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February 28, 2014

NRC Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

**Re: Semi-Annual Effluent and Environmental Monitoring Report Pursuant to License
Condition 11.1(D)
Lost Creek ISR Project License SUA-1598 Docket 40-9068**

To Whom It May Concern:

This Effluent and Environmental Monitoring Report has been submitted in accordance with License Condition 11.1(D) for Lost Creek ISR, LLC's (LCI) Lost Creek ISR Project License SUA-1598. License Condition 11.1(D) requires semi-annual reporting of the operational effluent and environmental monitoring program consistent with NRC Regulatory Guide (RG) 4.14, pursuant to 10 CFR 40.65, and as described in LCI's NRC License Application Technical Report (TR) Section 5.

The reporting period for this report is July 1, 2013 through December 31, 2013.

INTRODUCTION

The Lost Creek ISR Project commenced operations on August 2, 2013 following construction which began October 5, 2012. During the reporting period the following components were constructed and placed in operation:

- Processing plant and associated infrastructure
- Storage ponds
- Two Class I disposal wells
- Mine Unit 1 and associated infrastructure
- Fire water systems
- Acid storage tanks
- Site infrastructure including roads, electrical lines, and pipelines

Mining operations commenced in Mine Unit 1 (MU1) with the injection of lixiviant and circulation of mining fluid from MU 1 to the processing plant ion-exchange system used to extract the uranium. By the end of the report period, three header houses in MU1 were in operation providing flow from 64 production wells fed by 119 injection wells. The plant systems were used to produce uranium yellowcake from the extracted uranium and dried in rotary vacuum dryers

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within the Plant. The yellowcake is containerized in 55 gallon drums and shipped in lots via contract carrier. Three lots were shipped during the reporting period the first of which was shipped December 3, 2013.

Operational environmental monitoring of air, water, and soil in and around the project area was conducted to quantify radiological effluent above background levels, if any, as a result of operations.

EFFLUENT AND ENVIRONMENTAL MONITORING

Operational monitoring was performed during the reporting period according to the plan set forth in the TR and as specifically detailed in the Lost Creek Environmental Monitoring Program Standard Operating Procedures. The monitoring categories provided in RG 4.14 include the following categories:

- Stack
- Air (includes particulates and radon)
- Water (includes surface water and groundwater)
- Vegetation, Food, and Fish
- Soil and Sediment
- Direct Radiation

Of these categories, the following are performed at the Lost Creek Project:

- Radiological particulates in air
- Surface water
- Groundwater
- Soils
- Passive Gamma Radiation
- Passive Radon

Operational stack monitoring is not applicable. Stack samples are not collected since no stacks associated with the yellowcake dryer exist at the Lost Creek Plant. The dryer room has a ventilation system that maintains negative pressure and filters the air pulled from the dryer room which exhausts within the Plant. The dryer system draws a vacuum from the dryer drum and is filtered through a bag house integrated with the dryer.

Vegetation samples and other food sources are not collected routinely as stated in TR Section 5.7.7.1. Sediment samples are not collected due to the lack of surface water.

The operational monitoring data is included on Tables 1 through 6 included in the Attachment. Sample locations are shown on **Figure 1** in the Attachment. Sample locations with descriptions are identified on the following summary table:

Monitoring Category	Sample or Monitoring Location	Description
Radiological Particulates in Air and Soils (Data Table 1 and Table 4)	AP-1	Located in Town of Bairoil about 15 miles to the northeast of LC. This location is the nearest fulltime residence to LC.
	AP-2	Located several meters to the east of the processing facility. This location is the highest expected concentration of effluents from operations.
	AP-3	Located downwind of the plant in the southwest corner on the edge of the site boundary.
	AP-4	Located on the eastern edge of the site boundary.
	AP-5	Located to the northwest of the processing facility, on the northern boundary. AP-5 is the expected background because wind is unlikely toward that direction.
Surface Water (Data Table 2)	LC1	Autosampler to capture western-draw inflow in the NW area
	LC2	Autosampler to capture middle-draw outflow at mid-south boundary
	LC3	Autosampler to capture middle-draw outflow at mid-south boundary
	LC4	Autosampler to capture eastern-draw south boundary outflow from battle spring draw
	LC5	Autosampler to capture Crooked Well Reservoir within Battle Spring Draw
	LC6	Autosampler to capture eastern-draw (Battle Spring Draw) inflow at north boundary of eastern leg
	LC7	Autosampler to capture middle-draw outflow at southern corner
	LC8	Autosampler to capture western-draw outflow at south boundary of southern leg
	LC9	Autosampler to capture western-draw outflow at south boundary of southern leg
	LC10	Autosampler to capture middle-draw outflow at mid-south boundary
	LC11	Autosampler to capture middle-draw inflow at mid-north boundary
	LC12	Autosampler to capture middle-draw inflow at mid-north boundary
	LC13	Autosampler to capture mid-draw outflow at mid-south boundary

SEMI-ANNUAL EFFLUENT AND ENVIRONMENTAL MONITORING REPORT
2ND HALF 2013
LOST CREEK ISR PROJECT

Monitoring Category	Sample or Monitoring Location	Description
Groundwater (Data Table 3)	BLM(4451)	Private stock well (BLM Battle Spring Draw Well No. 4451) east of permit boundary
	BLM(4775)	Private stock well (BLM Boundary Well No. 4775) north east of permit boundary
	BLM(4777)	Private stock well (BLM Battle Spring Well No. 4777) south of permit boundary
	BLM(EEN)	Private stock well (BLM East Eagle Nest Draw Well) northwest of permit boundary
Passive Gamma Radiation and Passive Radon (Data Table 5 and Table 6)	PR-1	Co-located at the AP-1 sampling unit in Bairoil, the nearest fulltime residence
	PR-2	Co-located with AP-3
	PR-3	Co-located with AP-5
	PR-4	Located near the processing facility to the north
	PR-5	Co-located with AP-2
	PR-6	Located to sample the site NE boundary
	PR-7	Located to sample the site western boundary
	PR-8	Located to sample the site southern leg boundary
	PR-9	Located mid-site to sample area over the ore body.
	PR-10	Co-located with AP-4
	PR-11	Located to sample the site mid-southern boundary
	PR-12	Located to sample the site boundary on the south edge of the east leg
Supplemental Passive Radon (Data Table 6)	Pond 1	Located on the fence just downwind to the east of the Plant on the west edge of the storage ponds.
	Pond 2	Located on the fence just downwind to the east of the Plant on the west edge of the storage ponds.
	Pond 3	Located on the fence just downwind to the east of the Plant on the west edge of the storage ponds.
	Pond 4	Located on the fence just downwind to the east of the Plant on the west edge of the storage ponds.
	Pond 5	Located on the fence just downwind to the east of the Plant on the west edge of the storage ponds.
	Pond 6	Located on the fence just downwind to the east of the Plant on the west edge of the storage ponds.
	North Vent	Mounted on the center of the exhaust vent screen within the Plant on the north vent on the west wall
	South Vent	Mounted on the center of the exhaust vent screen within the Plant on the south vent on the west wall

Radiological Particulates in Air

Air particulate sampling for LC was performed at 6 locations. Samples were collected using F&J Specialty air sampling model DF-40L-8 and glass fiber filter paper. Filters are changed and collected weekly and composited quarterly. The filters were sent to Energy Labs in Casper, Wyoming for analysis of U-nat, Ra-226, Th-230, and Pb-210. Analytical data is provided on **Table 1** in the Attachment.

All radionuclide concentrations were under 5% of the Maximum Permissible Concentration (MPC). However, several of the lab reported MDCs were only slightly above the RG 4.14 recommended LLD value. The MPC for each measured radionuclide is the effluent concentration limit from 10 CFR 20 Appendix B Table 2. Referenced on Table 2, uranium (yellowcake) produced at Lost Creek is considered Class W based on the low temperature drying of the yellowcake and thorium is considered Class Y because thorium is expected to be oxidized in the mining lixiviant.

Calibration of each air sampler flow rate is performed annually with an F&J Specialty air flow calibrator model CD-802V.2-1-O. The air samplers are set to 30 L/min. The air flow calibrator is calibrated by the manufacturer annually.

Surface Water

As stated in TR Section 5.7.8.2, surface water samples are not routinely collected since surface water does not typically exist due to the ephemeral nature of drainage. However, an attempt is made to collect samples as feasible by the use of automatic storm water samplers as a result of precipitation events at locations LC1 through LC13. The samplers are limited to 1 liter of sample. The only sample that was collected from the reporting period was from location LC9 in October 2013 as a result of storm water runoff. Analysis is intended to include suspended and dissolved U-nat, Th-230, Ra-226, Pb-210, and Po-210. Analysis of Pb-210 and Po-210 was not feasible due to insufficient volume collected (<1L). The analysis that was completed included suspended and dissolved U-nat, Th-230, and Ra-226. Data is provided on **Table 2** in the Attachment.

Groundwater

Groundwater is collected from public (i.e. Bureau of Land Management [BLM]) wells used for stock watering purposes. Four BLM wells, BLM(4451), BLM(4775), BLM(4777) and BLM(EEN), are sampled if they are in operation. As described in TR Section 5.7.8.2 "Private Well Monitoring" samples are to be analyzed for U-nat and Ra-226 only. No samples were collected due to the wells not operating during the reporting period. If available in the future, data will be provided on **Table 3**.

Soils

Soil sampling is to be conducted annually during operations. Samples will be collected at the five air particulate sampling locations, AP1 through AP5, and analyzed for U-nat, Th-230, Ra-226, and Pb-210 per RG 4.14. Soil samples were not collected during the reporting period but

will be collected for the first half of 2014 and the data reported in the next semi-annual report. Data will be reported on **Table 4** when available.

Passive Gamma Radiation

Gamma radiation is measured on a quarterly basis by the use of environmental dosimeters placed at the passive radiation (PR) sampling locations PR-1 through 12. Potential exposure rates were determined by X9 Environmental/Low Level dosimetry badges manufactured by Landauer. The dosimeters were deployed for the approximate duration of each quarter and sent to Landauer for analysis. The data is reported by the lab in gross and net dose in mrem for the monitoring quarter. The net exposure rate is the gross measured dose rate minus the dose value of the deploy-control dosimeter (i.e. background). The results of dosimeter exposure are provided in mR/qtr on **Table 5** in the Attachment. Exposure provided in milliroentgens (mR) is, in effect, equivalent to the lab reported mrem since human exposures are not determined in actuality.

Passive Radon

Radon quantities in air are determined on a quarterly basis measured at PR sampling locations 1 through 12 using radon detectors co-located with the environmental dosimeters. Radon gas is quantified using Landauer Radtrak® long-term monitors equipped with a thoron-proof filter in order to measure radon-222 only. Radon-222 results are presented on **Table 6** in the Attachment. The detection limit specified by the manufacturer for Radtrak monitors is 0.33 pCi/L in 90 days.

Supplemental Passive Radon

To aid in quantifying radon potentially emanating from the Plant, additional radon monitors have been deployed at areas within or directly adjacent to the Plant. These monitors are intended to detect and quantify radon venting out of the Plant at the main exhaust ports and also directly downwind of the Plant. Supplemental radon-222 results are presented on **Table 6** in the Attachment.

If you have any questions regarding this letter or require additional information please feel free to contact me at the Casper office.

Sincerely,



Michael D. Gaither
Manager EHS and Regulatory Affairs
Ur-Energy USA, Inc

Attachment: **Operational Radiological Sampling Figure and Tables**

Cc: Deputy Director, Decommissioning and Uranium Recovery Licensing Directorate
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TABLE I: AIR PARTICULATE MONITORING RESULTS
SECOND HALF OF 2013
LOST CREEK ISR PROJECT SUA-1598

Sample Location	Sample Period	Radionuclide	Measured Concentration	Error Estimate (Precision)	Lab MDC or Reporting Limit (RL)	RG 4.14 LLD	MPC	% MPC
			$\mu\text{Ci/mL}$	$\pm \mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	
AP-1	2013 Q3	U-nat	1.20E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.013
		Th-230	1.80E-16	1.00E-16	1.20E-16	1.00E-16	3.00E-14	0.600
		Ra-226	1.30E-16	4.70E-17	6.10E-17	1.00E-16	9.00E-13	0.014
		Pb-210	6.90E-15	1.50E-15	2.10E-15	2.00E-15	6.00E-13	1.150
	2013 Q4	U-nat	1.00E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.011
		Th-230	1.20E-16	4.50E-17	4.40E-17	1.00E-16	3.00E-14	0.400
		Ra-226	7.10E-17	9.20E-17	1.40E-16	1.00E-16	9.00E-13	0.008
		Pb-210	1.70E-14	1.40E-15	1.40E-15	2.00E-15	6.00E-13	2.833
	2013 Q3	U-nat	2.30E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.026
		Th-230	2.40E-16	8.40E-17	8.70E-17	1.00E-16	3.00E-14	0.800
		Ra-226	1.90E-16	5.30E-17	6.20E-17	1.00E-16	9.00E-13	0.021
		Pb-210	1.60E-14	1.90E-15	2.30E-15	2.00E-15	6.00E-13	2.667
	2013 Q4	U-nat	2.70E-15	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.300
		Th-230	1.40E-16	6.40E-17	7.90E-17	1.00E-16	3.00E-14	0.467
		Ra-226	2.00E-16	1.10E-16	1.40E-16	1.00E-16	9.00E-13	0.022
		Pb-210	1.90E-14	1.70E-15	1.80E-15	2.00E-15	6.00E-13	3.167
AP-3	2013 Q3	U-nat	1.00E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.011
		Th-230	7.70E-17	3.80E-17	4.40E-17	1.00E-16	3.00E-14	0.257
		Ra-226	9.40E-17	8.90E-17	1.30E-16	1.00E-16	9.00E-13	0.010
		Pb-210	1.40E-14	1.30E-15	1.40E-15	2.00E-15	6.00E-13	2.333
	2013 Q4	U-nat	1.00E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.011
		Th-230	1.40E-16	4.90E-17	4.10E-17	1.00E-16	3.00E-14	0.467
		Ra-226	8.90E-17	7.30E-17	1.00E-16	1.00E-16	9.00E-13	0.010
		Pb-210	1.80E-14	1.40E-15	1.40E-15	2.00E-15	6.00E-13	3.000
	2013 Q3	U-nat	1.00E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.011
		Th-230	1.10E-16	4.50E-17	4.40E-17	1.00E-16	3.00E-14	0.367
		Ra-226	1.30E-17	8.30E-17	1.40E-16	1.00E-16	9.00E-13	0.001
		Pb-210	1.30E-14	1.30E-15	1.50E-15	2.00E-15	6.00E-13	2.167
	2013 Q4	U-nat	1.10E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.012
		Th-230	5.90E-17	3.90E-17	5.50E-17	1.00E-16	3.00E-14	0.197
		Ra-226	1.10E-16	6.10E-17	1.10E-16	1.00E-16	9.00E-13	0.012
		Pb-210	1.90E-14	1.50E-15	1.60E-15	2.00E-15	6.00E-13	3.167
AP-5	2013 Q3	U-nat	1.00E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.011
		Th-230	8.40E-17	4.90E-17	6.60E-17	1.00E-16	3.00E-14	0.280
		Ra-226	8.20E-17	3.60E-17	4.80E-17	1.00E-16	9.00E-13	0.009
		Pb-210	1.40E-14	1.40E-15	1.60E-15	2.00E-15	6.00E-13	2.333
	2013 Q4	U-nat	1.00E-16	--	1.00E-16 (RL)	1.00E-16	9.00E-13	0.011
		Th-230	6.80E-17	4.30E-17	6.00E-17	1.00E-16	3.00E-14	0.227
		Ra-226	4.00E-17	8.00E-17	1.30E-16	1.00E-16	9.00E-13	0.004
		Pb-210	1.70E-14	1.40E-15	1.40E-15	2.00E-15	6.00E-13	2.833

MDC: Minimum detectable concentration

LLD: Lower limit of detection

MPC: Maximum permissible concentration (10 CFR 20 App B Table 2) i.e. the amount of which if inhaled/ingested over 1 year would yield 50 mrem of dose

Indicates non-detect at the reporting limit or MDC listed

Indicates Lab MDC exceeds RG 4.14 LLD

TABLE 2: SURFACE WATER SAMPLE DATA
SECOND HALF 2013
LOST CREEK ISR PROJECT SUA-1598

Sample Location	Sample Date	Sample Type	Radionuclide	Measured Concentration	Error Estimate (Precision)	Lab MDC or Reporting Limit (RL)	4.14 LLD	Comments
				$\mu\text{Ci/mL}$	$\pm \mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	
LC1	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC2	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC3	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC4	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC5	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC6	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC7	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	

TABLE 2: SURFACE WATER SAMPLE DATA
SECOND HALF 2013
LOST CREEK ISR PROJECT SUA-I598

Sample Location	Sample Date	Sample Type	Radionuclide	Measured Concentration	Error Estimate (Precision)	Lab MDC or Reporting Limit (RL)	4.14 LLD	Comments
				$\mu\text{Ci/mL}$	$\pm \mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	
LC8	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC9	10/23/2013	Stormwater	U-nat (diss)	6.09E-10	--	2.03E-10 (RL)	2.00E-10	Limited volume of sample (< 1L)
			U-nat (susp)	1.34E-08	--	4.06E-10 (RL)	2.00E-10	Limited volume of sample (< 1L)
			Th-230 (diss)	2.00E-10	2.00E-10	4.00E-10	2.00E-10	Limited volume of sample (< 1L)
			Th-230 (susp)	7.30E-09	1.80E-09	9.00E-10	2.00E-10	Limited volume of sample (< 1L)
			Ra-226 (diss)	2.20E-09	4.20E-10	2.70E-10	2.00E-10	Limited volume of sample (< 1L)
			Ra-226 (susp)	1.80E-08	3.30E-09	2.20E-09	2.00E-10	Limited volume of sample (< 1L)
			Pb-210 (diss)	--	--	--	2.00E-09	Insufficient volume
			Pb-210 (susp)	--	--	--	2.00E-09	Insufficient volume
			Po-210 (diss)	--	--	--	2.00E-09	Insufficient volume
			Po-210 (susp)	--	--	--	2.00E-09	Insufficient volume
LC10	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC11	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC12	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	
LC13	N/A	Stormwater	U-nat (diss)	--	--	--	2.00E-10	No sample
			U-nat (susp)	--	--	--	2.00E-10	
			Th-230 (diss)	--	--	--	2.00E-10	
			Th-230 (susp)	--	--	--	2.00E-10	
			Ra-226 (diss)	--	--	--	2.00E-10	
			Ra-226 (susp)	--	--	--	2.00E-10	
			Pb-210 (diss)	--	--	--	2.00E-09	
			Pb-210 (susp)	--	--	--	2.00E-09	
			Po-210 (diss)	--	--	--	2.00E-09	
			Po-210 (susp)	--	--	--	2.00E-09	

LLD: Lower Limit of Detection

Indicates Lab MDC exceeds 4.14 LLD

TABLE 3: GROUNDWATER SAMPLE DATA
SECOND HALF 2013
LOST CREEK ISR PROJECT SUA-1598

Sample Location	Sample Date	Sample Type	Radionuclide	Measured Conc.	Error Estimate (Precision)	Lab LLD or Reporting Limit (RL)	RG 4.14 LLD	MPC	% MPC	Comments
				$\mu\text{Ci/mL}$	$\pm \mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$		
BLM(4451)	2nd Half 2013	Private well for stock watering	U-nat (diss)	--	--	--	2.00E-10	3.00E-07		Well not operating during report period
			U-nat (susp)	--	--	--	2.00E-10	3.00E-07		
			Ra-226 (diss)	--	--	--	2.00E-10	6.00E-08		
			Ra-226 (susp)	--	--	--	2.00E-10	6.00E-08		
BLM(4775)	2nd Half 2013	Private well for stock watering	U-nat (diss)	--	--	--	2.00E-10	3.00E-07		Well not operating during report period
			U-nat (susp)	--	--	--	2.00E-10	3.00E-07		
			Ra-226 (diss)	--	--	--	2.00E-10	6.00E-08		
			Ra-226 (susp)	--	--	--	2.00E-10	6.00E-08		
BLM(4777)	2nd Half 2013	Private well for stock watering	U-nat (diss)	--	--	--	2.00E-10	3.00E-07		Well not operating during report period
			U-nat (susp)	--	--	--	2.00E-10	3.00E-07		
			Ra-226 (diss)	--	--	--	2.00E-10	6.00E-08		
			Ra-226 (susp)	--	--	--	2.00E-10	6.00E-08		
BLM(EEN)	2nd Half 2013	Private well for stock watering	U-nat (diss)	--	--	--	2.00E-10	3.00E-07		Well not operating during report period
			U-nat (susp)	--	--	--	2.00E-10	3.00E-07		
			Ra-226 (diss)	--	--	--	2.00E-10	6.00E-08		
			Ra-226 (susp)	--	--	--	2.00E-10	6.00E-08		

TABLE 4: SOIL SAMPLE DATA
SECOND HALF 2013
LOST CREEK ISR PROJECT SUA-I598

Sample Location	Sample Date	Radionuclide	Measured Concentration	Error Estimate (Precision)	Lab LLD or Reporting Limit	RG 4.14 LLD	Comments
			$\mu\text{Ci/mL}$	$\pm \mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	
AP-1	2nd Half 2013	U-nat	--	--	--	2.00E-07	Not sampled
		Th-230	--	--	--	2.00E-07	
		Ra-226	--	--	--	2.00E-07	
		Pb-210	--	--	--	2.00E-07	
AP-2	2nd Half 2013	U-nat	--	--	--	2.00E-07	Not sampled
		Th-230	--	--	--	2.00E-07	
		Ra-226	--	--	--	2.00E-07	
		Pb-210	--	--	--	2.00E-07	
AP-3	2nd Half 2013	U-nat	--	--	--	2.00E-07	Not sampled
		Th-230	--	--	--	2.00E-07	
		Ra-226	--	--	--	2.00E-07	
		Pb-210	--	--	--	2.00E-07	
AP-4	2nd Half 2013	U-nat	--	--	--	2.00E-07	Not sampled
		Th-230	--	--	--	2.00E-07	
		Ra-226	--	--	--	2.00E-07	
		Pb-210	--	--	--	2.00E-07	
AP-5	2nd Half 2013	U-nat	--	--	--	2.00E-07	Not sampled
		Th-230	--	--	--	2.00E-07	
		Ra-226	--	--	--	2.00E-07	
		Pb-210	--	--	--	2.00E-07	

LLD: Lower Limit of Detection

TABLE 5: PASSIVE GAMMA DATA
SECOND HALF 2013
LOST CREEK ISR PROJECT SUA-I598

Sample Location	Sample Period	Start Date	End Date	Deploy Duration	Gross Exposure	Net Exposure
				days	mR/qtr	mR/qtr
Deploy Control	3rd Quarter	3-Jul-2013	8-Oct-2013	97	30.7	n/a
	4th Quarter	7-Oct-2013	18-Jan-2014	103	39.5	n/a
PR-1	3rd Quarter	3-Jul-2013	8-Oct-2013	97	52.9	22.2
	4th Quarter	8-Oct-2013	18-Jan-2014	102	51.2	11.7
PR-2	3rd Quarter	3-Jul-2013	7-Oct-2013	96	53.0	22.2
	4th Quarter	7-Oct-2013	15-Jan-2014	100	58.2	18.7
PR-3	3rd Quarter	3-Jul-2013	7-Oct-2013	96	60.4	29.7
	4th Quarter	7-Oct-2013	18-Jan-2014	103	67.1	27.6
PR-4	3rd Quarter	3-Jul-2013	7-Oct-2013	96	62.4	31.6
	4th Quarter	7-Oct-2013	18-Jan-2014	103	71.3	31.8
PR-5	3rd Quarter	3-Jul-2013	7-Oct-2013	96	50.9	20.2
	4th Quarter	7-Oct-2013	18-Jan-2014	103	60.5	21.0
PR-6	3rd Quarter	3-Jul-2013	7-Oct-2013	96	54.9	24.2
	4th Quarter	7-Oct-2013	18-Jan-2014	103	56.1	16.6
PR-7	3rd Quarter	3-Jul-2013	7-Oct-2013	96	61.4	30.7
	4th Quarter	7-Oct-2013	15-Jan-2014	100	63.6	24.1
PR-8	3rd Quarter	3-Jul-2013	7-Oct-2013	96	55.4	24.7
	4th Quarter	7-Oct-2013	15-Jan-2014	100	58.8	19.3
PR-9	3rd Quarter	3-Jul-2013	7-Oct-2013	96	58.7	28.0
	4th Quarter	7-Oct-2013	18-Jan-2014	103	63.1	23.6
PR-10	3rd Quarter	3-Jul-2013	7-Oct-2013	96	67.1	36.4
	4th Quarter	7-Oct-2013	15-Jan-2014	100	75.4	35.9
PR-10Dup	3rd Quarter	3-Jul-2013	7-Oct-2013	96	56.7	26.0
	RPD				17	33
	4th Quarter	7-Oct-2013	15-Jan-2014	100	63.9	24.4
	RPD				17	38
PR-11	3rd Quarter	3-Jul-2013	7-Oct-2013	96	58.2	27.4
	4th Quarter	7-Oct-2013	15-Jan-2014	100	59.8	20.3
PR-12	3rd Quarter	3-Jul-2013	7-Oct-2013	96	51.1	20.4
	4th Quarter	7-Oct-2013	18-Jan-2014	103	57.1	17.6

TABLE 6: PASSIVE RADON DATA
SECOND HALF 2013
LOST CREEK ISR PROJECT SUA-I598

Sample Location	Sample Period	Start Date	End Date	Period Duration	Radionuclide	Quantity	Error Estimate	Average Conc.	Error Estimate	MPC	% MPC
				days		$\mu\text{Ci/mL-qtr}$	$\pm \mu\text{Ci/mL-qtr}$	$\mu\text{Ci/mL}$	$\pm \mu\text{Ci/mL}$	$\mu\text{Ci/mL}$	
PR-1	3rd Quarter	3-Jul-2013	8-Oct-2013	97	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
	4th Quarter	8-Oct-2013	18-Jan-2014	102	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
PR-2	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	7.40E-08	5.06E-09	8.00E-10	5.00E-11	1.00E-08	8.00
	4th Quarter	7-Oct-2013	15-Jan-2014	100	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
PR-3	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
	4th Quarter	7-Oct-2013	18-Jan-2014	103	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
PR-4	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	6.28E-08	5.46E-09	7.00E-10	6.00E-11	1.00E-08	7.00
	4th Quarter	7-Oct-2013	18-Jan-2014	103	Rn-222	9.87E-08	7.42E-09	1.00E-09	7.00E-11	1.00E-08	10.00
PR-5	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	7.55E-08	6.27E-09	8.00E-10	7.00E-11	1.00E-08	8.00
	4th Quarter	7-Oct-2013	18-Jan-2014	103	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
PR-6	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	5.59E-08	5.00E-09	6.00E-10	5.00E-11	1.00E-08	6.00
	4th Quarter	7-Oct-2013	18-Jan-2014	103	Rn-222	7.05E-08	5.79E-09	7.00E-10	6.00E-11	1.00E-08	7.00
PR-7	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
	4th Quarter	7-Oct-2013	15-Jan-2014	100	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
PR-8	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	1.20E-07	7.40E-09	1.20E-09	8.00E-11	1.00E-08	12.00
	4th Quarter	7-Oct-2013	15-Jan-2014	100	Rn-222	8.06E-08	5.33E-09	8.00E-10	5.00E-11	1.00E-08	8.00
PR-9	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	6.56E-08	4.59E-09	7.00E-10	5.00E-11	1.00E-08	7.00
	4th Quarter	7-Oct-2013	18-Jan-2014	103	Rn-222	1.04E-07	7.70E-09	1.00E-09	7.00E-11	1.00E-08	10.00
PR-10	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	1.11E-07	8.20E-09	1.20E-09	9.00E-11	1.00E-08	12.00
	4th Quarter	7-Oct-2013	15-Jan-2014	100	Rn-222	1.26E-07	8.80E-09	1.30E-09	9.00E-11	1.00E-08	13.00
PR-10Dup	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	4.25E-08	3.17E-09	3.00E-10	3.00E-11	1.00E-08	3.00
	4th Quarter	7-Oct-2013	15-Jan-2014	100	Rn-222	1.21E-07	8.60E-09	1.20E-09	9.00E-11	1.00E-08	12.00
					RPD	89		120			
					RPD	4		8			
PR-11	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	6.10E-08	4.31E-09	6.00E-10	4.00E-11	1.00E-08	6.00
	4th Quarter	7-Oct-2013	15-Jan-2014	100	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
PR-12	3rd Quarter	3-Jul-2013	7-Oct-2013	96	Rn-222	7.06E-08	5.97E-09	7.00E-10	6.00E-11	1.00E-08	7.00
	4th Quarter	7-Oct-2013	18-Jan-2014	103	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
Ponds 1	3rd Quarter	26-Jul-2013	8-Oct-2013	74	Rn-222	3.51E-08	2.68E-09	5.00E-10	4.00E-11	1.00E-08	5.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	1.05E-07	6.60E-09	1.10E-09	7.00E-11	1.00E-08	11.00
Ponds 2	3rd Quarter	26-Jul-2013	8-Oct-2013	74	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
Ponds 3	3rd Quarter	26-Jul-2013	8-Oct-2013	74	Rn-222	1.24E-07	8.90E-09	1.70E-09	1.20E-10	1.00E-08	17.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
Ponds 4	3rd Quarter	25-Jul-2013	8-Oct-2013	75	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	3.80E-08	2.81E-09	4.00E-10	3.00E-11	1.00E-08	4.00
Ponds 5	3rd Quarter	25-Jul-2013	8-Oct-2013	75	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
Ponds 6	3rd Quarter	26-Jul-2013	8-Oct-2013	74	Rn-222	2.23E-07	1.32E-08	3.00E-09	1.80E-10	1.00E-08	30.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	3.00E-08	--	3.00E-10	2.00E-11	1.00E-08	3.00
North Vent	3rd Quarter	26-Jul-2013	8-Oct-2013	74	Rn-222	1.38E-07	9.60E-09	1.80E-09	1.30E-10	1.00E-08	18.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	1.72E-07	9.50E-09	1.80E-09	1.00E-10	1.00E-08	18.00
South Vent	3rd Quarter	26-Jul-2013	8-Oct-2013	74	Rn-222	1.45E-07	9.90E-09	1.90E-09	1.30E-10	1.00E-08	19.00
	4th Quarter	8-Oct-2013	11-Jan-2014	95	Rn-222	2.05E-07	1.08E-08	2.20E-09	1.10E-10	1.00E-08	22.00

