

Rio Algom Mining LLC

November 27, 2019

Mr. Thomas Lancaster
United States Nuclear Regulatory Commission
Mail Stop T5-A10
Washington, DC 20555-0001

Subject: SUA-1473, Docket No. 40-8905, Reporting of Monthly Sampling Results for Third Quarter 2019, Rio Algom Mining LLC, Ambrosia Lake Facility

Dear Mr. Lancaster:

This letter represents reporting of the third quarter (July through September) 2019 analytical results from monthly sampling for the following constituents and wells (**Figure 1**), in accordance with Condition 34.F of SUA-1473:

- Beryllium, cadmium, and gross alpha in Dakota Sandstone well 36-06 KD.
- Molybdenum and gross alpha in Dakota Sandstone well 32-45 KD-R.
- Gross alpha and uranium in Tres Hermanos B well 31-02 TRB-R.

This letter also presents the results for gross alpha in Tres Hermanos B well 31-67 TRB, for which the lower limit of detection (LLD) was above the groundwater protection standard (GPS).

The path forward for constituents exceeding their respective GPSs has been described in detail in the following documents:

- Corrective Action Plan (CAP) submitted within the *Semi-Annual Groundwater Stability Monitoring Report for the 1st Half of 2016 on July 29, 2016*, ML16215A059.
- Rio Algom Mining LLC (RAML)'s letter to the United States Nuclear Regulatory Commission (NRC), *Re: Status Update and Additional Alternate Concentration Limit Rationale*, dated April 13, 2017, ML17108A332.
- The *Data Collection Work Plan in Support of Additional Alternate Concentration Limits*, submitted November 27, 2017, ML17340A826.
- *Responses to NRC Comments Ambrosia Lake Work Plans 2017 and 2018*, submitted May 4, 2018, ML18192C139.

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The tables included in this report summarize the sampling results from the third quarter of 2019. Bolded results indicate exceedances of GPSs. Laboratory analytical reports¹ for the groundwater samples collected during the third quarter of 2019 are provided as **Attachment 1**.

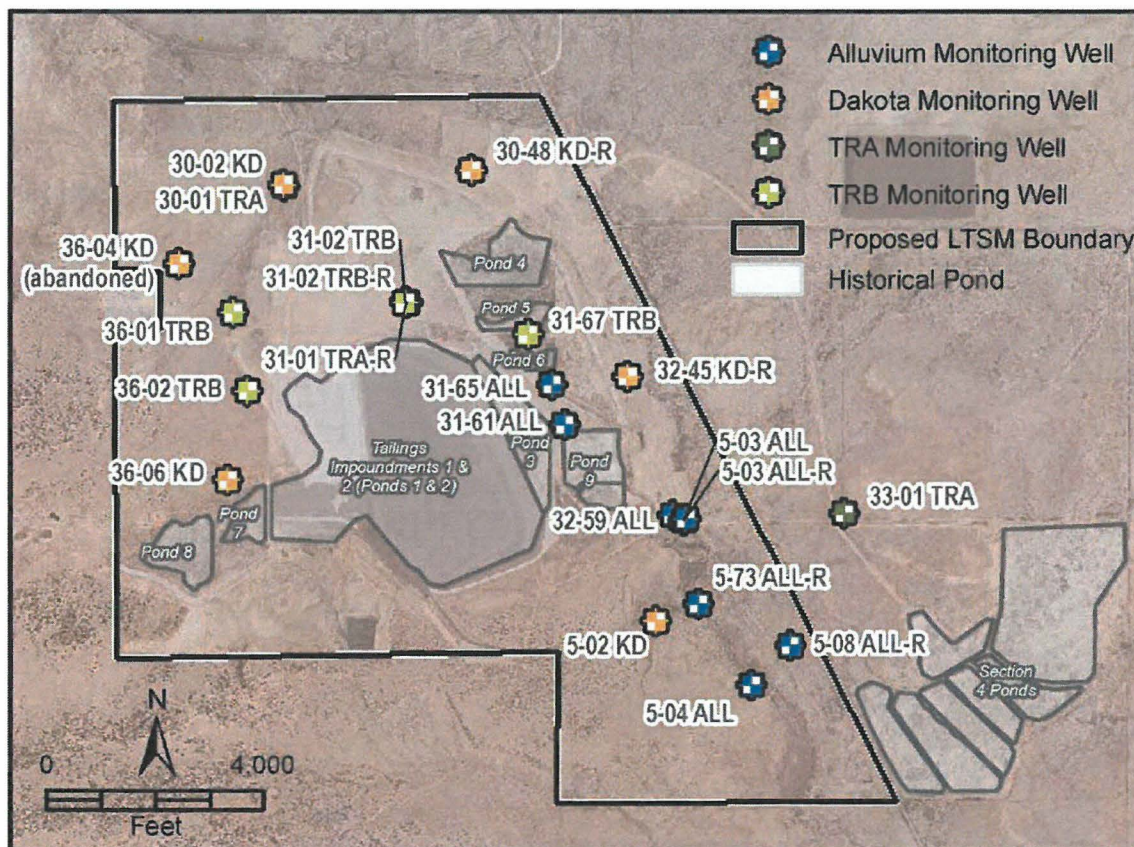


Figure 1. Monitoring Well Network with Historical Site Features.

Dakota Sandstone Well 36-06 KD

Monthly sampling results from well 36-06 KD during the third quarter show that cadmium and beryllium concentrations were below the GPSs (**Table 1**). At the time of the original Alternate Concentration Limit (ACL) petition (submitted in 2001), beryllium and cadmium were not present in elevated concentrations and, therefore, were not included in the ACL petition. However, beryllium and cadmium were subsequently detected at concentrations above the GPSs. As a result, RAML proposed to amend License SUA-1743 to add ACLs for beryllium and cadmium.

RAML submitted a CAP for beryllium and cadmium in 2007 and has since been monitoring these two parameters at 36-06 KD on a monthly basis. Both beryllium and cadmium

¹ Note that the laboratory reports in Attachment 1 include samples and analyses that are not discussed in this letter, but will be evaluated in the 2019 second half semi-annual groundwater monitoring report, which is scheduled to be submitted by January 31, 2020.

concentrations show overall decreasing trends since 2007, and concentrations have been at or below the GPSs for more than two years (**Figure 2** and **Figure 3**).

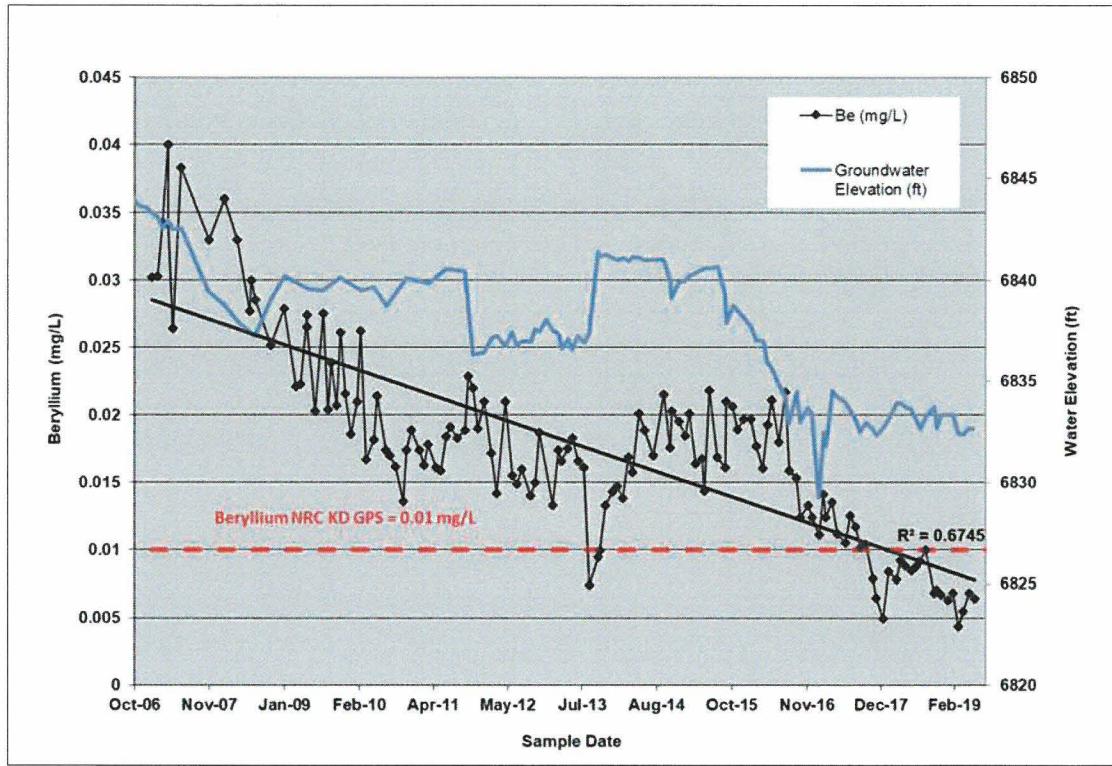


Figure 2. Beryllium Concentrations in Dakota Sandstone Monitoring Well 36-06 KD.

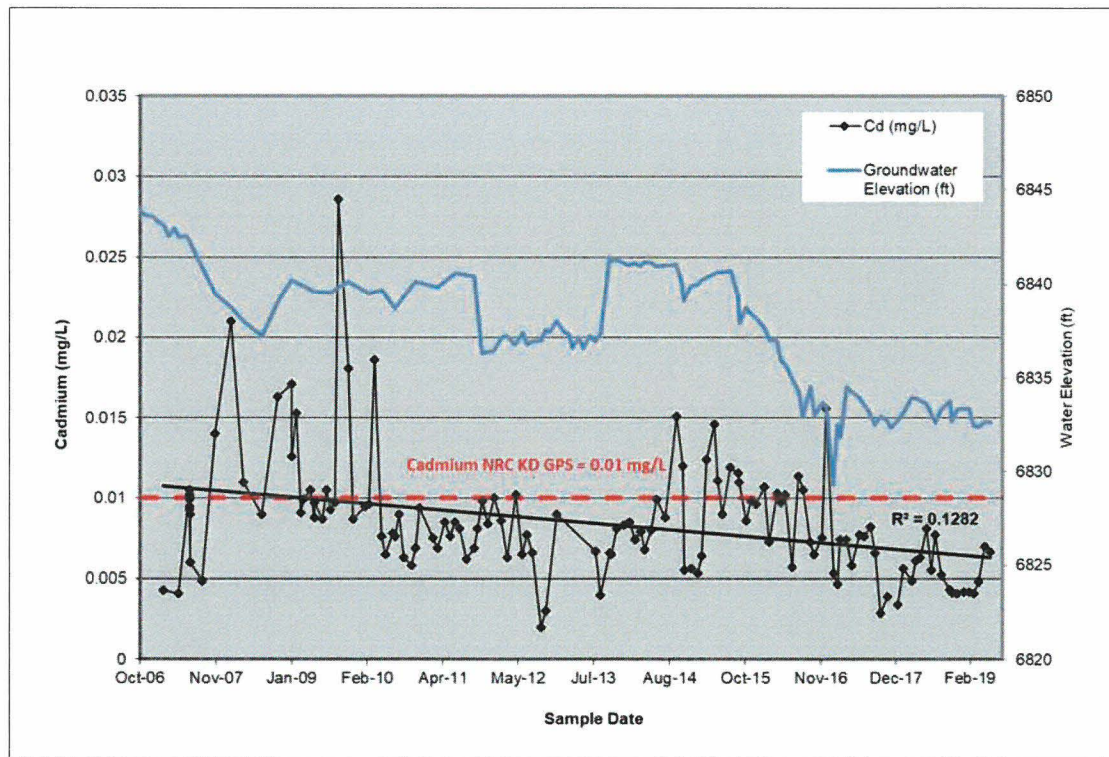


Figure 3. Cadmium Concentrations in Dakota Sandstone Monitoring Well 36-06 KD.

These trend charts show beryllium and cadmium concentrations are, and likely will remain, below the GPSs. Based on these data, RAML proposes to discontinue monthly monitoring of beryllium and cadmium at well 36-06 KD.

Gross alpha activity exceeded the GPS of 56 picocuries per liter (pCi/L) in July 2019 and has since been below the GPS (**Table 1**). Note that concentrations of the major alpha-emitting constituents have been below the established ACLs. RAML will continue monthly monitoring for gross alpha at well 36-06 KD in accordance with NRC monitoring requirements.

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)
GPS	0.01	0.01	56
7/22/2019	0.0065	0.0054	130
8/1/2019	0.00436	0.00314	34
9/4/2019	0.00561	0.00377	-160

Notes:

mg/L= milligrams per liter

pCi/L=picocuries per liter

Dakota Sandstone Well 32-45 KD-R

Results for molybdenum and gross alpha in third quarter 2019 samples from well 32-45 KD-R are displayed in **Table 2**. Concentrations of molybdenum in well 32-45 KD-R continue to decrease over time, yet still exceed the GPS of 0.06 milligrams per liter (mg/L). Pursuant to Condition 34.F and Criterion 5D of 10 CFR Part 40, RAML proposed a CAP to address the exceedances of molybdenum in well 32-45 KD-R, as presented in the *First Half 2014 Groundwater Stability Monitoring Report*. Gross alpha activity measured in well 32-45 KD-R exceeded the GPS of 56 pCi/L during the three monitoring events of the third quarter of 2019, but concentrations of major alpha-emitting constituents have been below the established ACLs. RAML anticipates that the GPS for gross alpha will be addressed in an upcoming license amendment and will continue monthly monitoring for both constituents in well 32-45 KD-R in accordance with NRC monitoring requirements.

Table 2. Molybdenum and Gross Alpha in 32-45 KD-R.

Date	Well 32-45 KD-R	
	Molybdenum (mg/L)	Gross Alpha (pCi/L)
GPS	0.06	56
7/22/2019	0.118	78
8/1/2019	0.115	58
9/5/2019	0.125	86

Notes:

mg/L= milligrams per liter

pCi/L=picocuries per liter

Tres Hermanos B Well 31-02 TRB-R

Monitoring well 31-02 TRB-R is a replacement well that was installed in December 2012. Original well 31-02 TRB was sampled monthly for uranium and gross alpha. When the well was replaced, RAML continued to monitor for those constituents monthly. Gross alpha activities in this well did not exceed the GPS during the third quarter of 2019 (**Table 3**). Uranium concentrations have remained below the ACL. Although uranium is well below the GPS, it is necessary to measure uranium concentrations in order to subtract the uranium activity from the gross alpha activity. RAML anticipates that the GPS for gross alpha will be addressed in an upcoming license amendment and will continue monthly monitoring for gross alpha and uranium in well 31-02 TRB-R in accordance with NRC monitoring requirements.

Table 3. Gross Alpha (Corrected) in 31-02 TRB-R.

Date	Well 31-02 TRB-R	
	Gross Alpha (pCi/L)	Uranium (mg/L)
GPS/ACL	21 (GPS)	1.6 (ACL)
7/17/2019	-3.5	0.0039
8/1/2019	6.3	0.0046
9/4/2019	13	0.0042

Notes:

mg/L= milligrams per liter

pCi/L=picocuries per liter

Tres Hermanos B Well 31-67 TRB

Analytical results for the gross alpha sample from well 31-67 TRB showed an LLD (56 pCi/L) that was above the GPS for gross alpha (21 pCi/L). A similar situation occurred during the third quarter of 2018, as reported in the November 26, 2018 letter report SUA-1473, Docket No. 40-8905, Reporting of Monthly Sampling Results for Third Quarter 2018, Rio Algom Mining LLC, Ambrosia Lake Facility. The elevated LLD is attributed to

matrix interferences and limitations of the gross alpha analytical method. The reported result of 28 pCi/L for gross alpha in the July 2019 sample from well 31-67 TRB is below the LLD, and is not a reliable indication of the actual concentration; note the analytical uncertainty of 24 pCi/L. As such, the reported result (28 pCi/L) is not treated as an exceedance of the GPS. Concentrations of major alpha-emitters have been below the ACLs for samples collected from well 31-67 TRB. RAML will continue semi-annual monitoring for gross alpha in well 31-67 TRB in accordance with the NRC monitoring requirements.

RAML hereby requests NRC approval to discontinue monthly monitoring for beryllium and cadmium in well 36-06 KD. Until such approval is granted, RAML will continue monthly monitoring for the following constituents:

- Gross alpha, beryllium, cadmium, and uranium in well 36-06 KD.
- Molybdenum, gross alpha, and uranium in well 32-45 KD-R.
- Gross alpha and uranium in well 31-02 TRB-R.

Monthly sample results will continue to be reported in quarterly and semi-annual groundwater stability monitoring reports until receiving NRC's approval to modify the groundwater monitoring program, which may be in the form of a license amendment.

Please contact me with any questions.

Sincerely,
Rio Algom Mining LLC



Sandra L. Ross, P.G.
Site Manager

cc. Document Control
Kurt Vollbrecht, NMED (email only)
Bernadette Tsosie, DOE (email only)

Enclosure:
Attachment 1 – 2019 Groundwater Laboratory Analytical Results (provided on accompanying compact disc)