Supplemental Preoperational Baseline Radiological Monitoring Data for the Pinyon Plain Mine

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Section 1.0 Introduction

On behalf of Energy Fuels Resources (USA) Inc. (Energy Fuels) and the U.S. Forest Service, Kaibab National Forest, (USFS), Environmental Restoration Group, Inc. (ERG) has prepared this supplemental report detailing existing radiological baseline conditions near the Pinyon Plain Mine, formerly known as the Canyon Mine, in Coconino County, Arizona. The Pinyon Plain Mine is a fully permitted uranium mine located on lands administered by the U.S. Forest Service (USFS). The mine is located approximately seven miles south of Tusayan, Arizona. The regional setting of the Pinyon Plain Mine is shown in Figure 1.

The radiological monitoring reported herein supplements a previously completed preoperational baseline data collection program described in Radiological Assessment of the Canyon Mine Project (McKlveen, 1985) and Supplemental Preoperational Baseline Radiological Monitoring Data for the Canyon Mine (ERG, 2017). With the exception of soil sampling at the Big Red Horse Wash location (approximately 1 mile west of Willaha) and water sampling at Havasu Spring, Indian Gardens and Blue Springs, the recent 2023 monitoring program consists of the same sample types, sample locations, analytical parameters and methods as those used by Dr. McKlveen in the 1980's and ERG in an abbreviated monitoring period in 2016-2017. Radon monitoring was also added to the South Wash location for further evaluation of an elevated radiological feature identified during the McKlveen studies.

Regarding soil sampling at the former Big Red Horse Wash location on Arizona Stand Land Department (ASLD) lands, this location was moved "upwash" onto USFS lands and re-named Red Horse Wash after consultation between Energy Fuels and the USFS in 2016. It was also determined that no additional water sampling would be conducted at Havasu Spring, Indian Gardens and Blue Springs as part of the updated monitoring program.

The monitoring program consists of measurements of direct gamma radiation, radon-222 and its progeny in air, and radionuclides in soil and surface waters. The sampling type, parameters, and frequency are shown in Table 1, and are summarized as follows.

- Direct gamma radiation measurements consisted of:
    - Dose rate measurements made using Optically Stimulated Luminescence (OSL) dosimeters were made over three consecutive quarters, the second quarter of 2023 through the fourth quarter of 2023.
    - High Pressure Ionization Chamber (HPIC) measurements made when deploying (OSL) dosimeters.
    - Exposure rate measurements were made using portable radiation measurement equipment at the same time and location as the HPIC measurements.
- Radon and its progeny measurements consisted of:
    - Radon-222 concentrations in air using passive track-etch detectors over three consecutive quarters, three consecutive quarters, the second quarter of 2023 through the fourth quarter of 2023.
    - Radon progeny concentrations in air when deploying track-etch detectors.
- Soil Sampling consisted of:
    - A one-time sampling of soil at the locations described in Section 3.
- Surface water sampling included:
    - A one-time sampling of surface water at the South Wash and Owl Tank locations if possible based on the availability of water.

Section 2.0 Methods

The methods for each type of measurement proposed in the scope of work are discussed below.

2.1 Direct Gamma Radiation

As discussed previously, direct gamma radiation measurements consisted of three types of measurements, each made quarterly for a period of three quarters. The locations for each type of measurement are shown in Figure 2 and include:

- Grand Canyon National Park Airport (Tusayan Airport),
- Tusayan Ranger Station,
- Owl Tank,
- a location described as South Wash where an elevated radiological anomaly was identified in previous studies, and
- locations of equal distance from the mine shaft in eight compass directions.

The following subsection describes in detail the methods used to measure direct gamma radiation.

2.1.1 Dose Rate Measurements

Radiation dose rate measurements were made using OSL dosimeters provided by Landauer, Inc., a National Voluntary Laboratory Accreditation Program (NVLAP) approved provider for ionizing radiation dosimetry services. The OSL dosimeters were deployed quarterly at each of the locations described above and shown in Figure 2. Deployment and retrieval dates for the OSL badge dosimeters are listed in Table 2.

- The first set of dosimeters was deployed on April 6, 2023, and retrieved on July 6, 2023; except for the Tusayan Airport and Tusayan Ranger Station locations, which were deployed on April 5, 2023, and retrieved on July 5, 2023. This period represents the second quarter of 2023.

- The second set of dosimeters was deployed on July 6, 2023, and retrieved on October 4, 2023; except for the Tusayan Airport and Tusayan Ranger Station locations which were deployed on July 5, 2023, and retrieved on October 3, 2023. This period represents the third quarter of 2023.

- The third set of dosimeters was deployed on October 4, 2023, and retrieved on January 15, 2024; except for the Tusayan Airport and Tusayan Ranger Station locations which were deployed on October 3, 2023, and retrieved on January 14, 2024. This period represents the fourth quarter of 2023.

The dosimeters were placed on wooden posts, t-posts, or other available features such as fencing, at approximately 1-meter above the ground surface (ags) and away from any obstacle that might influence the measurement by shielding gamma radiation. A second dosimeter was placed at the Northwest (NW) location for each period to serve as a duplicate measurement.

2.1.2 High Pressure Ion Chamber Measurements

The HPIC measures exposure rate from interactions of gamma, x-rays, and cosmic radiation without discrimination. HPIC measurements were made at each location described above at the quarterly

deployment of the OSL dosimeters. The measurements were collected using a GE Energy Model RSDetection HPIC with the center of the ion chamber located approximately 1-meter ags. All readings were stored automatically by internal HPIC datalogger software, downloaded to a laptop computer, and then transferred into a spreadsheet for analysis.

2.1.3 Portable Scintillometer Measurements

Exposure rate measurements using a Ludlum Model 19, a 1-inch by 1-inch sodium iodide (NaI) scintillometer, were made at each location described above at the quarterly deployment of the OSL dosimeters. These exposure rate readings were logged by ERG staff manually in a field logbook and measurement log form.

2.2 Radon-222 and Progeny Measurements

Radon-222 concentration in air and working level (the level of radon-222 decay products) measurements were made at three locations (Tusayan Airport, Mine Site, and South Wash), shown in Figure 2. Consistent with the direct gamma measurements, the radon-222 and working level measurements were each made quarterly for a period of three quarters. The following subsection describes in detail the methods used to measure radon-222 and its progeny.

2.2.1 Radon-222 Measurements

Radon-222 concentrations in air were measured quarterly at each of the three locations described above and shown in Figure 2, using passive Radonova Rapidos track-etch detectors. Deployment and retrieval dates for the three locations coincided with the quarterly OSL dosimeter deployment and retrieval dates.

The detectors were placed in a protective housing attached to a wooden post, t-post, or other available feature such as fencing at approximately 1-meter ags and away from any obstacle that might influence the measurement.

2.2.2 Working Level Measurements

Radon-222 decay products, or progeny, concentrations in air are typically expressed in unit of working level (WL) or milli-working level. WL measurements were made at each of the three locations described above and shown in Figure 2, using the Modified-Kusnetz method described in “Measuring Airborne Radon Progeny at Uranium Mills” (CNSC, 2003). The dates and times the WL measurements were made coincided with the quarterly Rapidos track-etch detector (and OSL dosimeter) deployments.

Air samples were collected for five minutes using an air pump operating at 2.5 liters per minute through a 37-millimeter (mm) glass fiber filter. Each filter was counted for alpha radiation emissions using a Ludlum Model 2929 with Ludlum Model 43-10-1 tray counter. The sample and background count times were five minutes each.

2.3 Soil Sampling

Surface soil samples were collected on April 5, 2023 and April 6, 2023 at the locations described in Table 1 and shown in Figure 2. A grab sample from 0 to 5 centimeters (cm) deep was collected from each location using a hand trowel or auger. The sample was placed in a Ziplock plastic bag and labeled with date, time, and sample location identification. The samples were sent to Energy Laboratories, Inc. in Casper, WY, a National Environmental Laboratory Accreditation Program (NELAP) approved laboratory. Proper chain of custody protocol was used in shipping. The samples were analyzed for the following radiological parameters:

- Gross alpha radioactivity,
- Gross beta radioactivity,
- Radium-226,
- Total Uranium,
- Potassium-40,
- Thorium-232,
- Thalium-208, and
- Cesium-137.

2.4 Surface Water Sampling

The monitoring plan required a one-time sampling of surface water in the southern wash and at Owl Tank, if surface water was present in sufficient quantity to sample. During the periods that ERG staff were at the site, surface water was only ever observed at Owl Tank; therefore, no sample was collected in the southern wash. *Note: there are no perennial flows and water is only present in the southern wash immediately following storm events*.

Section 3.0 Results

The results for each type of measurement collected pursuant to the scope of work are discussed below.

3.1 Direct Gamma Radiation

The results for the direct gamma radiation monitoring are provided in the following subsections.

3.1.1 Dose Rate Measurements

The dose rate measurements made using the OSL dosimeter badges are shown in Table 3. The quarterly radiation dose rate ranged from 18.8 to 34.5 mrem per quarter. As expected, the location with the highest dose rate is South Wash, where a higher than background gamma radiation level was reported in previous investigations (McKlveen, 1985). The location with the lowest dose rate was South (S), shown in Figure 2. The average for all locations is 26.3 millirem per quarter, or 11.8 microrem per hour (µR/hr). All results in Table 2 were corrected for an average transit control dosimeter response of 0.22 mrem per day while in transit and not deployed on site. Some of the dosimeters were lost or found lying on the ground at the time of their retrieval, and therefore the data for these badges was not included in this report. These badges were as follows: one at Tusayan Airport (2023 Q4, initially believed lost and then later found on ground after ground covering snow had melted), all three at Owl Tank (2023 Q2 lost, Q3 found on ground, and Q4 lost), one at South Wash (2023 Q3 found on ground), and one at the Northwest (NW) (2023 Q3 lost).

3.1.2 High Pressure Ion Chamber Measurements

The exposure rate measurements made using the HPIC are shown in Table 4. The exposure rate ranged from 10.9 to 15.6 µR/hr. The South Wash location had the highest observed exposure rate. The location with the lowest exposure rate was South (S), shown in Figure 2. The average for all locations is 13.0 µR/hr.

3.1.3 Portable Scintillometer Measurements

The exposure rate measurements made using the Ludlum Model 19 are shown in Table 4. The exposure rates ranged from 7.5 to 14.0 µR/hr. Again, the South Wash location had the highest observed exposure rate. Again, the location with the lowest exposure rate was the South (S), shown in Figure 2. The average for all locations was 10.1 µR/hr. The HPIC data are considered a true measure of exposure rate while the Ludlum Model 19 measurements are estimated based on the energy of the calibration source, typically radium-226. Therefore, it is advantageous to convert Ludlum Model 19 measurement to the true exposure rate readings using a site-specific conversion factor. Based on the HPIC and Ludlum Model 19 data, the most appropriate site-specific conversion factor is 1.3. That is, to convert a Ludlum Model 19 measurement result to a predicted HPIC measurement result, multiply the Ludlum Model 19 measurement by 1.3.

3.2 Radon-222 and Progeny Measurements

The results for the radon-222 and its progeny monitoring are provided in the following subsections.

3.2.1 Radon-222 Measurements

The radon-222 concentrations in air results are shown in Table 5. The radon-222 concentrations range from 0.11 to 0.59 picocuries per Liter (pCi/L). In a few cases the reported radon concentration results were less than the minimum detectable concentration (MDC). The highest concentration reported was observed at the South Wash location, followed by the Mine Site location. The lowest concentration measured was at Tusayan Airport, although none of the measured concentrations differ greatly from each

other. The 2023 Q3 track-etch cup for the South Wash location was found lying on the ground, and therefore the data for this track-etch cup was not included in this report. The average concentration for all areas and periods is 0.30 pCi/L.

3.2.2 Working Level Measurements

The radon-222 decay product concentrations in air results are shown in Table 6. The radon-222 decay product concentrations range from 0.0 to 7.9 milliworking levels (mWL). The highest quarterly concentration was observed at the South Wash location, followed by the Mine Site location. The lowest quarterly concentration of 0.0 was measured at the Mine Site location. The average concentration for all areas and periods is 3.3 mWL, comparable to the 3.0 mWL identified as the average exposure to the public from natural sources reported in previous studies (McKlveen, 1985).

3.3 Soil Sampling

The results for the six soil samples analyzed for radiological parameters are shown in Table 7. A summary of the soil sampling results are as follows:

- Radium-226 concentrations ranged from 1.0 pCi/g to 1.5 pCi/g with an average concentration of 1.3 pCi/g. Two locations tied for the highest radium-226 concentration in soil: South Wash and Red Horse Wash.

- Gross alpha concentrations ranged from 3.3 pCi/g to 6.1 pCi/g with an average concentration of 5.0 pCi/g. The location with the highest gross alpha concentration in soil is South Wash. The current gross alpha method includes contributions from all alpha emitting radionuclides in the uranium decay series, except radon-222.

- Gross beta concentrations ranged from 4.6 pCi/g to 10.8 pCi/g with an average concentration of 7.6 pCi/g. The location with the highest gross beta concentration in soil is Red Horse Wash.

- Potassium-40 concentrations ranged from 19.9 pCi/g to 28.3 pCi/g with an average concentration of 19.9 pCi/g. The location with the highest potassium-40 concentration in soil is Little Red Horse Wash.

- Thorium-232 concentrations ranged from 0.3 pCi/g to 0.6 pCi/g with an average concentration of 0.5 pCi/g. Three locations tied for the highest Thorium-232 concentration in soil: Owl Tank, Little Red Horse Wash, and Red Horse Wash.

- Thalium-208 concentrations ranged from 0.4 pCi/g to 0.5 pCi/g with an average concentration of 0.45 pCi/g. Three locations tied for the highest thalium-208 concentration in soil: South Wash, Little Red Horse Wash, and Red Horse Wash.

- Cesium-137 concentrations ranged from 0.01 pCi/g to 0.4 pCi/g with an average concentration of 0.17 pCi/g. Two locations tied for the highest cesium-137 concentration in soil: North-Northwest (NNW) and Little Red Horse Wash.

- Uranium concentrations ranged from 0.5 mg/kg to 0.9 mg/kg with an average concentration of 0.68 mg/Kg. The location with the highest uranium concentration in soil is Red Horse Wash.

3.4 Water Sampling

During the periods that ERG staff were at the site, surface water was only observed at Owl Tank and therefore no sample was collected in the southern wash. *Note: there are no perennial flows, and water is only present in the southern wash immediately following storm events*.

The results for the Owl Tank sample analyzed for radiological parameters are shown in Table 8. All but the gross alpha and gross beta results were less than minimum detectable concentrations.

Section 4.0 Conclusion

The results of this baseline radiological monitoring are generally consistent with those reported in Radiological Assessment of the Pinyon Plain Mine Project (McKlveen, 1985), Supplemental Preoperational Baseline Radiological Monitoring Data for the Canyon Mine (ERG, 2017) and represent values that are within the range of typical background conditions within the United States (NCRP, 2009).

The purpose of this monitoring was to supplement monitoring conducted in the 1980s and 2010s to evaluate if radiological conditions have changed since that time. Based on this data, radiological conditions are similar to those documented by previously collected data and represent the baseline radiological condition at the site. The elevated radiological area in the wash south of the site, as previously identified, was again identified in the field and monitoring data are consistent with those measured previously.

The current gross alpha method includes contributions from all alpha emitting radionuclides in the uranium decay series, except radon-222. While unknown, the previous method for gross alpha may have included radon-222, which could explain why gross alpha results reported herein are consistently lower than previous samples. It should also be mentioned that gross alpha and beta procedures are intended to be used as screening techniques and quantification of specific radionuclides such as uranium, radium-226 is a more precise tool to evaluate radionuclide concentrations in soil.

Section 5.0 References

Canadian Nuclear Safety Commission (CNSC). Measuring Airborne Radon Progeny at Uranium Mines and Mills. Regulatory Guide G-4. June,2003

Environmental Restoration Group, Inc. (ERG). "Supplemental Preoperational Baseline Radiological Monitoring Data for the Canyon Mine". August 2017.

McKlveen, J.W., "Radiological Assessment of the Canyon Mine Project" Kaibab National Forest, Coconino County Arizona. July 25, 1985

National Council on Radiation Protection and Measurements (NCRP). "NCRP Report 160, Ionizing Radiation Exposure of the Population of the United States". 2009

United States Forest Service (USFS). "Record of Decision, Canyon Mine Proposal - Final Environmental Impact Statement Canyon Uranium Mine ". August 1986.

Tables

Table 1 – Pinyon Plain Mine, USFS Preoperational Radiological Monitoring

Sample Type	Number of Locations	Location	Sample Frequency	Analyses (Method)[1]
Direct Gamma	12	8 × Compass Directions around Mine Site[2] Owl Tank (center wash, north of tank) South Wash[3] Tusayan Airport Tusayan Ranger Station	Quarterly	Direct Gamma in µR/hr (OSL, HPIC, and Scintillometer Micro-R meter)[4]
Radon	3	Mine Site South Wash Tusayan Airport	Quarterly	Radon concentration in air (Rapidos HS track-etch detector) and radon "working level" (Modified-Kusnetz).
Soil	6	Owl Tank Downwash of Mine Site (South Wash) Upwash of Mine Site (NNE) Upwash of Mine Site (NNW) Litte Red Horse Wash[5] Red Horse Wash[5]	One-time Sample Event	Gross Alpha/Beta (E900.0), Ra-226, K-40, Tl-208, and Cs-137 (E901.1), Th-232 (A7500-U-C), and Unat (SW6020)
Surface Water[6]	2	Downwash of Mine Site Owl Tank	One-time Sample Event (based on availability)	Gross Alpha/Beta (E900.0), Ra-226, K-40, Tl-208, and Cs-137 (E901.1), Th-232 (A7500-U-C), and Unat (SW6020)

Notes:
1. Based on data presented in the FEIS, Appendix E Radiological Assessment, Appendix C, Table C.2 (Soils) analyses for Ra-226, Gross Alpha, Gross Beta, Th-232, Tl-208, K-40, and Cs-137, and Table C.3 (Surface Water) analyses for Ra-226, Gross Alpha, Gross Beta, K-40.
2. Gamma monitoring at 8 compass direction (N, NE, E, SE, S, SW, W, NW) locations approximately 1/4 mile from mine shaft.
3. New radon location added to monitoring program in 2023.
4. Based on data presented in the FEIS, Appendix E Radiological Assessment, Appendix A.
5. Little Red Horse Wash location formerly known as Red Horse Wash at US Highway 180. Big Red Horse Wash location on Arizona State Land Department lands moved “upwash” onto USFS lands and re-named Red Horse Wash.
6. Based on historic monitoring as documented in a Nov 11, 1993 letter report by Errol L. Montgomery & Associates, no monitoring to be conducted at Havasu Springs, Indian Gardens, or Blue Springs.

Table 2 – OSL Badge Deployments

Monitoring Quarter	Location	Deployment	Retrieval
2023 Q2	Airport, Tusayan Ranger Station	April 5, 2023	July 5, 2023
	Owl Tank, South Wash, SE, S, SW, W, W, NW, N, NE, E	April 6, 2023	July 6, 2023
2023 Q3	Airport, Tusayan Ranger Station	July 5, 2023	October 3, 2023
	Owl Tank, South Wash, SE, S, SW, W, W, NW, N, NE, E	July 6, 2023	October 4, 2023
2023 Q4	Airport, Tusayan Ranger Station	October 3, 2023	January 14, 2024
	Owl Tank, South Wash, SE, S, SW, W, W, NW, N, NE, E	October 4, 2023	January 15, 2024

Table 3 – Dose Rate Measurements Using Optically Stimulated Dosimeters (OSLs)

Location	Monitoring Quarter	Days Deployed	Effective Ambient Dose (mrem/qtr)		Average Exposure Rate[3] (µrem/hr)	Comments
			(Gross)	(Net)[1]		
Tusayan Ranger Station	2023 Q2	91	32.6	28.1	11.6	
	2023 Q3	90	31.8	22.5		
	2023 Q4	103	43.5	28.7		
Airport	2023 Q2	91	35.3	30.8	12.4	
	2023 Q3	90	32.3	23.0		
	2023 Q4	*n/a*	*n/a*			*Lost*
Owl Tank	2023 Q2	*n/a*	*n/a*		n/a	*Lost*
	2023 Q3	*n/a*	*n/a*			*Found on ground, unused*
	2023 Q4	*n/a*	*n/a*			*Lost*
South Wash	2023 Q2	91	36.0	31.5	14.2	
	2023 Q3	*n/a*	*n/a*			*Found on ground, unused*
	2023 Q4	103	49.3	34.5		
N	2023 Q2	91	36.4	31.9	12.8	
	2023 Q3	90	34.3	25.0		
	2023 Q4	103	45.1	30.3		
NE	2023 Q2	91	35.8	31.3	11.6	
	2023 Q3	90	30.0	20.7		
	2023 Q4	103	41.5	26.7		
E	2023 Q2	91	32.3	27.8	10.5	
	2023 Q3	90	28.1	18.8		
	2023 Q4	103	40.0	25.2		
SE	2023 Q2	91	34.4	29.9	11.9	
	2023 Q3	90	33.8	24.5		
	2023 Q4	103	41.4	26.6		
S	2023 Q2	91	30.4	25.9	10.1	
	2023 Q3	90	28.1	18.8		
	2023 Q4	103	39.1	24.3		
SW	2023 Q2	91	31.9	27.4	11.2	
	2023 Q3	90	33.6	24.3		
	2023 Q4	103	39.1	24.3		
W	2023 Q2	91	33.9	29.4	12.0	
	2023 Q3	90	33.2	23.9		
	2023 Q4	103	43.4	28.6		
NW[3]	2023 Q2	91	29.7	25.2	10.9	
	2023 Q3	*n/a*	32.9	23.6		*Duplicate found on ground*
	2023 Q4	103	40.3	25.4		
Average				**26.3**	**11.8**	

Notes:

1. Net effective dose is Gross (reported) effective dose less the transit dose. Transit dose calculated by the number of days in transit multiplied by 0.22 mrem/day (average daily transit control dose for project OSL badges).
2. Average net effective dose for quarters in which badge retrieved converted to exposure rate per hour.
3. Results reflect weighted average of NW (2 quarters) and NW Duplicate (3 quarters) badge analyses.

Table 4 – HPIC and Ludlum Model 19 Measurements

Location	Monitoring Quarter	HPIC Reading (µR/hr)	Model 19 Reading (µR/hr)	Average HPIC Reading (µR/hr)	Average Model 19 Reading (µR/hr)
Tusayan Ranger Station	2023 Q2	12.3	9.5	12.8	9.5
	2023 Q3	13.2	9.5		
	2023 Q4	12.9	9.5		
Airport	2023 Q2	13.4	9.5	13.6	9.7
	2023 Q3	13.8	9.5		
	2023 Q4	13.6	10		
Owl Tank	2023 Q2	13.9	11.5	14.5	12.3
	2023 Q3	14.7	12.5		
	2023 Q4	14.9	13		
South Wash	2023 Q2	14.7	12.5	15.2	13.2
	2023 Q3	15.5	14.0		
	2023 Q4	15.6	13		
N	2023 Q2	13.6	11.0	14.0	11.5
	2023 Q3	14.1	12.0		
	2023 Q4	14.3	11.5		
NE	2023 Q2	12.4	10.0	12.8	10.5
	2023 Q3	13.1	10.5		
	2023 Q4	12.9	11		
E	2023 Q2	11.7	8.0	12.1	8.5
	2023 Q3	12.4	8.5		
	2023 Q4	12.1	9		
SE	2023 Q2	12.1	10.0	12.5	9.8
	2023 Q3	12.9	10.0		
	2023 Q4	12.3	9.5		
S	2023 Q2	10.9	7.5	11.1	7.7
	2023 Q3	11.3	7.5		
	2023 Q4	11.3	8		
SW	2023 Q2	12.2	9.0	12.5	9.0
	2023 Q3	12.8	9.0		
	2023 Q4	12.6	9		
W	2023 Q2	13.1	10.0	13.4	10.2
	2023 Q3	13.7	10.5		
	2023 Q4	13.3	10		
NW	2023 Q2	11.6	9.0	12.0	8.8
	2023 Q3	12.3	8.5		
	2023 Q4	12.0	9		
Average				**13.0**	**10.1**

Notes:
1. Measurements taken approximately 1-m above ground surface.
2. µR/hr: microroentgen per hour

Table 5 – Radon -222 Concentration Results

Location	Monitoring Quarter	Days Deployed	Radon-222 Concentration (pCi/L)	Radon-222 Uncertainty (pCi/L)	Average Radon-222 Concentration (pCi/L)	Comments
Airport	2023 Q2	91	< 0.24	*n/a*	0.22	
	2023 Q3	90	0.11	0.06		
	2023 Q4	103	0.30	0.11		
South Wash	2023 Q2	91	0.24	*0.14*	0.42	
	2023 Q3	*n/a*	*n/a*	*n/a*		*Found on ground, unused*
	2023 Q4	103	0.59	0.14		
Mine Site	2023 Q2	91	< 0.24	*n/a*	0.27	
	2023 Q3	*90*	0.16	0.09		
	2023 Q4	103	0.41	0.14		
Average					**0.30**	

Notes:
1. Where radon concentration is less than the detection limit the detection limit is used for the value when calculating the average.
2. Uncertainty is two standard deviations

Table 6 – Working Level Measurements Using Modified-Kusnetz Method

Location	Monitoring Quarter	Date	Radon-222 Progeny Concentration (mWL)	Average Radon-222 Progeny Concentration (mWL)
Tusayan Airport	2023 Q2	4/5/2023	4.4	3.6
	2023 Q3	7/5/2023	4.6	
	2023 Q4	10/3/2023	1.9	
South Wash	2023 Q2	4/6/2023	7.9	3.4
	2023 Q3	7/6/2023	1.6	
	2023 Q4	10/4/2023	0.8	
Mine Site	2023 Q2	4/6/2023	6.1	2.9
	2023 Q3	7/6/2023	2.6	
	2023 Q4	10/4/2023	0.0	
Average				**3.3**

Table 7 – Radiological Constituents Concentrations in Soil

Location	Ra-226 (pCi/g)	Gross Alpha (pCi/g)	Gross Beta (pCi/g)	K-40 (pCi/g)	Tl-208 (pCi/g)	Cs-137 (pCi/g)	Th-232 (pCi/g)	Total U (mg/Kg)
Owl Tank	1.1 ± 0.2	4.1 ± 1.3	6.4 ± 1.0	22.2 ± 1.6	0.4 ± 0.08	0.01 ± 0.07	0.6 ± 0.1	0.7
South Wash	1.5 ± 0.2	6.1 ± 1.7	9.3 ± 1.2	28.3 ± 2.4	0.5 ± 0.1	0.2 ± 0.08	0.5 ± 0.09	0.6
NNE	1.0 ± 0.1	3.3 ± 1.2	4.6 ± 0.8	19.9 ± 1.4	0.4 ± 0.07	0.01 ± 0.06	0.3 ± 0.06	0.5
NNW	1.3 ± 0.2	4.6 ± 1.5	7.1 ± 1.0	21.8 ± 1.6	0.4 ± 0.08	0.4 ± 0.08	0.3 ± 0.06	0.6
Little Red Horse Wash	1.2 ± 0.2	5.8 ± 1.7	7.6 ± 1.1	28.3 ± 2.0	0.5 ± 0.09	0.4 ± 0.07	0.6 ± 0.1	0.8
Red Horse Wash	1.5 ± 0.2	5.9 ± 1.8	10.8 ± 1.4	28.0 ± 2.3	0.5 ± 0.1	0.01 ± 0.09	0.6 ± 0.1	0.9
Average	1.27	4.97	7.63	24.75	0.45	0.17	0.48	0.68

Notes:
Gross Alpha/Beta by Method E900.0
Ra-226, K-40, Tl-208, Cs-137 by Method E901.1 (Gamma Spec)
Th-232 by Method A7500-U-C
Unat by Method SW6020

Table 8 – Radiological Constituents Concentrations in Surface Water

Location	Ra-226 (pCi/mL)	Gross Alpha (pCi/L)	Gross Beta (pCi/L)	K-40 (pCi/mL)	Tl-208 (pCi/mL)	Cs-137 (pCi/mL)	Th-232 (pCi/L)	Total U (mg/L)
Owl Tank	< 0.03	5.4 ± 2.7	11.4 ± 2.2	< 0.2	< 0.02	< 0.02	< 0.4	0.0004

Notes:
Gross Alpha/Beta by Method E900.0
Ra-226, K-40, Tl-208, Cs-137 by Method E901.1 (Gamma Spec). Ra-226 MDC = 0.03 pCi/mL, K-40 MDC = 0.2 pCi/mL, Tl-208 MDC = 0.02 pCi/ml, and Cs-137 MDC = 0.02 pCi/mL.
Th-232 by Method A7500-U-C. Th-232 MDC = 0.4 pCi/L
Total Uranium by Method SW6020

Figures

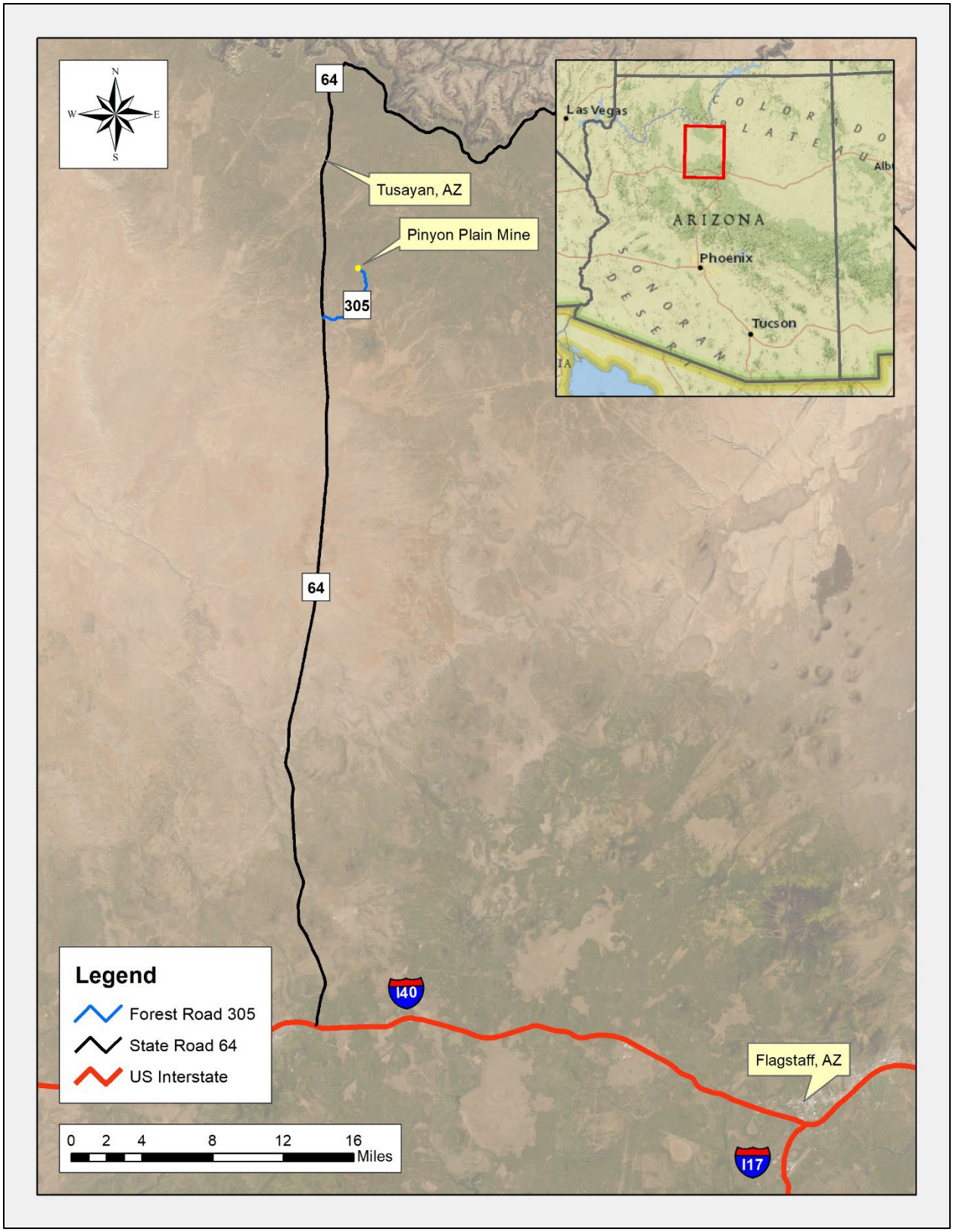

Figure 1 – Pinyon Plain Mine Regional Setting

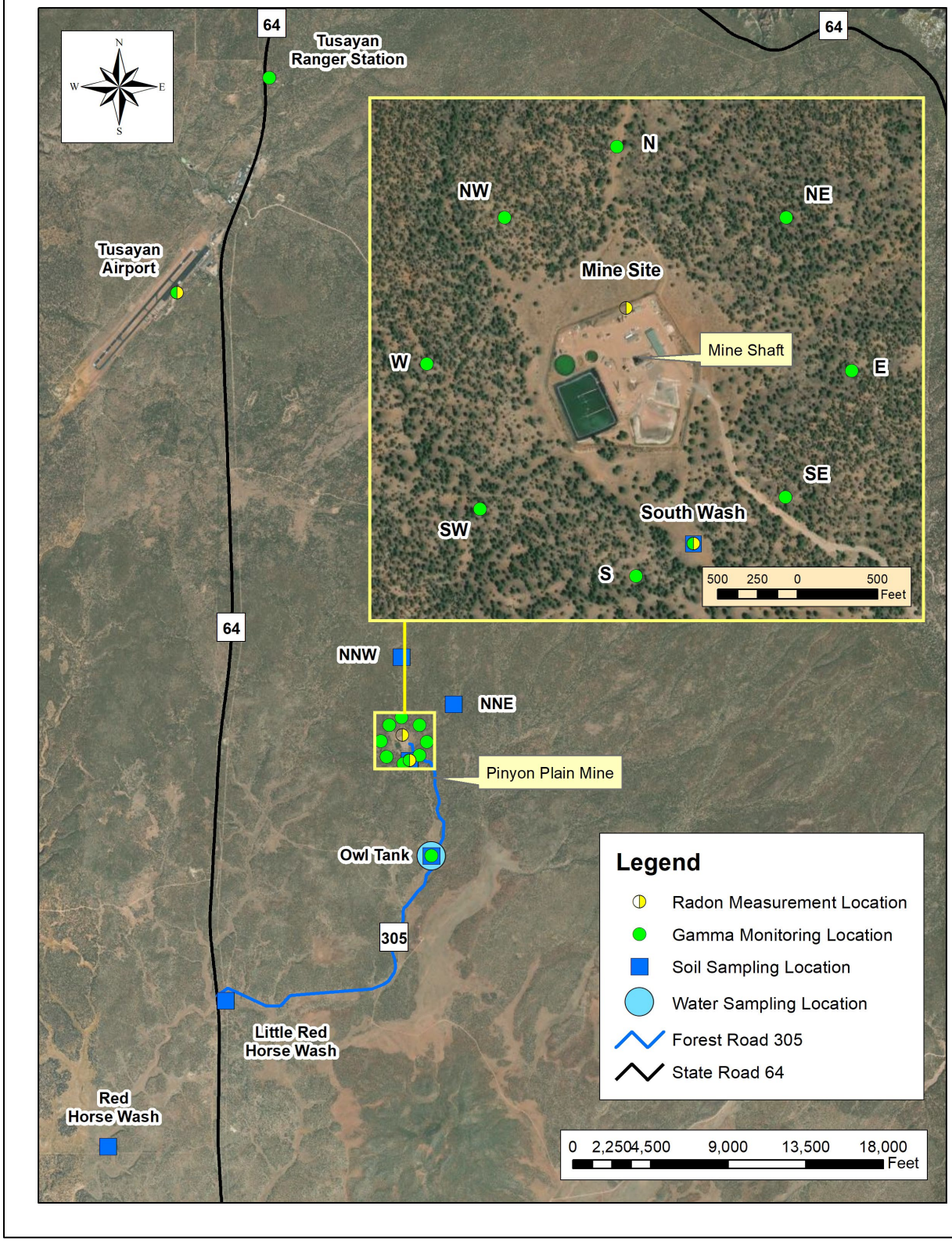

Figure 2 – Radiological Sampling Locations for the Pinyon Plain Mine

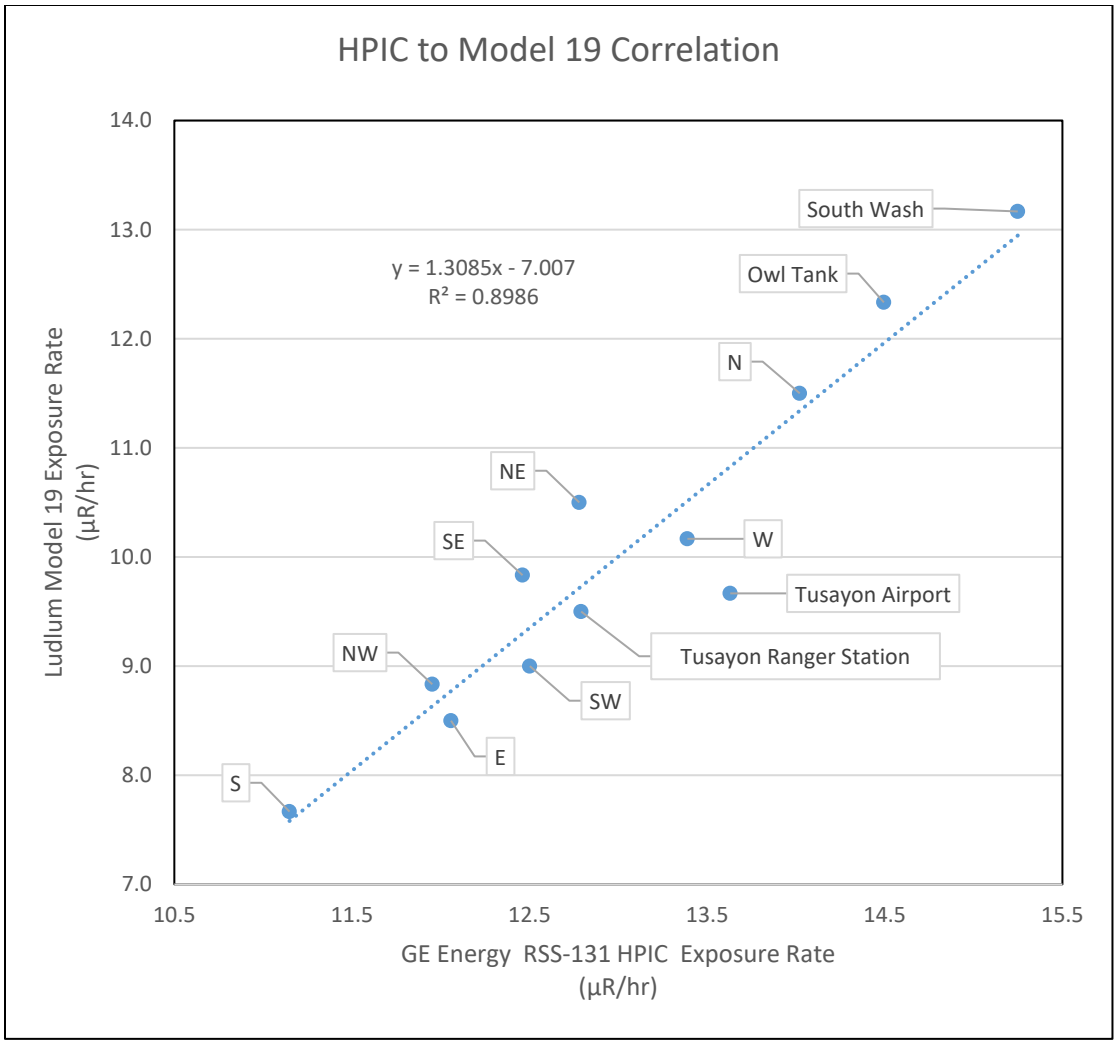

Figure 3 – HPIC to Model 19 Correlation

Appendix A
OSL (Gamma) Laboratory Data

ENVIRO RESTORATION GRP
STE 150 / NORTHEAST
8809 WASHINGTON ST
ALUQUERQUE, NM 87113

Report Date (YYYY-MM-DD)	2023-07-19
Page	1 of 1
Dosimeter Received	2023-07-18
QC Release	LCA
Analytical Work Order	2319402966

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Telephone: (708) 755-7000
Facsimile: (708) 755-7016
Customer Service: (800) 323-8830
Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 716005 Subaccount : 1448929 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:			2023-04-01 to	2023-06-30	Q2	2023			
00000	V03NH	Deploy Control						2016-10	EX001030467
	V03NH	Control Dose Used	35.9						
00025	V03NH	NORTH	36.4	0.6				2016-10	EX00102958L
00026	V03NH	NORTHEAST	35.8	-0.1				2016-10	EX001030087
00027	V03NH	EAST	32.3	-3.6				2016-10	EX00102927Q
00028	V03NH	SOUTHEAST	34.4	-1.4				2016-10	EX00102963U
00029	V03NH	SOUTH	30.4	-5.4				2016-10	EX00103000N
00030	V03NH	SOUTHWEST	31.9	-3.9				2016-10	EX00102974R
00031	V03NH	WEST	33.9	-1.9				2016-10	EX00103022H
00032	V03NH	NORTHWEST	28.8	-7.0				2016-10	EX001029600
00033	V03NH	SOUTH WASH	36.0	0.1	0.1	0.1	8.2	2016-10	EX00102996L
00035	V03NH	AIRPORT	35.3	-0.6	-0.6	-0.6	3.3	2016-10	EX00102979H
00036	V03NH	TUSAYAN	32.6	-3.2	-3.2	-3.2	-5.2	2016-10	EX00102993R
00037	V03NH		30.6	-5.3	-5.3	-5.3	-11.0	2016-10	EX001030582

ENVIRO RESTORATION GRP
STE 150 / NORTHEAST
8809 WASHINGTON ST
ALUQUERQUE, NM 87113

Report Date (YYYY-MM-DD)	2023-10-11
Page	1 of 1
Dosimeter Received	2023-10-10
QC Release	LCA
Analytical Work Order	2327900739

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Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 716005 Subaccount : 1448929 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:			2023-07-01 to	2023-09-30	Q3	2023			
00000	V03NH	Deploy Control						2016-10	EX00090762L
	V03NH	Control Dose Used	34.4						
00025	V03NH	NORTH	34.3	-0.2				2016-10	EX00058585H
00026	V03NH	NORTHEAST	30.0	-4.4				2016-10	EX00097354J
00027	V03NH	EAST	28.1	-6.3				2016-10	EX000956587
00028	V03NH	SOUTHEAST	33.8	-0.6				2016-10	EX00096103V
00029	V03NH	SOUTH	28.1	-6.4				2016-10	EX00065105Y
00030	V03NH	SOUTHWEST	33.6	-0.9				2016-10	EX00009807O
00031	V03NH	WEST	33.2	-1.3				2016-10	EX00097329C
00032	V03NH	NORTHWEST	29.9	-4.5				2016-10	EX00056595I
00033	V03NH	SOUTH WASH	42.0	7.6	7.6	7.7	15.7	2016-10	EX00095414N
00034	V03NH	OWL TANK	40.4	6.0	6.0	6.0	7.8	2016-10	EX00069246M
00035	V03NH	AIRPORT	32.3	-2.1	-2.1	-2.7	1.2	2016-10	EX00086306N
00036	V03NH	TUSAYAN	31.8	-2.7	-2.7	-5.9	-7.8	2016-10	EX00095382M
00037	V03NH		32.9	-1.6	-1.6	-6.9	-12.6	2016-10	EX000689881

ENVIRO RESTORATION GRP
STE 150 / NORTHEAST
8809 WASHINGTON ST
ALUQUERQUE, NM 87113

Report Date (YYYY-MM-DD)	2024-02-01
Page	1 of 1
Dosimeter Received	2024-01-29
QC Release	LCA
Analytical Work Order	2402301801

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Customer Service: (800) 323-8830
Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 716005 Subaccount : 1448929 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:			2023-10-01 to	2023-12-31	Q4	2023			
00000	V03NH	Deploy Control						2016-10	EX00091662M
	V03NH	Control Dose Used	49.4						
00025	V03NH	NORTH	45.1	-4.4				2016-10	EX000061645
00026	V03NH	NORTHEAST	41.5	-7.9				2016-10	EX000541027
00027	V03NH	EAST	40.0	-9.4				2016-10	EX000008241
00028	V03NH	SOUTHEAST	41.4	-8.0				2016-10	EX00091752L
00029	V03NH	SOUTH	39.1	-10.4				2016-10	EX00091163U
00030	V03NH	SOUTHWEST	39.1	-10.3				2016-10	EX00097110Z
00031	V03NH	WEST	43.4	-6.0				2016-10	EX00097050X
00032	V03NH	NORTHWEST	40.0	-9.4				2016-10	EX000816898
00033	V03NH	SOUTH WASH	49.3	-0.1	-0.1	7.6	15.7	2016-10	EX00069528E
00036	V03NH	TUSAYAN	43.5	-6.0	-6.0	-11.9	-13.8	2016-10	EX00081785E
00037	V03NH		40.5	-9.0	-9.0	-15.8	-21.5	2016-10	EX00097094L

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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Appendix B

Radon Laboratory Results

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REPORT NUMBER
6610708:1

REPORT DATE
07/20/2023

REPORT PAGE
1 of 2

PRINT DATE
07/20/2023

OWN ID
N/A

BY
ERG, Inc

REPORT RECEIVER(S)
chuckfarr@ergoffice.com

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed alpha-track detector (Rapidos®) following the measurement protocols given by AARST/ANSI.

The detector(s) arrived to Radonova Laboratories **07/14/2023**.
They were measured **07/20/2023**.

Test data have been given by CFarr

Property data and address

MEASURE SITE ADDRESS
Chuck Farr
EFRI Pinyon Plain Mine
n/a AZ

BUILDING ID

TRANSIT DETECTOR 1:
*581383 (5 ± 7 pCi*days/l)*

TRANSIT DETECTOR 2:
*773441 (9 ± 7 pCi*days/l)*

TRANSIT DETECTOR 3:
*566879 (3 ± 7 pCi*days/l)*

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
761452-2 [Rapidos®]	*04/05/2023 – 07/05/2023*	*Tusayan Airport*	*Out-door*	< 0.24 pCi/L
957671-1 [Rapidos®]	*04/06/2023 – 07/06/2023*	*South Wash*	*Out-door*	0.24 ± 0.14 pCi/L
675623-3 [Rapidos®]	*04/06/2023 – 07/06/2023*	*Onsite*	*Out-door*	< 0.24 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
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 the ANSI/AARST protocols. 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 (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. Detector deployment is not performed by Radonova Laboratories. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories by the end user. The presented results apply only to the samples tested.

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

Measurement method versions used when the report was created

ANSI/AARST MAH-2019, Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes
ANSI/AARST MAMF-2017, rev. 1/2021, Protocol for Conducting Measurements of Radon and Radon Decay Products in Multifamily Buildings
ANSI/AARST MALB-2014, rev. 1/2021, Prot. for Conducting Measurements of Radon and Radon Decay Products In Schools and Large Buildings

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories hereby certifies that the measurement procedures follows the guidance in accordance with the ANSI/AARST Measurement Protocols 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

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1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
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REPORT NUMBER
6631875:1

REPORT DATE
10/17/2023

REPORT PAGE
1 of 2

PRINT DATE
10/17/2023

OWN ID
N/A

BY
ERG, Inc

REPORT RECEIVER(S)
chuckfarr@ergoffice.com

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed alpha-track detector (Rapidos®) following the measurement protocols given by AARST/ANSI.

The detector(s) arrived to Radonova Laboratories **10/10/2023**.
They were measured **10/16/2023**.

Test data have been given by Chuck Farr

Property data and address

MEASURE SITE ADDRESS
EFRI Pinyon Plain Mine
Tusayan AZ 86023

BUILDING ID

TRANSIT DETECTOR 1:
*655069 (9 ± 7 pCi*days/l)*

TRANSIT DETECTOR 2:
*780181 (6 ± 7 pCi*days/l)*

TRANSIT DETECTOR 3:
*259073 (15 ± 7 pCi*days/l)*

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
287107-7 [Rapidos®]	*07/05/2023 – 10/03/2023*	*Airport*	*Out-door*	0.11 ± 0.06 pCi/L
960022-2 [Rapidos®]	*07/06/2023 – 10/04/2023*	*South Wash*	*Out-door*	0.49 ± 0.19 pCi/L
632426-3 [Rapidos®]	*07/06/2023 – 10/04/2023*	*Mine Site*	*Out-door*	0.16 ± 0.09 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

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ISO/IEC 17025

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RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
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 the ANSI/AARST protocols. 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 (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. Detector deployment is not performed by Radonova Laboratories. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories by the end user. The presented results apply only to the samples tested.

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

Measurement method versions used when the report was created

ANSI/AARST MAH-2023, Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes
ANSI/AARST MA-MFLB-2023, Protocol for Measurements of Radon in Multifamily, School, Commercial and Mixed-Use Buildings

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories hereby certifies that the measurement procedures follows the guidance in accordance with the ANSI/AARST Measurement Protocols 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

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REPORT NUMBER
6665025:1

REPORT DATE
01/30/2024

REPORT PAGE
1 of 2

PRINT DATE
01/30/2024

OWN ID
N/A

BY
ERG, Inc

REPORT RECEIVER(S)
chuckfarr@ergoffice.com

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed alpha-track detector (Rapidos®) following the measurement protocols given by AARST/ANSI.

The detector(s) arrived to Radonova Laboratories **01/23/2024**.
They were measured **01/28/2024**.

Test data have been given by Samantha Morley

Property data and address

MEASURE SITE ADDRESS
EFRI Pinyon Plain Mine
Tusayan AZ 86023

BUILDING ID

TRANSIT DETECTOR 1:
*384197 (1 ± 11 pCi*days/l)*

TRANSIT DETECTOR 2:
*666841 (5 ± 9 pCi*days/l)*

TRANSIT DETECTOR 3:
*159058 (0 ± 9 pCi*days/l)*

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	LOCATION TYPE	RADON RESULT
153415-5 [Rapidos®]	*10/03/2023 – 01/14/2024*	*Airport*	*Out-door*	0.30 ± 0.11 pCi/L
975162-9 [Rapidos®]	*10/04/2023 – 01/15/2024*	*South Wash*	*Out-door*	0.59 ± 0.14 pCi/L
683236-4 [Rapidos®]	*10/04/2023 – 01/15/2024*	*Onsite*	*Out-door*	0.41 ± 0.14 pCi/L

Comment to the results

Tryggve Rönnqvist (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
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 the ANSI/AARST protocols. 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 (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. Detector deployment is not performed by Radonova Laboratories. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories by the end user. The presented results apply only to the samples tested.

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

Measurement method versions used when the report was created

ANSI/AARST MAH-2023, Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes
ANSI/AARST MA-MFLB-2023, Protocol for Measurements of Radon in Multifamily, School, Commercial and Mixed-Use Buildings

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories hereby certifies that the measurement procedures follows the guidance in accordance with the ANSI/AARST Measurement Protocols 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.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
331.814.2200, help@radonova.com

Appendix C

Soil Sample Laboratory Results

ANALYTICAL SUMMARY REPORT

May 02, 2024

Environmental Restoration Group Inc
8809 Washington St NE
Albuquerque, NM 87113

Work Order: C23040281 Quote ID: C16198

Project Name: EFRI Pinyon Plain Quarterly

Energy Laboratories, Inc. Casper WY received the following 6 samples for Environmental Restoration Group Inc on 4/11/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C23040281-002	Litte Red Horse Wash	04/05/23 17:40	04/11/23	Solid	Metals by ICP/ICPMS, Total or Soluble Moisture Digestion, Total Metals Gamma Sample Preparation Digestion For RadioChemistry ELI_50-169 Drying/Grinding, Radiochemistry Gross Alpha, Gross Beta Gross Gamma Thorium, Isotopic
C23040281-003	Red Horse Wash	04/05/23 18:10	04/11/23	Solid	Same As Above
C23040281-004	Owl Tank	04/05/23 8:10	04/11/23	Solid	Same As Above
C23040281-005	South Wash	04/05/23 9:25	04/11/23	Solid	Same As Above
C23040281-006	NNW	04/05/23 11:35	04/11/23	Solid	Same As Above
C23040281-007	NNE	04/05/23 12:25	04/11/23	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Work Order: C23040281

Revised Date: 05/02/24
Report Date: 05/22/23

CASE NARRATIVE

Revised 5/2/24

The results for Uranium had been updated to show the actual value versus "ND" per the emailed request from Chuck Farr on 4/26/2023.

This revised report replaces any previously issued reports in its entirety.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E.Lyndale Ave., Helena, MT, EPA Number MT00945.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Lab ID: C23040281-002
Client Sample ID: Litte Red Horse Wash

Revised Date: 05/02/24
Report Date: 05/22/23
Collection Date: 04/05/23 17:40
DateReceived: 04/11/23
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	13.8	wt%		0.2		D2974	04/13/23 12:08 / eli-h
METALS, TOTAL							
Uranium	0.8	mg/kg	J	1	0.05	SW6020	04/18/23 12:05 / eli-h
RADIONUCLIDES, GAMMA							
Cesium 137	0.4	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Cesium 137 precision (±)	0.07	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Cesium 137 MDC	0.08	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Potassium 40	28.3	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Potassium 40 precision (±)	2.0	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Potassium 40 MDC	1.3	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Radium 226	1.2	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Thallium 208	0.5	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Thallium 208 precision (±)	0.09	pCi/g-dry				E901.1	05/03/23 11:57 / meh
Thallium 208 MDC	0.1	pCi/g-dry				E901.1	05/03/23 11:57 / meh
RADIONUCLIDES							
Gross Alpha	5.8	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha precision (±)	1.7	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha MDC	1.3	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta	7.6	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta precision (±)	1.1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta MDC	1.2	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Thorium 232	0.6	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec
Thorium 232 precision (±)	0.1	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec
Thorium 232 MDC	0.2	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec

Report Definitions:

RL - Analyte Reporting Limit
MDL - Method Detection Limit
MCL - Maximum Contaminant Level
QCL - Quality Control Limit
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Lab ID: C23040281-003
Client Sample ID: Red Horse Wash

Revised Date: 05/02/24
Report Date: 05/22/23
Collection Date: 04/05/23 18:10
DateReceived: 04/11/23
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	8.1	wt%		0.2		D2974	04/13/23 12:08 / eli-h
METALS, TOTAL							
Uranium	0.9	mg/kg	J	1	0.05	SW6020	04/18/23 12:08 / eli-h
RADIONUCLIDES, GAMMA							
Cesium 137	0.01	pCi/g-dry	U			E901.1	05/03/23 14:02 / meh
Cesium 137 precision (±)	0.09	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Cesium 137 MDC	0.1	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Potassium 40	28.0	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Potassium 40 precision (±)	2.3	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Potassium 40 MDC	1.4	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Radium 226	1.5	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Thallium 208	0.5	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Thallium 208 precision (±)	0.1	pCi/g-dry				E901.1	05/03/23 14:02 / meh
Thallium 208 MDC	0.1	pCi/g-dry				E901.1	05/03/23 14:02 / meh
RADIONUCLIDES							
Gross Alpha	5.9	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha precision (±)	1.8	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha MDC	1.5	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta	10.8	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta precision (±)	1.4	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta MDC	1.3	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Thorium 232	0.6	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec
Thorium 232 precision (±)	0.1	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec
Thorium 232 MDC	0.2	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec

Report Definitions:

RL - Analyte Reporting Limit
MDL - Method Detection Limit
MCL - Maximum Contaminant Level
QCL - Quality Control Limit
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
U - Not detected at Minimum Detectable Concentration (MDC)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Lab ID: C23040281-004
Client Sample ID: Owl Tank

Revised Date: 05/02/24
Report Date: 05/22/23
Collection Date: 04/05/23 08:10
DateReceived: 04/11/23
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	6.3	wt%		0.2		D2974	04/13/23 12:08 / eli-h
METALS, TOTAL							
Uranium	0.7	mg/kg	J	1	0.05	SW6020	04/18/23 12:10 / eli-h
RADIONUCLIDES, GAMMA							
Cesium 137	0.01	pCi/g-dry	U			E901.1	05/03/23 14:25 / meh
Cesium 137 precision (±)	0.07	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Cesium 137 MDC	0.1	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Potassium 40	22.2	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Potassium 40 precision (±)	1.6	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Potassium 40 MDC	1.1	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Radium 226	1.1	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Thallium 208	0.4	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Thallium 208 precision (±)	0.08	pCi/g-dry				E901.1	05/03/23 14:25 / meh
Thallium 208 MDC	0.1	pCi/g-dry				E901.1	05/03/23 14:25 / meh
RADIONUCLIDES							
Gross Alpha	4.1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha precision (±)	1.3	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha MDC	1.0	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta	6.4	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta precision (±)	1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta MDC	1.1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Thorium 232	0.6	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec
Thorium 232 precision (±)	0.1	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec
Thorium 232 MDC	0.4	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec

Report Definitions:

RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
U - Not detected at Minimum Detectable Concentration (MDC)
MDL - Method Detection Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Lab ID: C23040281-005
Client Sample ID: South Wash

Revised Date: 05/02/24
Report Date: 05/22/23
Collection Date: 04/05/23 09:25
DateReceived: 04/11/23
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	14.6	wt%		0.2		D2974	04/13/23 12:09 / eli-h
METALS, TOTAL							
Uranium	0.6	mg/kg	J	1	0.05	SW6020	04/18/23 12:13 / eli-h
RADIONUCLIDES, GAMMA							
Cesium 137	0.2	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Cesium 137 precision (±)	0.08	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Cesium 137 MDC	0.1	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Potassium 40	28.3	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Potassium 40 precision (±)	2.4	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Potassium 40 MDC	1.4	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Radium 226	1.5	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Radium 226 MDC	0.3	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Thallium 208	0.5	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Thallium 208 precision (±)	0.1	pCi/g-dry				E901.1	05/03/23 16:26 / meh
Thallium 208 MDC	0.1	pCi/g-dry				E901.1	05/03/23 16:26 / meh
RADIONUCLIDES							
Gross Alpha	6.1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha precision (±)	1.7	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha MDC	1.2	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta	9.3	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta precision (±)	1.2	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta MDC	1.1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Thorium 232	0.5	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec
Thorium 232 precision (±)	0.09	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec
Thorium 232 MDC	0.2	pCi/g-dry				A7500-U C	04/20/23 10:40 / sec

Report Definitions:
RL - Analyte Reporting Limit
MDL - Method Detection Limit
MCL - Maximum Contaminant Level
QCL - Quality Control Limit
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Lab ID: C23040281-006
Client Sample ID: NNW

Revised Date: 05/02/24
Report Date: 05/22/23
Collection Date: 04/05/23 11:35
DateReceived: 04/11/23
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	12.8	wt%		0.2		D2974	04/13/23 12:09 / eli-h
METALS, TOTAL							
Uranium	0.6	mg/kg	J	1	0.05	SW6020	04/18/23 12:15 / eli-h
RADIONUCLIDES, GAMMA							
Cesium 137	0.4	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Cesium 137 precision (±)	0.08	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Cesium 137 MDC	0.09	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Potassium 40	21.8	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Potassium 40 precision (±)	1.6	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Potassium 40 MDC	1	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Radium 226	1.3	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Thallium 208	0.4	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Thallium 208 precision (±)	0.08	pCi/g-dry				E901.1	05/03/23 16:28 / meh
Thallium 208 MDC	0.09	pCi/g-dry				E901.1	05/03/23 16:28 / meh
RADIONUCLIDES							
Gross Alpha	4.6	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha precision (±)	1.5	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Alpha MDC	1.2	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta	7.1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta precision (±)	1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Gross Beta MDC	1	pCi/g-dry				E900.0	04/22/23 01:34 / haw
Thorium 232	0.3	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec
Thorium 232 precision (±)	0.06	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec
Thorium 232 MDC	0.2	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec

Report Definitions:
RL - Analyte Reporting Limit
MDL - Method Detection Limit
MCL - Maximum Contaminant Level
QCL - Quality Control Limit
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Lab ID: C23040281-007
Client Sample ID: NNE

Revised Date: 05/02/24
Report Date: 05/22/23
Collection Date: 04/05/23 12:25
DateReceived: 04/11/23
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	10.5	wt%		0.2		D2974	04/13/23 12:09 / eli-h
METALS, TOTAL							
Uranium	0.5	mg/kg	J	1	0.05	SW6020	04/18/23 12:18 / eli-h
RADIONUCLIDES, GAMMA							
Cesium 137	0.01	pCi/g-dry	U			E901.1	05/04/23 09:53 / meh
Cesium 137 precision (±)	0.06	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Cesium 137 MDC	0.09	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Potassium 40	19.9	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Potassium 40 precision (±)	1.4	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Potassium 40 MDC	1	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Radium 226	1	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Radium 226 MDC	0.1	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Thallium 208	0.4	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Thallium 208 precision (±)	0.07	pCi/g-dry				E901.1	05/04/23 09:53 / meh
Thallium 208 MDC	0.08	pCi/g-dry				E901.1	05/04/23 09:53 / meh
RADIONUCLIDES							
Gross Alpha	3.3	pCi/g-dry				E900.0	04/24/23 22:16 / haw
Gross Alpha precision (±)	1.2	pCi/g-dry				E900.0	04/24/23 22:16 / haw
Gross Alpha MDC	1.3	pCi/g-dry				E900.0	04/24/23 22:16 / haw
Gross Beta	4.6	pCi/g-dry				E900.0	04/24/23 22:16 / haw
Gross Beta precision (±)	0.8	pCi/g-dry				E900.0	04/24/23 22:16 / haw
Gross Beta MDC	1.1	pCi/g-dry				E900.0	04/24/23 22:16 / haw
Thorium 232	0.3	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec
Thorium 232 precision (±)	0.06	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec
Thorium 232 MDC	0.1	pCi/g-dry				A7500-U C	04/20/23 10:41 / sec

Report Definitions:

RL - Analyte Reporting Limit
MDL - Method Detection Limit
MCL - Maximum Contaminant Level
QCL - Quality Control Limit
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
U - Not detected at Minimum Detectable Concentration (MDC)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Environmental Restoration Group Inc **Work Order:** C23040281 **Report Date:** 04/24/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **D2974**									Batch: PMOIST_230413_A	
Lab ID: **C23040281-007B DUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_23041			04/13/23 12:09	
Moisture		10.3	wt%	0.20				1.4	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Environmental Restoration Group Inc **Work Order:** C23040281 **Report Date:** 04/24/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS205-H_230418A	
Lab ID: **ICV**	Initial Calibration Verification Standard								04/18/23 10:29	
Uranium		0.0583	mg/L	0.00030	97	90	110			
Lab ID: **ICSA**	Interference Check Sample A								04/18/23 10:37	
Uranium		0.0000292	mg/L	0.00030						
Lab ID: **ICSAB**	Interference Check Sample AB								04/18/23 10:42	
Uranium		0.0000230	mg/L	0.00030		0	0			
Lab ID: **CCV**	Continuing Calibration Verification Standard								04/18/23 11:58	
Uranium		0.0506	mg/L	0.00030	101	90	110			
Lab ID: **CCV**	Continuing Calibration Verification Standard								04/18/23 12:30	
Uranium		0.0510	mg/L	0.00030	102	90	110			
Method: **SW6020**									Batch: 66091	
Lab ID: **MB-66091**	Method Blank				Run: ICPMS205-H_230418A				04/18/23 10:54	
Uranium		ND	mg/kg	0.02						
Lab ID: **LCS-66091**	Laboratory Control Sample				Run: ICPMS205-H_230418A				04/18/23 11:20	
Uranium		104	mg/kg	1.0	104	80.1	120.1			
Lab ID: **LFB-66091**	Laboratory Fortified Blank				Run: ICPMS205-H_230418A				04/18/23 11:23	
Uranium		52.7	mg/kg	1.0	108	80	120			
Lab ID: **C23040281-007BDIL**	Serial Dilution				Run: ICPMS205-H_230418A				04/18/23 12:20	
Uranium		0.435	mg/kg	1.0		0	0		10	N
Lab ID: **C23040281-007BPDS1**	Post Digestion/Distillation Spike				Run: ICPMS205-H_230418A				04/18/23 12:23	
Uranium		13.8	mg/kg	1.0	108	75	125			
Lab ID: **C23040281-007BMS**	Sample Matrix Spike				Run: ICPMS205-H_230418A				04/18/23 12:25	
Uranium		54.1	mg/kg	1.0	109	75	125			
Lab ID: **C23040281-007BMSD**	Sample Matrix Spike Duplicate				Run: ICPMS205-H_230418A				04/18/23 12:28	
Uranium		55.0	mg/kg	1.0	110	75	125	1.5	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

N - Analyte concentration was not sufficiently high to calculate a Relative Percent Difference (RPD) for the serial dilution test

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc **Work Order:** C23040281 **Report Date:** 05/09/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A7500-U C										Batch: 70333
Lab ID: MB-70333	3	Method Blank				Run: EGG-ORTEC_ALL_230417B				04/20/23 10:41
Thorium 232		0.005	pCi/g-dry							U
Thorium 232 precision (±)		0.008	pCi/g-dry							
Thorium 232 MDC		0.02	pCi/g-dry							
Lab ID: LCS5-70333	3	Laboratory Control Sample				Run: EGG-ORTEC_ALL_230417B				04/24/23 07:41
Thorium 230		5.0	pCi/g-dry		104	70	130			
Thorium 230 precision (±)		0.95	pCi/g-dry							
Thorium 230 MDC		0.20	pCi/g-dry							
Lab ID: C23040281-002AMS5	3	Sample Matrix Spike				Run: EGG-ORTEC_ALL_230417B				04/20/23 10:41
Thorium 230		2.8	pCi/g-dry		45	70	130			S
Thorium 230 precision (±)		0.53	pCi/g-dry							
Thorium 230 MDC		0.34	pCi/g-dry							
Lab ID: C23040281-002AMSD	3	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_ALL_230417B				04/20/23 10:40
Thorium 230		6.7	pCi/g-dry		127	70	130	82	30	R
Thorium 230 precision (±)		1.3	pCi/g-dry							
Thorium 230 MDC		1.7	pCi/g-dry							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 2.84.

Qualifiers:

RL - Analyte Reporting Limit
ND - Not detected at the Reporting Limit (RL)
R - Relative Percent Difference (RPD) exceeds advisory limit
S - Spike recovery outside of advisory limits
U - Not detected at Minimum Detectable Concentration (MDC)

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc **Work Order:** C23040281 **Report Date:** 05/09/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E900.0										Batch: 70333
Lab ID: Th230-GrAB-3169	3	Laboratory Control Sample				Run: G542M-2_230418A				04/22/23 01:34
Gross Alpha		100	pCi/L		103	70	130			
Gross Alpha precision (±)		21	pCi/L							
Gross Alpha MDC		3.4	pCi/L							
Lab ID: Sr90-GrAB-3169	3	Laboratory Control Sample				Run: G542M-2_230418A				04/22/23 01:34
Gross Beta		570	pCi/L		119	70	130			
Gross Beta precision (±)		58	pCi/L							
Gross Beta MDC		3.6	pCi/L							
Lab ID: MB-70333	6	Method Blank				Run: G542M-2_230418A				04/22/23 01:34
Gross Alpha		-0.05	pCi/g-dry							U
Gross Alpha precision (±)		0.03	pCi/g-dry							
Gross Alpha MDC		0.05	pCi/g-dry							
Gross Beta		-0.06	pCi/g-dry							U
Gross Beta precision (±)		0.05	pCi/g-dry							
Gross Beta MDC		0.09	pCi/g-dry							
Lab ID: C23040281-004AMS	3	Sample Matrix Spike				Run: G542M-2_230418A				04/22/23 01:34
Gross Alpha		970	pCi/g-dry		72	70	130			
Gross Alpha precision (±)		200	pCi/g-dry							
Gross Alpha MDC		44	pCi/g-dry							
Lab ID: C23040281-004AMSD	3	Sample Matrix Spike Duplicate				Run: G542M-2_230418A				04/22/23 01:34
Gross Alpha		1000	pCi/g-dry		79	70	130	8.4	30	
Gross Alpha precision (±)		210	pCi/g-dry							
Gross Alpha MDC		38	pCi/g-dry							
- The RER result is 0.29.										
Lab ID: C23040281-006AMS1	3	Sample Matrix Spike				Run: G542M-2_230418A				04/22/23 01:34
Gross Beta		6400	pCi/g-dry		116	70	130			
Gross Beta precision (±)		650	pCi/g-dry							
Gross Beta MDC		42	pCi/g-dry							
Lab ID: C23040281-006AMSD	3	Sample Matrix Spike Duplicate				Run: G542M-2_230418A				04/24/23 22:16
Gross Beta		6300	pCi/g-dry		114	70	130	1.8	30	
Gross Beta precision (±)		640	pCi/g-dry							
Gross Beta MDC		41	pCi/g-dry							
- The RER result is 0.12.										

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

U - Not detected at Minimum Detectable Concentration (MDC)

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc **Work Order:** C23040281 **Report Date:** 05/09/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1										Batch: R294108
Lab ID: LCS-R294108	6	Laboratory Control Sample				Run: GAM-HPGE 2_230501A				05/01/23 17:08
Cobalt 60		300	pCi/g-dry		96	70	130			
Cobalt 60 precision (±)		2.2	pCi/g-dry							
Cobalt 60 MDC		0.58	pCi/g-dry							
Lead 210		1600	pCi/g-dry		91	70	130			
Lead 210 precision (±)		12	pCi/g-dry							
Lead 210 MDC		10	pCi/g-dry							
Lab ID: MB-R294108	12	Method Blank				Run: GAM-HPGE 2_230501A				05/01/23 14:06
Cesium 137		0.01	pCi/g-dry							U
Cesium 137 precision (±)		0.04	pCi/g-dry							
Cesium 137 MDC		0.06	pCi/g-dry							
Potassium 40		1	pCi/g-dry							
Potassium 40 precision (±)		0.5	pCi/g-dry							
Potassium 40 MDC		0.7	pCi/g-dry							
Thallium 208		0.01	pCi/g-dry							U
Thallium 208 precision (±)		0.04	pCi/g-dry							
Thallium 208 MDC		0.07	pCi/g-dry							
Radium 226		-0.02	pCi/g-dry							U
Radium 226 precision (±)		0.1	pCi/g-dry							
Radium 226 MDC		0.1	pCi/g-dry							
Lab ID: C23040057-001ADUP	6	Sample Duplicate				Run: GAM-HPGE 2_230501A				05/02/23 12:03
Potassium 40		23	pCi/g-dry					7.1	30	
Potassium 40 precision (±)		2.5	pCi/g-dry							
Potassium 40 MDC		1.8	pCi/g-dry							
Radium 226		1.6	pCi/g-dry					1.2	30	
Radium 226 precision (±)		0.28	pCi/g-dry							
Radium 226 MDC		0.30	pCi/g-dry							

- The RER result for Ra226 is 0.05 and Ra228 is 0.07.

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

U - Not detected at Minimum Detectable Concentration (MDC)

Work Order Receipt Checklist

Environmental Restoration Group Inc C23040281

Login completed by:	Chrystal N. Sheaff	Date Received:	4/11/2023
Reviewed by:	cjohnson	Received by:	slr
Reviewed Date:	4/12/2023	Carrier name:	FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	18.0°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None

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Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

C23041028

Account Information (Billing information)

Company/Name	Environmental Restoration Group, Inc. (ERG)
Contact	Chuck Farr
Phone	505-298-4224
Mailing Address	Suite 150, 8809 Washington St. NE
City, State, Zip	Albuquerque, NM, 87113
Email	chuckfarr@ergoffice.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	EFRI 0229-03-03
Quote	16198_V2
Bottle Order	73640

Report Information (if different than Account Information)

Company/Name	Environmental Restoration Group, Inc. (ERG)
Contact	Chuck Farr
Phone	505-298-4224
Mailing Address	Suite 150, 8809 Washington St. NE
City, State, Zip	Albuquerque, NM, 87113
Email	chuckfarr@ergoffice.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats:
☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other Standard

Comments

Note that for E901.1 we need Ra-226, K-40, Tl-208, and Cs-137.

This is page 1 of 1 for Soils. There is another COC and shipment for one water sample in this order.

Project Information

Project Name, PWSID, Permit, etc.	EFRI Pinyon Plain Quarterly
Sampler Name	Chuck Farr
Sampler Phone	505-298-4224
Sample Origin State	AZ
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☐ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	E900.0 (Gross Alpha/Beta)	E901.1	A7500-U C	E6010.20	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Little Red Horse Wash	04/05/2023	5:40 pm	1	S	✔	✔	✔	✔			
2	Red Horse Wash	04/05/2023	6:10 pm	1	S	✔	✔	✔	✔			
3	Owl Tank	04/06/2023	8:10 am	1	S	✔	✔	✔	✔			
4	South Wash	04/06/2023	9:25 am	1	S	✔	✔	✔	✔			
5	NNW	04/06/2023	11:35 am	1	S	✔	✔	✔	✔			
6	NNE	04/06/2023	12:25 am	1	S	✔	✔	✔	✔			
7												
8												
9												

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	CHUCK FARR	4/10/23 1030			4-11-23	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				SHELBY RICHMS	940	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Appendix D

Water Sample Laboratory Results

ANALYTICAL SUMMARY REPORT

May 11, 2023

Environmental Restoration Group Inc
8809 Washington St NE
Albuquerque, NM 87113

Work Order: C23040287 Quote ID: C16198

Project Name: EFRI Pinyon Plain Quarterly

Energy Laboratories, Inc. Casper WY received the following 1 sample for Environmental Restoration Group Inc on 4/11/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C23040287-001	Owl Tank	04/06/23 8:20	04/11/23	Aqueous	Metals by ICP/ICPMS, Total Digestion, Total Metals Gamma Sample Preparation Gross Alpha, Gross Beta, Total Gross Gamma, Total Thorium, Isotopic, Total

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

CLIENT: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Work Order: C23040287

Report Date: 05/11/23

CASE NARRATIVE

Revised 01/03/2025:

The Cesium 137, Potassium 40, Thallium 208, Radium 226 results for sample Owl Tank (C23040287-001) analyzed by EPA method 901.1 are pCi/mL but the units incorrectly indicated the results as pCi/L due to a laboratory error.

The report is revised to show the correct units of pCi/mL.

The report has been revised and replaces the previously issued report dated 05/11/2023 in its entirety.

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Environmental Restoration Group Inc
Project: EFRI Pinyon Plain Quarterly
Lab ID: C23040287-001
Client Sample ID: Owl Tank

Report Date: 05/11/23
Collection Date: 04/06/23 08:20
DateReceived: 04/11/23
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By
METALS, TOTAL							
Uranium	0.0004	mg/L		0.0003	0.00003	SW6020	04/18/23 01:26 / eli-b
RADIONUCLIDES, GAMMA							
Cesium 137	-0.002	pCi/mL	U			E901.1	05/03/23 09:41 / haw
Cesium 137 precision (±)	0.01	pCi/mL				E901.1	05/03/23 09:41 / haw
Cesium 137 MDC	0.02	pCi/mL				E901.1	05/03/23 09:41 / haw
Potassium 40	-0.01	pCi/mL	U			E901.1	05/03/23 09:41 / haw
Potassium 40 precision (±)	0.1	pCi/mL				E901.1	05/03/23 09:41 / haw
Potassium 40 MDC	0.2	pCi/mL				E901.1	05/03/23 09:41 / haw
Radium 226	0.009	pCi/mL	U			E901.1	05/03/23 09:41 / haw
Radium 226 precision (±)	0.02	pCi/mL				E901.1	05/03/23 09:41 / haw
Radium 226 MDC	0.03	pCi/mL				E901.1	05/03/23 09:41 / haw
Thallium 208	-0.004	pCi/mL	U			E901.1	05/03/23 09:41 / haw
Thallium 208 precision (±)	0.01	pCi/mL				E901.1	05/03/23 09:41 / haw
Thallium 208 MDC	0.02	pCi/mL				E901.1	05/03/23 09:41 / haw
RADIONUCLIDES, TOTAL							
Gross Alpha	5.4	pCi/L				E900.0	04/20/23 00:05 / trs
Gross Alpha precision (±)	2.7	pCi/L				E900.0	04/20/23 00:05 / trs
Gross Alpha MDC	2.7	pCi/L				E900.0	04/20/23 00:05 / trs
Gross Beta	11.4	pCi/L				E900.0	04/20/23 00:05 / trs
Gross Beta precision (±)	2.2	pCi/L				E900.0	04/20/23 00:05 / trs
Gross Beta MDC	3.0	pCi/L				E900.0	04/20/23 00:05 / trs
Thorium 232	0.2	pCi/L	U			A7500-U C	05/02/23 12:43 / sec
Thorium 232 precision (±)	0.2	pCi/L				A7500-U C	05/02/23 12:43 / sec
Thorium 232 MDC	0.4	pCi/L				A7500-U C	05/02/23 12:43 / sec

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
MDL - Method Detection Limit
QCL - Quality Control Limit
U - Not detected

QA/QC Summary Report

Prepared by Casper, WY Branch

Work Order: C23040287 **Report Date:** 05/11/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A7500-U C									Batch: RA-TH-ISO-3607	
Lab ID: MB-RA-TH-ISO-3607	3	Method Blank				Run: EGG-ORTEC_ALL_230427A			05/02/23 12:43	
Thorium 232		0.02	pCi/L							U
Thorium 232 precision (±)		0.03	pCi/L							
Thorium 232 MDC		0.06	pCi/L							
Lab ID: LCS-RA-TH-ISO-3607	3	Laboratory Control Sample				Run: EGG-ORTEC_ALL_230427A			05/02/23 12:43	
Thorium 230		8.2	pCi/L		82	70	130			
Thorium 230 precision (±)		1.6	pCi/L							
Thorium 230 MDC		0.042	pCi/L							
Lab ID: C23040563-002ADUP	3	Sample Duplicate				Run: EGG-ORTEC_ALL_230427A			05/02/23 12:43	
Thorium 232		-0.021	pCi/L					240	30	UR
Thorium 232 precision (±)		0.31	pCi/L							
Thorium 232 MDC		1.0	pCi/L							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER is 0.48.

Qualifiers:

RL - Analyte Reporting Limit
R - Relative Percent Difference (RPD) exceeds advisory limit
ND - Not detected at the Reporting Limit (RL)
U - Not detected

QA/QC Summary Report

Prepared by Casper, WY Branch

Work Order: C23040287 **Report Date:** 05/11/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E900.0										Batch: GrAB-3168
Lab ID: Th230-GrAB-3168	3	Laboratory Control Sample				Run: TENNELEC-4_230413A				04/18/23 23:40
Gross Alpha		120	pCi/L		122	70	130			
Gross Alpha precision (±)		24	pCi/L							
Gross Alpha MDC		3.2	pCi/L							
Lab ID: Sr90-GrAB-3168	3	Laboratory Control Sample				Run: TENNELEC-4_230413A				04/18/23 23:40
Gross Beta		530	pCi/L		110	70	130			
Gross Beta precision (±)		54	pCi/L							
Gross Beta MDC		3.0	pCi/L							
Lab ID: MB-GrAB-3168	6	Method Blank				Run: TENNELEC-4_230413A				04/18/23 23:40
Gross Alpha		-3	pCi/L							U
Gross Alpha precision (±)		2	pCi/L							
Gross Alpha MDC		3	pCi/L							
Gross Beta		-0.6	pCi/L							U
Gross Beta precision (±)		2	pCi/L							
Gross Beta MDC		3	pCi/L							
Lab ID: C23040070-009AMS	3	Sample Matrix Spike				Run: TENNELEC-4_230413A				04/18/23 23:40
Gross Alpha		100	pCi/L		103	70	130			
Gross Alpha precision (±)		20	pCi/L							
Gross Alpha MDC		2.0	pCi/L							
Lab ID: C23040070-009AMSD	3	Sample Matrix Spike Duplicate				Run: TENNELEC-4_230413A				04/20/23 00:05
Gross Alpha		110	pCi/L		116	70	130	12	30	
Gross Alpha precision (±)		22	pCi/L							
Gross Alpha MDC		2.0	pCi/L							
- The RER result is 0.43.										
Lab ID: C23040225-002AMS1	3	Sample Matrix Spike				Run: TENNELEC-4_230413A				04/18/23 23:40
Gross Beta		580	pCi/L		120	70	130			
Gross Beta precision (±)		59	pCi/L							
Gross Beta MDC		3.2	pCi/L							
Lab ID: C23040225-002AMSD1	3	Sample Matrix Spike Duplicate				Run: TENNELEC-4_230413A				04/18/23 23:40
Gross Beta		570	pCi/L		119	70	130	0.5	30	
Gross Beta precision (±)		58	pCi/L							
Gross Beta MDC		2.8	pCi/L							
- The RER result is 0.04.										

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

U - Not detected

QA/QC Summary Report

Prepared by Casper, WY Branch

Work Order: C23040287 **Report Date:** 05/11/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1										Batch: R294170
Lab ID: MB-294170	12	Method Blank				Run: GAM-HPGE 3_230502A				05/02/23 18:04
Cesium 137		-0.007	pCi/mL							U
Cesium 137 precision (±)		0.01	pCi/mL							
Cesium 137 MDC		0.02	pCi/mL							
Potassium 40		-0.03	pCi/mL							U
Potassium 40 precision (±)		0.1	pCi/mL							
Potassium 40 MDC		0.2	pCi/mL							
Thallium 208		0.005	pCi/mL							U
Thallium 208 precision (±)		0.01	pCi/mL							
Thallium 208 MDC		0.01	pCi/mL							
Radium 226		0.02	pCi/mL							U
Radium 226 precision (±)		0.02	pCi/mL							
Radium 226 MDC		0.03	pCi/mL							
Lab ID: LCS-294170	6	Laboratory Control Sample				Run: GAM-HPGE 3_230502A				05/03/23 09:53
Americium 241		30	pCi/mL		112	70	130			
Americium 241 precision (±)		0.20	pCi/mL							
Americium 241 MDC		0.17	pCi/mL							
Cobalt 60		57	pCi/mL		112	70	130			
Cobalt 60 precision (±)		0.39	pCi/mL							
Cobalt 60 MDC		0.093	pCi/mL							
Lab ID: C23040287-001BDUP	12	Sample Duplicate				Run: GAM-HPGE 3_230502A				05/03/23 11:48
Cesium 137		0.0033	pCi/mL					540	30	UR
Cesium 137 precision (±)		0.0099	pCi/mL							
Cesium 137 MDC		0.015	pCi/mL							
Potassium 40		0.068	pCi/mL					270	30	UR
Potassium 40 precision (±)		0.12	pCi/mL							
Potassium 40 MDC		0.18	pCi/mL							
Thallium 208		-0.0033	pCi/mL					15	30	U
Thallium 208 precision (±)		0.011	pCi/mL							
Thallium 208 MDC		0.017	pCi/mL							
Radium 226		0.014	pCi/mL					45	30	UR
Radium 226 precision (±)		0.025	pCi/mL							
Radium 226 MDC		0.037	pCi/mL							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result for Cs137 is 0.34, K40 is 0.49 and Ra226 is 0.15. The RER result for TL-208 is 0.03.

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Environmental Restoration Group Inc **Work Order:** C23040287 **Report Date:** 04/19/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS208-B_230417A	
Lab ID: **ICSA**		Interference Check Sample A							04/18/23 04:48	
Uranium		0.0000638	mg/L	0.00030						
Lab ID: **ICSAB**		Interference Check Sample AB							04/18/23 04:54	
Uranium		0.0000501	mg/L	0.00030						
Lab ID: **QCS**		Initial Calibration Verification Standard							04/17/23 20:56	
Uranium		0.0490	mg/L	0.00030	98	90	110			
Method: **SW6020**									Batch: 177730	
Lab ID: **MB-177730**		Method Blank				Run: ICPMS208-B_230417A			04/17/23 23:08	
Uranium		ND	mg/L	0.00002						
Lab ID: **LCS4-177730**		Laboratory Control Sample				Run: ICPMS208-B_230417A			04/17/23 23:14	
Uranium		0.0909	mg/L	0.00030	91	80	120			
Lab ID: **B23040814-001CDIL**		Serial Dilution				Run: ICPMS208-B_230417A			04/17/23 23:58	
Uranium		0.00928	mg/L	0.0025				3.4	10	
Lab ID: **B23040814-001CPDS1**		Post Digestion/Distillation Spike				Run: ICPMS208-B_230417A			04/18/23 00:05	
Uranium		0.448	mg/L	0.00052	85	75	125			
Lab ID: **B23040814-001CMS4**		Sample Matrix Spike				Run: ICPMS208-B_230417A			04/18/23 00:11	
Uranium		0.198	mg/L	0.00050	94	75	125			
Lab ID: **B23040814-001CMSD**		Sample Matrix Spike Duplicate				Run: ICPMS208-B_230417A			04/18/23 00:17	
Uranium		0.199	mg/L	0.00050	95	75	125	0.8	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Environmental Restoration Group Inc C23040287

Login completed by: Chrystal N. Sheaff
Date Received: 4/11/2023
Reviewed by: cjohnson
Received by: slr
Reviewed Date: 4/13/2023
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	7.8°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

Time on samples are different than what is on the COC, the earliest time of collection was used to evaluate hold.

Laboratory Certifications and Accreditations

Current certificates are available at www.energylab.com website:

	Agency	Number
Billings, MT	Alaska	17-023
	California	3087
	Colorado	MT00005
	Department of Defense (DoD)/ISO17025	ADE-2588
	Florida (Primary NELAP)	E87668
	Idaho	MT00005
	Louisiana	05079
	Montana	CERT0044
	Nebraska	NE-OS-13-04
	Nevada	NV-C24-00250
	North Dakota	R-007
	National Radon Proficiency	109383-RMP
	Oregon	4184
	South Dakota	ARSD 74:04:07
	Texas	TX-C24-00302
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00170
	Washington	C1039
Casper, WY	Alaska	20-006
	California	3021
	Colorado	WY00002
	Florida (Primary NELAP)	E87641
	Idaho	WY00002
	Louisiana	05083
	Montana	CERT0002
	Nebraska	NE-OS-08-04
	Nevada	NV-C24-00245
	North Dakota	R-125
	Oregon	WY200001
	South Dakota	WY00002
	Texas	T104704181-23-21
	US EPA Region VIII	WY00002
	USNRC License	49-26846-01
	Washington	C1012
Gillette, WY	US EPA Region VIII	WY00006
Helena, MT	Colorado	MT00945
	Montana	CERT0079
	Nevada	NV-C24-00119
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00090

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Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

C2304028?

Account Information (Billing information)

Company/Name	Environmental Restoration Group, Inc. (ERG)
Contact	Chuck Farr
Phone	505-298-4224
Mailing Address	Suite 150, 8809 Washington St. NE
City, State, Zip	Albuquerque, NM, 87113
Email	chuckfarr@ergoffice.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	EFRI 0229-03-03
Quote	16198_V2
Bottle Order	73640

Report Information (if different than Account Information)

Company/Name	Environmental Restoration Group, Inc. (ERG)
Contact	Chuck Farr
Phone	505-298-4224
Mailing Address	Suite 150, 8809 Washington St. NE
City, State, Zip	Albuquerque, NM, 87113
Email	chuckfarr@ergoffice.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other Standard

Comments

Note that for E901.1 we need Ra-226, K-40, Tl-208, and Cs-137.

This is page 1 of 1 for Water. There is another COC and shipment for six soil samples in this order.

Project Information

Project Name, PWSID, Permit, etc.	EFRI Pinyon Plain Quarterly
Sampler Name	Chuck Farr
Sampler Phone	505-298-4224
Sample Origin State	AZ
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☐ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	E900.0 (Gross Alpha/Beta)	E901.1	A7500-U C	E6010.20	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Owl Tank	04/06/2023	8:35 am	1	W	✔	✔	✔	✔			
2												
3												
4												
5												
6												
7												
8												
9												

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	CHUCK FARR	4/10/23 10:30AM			4-11-23	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Richins	1040	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

ircumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.