1 ROI? Yes No
Note as "OTC" if samples are received over the counter, unpackaged

2 Temperature of cooler/samples. *(If more than 8 coolers, please write on back)*

Temps Observed (°C):	7						
Temps Corrected (°C):	7						

***Acceptable is: 0.1° to 10°C** for Bacteria; and 0.1° to 6°C for most other water parameters. Samples may not have had adequate time to cool following collection. Indicate ROI (Received on Ice) for iced samples received on the same day as sampled, in addition to temperature at receipt.*

Client contact for temperatures outside method criteria must be documented below.

3 Emission rate of samples for radiochemical analyses < 0.5mR/hr?	Yes	No	N/A
4 COC Number (If applicable): WR3			
5 Do the number of bottles agree with the COC?	Yes	No	N/A
6 Were the samples received intact? *(no broken bottles, leaks, etc.)*	Yes	No	N/A
7 Were the sample custody seals intact?	Yes	No	N/A
8 Is the COC properly completed, legible, and signed?	Yes	No	

Sample Verification, Labeling & Distribution

1 Were all requested analyses understood and appropriate?	Yes	No
2 Did the bottle labels correspond with the COC information?	Yes	No
3 Samples collected in method-prescribed containers?	Yes	No

4 Sample Preservation:

pH at Receipt:	Final pH (if added in lab):	Preservative/Lot#	Date/Time Added:
_____ Total Metals	_____ Total Metals	HNO_3 _____	_____
_____ Diss Metals	_____ Diss Metals	*Filtered and preserved in metals*	*Filtered and preserved in metals*
_____ Nutrient	_____ Nutrient	H_2SO_4 _____	
_____ Cyanide	_____ Cyanide	NaOH _____	
_____ Sulfide	_____ Sulfide	ZnAcet _____	
_____ Phenol	_____ Phenol	H_2SO_4 _____	
_____ SDWA Rads	_____ SDWA Rads	HNO_3 _____	_____

Preserved samples for Rad analysis accompanied by Field Blank?	Yes	No	
5 VOA vials have <6mm headspace?	Yes	No	N/A
6 Were all analyses within holding time at the time of receipt?	Yes	No	
7 Specially requested detection limits (RLs) assigned?	Yes	No	N/A
8 Have rush or project due dates been checked and accepted?	Yes	No	N/A
9 Do samples require subcontracted analyses?	Yes	No	

If "Yes", which type of subcontracting is required? **General** **Customer-Specified** **Certified**

Sample Receipt, Verification, Login, Labeling & Distribution completed by *(initials)*: KB

Set ID: 52112376

Discrepancy Documentation *(use back of sheet for notes on discrepancies)*

Any items listed above with a response of "No" or do not meet specifications must be resolved.

Person Contacted: _____ Method of Contact: __ Phone: _____

Initiated By: _____ Date/Time: _____ __ Email: _____

Problem:

Resolution:

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Date: 1/28/2022

CLIENT: Barrick Homestake Company
Project: HMC GRP-Q4 2021 Composite Air Filters
Lab Order: S2112376

CASE NARRATIVE

Report ID: S2112376001

Entire Report Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Samples HMC-1, HMC-1A, HMC-2, HMC-3, HMC-4, HMC-5, HMC-6 and HMC-7 were received on December 31, 2021.

All samples were received and analyzed within the recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

NRC radiological air particulate filters, animal, vegetation, soil and sediment samples may be composited by date and location per client's monitoring program requirements. Highly carbonaceous samples may require ashing. Samples are subjected to a modified USEPA SW-846 Method 3050B mineral acid digestion as appropriate. Analysis of the resulting solutions and digestates is performed using approved TNI, USEPA, and industry recognized analytical techniques. Where client-provided air volumes corresponding to the air filter composites exist, aqueous digestate results are converted to radiological particulate concentrations in air (e.g. µCi/mL). Quality control parameters acceptance criteria are defined by USEPA programs, and in USNRC Regulatory Guide 4.14 (Radiological Effluent and Environmental Monitoring at Uranium Mills), USNRC Regulatory Guide 4.15 (Quality Assurance for Radiological Monitoring Programs – Effluent Streams and the Environment), the TNI Standard EL-V1-2009, and Pace Analytical (Formerly Inter-Mountain Laboratories) internal quality procedures.

All Quality Control parameters met the acceptance criteria defined by EPA, NRC guidance, and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Date: 1/28/2022

Definitions

RL	Reporting Limit

Qualifiers

*	Value exceeds Maximum Contaminant Level
A	Check MSA specifications
B	Analyte detected in the associated Method Blank
C	Calculated Value
D	Report limit raised due to dilution
E	Value above quantitation range
G	Analyzed at IML Gillette laboratory
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
L	Analyzed by another laboratory
M	Value exceeds Monthly Ave or MCL or is less than LCL
ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte below method detection limit
X	Matrix Effect

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	1/28/2022
		Report ID	S2112376001
ProjectName:	HMC GRP-Q4 2021 Composite Air Filters	**WorkOrder:**	S2112376
Lab ID:	S2112376-001	**CollectionDate:**	
ClientSample ID:	HMC-1	**DateReceived:**	12/31/2021 11:25:00 AM
COC:	WEB	**FieldSampler:**	EA
PWS ID:		**Matrix:**	Filter
Comments	Q4 2021 Air filters		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	85900000	Liters			Field		
Radionuclides - Filter							
Radium 226	3.1	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1140	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	01/27/2022 1140	WN
Radium 226	3.7E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Radium 226 Precision (±)	4.7E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Thorium 230	4.2	pCi/Filter		0.2	ACW10	01/18/2022 1535	AEF
Thorium-230 Precision (±)	0.8	pCi/Filter			ACW10	01/18/2022 1535	AEF
Thorium 230	4.8E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Thorium 230 Precision (±)	9.3E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Uranium	133	pCi/Filter		0.2	EPA 200.8	01/14/2022 2201	MS
Uranium	1.5E-15	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Metals - Total							
Vanadium	0.03	mg/Filter		0.02	EPA 200.8	01/14/2022 2201	MS

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Sample Analysis Report

Company: Barrick Homestake Company
560 Anaconda Rd Route 605
Milan, NM 87021

Date Reported 1/28/2022
Report ID S2112376001

ProjectName: HMC GRP-Q4 2021 Composite Air Filters
Lab ID: S2112376-002
ClientSample ID: HMC-1A
COC: WEB
PWS ID:
Comments Q4 2021 Air filters

WorkOrder: S2112376
CollectionDate:
DateReceived: 12/31/2021 11:25:00 AM
FieldSampler: EA
Matrix: Filter

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	126000000	Liters			Field		
Radionuclides - Filter							
Radium 226	4.2	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1140	WN
Radium 226 Precision (±)	0.4	pCi/Filter			SM 7500RAB	01/27/2022 1140	WN
Radium 226	3.3E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Radium 226 Precision (±)	3.2E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Thorium 230	2.1	pCi/Filter		0.2	ACW10	01/18/2022 1535	AEF
Thorium-230 Precision (±)	0.5	pCi/Filter			ACW10	01/18/2022 1535	AEF
Thorium 230	1.7E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Thorium 230 Precision (±)	4.0E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Uranium	193	pCi/Filter		0.2	EPA 200.8	01/14/2022 2224	MS
Uranium	1.5E-15	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Metals - Total							
Vanadium	0.06	mg/Filter		0.02	EPA 200.8	01/14/2022 2224	MS

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	1/28/2022
		Report ID	S2112376001
ProjectName:	HMC GRP-Q4 2021 Composite Air Filters	**WorkOrder:**	S2112376
Lab ID:	S2112376-003	**CollectionDate:**	
ClientSample ID:	HMC-2	**DateReceived:**	12/31/2021 11:25:00 AM
COC:	WEB	**FieldSampler:**	EA
PWS ID:		**Matrix:**	Filter
Comments	Q4 2021 Air filters		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	145000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.5	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1140	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	01/27/2022 1140	WN
Radium 226	1.7E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Radium 226 Precision (±)	2.1E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Thorium 230	1.8	pCi/Filter		0.2	ACW10	01/18/2022 1535	AEF
Thorium-230 Precision (±)	0.5	pCi/Filter			ACW10	01/18/2022 1535	AEF
Thorium 230	1.2E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Thorium 230 Precision (±)	3.4E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Uranium	20.5	pCi/Filter		0.2	EPA 200.8	01/14/2022 2230	MS
Uranium	1.4E-16	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Metals - Total							
Vanadium	0.05	mg/Filter		0.02	EPA 200.8	01/14/2022 2230	MS

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	1/28/2022
		Report ID	S2112376001
ProjectName:	HMC GRP-Q4 2021 Composite Air Filters	**WorkOrder:**	S2112376
Lab ID:	S2112376-004	**CollectionDate:**	
ClientSample ID:	HMC-3	**DateReceived:**	12/31/2021 11:25:00 AM
COC:	WEB	**FieldSampler:**	EA
PWS ID:		**Matrix:**	Filter
Comments	Q4 2021 Air filters		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	106000000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.0	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1140	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	01/27/2022 1140	WN
Radium 226	1.9E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Radium 226 Precision (±)	2.8E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Thorium 230	1.8	pCi/Filter		0.2	ACW10	01/19/2022 1045	AEF
Thorium-230 Precision (±)	0.5	pCi/Filter			ACW10	01/19/2022 1045	AEF
Thorium 230	1.7E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Thorium 230 Precision (±)	4.7E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Uranium	65.9	pCi/Filter		0.2	EPA 200.8	01/14/2022 2236	MS
Uranium	6.2E-16	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Metals - Total							
Vanadium	0.05	mg/Filter		0.02	EPA 200.8	01/14/2022 2236	MS

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	1/28/2022
		Report ID	S2112376001
ProjectName:	HMC GRP-Q4 2021 Composite Air Filters	**WorkOrder:**	S2112376
Lab ID:	S2112376-005	**CollectionDate:**	
ClientSample ID:	HMC-4	**DateReceived:**	12/31/2021 11:25:00 AM
COC:	WEB	**FieldSampler:**	EA
PWS ID:		**Matrix:**	Filter
Comments	Q4 2021 Air filters		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	69200000	Liters			Field		
Radionuclides - Filter							
Radium 226	1.5	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1406	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	01/27/2022 1406	WN
Radium 226	2.1E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Radium 226 Precision (±)	4.3E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Thorium 230	1.0	pCi/Filter		0.2	ACW10	01/19/2022 1045	AEF
Thorium-230 Precision (±)	0.3	pCi/Filter			ACW10	01/19/2022 1045	AEF
Thorium 230	1.4E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Thorium 230 Precision (±)	4.3E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Uranium	18.2	pCi/Filter		0.2	EPA 200.8	01/14/2022 2242	MS
Uranium	2.6E-16	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Metals - Total							
Vanadium	0.03	mg/Filter		0.02	EPA 200.8	01/14/2022 2242	MS

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	1/28/2022
		Report ID	S2112376001
ProjectName:	HMC GRP-Q4 2021 Composite Air Filters	**WorkOrder:**	S2112376
Lab ID:	S2112376-006	**CollectionDate:**	
ClientSample ID:	HMC-5	**DateReceived:**	12/31/2021 11:25:00 AM
COC:	WEB	**FieldSampler:**	EA
PWS ID:		**Matrix:**	Filter
Comments	Q4 2021 Air filters		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	104000000	Liters			Field		
Radionuclides - Filter							
Radium 226	1.4	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1406	WN
Radium 226 Precision (±)	0.2	pCi/Filter			SM 7500RAB	01/27/2022 1406	WN
Radium 226	1.3E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Radium 226 Precision (±)	1.9E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Thorium 230	1.5	pCi/Filter		0.2	ACW10	01/19/2022 1045	AEF
Thorium-230 Precision (±)	0.4	pCi/Filter			ACW10	01/19/2022 1045	AEF
Thorium 230	1.4E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Thorium 230 Precision (±)	3.8E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Uranium	37.8	pCi/Filter		0.2	EPA 200.8	01/14/2022 2248	MS
Uranium	3.6E-16	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Metals - Total							
Vanadium	0.04	mg/Filter		0.02	EPA 200.8	01/14/2022 2248	MS

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	1/28/2022
		Report ID	S2112376001
ProjectName:	HMC GRP-Q4 2021 Composite Air Filters	**WorkOrder:**	S2112376
Lab ID:	S2112376-007	**CollectionDate:**	
ClientSample ID:	HMC-6	**DateReceived:**	12/31/2021 11:25:00 AM
COC:	WEB	**FieldSampler:**	EA
PWS ID:		**Matrix:**	Filter
Comments	Q4 2021 Air filters		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Field							
Actual Volume	83800000	Liters			Field		
Radionuclides - Filter							
Radium 226	2.3	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1406	WN
Radium 226 Precision (±)	0.3	pCi/Filter			SM 7500RAB	01/27/2022 1406	WN
Radium 226	2.8E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Radium 226 Precision (±)	3.6E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Thorium 230	1.6	pCi/Filter		0.2	ACW10	01/19/2022 1045	AEF
Thorium-230 Precision (±)	0.5	pCi/Filter			ACW10	01/19/2022 1045	AEF
Thorium 230	1.9E-17	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Thorium 230 Precision (±)	6.0E-18	µCi/mL			Calculation	01/28/2022 1527	WN
Uranium	20.1	pCi/Filter		0.2	EPA 200.8	01/14/2022 2254	MS
Uranium	2.4E-16	µCi/mL		1.0E-16	Calculation	01/28/2022 1527	WN
Metals - Total							
Vanadium	0.03	mg/Filter		0.02	EPA 200.8	01/14/2022 2254	MS

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Sample Analysis Report

Company:	Barrick Homestake Company 560 Anaconda Rd Route 605 Milan, NM 87021	**Date Reported**	1/28/2022
		Report ID	S2112376001
ProjectName:	HMC GRP-Q4 2021 Composite Air Filters	**WorkOrder:**	S2112376
Lab ID:	S2112376-008	**CollectionDate:**	
ClientSample ID:	HMC-7	**DateReceived:**	12/31/2021 11:25:00 AM
COC:	WEB	**FieldSampler:**	EA
PWS ID:		**Matrix:**	Filter
Comments	Q4 2021 Air filters		

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Filter							
Radium 226	0.19	pCi/Filter		0.2	SM 7500RAB	01/27/2022 1406	WN
Radium 226 Precision (±)	0.1	pCi/Filter			SM 7500RAB	01/27/2022 1406	WN
Thorium 230	0.23	pCi/Filter		0.2	ACW10	01/19/2022 1045	AEF
Thorium-230 Precision (±)	0.2	pCi/Filter			ACW10	01/19/2022 1045	AEF
Uranium	0.3	pCi/Filter		0.2	EPA 200.8	01/14/2022 2311	MS
Metals - Total							
Vanadium	<0.02	mg/Filter		0.02	EPA 200.8	01/14/2022 2311	MS

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ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 1/28/2022
Work Order: S2112376 **Report ID:** S2112376001
Project: HMC GRP-Q4 2021 Composite Air Filters

Uranium, Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MBLK (01/14/22 21:37) RunNo: 196584

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	ND	0.2					

Uranium, Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS (01/14/22 21:43) RunNo: 196584

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	67.2	0.2	67.7		99.3	85 - 115	

Uranium, Air Filter Analysis Sample Type **MS** Units: pCi/Filter

S2112376-001AS (01/14/22 22:13) RunNo: 196584

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Uranium	1660	0.2	1490	133	103	70 - 130	

Uranium, Air Filter Analysis Sample Type **MSD** Units: pCi/Filter

S2112376-001AMSD (01/14/22 22:18) RunNo: 196584

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Uranium	1600	0.2	1660	4.18	98.2	20	

Uranium, Air Filter Analysis Sample Type **DUP** Units: pCi/Filter

S2112376-001AD (01/14/22 22:07) RunNo: 196584

Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Uranium	130	0.2	133	2.27		20	

Radium 226 Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MB-2324 (01/27/22 11:40) RunNo: 196820 PrepDate: 01/18/22 14:37 BatchID: 19117

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS-2324 (01/27/22 11:40) RunNo: 196820 PrepDate: 01/18/22 14:37 BatchID: 19117

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	8.0	0.2	7.84		102	76 - 129	

Radium 226 Air Filter Analysis Sample Type **LCSD** Units: pCi/Filter

LCSD-2324 (01/27/22 11:40) RunNo: 196820 PrepDate: 01/18/22 14:37 BatchID: 19117

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	8.0	0.2	8.0	0.299	102	20	

Radium 226 Air Filter Analysis Sample Type **MS** Units: pCi/Filter

MS-2324 (01/27/22 11:40) RunNo: 196820 PrepDate: 01/18/22 14:37 BatchID: 19117

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	7.5	0.2	7.84	0.3	92.8	80 - 111	

Radium 226 Air Filter Analysis Sample Type **MSD** Units: pCi/Filter

MSD-2324 (01/27/22 11:40) RunNo: 196820 PrepDate: 01/18/22 14:37 BatchID: 19117

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	7.7	0.2	7.5	1.52	94.3	20	

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ANALYTICAL QC SUMMARY REPORT

CLIENT: Barrick Homestake Company **Date:** 1/28/2022
Work Order: S2112376 **Report ID:** S2112376001
Project: HMC GRP-Q4 2021 Composite Air Filters

Thorium Air Filter Analysis Sample Type **MBLK** Units: pCi/Filter

MB-829 (01/18/22 15:35) RunNo: 196686

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Thorium-230	ND	0.2					

Thorium Air Filter Analysis Sample Type **LCS** Units: pCi/Filter

LCS-829 (01/18/22 15:35) RunNo: 196686

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Thorium-230	12.9	0.2	12.5		103	72 - 142	

Thorium Air Filter Analysis Sample Type **LCSD** Units: pCi/Filter

LCSD-829 (01/18/22 15:35) RunNo: 196686

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Thorium-230	13.1	0.2	12.9	1.12	104	20	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MBLK** Units: mg/Filter

MBLK (01/14/22 21:37) RunNo: 196824

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	ND	0.02					

Total (3050) Metals by EPA 200.8-Soil Sample Type **LCS1** Units: mg/Filter

LCS (01/14/22 21:43) RunNo: 196824

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	0.10	0.02	0.1		102	85 - 115	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MS** Units: mg/Filter

S2112376-001AS (01/14/22 22:13) RunNo: 196824

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Vanadium	2.34	0.02	2.2	0.03	105	70 - 130	

Total (3050) Metals by EPA 200.8-Soil Sample Type **MSD** Units: mg/Filter

S2112376-001AMSD (01/14/22 22:18) RunNo: 196824

Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Vanadium	2.35	0.02	2.34	0.463	105	20	

Total (3050) Metals by EPA 200.8-Soil Sample Type **DUP** Units: mg/Filter

S2112376-001AD (01/14/22 22:07) RunNo: 196824

Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Vanadium	0.03	0.02	0.03	2.09		20	

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1

Lab ID: S2112376-001 **Sample Air Volume: 85900000 Liters**
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	3.1	0.4	3.7E-17	4.7E-18	1E-16	9 E-13	Week	0.0041
Thorium 230	4.2	0.8	4.8E-17	9.3E-18	1E-16	3 E-14	Year	0.16
Uranium	133		1.5E-15		1E-16	9 E-14	Year	1.7

Lab ID: S2110106-001 **Sample Air Volume: 133000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	3.1	0.4	2.4E-17	3.0E-18	1E-16	9 E-13	Week	0.0027
Thorium 230	3.0	1.0	2.3E-17	7.5E-18	1E-16	3 E-14	Year	0.077
Uranium	256		1.9E-15		1E-16	9 E-14	Year	2.1

Lab ID: S2107150-001 **Sample Air Volume: 131000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	7.1	0.5	5.4E-17	3.8E-18	1E-16	9 E-13	Week	0.0060
Thorium 230	5.9	1.0	4.5E-17	7.6E-18	1E-16	3 E-14	Year	0.15
Uranium	168		1.3E-15		1E-16	9 E-14	Year	1.4

Lab ID: S2104095-001 **Sample Air Volume: 131000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.9	0.3	2.2E-17	2.3E-18	1E-16	9 E-13	Week	0.0024
Thorium 230	1.0	0.3	7.3E-18	2.3E-18	1E-16	3 E-14	Year	0.024
Uranium	16.9		1.3E-16		1E-16	9 E-14	Year	0.14

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-1-A

Lab ID: S2112376-002 Client Sample ID: HMC-1A Sample Air Volume: 126000000 Liters
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.2	0.4	3.3E-17	3.2E-18	1E-16	9 E-13	Week	0.0037
Thorium 230	2.1	0.5	1.7E-17	4.0E-18	1E-16	3 E-14	Year	0.057
Uranium	193		1.5E-15		1E-16	9 E-14	Year	1.7

Lab ID: S2110106-002 Client Sample ID: HMC-1A Sample Air Volume: 92300000 Liters
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.9	0.3	3.2E-17	3.3E-18	1E-16	9 E-13	Week	0.0036
Thorium 230	3.1	0.9	3.3E-17	9.8E-18	1E-16	3 E-14	Year	0.11
Uranium	315		3.4E-15		1E-16	9 E-14	Year	3.8

Lab ID: S2107150-002 Client Sample ID: HMC-1A Sample Air Volume: 128000000 Liters
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.7	0.4	3.7E-17	3.1E-18	1E-16	9 E-13	Week	0.0041
Thorium 230	3.7	0.8	2.9E-17	6.3E-18	1E-16	3 E-14	Year	0.097
Uranium	84.0		6.6E-16		1E-16	9 E-14	Year	0.73

Lab ID: S2104095-002 Client Sample ID: HMC-1A Sample Air Volume: 126000000 Liters
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	1.5	0.3	1.2E-17	2.4E-18	1E-16	9 E-13	Week	0.0013
Thorium 230	0.7	0.3	5.3E-18	2.4E-18	1E-16	3 E-14	Year	0.018
Uranium	14.7		1.2E-16		1E-16	9 E-14	Year	0.13

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-2

Lab ID: S2112376-003 **Sample Air Volume: 145000000 Liters**
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.5	0.3	1.7E-17	2.1E-18	1E-16	9 E-13	Week	0.0019
Thorium 230	1.8	0.5	1.2E-17	3.4E-18	1E-16	3 E-14	Year	0.040
Uranium	20.5		1.4E-16		1E-16	9 E-14	Year	0.16

Lab ID: S2110106-003 **Sample Air Volume: 150000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	3.2	0.3	2.1E-17	2.0E-18	1E-16	9 E-13	Week	0.0023
Thorium 230	3.8	1.0	2.5E-17	6.7E-18	1E-16	3 E-14	Year	0.083
Uranium	83.2		5.5E-16		1E-16	9 E-14	Year	0.61

Lab ID: S2107150-003 **Sample Air Volume: 142000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.2	0.4	2.9E-17	2.8E-18	1E-16	9 E-13	Week	0.0032
Thorium 230	4.0	0.8	2.8E-17	5.6E-18	1E-16	3 E-14	Year	0.093
Uranium	42.7		3.0E-16		1E-16	9 E-14	Year	0.33

Lab ID: S2104095-003 **Sample Air Volume: 89700000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	3.5	0.4	3.9E-17	4.5E-18	1E-16	9 E-13	Week	0.0043
Thorium 230	1.4	0.4	1.6E-17	4.5E-18	1E-16	3 E-14	Year	0.053
Uranium	23.3		2.6E-16		1E-16	9 E-14	Year	0.29

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-3

Lab ID: S2112376-004 **Sample Air Volume: 106000000 Liters**
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.0	0.3	1.9E-17	2.8E-18	1E-16	9 E-13	Week	0.0021
Thorium 230	1.8	0.5	1.7E-17	4.7E-18	1E-16	3 E-14	Year	0.057
Uranium	65.9		6.2E-16		1E-16	9 E-14	Year	0.69

Lab ID: S2110106-004 **Sample Air Volume: 140000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.4	0.3	1.7E-17	2.1E-18	1E-16	9 E-13	Week	0.0019
Thorium 230	2.5	0.7	1.8E-17	5.0E-18	1E-16	3 E-14	Year	0.060
Uranium	110		7.8E-16		1E-16	9 E-14	Year	0.87

Lab ID: S2107150-004 **Sample Air Volume: 113000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	7.1	0.6	6.3E-17	5.3E-18	1E-16	9 E-13	Week	0.0070
Thorium 230	5.6	1.0	5.0E-17	8.8E-18	1E-16	3 E-14	Year	0.17
Uranium	63.5		5.6E-16		1E-16	9 E-14	Year	0.62

Lab ID: S2104095-004 **Sample Air Volume: 134000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	4.6	0.4	3.5E-17	3.0E-18	1E-16	9 E-13	Week	0.0039
Thorium 230	1.7	0.5	1.3E-17	3.7E-18	1E-16	3 E-14	Year	0.043
Uranium	53.2		4.0E-16		1E-16	9 E-14	Year	0.44

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-4

Lab ID: S2112376-005 **Sample Air Volume: 69200000 Liters**
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	1.5	0.3	2.1E-17	4.3E-18	1E-16	9 E-13	Week	0.0023
Thorium 230	1.0	0.3	1.4E-17	4.3E-18	1E-16	3 E-14	Year	0.047
Uranium	18.2		2.6E-16		1E-16	9 E-14	Year	0.29

Lab ID: S2110106-005 **Sample Air Volume: 107000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.1	0.3	1.9E-17	2.8E-18	1E-16	9 E-13	Week	0.0021
Thorium 230	1.7	0.6	1.6E-17	5.6E-18	1E-16	3 E-14	Year	0.053
Uranium	83.0		7.8E-16		1E-16	9 E-14	Year	0.87

Lab ID: S2107150-005 **Sample Air Volume: 112000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	23.8	0.9	2.1E-16	8.0E-18	1E-16	9 E-13	Week	0.023
Thorium 230	16.1	2.6	1.4E-16	2.3E-17	1E-16	3 E-14	Year	0.47
Uranium	92.8		8.3E-16		1E-16	9 E-14	Year	0.92

Lab ID: S2104095-005 **Sample Air Volume: 115000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	12.2	0.6	1.1E-16	5.2E-18	1E-16	9 E-13	Week	0.012
Thorium 230	6.6	1.2	5.7E-17	1.0E-17	1E-16	3 E-14	Year	0.19
Uranium	48.0		4.2E-16		1E-16	9 E-14	Year	0.47

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-5

Lab ID: S2112376-006 **Sample Air Volume: 104000000 Liters**
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	1.4	0.2	1.3E-17	1.9E-18	1E-16	9 E-13	Week	0.0014
Thorium 230	1.5	0.4	1.4E-17	3.8E-18	1E-16	3 E-14	Year	0.047
Uranium	37.8		3.6E-16		1E-16	9 E-14	Year	0.40

Lab ID: S2110106-006 **Sample Air Volume: 119000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.5	0.3	2.1E-17	2.5E-18	1E-16	9 E-13	Week	0.0023
Thorium 230	2.0	0.7	1.7E-17	5.9E-18	1E-16	3 E-14	Year	0.057
Uranium	202		1.7E-15		1E-16	9 E-14	Year	1.9

Lab ID: S2107150-006 **Sample Air Volume: 134000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	6.3	0.5	4.7E-17	3.7E-18	1E-16	9 E-13	Week	0.0052
Thorium 230	4.2	0.8	3.1E-17	6.0E-18	1E-16	3 E-14	Year	0.10
Uranium	122		9.1E-16		1E-16	9 E-14	Year	1.0

Lab ID: S2104095-006 **Sample Air Volume: 134000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.8	0.3	2.1E-17	2.2E-18	1E-16	9 E-13	Week	0.0023
Thorium 230	2.6	0.7	2.0E-17	5.2E-18	1E-16	3 E-14	Year	0.067
Uranium	15.5		1.2E-16		1E-16	9 E-14	Year	0.13

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

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Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-6

Lab ID: S2112376-007 **Sample Air Volume: 83800000 Liters**
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.3	0.3	2.8E-17	3.6E-18	1E-16	9 E-13	Week	0.0031
Thorium 230	1.6	0.5	1.9E-17	6.0E-18	1E-16	3 E-14	Year	0.063
Uranium	20.1		2.4E-16		1E-16	9 E-14	Year	0.27

Lab ID: S2110106-007 **Sample Air Volume: 107000000 Liters**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.0	0.3	1.9E-17	2.8E-18	1E-16	9 E-13	Week	0.0021
Thorium 230	1.3	0.5	1.2E-17	4.7E-18	1E-16	3 E-14	Year	0.040
Uranium	137		1.3E-15		1E-16	9 E-14	Year	1.4

Lab ID: S2107150-007 **Sample Air Volume: 110000000 Liters**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	5.0	0.4	4.6E-17	3.6E-18	1E-16	9 E-13	Week	0.0051
Thorium 230	3.9	0.8	3.5E-17	7.3E-18	1E-16	3 E-14	Year	0.12
Uranium	68.4		6.2E-16		1E-16	9 E-14	Year	0.69

Lab ID: S2104095-007 **Sample Air Volume: 125000000 Liters**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
Radium 226	2.3	0.3	1.8E-17	2.4E-18	1E-16	9 E-13	Week	0.0020
Thorium 230	1.6	0.5	1.3E-17	4.0E-18	1E-16	3 E-14	Year	0.043
Uranium	8.9		7.1E-17		1E-16	9 E-14	Year	0.079

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Pace Analytical® Formerly Inter-Mountain Laboratories
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Air Filter Summary Report

Client: Barrick Homestake Company

Client Sampler ID: HMC-7

Lab ID: S2112376-008 **Sample Air Volume:**
Q4 2021 Air filters

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
	0.19	0.1				9 E-13	Week	
	0.23	0.2				3 E-14	Year	
	0.3					9 E-14	Year	

Lab ID: S2110106-008 **Sample Air Volume:**
2021 Q3 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
	0.6	0.2				9 E-13	Week	
	0.26	0.2				3 E-14	Year	
	0.4					9 E-14	Year	

Lab ID: S2107150-008 **Sample Air Volume:**
Q2 2021 Composite

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
	0.5	0.2				9 E-13	Week	
	0.19	0.1				3 E-14	Year	
	0.3					9 E-14	Year	

Lab ID: S2104095-008 **Sample Air Volume:**
2021 First Qtr

Analyte	Result pCi/filter	Precision ± pCi/filter	Result µCi/ml	Precision ± µCi/ml	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Conc.
	0.3	0.2				9 E-13	Week	
	0.4	0.2				3 E-14	Year	
	0.4					9 E-14	Year	

Effluent Limits are from 10 CFR Part 20 Appendix B Table 2

ND - Not Detected at the Reporting Limit

Attachment 2

Radon Gas Monitoring Results

Attachment 2 - Radon Gas Monitoring Results
Track-Etch Passive Survey

Location	Monitoring Period	Rn Concentration (µCi/ml)	Uncertainty - 2 S.D. (µCi/ml)	LLD (µCi/ml)
HMC #1(average) N Outer Perimeter	7/1/21 - 1/5/22	9.5E-10	2.0E-10	3.2E-10
HMC #1-A (average) N Outer Perimeter	7/1/21 - 1/5/22	8.6E-10	2.0E-10	3.2E-10
HMC #2 (average) NE Outer Perimeter	7/1/21 - 1/5/22	1.1E-09	2.2E-10	3.2E-10
HMC #3 (average) E Outer Perimeter	7/1/21 - 1/5/22	8.5E-10	1.9E-10	3.2E-10
HMC #4 (average) S Outer Perimeter	7/1/21 - 1/5/22	9.7E-10	2.1E-10	3.2E-10
HMC #5 (average) N of Nearest Residence	7/1/21 - 1/5/22	1.0E-09	2.1E-10	3.2E-10
HMC #6 (average) W of Outer Perimeter	7/1/21 - 1/5/22	8.7E-10	1.9E-10	3.2E-10
HMC #7 (average) S Boundary	7/1/21 - 1/5/22	9.8E-10	2.1E-10	3.2E-10
HMC #16 (average) Background	7/1/21 - 1/5/22	5.4E-10	1.6E-10	3.2E-10

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REPORT NUMBER
5761604:1

REPORT DATE
04/13/2021

REPORT PAGE
1 of 4

PRINT DATE
04/13/2021

OWN ID
N/A

BY
ERG, Inc

REPORT RECEIVER(S)
ERG, Inc
Homestake

ERG, Inc
8809 E. Washington Street NE
Suite 150
Albuquerque NM 87113

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **04/02/2021**.
They were measured **04/08/2021**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
PO Box 98, Hwy 605
Grants NM 87020

BUILDING ID

TRANSIT DETECTOR 1:
*424192 (8 ± 7 pCi*days/l)*

TRANSIT DETECTOR 2:
*416065 (10 ± 7 pCi*days/l)*

TRANSIT DETECTOR 3:
*305720 (10 ± 7 pCi*days/l)*

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
464625-3 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 1*	*Out-door*	0.62 ± 0.14 pCi/L
412826-0 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 1*	*Out-door*	0.76 ± 0.17 pCi/L
327649-0 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 1A*	*Out-door*	0.62 ± 0.14 pCi/L
476385-0 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 1A*	*Out-door*	0.59 ± 0.14 pCi/L
259283-0 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 2*	*Out-door*	0.86 ± 0.17 pCi/L
397716-2 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 2*	*Out-door*	0.86 ± 0.17 pCi/L
422919-1 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 3*	*Out-door*	0.54 ± 0.14 pCi/L
408581-7 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 3*	*Out-door*	0.59 ± 0.14 pCi/L
784969-8 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 4*	*Out-door*	0.70 ± 0.14 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
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5761604:1

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2 of 4

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ERG, Inc

REPORT RECEIVER(S)
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Homestake

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RADON MONITORING REPORT

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They were measured **04/08/2021**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
PO Box 98, Hwy 605
Grants NM 87020

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
472671-7 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 4*	*Out-door*	0.59 ± 0.14 pCi/L
448093-5 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 5*	*Out-door*	0.92 ± 0.17 pCi/L
326009-8 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 5*	*Out-door*	0.68 ± 0.14 pCi/L
192470-3 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 6*	*Out-door*	0.62 ± 0.14 pCi/L
471564-5 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 6*	*Out-door*	0.59 ± 0.14 pCi/L
407403-5 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 7*	*Out-door*	0.76 ± 0.17 pCi/L
478354-4 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 7*	*Out-door*	0.84 ± 0.17 pCi/L
464637-8 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 16*	*Out-door*	0.35 ± 0.11 pCi/L
690242-3 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 16*	*Out-door*	0.38 ± 0.11 pCi/L
423304-5 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 1OFF*	*Out-door*	0.76 ± 0.17 pCi/L
479943-3 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 1OFF*	*Out-door*	0.78 ± 0.17 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
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Westmont IL 60559
331.814.2200, help@radonova.com

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Homestake

ERG, Inc
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Suite 150
Albuquerque NM 87113

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **04/02/2021**.
They were measured **04/08/2021**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
PO Box 98, Hwy 605
Grants NM 87020

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
738358-1 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 6OFF*	*Out-door*	0.59 ± 0.14 pCi/L
413333-6 [Rapidos®]	*01/06/2021 – 03/29/2021*	*HMC 6OFF*	*Out-door*	0.81 ± 0.17 pCi/L
421611-5 [Rapidos®]	*01/06/2021 – 03/29/2021*	*RO Plant*	*In-door*	0.97 ± 0.19 pCi/L
463895-3 [Rapidos®]	*01/06/2021 – 03/29/2021*	*Office*	*In-door*	2.1 ± 0.33 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

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Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
900 Oakmont Lane Suite 207
Westmont IL 60559
331.814.2200, help@radonova.com

Measurement method: Closed alpha-track detector

The radon measurement was performed with a closed alpha-track detector following the quality assurance guidance given in EPA 402-R-95-012. The detector container is manufactured from electrically conducting plastic. Through a small slit (filter), radon gas enters the detector. The track-detecting material (film) inside the detector is hit by alpha particles generated by the radon entering the container and the decay products formed from it. On the film, the alpha particles make small tracks which are enlarged through chemical etching and later counted in a microscope in order to determine the radon exposure.

Transit detectors are used for the return delivery of the high-sensitivity detectors in order to make a more accurate background subtraction.

Radonova Laboratories AB (P.O. Box 6522, SE-751 38 Uppsala, Sweden) is accredited (no. 1489) by SWEDAC to conduct radon-gas measurements using the closed alpha-track detector method. The analysis equipment is checked daily and the detectors are calibrated at regular intervals. NRPP Licenses: 107831 AL, 107830 RT

Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 4.0 ± 0.5 pCi/L means that the radon concentration is most likely contained in the range 3.5 - 4.5 pCi/L. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in pCi*days/L will be reported. The reported measured values are related to the detectors as received by Radonova Laboratories AB. Detector deployment is not performed by Radonova Laboratories AB. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories AB by the end user.

The average transit exposure has been subtracted in the reported radon concentrations.

Codes on non-reportable detectors

DNR	Not Reported – Detector Not Returned
VTW	Not Reported – Visibly Tampered With
FBD	Not Reported – Film Broken or Damaged
LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories AB hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

Certification no:

107831-AL, 107830-RT, NRSB ARL1904

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5826073:1

REPORT DATE
07/21/2021

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07/21/2021

OWN ID
N/A

BY
Homestake Mining Co

REPORT RECEIVER(S)
Homestake Mining Co
Homestake

Homestake Mining Co
Highway 605
Grants NM 87020

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **07/06/2021**.
They were measured **07/12/2021**.

Test data have been given by Homestake

Property data and address

MEASURE SITE ADDRESS

BUILDING ID

TRANSIT DETECTOR 1:
*330897 (5 ± 7 pCi*days/l)*

TRANSIT DETECTOR 2:
*479323 (8 ± 9 pCi*days/l)*

TRANSIT DETECTOR 3:
*816846 (2 ± 7 pCi*days/l)*

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
119244-2 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-1*	*Out-door*	0.43 ± 0.11 pCi/L
622839-9 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-1*	*Out-door*	0.49 ± 0.11 pCi/L
390239-2 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-1A*	*Out-door*	0.43 ± 0.11 pCi/L
443022-9 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-1A*	*Out-door*	0.49 ± 0.11 pCi/L
656998-2 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-2*	*Out-door*	0.54 ± 0.11 pCi/L
577325-4 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-2*	*Out-door*	0.49 ± 0.11 pCi/L
937777-1 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-3*	*Out-door*	0.43 ± 0.11 pCi/L
655789-6 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-3*	*Out-door*	0.46 ± 0.11 pCi/L
809765-1 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-4*	*Out-door*	0.46 ± 0.11 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

DISCLAIMER

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5826073:1

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2 of 4

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07/21/2021

OWN ID
N/A

BY
Homestake Mining Co

REPORT RECEIVER(S)
Homestake Mining Co
Homestake

Homestake Mining Co
Highway 605
Grants NM 87020

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **07/06/2021**.
They were measured **07/12/2021**.

Test data have been given by Homestake

Property data and address

MEASURE SITE ADDRESS

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
209089-2 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-4*	*Out-door*	0.65 ± 0.14 pCi/L
957384-1 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-5*	*Out-door*	0.51 ± 0.11 pCi/L
576524-3 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-5*	*Out-door*	0.49 ± 0.11 pCi/L
723445-3 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-6*	*Out-door*	0.46 ± 0.11 pCi/L
969782-2 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-6*	*Out-door*	0.43 ± 0.11 pCi/L
813548-5 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-7*	*Out-door*	0.46 ± 0.11 pCi/L
674735-6 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-7*	*Out-door*	0.46 ± 0.11 pCi/L
413895-4 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-16*	*Out-door*	0.24 ± 0.09 pCi/L
710289-0 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-16*	*Out-door*	0.22 ± 0.09 pCi/L
621175-9 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-1 Off*	*Out-door*	0.62 ± 0.14 pCi/L
936880-4 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-1 Off*	*Out-door*	0.51 ± 0.11 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

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Homestake Mining Co
Highway 605
Grants NM 87020

BY
Homestake Mining Co

REPORT RECEIVER(S)
Homestake Mining Co
Homestake

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **07/06/2021**.
They were measured **07/12/2021**.

Test data have been given by Homestake

Property data and address

MEASURE SITE ADDRESS

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
463604-9 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-6 Off*	*Out-door*	0.46 ± 0.11 pCi/L
946176-5 [Rapidos®]	*03/29/2021 – 07/01/2021*	*HMC-6 Off*	*Out-door*	0.43 ± 0.11 pCi/L
633185-4 [Rapidos®]	*03/29/2021 – 07/01/2021*	*RO Plant*	*In-door*	0.89 ± 0.17 pCi/L
268768-9 [Rapidos®]	*03/29/2021 – 07/01/2021*	*Office*	*In-door*	1.6 ± 0.25 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

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Measurement method: Closed alpha-track detector

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Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 4.0 ± 0.5 pCi/L means that the radon concentration is most likely contained in the range 3.5 - 4.5 pCi/L. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in pCi*days/L will be reported. The reported measured values are related to the detectors as received by Radonova Laboratories AB. Detector deployment is not performed by Radonova Laboratories AB. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories AB by the end user.

The average transit exposure has been subtracted in the reported radon concentrations.

Codes on non-reportable detectors

DNR	Not Reported – Detector Not Returned
VTW	Not Reported – Visibly Tampered With
FBD	Not Reported – Film Broken or Damaged
LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories AB hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

Certification no:

107831-AL, 107830-RT, NRSB ARL1904

SWEDAC ACKREDITERING
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REPORT NUMBER
5927900:1

REPORT DATE
10/20/2021

REPORT PAGE
1 of 4

PRINT DATE
11/12/2021

OWN ID
N/A

PO BOX 98 HWY 605
GRANTS NM 87020

BY
Homestake Mining Co

REPORT RECEIVER(S)
ChuckFarr@ergoffice.com

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **10/08/2021**.
They were measured **10/18/2021**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
PO BOX 98 HWY 605
GRANTS NM 87020

BUILDING ID

TRANSIT DETECTOR 1:
*663566 (3 ± 11 pCi*days/l)*

TRANSIT DETECTOR 2:
*105816 (5 ± 9 pCi*days/l)*

TRANSIT DETECTOR 3:
*994046 (12 ± 11 pCi*days/l)*

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
128129-4 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-1*	*Out-door*	0.65 ± 0.17 pCi/L
115714-8 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-1*	*Out-door*	0.65 ± 0.17 pCi/L
822906-4 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-1A*	*Out-door*	0.78 ± 0.17 pCi/L
467117-8 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-1A*	*Out-door*	0.62 ± 0.17 pCi/L
574495-8 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-2*		0.81 ± 0.17 pCi/L
405872-3 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-2*	*Out-door*	0.78 ± 0.17 pCi/L
411940-0 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-3*	*Out-door*	0.57 ± 0.17 pCi/L
216569-4 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-3*	*Out-door*	0.62 ± 0.17 pCi/L
263678-5 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-4*	*Out-door*	0.65 ± 0.17 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
900 Oakmont Lane Suite 207
Westmont IL 60559
331.814.2200, help@radonova.com

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The global leader in radon measurement

REPORT NUMBER
5927900:1

REPORT DATE
10/20/2021

REPORT PAGE
2 of 4

PRINT DATE
11/12/2021

OWN ID
N/A

PO BOX 98 HWY 605
GRANTS NM 87020

BY
Homestake Mining Co

REPORT RECEIVER(S)
ChuckFarr@ergoffice.com

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **10/08/2021**.
They were measured **10/18/2021**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
PO BOX 98 HWY 605
GRANTS NM 87020

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
722381-1 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-4*	*Out-door*	0.65 ± 0.17 pCi/L
803698-0 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-5*	*Out-door*	0.76 ± 0.17 pCi/L
103346-3 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-5*	*Out-door*	0.76 ± 0.17 pCi/L
803607-1 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-6*	*Out-door*	0.73 ± 0.17 pCi/L
248397-2 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-6*	*Out-door*	0.57 ± 0.17 pCi/L
558824-9 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-7*	*Out-door*	0.76 ± 0.17 pCi/L
929669-0 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-7*	*Out-door*	0.78 ± 0.17 pCi/L
806877-7 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-16*	*Out-door*	0.59 ± 0.17 pCi/L
677000-2 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-16*	*Out-door*	0.51 ± 0.14 pCi/L
748745-7 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-1 OFF*	*Out-door*	0.76 ± 0.17 pCi/L
538445-8 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-1OFF*	*Out-door*	0.76 ± 0.17 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
900 Oakmont Lane Suite 207
Westmont IL 60559
331.814.2200, help@radonova.com

OWN ID
N/A

PO BOX 98 HWY 605
GRANTS NM 87020

BY
Homestake Mining Co

REPORT RECEIVER(S)
ChuckFarr@ergoffice.com

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **10/08/2021**.
They were measured **10/18/2021**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
PO BOX 98 HWY 605
GRANTS NM 87020

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
939402-4 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-6 OFF*	*Out-door*	0.73 ± 0.17 pCi/L
631119-5 [Rapidos®]	*07/01/2021 – 10/05/2021*	*HMC-6 OFF*	*Out-door*	0.73 ± 0.17 pCi/L
212652-2 [Rapidos®]	*07/01/2021 – 10/05/2021*	*RO PLANT*	*In-door*	1.1 ± 0.19 pCi/L
958099-4 [Rapidos®]	*07/01/2021 – 10/05/2021*	*OFFICE*	*In-door*	1.4 ± 0.25 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
900 Oakmont Lane Suite 207
Westmont IL 60559
331.814.2200, help@radonova.com

Measurement method: Closed alpha-track detector

The radon measurement was performed with a closed alpha-track detector following the quality assurance guidance given in EPA 402-R-95-012. The detector container is manufactured from electrically conducting plastic. Through a small slit (filter), radon gas enters the detector. The track-detecting material (film) inside the detector is hit by alpha particles generated by the radon entering the container and the decay products formed from it. On the film, the alpha particles make small tracks which are enlarged through chemical etching and later counted in a microscope in order to determine the radon exposure.

Transit detectors are used for the return delivery of the high-sensitivity detectors in order to make a more accurate background subtraction.

Radonova Laboratories AB (P.O. Box 6522, SE-751 38 Uppsala, Sweden) is accredited (no. 1489) by SWEDAC to conduct radon-gas measurements using the closed alpha-track detector method. The analysis equipment is checked daily and the detectors are calibrated at regular intervals. NRPP Licenses: 107831 AL, 107830 RT

Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 4.0 ± 0.5 pCi/L means that the radon concentration is most likely contained in the range 3.5 - 4.5 pCi/L. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in pCi*days/L will be reported. The reported measured values are related to the detectors as received by Radonova Laboratories AB. Detector deployment is not performed by Radonova Laboratories AB. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories AB by the end user.

The average transit exposure has been subtracted in the reported radon concentrations.

Codes on non-reportable detectors

DNR	Not Reported – Detector Not Returned
VTW	Not Reported – Visibly Tampered With
FBD	Not Reported – Film Broken or Damaged
LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories AB hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

Certification no:

107831-AL, 107830-RT, NRSB ARL1904

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

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REPORT NUMBER
5954078:2

REPORT DATE
01/26/2022

PRINT DATE
01/26/2022

OWN ID
N/A

BY
Homestake Mining Co

REPORT RECEIVER(S)
ChuckFarr@ergoffice.com
Homestake

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **01/11/2022**.
They were measured **01/14/2022**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
P.O. Box 98 Hwy 605
Grants NM 87020

BUILDING ID

TRANSIT DETECTOR 1:
*613530 (11 ± 14 pCi*days/l)*

TRANSIT DETECTOR 2:
*624478 (10 ± 14 pCi*days/l)*

TRANSIT DETECTOR 3:
*625064 (16 ± 11 pCi*days/l)*

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
612730-2 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-1*	*Out-door*	1.2 ± 0.22 pCi/L
563429-0 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-1*	*Out-door*	1.3 ± 0.22 pCi/L
597698-0 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-1A*	*Out-door*	1.1 ± 0.22 pCi/L
612152-9 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-1A*	*Out-door*	1.1 ± 0.22 pCi/L
599917-2 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-2*	*Out-door*	1.5 ± 0.25 pCi/L
332253-4 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-2*	*Out-door*	1.5 ± 0.28 pCi/L
137264-8 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-3*	*Out-door*	1.2 ± 0.22 pCi/L
384139-2 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-3*	*Out-door*	1.1 ± 0.22 pCi/L
121068-1 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-4*	*Out-door*	1.4 ± 0.25 pCi/L

Comment to the results

This report replaces 5954078:1. Reason: new or corrected measurement information has been received.

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

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REPORT NUMBER
5954078:2

REPORT PAGE
2 of 4

REPORT DATE
01/26/2022

PRINT DATE
01/26/2022

OWN ID
N/A

BY
Homestake Mining Co

REPORT RECEIVER(S)
ChuckFarr@ergoffice.com
Homestake

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **01/11/2022**.
They were measured **01/14/2022**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
P.O. Box 98 Hwy 605
Grants NM 87020

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
125613-0 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-4*	*Out-door*	1.3 ± 0.25 pCi/L
611998-6 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-5*	*Out-door*	1.4 ± 0.25 pCi/L
625608-5 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-5*	*Out-door*	1.2 ± 0.25 pCi/L
624258-0 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-6*	*Out-door*	1.1 ± 0.22 pCi/L
609943-6 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-6*	*Out-door*	1.2 ± 0.22 pCi/L
626351-1 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-7*	*Out-door*	1.3 ± 0.22 pCi/L
597034-8 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-7*	*Out-door*	1.3 ± 0.25 pCi/L
596587-6 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-16*	*Out-door*	0.73 ± 0.17 pCi/L
616178-0 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-16*	*Out-door*	0.76 ± 0.17 pCi/L
616375-2 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-1 off*	*Out-door*	1.4 ± 0.25 pCi/L
598252-5 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-1 off*	*Out-door*	1.1 ± 0.22 pCi/L

Comment to the results

This report replaces 5954078:1. Reason: new or corrected measurement information has been received.

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
900 Oakmont Lane Suite 207
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331.814.2200, help@radonova.com

OWN ID
N/A

BY
Homestake Mining Co

REPORT RECEIVER(S)
ChuckFarr@ergoffice.com
Homestake

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed high-sensitivity alpha-track detector.

The detector(s) arrived to Radonova Laboratories AB **01/11/2022**.
They were measured **01/14/2022**.

Test data have been given by Kyle Martinez

Property data and address

MEASURE SITE ADDRESS
P.O. Box 98 Hwy 605
Grants NM 87020

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
621202-1 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-6 off*	*Out-door*	1.2 ± 0.22 pCi/L
320595-2 [Rapidos®]	*10/05/2021 – 01/05/2022*	*HMC-6 off*	*Out-door*	1.3 ± 0.22 pCi/L
624981-7 [Rapidos®]	*10/05/2021 – 01/05/2022*	*RO Plant*	*In-door*	1.5 ± 0.28 pCi/L
141135-4 [Rapidos®]	*10/05/2021 – 01/05/2022*	*Office*	*In-door*	2.7 ± 0.41 pCi/L

Comment to the results

This report replaces 5954078:1. Reason: new or corrected measurement information has been received.

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
900 Oakmont Lane Suite 207
Westmont IL 60559
331.814.2200, help@radonova.com

Measurement method: Closed alpha-track detector

The radon measurement was performed with a closed alpha-track detector following the quality assurance guidance given in EPA 402-R-95-012. The detector container is manufactured from electrically conducting plastic. Through a small slit (filter), radon gas enters the detector. The track-detecting material (film) inside the detector is hit by alpha particles generated by the radon entering the container and the decay products formed from it. On the film, the alpha particles make small tracks which are enlarged through chemical etching and later counted in a microscope in order to determine the radon exposure.

Transit detectors are used for the return delivery of the high-sensitivity detectors in order to make a more accurate background subtraction.

Radonova Laboratories AB (P.O. Box 6522, SE-751 38 Uppsala, Sweden) is accredited (no. 1489) by SWEDAC to conduct radon-gas measurements using the closed alpha-track detector method. The analysis equipment is checked daily and the detectors are calibrated at regular intervals. NRPP Licenses: 107831 AL, 107830 RT

Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 4.0 ± 0.5 pCi/L means that the radon concentration is most likely contained in the range 3.5 - 4.5 pCi/L. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in pCi*days/L will be reported. The reported measured values are related to the detectors as received by Radonova Laboratories AB. Detector deployment is not performed by Radonova Laboratories AB. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories AB by the end user.

The average transit exposure has been subtracted in the reported radon concentrations.

Codes on non-reportable detectors

DNR	Not Reported – Detector Not Returned
VTW	Not Reported – Visibly Tampered With
FBD	Not Reported – Film Broken or Damaged
LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories AB hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

Certification no:

107831-AL, 107830-RT, NRSB ARL1904, NY ELAP ID: 12042,

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
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331.814.2200, help@radonova.com

Attachment 3
Environmental Gamma Radiation Results

Attachment 3 - Environmental Gamma Radiation Results
OSL Perimeter Survey

Direct Radiation Measurements

Location	Monitoring Period	Dose Rate (mrem/6 mo)	Error (mrem/6 mo)*
HMC #1 N Outer Perimeter	7/1/21 - 12/31/21	63.0	6.2
HMC #1-A N Outer Perimeter	7/1/21 - 12/31/21	50.9	5.0
HMC #2 NE Outer Perimeter	7/1/21 - 12/31/21	66.4	6.5
HMC #3 E Outer Perimeter	7/1/21 - 12/31/21	65.0	6.4
HMC #4 S Outer Perimeter	7/1/21 - 12/31/21	63.7	6.2
HMC #5 N of Nearest Residence	7/1/21 - 12/31/21	61.9	6.1
HMC #6 W of Outer Perimeter	7/1/21 - 12/31/21	64.7	6.3
HMC #16 Background	7/1/21 - 12/31/21	54.3	5.3

*Error is 1.96 std. dev.

HOMESTAKE MINING CO
ENVIRONMENTAL AFFAIRS
ATTN: KYLE MARTINEZ
HIGHWAY 605 N
GRANTS, NM 87020

Report Date (YYYY-MM-DD)	2021-07-13
Page	1 of 1
Dosimeter Received	2021-07-09
QC Release	CHA
Analytical Work Order	2118902559

LANDAUER®
LANDAUER, Inc., 2 Science Road
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landauer.com
Telephone: (708) 755-7000
Facsimile: (708) 755-7016
Customer Service: (800) 323-8830
Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 719183 Subaccount : 1456735 Series: X9

Location ID Number	Dosimeter Type	Identifier (Client Supplied)	Exposure (Ambient Dose mrem)		Net Cumulative Totals (mrem)			Inception Date (YYYY-MM)	Serial Number
			Gross	Net	Quarter to Date	Year to Date	Permanent		
Monitoring Period:			2021-01-01 to	2021-06-30	Q1	2021			
00000	V03NH	Deploy Control						2018-01	EX00063466M
	V03NH	Control Dose Used	52.1						
00000	V03NH	Deploy Control						2018-01	EX000897674
	V03NH	Control Dose Used	46.7						
00462	V03NH	HMC1 A	58.5	6.4	6.4	6.4	1.3	2018-01	EX00064768B
00463	V03NH	HMC1 OFF	54.1	2.0	2.0	2.0	20.6	2018-01	EX00044008Z
00464	V03NH	HMC16 BACKGROUND	46.1	-6.0	-6.0	-6.0	-8.5	2018-01	EX00041942S
00465	V03NH	HMC 2	63.6	11.5	11.5	11.5	48.6	2018-01	EX000190741
00466	V03NH	HMC 3	56.1	4.0	4.0	4.0	16.7	2018-01	EX00064919A
00467	V03NH	HMC 4	69.2	17.1	17.1	17.1	75.1	2018-01	EX00051842S
00468	V03NH	HMC 5	58.7	6.6	6.6	6.6	38.5	2018-01	EX00009534X
00469	V03NH	HMC 6	54.1	2.0	2.0	2.0	30.4	2018-01	EX00056883H
00470	V03NH	HMC 1	58.4	6.2	6.2	6.2	10.6	2018-01	EX000602522
00480	V03NH	HMC6-OFF	51.8	5.1				2021-01	EX00061376P

General Information

The Environmental dosimeter is for both indoor and outdoor use, and is designed to withstand extremes of temperature, humidity, precipitation, and other environmental conditions. InLight dosimeters are built on an assembly of a case component with copper and plastic filters along with a four-positioned aluminum oxide detector slide component. Both the case and slide are uniquely bar coded with serial numbers for chain of custody and sensitivity identification. The InLight dosimeter is sealed within a heavy-duty vinyl tamper resistant pouch that has multiple slots to permit several methods of attachment for easy deployment.

Technical Specifications

- Fully meets ANSI N545-1977, NRC Regulatory Guide 4.13, and HPS Draft Standard N13.29 for environmental dosimetry.
- Minimum Detectable Dose - nominally 0.1 mrem (1 μSv), reporting to tenths of a millirem ambient dose equivalent.
- Detection Capabilities:

  Photons (x and gamma rays) with energies above 15 keV nominally: 0.1 mrem to 1000 rem (1 μSv to 10 Sv).

  Beta particles with energies greater than approximately 500 keV average energy: 20 mrem to 1000 rem (200 μSv to 10 Sv).

Control Dosimeter

A minimum of two control dosimeters are provided per shipment. The first is for field deployment/retrieval used to measure exposure during shipment and placement/collection. The second is for transit used to measure exposure during shipment only. Both control dosimeters assigned to a shipment should accompany that shipment both from and to LANDAUER. Do not use the control dosimeters for any other purpose. Store dosimeters away from radiation when not in use along with the control dosimeter(s) of the same use date.

Dosimetry reports show gross and net dosage. Gross dosage includes the dosage to the controls. LANDAUER's background subtraction protocol is:

1. Subtract the deployment/retrieval control; or if not returned to LANDAUER
2. Subtract the transit control.

Environmental Dosimetry Report Information

Location ID Number
Unique number assigned by LANDAUER.

Dosimeter Type

Dosimeter Type	Analytical Sensitivity	Minimum Detectable Dose Level (mrem)
V03NH	High	0.1
V03NN	Standard	5.0
V06NH	High	0.1
V06NN	Standard	5.0

Identifier
Location name supplied by customer.

Exposure Ambient Dose (mrem)
Gross: Gross exposure before control subtraction.
Net: Net exposure after control subtraction.

Net Cumulative Totals (mrem)
Quarter to Date, Year to Date, and Permanent are accumulated net ambient exposure.

Inception Date
The date LANDAUER began keeping dosimeter records for a given dosimeter for a monitoring location on the current account.

Serial Number
Dosimeter serial number.

U.S. Patents

6,316,782; 6,127,685; 5,892,234

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Glenwood, Illinois 60425-1586
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Technical: (800) 438-3241

LANDAUER®

HOMESTAKE MINING CO
ENVIRONMENTAL AFFAIRS
ATTN: KYLE MARTINEZ
HIGHWAY 605 N
GRANTS, NM 87020

Report Date (YYYY-MM-DD)	2022-01-19
Page	1 of 1
Dosimeter Received	2022-01-12
QC Release	LCA
Analytical Work Order	2201200163

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Customer Service: (800) 323-8830
Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 719183 Subaccount : 1456735 Series: X9

Location ID Number	Dosimeter Type	Identifier (Client Supplied)	Exposure (Ambient Dose mrem)		Net Cumulative Totals (mrem)			Inception Date (YYYY-MM)	Serial Number
			Gross	Net	Quarter to Date	Year to Date	Permanent		
Monitoring Period:			2021-07-01 to	2021-12-31	Q3	2021			
00000	V03NH	Deploy Control						2018-01	EX00094246L
	V03NH	Control Dose Used	58.6						
00462	V03NH	HMC1 A	50.9	-7.7	-7.7	-1.3	-6.5	2018-01	EX00094254O
00463	V03NH	HMC1 OFF	59.0	0.3	0.3	2.3	20.9	2018-01	EX00094190U
00464	V03NH	HMC16 BACKGROUND	54.3	-4.4	-4.4	-10.4	-12.9	2018-01	EX00094354M
00465	V03NH	HMC 2	66.4	7.8	7.8	19.3	56.4	2018-01	EX00094253Q
00466	V03NH	HMC 3	65.0	6.4	6.4	10.4	23.1	2018-01	EX00094331U
00467	V03NH	HMC 4	63.7	5.1	5.1	22.2	80.2	2018-01	EX00094189D
00468	V03NH	HMC 5	61.9	3.2	3.2	9.8	41.7	2018-01	EX00094250W
00469	V03NH	HMC 6	64.7	6.1	6.1	8.1	36.5	2018-01	EX00094239G
00470	V03NH	HMC 1	63.0	4.4	4.4	10.6	14.9	2018-01	EX00094351S
00480	V03NH	HMC6-OFF	55.6	-3.0				2021-01	EX00094323R

General Information

The Environmental dosimeter is for both indoor and outdoor use, and is designed to withstand extremes of temperature, humidity, precipitation, and other environmental conditions. InLight dosimeters are built on an assembly of a case component with copper and plastic filters along with a four-positioned aluminum oxide detector slide component. Both the case and slide are uniquely bar coded with serial numbers for chain of custody and sensitivity identification. The InLight dosimeter is sealed within a heavy-duty vinyl tamper resistant pouch that has multiple slots to permit several methods of attachment for easy deployment.

Technical Specifications

- Fully meets ANSI N545-1977, NRC Regulatory Guide 4.13, and HPS Draft Standard N13.29 for environmental dosimetry.

- Minimum Detectable Dose - nominally 0.1 mrem (1 μSv), reporting to tenths of a millirem ambient dose equivalent.

- Detection Capabilities:

  Photons (x and gamma rays) with energies above 15 keV nominally: 0.1 mrem to 1000 rem (1 μSv to 10 Sv).

  Beta particles with energies greater than approximately 500 keV average energy: 20 mrem to 1000 rem (200 μSv to 10 Sv).

Control Dosimeter

A minimum of two control dosimeters are provided per shipment. The first is for field deployment/retrieval used to measure exposure during shipment and placement/collection. The second is for transit used to measure exposure during shipment only. Both control dosimeters assigned to a shipment should accompany that shipment both from and to LANDAUER. Do not use the control dosimeters for any other purpose. Store dosimeters away from radiation when not in use along with the control dosimeter(s) of the same use date.

Dosimetry reports show gross and net dosage. Gross dosage includes the dosage to the controls. LANDAUER's background subtraction protocol is:

1. Subtract the deployment/retrieval control; or if not returned to LANDAUER
2. Subtract the transit control.

Environmental Dosimetry Report Information

Location ID Number

Unique number assigned by LANDAUER.

Dosimeter Type

Dosimeter Type	Analytical Sensitivity	Minimum Detectable Dose Level (mrem)
V03NH	High	0.1
V03NN	Standard	5.0
V06NH	High	0.1
V06NN	Standard	5.0

Identifier

Location name supplied by customer.

Exposure Ambient Dose (mrem)

Gross: Gross exposure before control subtraction.
Net: Net exposure after control subtraction.

Net Cumulative Totals (mrem)

Quarter to Date, Year to Date, and Permanent are accumulated net ambient exposure.

Inception Date

The date LANDAUER began keeping dosimeter records for a given dosimeter for a monitoring location on the current account.

Serial Number

Dosimeter serial number.

U.S. Patents

6,316,782; 6,127,685; 5,892,234

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LANDAUER®

Attachment 4
2021 Annual Public Dose Estimates

Annual Public Dose Estimates

1.0 Introduction

Operational activities in 2020 at the HMC Grants Reclamation Project (Site) were primarily associated with groundwater restoration, maintenance of containment facilities (e.g. tailings impoundments, ponds, tanks, pipes, etc.) and environmental monitoring. Historic windblown tailings beyond the two tailings impoundments were cleaned up and consolidated with the tailings in 1995 then covered with a minimum of several feet of clean soil. All tailings currently have either an interim or permanent cover in place. In the case of the Small Tailings Pile (STP), a large portion of the tailings are covered by Evaporation Pond 1 (EP-1). Specific activities that occurred on the tailings piles included maintenance of interim soil cover, operation of Zeolite water treatment facilities on the Large Tailings Pile (LTP), enhanced evaporation operations on EP-1, and use/maintenance of trash pits on the STP.

The 10 CFR 20.1301 radiation dose limit for individual members of the public from NRC-licensed facilities is specified as a total effective dose equivalent (TEDE) of 100 mrem/year. In addition, 10 CFR 20.1101 has a constraint on the TEDE from air emissions (excluding Rn-222 and its decay products) to the maximum exposed member of the public of 10 mrem/year. Compliance may be demonstrated by calculations or measurements showing that the individual likely to receive the maximum dose from the facility does not exceed the limit, or by comparing measured effluent concentrations to those specified in Table 2 of Appendix B to 10 CFR Part 20. In addition, radiation from external sources for individuals in the unrestricted area may not deliver a dose equivalent of 0.002 rem in any hour or 0.050 rem in one year.

HMC has submitted semiannual environmental monitoring reports for 2020 as required by 10 CFR 40.65 and License Condition 15 of radioactive materials license (RML) SUA-1471 with the NRC. The data provided in these reports were used in this dose assessment.

2.0 Dose Assessment

The important pathways for assessing the dose to the maximum exposed individual are: 1) inhalation of airborne particulate from the site, 2) exposure to radon generated at the site, and 3) the exposure to direct gamma radiation originating from the site. The nearest residence is located within 100 yards of the HMC-4 and HMC-5 monitoring stations and therefore the exposure may be conservatively assumed to be comparable to that at the monitoring stations. The exposure at both monitoring stations is considered and the station with the highest exposure is used for calculating the TEDE to the maximum exposed individual. Nearby residents are believed to lead typical rural residential lifestyles.

NUREG/CR-5512 recommends default values for the residential scenario. The recommended values for indoor and outdoor occupancy are 200 and 71 effective days/year, respectively. This is approximately equivalent to an effective occupancy near the Site of 75%. These assumptions were used in this analysis for all radiological exposure/dose pathways.

2.1 Inhalation of Radionuclides

The committed effective dose equivalent (CEDE) from inhalation of particulate was calculated for five principal long-lived radionuclides, U-238, U-235, U-234, Th-230, and Ra-226, based on quarterly environmental monitoring data provided in the two 2021 Semiannual Environmental Reports.

The monitoring stations HMC-4 and HMC-5 are considered representative of exposure conditions for the maximally exposed nearest resident location(s) for comparison of calculated doses with public dose limits. These stations are located on the southwestern perimeter of the Site near existing residences. The use of these data to predict the dose to the nearest resident is conservative in that exposure conditions at the nearest resident location are further from Site facilities and should thus be less than that at stations HMC-4 and HMC-5 near Site perimeter boundaries.

The CEDE per Unit Intake via Inhalation factors were taken from ICRP 30 tables. The values are given below:

Nuclide	CEDE (mrem/μCi)
U-234	13.2E4
U-235	12.3E4
U-238	11.8E4
Th-230	32.6E4
Ra-226	8.6E3

The measured annual average radionuclide concentration in airborne particulates for each monitoring station are shown in Table 2-1. Isotopic uranium concentrations were derived from the expected activity abundances in natural (total) uranium (U-nat) (48.9% each for U-238 and U-234, and 2.2% for U-235) for calculation of the dose per net annual unit intake of each radionuclide. Net doses were summed to determine the total CEDE from inhalation of the net (above background)[1] concentrations of airborne particulate radionuclides in 2021 at each air monitoring station (Table 2-2). Continuous occupancy and an average breathing rate of 20,000 liters/day (Table A-1, NUREG-0859) were assumed for the calculation. The calculated above-background CEDE at locations HMC-4 and HMC-5 for 100% occupancy was 0.11 mrem/year and 0.19 mrem/y (Table 2-2). Accounting for an assumed occupancy of 75% results in a dose rate of 0.08 and 0.14 mrem/year at HMC-4 and HMC-5, respectively. The nearby monitoring station with the highest calculated TEDE from all pathways (in this case 51 mrem/yr at Station HMC-4) is assumed representative of the TEDE to the nearest member of the public in 2021 (Table 2-3), and the dose from airborne particulate radiation (0.1 mrem/yr) at HMC-4 (excluding radon) meets the 10 mrem/yr constraint per 10 CFR 20.1101. The maximum external radiation dose to any member of the public (24 mrem/yr at HMC-4) is well below the limits mentioned in Section 1 (equivalent to 2 mrem/hr or 50 mrem/yr).

2.2 Exposure to Radon

Outdoor radon levels in the Grants Uranium Belt are known to be somewhat elevated and variable, depending on the location relative to mine vents, naturally mineralized geologic deposits at or near the surface, and

[1] The average background concentration (considered to be air station HMC-6) was subtracted from the annual average concentration for each radionuclide at other stations to obtain the average net concentration of each radionuclide at each air monitoring station for use in determining the net dose estimates.

topographical features. Natural background radon concentrations, arising from the calm winds during the early morning hours and at times from temperature inversions, generally follow a downgradient drainage path. The HMC site is situated along the bottom of the San Mateo Creek valley, a relatively flat area where nocturnal drainage flow converges from adjacent, nearfield upland source areas. In addition, the valley floor is known to contain naturally elevated Ra-226 concentrations from eons of erosion of upgradient mineralized uranium outcrops, and this depositional geomorphic feature likely contributes to naturally elevated radon levels in the vicinity of the Site.

The radon data for each semiannual monitoring period are provided in Attachment 2 of corresponding semiannual monitoring reports. Monitoring Station 16 has historically been used as the radon background location for the Site. The overall annual average radon concentration for 2021 at HMC-4 and HMC-5 was 0.78 and 0.83 pCi/L respectively. The average annual concentration at the background location (HMC-16) was 0.42 pCi/L. Subtracting the background concentration from the measured concentrations at HMC-4 and HMC-5 results in net radon concentrations of 0.36 and 0.41 pCi/L, respectively.

Since the nearest residence is within a few hundred feet of the site perimeter and within 3500 feet of the major sources of onsite releases of radon (the tailings piles), the radon progeny/gas equilibrium ratio is expected to be low due to a relatively short time of atmospheric migration to reach the location of the nearest residence. HMC has historically assumed a 20% radon equilibrium ratio for public dose calculations. NRC regulations assume a continuous exposure to 0.1 pCi/L Rn-222, in equilibrium with its decay products, will result in a committed effective dose equivalent (CEDE) of 50 mrem/y (10 CFR Part 20, Appendix B). At 20% equilibrium, the corresponding radon dose conversion factor is 100 mrem/pCi/L. Considering the 75% occupancy factor, the net (above background) radon concentrations at HMC-4 and HMC-5 resulted in calculated CEDE values of 27.2 and 30.9 mrem/y respectively for 2021.

The NRC has issued a request for additional information (RAI) concerning this public dose calculation method for radon based on identified inconsistencies with NRC's recently finalized Interim Staff Guidance (ISR) for determination of public dose from radon. In response, on December 18, 2020, HMC submitted a directly related license amendment request (ML20356A288) to move the background radon monitoring station (HMC-16) to a more representative location on the floor of the San Mateo Creek valley. At this time, this issue is still under review by HMC and NRC because the background radon station (HMC-16) is known to have a significant low bias relative to the valley in which the Site is situated. HMC is currently in the process of responding to a request for additional information (RAI) (ML21237A454) regarding HMC's December 18, 2020 amendment request (ML20356A288). Until this issue is resolved, HMC will continue using the current/historical method for calculating public dose from facility radon emissions.

2.3 Dose from Exposure to Direct Radiation

An estimate of the dose equivalent from direct exposure to radiation sources at the site is obtained from optically stimulated luminescence (OSL) dosimeters placed at each monitoring station. The direct radiation measurements for the two semiannual monitoring periods are provided in Attachment 3 of the 1st and 2nd half semiannual monitoring reports, respectively. The total annual effective dose equivalents measured at HMC-4 and HMC-5 were 133 and 121 mrem/year, respectively. The average annual effective dose equivalent at the background location (HMC-16) was 100 mrem/year. The net annual effective dose equivalent for HMC-4 and HMC-5, assuming 100% occupancy, was 33 and 20 mrem/year, respectively. Considering the 75% occupancy factor, the calculated net annual effective dose equivalent was 24 and 15 mrem/year for HMC-4

and HMC-5, respectively. The maximum external radiation dose to any member of the public (24 mrem/yr at HMC-4) is well below the limits mentioned in Section 1 (equivalent to 2 mrem/hr or 50 mrem/yr).

2.4 Total Effective Dose Equivalent to the Nearest Resident

The TEDE to the Nearest Resident was calculated by adding the CEDE from inhalation of airborne particulate, the CEDE from the exposure to radon coming from the site, and the dose equivalent from direct gamma radiation (Table 2-3). The TEDE at HMC-4 was 51 mrem/year and at HMC-5 was 46 mrem/year. This is within the 100 mrem/year limit and the air particulate CEDE is well below the 10 mrem/y constraint limit on airborne particulate emissions. The dose from combined dose from external gamma and air particulates at HMC-4 and HMC-5 (24.1 and 15.1 mrem/yr respectively), are each below the 25 mrem/yr whole-body dose limit specified 40 CFR 190 for nuclear fuel cycle facilities.

Table 2-1: Measured average airborne radionuclide concentrations

Sample ID	Radionuclide	Q1 Conc. (µCi/mL)	Q2 Conc. (µCi/mL)	Q3 Conc. (µCi/mL)	Q4 Conc. (µCi/mL)	Total Annual Average Conc. (µCi/mL)
HMC-1	U-nat	1.3E-16	1.3E-15	1.9E-15	1.5E-15	1.2E-15
	Th-230	7.3E-18	4.5E-17	2.3E-17	4.8E-17	3.1E-17
	Ra-226	2.2E-17	5.4E-17	2.4E-17	3.7E-17	3.4E-17
HMC-1-A	U-nat	1.2E-16	6.6E-16	3.4E-15	1.5E-15	1.4E-15
	Th-230	5.3E-18	2.9E-17	3.3E-17	1.7E-17	2.1E-17
	Ra-226	1.2E-17	3.7E-17	3.2E-17	3.3E-17	2.9E-17
HMC-2	U-nat	2.6E-16	3.0E-16	5.5E-16	1.4E-16	3.1E-16
	Th-230	1.6E-17	2.8E-17	2.5E-17	1.2E-17	2.0E-17
	Ra-226	3.9E-17	2.9E-17	2.1E-17	1.7E-17	2.7E-17
HMC-3	U-nat	4.0E-16	5.6E-16	7.8E-16	6.2E-16	5.9E-16
	Th-230	1.3E-17	5.0E-17	1.8E-17	1.7E-17	2.5E-17
	Ra-226	3.5E-17	6.3E-17	1.7E-17	1.9E-17	3.4E-17
HMC-4	U-nat	4.2E-16	8.3E-16	7.8E-16	2.6E-16	5.7E-16
	Th-230	5.7E-17	1.4E-16	1.6E-17	1.4E-17	5.7E-17
	Ra-226	1.1E-16	2.1E-16	1.9E-17	2.1E-17	9.0E-17
HMC-5	U-nat	1.2E-16	9.1E-16	1.7E-15	3.6E-16	7.7E-16
	Th-230	2.0E-17	3.1E-17	1.7E-17	1.4E-17	2.1E-17
	Ra-226	2.1E-17	4.7E-16	2.1E-17	1.3E-17	1.3E-16
HMC-6	U-nat	7.1E-17	6.2E-16	1.3E-15	2.4E-16	5.6E-16
	Th-230	1.3E-17	3.5E-17	1.2E-17	1.9E-17	2.0E-17
	Ra-226	1.8E-17	4.6E-17	1.9E-17	2.8E-17	2.8E-17

Table 2-2: Calculation of net internal dose (CEDE) due to radionuclides in air particulates from Site operations.

Sample ID	Radionuclide (Isotopic)	Calculated Istotopic Conc. (µCi/mL)*	Net Annual Average Conc. (µCi/mL)**	Inhalation DCF from ICRP 30 (mrem/µCi)	Calculated net CEDE (mrem/yr)	Total net CEDE by Station @100% Occupancy (mrem/yr)	Total net CEDE by Station @75% Occupancy (mrem/yr)
HMC-1	U-234	5.9E-16	3.2E-16	1.32E+05	3.1E-01	1.5E+00	1.1E+00
	U-235	2.7E-17	1.4E-17	1.23E+05	1.3E-02		
	U-238	5.9E-16	3.2E-16	1.18E+05	2.7E-01		
	Th-230	3.9E-16	3.7E-16	3.26E+05	8.9E-01		
	Ra-226	4.0E-16	3.7E-16	8.60E+03	2.3E-02		
HMC-1-A	U-234	6.9E-16	4.2E-16	1.32E+05	4.1E-01	7.9E-01	5.9E-01
	U-235	3.1E-17	1.9E-17	1.23E+05	1.7E-02		
	U-238	6.9E-16	4.2E-16	1.18E+05	3.6E-01		
	Th-230	2.1E-17	1.3E-18	3.26E+05	3.2E-03		
	Ra-226	2.9E-17	7.5E-19	8.60E+03	4.7E-05		
HMC-2	U-234	1.5E-16	0.0E+00	1.32E+05	0.0E+00	1.2E-03	8.9E-04
	U-235	6.9E-18	0.0E+00	1.23E+05	0.0E+00		
	U-238	1.5E-16	0.0E+00	1.18E+05	0.0E+00		
	Th-230	2.0E-17	5.0E-19	3.26E+05	1.2E-03		
	Ra-226	2.7E-17	0.0E+00	8.60E+03	0.0E+00		
HMC-3	U-234	2.9E-16	1.6E-17	1.32E+05	1.5E-02	4.1E-02	3.1E-02
	U-235	1.3E-17	7.1E-19	1.23E+05	6.4E-04		
	U-238	2.9E-16	1.6E-17	1.18E+05	1.4E-02		
	Th-230	2.5E-17	4.8E-18	3.26E+05	1.1E-02		
	Ra-226	3.4E-17	5.8E-18	8.60E+03	3.6E-04		
HMC-4	U-234	2.8E-16	7.2E-18	1.32E+05	7.0E-03	1.1E-01	7.9E-02
	U-235	1.3E-17	3.2E-19	1.23E+05	2.9E-04		
	U-238	2.8E-16	7.2E-18	1.18E+05	6.2E-03		
	Th-230	5.7E-17	3.7E-17	3.26E+05	8.8E-02		
	Ra-226	9.0E-17	6.2E-17	8.60E+03	3.9E-03		
HMC-5	U-234	3.7E-16	9.7E-17	1.32E+05	9.4E-02	1.9E-01	1.4E-01
	U-235	1.7E-17	4.4E-18	1.23E+05	3.9E-03		
	U-238	3.7E-16	9.7E-17	1.18E+05	8.4E-02		
	Th-230	2.1E-17	7.5E-19	3.26E+05	1.8E-03		
	Ra-226	1.3E-16	1.0E-16	8.60E+03	6.5E-03		
HMC-6 (Bkg. Station)	U-234	2.7E-16	N/A	N/A	N/A	N/A	N/A
	U-235	1.2E-17					
	U-238	2.7E-16					
	Th-230	2.0E-17					
	Ra-226	2.8E-17					

*Measured U-nat converted to isotopic concentrations assuming natural abundances of 2.2% for U-235, and 48.9% for U-234 and U-238

**Isotopic average values for Station HMC-6 subtracted from measured result at other stations to obtain the net concentration.

Table 2-3: Estimated dose by pathway and calculated TEDE (mrem/yr)

Sample ID	Internal CEDE Air Particulates (mrem/yr)	Internal CEDE Radon (mrem/yr)	Exernal EDE (mrem/yr)	TEDE (mrem/yr)
HMC-4	0.1	27	24	51
HMC-5	0.1	31	15	46