

Rio Algom Mining LLC

August 27, 2014

ADDRESSEE ONLY

Mr. Tom McLaughlin, Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop T-8F5
Washington, DC 20555

CERTIFIED MAIL

Re: **License SUA-1473, Docket No. 40-8905**
Semiannual Effluent Report – 1st Half 2014

Dear Mr. McLaughlin,

In accordance with license condition #19 of the above referenced source material license and the NRC approved *Health Physics and Environmental Programs Manual*, please find attached the 1st Half 2014 Semiannual Report for the Ambrosia Lake facility.

As stated in the last submittal dated February 24, 2013, this presentation format does not include three items/actions that are completed or no longer performed. These include (1) Crushing Circuit Stack Emission, (2) Yellowcake Dryer Stack Emission, and (3) Treated Mine Discharge Water. Also, vegetation samples are not taken during winter months so there is no data for the first quarter of 2014.

We have been in contact with our outside lab (ACZ) in regard to the lower limits of detection (LLD's) for vegetation, soil, and sediment samples, as referenced in the NRC Regulatory Guidance Document 4.14 (April, 1980). We will be moving forward with contacting our NRC inspector and proposing alternate LLD's based on the capabilities of our laboratory.

If you have any questions or need additional information, please do not hesitate to call me at (865) 220-7193.

Regards,



Digitally signed by Brad Squibb
DN: cn=Brad Squibb, o=Solutient
Technologies, ou=RSO, email=brad-
s@str.net, c=US
Date: 2014.08.27 14:52:46 -0400

Brad Squibb
Radiation Safety Officer

Attachment

cc: **NRC (document control)**
File

**Environmental Gamma Radiation
 2014**

1st Quarter

Sample Media: Gamma
 Date: 1/1/2014 - 3/31/2014

Location:	Rate (mRem/qtr)
Substation	0.0
Mill Diversion	0.0
Section 30W VH6	18.3
North Fence	0.9
Section 17 VH4	0.0
Section 4 - #1	0.0
Section 4 - #2	1.0
Section 4 - #3	0.0

2nd Quarter

Sample Media: Gamma
 Date: 4/1/2014 - 6/30/2014

Location:	Rate (mRem/qtr)
Substation	0.0
Mill Diversion	0.0
Section 30W VH6	8.9
North Fence	0.0
Section 17 VH4	0.0
Section 4 - #1	0.0
Section 4 - #2	0.0
Section 4 - #3	0.0

Notes:

Values are net after subtraction of control value

Environmental Radon
 2014

1st Quarter
 Sample Media: Track Etch

Location:	Rate pCi/L	Error pCi/L
Substation	0.3	0.0
Mill Diversion	1.7	0.1
Section 30W VH6	2.4	0.1
North Fence	2.4	0.1
Section 17 VH4	1.0	0.1
KGL - North	1.6	0.1
KGL - South	1.8	0.1

2nd Quarter
 Sample Media: Track Etch

Location:	Rate pCi/L	Error pCi/L
Substation	0.4	0.0
Mill Diversion	1.3	0.1
Section 30W VH6	1.6	0.1
North Fence	1.8	0.1
Section 17 VH4	0.3	0.0
KGL - North	1.3	0.1
KGL - South	1.4	0.1

Notes:

High Volume Environmental Air Samples
2014

1st Quarter				2nd Quarter					
Substation									
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	0.0E+00	2.1E-16	2.6E-18	< 1.0	U-nat	0.0E+00	5.3E+12	8.7E+10	< 1.0
Th-230	3.5E-18	5.1E-18	4.4E-18	< 1.0	Th-230	5.3E-18	9.3E-18	8.5E-18	< 1.0
Ra-226	2.9E-18	2.3E-18	3.2E-18	< 1.0	Ra-226	1.6E-18	3.2E-18	1.2E-17	< 1.0
Pb-210	7.3E-16	1.0E-16	3.3E-17	< 1.0	Pb-210	4.8E-16	7.5E-17	1.0E-16	< 1.0

1st Quarter				2nd Quarter					
Section 17 VH4									
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	0.0E+00	2.1E-16	2.7E-18	< 1.0	U-nat	3.1E-18	4.9E+12	8.1E+10	< 1.0
Th-230	-1.0E-18	5.4E-18	3.7E-18	< 1.0	Th-230	9.2E-18	1.3E-17	1.8E-17	< 1.0
Ra-226	5.5E-18	3.2E-18	2.5E-18	< 1.0	Ra-226	6.0E-18	2.4E-18	5.1E-18	< 1.0
Pb-210	6.9E-16	7.8E-17	3.8E-17	< 1.0	Pb-210	3.1E-16	6.1E-17	1.3E-16	< 1.0

1st Quarter				2nd Quarter					
Mill Diversion									
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	1.3E-17	2.1E-16	2.6E-18	< 1.0	U-nat	1.0E-17	5.2E+12	8.6E+10	< 1.0
Th-230	1.3E-16	1.0E-17	1.5E-17	< 1.0	Th-230	1.1E-16	3.8E-17	1.1E-17	< 1.0
Ra-226	1.0E-17	3.6E-18	2.7E-18	< 1.0	Ra-226	1.2E-17	4.6E-18	2.1E-18	< 1.0
Pb-210	9.3E-16	1.1E-16	3.7E-17	< 1.0	Pb-210	5.6E-16	7.0E-17	1.0E-16	< 1.0

1st Quarter				2nd Quarter					
Section 30 West VH6									
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	3.2E-18	2.1E-16	2.7E-18	< 1.0	U-nat	4.7E-18	5.1E+12	8.5E+10	< 1.0
Th-230	8.7E-18	5.8E-18	4.9E-18	< 1.0	Th-230	9.6E-18	8.5E-18	8.5E-18	< 1.0
Ra-226	3.5E-18	3.1E-18	2.5E-18	< 1.0	Ra-226	8.0E-18	3.6E-18	5.2E-18	< 1.0
Pb-210	8.7E-16	1.0E-16	4.3E-17	< 1.0	Pb-210	4.9E-16	7.6E-17	1.0E-16	< 1.0

High Volume Environmental Air Samples
2014

1st Quarter				2nd Quarter					
North Fence		North Fence		North Fence		North Fence			
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	3.7E-18	2.1E-16	2.6E-18	< 1.0	U-nat	1.1E-17	5.1E+12	8.5E+10	< 1.0
Th-230	6.3E-18	7.4E-18	6.3E-18	< 1.0	Th-230	5.1E-17	1.5E-17	9.6E-18	< 1.0
Ra-226	8.6E-18	3.0E-18	3.3E-18	< 1.0	Ra-226	1.4E-17	5.3E-18	8.3E-18	< 1.0
Pb-210	7.8E-16	8.6E-17	4.3E-17	< 1.0	Pb-210	3.5E-16	7.1E-17	1.2E-16	< 1.0

1st Quarter				2nd Quarter					
KGL - North		KGL - North		KGL - North		KGL - North			
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	3.7E-18	2.1E-16	2.7E-18	< 1.0	U-nat	2.0E-17	4.6E+12	7.7E+10	< 1.0
Th-230	3.3E-17	6.2E-18	1.4E-17	< 1.0	Th-230	1.8E-16	2.9E-17	1.1E-17	< 1.0
Ra-226	2.3E-17	3.6E-18	2.1E-18	< 1.0	Ra-226	2.1E-17	9.2E-18	4.4E-18	< 1.0
Pb-210	7.2E-16	1.1E-16	3.4E-17	< 1.0	Pb-210	3.6E-16	7.7E-17	9.4E-17	< 1.0

1st Quarter				2nd Quarter					
KGL - South		KGL - South		KGL - South		KGL - South			
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	1.4E-17	2.2E-16	2.7E-18	< 1.0	U-nat	3.7E-17	4.7E+12	7.8E+10	< 1.0
Th-230	4.8E-17	7.3E-18	2.1E-17	< 1.0	Th-230	9.0E-17	2.3E-17	1.0E-17	< 1.0
Ra-226	1.9E-17	3.6E-18	3.1E-18	< 1.0	Ra-226	4.4E-17	4.2E-18	4.3E-18	< 1.0
Pb-210	9.7E-16	1.0E-16	4.1E-17	< 1.0	Pb-210	3.7E-16	8.2E-17	1.1E-16	< 1.0

Vegetation
2014

1st Quarter

Location: Substation			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	Vegetation Samples not taken during Winter months.		
Th-230	Vegetation Samples not taken during Winter months.		
Ra-226	Vegetation Samples not taken during Winter months.		
Pb-210	Vegetation Samples not taken during Winter months.		

Location: Mill Diversion			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	Vegetation Samples not taken during Winter months.		
Th-230	Vegetation Samples not taken during Winter months.		
Ra-226	Vegetation Samples not taken during Winter months.		
Pb-210	Vegetation Samples not taken during Winter months.		

Location: Section 30 West VH6			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	Vegetation Samples not taken during Winter months.		
Th-230	Vegetation Samples not taken during Winter months.		
Ra-226	Vegetation Samples not taken during Winter months.		
Pb-210	Vegetation Samples not taken during Winter months.		

Location: North Fence			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	Vegetation Samples not taken during Winter months.		
Th-230	Vegetation Samples not taken during Winter months.		
Ra-226	Vegetation Samples not taken during Winter months.		
Pb-210	Vegetation Samples not taken during Winter months.		

2nd Quarter

Location: Substation			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.6E-04	7.9E-06	3.4E-05
Th-230	1.5E-03	8.9E-04	1.6E-03
Ra-226	1.1E-03	8.7E-04	3.4E-03
Pb-210	-1.6E-02	4.9E-03	2.0E-02

Location: Mill Diversion			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.3E-04	6.3E-06	4.1E-05
Th-230	1.2E-03	1.1E-03	1.8E-03
Ra-226	2.2E-04	7.6E-04	3.6E-03
Pb-210	-6.1E-03	5.6E-03	2.2E-02

Location: Section 30 West VH6			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.9E-03	9.1E-05	3.4E-05
Th-230	9.7E-04	8.2E-04	1.5E-03
Ra-226	4.2E-03	1.5E-03	3.5E-03
Pb-210	-2.2E-02	5.1E-03	2.1E-02

Location: North Fence			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.7E-04	8.2E-06	4.1E-05
Th-230	1.6E-03	1.1E-03	1.8E-03
Ra-226	7.5E-04	9.2E-04	4.0E-03
Pb-210	-2.1E-02	5.8E-03	2.4E-02

Vegetation
 2014

1st Quarter

Location: Section 17 VH4			
Date: 21-Aug-12			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	Vegetation Samples not taken during Winter months.		
Th-230	Vegetation Samples not taken during Winter months.		
Ra-226	Vegetation Samples not taken during Winter months.		
Pb-210	Vegetation Samples not taken during Winter months.		

Location: KGL - North			
Date: 21-Aug-12			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	Vegetation Samples not taken during Winter months.		
Th-230	Vegetation Samples not taken during Winter months.		
Ra-226	Vegetation Samples not taken during Winter months.		
Pb-210	Vegetation Samples not taken during Winter months.		

Location: KGL - South			
Date: 21-Aug-12			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	Vegetation Samples not taken during Winter months.		
Th-230	Vegetation Samples not taken during Winter months.		
Ra-226	Vegetation Samples not taken during Winter months.		
Pb-210	Vegetation Samples not taken during Winter months.		

2nd Quarter

Location: Section 17 VH4			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.6E-04	7.9E-06	3.4E-05
Th-230	3.6E-04	7.9E-04	1.6E-03
Ra-226	4.6E-04	7.6E-04	3.4E-03
Pb-210	-6.9E-03	4.7E-03	1.8E-02

Location: KGL - North			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.1E-04	5.3E-06	4.1E-05
Th-230	1.3E-03	9.4E-04	1.7E-03
Ra-226	4.8E-04	7.4E-04	3.6E-03
Pb-210	-2.4E-02	5.7E-03	2.4E-02

Location: KGL - South			
Date:			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	2.3E-04	1.1E-05	3.4E-05
Th-230	2.8E-04	1.7E-03	1.7E-03
Ra-226	7.1E-04	8.2E-04	3.5E-03
Pb-210	-1.1E-02	4.5E-03	1.8E-02

Soil
2014

Location: Substation				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	6.4E-07	8.8E-09	3.4E-08	
Th-230	1.3E-06	4.4E-07	5.6E-07	
Ra-226	1.6E-06	5.3E-07	1.3E-06	
Pb-210	3.7E-07	1.6E-06	5.9E-06	

Location: Mill Diversion				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	7.0E-07	9.7E-09	3.4E-08	
Th-230	8.3E-06	1.2E-06	7.5E-07	
Ra-226	2.3E-06	6.3E-07	1.3E-06	
Pb-210	6.1E-06	1.8E-06	6.2E-06	

Location: Section 30 West VH6				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	1.1E-05	1.5E-07	3.4E-08	
Th-230	6.1E-06	8.7E-07	5.8E-07	
Ra-226	4.6E-06	8.5E-07	1.3E-06	
Pb-210	5.8E-06	2.0E-06	7.0E-06	

Location: North Fence				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	6.2E-07	8.5E-09	3.4E-08	
Th-230	1.1E-06	4.1E-07	5.2E-07	
Ra-226	1.8E-06	5.9E-07	1.3E-06	
Pb-210	-2.2E-07	2.1E-06	7.8E-06	

Location: Section 17 VH4				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	6.6E-07	9.2E-09	3.4E-08	
Th-230	5.9E-07	3.4E-07	5.4E-07	
Ra-226	1.7E-06	5.7E-07	1.3E-06	
Pb-210	2.2E-06	1.7E-06	6.3E-06	

Location: KGL - North				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	1.3E-06	1.8E-08	3.4E-08	
Th-230	4.1E-06	7.7E-07	5.8E-07	
Ra-226	2.3E-06	6.1E-07	1.2E-06	
Pb-210	4.0E-07	1.7E-06	6.4E-06	

Location: KGL - South				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	1.7E-06	2.3E-08	3.4E-08	
Th-230	2.6E-06	5.6E-07	5.7E-07	
Ra-226	3.5E-06	7.5E-07	1.3E-06	
Pb-210	5.4E-06	1.8E-06	6.4E-06	

Sediment
2014

Location: P-0				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	6.5E-06	9.0E-08	3.4E-08	
Th-230	2.9E-06	7.8E-07	5.5E-07	
Ra-226	6.0E-06	9.6E-07	1.3E-06	
Pb-210	4.1E-06	2.0E-06	7.3E-06	

Location: P-1				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	3.4E-06	4.7E-08	3.4E-08	
Th-230	4.5E-06	1.4E-06	6.5E-07	
Ra-226	6.0E-06	1.0E-06	1.4E-06	
Pb-210	-1.7E-06	1.7E-06	6.5E-06	

Location: P-2				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	1.1E-05	1.5E-07	3.4E-08	
Th-230	8.5E-06	1.3E-06	6.0E-07	
Ra-226	1.3E-05	1.4E-06	1.3E-06	
Pb-210	1.1E-05	2.0E-06	6.5E-06	

Location: P-3				
Date: 5/16/2014				
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	
U-nat	1.8E-07	2.5E-09	3.4E-08	
Th-230	-7.0E-08	5.7E-07	7.7E-07	
Ra-226	6.3E-07	3.7E-07	1.3E-06	
Pb-210	0.0E+00	1.9E-06	7.1E-06	