

# Rio Algom Mining LLC

May 25, 2016

40-8905

Mr. Varughese Kurian  
United States Nuclear Regulatory Commission  
Mail Stop T-8F5  
Washington, DC 28555

Subject: SUA-1473, Reporting of Monthly Sampling Results for First Quarter 2016,  
Rio Algom Mining LLC, Ambrosia Lake Facility

Dear Mr. Kurian:

This letter represents reporting of the first quarter 2016 analytical results from monthly sampling for the following constituents, in accordance with Condition 34.F of SUA-1473:

- Gross alpha, beryllium, and cadmium in well 36-06 KD
- Gross alpha in well 31-02 TRB-R
- Molybdenum and nitrate + nitrite as N in well 32-45 KD-R

The tables included in this report summarize the sampling results. Bolded results indicate an exceedance of Groundwater Protection Standards (GPS) or Alternate Concentration Limits (ACL).

## Well 36-06 KD

Monthly sampling results from well 36-06 KD show that beryllium (Be) and cadmium (Cd) continue to hover at concentrations near or above the GPS (Table 1). At the time of the original ACL petition, Be and Cd were not present in elevated concentrations. Since the time of the ACL petition (2001), Be and Cd concentrations have increased in a pattern that appears consistent with effects caused by surface reclamation activities. RAML submitted a Corrective Action Plan (CAP) for Be and Cd in 2007 and has been monitoring those two parameters on a monthly basis since then. Since the concentrations are not stabilizing below the GPS, RAML will propose to amend License SUA-1743 to add ACLs for Be and Cd. Until such time as ACLs are granted, monthly monitoring of Be and Cd will continue.

Gross alpha was elevated above the GPS of 56 picocuries per liter (pCi/L) in January and March (61.2 and 280 pCi/L, respectively). As discussed in more detail in the *Second Half 2015 Groundwater Stability Monitoring Report* (INTERA, 2016), other alpha emitters in the upper bedrock units have ACLs and gross alpha in the alluvium has an ACL. Therefore, an ACL for gross alpha for the upper bedrock units will be included in the upcoming license

amendment. Until an ACL is approved, 36-06 KD will continue to be monitored for gross alpha on a monthly basis.

**Table 1. Beryllium, Cadmium, and Gross Alpha in 36-06 KD**

Date	Well 36-06 KD		
	Beryllium (mg/L)	Cadmium (mg/L)	Gross Alpha (pCi/L)
<b>GPS</b>	<b>0.01</b>	<b>0.01</b>	<b>56</b>
1/14/16	0.0197	0.0107	61.2
2/11/16	0.0177	0.0073	-17.9
3/21/16	0.01603	0.0103	280

**Well 31-02 TRB-R**

Monitoring well 31-02 TRB-R is a replacement well which was installed in December 2012. Original well 31-02 TRB was in accelerated-monthly monitoring for uranium (U) and gross alpha. When the well was replaced, RAML continued to monitor for those constituents on a monthly basis. Since 2013, gross alpha concentrations have exceeded the GPS four times, including in March 2016 (Table 2). U concentrations have remained below the ACL throughout the first quarter of 2016. As proposed in the *Second Half 2014 Groundwater Stability Monitoring Report*, monthly monitoring for gross alpha and U in well 31-02 TRB-R will continue as the well continues to stabilize. Although U is well below the GPS, it is necessary to analyze in order to subtract the U activity from the gross alpha activity. An ACL for gross alpha will be proposed in the upcoming license amendment. Until ACLs are approved, monthly monitoring for gross alpha in 31-02 TRB-R will continue.

**Table 2. Gross Alpha (Corrected) in 31-02 TRB-R**

Date	Well 31-02 TRB-R	
	Gross Alpha (pCi/L)	Uranium (mg/L)
<b>GPS / ACL</b>	<b>21</b>	<b>1.6</b>
1/14/16	2.52	0.0046
2/11/16	-11.1	0.0039
3/21/16	42.9	0.0032

**Well 32-45 KD-R**

Results for Molybdenum (Mo) are in Table 3. Concentrations in 32-45 KD-R continue to exceed the GPS of 0.06 milligrams per liter (mg/L). Pursuant to Condition 34.F and Criterion 5D of 40CFR, RAML proposed a CAP to address the exceedances of Mo and nitrate + nitrite as N in well 32-45 KD-R in the *First Half 2014 Groundwater Stability Monitoring Report*. Since well 32-45 KD-R is a newly installed replacement well (replacing well 32-45 KD), RAML will continue monthly monitoring for Mo through 2016 in order to evaluate apparent stabilization trends in the data. Nitrate + nitrite as N concentrations have dropped below the ACL and therefore nitrate + nitrite as N has been removed from the CAP as presented in the *Second Half 2015 Groundwater Stability Monitoring Report*. As collection of monthly Mo data continues, RAML will evaluate whether an ACL may be appropriate for Mo in the Dakota Sandstone.

**Table 3. Molybdenum in 32-45 KD-R**

Date	Well 32-45 KD-R
	Molybdenum (mg/L)
<b>GPS / ACL</b>	<b>0.06</b>
1/14/16	<b>0.352</b>
2/11/16	<b>0.327</b>
3/21/16	<b>0.3778</b>

Monthly sampling results for the wells and constituents presented above will continue throughout 2016 and will be reported in detail in the upcoming First Half 2016 Semi-Annual Groundwater Stability Monitoring Report.

Please contact me with any questions.

Sincerely,

**Rio Algom Mining LLC**



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Site Manager

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