

Data Validation Package

May 2012
Groundwater and Surface
Water Sampling at the
Rio Blanco, Colorado Site

December 2012

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Sampling Event Summary

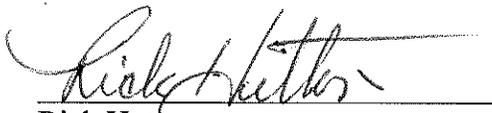
Site: Rio Blanco, Colorado, Site

Sampling Period: May 9–10, 2012

Annual sampling was conducted at the Rio Blanco, Colorado, site for the Long-Term Hydrologic Monitoring Program May 9–10, 2012, to monitor groundwater and surface water for potential radionuclide contamination. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated). A duplicate sample was collected from location Johnson Artesian WL. Samples were analyzed for gamma-emitting radionuclides by high-resolution gamma spectroscopy and for tritium using the conventional and enrichment methods. Results of this monitoring at the Rio Blanco site demonstrate that groundwater and surface water outside the site boundaries have not been affected by project-related contaminants.

Two sampling locations, B-1 Equity Camp and CER #1 Black Sulphur, yielded reportable values of tritium activity using the electrolytic enrichment tritium analysis method, with values of 12.7 and 13.6 picocuries per liter (pCi/L), respectively. Conventional tritium analysis for these and all other locations resulted in no detectable activity. These results are consistent with background levels for tritium, well below the EPA drinking water standard for tritium of 20,000 pCi/L.

All high-resolution gamma spectrometry results for cesium-137 were below detectable concentrations. The results from this sampling event indicate that groundwater and surface water supplies in the area have not been impacted by detonation-related contaminants.



Rick Hutton
Site Lead, S.M. Stoller Corporation

12-19-12
Date

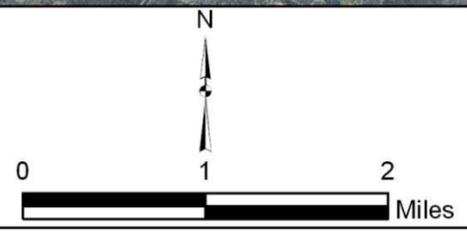
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Aerial Imagery: 2011 NIAP

LEGEND

- WELL TO BE SAMPLED
- SURFACE LOCATION TO BE SAMPLED
- EXISTING WELL
- - - SITE BOUNDARY



U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Planned Sampling Map Rio Blanco, CO, Site May 2012	
DATE PREPARED: April 3, 2012	FILENAME: S0885800

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Sampling Locations, Rio Blanco, Colorado, Site

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Rio Blanco, Colorado	Date(s) of Water Sampling	May 9-10, 2012
Date(s) of Verification	October 23, 2012	Name of Verifier	Gretchen Baer

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOPs, instructions.	Yes	Work Order letter dated April 9, 2012.
2. Were the sampling locations specified in the planning documents sampled?	Yes	
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	Pre-trip calibration was performed May 7, 2012.
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	Yes Yes	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Was the category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling? Did the water level stabilize prior to sampling? Did pH, specific conductance, and turbidity measurements stabilize prior to sampling? Was the flow rate less than 500 mL/min? If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	Yes Yes Yes Yes NA	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well: Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected from Johnson Artesian WL.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number? Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDSC) report?	Yes	Location ID 2612 was used for the duplicate sample.
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDSC) report?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the "Date Signed" fields (FDSC)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	NA	Sample chilling was not required.
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN): 12044516
Sample Event: May 9-10, 2012
Site(s): Rio Blanco, Colorado, Site
Laboratory: GEL Laboratories, Charleston, South Carolina
Work Order No.: 304371
Analysis: Radiochemistry
Validator: Gretchen Baer
Review Date: October 23, 2012

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) “Standard Practice for Validation of Laboratory Data.” The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Gamma Spectrometry	GAM-A-001	EPA 901.1	EPA 901.1
Tritium	LSC-A-001	EPA 906.0m	EPA 906.0m
Tritium, Enrichment Method	LMR-17	DOE EML HASL 300	DOE EML HASL 300

Data Qualifier Summary

None of the sample results required additional qualification.

Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received 16 water samples on May 15, 2012, accompanied by a Chain of Custody form. The Chain of Custody was checked to confirm that all of the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The Chain of Custody had no errors or omissions.

Preservation and Holding Times

The sample shipment was received intact at ambient temperature, which complies with requirements. All samples were analyzed within the applicable holding times. All samples were received in the correct container types and had been preserved correctly for the requested analyses with one exception. The gamma bottle for sample RB-D-01 was received unacidified. The laboratory adjusted the pH of the sample upon receipt. No data qualification or further corrective action is required.

Detection and Quantitation Limits

Radiochemical results are evaluated using the minimum detectable concentration (MDC), Decision Level Concentration (DLC), and Determination Limit (DL). The MDC is a measure of radiochemical method performance and was calculated and reported as specified in *Quality Systems for Analytical Services*. The DLC is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, and is estimated as 3 times the one-sigma total propagated uncertainty. Results that are greater than the MDC, but less than the DLC are qualified with a “U” flag (not detected). The DL for radiochemical results is the lowest concentration that can be reliably measured, and is defined as 3 times the MDC. Results not previously “U” qualified that are less than the DL are qualified with a “J” flag as estimated values.

An MDC for enriched tritium for sample CER #1 Black Sulphur was slightly above the requested limit; however, the sample result was above the MDC, so no corrective action is required. The reported MDCs for radiochemical analytes demonstrate compliance with contractual requirements.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods. All calibration and laboratory spike standards were prepared from independent sources.

Radiochemical Analysis

Tritium by Distillation

Instrument quench calibration curves were generated on August 31, 2011. Daily instrument checks performed on May 23 and June 22, 2012, met the acceptance criteria.

Enriched Tritium

Instrument quench calibration curves were generated on July 31, 2011. Daily instrument checks performed on July 19 and 20, 2012, met the acceptance criteria. The chemical recoveries were acceptable for all samples.

Gamma Spectrometry

The gamma spectrometry efficiency calibrations were performed within a year prior to sample analysis. All daily calibration and background check results met the acceptance criteria.

Method Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. All method blank results associated with the samples were below the DLC for all analytes.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate samples were analyzed for tritium as a measure of method performance in the sample matrix. All spike results were within the acceptance range.

Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. For radiochemical measurements, the relative error ratio (the ratio of the absolute difference between the sample and duplicate results and the sum of the 1-sigma uncertainties) is used to evaluate duplicate results. The relative error ratio for the replicate results was less than 3, indicating acceptable precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. All control sample results were acceptable.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Electronic Data Deliverable (EDD) File

A revised EDD file arrived on August 23, 2012, that included corrections to some filtration status fields. The Sample Management System EDD validation module was used to verify that the EDD files were complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM
General Data Validation Report

RIN: 12044516 Lab Code: GEN Validator: Gretchen Baer Validation Date: 10/23/2012
Project: Rio Blanco Site Analysis Type: Metals General Chem Rad Organics
of Samples: 16 Matrix: Water Requested Analysis Completed: Yes

Chain of Custody

Present: OK Signed: OK Dated: OK

Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

- Holding Times
- Detection Limits
- Field/Trip Blanks
- Field Duplicates

All analyses were completed within the applicable holding times.

There are 1 detection limit failures.

There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 12044516 Lab Code: GEN

Project: Rio Blanco Site

Validation Date: 10/23/2012

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
KFT 150	CER #1 Black Sulphur	304371001	LMR-17	DOE EML HASL 300	Tritium	13.6		3.05	3	pCi/L

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12044516 Lab Code: GEN Date Due: 8/13/2012
 Matrix: Water Site Code: RBL01 Date Completed: 8/13/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
CER #1 Black S	Actinium-228	06/03/2012						1.03
CER #1 Black S	Americium-241	06/03/2012						0.11
Blank_Spike	Americium-241	06/05/2012				105.00		
CER #1 Black S	Antimony-125	06/03/2012						0.52
CER #1 Black S	Cerium-144	06/03/2012						0.60
Blank_Spike	Cerium-144	06/05/2012						
CER #1 Black S	Cesium-134	06/03/2012						0.55
CER #1 Black S	Cesium-137	06/03/2012						0.28
Blank_Spike	Cesium-137	06/05/2012				101.00		
CER #1 Black S	Cobalt-60	06/03/2012						0.18
Blank_Spike	Cobalt-60	06/05/2012				101.00		
CER #1 Black S	Europium-152	06/03/2012						0.21
CER #1 Black S	Europium-154	06/03/2012						1.70
Blank_Spike	Europium-154	06/05/2012						
CER #1 Black S	Europium-155	06/03/2012						0.24
CER #1 Black S	Lead-212	06/03/2012						1.69
Blank_Spike	Lead-212	06/05/2012						
CER #1 Black S	Potassium-40	06/03/2012						0.01
CER #1 Black S	Promethium-144	06/03/2012						0.36
Blank_Spike	Promethium-144	06/05/2012						
CER #1 Black S	Promethium-146	06/03/2012						0.71
CER #1 Black S	Ruthenium-106	06/03/2012						0.06
Blank_Spike	Ruthenium-106	06/05/2012						
CER #1 Black S	Thorium-234	06/03/2012						0.52
CER #1 Black S	Tritium	05/23/2012						0.48
Blank_Spike	Tritium	05/23/2012				100.00		
CER #1 Black S	Tritium	05/23/2012					92.3	
Blank	Tritium	05/23/2012	-19.4000	U				
RB-D-03	Tritium	06/22/2012						0.32
Blank_Spike	Tritium	06/22/2012				79.40		
RB-D-03	Tritium	06/22/2012					92.7	
Blank	Tritium	06/22/2012	0	U				

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12044516 **Lab Code:** GEN **Date Due:** 8/13/2012
Matrix: Water **Site Code:** RBL01 **Date Completed:** 8/13/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
B-1 Equity Camp	Tritium	07/19/2012			63.0			
CER #1 Black S	Tritium	07/19/2012			63.0			
RB-D-01	Tritium	07/19/2012			63.0			
RB-W-01	Tritium	07/19/2012			63.0			
Blank_Spike	Tritium	07/20/2012			63.0	108.00		
Blank	Tritium	07/20/2012	1.7400	U	63.0			
CER #1 Black S	Uranium-235	06/03/2012						0.10
Blank_Spike	Uranium-235	06/05/2012						
CER #1 Black S	Uranium-238	06/03/2012						0.52
CER #1 Black S	Yttrium-88	06/03/2012						1.69
Blank_Spike	Yttrium-88	06/05/2012						

Sampling Quality Control Assessment

The following information summarizes and assesses quality control for this sampling event.

Sampling Protocol

Wells RB-D-01, RB-D-03, RB-S-03, and RB-W-01 were sampled using dedicated bladder pumps or a peristaltic pump with dedicated tubing. Data from these wells are qualified with an “F” flag in the database indicating the wells were purged and sampled using the low-flow sampling method. The data from well RB-W-01 were further qualified with a “Q” flag because this well was classified as Category II. All other sample locations were domestic wells or surface water locations.

Equipment Blank Assessment

Equipment blanks are prepared and analyzed to document contamination attributable to the sample collection process. An equipment blank was not required for this sampling event.

Field Duplicate Analysis

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. A duplicate sample was collected from location Johnson Artesian WL. For radiochemical measurements, the relative error ratio (the ratio of the absolute difference between the sample and duplicate results and the sum of the 1-sigma uncertainties) is used to evaluate duplicate results. The relative error ratio for the sample and duplicate was less than 3, indicating acceptable precision.

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

Page 1 of 1

RIN: 12044516 Lab Code: GEN Project: Rio Blanco Site Validation Date: 10/23/2012

Duplicate: 2612

Sample: Johnson Artesian WL

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Actinium-228	3.17	U	12.9	1.00	3.33	U	16.4	1.00		0	pCi/L
Americium-241	-13.9	U	23.1	1.00	5.31	U	13.6	1.00		1.4	pCi/L
Antimony-125	6.77	U	8.55	1.00	-0.438	U	9.44	1.00		1.1	pCi/L
Cerium-144	14.4	U	24.0	1.00	-7.92	U	21.5	1.00		1.4	pCi/L
Cesium-134	1.06	U	3.52	1.00	-1.28	U	3.66	1.00		0.9	pCi/L
Cesium-137	2.77	U	3.88	1.00	1.44	U	4.04	1.00		0.5	pCi/L
Cobalt-60	1.74	U	3.05	1.00	0.504	U	2.47	1.00		0.6	pCi/L
Europium-152	-4.2	U	9.36	1.00	-6.45	U	9.99	1.00		0.3	pCi/L
Europium-154	4.04	U	9.77	1.00	9.82	U	13.0	1.00		0.7	pCi/L
Europium-155	3.49	U	11.7	1.00	-1.62	U	11.2	1.00		0.6	pCi/L
Lead-212	4.13	U	10.5	1.00	-1.18	U	7.75	1.00		0.8	pCi/L
Potassium-40	-10.6	U	43.2	1.00	-52.6	U	63.8	1.00		1.1	pCi/L
Promethium-144	-1.47	U	3.23	1.00	-0.745	U	3.40	1.00		0.3	pCi/L
Promethium-146	1.87	U	3.61	1.00	2.44	U	4.83	1.00		0.2	pCi/L
Ruthenium-106	18.0	U	31.0	1.00	8.97	U	35.3	1.00		0.4	pCi/L
Thorium-234	-87	U	222	1.00	7.19	U	132	1.00		0.7	pCi/L
Tritium	72.6	U	193	1.00	-55.8	U	175	1.00		1.0	pCi/L
Uranium-235	15.8	U	26.0	1.00	-1.92	U	21.3	1.00		1.0	pCi/L
Uranium-238	-87	U	222	1.00	7.19	U	132	1.00		0.7	pCi/L
Yttrium-88	0.525	U	3.68	1.00	-3.4	U	5.49	1.00		1.2	pCi/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the SEEPro database reports are defined on the last page of each report. All data in this package are considered validated and available for use.

Laboratory Coordinator: Steve Donovan 12-19-2012
Steve Donovan Date

Data Validation Lead: Gretchen Baer 12/19/12
Gretchen Baer Date

Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

Potential outliers are measurements that are extremely large or small relative to the rest of the data and, therefore, are suspected of misrepresenting the population from which they were collected. Potential outliers may result from transcription errors, data-coding errors, or measurement system problems. However, outliers may also represent true extreme values of a distribution and indicate more variability in the population than was expected.

Statistical outlier tests give probabilistic evidence that an extreme value does not "fit" with the distribution of the remainder of the data and is therefore a statistical outlier. These tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set.

There are three steps involved in identifying extreme values or outliers:

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the environmental database. The application compares the new data set (in standard environmental database units) with historical data and lists the new data that fall outside the historical data range. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition.

There were no potential outliers identified, and the data for this event are acceptable as qualified.

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Attachment 2

Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Brennan Windmill WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	0	-	0	-1.29	U		#	21.1	11.7
Americium-241	pCi/L	05/09/2012	N001	0	-	0	3.95	U		#	17.9	10.8
Antimony-125	pCi/L	05/09/2012	N001	0	-	0	0.504	U		#	14.6	8.09
Cerium-144	pCi/L	05/09/2012	N001	0	-	0	-15.5	U		#	29.6	19.6
Cesium-134	pCi/L	05/09/2012	N001	0	-	0	3.02	U		#	6.74	3.53
Cesium-137	pCi/L	05/09/2012	N001	0	-	0	-0.472	U		#	6.16	3.36
Cobalt-60	pCi/L	05/09/2012	N001	0	-	0	-1.11	U		#	4.7	2.63
Europium-152	pCi/L	05/09/2012	N001	0	-	0	-5.67	U		#	13.5	8.43
Europium-154	pCi/L	05/09/2012	N001	0	-	0	-3.77	U		#	14.2	8.11
Europium-155	pCi/L	05/09/2012	N001	0	-	0	11.9	U		#	18.2	11.1
Lead-212	pCi/L	05/09/2012	N001	0	-	0	5.5	U		#	10.1	8.3
pH	s.u.	05/09/2012	N001	0	-	0	7.17			#		
Potassium-40	pCi/L	05/09/2012	N001	0	-	0	-11.5	U		#	73.7	37.7
Promethium-144	pCi/L	05/09/2012	N001	0	-	0	1.06	U		#	4.86	2.48
Promethium-146	pCi/L	05/09/2012	N001	0	-	0	-1.55	U		#	6.03	3.6
Ruthenium-106	pCi/L	05/09/2012	N001	0	-	0	-0.69	U		#	42.4	22.3
Specific Conductance	umhos/cm	05/09/2012	N001	0	-	0	2280			#		
Temperature	C	05/09/2012	N001	0	-	0	12			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Brennan Windmill WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Thorium-234	pCi/L	05/09/2012	N001	0	-	0	62.8	U		#	149	146
Tritium	pCi/L	05/09/2012	N001	0	-	0	-54.5	U		#	360	171
Turbidity	NTU	05/09/2012	N001	0	-	0	3.25			#		
Uranium-235	pCi/L	05/09/2012	N001	0	-	0	-4.35	U		#	31.9	18.9
Uranium-238	pCi/L	05/09/2012	N001	0	-	0	62.8	U		#	149	146
Yttrium-88	pCi/L	05/09/2012	N001	0	-	0	-3.44	U		#	4.15	3.35

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Johnson Artesian WL WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	0 - 0	3.17	U		#	25.4	12.9
Actinium-228	pCi/L	05/09/2012	N002	0 - 0	3.33	U		#	33	16.4
Americium-241	pCi/L	05/09/2012	N001	0 - 0	-13.9	U		#	37.9	23.1
Americium-241	pCi/L	05/09/2012	N002	0 - 0	5.31	U		#	25	13.6
Antimony-125	pCi/L	05/09/2012	N001	0 - 0	6.77	U		#	15.8	8.55
Antimony-125	pCi/L	05/09/2012	N002	0 - 0	-438	U		#	17.3	9.44
Cerium-144	pCi/L	05/09/2012	N001	0 - 0	14.4	U		#	41.2	24
Cerium-144	pCi/L	05/09/2012	N002	0 - 0	-7.92	U		#	35.8	21.5
Cesium-134	pCi/L	05/09/2012	N001	0 - 0	1.06	U		#	6.78	3.52
Cesium-134	pCi/L	05/09/2012	N002	0 - 0	-1.28	U		#	6.6	3.66
Cesium-137	pCi/L	05/09/2012	N001	0 - 0	2.77	U		#	7.33	3.88
Cesium-137	pCi/L	05/09/2012	N002	0 - 0	1.44	U		#	8.07	4.04
Cobalt-60	pCi/L	05/09/2012	N001	0 - 0	1.74	U		#	6.5	3.05
Cobalt-60	pCi/L	05/09/2012	N002	0 - 0	0.504	U		#	5.93	2.47
Europium-152	pCi/L	05/09/2012	N001	0 - 0	-4.2	U		#	15.7	9.36
Europium-152	pCi/L	05/09/2012	N002	0 - 0	-6.45	U		#	16.1	9.99
Europium-154	pCi/L	05/09/2012	N001	0 - 0	4.04	U		#	19.9	9.77
Europium-154	pCi/L	05/09/2012	N002	0 - 0	9.82	U		#	28.1	13

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Johnson Artesian WL WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Europium-155	pCi/L	05/09/2012	N001	0 - 0	3.49	U		#	20.6	11.7
Europium-155	pCi/L	05/09/2012	N002	0 - 0	-1.62	U		#	19.5	11.2
Lead-212	pCi/L	05/09/2012	N001	0 - 0	4.13	U		#	15.2	10.5
Lead-212	pCi/L	05/09/2012	N002	0 - 0	-1.18	U		#	14.1	7.75
pH	s.u.	05/09/2012	N001	0 - 0	8.26			#		
Potassium-40	pCi/L	05/09/2012	N001	0 - 0	-10.6	U		#	81.8	43.2
Potassium-40	pCi/L	05/09/2012	N002	0 - 0	-52.6	U		#	100	63.8
Promethium-144	pCi/L	05/09/2012	N001	0 - 0	-1.47	U		#	5.51	3.23
Promethium-144	pCi/L	05/09/2012	N002	0 - 0	-0.745	U		#	6.32	3.4
Promethium-146	pCi/L	05/09/2012	N001	0 - 0	1.87	U		#	7.05	3.61
Promethium-146	pCi/L	05/09/2012	N002	0 - 0	2.44	U		#	9.21	4.83
Ruthenium-106	pCi/L	05/09/2012	N001	0 - 0	18	U		#	59.5	31
Ruthenium-106	pCi/L	05/09/2012	N002	0 - 0	8.97	U		#	69.8	35.3
Specific Conductance	umhos /cm	05/09/2012	N001	0 - 0	2325			#		
Temperature	C	05/09/2012	N001	0 - 0	14			#		
Thorium-234	pCi/L	05/09/2012	N001	0 - 0	-87	U		#	377	222
Thorium-234	pCi/L	05/09/2012	N002	0 - 0	7.19	U		#	240	132
Tritium	pCi/L	05/09/2012	N001	0 - 0	72.6	U		#	354	193

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Johnson Artesian WL WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Tritium	pCi/L	05/09/2012	N002	0 - 0	-55.8	U		#	368	175
Turbidity	NTU	05/09/2012	N001	0 - 0	1.93			#		
Uranium-235	pCi/L	05/09/2012	N001	0 - 0	15.8	U		#	40.1	26
Uranium-235	pCi/L	05/09/2012	N002	0 - 0	-1.92	U		#	36.7	21.3
Uranium-238	pCi/L	05/09/2012	N001	0 - 0	-87	U		#	377	222
Uranium-238	pCi/L	05/09/2012	N002	0 - 0	7.19	U		#	240	132
Yttrium-88	pCi/L	05/09/2012	N001	0 - 0	0.525	U		#	7.8	3.68
Yttrium-88	pCi/L	05/09/2012	N002	0 - 0	-3.4	U		#	9.14	5.49

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-D-01 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)			Lab	Data	QA		
Actinium-228	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	-2.55	U	F	#	21.7	11.8
Americium-241	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	-25.7	U	F	#	30.3	22.9
Antimony-125	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	-.762	U	F	#	13.7	7.52
Cerium-144	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	1.13	U	F	#	38	22.1
Cesium-134	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	0.365	U	F	#	5.67	3.06
Cesium-137	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	1.21	U	F	#	5.45	2.89
Cobalt-60	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	0.379	U	F	#	4.9	2.45
Europium-152	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	6.16	U	F	#	17.3	9.41
Europium-154	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	-.109	U	F	#	16.3	8.64
Europium-155	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	4.84	U	F	#	21.4	11.9
Lead-212	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	-2.67	U	F	#	11	6.67
pH	s.u.	05/10/2012	N001	16628. 77	- 16628. 77	7.46		F	#		
Potassium-40	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	39.1	U	F	#	66.2	45.4
Promethium-144	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	-.688	U	F	#	4.69	2.67
Promethium-146	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	-2.67	U	F	#	5.74	3.59
Ruthenium-106	pCi/L	05/10/2012	N001	16628. 77	- 16628. 77	14.8	U	F	#	47.7	25.2
Specific Conductance	umhos/cm	05/10/2012	N001	16628. 77	- 16628. 77	23100		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-D-01 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)			Lab	Data	QA		
Temperature	C	05/10/2012	N001	16628. 77	- 77	18.1		F	#		
Thorium-234	pCi/L	05/10/2012	N001	16628. 77	- 77	76.4	U	F	#	303	177
Tritium	pCi/L	05/10/2012	N001	16628. 77	- 77	-95.2	U	F	#	316	131
Tritium	pCi/L	05/10/2012	N001	16628. 77	- 77	-473	U	F	#	2.32	1.26
Turbidity	NTU	05/10/2012	N001	16628. 77	- 77	4.92		F	#		
Uranium-235	pCi/L	05/10/2012	N001	16628. 77	- 77	0	UI	F	#	37.5	64.1
Uranium-238	pCi/L	05/10/2012	N001	16628. 77	- 77	76.4	U	F	#	303	177
Yttrium-88	pCi/L	05/10/2012	N001	16628. 77	- 77	0.786	U	F	#	6.87	3.32

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-D-03 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	0 - 0	0.112	U	F	#	22.3	11.6
Americium-241	pCi/L	05/09/2012	N001	0 - 0	15.9	U	F	#	38.8	21.8
Antimony-125	pCi/L	05/09/2012	N001	0 - 0	1.54	U	F	#	12.4	6.64
Cerium-144	pCi/L	05/09/2012	N001	0 - 0	-6.96	U	F	#	31.5	19
Cesium-134	pCi/L	05/09/2012	N001	0 - 0	1.04	U	F	#	5.5	2.78
Cesium-137	pCi/L	05/09/2012	N001	0 - 0	1.01	U	F	#	4.91	2.47
Cobalt-60	pCi/L	05/09/2012	N001	0 - 0	-2.05	U	F	#	4.79	2.97
Europium-152	pCi/L	05/09/2012	N001	0 - 0	-2.6	U	F	#	13.8	7.94
Europium-154	pCi/L	05/09/2012	N001	0 - 0	-829	U	F	#	14.8	7.64
Europium-155	pCi/L	05/09/2012	N001	0 - 0	-3.94	U	F	#	16.9	10.1
Lead-212	pCi/L	05/09/2012	N001	0 - 0	1.16	U	F	#	10.7	10.3
pH	s.u.	05/09/2012	N001	0 - 0	9		F	#		
Potassium-40	pCi/L	05/09/2012	N001	0 - 0	1.27	U	F	#	82.5	42.7
Promethium-144	pCi/L	05/09/2012	N001	0 - 0	0.515	U	F	#	4.83	2.5
Promethium-146	pCi/L	05/09/2012	N001	0 - 0	-4.09	U	F	#	5.48	4.02
Ruthenium-106	pCi/L	05/09/2012	N001	0 - 0	-17.9	U	F	#	41	25.2
Specific Conductance	umhos /cm	05/09/2012	N001	0 - 0	900		F	#		
Temperature	C	05/09/2012	N001	0 - 0	11.4		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-D-03 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Thorium-234	pCi/L	05/09/2012	N001	0	-	0	-216	U	F	#	341	226
Tritium	pCi/L	05/09/2012	N001	0	-	0	-91.6	U	F	#	356	161
Turbidity	NTU	05/09/2012	N001	0	-	0	3.38		F	#		
Uranium-235	pCi/L	05/09/2012	N001	0	-	0	12.6	U	F	#	35.3	20.8
Uranium-238	pCi/L	05/09/2012	N001	0	-	0	-216	U	F	#	341	226
Yttrium-88	pCi/L	05/09/2012	N001	0	-	0	0.134	U	F	#	5.72	2.62

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-S-03 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)			Lab	Data	QA		
Actinium-228	pCi/L	05/10/2012	N001	16628.75	- 16628.75	1.78	U	F	#	22.7	12.2
Americium-241	pCi/L	05/10/2012	N001	16628.75	- 16628.75	2.87	U	F	#	32.7	19.5
Antimony-125	pCi/L	05/10/2012	N001	16628.75	- 16628.75	1.01	U	F	#	14.6	7.95
Cerium-144	pCi/L	05/10/2012	N001	16628.75	- 16628.75	1.88	U	F	#	33.1	18.7
Cesium-134	pCi/L	05/10/2012	N001	16628.75	- 16628.75	1.16	U	F	#	5.85	2.98
Cesium-137	pCi/L	05/10/2012	N001	16628.75	- 16628.75	0.718	U	F	#	4.68	2.34
Cobalt-60	pCi/L	05/10/2012	N001	16628.75	- 16628.75	2.24	U	F	#	5.34	2.39
Europium-152	pCi/L	05/10/2012	N001	16628.75	- 16628.75	1.78	U	F	#	15.6	8.46
Europium-154	pCi/L	05/10/2012	N001	16628.75	- 16628.75	-.192	U	F	#	14.1	7.05
Europium-155	pCi/L	05/10/2012	N001	16628.75	- 16628.75	0.0996	U	F	#	18.8	10.6
Lead-212	pCi/L	05/10/2012	N001	16628.75	- 16628.75	-3.7	U	F	#	9.44	5.73
pH	s.u.	05/10/2012	N001	16628.75	- 16628.75	8.42		F	#		
Potassium-40	pCi/L	05/10/2012	N001	16628.75	- 16628.75	5.73	U	F	#	77.4	38
Promethium-144	pCi/L	05/10/2012	N001	16628.75	- 16628.75	-2.38	U	F	#	3.97	2.65
Promethium-146	pCi/L	05/10/2012	N001	16628.75	- 16628.75	1.93	U	F	#	6.23	3.3
Ruthenium-106	pCi/L	05/10/2012	N001	16628.75	- 16628.75	-8.31	U	F	#	40.6	22.5
Specific Conductance	umhos/cm	05/10/2012	N001	16628.75	- 16628.75	910		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-S-03 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)			Lab	Data	QA		
Temperature	C	05/10/2012	N001	16628.75	- 16628.75	12.9		F	#		
Thorium-234	pCi/L	05/10/2012	N001	16628.75	- 16628.75	123	U	F	#	278	233
Tritium	pCi/L	05/10/2012	N001	16628.75	- 16628.75	-72.8	U	F	#	356	165
Turbidity	NTU	05/10/2012	N001	16628.75	- 16628.75	3.67		F	#		
Uranium-235	pCi/L	05/10/2012	N001	16628.75	- 16628.75	-15.3	U	F	#	33	22
Uranium-238	pCi/L	05/10/2012	N001	16628.75	- 16628.75	123	U	F	#	278	233
Yttrium-88	pCi/L	05/10/2012	N001	16628.75	- 16628.75	1.29	U	F	#	7.74	3.63

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-W-01 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	0	-	0	9.79	U	FQ	#	22	12.2
Americium-241	pCi/L	05/09/2012	N001	0	-	0	-.375	U	FQ	#	16.3	9.16
Antimony-125	pCi/L	05/09/2012	N001	0	-	0	-.545	U	FQ	#	11.3	6.23
Cerium-144	pCi/L	05/09/2012	N001	0	-	0	4.57	U	FQ	#	32.5	18.7
Cesium-134	pCi/L	05/09/2012	N001	0	-	0	-.347	U	FQ	#	4.85	2.59
Cesium-137	pCi/L	05/09/2012	N001	0	-	0	2.2	U	FQ	#	5.81	3.06
Cobalt-60	pCi/L	05/09/2012	N001	0	-	0	-.105	U	FQ	#	6.15	2.95
Europium-152	pCi/L	05/09/2012	N001	0	-	0	-.254	U	FQ	#	13.5	7.44
Europium-154	pCi/L	05/09/2012	N001	0	-	0	-3.07	U	FQ	#	12.9	7.48
Europium-155	pCi/L	05/09/2012	N001	0	-	0	-3.6	U	FQ	#	15.1	9.06
Lead-212	pCi/L	05/09/2012	N001	0	-	0	3.41	U	FQ	#	9.09	6.57
pH	s.u.	05/09/2012	N001	0	-	0	8.37		FQ	#		
Potassium-40	pCi/L	05/09/2012	N001	0	-	0	9.79	U	FQ	#	69.1	32.8
Promethium-144	pCi/L	05/09/2012	N001	0	-	0	-.562	U	FQ	#	4.19	2.28
Promethium-146	pCi/L	05/09/2012	N001	0	-	0	0.39	U	FQ	#	5.17	2.77
Ruthenium-106	pCi/L	05/09/2012	N001	0	-	0	-3.34	U	FQ	#	34.8	19.5
Specific Conductance	umhos/cm	05/09/2012	N001	0	-	0	1510		FQ	#		
Temperature	C	05/09/2012	N001	0	-	0	11.4		FQ	#		
Thorium-234	pCi/L	05/09/2012	N001	0	-	0	-112	U	FQ	#	167	113
Tritium	pCi/L	05/09/2012	N001	0	-	0	2.53	U	FQ	#	2.55	1.63

Groundwater Quality Data by Location (USEE100) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: RB-W-01 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Tritium	pCi/L	05/09/2012	N001	0	-	0	198	U	FQ	#	302	192
Turbidity	NTU	05/09/2012	N001	0	-	0	89.6		FQ	#		
Uranium-235	pCi/L	05/09/2012	N001	0	-	0	-15.8	U	FQ	#	31.2	20.9
Uranium-238	pCi/L	05/09/2012	N001	0	-	0	-112	U	FQ	#	167	113
Yttrium-88	pCi/L	05/09/2012	N001	0	-	0	2.22	U	FQ	#	6.54	2.95

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

- F Low flow sampling method used.
- L Less than 3 bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- G Possible grout contamination, pH > 9.
- Q Qualitative result due to sampling technique.
- X Location is undefined.
- J Estimated value.
- R Unusable result.

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

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Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: B-1 Equity Camp SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	-10.5	U	#		19.7	12.1
Americium-241	pCi/L	05/09/2012	N001	14.6	U	#		22.7	13.4
Antimony-125	pCi/L	05/09/2012	N001	2.01	U	#		11.9	6.34
Cerium-144	pCi/L	05/09/2012	N001	2.76	U	#		31.8	18.3
Cesium-134	pCi/L	05/09/2012	N001	1.43	U	#		5.15	2.56
Cesium-137	pCi/L	05/09/2012	N001	-1.78	U	#		4.11	2.5
Cobalt-60	pCi/L	05/09/2012	N001	-0.0238	U	#		4.11	2.07
Europium-152	pCi/L	05/09/2012	N001	0.822	U	#		11.5	6.12
Europium-154	pCi/L	05/09/2012	N001	5.64	U	#		16.6	8.28
Europium-155	pCi/L	05/09/2012	N001	-4.97	U	#		15.3	9.38
Lead-212	pCi/L	05/09/2012	N001	-0.136	U	#		8.77	4.98
pH	s.u.	05/09/2012	N001	7.63		#			
Potassium-40	pCi/L	05/09/2012	N001	16.1	U	#		33.6	32.4
Promethium-144	pCi/L	05/09/2012	N001	0.365	U	#		4.32	2.21
Promethium-146	pCi/L	05/09/2012	N001	-2.35	U	#		5.52	3.47
Ruthenium-106	pCi/L	05/09/2012	N001	-3.52	U	#		40.9	23
Specific Conductance	umhos/cm	05/09/2012	N001	1120		#			
Temperature	C	05/09/2012	N001	10.9		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: B-1 Equity Camp SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Thorium-234	pCi/L	05/09/2012	N001	-90.7	U	#	204	131
Tritium	pCi/L	05/09/2012	N001	76.3	U	#	319	174
Tritium	pCi/L	05/09/2012	N001	12.7		#	2.72	2.79
Turbidity	NTU	05/09/2012	N001	1.54		#		
Uranium-235	pCi/L	05/09/2012	N001	-5.48	U	#	28.1	17.5
Uranium-238	pCi/L	05/09/2012	N001	-90.7	U	#	204	131
Yttrium-88	pCi/L	05/09/2012	N001	0.158	U	#	4.39	1.93

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: CER #1 Black Sulphur SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	4.8	U	#		17.7	8.83
Americium-241	pCi/L	05/09/2012	N001	8.29	U	#		18.2	11.6
Antimony-125	pCi/L	05/09/2012	N001	-5.77	U	#		10.4	7.01
Cerium-144	pCi/L	05/09/2012	N001	8.53	U	#		30.4	17.2
Cesium-134	pCi/L	05/09/2012	N001	-0.443	U	#		4.7	2.54
Cesium-137	pCi/L	05/09/2012	N001	0.429	U	#		4.57	2.36
Cobalt-60	pCi/L	05/09/2012	N001	-0.374	U	#		4.69	2.41
Europium-152	pCi/L	05/09/2012	N001	2.06	U	#		13.7	7.53
Europium-154	pCi/L	05/09/2012	N001	-5.71	U	#		11.3	7.21
Europium-155	pCi/L	05/09/2012	N001	-1.91	U	#		15	8.39
Lead-212	pCi/L	05/09/2012	N001	4.17	U	#		8.74	6.25
pH	s.u.	05/09/2012	N001	7.58		#			
Potassium-40	pCi/L	05/09/2012	N001	-1.12	U	#		63.1	32.6
Promethium-144	pCi/L	05/09/2012	N001	-0.476	U	#		3.72	2.02
Promethium-146	pCi/L	05/09/2012	N001	-1.09	U	#		5.46	3.22
Ruthenium-106	pCi/L	05/09/2012	N001	-6.7	U	#		38.4	21.3
Specific Conductance	umhos/cm	05/09/2012	N001	1665		#			
Temperature	C	05/09/2012	N001	10.3		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: CER #1 Black Sulphur SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Thorium-234	pCi/L	05/09/2012	N001	5.46	U	#	179	155	
Tritium	pCi/L	05/09/2012	N001	13.6		#	3.05	3.06	
Tritium	pCi/L	05/09/2012	N001	57.6	U	#	325	173	
Turbidity	NTU	05/09/2012	N001	3.14		#			
Uranium-235	pCi/L	05/09/2012	N001	-3.07	U	#	29.4	19.2	
Uranium-238	pCi/L	05/09/2012	N001	5.46	U	#	179	155	
Yttrium-88	pCi/L	05/09/2012	N001	-1.32	U	#	5.63	3.15	

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: CER #4 Black Sulphur SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	5.15	U	#		23.7	12.2
Americium-241	pCi/L	05/09/2012	N001	-2.21	U	#		34.1	21.8
Antimony-125	pCi/L	05/09/2012	N001	-2.36	U	#		15.3	8.69
Cerium-144	pCi/L	05/09/2012	N001	5.91	U	#		37	21.6
Cesium-134	pCi/L	05/09/2012	N001	0.828	U	#		7.19	3.77
Cesium-137	pCi/L	05/09/2012	N001	1.92	U	#		5.87	3.09
Cobalt-60	pCi/L	05/09/2012	N001	-.357	U	#		5.71	3.04
Europium-152	pCi/L	05/09/2012	N001	1.36	U	#		16.7	9.06
Europium-154	pCi/L	05/09/2012	N001	4.52	U	#		18.5	9.19
Europium-155	pCi/L	05/09/2012	N001	0.319	U	#		20.9	11.9
Lead-212	pCi/L	05/09/2012	N001	-1.71	U	#		10.5	6.09
pH	s.u.	05/09/2012	N001	7.56		#			
Potassium-40	pCi/L	05/09/2012	N001	-9.04	U	#		77.1	38.9
Promethium-144	pCi/L	05/09/2012	N001	0.519	U	#		5.62	2.93
Promethium-146	pCi/L	05/09/2012	N001	3.55	U	#		7.85	4.32
Ruthenium-106	pCi/L	05/09/2012	N001	5.48	U	#		45.2	23.8
Specific Conductance	umhos/cm	05/09/2012	N001	1425		#			
Temperature	C	05/09/2012	N001	11		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: CER #4 Black Sulphur SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Thorium-234	pCi/L	05/09/2012	N001	157	U	#	282	236	
Tritium	pCi/L	05/09/2012	N001	-18.9	U	#	356	177	
Turbidity	NTU	05/09/2012	N001	6.56		#			
Uranium-235	pCi/L	05/09/2012	N001	-5.69	U	#	36.8	24.6	
Uranium-238	pCi/L	05/09/2012	N001	157	U	#	282	236	
Yttrium-88	pCi/L	05/09/2012	N001	-1.36	U	#	6.76	3.69	

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek #1 SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/10/2012	N001	12.7	U	#		23.5	12.4
Americium-241	pCi/L	05/10/2012	N001	8.4	U	#		51.5	29.7
Antimony-125	pCi/L	05/10/2012	N001	3.21	U	#		15.8	8.48
Cerium-144	pCi/L	05/10/2012	N001	-8.27	U	#		37.6	22
Cesium-134	pCi/L	05/10/2012	N001	1.14	U	#		5.49	2.74
Cesium-137	pCi/L	05/10/2012	N001	0.558	U	#		5.52	2.85
Cobalt-60	pCi/L	05/10/2012	N001	-1.02	U	#		4.53	2.5
Europium-152	pCi/L	05/10/2012	N001	3.66	U	#		17	9.16
Europium-154	pCi/L	05/10/2012	N001	5.79	U	#		15.8	7.26
Europium-155	pCi/L	05/10/2012	N001	4.5	U	#		21.2	11.7
Lead-212	pCi/L	05/10/2012	N001	4.76	U	#		12.2	8.91
pH	s.u.	05/10/2012	N001	7.56		#			
Potassium-40	pCi/L	05/10/2012	N001	0.32	U	#		80.4	42.5
Promethium-144	pCi/L	05/10/2012	N001	-.538	U	#		5	2.72
Promethium-146	pCi/L	05/10/2012	N001	-.621	U	#		6.87	3.85
Ruthenium-106	pCi/L	05/10/2012	N001	5.58	U	#		45.9	23.4
Specific Conductance	umhos/cm	05/10/2012	N001	1655		#			
Temperature	C	05/10/2012	N001	11.6		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek #1 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Thorium-234	pCi/L	05/10/2012	N001	-182	U	#	429	265
Tritium	pCi/L	05/10/2012	N001	71.6	U	#	350	191
Turbidity	NTU	05/10/2012	N001	3.25		#		
Uranium-235	pCi/L	05/10/2012	N001	19.1	U	#	38.6	24.9
Uranium-238	pCi/L	05/10/2012	N001	-182	U	#	429	265
Yttrium-88	pCi/L	05/10/2012	N001	2.46	U	#	8.81	4.16

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek #3 SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	-9.2	U	#		18.4	11.3
Americium-241	pCi/L	05/09/2012	N001	-4.05	U	#		21.4	13.5
Antimony-125	pCi/L	05/09/2012	N001	0.108	U	#		12.6	6.78
Cerium-144	pCi/L	05/09/2012	N001	1.61	U	#		30	16.8
Cesium-134	pCi/L	05/09/2012	N001	-.238	U	#		5	2.62
Cesium-137	pCi/L	05/09/2012	N001	3.46	U	#		4.79	3.16
Cobalt-60	pCi/L	05/09/2012	N001	-.241	U	#		4.6	2.3
Europium-152	pCi/L	05/09/2012	N001	6.56	U	#		14.5	7.85
Europium-154	pCi/L	05/09/2012	N001	-4	U	#		12.2	7
Europium-155	pCi/L	05/09/2012	N001	1.87	U	#		16.4	9.09
Lead-212	pCi/L	05/09/2012	N001	0.56	U	#		9.85	6.93
pH	s.u.	05/09/2012	N001	7.65		#			
Potassium-40	pCi/L	05/09/2012	N001	-26.7	U	#		59.4	35.8
Promethium-144	pCi/L	05/09/2012	N001	0.614	U	#		5	2.57
Promethium-146	pCi/L	05/09/2012	N001	0.363	U	#		5.85	3.14
Ruthenium-106	pCi/L	05/09/2012	N001	6.61	U	#		45.6	24.3
Specific Conductance	umhos/cm	05/09/2012	N001	1475		#			
Temperature	C	05/09/2012	N001	9.5		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek #3 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Thorium-234	pCi/L	05/09/2012	N001	37.3	U	#	209	239
Tritium	pCi/L	05/09/2012	N001	54.1	U	#	357	191
Turbidity	NTU	05/09/2012	N001	1.32		#		
Uranium-235	pCi/L	05/09/2012	N001	-11.6	U	#	30.7	19.3
Uranium-238	pCi/L	05/09/2012	N001	37.3	U	#	209	239
Yttrium-88	pCi/L	05/09/2012	N001	0.547	U	#	6.58	3.14

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 500ft Dwn SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	10.5	U	#		31.3	16.5
Americium-241	pCi/L	05/09/2012	N001	-10.7	U	#		35.2	21.3
Antimony-125	pCi/L	05/09/2012	N001	-2.6	U	#		16.1	9.43
Cerium-144	pCi/L	05/09/2012	N001	10.2	U	#		41	22.4
Cesium-134	pCi/L	05/09/2012	N001	2.11	U	#		6.87	3.5
Cesium-137	pCi/L	05/09/2012	N001	0.353	U	#		5.38	2.78
Cobalt-60	pCi/L	05/09/2012	N001	-.924	U	#		5.9	3.2
Europium-152	pCi/L	05/09/2012	N001	8.49	U	#		18	10.1
Europium-154	pCi/L	05/09/2012	N001	-7.07	U	#		13.9	9.11
Europium-155	pCi/L	05/09/2012	N001	-4.37	U	#		19.6	11.9
Lead-212	pCi/L	05/09/2012	N001	1.11	U	#		11.9	6.59
pH	s.u.	05/09/2012	N001	8.4		#			
Potassium-40	pCi/L	05/09/2012	N001	-5.43	U	#		73.7	38.8
Promethium-144	pCi/L	05/09/2012	N001	1.06	U	#		5.94	3.1
Promethium-146	pCi/L	05/09/2012	N001	-2.94	U	#		6.17	3.83
Ruthenium-106	pCi/L	05/09/2012	N001	4.53	U	#		55.2	29.1
Specific Conductance	umhos/cm	05/09/2012	N001	1480		#			
Temperature	C	05/09/2012	N001	13.9		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 500ft Dwn SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Thorium-234	pCi/L	05/09/2012	N001	-70.2	U	#	320	194
Tritium	pCi/L	05/09/2012	N001	-53.9	U	#	355	169
Turbidity	NTU	05/09/2012	N001	4.71		#		
Uranium-235	pCi/L	05/09/2012	N001	-12.9	U	#	40.1	23.6
Uranium-238	pCi/L	05/09/2012	N001	-70.2	U	#	320	194
Yttrium-88	pCi/L	05/09/2012	N001	-.396	U	#	6.93	3.39

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 500ft Ups SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	8.89	U	#		21.2	10.9
Americium-241	pCi/L	05/09/2012	N001	-1.58	U	#		21.4	12.5
Antimony-125	pCi/L	05/09/2012	N001	6.21	U	#		14.3	7.55
Cerium-144	pCi/L	05/09/2012	N001	-5.14	U	#		31.2	17.7
Cesium-134	pCi/L	05/09/2012	N001	0.173	U	#		5.14	2.69
Cesium-137	pCi/L	05/09/2012	N001	-1.35	U	#		4.18	2.48
Cobalt-60	pCi/L	05/09/2012	N001	-.555	U	#		4.78	2.52
Europium-152	pCi/L	05/09/2012	N001	2.59	U	#		14	7.67
Europium-154	pCi/L	05/09/2012	N001	6.75	U	#		15.6	7.18
Europium-155	pCi/L	05/09/2012	N001	2.15	U	#		17.1	9.29
Lead-212	pCi/L	05/09/2012	N001	0	UI	#		11.3	10.9
pH	s.u.	05/09/2012	N001	8.41		#			
Potassium-40	pCi/L	05/09/2012	N001	12.7	U	#		69	33.2
Promethium-144	pCi/L	05/09/2012	N001	-.745	U	#		4.62	2.59
Promethium-146	pCi/L	05/09/2012	N001	0.00404	U	#		6.18	3.29
Ruthenium-106	pCi/L	05/09/2012	N001	-15.2	U	#		39.4	24
Specific Conductance	umhos/cm	05/09/2012	N001	1475		#			
Temperature	C	05/09/2012	N001	13.8		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 500ft Ups SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Thorium-234	pCi/L	05/09/2012	N001	36.2	U	#	216	127
Tritium	pCi/L	05/09/2012	N001	-71.8	U	#	351	163
Turbidity	NTU	05/09/2012	N001	4.52		#		
Uranium-235	pCi/L	05/09/2012	N001	-1.83	U	#	33.5	18.8
Uranium-238	pCi/L	05/09/2012	N001	36.2	U	#	216	127
Yttrium-88	pCi/L	05/09/2012	N001	0.141	U	#	6.27	2.94

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 6800ft Up SURFACE LOCATION

Parameter	Units	Sample		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Data	QA		
Actinium-228	pCi/L	05/09/2012	N001	2.73	U	#		22.1	11.7
Americium-241	pCi/L	05/09/2012	N001	-.484	U	#		22.7	12.2
Antimony-125	pCi/L	05/09/2012	N001	-.903	U	#		10.8	5.85
Cerium-144	pCi/L	05/09/2012	N001	2.74	U	#		31	17.2
Cesium-134	pCi/L	05/09/2012	N001	-1.21	U	#		3.94	2.42
Cesium-137	pCi/L	05/09/2012	N001	2.26	U	#		4.94	2.55
Cobalt-60	pCi/L	05/09/2012	N001	0.431	U	#		6.02	3.01
Europium-152	pCi/L	05/09/2012	N001	3.25	U	#		14.2	7.51
Europium-154	pCi/L	05/09/2012	N001	-1.21	U	#		9.45	4.69
Europium-155	pCi/L	05/09/2012	N001	-3.06	U	#		15.2	8.73
Lead-212	pCi/L	05/09/2012	N001	6	U	#		10.9	8.7
pH	s.u.	05/09/2012	N001	7.55		#			
Potassium-40	pCi/L	05/09/2012	N001	-4.44	U	#		61	29.4
Promethium-144	pCi/L	05/09/2012	N001	-.478	U	#		4.73	2.54
Promethium-146	pCi/L	05/09/2012	N001	0.42	U	#		5.67	3.01
Ruthenium-106	pCi/L	05/09/2012	N001	19.3	U	#		42.2	21.7
Specific Conductance	umhos/cm	05/09/2012	N001	1395		#			
Temperature	C	05/09/2012	N001	10.9		#			

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 6800ft Up SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Thorium-234	pCi/L	05/09/2012	N001	-156	U	#	226	148
Tritium	pCi/L	05/09/2012	N001	-33.7	U	#	342	166
Turbidity	NTU	05/09/2012	N001	1.63		#		
Uranium-235	pCi/L	05/09/2012	N001	4.74	U	#	31	18.5
Uranium-238	pCi/L	05/09/2012	N001	-156	U	#	226	148
Yttrium-88	pCi/L	05/09/2012	N001	1.82	U	#	7.18	3.3

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 8400ft Dw SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Actinium-228	pCi/L	05/10/2012	0001	-14.1	U		#	22.2	15.3
Americium-241	pCi/L	05/10/2012	0001	2.42	U		#	9.7	6.04
Antimony-125	pCi/L	05/10/2012	0001	0.581	U		#	14.6	7.69
Cerium-144	pCi/L	05/10/2012	0001	-20.2	U		#	27	19
Cesium-134	pCi/L	05/10/2012	0001	1.13	U		#	6.78	3.33
Cesium-137	pCi/L	05/10/2012	0001	0.837	U		#	7.17	3.84
Cobalt-60	pCi/L	05/10/2012	0001	-.386	U		#	7.29	3.71
Europium-152	pCi/L	05/10/2012	0001	12	U		#	18.5	10.4
Europium-154	pCi/L	05/10/2012	0001	-1.39	U		#	18.9	9.56
Europium-155	pCi/L	05/10/2012	0001	-.561	U		#	13.8	7.54
Lead-212	pCi/L	05/10/2012	0001	-4.9	U		#	11.3	6.75
pH	s.u.	05/10/2012	N001	8.15			#		
Potassium-40	pCi/L	05/10/2012	0001	-32.8	U		#	73.2	48.6
Promethium-144	pCi/L	05/10/2012	0001	0.0507	U		#	6.27	3.24
Promethium-146	pCi/L	05/10/2012	0001	0.554	U		#	6.31	3.26
Ruthenium-106	pCi/L	05/10/2012	0001	-7.21	U		#	49.3	27.8
Specific Conductance	umhos/cm	05/10/2012	N001	1530			#		
Temperature	C	05/10/2012	N001	11.9			#		

Surface Water Quality Data by Location (USEE102) FOR SITE RBL01, Rio Blanco Site

REPORT DATE: 11/28/2012

Location: Fawn Creek 8400ft Dw SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Thorium-234	pCi/L	05/10/2012	0001	24.2	U	#	85.1	68.4
Tritium	pCi/L	05/10/2012	0001	-93.2	U	#	362	164
Turbidity	NTU	05/10/2012	N001	25.2		#		
Uranium-235	pCi/L	05/10/2012	0001	-10.1	U	#	28.7	18.5
Uranium-238	pCi/L	05/10/2012	0001	24.2	U	#	85.1	68.4
Yttrium-88	pCi/L	05/10/2012	0001	0.877	U	#	9.13	4.28

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

- F Low flow sampling method used.
- L Less than 3 bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- G Possible grout contamination, pH > 9.
- Q Qualitative result due to sampling technique.
- X Location is undefined.
- J Estimated value.
- R Unusable result.

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

Attachment 3
Sampling and Analysis Work Order

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established 1959

Task Order LM00-502
Control Number 12-0538

April 9, 2012

U.S. Department of Energy
Office of Legacy Management
ATTN: Art Kleinrath
Site Manager
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
May 2012 Environmental Sampling at Rio Blanco, Colorado, Site

REFERENCE: Task Order LM00-502-07-618, Rio Blanco, Colorado, Site

Dear Mr. Kleinrath:

The purpose of this letter is to inform you of the upcoming sampling event at Rio Blanco, Colorado. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Rio Blanco site. Water quality data will be collected from monitoring wells and surface locations at this site as part of the routine environmental sampling scheduled to begin the week of May 7, 2012.

The following lists show the locations scheduled for sampling during this event.

Monitor Wells

On-site

RB-D-01 RB-D-03 RB-S-03 RB-W-01

Off-site

Johnson Artesian WL Brennan Windmill

Surface Water

On-Site

Fawn Creek 500ft Dwn Fawn Creek 500ft Ups

Off-Site

B-1 Equity Camp CER #1 Black Sulphur CER #4 Black Sulphur Fawn Creek #1
Fawn Creek #3 Fawn Creek 6800ft Up Fawn Creek 8400ft Dw

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Notification for access to locations on private property will be conducted prior to the beginning of fieldwork.

The S.M. Stoller Corporation 2597 Legacy Way Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

Art Kleinrath
Control Number 12-0538
Page 2

Please contact me at (970) 248-6477 with any questions.

Sincerely,



Rick Hutton
Site lead

RH/lcg/dc
Enclosures (3)

cc: (electronic)
Karl Stoeckle, DOE
Steve Donovan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
rc-grand, junction
File: RBL 410.02(A)

**Sampling Frequencies for Locations at
Rio Blanco, Colorado**

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
On-Site						
RB-D-01			X			
RB-D-03			X			
RB-S-03			X			
RB-W-01			X			
Off-Site						
Johnson Artesian WL			X			
Brennan Windmill			X			
Surface Locations						
On-Site						
Fawn Creek 500ft Dwn			X			
Fawn Creek 500ft Ups			X			
Off-Site						
B-1 Equity Camp			X			
CER #1 Black Sulphur			X			
CER #4 Black Sulphur			X			
Fawn Creek #1			X			
Fawn Creek #3			X			
Fawn Creek 6800ft Up			X			
Fawn Creek 8400ft Dw			X			

Sampling conducted in May

RIO BLANCO

On-site Location	Depth (ft)	Sample Analytes		Comment
		Tritium*	Gamma Spec	
Wells				
RB-D-01	1651	X	X	
RB-D-03		X	X	
RB-S-03	820	X	X	
RB-W-01		X	X	shallow
Surface				
Fawn Creek 500ft Dwn		X	X	
Fawn Creek 500ft Ups		X	X	

Also collect field measurements for specific conductivity, pH, & T.

*25% of tritium samples are analyzed by the enriched tritium method.

RIO BLANCO

Off-site Location	Sample Analytes		Comment
	Tritium*	Gamma Spec	
Wells			
Johnson Artesian WL	X	X	
Brennan Windmill	X	X	
Surface			
B-1 Equity Camp	X	X	
CER #1 Black Sulphur	X	X	
CER #4 Black Sulphur	X	X	
Fawn Creek #1	X	X	
Fawn Creek #3	X	X	
Fawn Creek 6800ft Up	X	X	
Fawn Creek 8400ft Dw	X	X	

Also collect field measurements for specific conductivity, pH, & T.

* 25% of tritium samples are analyzed by the enriched tritium method.

Attachment 4 Trip Report

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Memorandum

Control Number N/A

DATE: May 17, 2012
 TO: Rick Hutton
 FROM: Jeff Price
 SUBJECT: Trip Report (LTHMP Sampling)

Site: Rio Blanco, CO

Dates of Sampling Event: May 9-10, 2012.

Team Members: Lauren Goodknight, David Atkinson, and Jeff Price.

Number of Locations Sampled: 2 on-site wells, 4 private wells, and 9 surface locations.

Locations Not Sampled/Reason: None.

Quality Control Sample Cross Reference: The following is the false identification assigned to the quality control sample:

False Id	True Id	Sample Type	Associated Matrix	Ticket Number
2612	Johnson Artesian Well	Duplicate	Groundwater	KFT 162

RIN Number Assigned: Samples were assigned to RIN 12044516.

Sample Shipment: Samples were shipped to GEL Laboratories on May 14, 2012.

Water Level Measurements: Water levels are presented in the following table.

Site Code	Well ID	Date	Time	DTW (ft)	Comments
RBL01	RB-W-01	5/09/2012	12:05	18.65	Peristaltic.
RBL01	RB-D-03	5/09/2012	12:30	4.23	Peristaltic.
RBL01	RB-S-03	5/10/2012	11:44	39.44	Dedicated bladder pump.
RBL01	RB-D-01	5/10/2012	10:00	56.65	Dedicated bladder pump & drop tube.

DTW = Depth to Water (all measurements obtained from north top of casing)
 Ft = Feet
 ID = Identification

Trip Summary

Lauren Goodknight and Jeff Price drove from the Grand Junction office to the Rio Blanco site and began sampling on May 9, 2012. David Atkinson and Jeff Price returned the next day and completed the sampling. All samples will be analyzed by GEL Laboratories for tritium and gamma spec; a select set of sample locations will also be analyzed for enriched tritium. Copies of the sample collection logs, field data sheets, and chain of custody documentation are maintained at the Grand Junction office. In general, the sampling event went well, the weather was pleasant, and all samples were collected in accordance with the LM sampling and analysis plan.

Sample Locations

RB-D-01 (On-site well)	B-1 Equity Camp (Surface Location)
RB-S-03 (On-site well)	CER #1 Black Sulphur (Surface Location)
RB-D-03 (Private well)	CER #4 Black Sulphur (Surface Location)
RB-W-01 (Private well)	Fawn Creek #1 (Surface Location)
Johnson Artesian Well (Private well)	Fawn Creek #3 (Surface Location)
Brennan Windmill (Private well)	Fawn Creek 6800ft Up (Surface Location)
Fawn Creek 500ft Dwn (Surface Location)	Fawn Creek 8400ft Dw (Surface Location)
Fawn Creek 500ft Ups (Surface Location)	

(JP/lcg)

cc: (electronic)
Art Kleinrath, DOE
Steve Donovan, Stoller
Jack Duray, Stoller
Rick Findlay, Stoller
Bev Gallagher, Stoller
Rex Hodges, Stoller
Rick Hutton, Stoller
Mark Plessinger, Stoller
EDD Delivery