LMS/RFL/S01112

WM-0DD62

Data Validation Package

November 2012 Groundwater and Surface Water Sampling at the Old and New Rifle, Colorado, Processing Sites

February 2013

U.S. DEPARTMENT OF ENERGY Legacy Management

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Data Validation Package for the Old and New Rifle, Colorado, Sites, November 2012

The U.S. Department of Energy (DOE) has prepared a Data Validation Package containing the groundwater and surface water monitoring data generated from the November 2012 sampling event at the Old and New Rifle, Colorado, Sites. This package includes worksheets and reports that document the sampling activities and validation procedures conducted. **At your request, you are receiving a hard copy of the report.**

The report can also be found on the Internet at the DOE Office of Legacy Management (LM) website – www.lm.doe.gov. From the LM website home page, select Rifle Sites from the drop-down box (Select a Site) above the United States map icon titled Legacy Management Sites. Then select Rifle New Processing Site or Rifle Old Processing from that page. The report will be available on the Rifle New Processing Site and Rifle Old Processing Site pages of the LM website under Site Documents and Links.

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Sampling Event Summary

Site: Old and New Rifle, Colorado, Processing Sites

Sampling Period: November 12–20, 2012

Forty–five water samples were collected at New Rifle and Old Rifle, Colorado, Processing Sites. Old Rifle CMT monitoring-well ports 0742-1 and 0743-1, and surface water location 0452 at New Rifle were dry and could not be sampled. New Rifle locations 0609 and 0680 were added to this sampling event. Additionally, samples were collected from select Old Rifle and New Rifle locations for the analysis of major anion and cations, stable hydrogen and oxygen isotope ratios, and uranium isotopes. Duplicate samples were collected from New Rifle locations 0620 and 0855, and Old Rifle location 0742-2. One equipment blank was collected. 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).

New Rifle Site

Samples were collected at the New Rifle site from 19 monitoring wells and 6 surface locations in compliance with the 2008 *Ground Water Compliance Action Plan for the New Rifle, Colorado, Processing Site*. Water levels were measured at each sampled well.

The contaminants of concern (COCs) at the New Rifle site are arsenic, molybdenum, nitrate + nitrite as nitrogen, selenium, uranium, and vanadium. All COCs except vanadium have a remedial action goal of the U.S. Environmental Protection Agency (EPA) groundwater standard or background concentration; an alternate concentration limit (ACL) of 50 milligrams per liter (mg/L) has been proposed for vanadium. The groundwater monitoring wells were sampled to monitor plume movement and natural flushing. Wells with contaminant concentrations that exceeded either the EPA groundwater standards or the maximum background concentration, whichever is greater, are listed in Table 1.

Time-concentration graphs from the locations sampled are included with the analytical data. Concentrations of the COCs are stable or decreasing at most locations.

The surface water locations were sampled to monitor the impact of groundwater discharge. No large variations in the data were noted with the contaminant concentrations at the two Colorado River surface water locations (0322 and 0324) remaining low, indicating no impact due to groundwater discharge.

Old Rifle Site

Samples were collected at the Old Rifle site from 15 monitoring wells and 5 surface locations in compliance with the 2001 *Ground Water Compliance Action Plan for the Old Rifle, Colorado, UMTRA Project Site*. The wells at locations 0742, 0743, and 0744 are 3-port CMT wells. Water levels were measured at each sampled well.

The COCs at the Old Rifle site are selenium, uranium, and vanadium. Locations with contaminant concentrations that exceeded EPA groundwater standards or ACLs are listed in Table 2.

Table 1. New Rifle Monitoring Wells with Contaminant Concentrations that Exceed Standards

Analyte	Standard[a]	MBC[b]	Location	Concentration (mg/L)
Arsenic	**0.05 mg/L**	0.03 mg/L	0658	0.07
			0855	0.68
Molybdenum	**0.10 mg/L**	0.03 mg/L	0201	1.7
			0217	1.7
			0590	1.2
			0635	0.37
			0658	1.2
			0659	1.6
			0664	0.41
			0669	0.76
			0670	0.19
			0680	2.0
			0855	1.2
Nitrate + Nitrite as Nitrogen	**10 mg/L**	5.22 mg/L	0170	11
			0201	66
			0590	10
			0620	29
			0635	13
			0659	14
			0664	12
			0680	24
			0855	16
Selenium	0.01 mg/L	**0.041 mg/L**	0658	1.0
			0659	0.045
			0664	0.092
			0670	0.26
			0855	0.95
Uranium	0.044 mg/L	**0.067 mg/L**	0172	0.075
			0201	0.10
			0217	0.15
			0590	0.078
			0635	0.076
			0659	0.10
			0669	0.073
			0670	0.071
			0680	0.099
Vanadium	Proposed ACL[c]= 50 mg/L		NA	NA

[a] Standards are listed in 40 CFR 192.02 Table 1 to Subpart A.
[b] Maximum background concentrations (MBCs) are from historical results at location RFO01 0658.
[c] ACLs listed in *Ground Water Compliance Action Plan for the New Rifle, Colorado, Processing Site.*

Table 2. Old Rifle Locations with Contaminant Concentrations that Exceed Standards or ACLs

Analyte	Standard[a]	ACL or MBC	Location	Concentration (mg/L)
Selenium	0.01 mg/L	0.05 mg/L[b]	0305	0.021
			0655	0.010
			0743-2	0.10
			0743-3	0.020
Uranium	0.044 mg/L	0.067 mg/L[c]	0305	0.057
			0310	0.17
			0655	0.076
			0656	0.19
			0743-2	0.23
			0743-3	0.17
			0744-1	0.070
			0744-2	0.22
			0744-3	0.12
Vanadium	NA	POC: 1.0 mg/L[b] POE: 0.33 mg/L[b]	0743-2	3.7
			0743-3	2.9

[a] Groundwater standards are listed in 40 CFR 192.02 Table 1 to Subpart A.
[b] ACL proposed in *Ground Water Compliance Action Plan for the Old Rifle, Colorado, UMTRA Project Site*. A concentration of 1.0 mg/L is proposed as the ACL for vanadium at the point of compliance (POC) for any onsite DOE monitoring well. A concentration of 0.33 mg/L is proposed as the concentration limit for the point of exposure (POE), which is the Colorado River.
[c] Maximum background concentrations (MBCs) are from historical results at location RFO01 0658.

Time-concentration graphs from the locations sampled are included with the analytical data and indicate that the concentrations of the COCs are decreasing at many locations.

Analytical results for surface locations 0396 and 0741 that are adjacent to and downgradient of the site along the Colorado River remain low, indicating no impact due to groundwater discharge.

Richard Dayvault

2/15/13

Richard Dayvault
Site Lead, S. M. Stoller Corporation

Date

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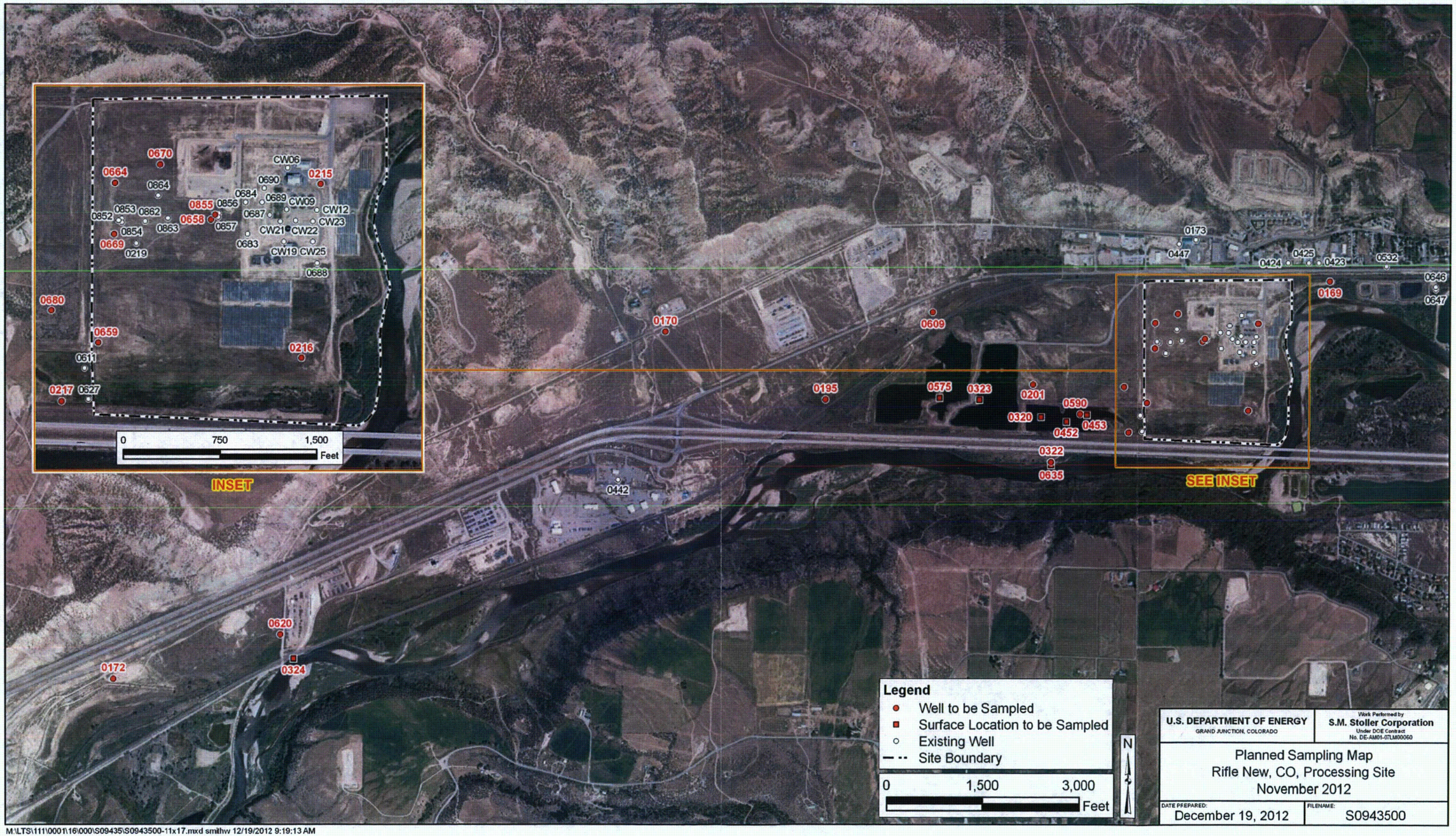

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Sample Location Map, New Rifle, Colorado, Processing Site

Sample Location Map, Old Rifle, Colorado, Processing Site

Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Old and New Rifle, Colorado, Processing Sites	**Date(s) of Water Sampling**	November 12–20, 2012
Date(s) of Verification	January 10, 2013	**Name of Verifier**	Stephen Donivan

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOPs, instructions.		Work Order letter dated October 17, 2012.
2. Were the sampling locations specified in the planning documents sampled?	No	RFO01 CMT ports 0742-1 and 0743-1 were dry. Surface water location RFN01 0452 was dry.
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	Pre-trip calibrations were performed on November 9 and 12, 2012.
4. Was an operational check of the field equipment conducted daily?	Yes	
Did the operational checks meet criteria?	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?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	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	Duplicate samples were collected from New rifle locations 0620, 0855, and Old Rifle location 0742-2.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	Yes	One equipment blank was collected.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) 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 (FDCS)?	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?	Yes	
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN):	12114947
Sample Event:	November 12–20, 2012
Site(s):	Rifle Processing Sites, Colorado
Laboratory:	ALS Laboratory Group, Fort Collins, Colorado
Work Order No.:	1211303
Analysis:	Metals, Organics, and Wet Chemistry
Validator:	Steve Donivan
Review Date:	January 8, 2013

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 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N	WCH-A-005	EPA 350.2	EPA 350.1
Arsenic, Molybdenum, Selenium, Uranium, Vanadium	LMM-02	SW-846 3005A	SW-846 6020
Calcium, Iron, Magnesium, Manganese, Potassium, Sodium	LMM-01	SW-846 3005A	SW-846 6010B
Chloride	MIS-A-045	EPA 300.0	EPA 300.0
Nitrate + Nitrite as N	WCH-A-022	EPA 353.2	EPA 353.2
Sulfate	MIS-A-045	EPA 300.0	EPA 300.0
Uranium Isotopes	LMR-02	SOP 776	SOP 778

Data Qualifier Summary

Analytical results were qualified as listed in Table 4. Refer to the sections below for an explanation of the data qualifiers applied.

Table 4. Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
1211303-1	0169	Ammonia as N	J	Matrix spike recovery
1211303-1	0169	Potassium	J	Matrix spike recovery
1211303-1	0169	Sodium	J	Serial dilution recovery
1211303-6	0215	Uranium-235	J	Less than the determination limit
1211303-8	0217	Iron	U	Less than 5 times the method blank
1211303-9	0320	Iron	U	Less than 5 times the method blank
1211303-15	0575	Iron	U	Less than 5 times the calibration blank
1211303-16	0590	Iron	U	Less than 5 times the calibration blank
1211303-17	0609	Iron	U	Less than 5 times the calibration blank
1211303-20	0658	Iron	U	Less than 5 times the method blank
1211303-21	0659	Chloride	J	Matrix spike recovery
1211303-21	0659	Sodium	J	Serial dilution recovery
1211303-21	0659	Sulfate	J	Matrix spike recovery
1211303-25	0609	Iron	U	Less than 5 times the calibration blank
1211303-26	0855	Iron	U	Less than 5 times the calibration blank
1211303-27	Equipment blank	Vanadium	U	Less than 5 times the method blank

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 50 water samples on November 21, 2012, accompanied a Chain of Custody form. The Chain of Custody form 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 receiving documentation included copies of the air bills. The Chain of Custody form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipments were received intact with the temperature inside the iced coolers at 2.6 °C and 4 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The method detection limit (MDL) was reported for all metal, organic, and wet chemical analytes as required. The MDL, as defined in 40 CFR 136, 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. The practical quantitation limit (PQL) for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL.

For radiochemical analytes (those measured by radiometric counting) the MDL and PQL are not applicable, and these 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.

The reported MDLs for all metal, organic, and wet chemical analytes, and 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.

Method EPA 300.0 Chloride, Sulfate
Calibrations for chloride and sulfate were performed using seven calibration standards on November 9, 2012. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency. All calibration check results were within the acceptance criteria.

Method EPA 350.1 Ammonia as N
Calibrations for ammonia as N were performed using five calibration standards on November 28, 2012. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency. All calibration check results were within the acceptance criteria.

Method EPA 353.2 Nitrite + Nitrate as N
Calibrations for nitrate + nitrite as N were performed using five calibration standards on November 29, 2012. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency. All calibration check results were within the acceptance criteria.

Method SW-846 6010B Ca, Mg, Na, K, V
Calibrations were performed on November 28, 2012, using four calibration standards. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification

checks were made at the required frequency. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range.

Method SW-846 6020 As, Mo, Se, U
Calibrations were performed on November 27, 2012, using two calibration standards. Initial and continuing calibration verification checks were made at the required frequency. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Radiochemical Analysis

Alpha spectrometry calibrations and instrument backgrounds were performed within a month prior to sample analysis. Calibration standards were counted to obtain a minimum of 10,000 counts per peak. Daily instrument checks met the acceptance criteria. The tracer recoveries met the acceptance criteria of 30 to 110 percent for all samples. The full width at half maximum was reviewed to evaluate the spectral resolution. All internal standard full width at half maximum values were below 100 kiloelectron volts demonstrating acceptable resolution. All internal standard peaks were within 50 kiloelectron volts of the expected position. The regions of interest for analyte peaks were reviewed. All regions of interest were satisfactory and all integrations were performed correctly.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and calibration blank results associated with the samples were below the PQLs. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a "U" flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

Inductively Coupled Plasma Interference Check Sample Analysis

Interference check samples were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spike results met the recovery and precision criteria for all analytes evaluated with the following exceptions. The ammonia as N and potassium spike recoveries from sample 0169, and the chloride and sulfate

recoveries from sample 0659 were outside of the acceptance limits. The associated sample results are qualified with a "J" flag as estimated values.

Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative percent difference for replicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than 5 times the PQL, the range should be no greater than the PQL. 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 and should be less than three. All duplicate results met these criteria demonstrating 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.

Metals Serial Dilution

Serial dilutions were prepared and analyzed for the metals analyses to monitor chemical or physical interferences in the sample matrix. Serial dilution data are evaluated when the concentration of the undiluted sample is greater than 50 times the MDL. All evaluated serial dilution data were acceptable with the following exceptions. The potassium serial dilution prepared from sample 0169 and the sodium serial dilutions prepared from samples 0169 and 0659 did not meet the acceptance criteria. The associated potassium and sodium sample results are qualified with a "J" flag as estimated values.

Completeness

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

Electronic Data Deliverable (EDD) File

The EDD file arrived on August 30, 2012. The Sample Management System EDD validation module was used to verify that the EDD file was 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: 12114947 Lab Code: PAR Validator: Stephen Donivan Validation Date: 1/4/2013

Project: Rifle Disposal/Processing Site (old/new) Analysis Type: ☑ Metals ☑ General Chem ☑ Rad ☐ Organics

# of Samples: 50 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	All analyses were completed within the applicable holding times.
☑ Detection Limits	There are 0 detection limit failures.
☑ Field/Trip Blanks	There was 1 trip/equipment blank evaluated.
☑ Field Duplicates	There were 3 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 12114947 Lab Code: PAR Date Due: 12/19/2012

Matrix: Water Site Code: RFL01 Date Completed: 12/6/2012

Analyte	Method Type	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB								
Arsenic	ICP/MS	11/27/2012			OK	OK	OK	OK	OK	97.0	99.0	102.0	3.0	104.0		92.0
Arsenic	ICP/MS	11/27/2012								102.0	102.0	99.0	3.0			
Arsenic	ICP/MS	11/27/2012								94.0	107.0	106.0	2.0			
Calcium	ICP/ES	11/28/2012	0.0000	1.0000	OK	OK	OK	OK	OK	102.0	96.0	89.0	1.0	104.0	2.0	108.0
Calcium	ICP/ES	11/28/2012							OK	100.0	84.0	87.0	0.0	103.0	1.0	108.0
Calcium	ICP/ES	11/28/2012							OK	101.0	112.0	104.0	1.0		3.0	
Iron	ICP/ES	11/28/2012	0.0000	1.0000	OK	OK	OK	OK	OK	98.0	98.0	94.0	4.0	107.0		101.0
Iron	ICP/ES	11/28/2012							OK	97.0	97.0	99.0	1.0	105.0		100.0
Iron	ICP/ES	11/28/2012							OK	98.0	100.0	100.0	0.0			
Magnesium	ICP/ES	11/28/2012	0.0000	1.0000	OK	OK	OK	OK	OK	102.0	99.0	94.0	1.0	106.0	2.0	106.0
Magnesium	ICP/ES	11/28/2012							OK	100.0	99.0	99.0	0.0	106.0	5.0	106.0
Magnesium	ICP/ES	11/28/2012							OK	102.0	103.0	97.0	1.0		1.0	
Manganese	ICP/ES	11/28/2012	0.0000	1.0000	OK	OK	OK	OK	OK	97.0	94.0	93.0	1.0	98.0	2.0	107.0
Manganese	ICP/ES	11/28/2012							OK	96.0	87.0	88.0	0.0	97.0	1.0	106.0
Manganese	ICP/ES	11/28/2012			OK	OK	OK	OK	OK	97.0	99.0	96.0	1.0		0.0	
Molybdenum	ICP/MS	11/27/2012							OK	98.0	103.0	104.0	1.0	108.0	2.0	103.0
Molybdenum	ICP/MS	11/27/2012								102.0		115.0	1.0		1.0	
Molybdenum	ICP/MS	11/27/2012								97.0	109.0	108.0	1.0		1.0	

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 12114947 **Lab Code:** PAR **Date Due:** 12/19/2012

Matrix: Water **Site Code:** RFL01 **Date Completed:** 12/6/2012

Analyte	Method Type	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB								
Potassium	ICP/ES	11/28/2012	0.0000	1.0000	OK	OK	OK	OK	OK	106.0	126.0	123.0	2.0		43.0	79.0
Potassium	ICP/ES	11/28/2012							OK	105.0	104.0	104.0	0.0			78.0
Potassium	ICP/ES	11/28/2012							OK	106.0	102.0	101.0	1.0			
Selenium	ICP/MS	11/27/2012			OK	OK	OK	OK	OK	98.0	97.0	99.0	2.0	103.0	4.0	122.0
Selenium	ICP/MS	11/27/2012								103.0	97.0	101.0	3.0		6.0	
Selenium	ICP/MS	11/27/2012								96.0	101.0	99.0	2.0			
Sodium	ICP/ES	11/28/2012	0.0000	1.0000	OK	OK	OK	OK	OK	97.0	101.0	98.0	1.0		11.0	82.0
Sodium	ICP/ES	11/28/2012							OK	96.0	92.0	92.0	0.0		12.0	82.0
Sodium	ICP/ES	11/28/2012							OK	97.0		116.0	1.0		7.0	
Uranium	ICP/MS	11/27/2012			OK	OK	OK	OK	OK	100.0	103.0	103.0	0.0	105.0	2.0	130.0
Uranium	ICP/MS	11/27/2012								101.0	97.0	85.0	1.0		3.0	
Uranium	ICP/MS	11/27/2012								100.0	123.0	118.0	1.0		1.0	
Vanadium	ICP/MS	11/27/2012			OK	OK	OK	OK	OK	96.0	101.0	100.0	1.0	104.0	1.0	
Vanadium	ICP/MS	11/27/2012								97.0	108.0	108.0	0.0		1.0	102.0
Vanadium	ICP/MS	11/27/2012								95.0	107.0	107.0	0.0		4.0	

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12114947 **Lab Code:** PAR **Date Due:** 12/19/2012

Matrix: Water **Site Code:** RFL01 **Date Completed:** 12/6/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
0292A	U-234	11/27/2012			84.5			
0294	U-234	11/27/2012			81.4			
0395	U-234	11/27/2012			83.5			
0398	U-234	11/27/2012			81.8			
0620	U-234	11/27/2012			67.8			
0635	U-234	11/27/2012			80.8			
0658	U-234	11/27/2012			81.1			
0659	U-234	11/27/2012			75.6			
0669	U-234	11/27/2012			79.5			
0670	U-234	11/27/2012			85.3			
0680	U-234	11/27/2012			78.8			
0855	U-234	11/27/2012			82.1			
2238	U-234	11/27/2012			83.0			
2948	U-234	11/27/2012			79.7			
2949	U-234	11/27/2012			79.2			
0292A	U-234	11/27/2012			87.7			0.74
0680	U-234	11/27/2012			86.7			0.80
0169	U-234	11/29/2012			96.7			
0170	U-234	11/29/2012			70.4			
0172	U-234	11/29/2012			87.6			
0195	U-234	11/29/2012			60.8			
0215	U-234	11/29/2012			53.4			
0216	U-234	11/29/2012			90.1			
0217	U-234	11/29/2012			86.5			
0320	U-234	11/29/2012			88.3			
0322	U-234	11/29/2012			76.1			
0323	U-234	11/29/2012			64.1			
0575	U-234	11/29/2012			89.2			
0590	U-234	11/29/2012			88.0			
0609	U-234	11/29/2012			89.2			
0658	U-234	11/29/2012			82.0			
0169	U-234	11/29/2012			95.7			0.38

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12114947 **Lab Code:** PAR **Date Due:** 12/19/2012

Matrix: Water **Site Code:** RFL01 **Date Completed:** 12/6/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
Blank_Spike	U-234	11/29/2012			88.6	96.80		
Blank_Spike	U-234	11/29/2012			88.0	102.00		
Blank	U-234	11/29/2012	0.0170	U	83.3			
Blank	U-234	11/29/2012	-0.0050	U	84.9			
Blank	U-235	11/29/2012	0.0060	U				
Blank	U-235	11/29/2012	0.0060	U				
Blank	U-238	11/29/2012	0.0100	U				
Blank	U-238	11/29/2012	0.0040	U				
0292A	Uranium-235	11/27/2012						1.26
0680	Uranium-235	11/27/2012						0.59
0169	Uranium-235	11/29/2012						1.46
0292A	Uranium-238	11/27/2012						0.31
0680	Uranium-238	11/27/2012						0.56
0169	Uranium-238	11/29/2012						0.29
Blank_Spike	Uranium-238	11/29/2012				103.00		
Blank_Spike	Uranium-238	11/29/2012				103.00		

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 12114947 **Lab Code:** PAR **Date Due:** 12/19/2012

Matrix: Water **Site Code:** RFL01 **Date Completed:** 12/6/2012

Analyte	Date Analyzed	CALIBRATION						Method	LCS	MS	MSD	DUP	Serial Dil.
		Int.	R^2	ICV	CCV	ICB	CCB	Blank	%R	%R	%R	RPD	%R
AMMONIA AS N	11/28/2012	0.000	1.0000	OK	OK	OK	OK	OK	99.00	75.0	71.0	5.00	
AMMONIA AS N	11/28/2012							OK	97.00	96.0	93.0	0	
AMMONIA AS N	11/28/2012									103.0	95.0	7.00	
CHLORIDE	11/28/2012	0.000	1.0000	OK	OK	OK	OK	OK	98.00	115.0	118.0	2.00	
CHLORIDE	11/28/2012							OK	97.00	113.0	114.0	0	
CHLORIDE	11/28/2012									116.0			
CHLORIDE	11/28/2012									115.0			
CHLORIDE	11/29/2012									115.0	133.0	9.00	
Nitrate+Nitrite as N	11/29/2012	0.000	1.0000	OK	OK	OK	OK	OK	103.00	113.0	109.0	3.00	
Nitrate+Nitrite as N	11/29/2012							OK	103.00	82.0	110.0	6.00	
SULFATE	11/28/2012	0.000	1.0000	OK	OK	OK	OK	OK	97.00	115.0	115.0	0	
SULFATE	11/28/2012							OK	96.00	114.0	113.0	0	
SULFATE	11/28/2012									115.0			
SULFATE	11/28/2012									114.0			
SULFATE	11/29/2012									115.0	130.0	5.00	

General Information

Report Numbers (RINs):	12114955
Sample Event:	November 12–15, 2012
Site(s):	New Rifle and Old Rifle, Colorado, Processing Sites
Laboratory:	Reston Stable Isotope Laboratory, Reston, Virginia
Analysis:	Stable Isotopes
Validator:	Steve Donivan
Review Date:	January 11, 2013

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 1, Data Deliverables Examination. 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 5.

Table 5. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
H-2/H-1 and O-18/O-16–Isotope Ratios	LMW-08	NA	Mass Spectrometry

Data Qualifier Summary

None of the analytical results required qualification.

Sample Shipping/Receiving

The Reston Stable Isotope Laboratory in Reston, Virginia, received 29 water samples on November 21, 2012, submitted for the determination of stable hydrogen and oxygen isotope ratios. The analytical report was checked to confirm that all of the samples scheduled were received and analyzed.

Preservation and Holding Times

The sample shipment was received intact with all samples in the correct container types preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Laboratory Analysis

Hydrogen-isotope-ratio analyses were performed using a hydrogen equilibration technique rather than the zinc technique. The hydrogen equilibration technique measures deuterium activity, whereas the zinc technique measures deuterium concentration. For the majority of samples–with the exception of brines–the difference in reported isotopic compositions between the two techniques is not significant.

Water samples are measured for delta O-18 using the CO_2 equilibration technique of Epstein and Mayeda, which has been automated. Therefore, both oxygen and hydrogen isotopic ratio measurements are reported as activities.

Reporting of Stable Hydrogen and Oxygen Isotope Ratios

Oxygen and hydrogen isotopic results are reported in per mill relative to VSMOW (Vienna Standard Mean Ocean Water) and normalized on scales such that the oxygen and hydrogen isotopic values of SLAP (Standard Light Antarctic Precipitation) are -55.5 per mill and -428 per mill, respectively. Oxygen isotopic results of a sample Z can be expressed relative to VPDB (Vienna Peedee belemnite) using the equation:

Delta O-18 of Z relative to VPDB = (0.97001 × delta O-18 of Z relative to VSMOW) - 29.99.

The 2-sigma uncertainties of oxygen and hydrogen isotopic results are 0.2 per mill and 2 per mill, respectively, unless otherwise indicated. This means that if the same sample were resubmitted for isotopic analysis, the newly measured value would lie within the uncertainty bounds 95 percent of the time.

Completeness

The electronic data deliverable was the only deliverable received for this RIN.

Electronic Data Deliverable (EDD) File

The EDD file arrived on January 2, 2013.

Sampling Quality Control Assessment

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

Sampling Protocol

Sample results for all monitoring wells were qualified with an "F" flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. All wells met the Category I criteria with the following exceptions: RFN01 0669 and RFO01 0744-1 were classified as Category II. The sample results for these wells were qualified with a "Q" flag, indicating the data are qualitative because of the sampling technique.

Equipment Blank Assessment

An equipment blank (field ID 2238) was collected after decontamination of the tubing reel used to collect some surface water samples. Calcium, sodium, and uranium were detected in this blank. The associated sample results for these analytes were greater than 10 times the blank concentration, not requiring qualification. The equipment blank results indicate adequate decontamination of the sampling equipment.

Field Duplicate Assessment

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. Duplicate samples were collected from New Rifle locations 0620 and 0855, and Old Rifle location 0742-2. For non-radiochemical measurements, the relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. For results less than 5 times the PQL, the range should be no greater than the PQL. 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 and should be less than 3. All duplicate results met these criteria demonstrating acceptable precision.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Equipment/Trip Blanks

RIN: 12114947 Lab Code: PAR Project: Rifle Disposal/Processing Site (old/new) Validation Date: 1/7/2013

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1211303-27	SW6010	Calcium	330	B	12	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1211303-11	KMU 330	0323	650000	10		
1211303-15	KMU 332	0575	210000	5		
1211303-31	KMU 342	0294	77000	1		
1211303-9	KMU 354	0320	750000	10		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1211303-27	SW6010	Sodium	61	B	6.6	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1211303-11	KMU 330	0323	1200000	10		
1211303-15	KMU 332	0575	610000	5		
1211303-31	KMU 342	0294	140000	1		
1211303-9	KMU 354	0320	740000	10		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1211303-27	SW6020	Uranium	0.018		0.0029	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1211303-11	KMU 330	0323	350	10		
1211303-13	KMU 331	0324	2.7	1		
1211303-14	KMU 357	0453	67	5		
1211303-15	KMU 332	0575	59	1		
1211303-31	KMU 342	0294	2.4	1		
1211303-37	KMU 344	0396	2.8	1		
1211303-9	KMU 354	0320	87	5		

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 12114947 Lab Code: PAR Project: Rifle Disposal/Processing Site (old/new) Validation Date: 1/4/2013

Duplicate: 2237 Sample: 0742-2

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
Selenium	6.1			5	6.4			5	4.80		UG/L
Uranium	22			5	22			5	0		UG/L
Vanadium	400			5	400			5	0		UG/L

Duplicate: 2948 Sample: 0855

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
AMMONIA AS N	34			10	36			10	5.71		MG/L
Arsenic	680			100	700			100	2.90		UG/L
Calcium	370000			1	370000			1	0		UG/L
CHLORIDE	150			50	150			50	0		MG/L
Iron	5.5	B		1	4.9	U		1			UG/L
Magnesium	35000			1	35000			1	0		UG/L
Manganese	1000			1	970			1	3.05		UG/L
Molybdenum	1200			100	1200			100	0		UG/L
Nitrate+Nitrite as N	16			10	14			10	13.33		MG/L
Potassium	12000			1	12000			1	0		UG/L
Selenium	950			100	980			100	3.11		UG/L
Sodium	160000			2	170000			2	6.06		UG/L
SULFATE	1200			50	1100			50	8.70		MG/L
U-234	16.2		2.54	1	16.1		2.54	1	0.62	0.1	pCi/L
Uranium	45			100	49			100	8.51		UG/L
Uranium-235	0.676		0.151	1	0.687		0.158	1	1.61	0.1	pCi/L
Uranium-238	15.8		2.49	1	15.5		2.45	1	1.92	0.2	pCi/L
Vanadium	31000			100	31000			100	0		UG/L

Duplicate: 2949 Sample: 0620

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
Arsenic	0.52			1	0.53			1	1.90		UG/L
Calcium	350000			10	340000			10	2.90		UG/L
CHLORIDE	900			100	910			100	1.10		MG/L
Iron	49	U		10	49	U		10			UG/L
Magnesium	210000			10	210000			10	0		UG/L
Manganese	1100			10	1100			10	0		UG/L
Molybdenum	8.4			1	8.2			1	2.41		UG/L
Nitrate+Nitrite as N	29			20	30			20	3.39		MG/L

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 12114947 Lab Code: PAR Project: Rifle Disposal/Processing Site (old/new) Validation Date: 1/4/2013

Duplicate: 2949 Sample: 0620

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
Potassium	7600	B		10	11000			10	NA		UG/L
Selenium	29			1	28			1	3.51		UG/L
Sodium	890000			10	880000			10	1.13		UG/L
SULFATE	2100			100	2100			100	0		MG/L
U-234	28.8		4.53	1	30.3		4.71	1	5.08	0.4	pCi/L
Uranium	59			1	59			1	0		UG/L
Uranium-235	0.963		0.206	1	0.857		0.181	1	11.65	0.8	pCi/L
Uranium-238	19.7		3.11	1	19.9		3.11	1	1.01	0.1	pCi/L
Vanadium	1.9			1	1.8			1	5.41		UG/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the environmental 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: Stephen Donivan 2-15-2013
Stephen Donivan

Data Validation Lead: Stephen Donivan 2-15-2013
Stephen Donivan

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.

Four results were identified as potentially anomalous. No analytical errors were noted during the review of these data. At this time, all data from this sampling event may be treated as validated results.

Data Validation Outliers Report - No Field Parameters
Comparison: All historical Data Beginning 1/1/2003
Laboratory: ALS Laboratory Group
RIN: 12114947
Report Date: 1/10/2013

					Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Qualifiers			Qualifiers			Qualifiers				
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0169	N001	11/15/2012	Manganese	0.16		F	0.298		F	0.17		F	5	0	No
RFN01	0169	N001	11/15/2012	Uranium	0.017		F	0.039		F	0.018		F	12	0	No
RFN01	0170	N001	11/15/2012	Manganese	0.0087	B	F	0.173		F	0.028	E	F	5	0	No
RFN01	0195	N001	11/15/2012	Manganese	2.3		F	1.87		F	0.56		F	7	0	No
RFN01	0195	N001	11/15/2012	Selenium	0.00012		F	0.0015	U	F	0.00017		UF	11	3	No
RFN01	0201	N001	11/14/2012	Selenium	0.0048		F	0.065		F	0.0076		F	13	0	No
RFN01	0215	N001	11/14/2012	Manganese	0.31		F	0.77		F	0.36		F	13	0	No
RFN01	0215	N001	11/14/2012	Molybdenum	0.01		F	0.1	U		0.0115		F	18	1	No
RFN01	0216	N001	11/14/2012	Molybdenum	0.039		F	0.15		F	0.043		F	15	0	No
RFN01	0216	N001	11/14/2012	Uranium	0.01		F	0.079		F	0.011		F	16	0	No
RFN01	0217	N001	11/14/2012	Manganese	4.3		F	6.5		F	5.1		F	9	0	No
RFN01	0320	N001	11/14/2012	Manganese	0.084			0.83			0.153			5	0	No
RFN01	0322	N001	11/14/2012	Sulfate	140			130			42.8			8	0	No
RFN01	0323	N001	11/14/2012	Molybdenum	3.2			3.02			1.1		J	16	0	No
RFN01	0323	N001	11/14/2012	Nitrate + Nitrite as Nitrogen	56			130			57			14	0	No
RFN01	0323	N001	11/20/2012	Sulfate	4400			4300			3100			8	0	No
RFN01	0323	N001	11/14/2012	Vanadium	0.0064			0.0063			0.0027	B		16	1	No
RFN01	0453	N001	11/14/2012	Ammonia Total as N	12			120			30		J	10	0	No
RFN01	0453	N001	11/14/2012	Molybdenum	6.1			4.1		J	1.6			11	0	Yes

Data Validation Outliers Report - No Field Parameters
Comparison: All historical Data Beginning 1/1/2003
Laboratory: ALS Laboratory Group
RIN: 12114947
Report Date: 1/10/2013

					Current	Qualifiers		Historical Maximum	Qualifiers		Historical Minimum	Qualifiers		Number of Data Points		Statistical Outlier
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0590	N001	11/14/2012	Nitrate + Nitrite as Nitrogen	9.6		F	140		F	29.4		F	13	0	No
RFN01	0620	N002	11/14/2012	Manganese	1.1		F	1		F	0.51		FJ	6	0	No
RFN01	0620	N001	11/14/2012	Manganese	1.1		F	1		F	0.51		FJ	6	0	No
RFN01	0620	N001	11/14/2012	Molybdenum	0.0084		F	0.015		F	0.0085		F	14	0	No
RFN01	0620	N002	11/14/2012	Molybdenum	0.0082		F	0.015		F	0.0085		F	14	0	No
RFN01	0635	N001	11/14/2012	Selenium	0.0075		F	0.0064		F	0.001	UN	F	12	2	Yes
RFN01	0658	N001	11/13/2012	Manganese	2.1		F	5.7		FJ	2.97		F	8	0	No
RFN01	0669	0001	11/14/2012	Arsenic	0.0084		FQ	0.0083		FQ	0.0029		FQ	13	0	No
RFN01	0669	0001	11/14/2012	Molybdenum	0.76		FQ	2.27		F	0.91		FQ	15	0	No
RFN01	0669	0001	11/14/2012	Vanadium	4.1		FQ	3.82		F	0.73		FQ	22	0	No
RFN01	0670	N001	11/13/2012	Manganese	0.74		F	2		FQ	0.97		F	9	0	No
RFO01	0292A	N001	11/12/2012	Iron	0.095	B	F	0.43		F	0.11		F	7	2	No
RFO01	0292A	N001	11/12/2012	Selenium	0.00016		F	0.035		F	0.00024		F	15	4	No
RFO01	0292A	N001	11/12/2012	Sodium	160		F	250		F	199		F	9	0	No
RFO01	0292A	N001	11/12/2012	Sulfate	550		F	760		F	599		F	9	0	No
RFO01	0292A	N001	11/12/2012	Uranium	0.022		F	0.04	E	F	0.025		F	15	0	No
RFO01	0294	N001	11/12/2012	Calcium	77			65			29			8	0	No
RFO01	0294	N001	11/12/2012	Chloride	250			180			20			8	0	No
RFO01	0294	N001	11/12/2012	Iron	0.31			0.098	B	U	0.02	B		7	4	Yes

Data Validation Outliers Report - No Field Parameters
Comparison: All historical Data Beginning 1/1/2003
Laboratory: ALS Laboratory Group
RIN: 12114947
Report Date: 1/10/2013

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum	Qualifiers		Historical Minimum	Qualifiers		Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFO01	0294	N001	11/12/2012	Magnesium	17			12			5.8			8	0	No
RFO01	0294	N001	11/12/2012	Manganese	0.084			0.021			0.0078			7	0	Yes
RFO01	0294	N001	11/12/2012	Potassium	5.3			4.2		J	0.8	B	J	8	0	No
RFO01	0294	N001	11/12/2012	Sodium	140			97			15			8	0	No
RFO01	0294	N001	11/12/2012	Sulfate	140			110			29			8	0	No
RFO01	0305	N001	11/13/2012	Selenium	0.021		F	0.089		F	0.023		F	27	0	No
RFO01	0396	N001	11/13/2012	Uranium	0.0028			0.00266			0.0008			25	0	No
RFO01	0398	N001	11/12/2012	Chloride	190			170			100			9	0	No
RFO01	0398	N001	11/12/2012	Manganese	0.015			0.011			0.0049	B		8	0	No
RFO01	0655	N001	11/13/2012	Uranium	0.076		F	0.17		F	0.093		F	25	0	No
RFO01	0658	N001	11/12/2012	Sodium	61		F	150		F	63		F	10	0	No
RFO01	0658	N001	11/12/2012	Sulfate	370		F	560		F	380		F	10	0	No
RFO01	0658	N001	11/12/2012	Uranium	0.0096		F	0.067		FJ	0.01		F	24	0	No

STATISTICAL TESTS:
The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test
Outliers are identified using Dixon's Test when there are 25 or fewer data points.
Outliers are identified using Rosner's Test when there are 26 or more data points.
See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

Attachment 2
Data Presentation

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New Rifle
Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0169 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2012	N001	3.13 - 18.13	460		F	#		
Ammonia Total as N	mg/L	11/15/2012	N001	3.13 - 18.13	0.1	UN	FJ	#	0.1	
Arsenic	mg/L	11/15/2012	N001	3.13 - 18.13	0.00049		F	#	0.000015	
Calcium	mg/L	11/15/2012	N001	3.13 - 18.13	160		F	#	0.012	
Chloride	mg/L	11/15/2012	N001	3.13 - 18.13	52	N	F	#	4	
Iron	mg/L	11/15/2012	N001	3.13 - 18.13	0.0049	U	F	#	0.0049	
Magnesium	mg/L	11/15/2012	N001	3.13 - 18.13	97		F	#	0.013	
Manganese	mg/L	11/15/2012	N001	3.13 - 18.13	0.16		F	#	0.00011	
Molybdenum	mg/L	11/15/2012	N001	3.13 - 18.13	0.0043		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/15/2012	N001	3.13 - 18.13	0.068		F	#	0.01	
Oxidation Reduction Potential	mV	11/15/2012	N001	3.13 - 18.13	37.6		F	#		
pH	s.u.	11/15/2012	N001	3.13 - 18.13	6.98		F	#		
Potassium	mg/L	11/15/2012	N001	3.13 - 18.13	6.7	EN	FJ	#	0.11	
Selenium	mg/L	11/15/2012	N001	3.13 - 18.13	0.0019		F	#	0.000032	
Sodium	mg/L	11/15/2012	N001	3.13 - 18.13	130	E	FJ	#	0.013	
Specific Conductance	umhos /cm	11/15/2012	N001	3.13 - 18.13	1848		F	#		
H2/H1	‰	11/15/2012	0001	3.13 - 18.13	-115.4			#		
O18/O16	‰	11/15/2012	0001	3.13 - 18.13	-14.83			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0169 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/15/2012	N001	3.13 - 18.13	580		F	#	10	
Temperature	C	11/15/2012	N001	3.13 - 18.13	15.5		F	#		
Turbidity	NTU	11/15/2012	N001	3.13 - 18.13	1.25		F	#		
Uranium	mg/L	11/15/2012	N001	3.13 - 18.13	0.017		F	#	0.0000029	
Uranium-234	pCi/L	11/15/2012	N001	3.13 - 18.13	9.98		F	#	0.033	1.57
Uranium-235	pCi/L	11/15/2012	N001	3.13 - 18.13	0.316		F	#	0.034	0.0844
Uranium-238	pCi/L	11/15/2012	N001	3.13 - 18.13	5.35		F	#	0.023	0.857
Vanadium	mg/L	11/15/2012	N001	3.13 - 18.13	0.00087		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0170 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2012	N001	92.23 - 112.23	522		F	#		
Ammonia Total as N	mg/L	11/15/2012	N001	92.23 - 112.23	0.21		F	#	0.1	
Arsenic	mg/L	11/15/2012	N001	92.23 - 112.23	0.0003		F	#	0.000015	
Calcium	mg/L	11/15/2012	N001	92.23 - 112.23	150		F	#	0.06	
Chloride	mg/L	11/15/2012	N001	92.23 - 112.23	150		F	#	10	
Iron	mg/L	11/15/2012	N001	92.23 - 112.23	0.025	U	F	#	0.025	
Magnesium	mg/L	11/15/2012	N001	92.23 - 112.23	91		F	#	0.065	
Manganese	mg/L	11/15/2012	N001	92.23 - 112.23	0.0087	B	F	#	0.00057	
Molybdenum	mg/L	11/15/2012	N001	92.23 - 112.23	0.0034		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/15/2012	N001	92.23 - 112.23	11		F	#	0.1	
Oxidation Reduction Potential	mV	11/15/2012	N001	92.23 - 112.23	155.7		F	#		
pH	s.u.	11/15/2012	N001	92.23 - 112.23	6.94		F	#		
Potassium	mg/L	11/15/2012	N001	92.23 - 112.23	5.1		F	#	0.54	
Selenium	mg/L	11/15/2012	N001	92.23 - 112.23	0.014		F	#	0.000032	
Sodium	mg/L	11/15/2012	N001	92.23 - 112.23	430		F	#	0.033	
Specific Conductance	umhos /cm	11/15/2012	N001	92.23 - 112.23	3153		F	#		
H2/H1	‰	11/15/2012	0001	92.23 - 112.23	-116.71			#		
O18/O16	‰	11/15/2012	0001	92.23 - 112.23	-15.2			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0170 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/15/2012	N001	92.23 - 112.23	1000		F	#	25	
Temperature	C	11/15/2012	N001	92.23 - 112.23	13.57		F	#		
Turbidity	NTU	11/15/2012	N001	92.23 - 112.23	2.61		F	#		
Uranium	mg/L	11/15/2012	N001	92.23 - 112.23	0.06		F	#	0.0000029	
Uranium-234	pCi/L	11/15/2012	N001	92.23 - 112.23	24.6		F	#	0.069	3.88
Uranium-235	pCi/L	11/15/2012	N001	92.23 - 112.23	0.961		F	#	0.05	0.209
Uranium-238	pCi/L	11/15/2012	N001	92.23 - 112.23	19.6		F	#	0.052	3.1
Vanadium	mg/L	11/15/2012	N001	92.23 - 112.23	0.00093		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0172 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	6.98 - 31.98	730		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	6.98 - 31.98	0.1	U	F	#	0.1	
Arsenic	mg/L	11/14/2012	N001	6.98 - 31.98	0.0055		F	#	0.000015	
Calcium	mg/L	11/14/2012	N001	6.98 - 31.98	500		F	#	0.6	
Chloride	mg/L	11/14/2012	N001	6.98 - 31.98	3000		F	#	40	
Iron	mg/L	11/14/2012	N001	6.98 - 31.98	1.7	B	F	#	0.25	
Magnesium	mg/L	11/14/2012	N001	6.98 - 31.98	700		F	#	0.65	
Manganese	mg/L	11/14/2012	N001	6.98 - 31.98	1.1		F	#	0.0057	
Molybdenum	mg/L	11/14/2012	N001	6.98 - 31.98	0.0044		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	6.98 - 31.98	0.012		F	#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	6.98 - 31.98	-154.4		F	#		
pH	s.u.	11/14/2012	N001	6.98 - 31.98	6.91		F	#		
Potassium	mg/L	11/14/2012	N001	6.98 - 31.98	11	B	F	#	5.4	
Selenium	mg/L	11/14/2012	N001	6.98 - 31.98	0.00021		F	#	0.000032	
Sodium	mg/L	11/14/2012	N001	6.98 - 31.98	3600		F	#	0.33	
Specific Conductance	umhos /cm	11/14/2012	N001	6.98 - 31.98	19381		F	#		
H2/H1	‰	11/14/2012	0001	6.98 - 31.98	-117.59			#		
O18/O16	‰	11/14/2012	0001	6.98 - 31.98	-15.01			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0172 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	6.98	-	31.98	7900		F	#	100	
Temperature	C	11/14/2012	N001	6.98	-	31.98	13.83		F	#		
Turbidity	NTU	11/14/2012	N001	6.98	-	31.98	2.76		F	#		
Uranium	mg/L	11/14/2012	N001	6.98	-	31.98	0.075		F	#	0.0000029	
Uranium-234	pCi/L	11/14/2012	N001	6.98	-	31.98	40.5		F	#	0.038	6.27
Uranium-235	pCi/L	11/14/2012	N001	6.98	-	31.98	1.16		F	#	0.039	0.228
Uranium-238	pCi/L	11/14/2012	N001	6.98	-	31.98	23.8		F	#	0.047	3.71
Vanadium	mg/L	11/14/2012	N001	6.98	-	31.98	0.00022	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0195 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2012	N001	5.29 - 25.29	306		F	#		
Ammonia Total as N	mg/L	11/15/2012	N001	5.29 - 25.29	0.1	U	F	#	0.1	
Arsenic	mg/L	11/15/2012	N001	5.29 - 25.29	0.00093		F	#	0.000015	
Calcium	mg/L	11/15/2012	N001	5.29 - 25.29	140		F	#	0.012	
Chloride	mg/L	11/15/2012	N001	5.29 - 25.29	43		F	#	4	
Iron	mg/L	11/15/2012	N001	5.29 - 25.29	0.71		F	#	0.0049	
Magnesium	mg/L	11/15/2012	N001	5.29 - 25.29	67		F	#	0.013	
Manganese	mg/L	11/15/2012	N001	5.29 - 25.29	2.3		F	#	0.00011	
Molybdenum	mg/L	11/15/2012	N001	5.29 - 25.29	0.016		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/15/2012	N001	5.29 - 25.29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/15/2012	N001	5.29 - 25.29	-3		F	#		
pH	s.u.	11/15/2012	N001	5.29 - 25.29	6.96		F	#		
Potassium	mg/L	11/15/2012	N001	5.29 - 25.29	9.3		F	#	0.11	
Selenium	mg/L	11/15/2012	N001	5.29 - 25.29	0.00012		F	#	0.000032	
Sodium	mg/L	11/15/2012	N001	5.29 - 25.29	110		F	#	0.0066	
Specific Conductance	umhos /cm	11/15/2012	N001	5.29 - 25.29	1521		F	#		
H2/H1	‰	11/15/2012	0001	5.29 - 25.29	-105.88			#		
O18/O16	‰	11/15/2012	0001	5.29 - 25.29	-13.9			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0195 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/15/2012	N001	5.29 - 25.29	290		F	#	10	
Temperature	C	11/15/2012	N001	5.29 - 25.29	13.7		F	#		
Turbidity	NTU	11/15/2012	N001	5.29 - 25.29	4.32		F	#		
Uranium	mg/L	11/15/2012	N001	5.29 - 25.29	0.027		F	#	0.0000029	
Uranium-234	pCi/L	11/15/2012	N001	5.29 - 25.29	12.5		F	#	0.099	2.02
Uranium-235	pCi/L	11/15/2012	N001	5.29 - 25.29	0.417		F	#	0.072	0.124
Uranium-238	pCi/L	11/15/2012	N001	5.29 - 25.29	9.14		F	#	0.088	1.49
Vanadium	mg/L	11/15/2012	N001	5.29 - 25.29	0.00047		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0201 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	7.35	-	22.35	295		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	7.35	-	22.35	89		F	#	5	
Arsenic	mg/L	11/14/2012	N001	7.35	-	22.35	0.00049		F	#	0.000015	
Molybdenum	mg/L	11/14/2012	N001	7.35	-	22.35	1.7		F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	7.35	-	22.35	66		F	#	0.5	
Oxidation Reduction Potential	mV	11/14/2012	N001	7.35	-	22.35	-130		F	#		
pH	s.u.	11/14/2012	N001	7.35	-	22.35	6.77		F	#		
Selenium	mg/L	11/14/2012	N001	7.35	-	22.35	0.0048		F	#	0.000032	
Specific Conductance	umhos /cm	11/14/2012	N001	7.35	-	22.35	3930		F	#		
Temperature	C	11/14/2012	N001	7.35	-	22.35	15		F	#		
Turbidity	NTU	11/14/2012	N001	7.35	-	22.35	1.09		F	#		
Uranium	mg/L	11/14/2012	N001	7.35	-	22.35	0.1		F	#	0.000029	
Vanadium	mg/L	11/14/2012	N001	7.35	-	22.35	0.0007		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0215 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	6.84 - 21.84	244		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	6.84 - 21.84	0.58		F	#	0.1	
Arsenic	mg/L	11/14/2012	N001	6.84 - 21.84	0.00046		F	#	0.000015	
Calcium	mg/L	11/14/2012	N001	6.84 - 21.84	92		F	#	0.012	
Chloride	mg/L	11/14/2012	N001	6.84 - 21.84	140		F	#	2	
Iron	mg/L	11/14/2012	N001	6.84 - 21.84	0.0049	U	F	#	0.0049	
Magnesium	mg/L	11/14/2012	N001	6.84 - 21.84	46		F	#	0.013	
Manganese	mg/L	11/14/2012	N001	6.84 - 21.84	0.31		F	#	0.00011	
Molybdenum	mg/L	11/14/2012	N001	6.84 - 21.84	0.01		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	6.84 - 21.84	0.037		F	#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	6.84 - 21.84	-15		F	#		
pH	s.u.	11/14/2012	N001	6.84 - 21.84	7.28		F	#		
Potassium	mg/L	11/14/2012	N001	6.84 - 21.84	4.4		F	#	0.11	
Selenium	mg/L	11/14/2012	N001	6.84 - 21.84	0.00049		F	#	0.000032	
Sodium	mg/L	11/14/2012	N001	6.84 - 21.84	110		F	#	0.0066	
Specific Conductance	umhos /cm	11/14/2012	N001	6.84 - 21.84	1240		F	#		
H2/H1	‰	11/14/2012	0001	6.84 - 21.84	-120.91			#		
O18/O16	‰	11/14/2012	0001	6.84 - 21.84	-16.08			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0215 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	6.84	-	21.84	250		F	#	5	
Temperature	C	11/14/2012	N001	6.84	-	21.84	14.1		F	#		
Turbidity	NTU	11/14/2012	N001	6.84	-	21.84	0.91		F	#		
Uranium	mg/L	11/14/2012	N001	6.84	-	21.84	0.015		F	#	0.0000029	
Uranium-234	pCi/L	11/14/2012	N001	6.84	-	21.84	6.78		F	#	0.15	1.13
Uranium-235	pCi/L	11/14/2012	N001	6.84	-	21.84	0.245		FJ	#	0.091	0.0991
Uranium-238	pCi/L	11/14/2012	N001	6.84	-	21.84	5.34		F	#	0.1	0.907
Vanadium	mg/L	11/14/2012	N001	6.84	-	21.84	0.0033		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0216 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	5.5 - 20.5	175		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	5.5 - 20.5	5.8		F	#	0.2	
Arsenic	mg/L	11/14/2012	N001	5.5 - 20.5	0.024		F	#	0.00015	
Calcium	mg/L	11/14/2012	N001	5.5 - 20.5	79		F	#	0.012	
Chloride	mg/L	11/14/2012	N001	5.5 - 20.5	140		F	#	2	
Iron	mg/L	11/14/2012	N001	5.5 - 20.5	0.12		F	#	0.0049	
Magnesium	mg/L	11/14/2012	N001	5.5 - 20.5	16		F	#	0.013	
Manganese	mg/L	11/14/2012	N001	5.5 - 20.5	0.97		F	#	0.00011	
Molybdenum	mg/L	11/14/2012	N001	5.5 - 20.5	0.039		F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	5.5 - 20.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	5.5 - 20.5	-150		F	#		
pH	s.u.	11/14/2012	N001	5.5 - 20.5	7.41		F	#		
Potassium	mg/L	11/14/2012	N001	5.5 - 20.5	7.5		F	#	0.11	
Selenium	mg/L	11/14/2012	N001	5.5 - 20.5	0.0002		F	#	0.000032	
Sodium	mg/L	11/14/2012	N001	5.5 - 20.5	74		F	#	0.0066	
Specific Conductance	umhos /cm	11/14/2012	N001	5.5 - 20.5	935		F	#		
H2/H1	‰	11/14/2012	0001	5.5 - 20.5	-120.77			#		
O18/O16	‰	11/14/2012	0001	5.5 - 20.5	-15.58			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0216 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	5.5 - 20.5	120		F	#	5	
Temperature	C	11/14/2012	N001	5.5 - 20.5	14.6		F	#		
Turbidity	NTU	11/14/2012	N001	5.5 - 20.5	1.95		F	#		
Uranium	mg/L	11/14/2012	N001	5.5 - 20.5	0.01		F	#	0.000029	
Uranium-234	pCi/L	11/14/2012	N001	5.5 - 20.5	3.79		F	#	0.038	0.626
Uranium-235	pCi/L	11/14/2012	N001	5.5 - 20.5	0.161		F	#	0.03	0.0581
Uranium-238	pCi/L	11/14/2012	N001	5.5 - 20.5	3.62		F	#	0.032	0.6
Vanadium	mg/L	11/14/2012	N001	5.5 - 20.5	0.19		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0217 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	7.4 - 22.4	215		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	7.4 - 22.4	46		F	#	2	
Arsenic	mg/L	11/14/2012	N001	7.4 - 22.4	0.00078		F	#	0.000074	
Calcium	mg/L	11/14/2012	N001	7.4 - 22.4	610		F	#	0.024	
Chloride	mg/L	11/14/2012	N001	7.4 - 22.4	180		F	#	10	
Iron	mg/L	11/14/2012	N001	7.4 - 22.4	0.018	B	F	#	0.0049	
Magnesium	mg/L	11/14/2012	N001	7.4 - 22.4	19		F	#	0.013	
Manganese	mg/L	11/14/2012	N001	7.4 - 22.4	4.3		F	#	0.00011	
Molybdenum	mg/L	11/14/2012	N001	7.4 - 22.4	1.4		F	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	7.4 - 22.4	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	7.4 - 22.4	-95		F	#		
pH	s.u.	11/14/2012	N001	7.4 - 22.4	6.8		F	#		
Potassium	mg/L	11/14/2012	N001	7.4 - 22.4	21		F	#	0.11	
Selenium	mg/L	11/14/2012	N001	7.4 - 22.4	0.006		F	#	0.00016	
Sodium	mg/L	11/14/2012	N001	7.4 - 22.4	160		F	#	0.013	
Specific Conductance	umhos /cm	11/14/2012	N001	7.4 - 22.4	3030		F	#		
H2/H1	‰	11/14/2012	0001	7.4 - 22.4	-119.2			#		
O18/O16	‰	11/14/2012	0001	7.4 - 22.4	-15.58			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0217 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	7.4	-	22.4	1600		F	#	25	
Temperature	C	11/14/2012	N001	7.4	-	22.4	11.5		F	#		
Turbidity	NTU	11/14/2012	N001	7.4	-	22.4	2.01		F	#		
Uranium	mg/L	11/14/2012	N001	7.4	-	22.4	0.15		F	#	0.00015	
Uranium-234	pCi/L	11/14/2012	N001	7.4	-	22.4	49.6		F	#	0.027	7.68
Uranium-235	pCi/L	11/14/2012	N001	7.4	-	22.4	2.35		F	#	0.032	0.413
Uranium-238	pCi/L	11/14/2012	N001	7.4	-	22.4	50.8		F	#	0.048	7.87
Vanadium	mg/L	11/14/2012	N001	7.4	-	22.4	1.7		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0590 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	5.21 - 19.21	300		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	5.21 - 19.21	180		F	#	5	
Arsenic	mg/L	11/14/2012	N001	5.21 - 19.21	0.0011		F	#	0.000074	
Calcium	mg/L	11/14/2012	N001	5.21 - 19.21	510		F	#	0.06	
Chloride	mg/L	11/14/2012	N001	5.21 - 19.21	280		F	#	10	
Iron	mg/L	11/14/2012	N001	5.21 - 19.21	0.12	B	UF	#	0.025	
Magnesium	mg/L	11/14/2012	N001	5.21 - 19.21	59		F	#	0.065	
Manganese	mg/L	11/14/2012	N001	5.21 - 19.21	9.3		F	#	0.00057	
Molybdenum	mg/L	11/14/2012	N001	5.21 - 19.21	1.2		F	#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	5.21 - 19.21	9.6		F	#	0.1	
Oxidation Reduction Potential	mV	11/14/2012	N001	5.21 - 19.21	-50		F	#		
pH	s.u.	11/14/2012	N001	5.21 - 19.21	6.67		F	#		
Potassium	mg/L	11/14/2012	N001	5.21 - 19.21	29		F	#	0.54	
Selenium	mg/L	11/14/2012	N001	5.21 - 19.21	0.025		F	#	0.00016	
Sodium	mg/L	11/14/2012	N001	5.21 - 19.21	450		F	#	0.033	
Specific Conductance	umhos /cm	11/14/2012	N001	5.21 - 19.21	4885		F	#		
H2/H1	‰	11/14/2012	0001	5.21 - 19.21	-119.29			#		
O18/O16	‰	11/14/2012	0001	5.21 - 19.21	-15.84			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0590 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	5.21 - 19.21	2600		F	#	25	
Temperature	C	11/14/2012	N001	5.21 - 19.21	12.6		F	#		
Turbidity	NTU	11/14/2012	N001	5.21 - 19.21	2.12		F	#		
Uranium	mg/L	11/14/2012	N001	5.21 - 19.21	0.078		F	#	0.000015	
Uranium-234	pCi/L	11/14/2012	N001	5.21 - 19.21	25.5		F	#	0.045	3.95
Uranium-235	pCi/L	11/14/2012	N001	5.21 - 19.21	1.1		F	#	0.036	0.213
Uranium-238	pCi/L	11/14/2012	N001	5.21 - 19.21	26.2		F	#	0.024	4.06
Vanadium	mg/L	11/14/2012	N001	5.21 - 19.21	0.43		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0609 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	6 - 21	420		F	#		
Ammonia Total as N	mg/L	11/14/2012	0001	6 - 21	0.2		F	#	0.1	
Arsenic	mg/L	11/14/2012	0001	6 - 21	0.00054		F	#	0.000015	
Calcium	mg/L	11/14/2012	0001	6 - 21	160		F	#	0.012	
Chloride	mg/L	11/14/2012	0001	6 - 21	45		F	#	4	
Iron	mg/L	11/14/2012	0001	6 - 21	0.007	B	UF	#	0.0049	
Magnesium	mg/L	11/14/2012	0001	6 - 21	110		F	#	0.013	
Manganese	mg/L	11/14/2012	0001	6 - 21	2		F	#	0.00011	
Molybdenum	mg/L	11/14/2012	0001	6 - 21	0.014		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	0001	6 - 21	0.36		F	#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	6 - 21	76.2		F	#		
pH	s.u.	11/14/2012	N001	6 - 21	6.98		F	#		
Potassium	mg/L	11/14/2012	0001	6 - 21	7.9		F	#	0.11	
Selenium	mg/L	11/14/2012	0001	6 - 21	0.0024		F	#	0.000032	
Sodium	mg/L	11/14/2012	0001	6 - 21	110		F	#	0.0066	
Specific Conductance	umhos /cm	11/14/2012	N001	6 - 21	1843		F	#		
H2/H1	‰	11/14/2012	0002	6 - 21	-109.05			#		
O18/O16	‰	11/14/2012	0002	6 - 21	-13.98			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0609 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	0001	6 - 21	530		F	#	10	
Temperature	C	11/14/2012	N001	6 - 21	10.82		F	#		
Turbidity	NTU	11/14/2012	N001	6 - 21	45.2		F	#		
Uranium	mg/L	11/14/2012	0001	6 - 21	0.03		F	#	0.0000029	
Uranium-234	pCi/L	11/14/2012	0001	6 - 21	12.7		F	#	0.025	1.99
Uranium-235	pCi/L	11/14/2012	0001	6 - 21	0.51		F	#	0.011	0.119
Uranium-238	pCi/L	11/14/2012	0001	6 - 21	9.68		F	#	0.05	1.53
Vanadium	mg/L	11/14/2012	0001	6 - 21	0.0023		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0620 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	6.7	-	10.7	540		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	6.7	-	10.7	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	11/14/2012	N002	6.7	-	10.7	0.1	U	F	#	0.1	
Arsenic	mg/L	11/14/2012	N001	6.7	-	10.7	0.00052		F	#	0.000015	
Arsenic	mg/L	11/14/2012	N002	6.7	-	10.7	0.00053		F	#	0.000015	
Calcium	mg/L	11/14/2012	N001	6.7	-	10.7	350		F	#	0.12	
Calcium	mg/L	11/14/2012	N002	6.7	-	10.7	340		F	#	0.12	
Chloride	mg/L	11/14/2012	N001	6.7	-	10.7	900		F	#	20	
Chloride	mg/L	11/14/2012	N002	6.7	-	10.7	910		F	#	20	
Iron	mg/L	11/14/2012	N001	6.7	-	10.7	0.049	U	F	#	0.049	
Iron	mg/L	11/14/2012	N002	6.7	-	10.7	0.049	U	F	#	0.049	
Magnesium	mg/L	11/14/2012	N001	6.7	-	10.7	210		F	#	0.13	
Magnesium	mg/L	11/14/2012	N002	6.7	-	10.7	210		F	#	0.13	
Manganese	mg/L	11/14/2012	N001	6.7	-	10.7	1.1		F	#	0.0011	
Manganese	mg/L	11/14/2012	N002	6.7	-	10.7	1.1		F	#	0.0011	
Molybdenum	mg/L	11/14/2012	N001	6.7	-	10.7	0.0084		F	#	0.000032	
Molybdenum	mg/L	11/14/2012	N002	6.7	-	10.7	0.0082		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	6.7	-	10.7	29		F	#	0.2	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0620 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N002	6.7	-	10.7	30		F	#	0.2	
Oxidation Reduction Potential	mV	11/14/2012	N001	6.7	-	10.7	68.1		F	#		
pH	s.u.	11/14/2012	N001	6.7	-	10.7	7.14		F	#		
Potassium	mg/L	11/14/2012	N001	6.7	-	10.7	7.6	B	F	#	1.1	
Potassium	mg/L	11/14/2012	N002	6.7	-	10.7	11		F	#	1.1	
Selenium	mg/L	11/14/2012	N001	6.7	-	10.7	0.029		F	#	0.000032	
Selenium	mg/L	11/14/2012	N002	6.7	-	10.7	0.028		F	#	0.000032	
Sodium	mg/L	11/14/2012	N001	6.7	-	10.7	890		F	#	0.066	
Sodium	mg/L	11/14/2012	N002	6.7	-	10.7	880		F	#	0.066	
Specific Conductance	umhos /cm	11/14/2012	N001	6.7	-	10.7	6772		F	#		
H2/H1	‰	11/14/2012	0001	6.7	-	10.7	-102.71			#		
O18/O16	‰	11/14/2012	0001	6.7	-	10.7	-12.53			#		
Sulfate	mg/L	11/14/2012	N001	6.7	-	10.7	2100		F	#	50	
Sulfate	mg/L	11/14/2012	N002	6.7	-	10.7	2100		F	#	50	
Temperature	C	11/14/2012	N001	6.7	-	10.7	14.55		F	#		
Turbidity	NTU	11/14/2012	N001	6.7	-	10.7	2.16		F	#		
Uranium	mg/L	11/14/2012	N001	6.7	-	10.7	0.059		F	#	0.0000029	
Uranium	mg/L	11/14/2012	N002	6.7	-	10.7	0.059		F	#	0.0000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0620 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Uranium-234	pCi/L	11/14/2012	N001	6.7	-	10.7	28.8		F	#	0.065	4.53
Uranium-234	pCi/L	11/14/2012	N002	6.7	-	10.7	30.3		F	#	0.096	4.71
Uranium-235	pCi/L	11/14/2012	N001	6.7	-	10.7	0.963		F	#	0.055	0.206
Uranium-235	pCi/L	11/14/2012	N002	6.7	-	10.7	0.857		F	#	0.038	0.181
Uranium-238	pCi/L	11/14/2012	N001	6.7	-	10.7	19.7		F	#	0.052	3.11
Uranium-238	pCi/L	11/14/2012	N002	6.7	-	10.7	19.9		F	#	0.068	3.11
Vanadium	mg/L	11/14/2012	N001	6.7	-	10.7	0.0019		F	#	0.000015	
Vanadium	mg/L	11/14/2012	N002	6.7	-	10.7	0.0018		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0635 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	12 - 17	289		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	12 - 17	90		F	#	5	
Arsenic	mg/L	11/14/2012	N001	12 - 17	0.00026		F	#	0.000015	
Calcium	mg/L	11/14/2012	N001	12 - 17	520		F	#	0.06	
Chloride	mg/L	11/14/2012	N001	12 - 17	230		F	#	10	
Iron	mg/L	11/14/2012	N001	12 - 17	0.025	U	F	#	0.025	
Magnesium	mg/L	11/14/2012	N001	12 - 17	33		F	#	0.065	
Manganese	mg/L	11/14/2012	N001	12 - 17	5.9		F	#	0.00057	
Molybdenum	mg/L	11/14/2012	N001	12 - 17	0.37		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	12 - 17	13		F	#	0.1	
Oxidation Reduction Potential	mV	11/14/2012	N001	12 - 17	64.3		F	#		
pH	s.u.	11/14/2012	N001	12 - 17	6.79		F	#		
Potassium	mg/L	11/14/2012	N001	12 - 17	37		F	#	0.54	
Selenium	mg/L	11/14/2012	N001	12 - 17	0.0075		F	#	0.000032	
Sodium	mg/L	11/14/2012	N001	12 - 17	240		F	#	0.033	
Specific Conductance	umhos /cm	11/14/2012	N001	12 - 17	4023		F	#		
H2/H1	‰	11/14/2012	0001	12 - 17	-113.49			#		
O18/O16	‰	11/14/2012	0001	12 - 17	-14.34			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0635 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	12	-	17	1700		F	#	25	
Temperature	C	11/14/2012	N001	12	-	17	12.53		F	#		
Turbidity	NTU	11/14/2012	N001	12	-	17	1.75		F	#		
Uranium	mg/L	11/14/2012	N001	12	-	17	0.076		F	#	0.0000029	
Uranium-234	pCi/L	11/14/2012	N001	12	-	17	25.2		F	#	0.046	3.92
Uranium-235	pCi/L	11/14/2012	N001	12	-	17	1.24		F	#	0.011	0.238
Uranium-238	pCi/L	11/14/2012	N001	12	-	17	25		F	#	0.0095	3.88
Vanadium	mg/L	11/14/2012	N001	12	-	17	0.00057		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0658 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	.5 - 5.5	299		F	#		
Ammonia Total as N	mg/L	11/13/2012	N001	.5 - 5.5	49		F	#	2	
Arsenic	mg/L	11/13/2012	N001	.5 - 5.5	0.067		F	#	0.0015	
Calcium	mg/L	11/13/2012	N001	.5 - 5.5	480		F	#	0.024	
Chloride	mg/L	11/13/2012	N001	.5 - 5.5	160		F	#	10	
Iron	mg/L	11/13/2012	N001	.5 - 5.5	0.0059	B	UF	#	0.0049	
Magnesium	mg/L	11/13/2012	N001	.5 - 5.5	26		F	#	0.013	
Manganese	mg/L	11/13/2012	N001	.5 - 5.5	2.1		F	#	0.00011	
Molybdenum	mg/L	11/13/2012	N001	.5 - 5.5	1.2		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	11/13/2012	N001	.5 - 5.5	5.6		F	#	0.05	
Oxidation Reduction Potential	mV	11/13/2012	N001	.5 - 5.5	102.3		F	#		
pH	s.u.	11/13/2012	N001	.5 - 5.5	6.79		F	#		
Potassium	mg/L	11/13/2012	N001	.5 - 5.5	11		F	#	0.11	
Selenium	mg/L	11/13/2012	N001	.5 - 5.5	1		F	#	0.0032	
Sodium	mg/L	11/13/2012	N001	.5 - 5.5	150		F	#	0.013	
Specific Conductance	umhos /cm	11/13/2012	N001	.5 - 5.5	2967		F	#		
H2/H1	‰	11/12/2012	0001	.5 - 5.5	-116.59			#		
H2/H1	‰	11/13/2012	0001	.5 - 5.5	-119.5			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0658 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
H2/H1	‰	11/13/2012	0002	.5	-	5.5	-117.73			#		
O18/O16	‰	11/12/2012	0001	.5	-	5.5	-15.1			#		
O18/O16	‰	11/13/2012	0001	.5	-	5.5	-15.61			#		
O18/O16	‰	11/13/2012	0002	.5	-	5.5	-15.22			#		
Sulfate	mg/L	11/13/2012	N001	.5	-	5.5	1200		F	#	25	
Temperature	C	11/13/2012	N001	.5	-	5.5	14.65		F	#		
Turbidity	NTU	11/13/2012	N001	.5	-	5.5	4.77		F	#		
Uranium	mg/L	11/13/2012	N001	.5	-	5.5	0.063		F	#	0.00029	
Uranium-234	pCi/L	11/13/2012	N001	.5	-	5.5	23.1		F	#	0.056	3.6
Uranium-235	pCi/L	11/13/2012	N001	.5	-	5.5	1.11		F	#	0.011	0.218
Uranium-238	pCi/L	11/13/2012	N001	.5	-	5.5	23.5		F	#	0.038	3.66
Vanadium	mg/L	11/13/2012	N001	.5	-	5.5	29		F	#	0.0015	

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Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0659 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	.5 - 10.5	203		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	.5 - 10.5	39		F	#	1	
Arsenic	mg/L	11/14/2012	N001	.5 - 10.5	0.01		F	#	0.00074	
Calcium	mg/L	11/14/2012	N001	.5 - 10.5	630		F	#	0.06	
Chloride	mg/L	11/14/2012	N001	.5 - 10.5	200	N	FJ	#	10	
Iron	mg/L	11/14/2012	N001	.5 - 10.5	0.38	B	F	#	0.025	
Magnesium	mg/L	11/14/2012	N001	.5 - 10.5	28		F	#	0.065	
Manganese	mg/L	11/14/2012	N001	.5 - 10.5	2.6		F	#	0.00057	
Molybdenum	mg/L	11/14/2012	N001	.5 - 10.5	1.6		F	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	.5 - 10.5	14		F	#	0.1	
Oxidation Reduction Potential	mV	11/14/2012	N001	.5 - 10.5	-55		F	#		
pH	s.u.	11/14/2012	N001	.5 - 10.5	6.97		F	#		
Potassium	mg/L	11/14/2012	N001	.5 - 10.5	9.7		F	#	0.54	
Selenium	mg/L	11/14/2012	N001	.5 - 10.5	0.045		F	#	0.0016	
Sodium	mg/L	11/14/2012	N001	.5 - 10.5	180	E	FJ	#	0.033	
Specific Conductance	umhos /cm	11/14/2012	N001	.5 - 10.5	3175		F	#		
H2/H1	‰	11/14/2012	0001	.5 - 10.5	-119.22			#		
O18/O16	‰	11/14/2012	0001	.5 - 10.5	-15.57			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0659 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	.5 - 10.5	1700	N	FJ	#	25	
Temperature	C	11/14/2012	N001	.5 - 10.5	14		F	#		
Turbidity	NTU	11/14/2012	N001	.5 - 10.5	5.48		F	#		
Uranium	mg/L	11/14/2012	N001	.5 - 10.5	0.1		F	#	0.00015	
Uranium-234	pCi/L	11/14/2012	N001	.5 - 10.5	33.9		F	#	0.055	5.27
Uranium-235	pCi/L	11/14/2012	N001	.5 - 10.5	1.5		F	#	0.064	0.286
Uranium-238	pCi/L	11/14/2012	N001	.5 - 10.5	35.5		F	#	0.029	5.53
Vanadium	mg/L	11/14/2012	N001	.5 - 10.5	0.75		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0664 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	7.7 - 14.7	384		F	#		
Ammonia Total as N	mg/L	11/14/2012	N001	7.7 - 14.7	32		F	#	2	
Arsenic	mg/L	11/14/2012	N001	7.7 - 14.7	0.0024		F	#	0.000074	
Molybdenum	mg/L	11/14/2012	N001	7.7 - 14.7	0.41		F	#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	7.7 - 14.7	12		F	#	0.2	
Oxidation Reduction Potential	mV	11/14/2012	N001	7.7 - 14.7	-80		F	#		
pH	s.u.	11/14/2012	N001	7.7 - 14.7	6.85		F	#		
Selenium	mg/L	11/14/2012	N001	7.7 - 14.7	0.092		F	#	0.00016	
Specific Conductance	umhos /cm	11/14/2012	N001	7.7 - 14.7	2195		F	#		
Temperature	C	11/14/2012	N001	7.7 - 14.7	13.8		F	#		
Turbidity	NTU	11/14/2012	N001	7.7 - 14.7	9.85		F	#		
Uranium	mg/L	11/14/2012	N001	7.7 - 14.7	0.054		F	#	0.000015	
Vanadium	mg/L	11/14/2012	N001	7.7 - 14.7	1.5		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0669 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	4 - 10.6	372		FQ	#		
Ammonia Total as N	mg/L	11/14/2012	0001	4 - 10.6	77		FQ	#	2	
Arsenic	mg/L	11/14/2012	0001	4 - 10.6	0.0084		FQ	#	0.00074	
Calcium	mg/L	11/14/2012	0001	4 - 10.6	250		FQ	#	0.012	
Chloride	mg/L	11/14/2012	0001	4 - 10.6	120		FQ	#	10	
Iron	mg/L	11/14/2012	0001	4 - 10.6	0.045	B	FQ	#	0.0049	
Magnesium	mg/L	11/14/2012	0001	4 - 10.6	26		FQ	#	0.013	
Manganese	mg/L	11/14/2012	0001	4 - 10.6	1.9		FQ	#	0.00011	
Molybdenum	mg/L	11/14/2012	0001	4 - 10.6	0.76		FQ	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	0001	4 - 10.6	2.4		FQ	#	0.05	
Oxidation Reduction Potential	mV	11/14/2012	N001	4 - 10.6	-35		FQ	#		
pH	s.u.	11/14/2012	N001	4 - 10.6	6.94		FQ	#		
Potassium	mg/L	11/14/2012	0001	4 - 10.6	8.5		FQ	#	0.11	
Selenium	mg/L	11/14/2012	0001	4 - 10.6	0.015		FQ	#	0.0016	
Sodium	mg/L	11/14/2012	0001	4 - 10.6	180		FQ	#	0.013	
Specific Conductance	umhos /cm	11/14/2012	N001	4 - 10.6	2305		FQ	#		
H2/H1	‰	11/14/2012	0002	4 - 10.6	-117.66			#		
O18/O16	‰	11/14/2012	0002	4 - 10.6	-14.96			#		

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Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0669 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	0001	4 - 10.6	830		FQ	#	25	
Temperature	C	11/14/2012	N001	4 - 10.6	13.5		FQ	#		
Turbidity	NTU	11/14/2012	N001	4 - 10.6	30.5		FQ	#		
Uranium	mg/L	11/14/2012	0001	4 - 10.6	0.073		FQ	#	0.00015	
Uranium-234	pCi/L	11/14/2012	0001	4 - 10.6	25.4		FQ	#	0.034	3.96
Uranium-235	pCi/L	11/14/2012	0001	4 - 10.6	1.15		FQ	#	0.04	0.227
Uranium-238	pCi/L	11/14/2012	0001	4 - 10.6	24.4		FQ	#	0.027	3.79
Vanadium	mg/L	11/14/2012	0001	4 - 10.6	4.1		FQ	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0670 WELL For Organics Study.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	5.2 - 12.2	387		F	#		
Ammonia Total as N	mg/L	11/13/2012	N001	5.2 - 12.2	16		F	#	1	
Arsenic	mg/L	11/13/2012	N001	5.2 - 12.2	0.0049		F	#	0.00015	
Calcium	mg/L	11/13/2012	N001	5.2 - 12.2	150		F	#	0.06	
Chloride	mg/L	11/13/2012	N001	5.2 - 12.2	110		F	#	4	
Iron	mg/L	11/13/2012	N001	5.2 - 12.2	0.025	U	F	#	0.025	
Magnesium	mg/L	11/13/2012	N001	5.2 - 12.2	91		F	#	0.065	
Manganese	mg/L	11/13/2012	N001	5.2 - 12.2	0.74		F	#	0.00057	
Molybdenum	mg/L	11/13/2012	N001	5.2 - 12.2	0.19		F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	11/13/2012	N001	5.2 - 12.2	3.4		F	#	0.05	
Oxidation Reduction Potential	mV	11/13/2012	N001	5.2 - 12.2	91.6		F	#		
pH	s.u.	11/13/2012	N001	5.2 - 12.2	6.97		F	#		
Potassium	mg/L	11/13/2012	N001	5.2 - 12.2	8.8		F	#	0.54	
Selenium	mg/L	11/13/2012	N001	5.2 - 12.2	0.26		F	#	0.00032	
Sodium	mg/L	11/13/2012	N001	5.2 - 12.2	190		F	#	0.033	
Specific Conductance	umhos /cm	11/13/2012	N001	5.2 - 12.2	2273		F	#		
H2/H1	‰	11/13/2012	0001	5.2 - 12.2	-118.44			#		
O18/O16	‰	11/13/2012	0001	5.2 - 12.2	-15.48			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0670 WELL For Organics Study.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/13/2012	N001	5.2 - 12.2	710		F	#	10	
Temperature	C	11/13/2012	N001	5.2 - 12.2	15.29		F	#		
Turbidity	NTU	11/13/2012	N001	5.2 - 12.2	6.66		F	#		
Uranium	mg/L	11/13/2012	N001	5.2 - 12.2	0.071		F	#	0.000029	
Uranium-234	pCi/L	11/13/2012	N001	5.2 - 12.2	28.5		F	#	0.063	4.44
Uranium-235	pCi/L	11/13/2012	N001	5.2 - 12.2	0.97		F	#	0.06	0.199
Uranium-238	pCi/L	11/13/2012	N001	5.2 - 12.2	24.8		F	#	0.075	3.86
Vanadium	mg/L	11/13/2012	N001	5.2 - 12.2	2.5		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0680 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2012	N001	5 - 10	219		F	#		
Ammonia Total as N	mg/L	11/15/2012	N001	5 - 10	50		F	#	2	
Arsenic	mg/L	11/15/2012	N001	5 - 10	0.003		F	#	0.00015	
Calcium	mg/L	11/15/2012	N001	5 - 10	640		F	#	0.024	
Chloride	mg/L	11/15/2012	N001	5 - 10	190	N	F	#	10	
Iron	mg/L	11/15/2012	N001	5 - 10	0.055	B	UF	#	0.0099	
Magnesium	mg/L	11/15/2012	N001	5 - 10	27		F	#	0.026	
Manganese	mg/L	11/15/2012	N001	5 - 10	4.1		F	#	0.00023	
Molybdenum	mg/L	11/15/2012	N001	5 - 10	2		F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	11/15/2012	N001	5 - 10	24		F	#	0.2	
Oxidation Reduction Potential	mV	11/15/2012	N001	5 - 10	87.2		F	#		
pH	s.u.	11/15/2012	N001	5 - 10	6.81		F	#		
Potassium	mg/L	11/15/2012	N001	5 - 10	9		F	#	0.22	
Selenium	mg/L	11/15/2012	N001	5 - 10	0.0029		F	#	0.00032	
Sodium	mg/L	11/15/2012	N001	5 - 10	190		F	#	0.013	
Specific Conductance	umhos /cm	11/15/2012	N001	5 - 10	3670		F	#		
H2/H1	‰	11/15/2012	0001	5 - 10	-117.7			#		
O18/O16	‰	11/15/2012	0001	5 - 10	-14.88			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0680 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/15/2012	N001	5 - 10	1700		F	#	25	
Temperature	C	11/15/2012	N001	5 - 10	15.13		F	#		
Turbidity	NTU	11/15/2012	N001	5 - 10	4.8		F	#		
Uranium	mg/L	11/15/2012	N001	5 - 10	0.099		F	#	0.000029	
Uranium-234	pCi/L	11/15/2012	N001	5 - 10	34.7		F	#	0.059	5.4
Uranium-235	pCi/L	11/15/2012	N001	5 - 10	1.59		F	#	0.061	0.301
Uranium-238	pCi/L	11/15/2012	N001	5 - 10	34.5		F	#	0.068	5.38
Vanadium	mg/L	11/15/2012	N001	5 - 10	0.041		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0855 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	6 - 11	270		F	#		
Ammonia Total as N	mg/L	11/13/2012	N001	6 - 11	34		F	#	1	
Ammonia Total as N	mg/L	11/13/2012	N002	6 - 11	36		F	#	1	
Arsenic	mg/L	11/13/2012	N001	6 - 11	0.68		F	#	0.0015	
Arsenic	mg/L	11/13/2012	N002	6 - 11	0.7		F	#	0.0015	
Calcium	mg/L	11/13/2012	N001	6 - 11	370		F	#	0.012	
Calcium	mg/L	11/13/2012	N002	6 - 11	370		F	#	0.012	
Chloride	mg/L	11/13/2012	N001	6 - 11	150		F	#	10	
Chloride	mg/L	11/13/2012	N002	6 - 11	150		F	#	10	
Iron	mg/L	11/13/2012	N001	6 - 11	0.0055	B	UF	#	0.0049	
Iron	mg/L	11/13/2012	N002	6 - 11	0.0049	U	F	#	0.0049	
Magnesium	mg/L	11/13/2012	N001	6 - 11	35		F	#	0.013	
Magnesium	mg/L	11/13/2012	N002	6 - 11	35		F	#	0.013	
Manganese	mg/L	11/13/2012	N001	6 - 11	1		F	#	0.00011	
Manganese	mg/L	11/13/2012	N002	6 - 11	0.97		F	#	0.00011	
Molybdenum	mg/L	11/13/2012	N001	6 - 11	1.2		F	#	0.0032	
Molybdenum	mg/L	11/13/2012	N002	6 - 11	1.2		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	11/13/2012	N001	6 - 11	16		F	#	0.1	
Nitrate + Nitrite as Nitrogen	mg/L	11/13/2012	N002	6 - 11	14		F	#	0.1	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0855 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Oxidation Reduction Potential	mV	11/13/2012	N001	6	-	11	106.3		F	#		
pH	s.u.	11/13/2012	N001	6	-	11	6.54		F	#		
Potassium	mg/L	11/13/2012	N001	6	-	11	12		F	#	0.11	
Potassium	mg/L	11/13/2012	N002	6	-	11	12		F	#	0.11	
Selenium	mg/L	11/13/2012	N001	6	-	11	0.95		F	#	0.0032	
Selenium	mg/L	11/13/2012	N002	6	-	11	0.98		F	#	0.0032	
Sodium	mg/L	11/13/2012	N001	6	-	11	160		F	#	0.013	
Sodium	mg/L	11/13/2012	N002	6	-	11	170		F	#	0.013	
Specific Conductance	umhos /cm	11/13/2012	N001	6	-	11	3262		F	#		
H2/H1	‰	11/13/2012	0001	6	-	11	-117.65			#		
O18/O16	‰	11/13/2012	0001	6	-	11	-15.03			#		
Sulfate	mg/L	11/13/2012	N001	6	-	11	1200		F	#	25	
Sulfate	mg/L	11/13/2012	N002	6	-	11	1100		F	#	25	
Temperature	C	11/13/2012	N001	6	-	11	15.31		F	#		
Turbidity	NTU	11/13/2012	N001	6	-	11	5.83		F	#		
Uranium	mg/L	11/13/2012	N001	6	-	11	0.045		F	#	0.00029	
Uranium	mg/L	11/13/2012	N002	6	-	11	0.049		F	#	0.00029	
Uranium-234	pCi/L	11/13/2012	N001	6	-	11	16.2		F	#	0.044	2.54
Uranium-234	pCi/L	11/13/2012	N002	6	-	11	16.1		F	#	0.069	2.54

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0855 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Uranium-235	pCi/L	11/13/2012	N001	6	-	11	0.676		F	#	0.032	0.151
Uranium-235	pCi/L	11/13/2012	N002	6	-	11	0.687		F	#	0.061	0.158
Uranium-238	pCi/L	11/13/2012	N001	6	-	11	15.8		F	#	0.048	2.49
Uranium-238	pCi/L	11/13/2012	N002	6	-	11	15.5		F	#	0.047	2.45
Vanadium	mg/L	11/13/2012	N001	6	-	11	31		F	#	0.0015	
Vanadium	mg/L	11/13/2012	N002	6	-	11	31		F	#	0.0015	

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.

Old Rifle
Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0292A WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	N001	10.5	-	20.5	465		F	#		
Calcium	mg/L	11/12/2012	N001	10.5	-	20.5	140		F	#	0.012	
Chloride	mg/L	11/12/2012	N001	10.5	-	20.5	91		F	#	4	
Iron	mg/L	11/12/2012	N001	10.5	-	20.5	0.095	B	F	#	0.0049	
Magnesium	mg/L	11/12/2012	N001	10.5	-	20.5	82		F	#	0.013	
Manganese	mg/L	11/12/2012	N001	10.5	-	20.5	0.8		F	#	0.00011	
Oxidation Reduction Potential	mV	11/12/2012	N001	10.5	-	20.5	0.4		F	#		
pH	s.u.	11/12/2012	N001	10.5	-	20.5	7.04		F	#		
Potassium	mg/L	11/12/2012	N001	10.5	-	20.5	6		F	#	0.11	
Selenium	mg/L	11/12/2012	N001	10.5	-	20.5	0.00016		F	#	0.000032	
Sodium	mg/L	11/12/2012	N001	10.5	-	20.5	160		F	#	0.013	
Specific Conductance	umhos /cm	11/12/2012	N001	10.5	-	20.5	1816		F	#		
H2/H1	‰	11/12/2012	0001	10.5	-	20.5	-113.64			0		
H2/H1	‰	11/12/2012	0002	10.5	-	20.5	-117.15			0		
O18/O16	‰	11/12/2012	0001	10.5	-	20.5	-14.5			0		
O18/O16	‰	11/12/2012	0002	10.5	-	20.5	-15.27			0		
Sulfate	mg/L	11/12/2012	N001	10.5	-	20.5	550		F	#	10	
Temperature	C	11/12/2012	N001	10.5	-	20.5	13.21		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0292A WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Turbidity	NTU	11/12/2012	N001	10.5	-	20.5	2.07		F	#		
Uranium	mg/L	11/12/2012	N001	10.5	-	20.5	0.022		F	#	0.0000029	
Uranium-234	pCi/L	11/12/2012	N001	10.5	-	20.5	11.2		F	#	0.028	1.78
Uranium-235	pCi/L	11/12/2012	N001	10.5	-	20.5	0.252		F	#	0.021	0.0775
Uranium-238	pCi/L	11/12/2012	N001	10.5	-	20.5	7.12		F	#	0.049	1.14
Vanadium	mg/L	11/12/2012	N001	10.5	-	20.5	0.00026	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0304 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	13.2 - 18.2	281		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	13.2 - 18.2	0.3		F	#		
pH	s.u.	11/13/2012	N001	13.2 - 18.2	7.13		F	#		
Selenium	mg/L	11/13/2012	N001	13.2 - 18.2	0.0028		F	#	0.000032	
Specific Conductance	umhos /cm	11/13/2012	N001	13.2 - 18.2	1643		F	#		
Temperature	C	11/13/2012	N001	13.2 - 18.2	14.85		F	#		
Turbidity	NTU	11/13/2012	N001	13.2 - 18.2	2.06		F	#		
Uranium	mg/L	11/13/2012	N001	13.2 - 18.2	0.034		F	#	0.0000029	
Vanadium	mg/L	11/13/2012	N001	13.2 - 18.2	0.057		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0305 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	13.76 - 18.76	342		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	13.76 - 18.76	16.6		F	#		
pH	s.u.	11/13/2012	N001	13.76 - 18.76	7.23		F	#		
Selenium	mg/L	11/13/2012	N001	13.76 - 18.76	0.021		F	#	0.00016	
Specific Conductance	umhos /cm	11/13/2012	N001	13.76 - 18.76	1821		F	#		
Temperature	C	11/13/2012	N001	13.76 - 18.76	16.02		F	#		
Turbidity	NTU	11/13/2012	N001	13.76 - 18.76	1.13		F	#		
Uranium	mg/L	11/13/2012	N001	13.76 - 18.76	0.057		F	#	0.000015	
Vanadium	mg/L	11/13/2012	N001	13.76 - 18.76	0.43		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0309 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	16.93 - 21.93	375		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	16.93 - 21.93	-14		F	#		
pH	s.u.	11/13/2012	N001	16.93 - 21.93	7.04		F	#		
Selenium	mg/L	11/13/2012	N001	16.93 - 21.93	0.00017		F	#	0.000032	
Specific Conductance	umhos /cm	11/13/2012	N001	16.93 - 21.93	2383		F	#		
Temperature	C	11/13/2012	N001	16.93 - 21.93	14.25		F	#		
Turbidity	NTU	11/13/2012	N001	16.93 - 21.93	2.66		F	#		
Uranium	mg/L	11/13/2012	N001	16.93 - 21.93	0.023		F	#	0.0000029	
Vanadium	mg/L	11/13/2012	N001	16.93 - 21.93	0.00021	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0310 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	17.93 - 22.93	473		F	#		
Oxidation Reduction Potential	mV	11/14/2012	N001	17.93 - 22.93	-18.8		F	#		
pH	s.u.	11/14/2012	N001	17.93 - 22.93	7.03		F	#		
Selenium	mg/L	11/14/2012	N001	17.93 - 22.93	0.00025		F	#	0.000032	
Specific Conductance	umhos /cm	11/14/2012	N001	17.93 - 22.93	2246		F	#		
Temperature	C	11/14/2012	N001	17.93 - 22.93	14.08		F	#		
Turbidity	NTU	11/14/2012	N001	17.93 - 22.93	3.76		F	#		
Uranium	mg/L	11/14/2012	N001	17.93 - 22.93	0.17		F	#	0.000015	
Vanadium	mg/L	11/14/2012	N001	17.93 - 22.93	0.0092		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0655 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	13.6 - 23.6	433		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	13.6 - 23.6	31.7		F	#		
pH	s.u.	11/13/2012	N001	13.6 - 23.6	7.01		F	#		
Selenium	mg/L	11/13/2012	N001	13.6 - 23.6	0.0096		F	#	0.00016	
Specific Conductance	umhos /cm	11/13/2012	N001	13.6 - 23.6	2124		F	#		
Temperature	C	11/13/2012	N001	13.6 - 23.6	14.85		F	#		
Turbidity	NTU	11/13/2012	N001	13.6 - 23.6	1.61		F	#		
Uranium	mg/L	11/13/2012	N001	13.6 - 23.6	0.076		F	#	0.000015	
Vanadium	mg/L	11/13/2012	N001	13.6 - 23.6	0.3		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0656 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	N001	6.35 - 21.35	413		F	#		
Oxidation Reduction Potential	mV	11/12/2012	N001	6.35 - 21.35	168.6		F	#		
pH	s.u.	11/12/2012	N001	6.35 - 21.35	7.02		F	#		
Selenium	mg/L	11/12/2012	N001	6.35 - 21.35	0.0052		F	#	0.00016	
Specific Conductance	umhos /cm	11/12/2012	N001	6.35 - 21.35	2119		F	#		
Temperature	C	11/12/2012	N001	6.35 - 21.35	17.36		F	#		
Turbidity	NTU	11/12/2012	N001	6.35 - 21.35	3.22		F	#		
Uranium	mg/L	11/12/2012	N001	6.35 - 21.35	0.19		F	#	0.000015	
Vanadium	mg/L	11/12/2012	N001	6.35 - 21.35	0.022		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0658 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	N001	2.3	-	17.3	350		F	#		
Calcium	mg/L	11/12/2012	N001	2.3	-	17.3	140		F	#	0.012	
Chloride	mg/L	11/12/2012	N001	2.3	-	17.3	22		F	#	4	
Iron	mg/L	11/12/2012	N001	2.3	-	17.3	0.037	B	F	#	0.0049	
Magnesium	mg/L	11/12/2012	N001	2.3	-	17.3	79		F	#	0.013	
Manganese	mg/L	11/12/2012	N001	2.3	-	17.3	0.68		F	#	0.00011	
Oxidation Reduction Potential	mV	11/12/2012	N001	2.3	-	17.3	35		F	#		
pH	s.u.	11/12/2012	N001	2.3	-	17.3	7.03		F	#		
Potassium	mg/L	11/12/2012	N001	2.3	-	17.3	3.2		F	#	0.11	
Selenium	mg/L	11/12/2012	N001	2.3	-	17.3	0.0047		F	#	0.000032	
Sodium	mg/L	11/12/2012	N001	2.3	-	17.3	61		F	#	0.0066	
Specific Conductance	umhos /cm	11/12/2012	N001	2.3	-	17.3	1364		F	#		
Sulfate	mg/L	11/12/2012	N001	2.3	-	17.3	370		F	#	10	
Temperature	C	11/12/2012	N001	2.3	-	17.3	12.06		F	#		
Turbidity	NTU	11/12/2012	N001	2.3	-	17.3	2.31		F	#		
Uranium	mg/L	11/12/2012	N001	2.3	-	17.3	0.0096		F	#	0.0000029	
Uranium-234	pCi/L	11/12/2012	N001	2.3	-	17.3	5.33		F	#	0.033	0.865
Uranium-235	pCi/L	11/12/2012	N001	2.3	-	17.3	0.125		F	#	0.011	0.0494
Uranium-238	pCi/L	11/12/2012	N001	2.3	-	17.3	3.28		F	#	0.026	0.549
Vanadium	mg/L	11/12/2012	N001	2.3	-	17.3	0.00065		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0742-2 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	N001	14.05 - 14.55	255		F	#		
Oxidation Reduction Potential	mV	11/12/2012	N001	14.05 - 14.55	142		F	#		
pH	s.u.	11/12/2012	N001	14.05 - 14.55	7.13		F	#		
Selenium	mg/L	11/12/2012	N001	14.05 - 14.55	0.0061		F	#	0.00016	
Selenium	mg/L	11/12/2012	N002	14.05 - 14.55	0.0064		F	#	0.00016	
Specific Conductance	umhos /cm	11/12/2012	N001	14.05 - 14.55	1552		F	#		
Temperature	C	11/12/2012	N001	14.05 - 14.55	13.14		F	#		
Turbidity	NTU	11/12/2012	N001	14.05 - 14.55	4.85		F	#		
Uranium	mg/L	11/12/2012	N001	14.05 - 14.55	0.022		F	#	0.000015	
Uranium	mg/L	11/12/2012	N002	14.05 - 14.55	0.022		F	#	0.000015	
Vanadium	mg/L	11/12/2012	N001	14.05 - 14.55	0.4		F	#	0.000076	
Vanadium	mg/L	11/12/2012	N002	14.05 - 14.55	0.4		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0742-3 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	N001	18.05 - 18.55	212		F	#		
Oxidation Reduction Potential	mV	11/12/2012	N001	18.05 - 18.55	80		F	#		
pH	s.u.	11/12/2012	N001	18.05 - 18.55	7.37		F	#		
Selenium	mg/L	11/12/2012	N001	18.05 - 18.55	0.0058		F	#	0.00016	
Specific Conductance	umhos /cm	11/12/2012	N001	18.05 - 18.55	1410		F	#		
Temperature	C	11/12/2012	N001	18.05 - 18.55	13.26		F	#		
Turbidity	NTU	11/12/2012	N001	18.05 - 18.55	4.3		F	#		
Uranium	mg/L	11/12/2012	N001	18.05 - 18.55	0.019		F	#	0.000015	
Vanadium	mg/L	11/12/2012	N001	18.05 - 18.55	0.48		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0743-2 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	12.2 - 12.7	475		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	12.2 - 12.7	-25.7		F	#		
pH	s.u.	11/13/2012	N001	12.2 - 12.7	6.91		F	#		
Selenium	mg/L	11/13/2012	N001	12.2 - 12.7	0.1		F	#	0.0016	
Specific Conductance	umhos /cm	11/13/2012	N001	12.2 - 12.7	2565		F	#		
Temperature	C	11/13/2012	N001	12.2 - 12.7	14.89		F	#		
Turbidity	NTU	11/13/2012	N001	12.2 - 12.7	2.44		F	#		
Uranium	mg/L	11/13/2012	N001	12.2 - 12.7	0.23		F	#	0.00015	
Vanadium	mg/L	11/13/2012	N001	12.2 - 12.7	3.7		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0743-3 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	16.2	-	16.7	455		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	16.2	-	16.7	-42.1		F	#		
pH	s.u.	11/13/2012	N001	16.2	-	16.7	7.02		F	#		
Selenium	mg/L	11/13/2012	N001	16.2	-	16.7	0.02		F	#	0.0016	
Specific Conductance	umhos /cm	11/13/2012	N001	16.2	-	16.7	2651		F	#		
Temperature	C	11/13/2012	N001	16.2	-	16.7	14.79		F	#		
Turbidity	NTU	11/13/2012	N001	16.2	-	16.7	1.94		F	#		
Uranium	mg/L	11/13/2012	N001	16.2	-	16.7	0.17		F	#	0.00015	
Vanadium	mg/L	11/13/2012	N001	16.2	-	16.7	2.9		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0744-1 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	11.2	-	11.7	582		FQ	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	11.2	-	11.7	-11		FQ	#		
pH	s.u.	11/13/2012	N001	11.2	-	11.7	6.73		FQ	#		
Selenium	mg/L	11/13/2012	0001	11.2	-	11.7	0.00067		FQ	#	0.000032	
Specific Conductance	umhos /cm	11/13/2012	N001	11.2	-	11.7	2901		FQ	#		
Temperature	C	11/13/2012	N001	11.2	-	11.7	13.08		FQ	#		
Turbidity	NTU	11/13/2012	N001	11.2	-	11.7	21.5		FQ	#		
Uranium	mg/L	11/13/2012	0001	11.2	-	11.7	0.07		FQ	#	0.0000029	
Vanadium	mg/L	11/13/2012	0001	11.2	-	11.7	0.0015		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0744-2 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	15.2 - 15.7	450		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	15.2 - 15.7	-37.3		F	#		
pH	s.u.	11/13/2012	N001	15.2 - 15.7	6.98		F	#		
Selenium	mg/L	11/13/2012	N001	15.2 - 15.7	0.00053		F	#	0.000032	
Specific Conductance	umhos /cm	11/13/2012	N001	15.2 - 15.7	2045		F	#		
Temperature	C	11/13/2012	N001	15.2 - 15.7	13.86		F	#		
Turbidity	NTU	11/13/2012	N001	15.2 - 15.7	2.58		F	#		
Uranium	mg/L	11/13/2012	N001	15.2 - 15.7	0.22		F	#	0.000015	
Vanadium	mg/L	11/13/2012	N001	15.2 - 15.7	0.17		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0744-3 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	19.2 - 19.7	444		F	#		
Oxidation Reduction Potential	mV	11/13/2012	N001	19.2 - 19.7	-78.6		F	#		
pH	s.u.	11/13/2012	N001	19.2 - 19.7	7.11		F	#		
Selenium	mg/L	11/13/2012	N001	19.2 - 19.7	0.00021		F	#	0.000032	
Specific Conductance	umhos /cm	11/13/2012	N001	19.2 - 19.7	2041		F	#		
Temperature	C	11/13/2012	N001	19.2 - 19.7	13.33		F	#		
Turbidity	NTU	11/13/2012	N001	19.2 - 19.7	4.87		F	#		
Uranium	mg/L	11/13/2012	N001	19.2 - 19.7	0.12		F	#	0.000015	
Vanadium	mg/L	11/13/2012	N001	19.2 - 19.7	0.005		F	#	0.000015	

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.

New Rifle
Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0320 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	125			#		
Ammonia Total as N	mg/L	11/14/2012	N001	38			#	1	
Arsenic	mg/L	11/14/2012	N001	0.0038			#	0.000074	
Calcium	mg/L	11/14/2012	N001	750			#	0.12	
Chloride	mg/L	11/14/2012	N001	570			#	20	
Iron	mg/L	11/14/2012	N001	0.015	B		#	0.0049	
Magnesium	mg/L	11/14/2012	N001	130			#	0.013	
Manganese	mg/L	11/14/2012	N001	0.084			#	0.00011	
Molybdenum	mg/L	11/14/2012	N001	0.66			#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	3.7			#	0.05	
Oxidation Reduction Potential	mV	11/14/2012	N001	-235			#		
pH	s.u.	11/14/2012	N001	8.01			#		
Potassium	mg/L	11/14/2012	N001	95			#	0.11	
Selenium	mg/L	11/14/2012	N001	0.0066			#	0.00016	
Sodium	mg/L	11/14/2012	N001	740			#	0.066	
Specific Conductance	umhos/cm	11/14/2012	N001	6325			#		
H2/H1	‰	11/14/2012	0001	-35.91			#		
O18/O16	‰	11/14/2012	0001	0.9			#		

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0320 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	3500			#	50	
Temperature	C	11/14/2012	N001	10.8			#		
Turbidity	NTU	11/14/2012	N001	4.53			#		
Uranium	mg/L	11/14/2012	N001	0.087			#	0.000015	
Uranium-234	pCi/L	11/14/2012	N001	27.5			#	0.051	4.27
Uranium-235	pCi/L	11/14/2012	N001	1.4			#	0.031	0.265
Uranium-238	pCi/L	11/14/2012	N001	27.5			#	0.039	4.27
Vanadium	mg/L	11/14/2012	N001	0.038			#	0.000076	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0322 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	72			#		
Ammonia Total as N	mg/L	11/14/2012	N001	0.21			#	0.1	
Arsenic	mg/L	11/14/2012	N001	0.00045			#	0.000015	
Calcium	mg/L	11/14/2012	N001	83			#	0.012	
Chloride	mg/L	11/14/2012	N001	280			#	4	
Iron	mg/L	11/14/2012	N001	0.15			#	0.0049	
Magnesium	mg/L	11/14/2012	N001	18			#	0.013	
Manganese	mg/L	11/14/2012	N001	0.048			#	0.00011	
Molybdenum	mg/L	11/14/2012	N001	0.0047			#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	0.17			#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	-12.5			#		
pH	s.u.	11/14/2012	N001	8.39			#		
Potassium	mg/L	11/14/2012	N001	6.3			#	0.11	
Selenium	mg/L	11/14/2012	N001	0.00071			#	0.000032	
Sodium	mg/L	11/14/2012	N001	150			#	0.013	
Specific Conductance	umhos/cm	11/14/2012	N001	1461			#		
H2/H1	‰	11/14/2012	0001	-119.16			#		
O18/O16	‰	11/14/2012	0001	-15.62			#		

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0322 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/14/2012	N001	140			#	10	
Temperature	C	11/14/2012	N001	4.9			#		
Turbidity	NTU	11/14/2012	N001	6.57			#		
Uranium	mg/L	11/14/2012	N001	0.0029			#	0.0000029	
Uranium-234	pCi/L	11/14/2012	N001	1.7			#	0.049	0.311
Uranium-235	pCi/L	11/14/2012	N001	0.051	U		#	0.051	0.0346
Uranium-238	pCi/L	11/14/2012	N001	1.05			#	0.043	0.208
Vanadium	mg/L	11/14/2012	N001	0.0014			#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0323 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	165			#		
Ammonia Total as N	mg/L	11/14/2012	N001	20			#	1	
Arsenic	mg/L	11/14/2012	N001	0.0017			#	0.00015	
Calcium	mg/L	11/14/2012	N001	650			#	0.12	
Chloride	mg/L	11/20/2012	N001	630			#	20	
Iron	mg/L	11/14/2012	N001	0.049	U		#	0.049	
Magnesium	mg/L	11/14/2012	N001	200			#	0.13	
Manganese	mg/L	11/14/2012	N001	0.21			#	0.0011	
Molybdenum	mg/L	11/14/2012	N001	3.2			#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	56			#	0.5	
Oxidation Reduction Potential	mV	11/14/2012	N001	-280			#		
pH	s.u.	11/14/2012	N001	8.11			#		
Potassium	mg/L	11/14/2012	N001	92			#	1.1	
Selenium	mg/L	11/14/2012	N001	0.0082			#	0.00032	
Sodium	mg/L	11/14/2012	N001	1200			#	0.066	
Specific Conductance	umhos/cm	11/14/2012	N001	7600			#		
H2/H1	‰	11/14/2012	0001	-47.19			#		
O18/O16	‰	11/14/2012	0001	-1.44			#		

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0323 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Sulfate	mg/L	11/20/2012	N001	4400			#	50	
Temperature	C	11/14/2012	N001	8.2			#		
Turbidity	NTU	11/14/2012	N001	4.53			#		
Uranium	mg/L	11/14/2012	N001	0.35			#	0.000029	
Uranium-234	pCi/L	11/14/2012	N001	113			#	0.1	17.7
Uranium-235	pCi/L	11/14/2012	N001	5.17			#	0.071	0.875
Uranium-238	pCi/L	11/14/2012	N001	112			#	0.063	17.5
Vanadium	mg/L	11/14/2012	N001	0.0064			#	0.00015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0324 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	145			#		
Ammonia Total as N	mg/L	11/14/2012	N001	0.1	U		#	0.1	
Arsenic	mg/L	11/14/2012	N001	0.0004			#	0.000015	
Molybdenum	mg/L	11/14/2012	N001	0.0034			#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	0.1			#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	75.5			#		
pH	s.u.	11/14/2012	N001	8.48			#		
Selenium	mg/L	11/14/2012	N001	0.00056			#	0.000032	
Specific Conductance	umhos/cm	11/14/2012	N001	1426			#		
Temperature	C	11/14/2012	N001	5.93			#		
Turbidity	NTU	11/14/2012	N001	5.55			#		
Uranium	mg/L	11/14/2012	N001	0.0027			#	0.0000029	
Vanadium	mg/L	11/14/2012	N001	0.00078			#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0453 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	70			#		
Ammonia Total as N	mg/L	11/14/2012	N001	12			#	1	
Arsenic	mg/L	11/14/2012	N001	0.026			#	0.000074	
Molybdenum	mg/L	11/14/2012	N001	6.1			#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	97			#	0.5	
Oxidation Reduction Potential	mV	11/14/2012	N001	-90			#		
pH	s.u.	11/14/2012	N001	7.49			#		
Selenium	mg/L	11/14/2012	N001	0.051			#	0.00016	
Specific Conductance	umhos/cm	11/14/2012	N001	5975			#		
Temperature	C	11/14/2012	N001	10.2			#		
Turbidity	NTU	11/14/2012	N001	4.53			#		
Uranium	mg/L	11/14/2012	N001	0.067			#	0.000015	
Vanadium	mg/L	11/14/2012	N001	1.8			#	0.000076	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0575 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/14/2012	N001	100			#		
Ammonia Total as N	mg/L	11/14/2012	N001	1.3			#	0.1	
Arsenic	mg/L	11/14/2012	N001	0.0031			#	0.000015	
Calcium	mg/L	11/14/2012	N001	210			#	0.06	
Chloride	mg/L	11/14/2012	N001	320			#	10	
Iron	mg/L	11/14/2012	N001	0.14	B	U	#	0.025	
Magnesium	mg/L	11/14/2012	N001	200			#	0.065	
Manganese	mg/L	11/14/2012	N001	0.091			#	0.00057	
Molybdenum	mg/L	11/14/2012	N001	0.46			#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/14/2012	N001	0.88			#	0.01	
Oxidation Reduction Potential	mV	11/14/2012	N001	-315			#		
pH	s.u.	11/14/2012	N001	8.74			#		
Potassium	mg/L	11/14/2012	N001	41			#	0.54	
Selenium	mg/L	11/14/2012	N001	0.00052			#	0.000032	
Sodium	mg/L	11/14/2012	N001	610			#	0.033	
Specific Conductance	umhos/cm	11/14/2012	N001	4475			#		
H2/H1	‰	11/14/2012	0001	-31.86			#		
O18/O16	‰	11/14/2012	0001	1.83			#		
Sulfate	mg/L	11/14/2012	N001	2500			#	25	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 01/25/2013
Location: 0575 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Temperature	C	11/14/2012	N001	6.8			#		
Turbidity	NTU	11/14/2012	N001	8.63			#		
Uranium	mg/L	11/14/2012	N001	0.059			#	0.0000029	
Uranium-234	pCi/L	11/14/2012	N001	21.7			#	0.044	3.38
Uranium-235	pCi/L	11/14/2012	N001	0.917			#	0.048	0.187
Uranium-238	pCi/L	11/14/2012	N001	19.3			#	0.044	3.01
Vanadium	mg/L	11/14/2012	N001	0.002			#	0.000015	

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.

Old Rifle
Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0294 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	N001	144			#		
Calcium	mg/L	11/12/2012	N001	77			#	0.012	
Chloride	mg/L	11/12/2012	N001	250			#	4	
Iron	mg/L	11/12/2012	N001	0.31			#	0.0049	
Magnesium	mg/L	11/12/2012	N001	17			#	0.013	
Manganese	mg/L	11/12/2012	N001	0.084			#	0.00011	
Oxidation Reduction Potential	mV	11/12/2012	N001	51.5			#		
pH	s.u.	11/12/2012	N001	8.93			#		
Potassium	mg/L	11/12/2012	N001	5.3			#	0.11	
Selenium	mg/L	11/12/2012	N001	0.00054			#	0.000032	
Sodium	mg/L	11/12/2012	N001	140			#	0.0066	
Specific Conductance	umhos/cm	11/12/2012	N001	1282			#		
H2/H1	‰	11/12/2012	0001	-120.72			#		
O18/O16	‰	11/12/2012	0001	-16.16			#		
Sulfate	mg/L	11/12/2012	N001	140			#	5	
Temperature	C	11/12/2012	N001	5.67			#		
Turbidity	NTU	11/12/2012	N001	9.24			#		
Uranium	mg/L	11/12/2012	N001	0.0024			#	0.0000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0294 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Uranium-234	pCi/L	11/12/2012	N001	1.32			#	0.047	0.251
Uranium-235	pCi/L	11/12/2012	N001	0.034	U		#	0.034	0.0266
Uranium-238	pCi/L	11/12/2012	N001	0.89			#	0.037	0.182
Vanadium	mg/L	11/12/2012	N001	0.001			#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0395 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	0001	298			#		
Calcium	mg/L	11/12/2012	0001	100			#	0.012	
Chloride	mg/L	11/12/2012	0001	33			#	2	
Iron	mg/L	11/12/2012	0001	0.082	B		#	0.0049	
Magnesium	mg/L	11/12/2012	0001	75			#	0.013	
Manganese	mg/L	11/12/2012	0001	0.0029	B		#	0.00011	
Oxidation Reduction Potential	mV	11/12/2012	N001	164			#		
pH	s.u.	11/12/2012	N001	7.77			#		
Potassium	mg/L	11/12/2012	0001	3.2			#	0.11	
Selenium	mg/L	11/12/2012	0001	0.0041			#	0.000032	
Sodium	mg/L	11/12/2012	0001	71			#	0.0066	
Specific Conductance	umhos/cm	11/12/2012	N001	1267			#		
H2/H1	‰	11/12/2012	0002	-117.15			#		
O18/O16	‰	11/12/2012	0002	-15.42			#		
Sulfate	mg/L	11/12/2012	0001	370			#	5	
Temperature	C	11/12/2012	N001	12.77			#		
Turbidity	NTU	11/12/2012	N001	13			#		
Uranium	mg/L	11/12/2012	0001	0.027			#	0.0000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0395 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Uranium-234	pCi/L	11/12/2012	0001	12.3			#	0.048	1.94
Uranium-235	pCi/L	11/12/2012	0001	0.487			#	0.032	0.119
Uranium-238	pCi/L	11/12/2012	0001	9.04			#	0.048	1.44
Vanadium	mg/L	11/12/2012	0001	0.0017			#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0396 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	99			#		
Oxidation Reduction Potential	mV	11/13/2012	N001	45			#		
pH	s.u.	11/13/2012	N001	8.27			#		
Selenium	mg/L	11/13/2012	N001	0.00061			#	0.000032	
Specific Conductance	umhos/cm	11/13/2012	N001	1473			#		
Temperature	C	11/13/2012	N001	5.64			#		
Turbidity	NTU	11/13/2012	N001	5.44			#		
Uranium	mg/L	11/13/2012	N001	0.0028			#	0.0000029	
Vanadium	mg/L	11/13/2012	N001	0.0011			#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0398 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/12/2012	N001	243			#		
Calcium	mg/L	11/12/2012	N001	130			#	0.012	
Chloride	mg/L	11/12/2012	N001	190			#	4	
Iron	mg/L	11/12/2012	N001	0.061	B		#	0.0049	
Magnesium	mg/L	11/12/2012	N001	50			#	0.013	
Manganese	mg/L	11/12/2012	N001	0.015			#	0.00011	
Oxidation Reduction Potential	mV	11/12/2012	N001	177			#		
pH	s.u.	11/12/2012	N001	8.28			#		
Potassium	mg/L	11/12/2012	N001	4.2			#	0.11	
Selenium	mg/L	11/12/2012	N001	0.0021			#	0.000032	
Sodium	mg/L	11/12/2012	N001	120			#	0.0066	
Specific Conductance	umhos/cm	11/12/2012	N001	1570			#		
H2/H1	‰	11/12/2012	0001	-112.54			#		
O18/O16	‰	11/12/2012	0001	-14.12			#		
Sulfate	mg/L	11/12/2012	N001	330			#	10	
Temperature	C	11/12/2012	N001	9.36			#		
Turbidity	NTU	11/12/2012	N001	1.43			#		
Uranium	mg/L	11/12/2012	N001	0.016			#	0.0000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0398 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Uranium-234	pCi/L	11/12/2012	N001	6.86			#	0.072	1.11
Uranium-235	pCi/L	11/12/2012	N001	0.205			#	0.048	0.0718
Uranium-238	pCi/L	11/12/2012	N001	5.37			#	0.041	0.875
Vanadium	mg/L	11/12/2012	N001	0.0036			#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 01/25/2013
Location: 0741 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/13/2012	N001	138			#		
Oxidation Reduction Potential	mV	11/13/2012	N001	206			#		
pH	s.u.	11/13/2012	N001	6.94			#		
Selenium	mg/L	11/13/2012	N001	0.00058			#	0.000032	
Specific Conductance	umhos/cm	11/13/2012	N001	1495			#		
Temperature	C	11/13/2012	N001	2.57			#		
Turbidity	NTU	11/13/2012	N001	4.5			#		
Uranium	mg/L	11/13/2012	N001	0.0025			#	0.0000029	
Vanadium	mg/L	11/13/2012	N001	0.00072			#	0.000015	

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

QA QUALIFIER:
- # Validated according to quality assurance guidelines.

Equipment Blank Data

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BLANKS REPORT
LAB: PARAGON/ALS LABORATORY GROUP (Fort Collins, CO)
RIN: 12114947
Report Date: 01/25/2013

Parameter	Site Code	Location ID	Sample Date	Sample ID	Units	Result	Qualifiers Lab	Qualifiers Data	Detection Limit	Uncertainty	Sample Type
Ammonia Total as N	RFN01	0999	11/15/2012	N001	mg/L	0.1	U		0.1		E
Arsenic	RFN01	0999	11/15/2012	N001	mg/L	0.000015	U		0.000015		E
Calcium	RFN01	0999	11/15/2012	N001	mg/L	0.33	B		0.012		E
Chloride	RFN01	0999	11/15/2012	N001	mg/L	0.2	U		0.2		E
Iron	RFN01	0999	11/15/2012	N001	mg/L	0.0049	U		0.0049		E
Magnesium	RFN01	0999	11/15/2012	N001	mg/L	0.013	U		0.013		E
Manganese	RFN01	0999	11/15/2012	N001	mg/L	0.00011	U		0.00011		E
Molybdenum	RFN01	0999	11/15/2012	N001	mg/L	0.000032	U		0.000032		E
Nitrate + Nitrite as Nitrogen	RFN01	0999	11/15/2012	N001	mg/L	0.01	U		0.01		E
Potassium	RFN01	0999	11/15/2012	N001	mg/L	0.11	U		0.11		E
Selenium	RFN01	0999	11/15/2012	N001	mg/L	0.000032	U		0.000032		E
Sodium	RFN01	0999	11/15/2012	N001	mg/L	0.061	B		0.0066		E
Sulfate	RFN01	0999	11/15/2012	N001	mg/L	0.5	U		0.5		E
Uranium	RFN01	0999	11/15/2012	N001	mg/L	0.000018			0.0000029		E
Uranium-234	RFN01	0999	11/15/2012	N001	pCi/L	0.046	U		0.046	0.0264	E
Uranium-235	RFN01	0999	11/15/2012	N001	pCi/L	0.049	U		0.049	0.022	E
Uranium-238	RFN01	0999	11/15/2012	N001	pCi/L	0.054	U		0.054	0.0332	E
Vanadium	RFN01	0999	11/15/2012	N001	mg/L	0.000029	B	U	0.000015		E

BLANKS REPORT

LAB: Reston Stable Isotope Laboratory, (Reston, VA)
RIN: 12114955
Report Date: 01/25/2013

Parameter	Site Code	Location ID	Sample Date	Sample ID	Units	Result	Qualifiers Lab	Qualifiers Data	Detection Limit	Uncertainty	Sample Type
H2/H1	RFN01	0999	11/15/2012	0001	‰	-95.13					E
O18/O16	RFN01	0999	11/15/2012	0001	‰	-11.47					E

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

SAMPLE TYPES:
E Equipment Blank.

Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/10/2013

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)
0169	U	5275.47	11/15/2012	11:40:01	9.22	5266.25
0170	D	5332.97	11/15/2012	09:45:13	94.75	5238.22
0172	D	5229.45	11/14/2012	11:20:40	17.11	5212.34
0195	D	5253.1	11/15/2012	10:50:55	10.2	5242.9
0201	D	5261.07	11/14/2012	15:05:50	14.45	5246.62
0215	O	5271.42	11/14/2012	10:10:35	12.2	5259.22
0216	O	5265.41	11/14/2012	12:25:03	8.13	5257.28
0217	D	5256.98	11/14/2012	12:55:52	5.21	5251.77
0590	D	5256.37	11/14/2012	13:20:48	7.72	5248.65
0609	D	5260.19	11/14/2012	16:10:38	14.99	5245.2
0620	D	5231.22	11/14/2012	13:40:57	10.2	5221.02
0635	D	5256.12	11/14/2012	12:30:59	9.29	5246.83
0658	O	5265.91	11/13/2012	15:45:12	7.72	5258.19
0659	O	5261.33	11/14/2012	11:55:45	7.57	5253.76
0664	O	5270.17	11/14/2012	11:05:24	13.54	5256.63
0669	O	5266.56	11/14/2012	11:25:03	10.81	5255.75
0670	O	5270.94	11/13/2012	14:30:23	13.92	5257.02
0680	D	5261.16	11/15/2012	12:20:10	8.46	5252.7
0855	O	5267.24	11/13/2012	15:15:23	9	5258.24

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
N UNKNOWN O ON SITE U UPGRADIENT

STATIC WATER LEVELS (USEE700) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/10/2013

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0292A		5323.08	11/12/2012	11:20:22	12.34	5310.74	
0304	O	5310.63	11/13/2012	12:40:01	11.89	5298.74	
0305	O	5312.08	11/13/2012	13:00:03	12.81	5299.27	
0309	O	5313.37	11/13/2012	09:40:13	15.83	5297.54	
0310	O	5311.64	11/14/2012	10:20:02	13.75	5297.89	
0655	O	5312.87	11/13/2012	13:30:05	13.76	5299.11	
0656	O	5313.28	11/12/2012	14:20:31	13.76	5299.52	
0658	U	5323.07	11/12/2012	10:40:55	7.73	5315.34	
0742-1		5313.28	11/12/2012	14:49:00			D
0742-2		5313.28	11/12/2012	15:10:23	14.59	5298.69	
0742-3		5313.28	11/12/2012	15:25:14	14.59	5298.69	
0743-1		5310.43	11/13/2012	10:48:00			D
0743-2		5310.43	11/13/2012	11:05:49	13.11	5297.32	
0743-3		5310.43	11/13/2012	11:25:01	13.11	5297.32	
0744-1		5309.25	11/13/2012	10:00:17	12.35	5296.9	
0744-2		5309.25	11/13/2012	10:15:58	12.39	5296.86	
0744-3		5309.25	11/13/2012	10:35:34	12.39	5296.86	

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
N UNKNOWN O ON SITE U UPGRADIENT

WATER LEVEL FLAGS: D Dry F Flowing B Below top of pump

New Rifle Hydrographs

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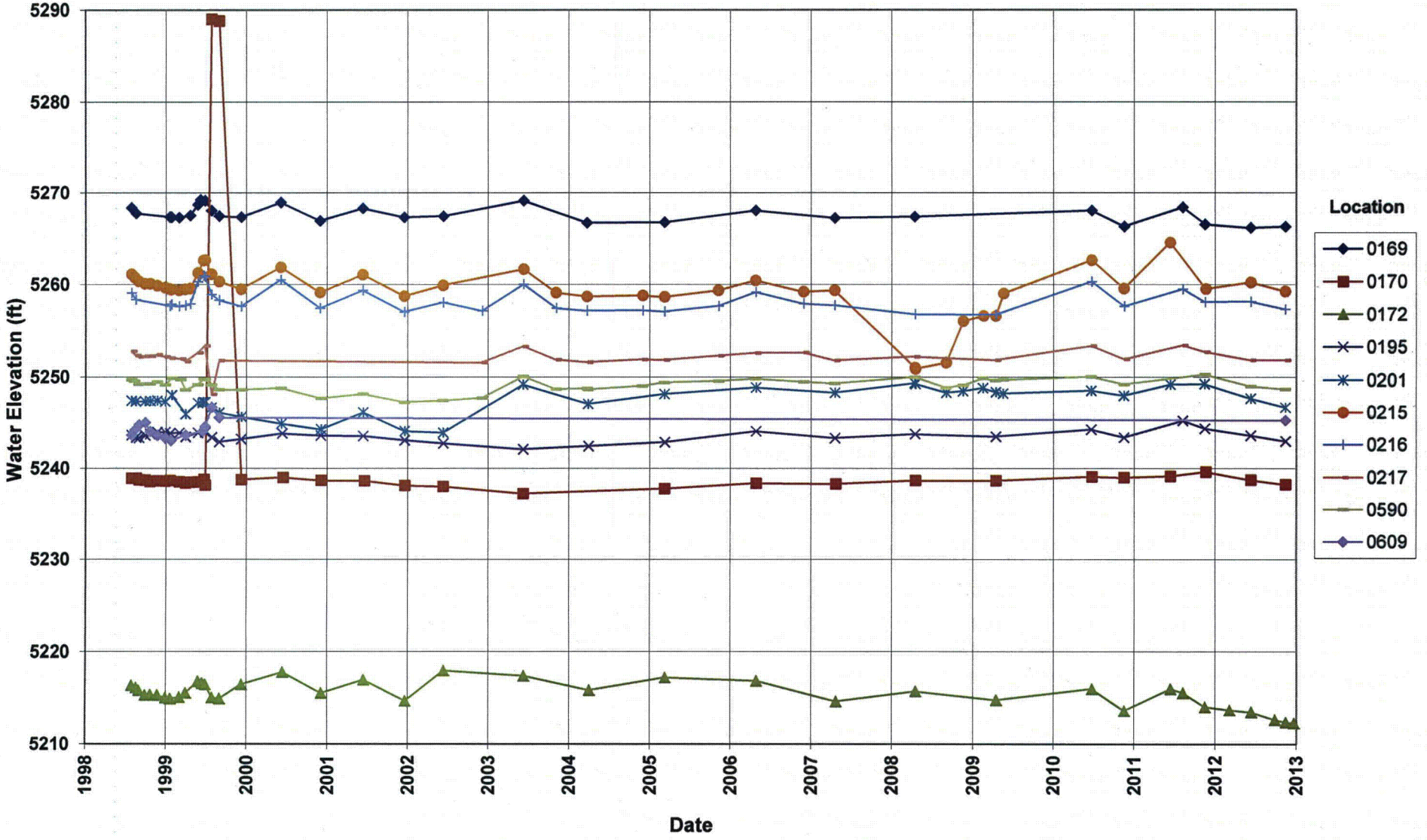
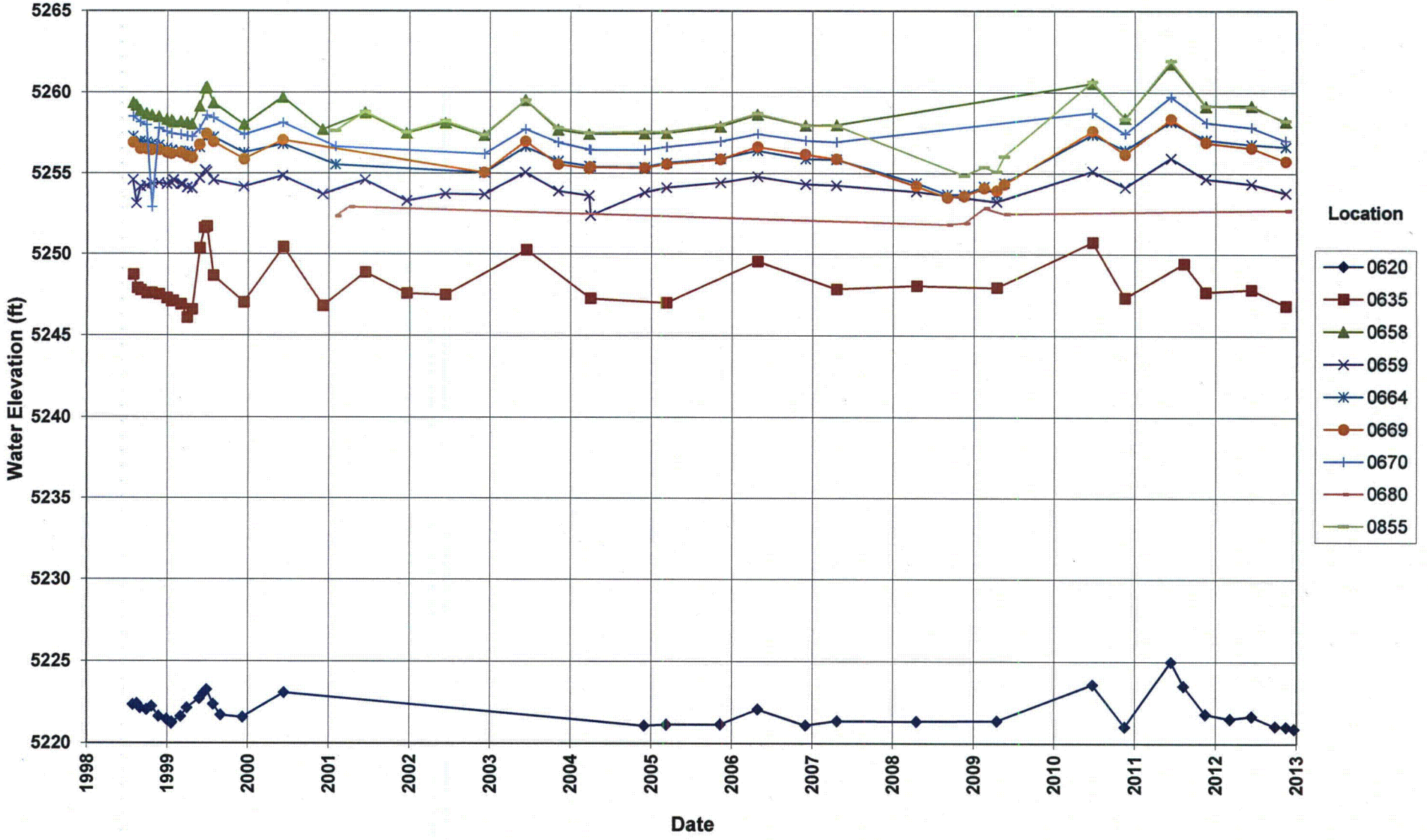
Rifle New Processing Site
Hydrograph



Rifle New Processing Site
Hydrograph



Old Rifle Hydrograph

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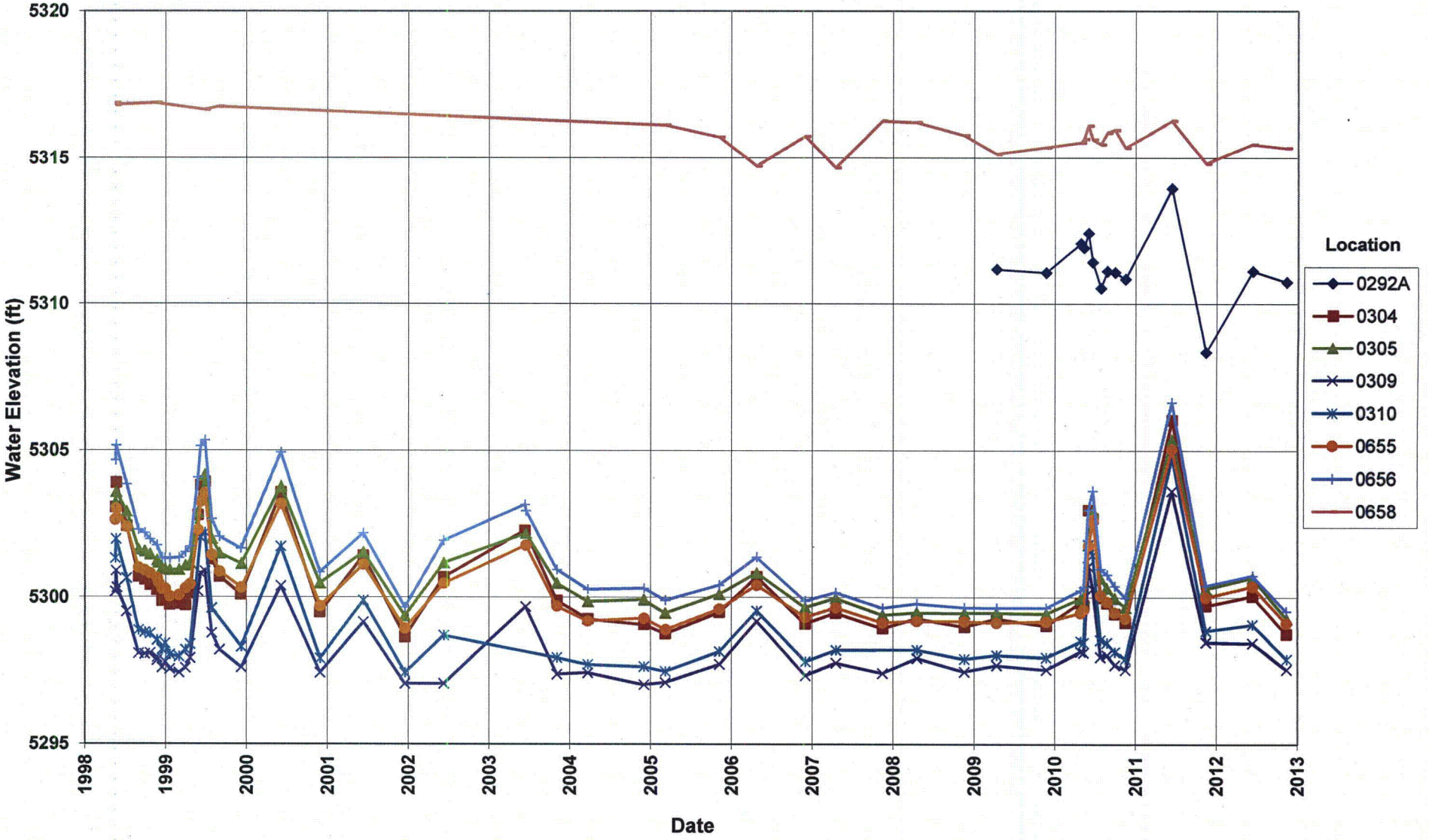
Rifle Old Processing Site
Hydrograph



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New Rifle Groundwater Time-Concentration Graphs

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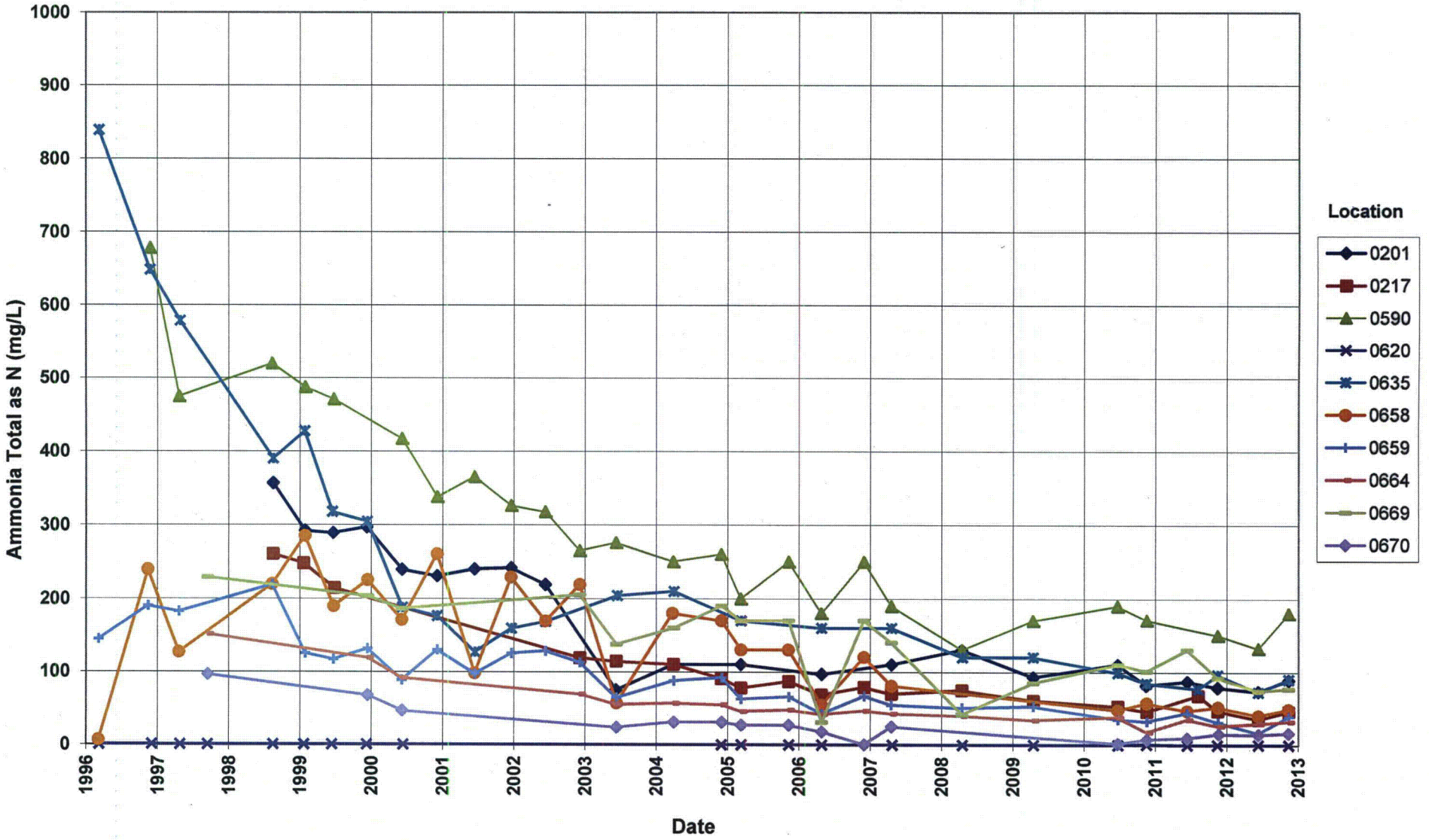
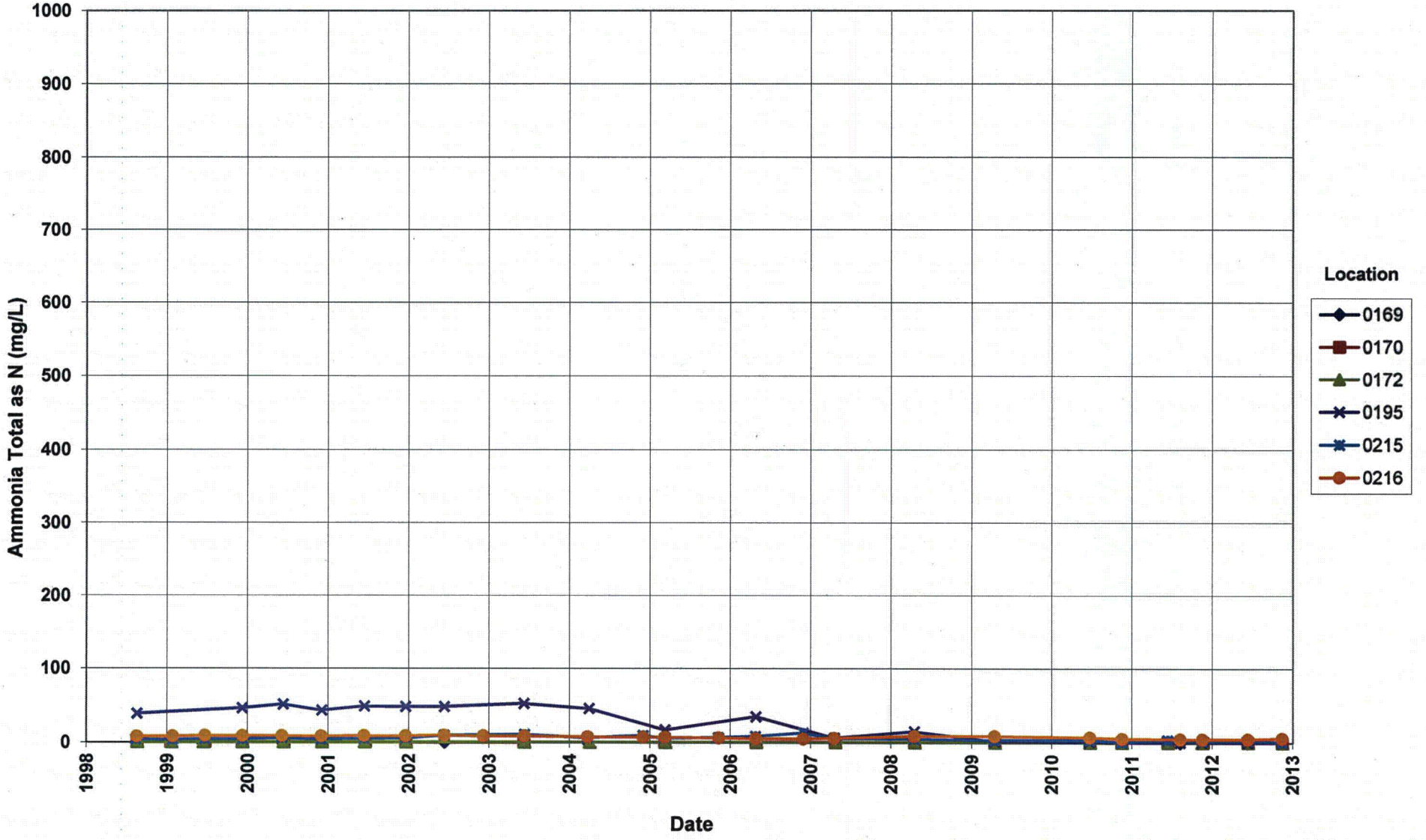
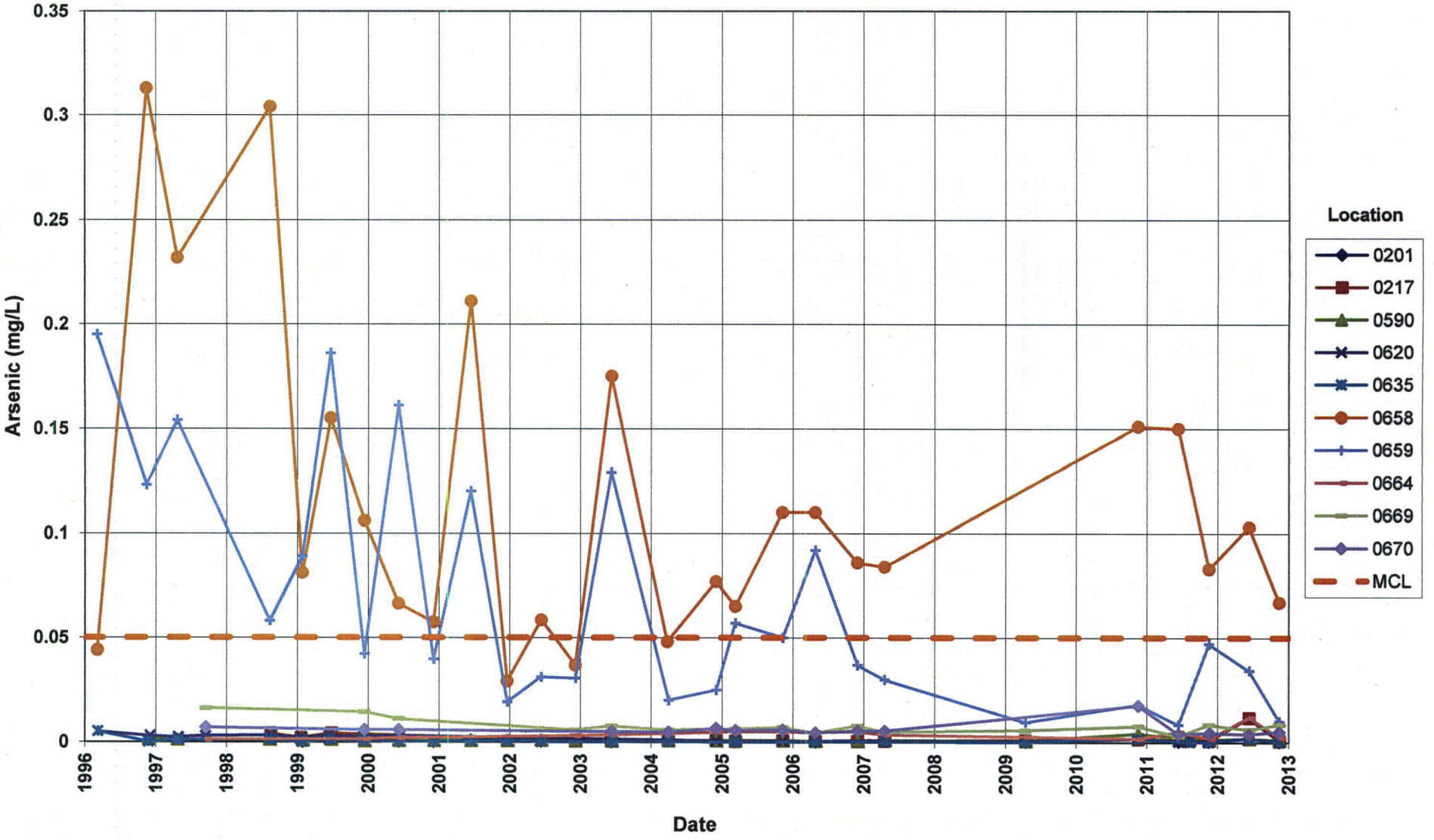
Rifle New Processing Site
Ammonia Total as N Concentration



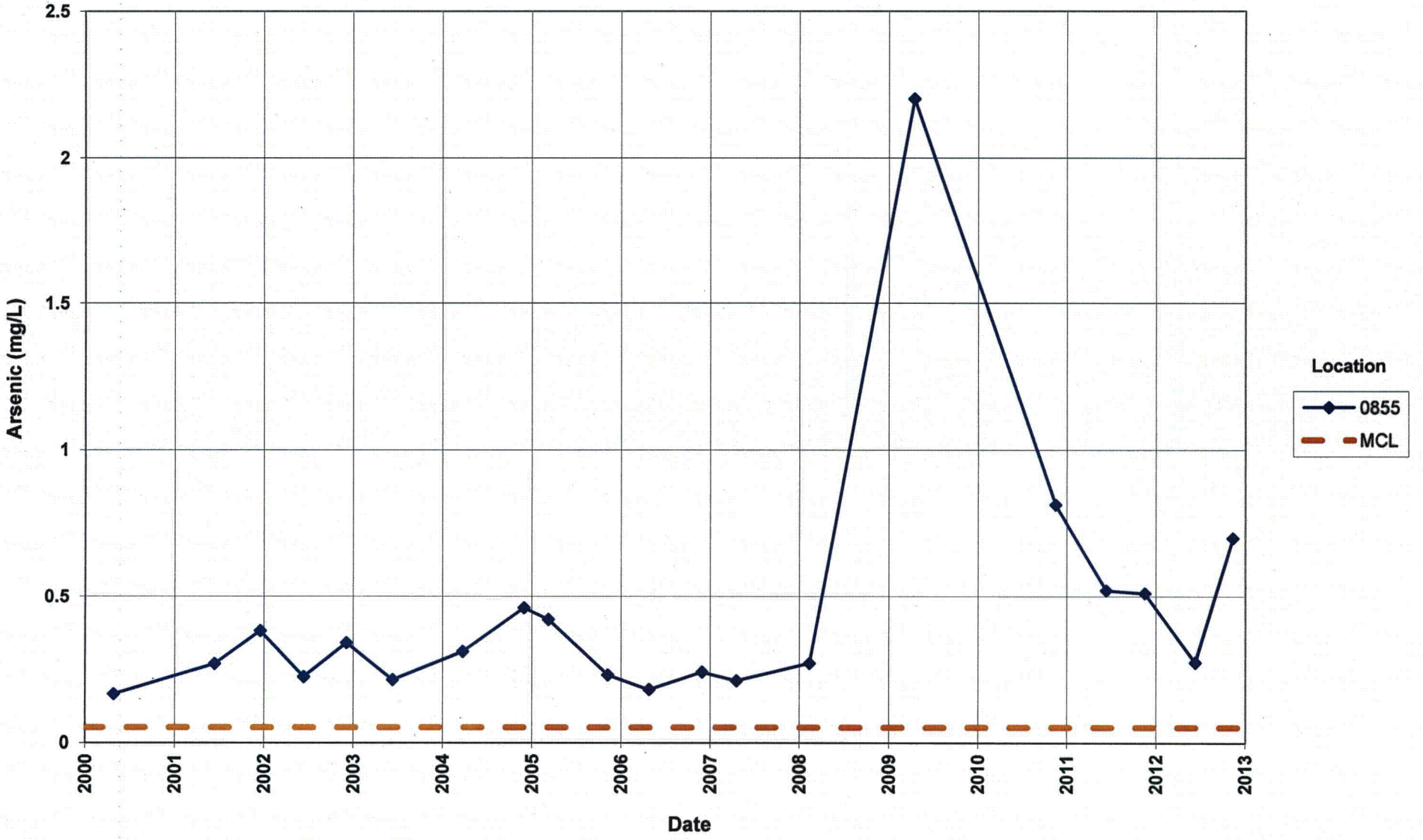
Rifle New Processing Site
Ammonia Total as N Concentration

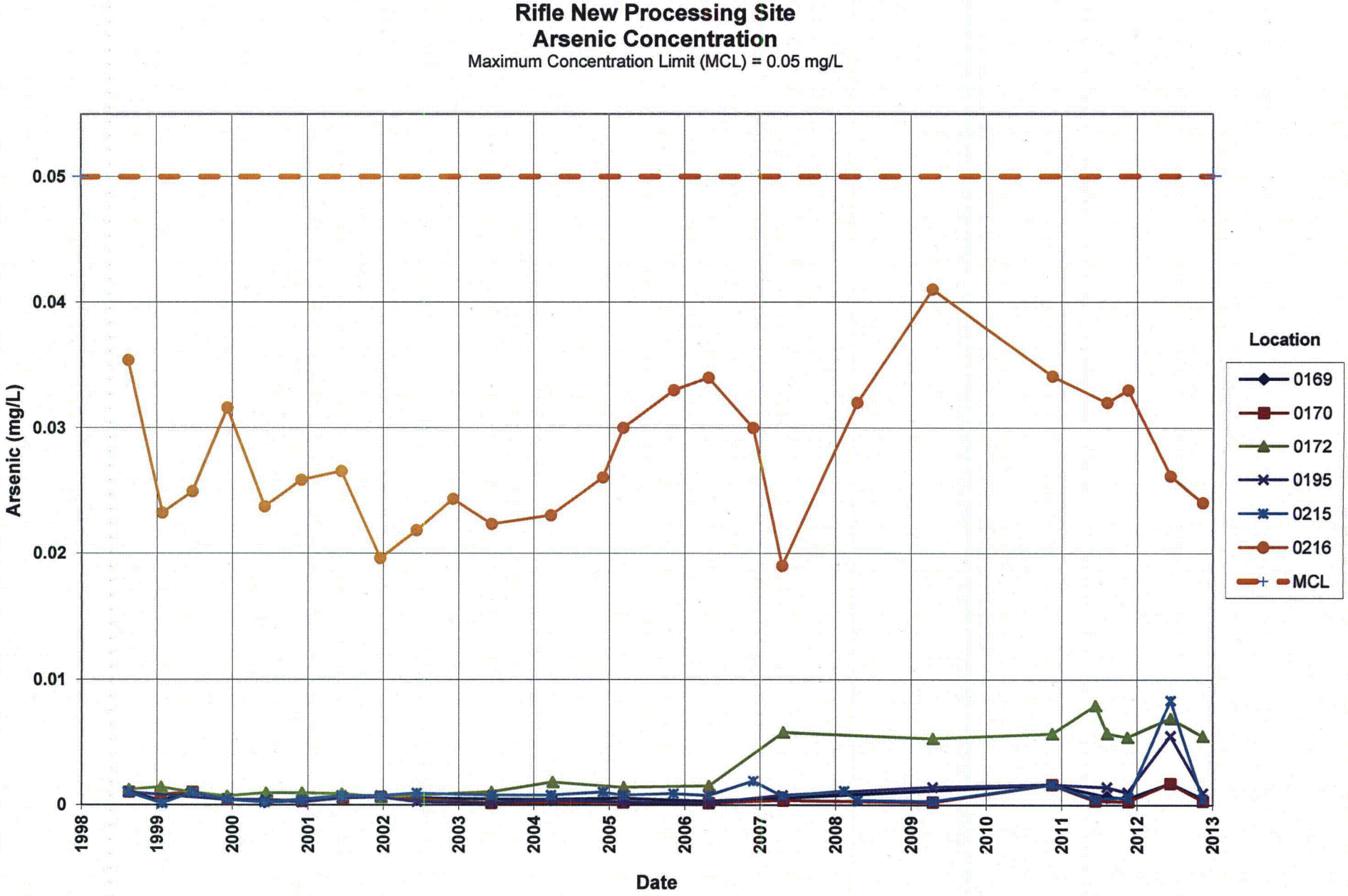


Rifle New Processing Site
Arsenic Concentration
Maximum Concentration Limit (MCL) = 0.05 mg/L

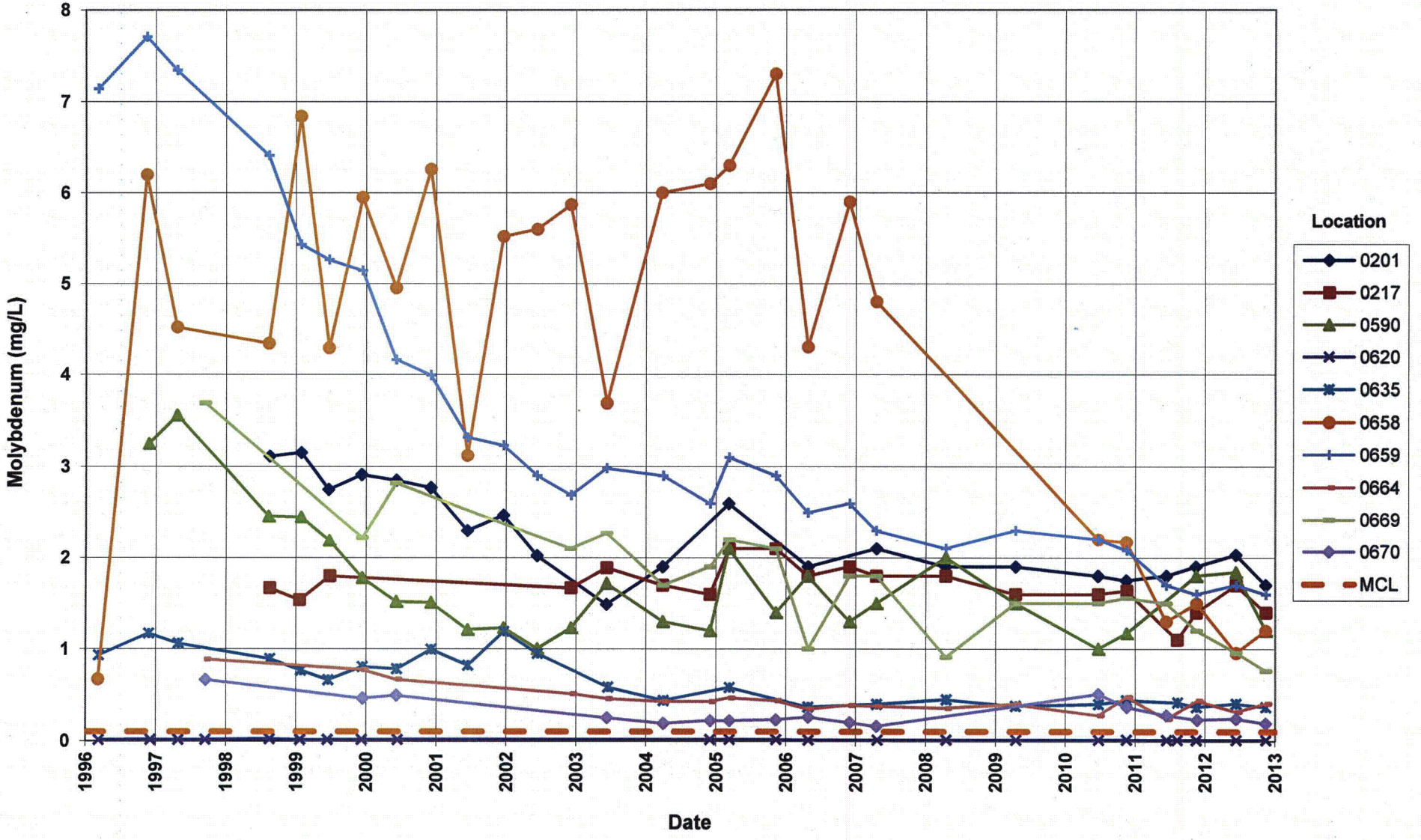


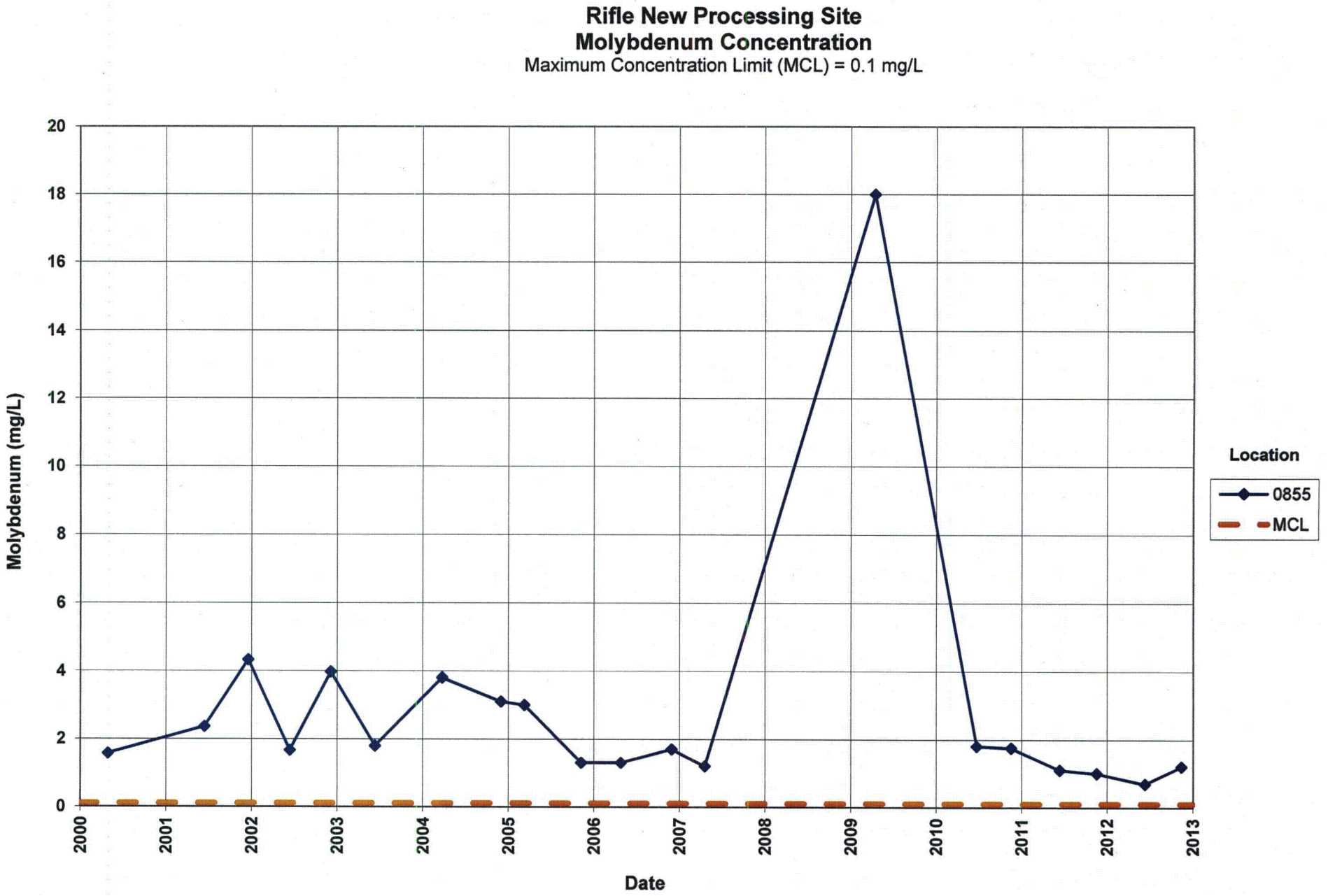
Rifle New Processing Site
Arsenic Concentration
Maximum Concentration Limit (MCL) = 0.05 mg/L

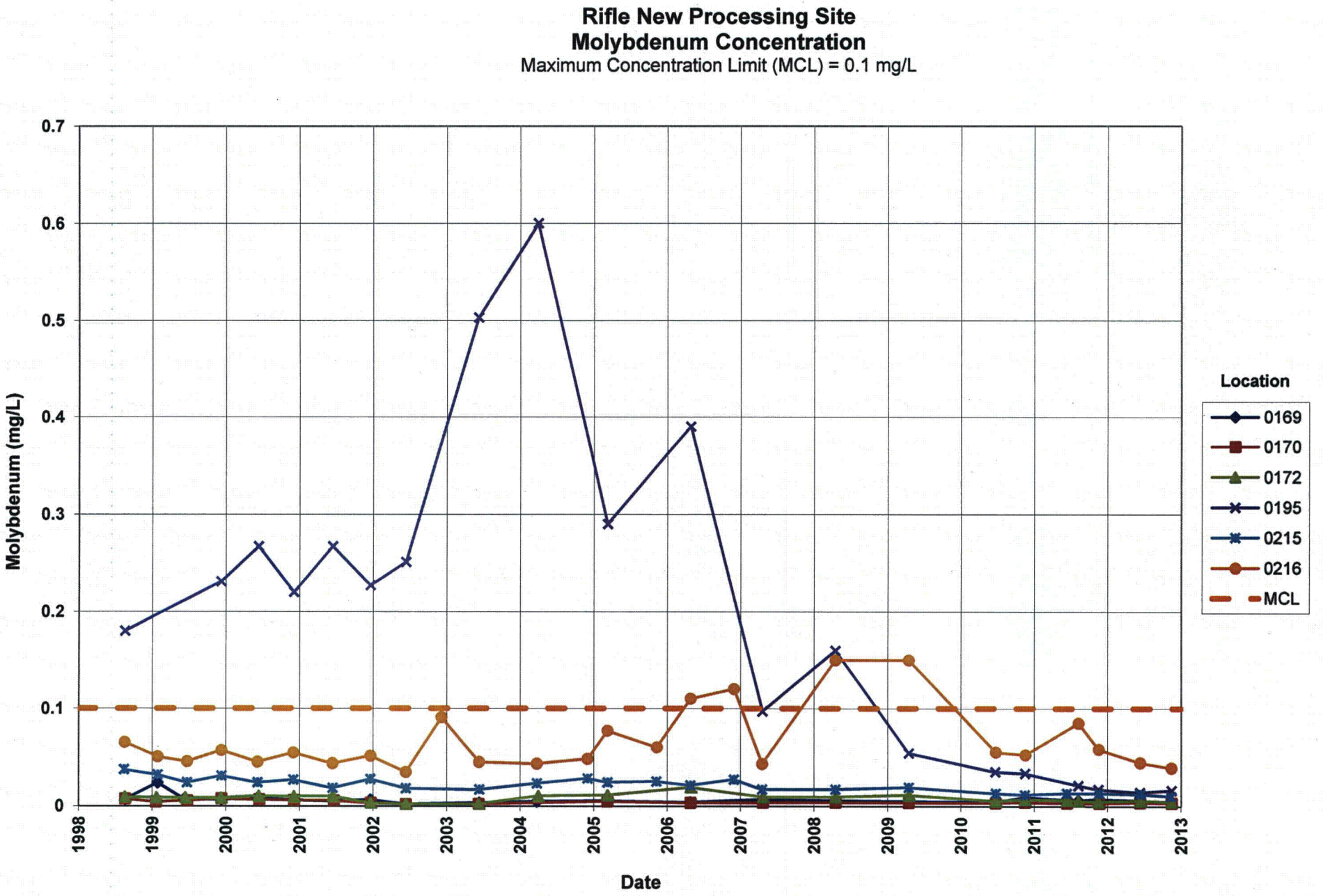



Rifle New Processing Site
Arsenic Concentration
Maximum Concentration Limit (MCL) = 0.05 mg/L
Arsenic (mg/L)
0.05
0.04
0.03
0.02
0.01
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
0169
0170
0172
0195
0215
0216
MCL

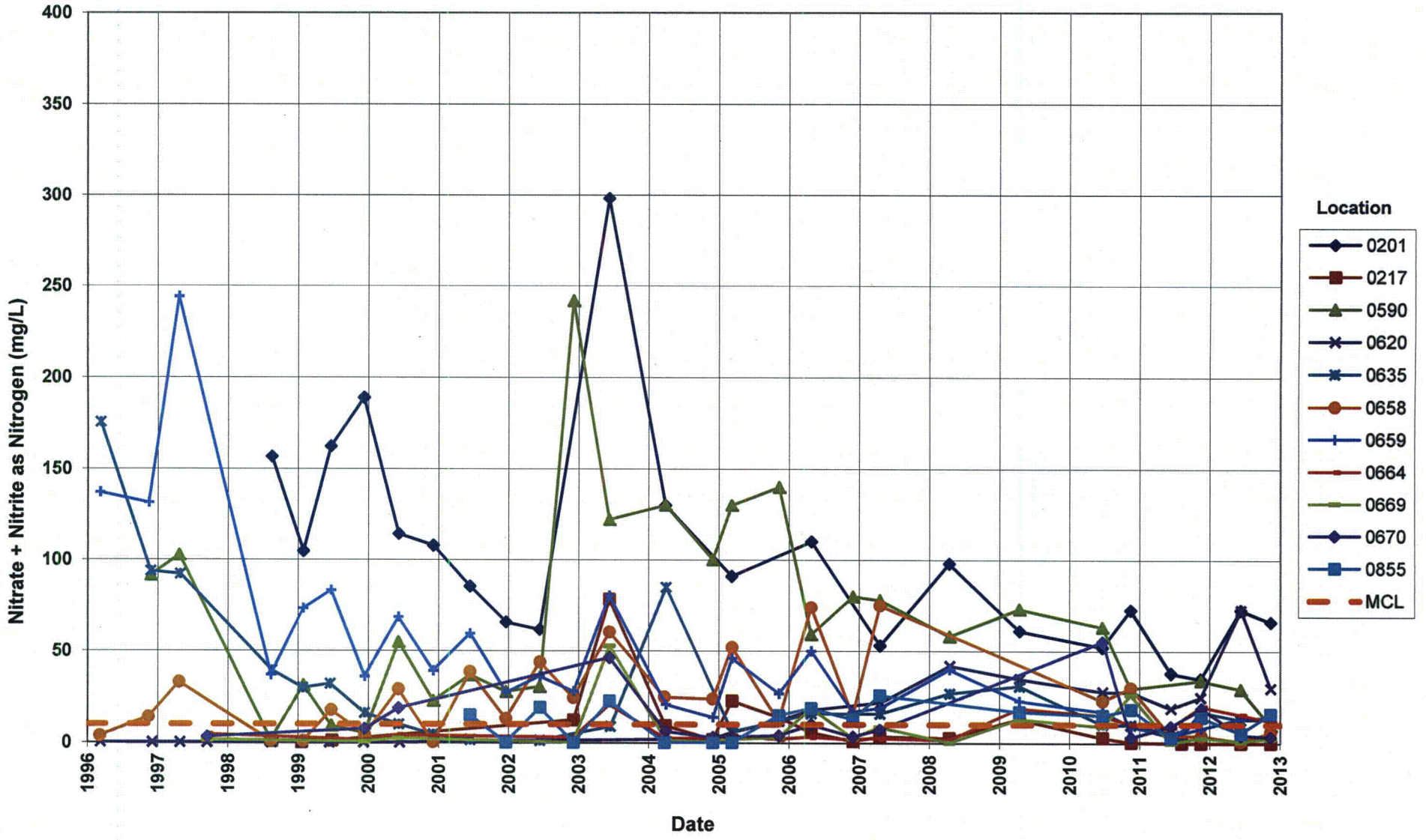
Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L



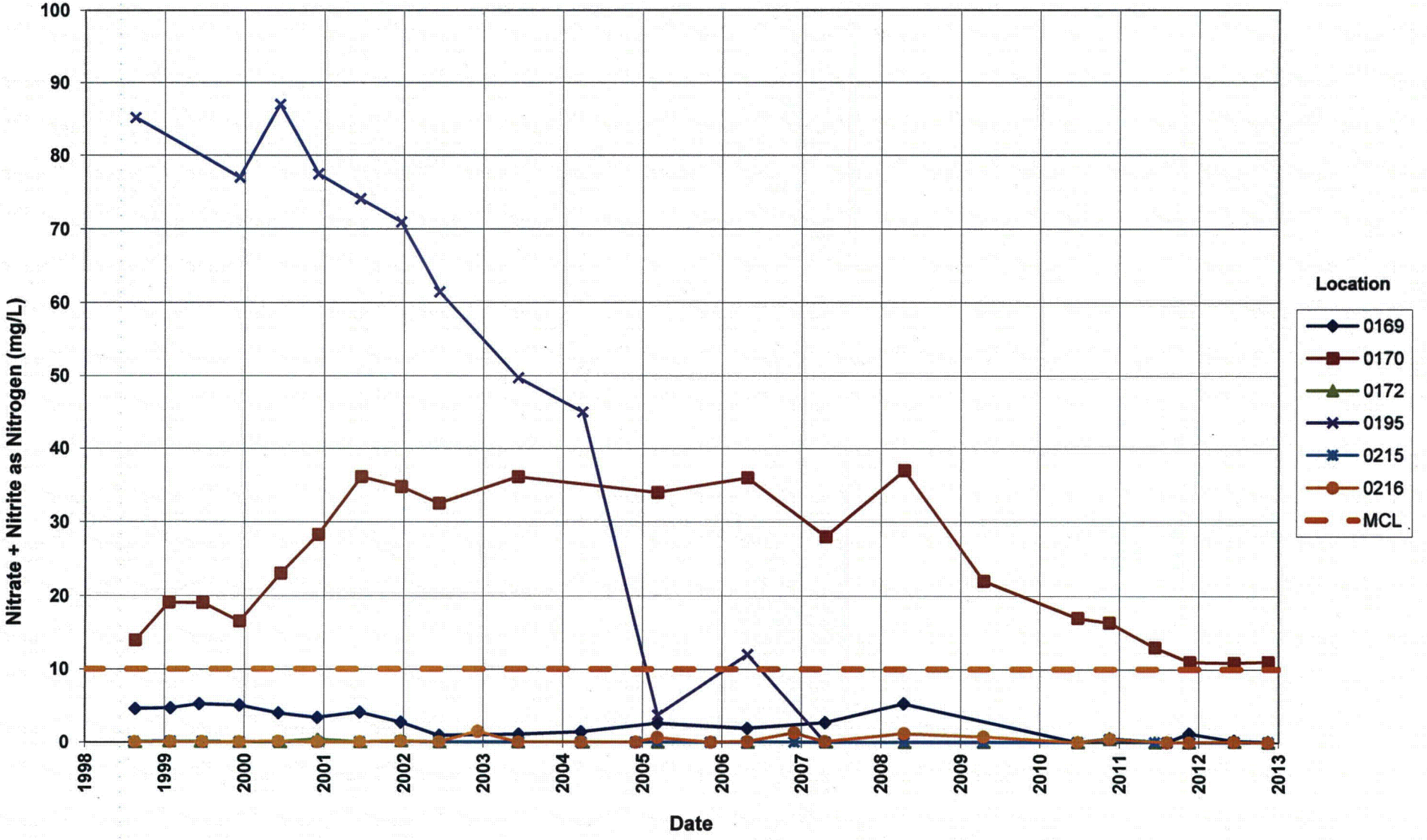

Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L
Molybdenum (mg/L)
20
18
16
14
12
10
8
6
4
2
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
0855
MCL


Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L
Molybdenum (mg/L)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
0169
0170
0172
0195
0215
0216
MCL

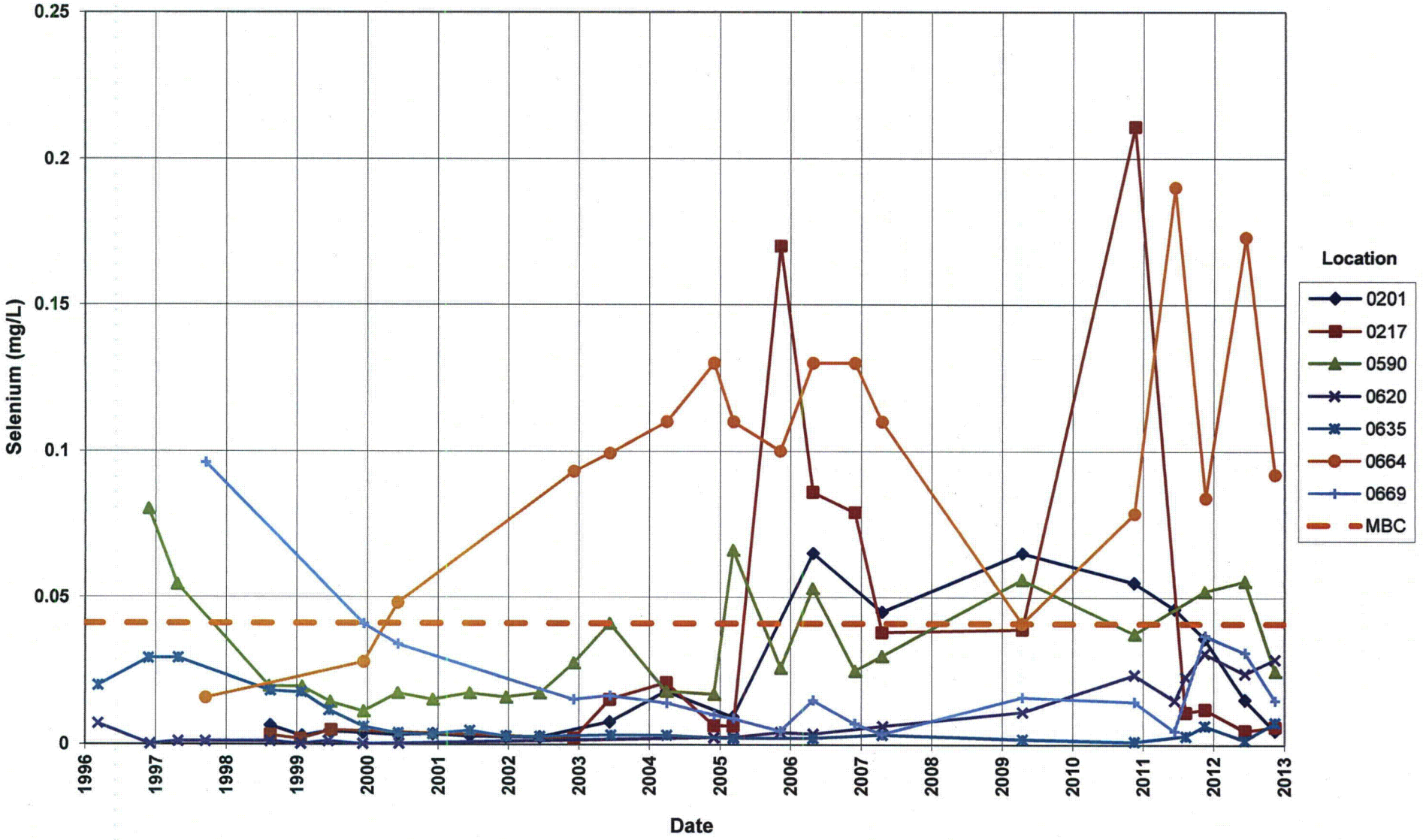
Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10.0 mg/L



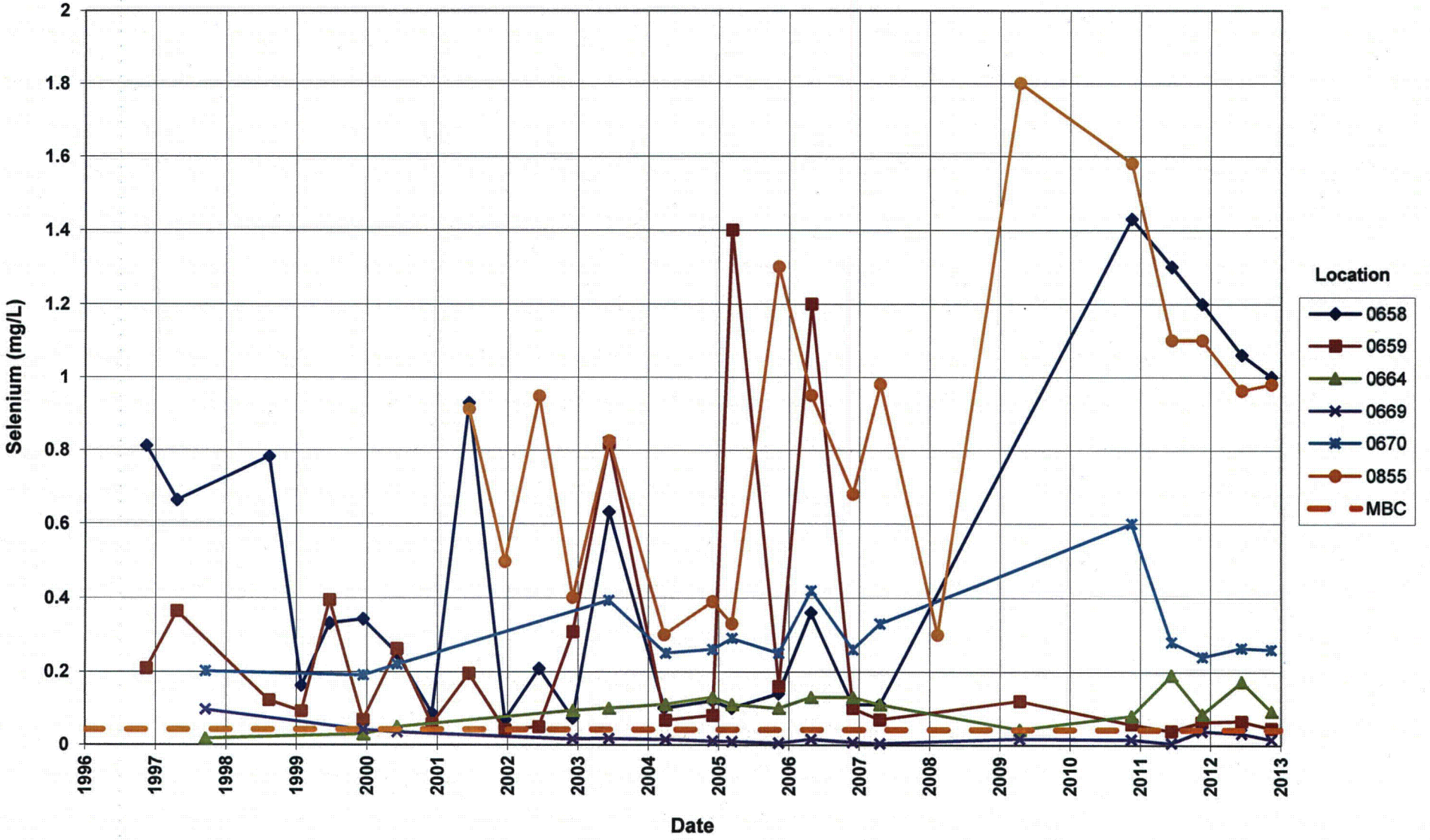
Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10.0 mg/L



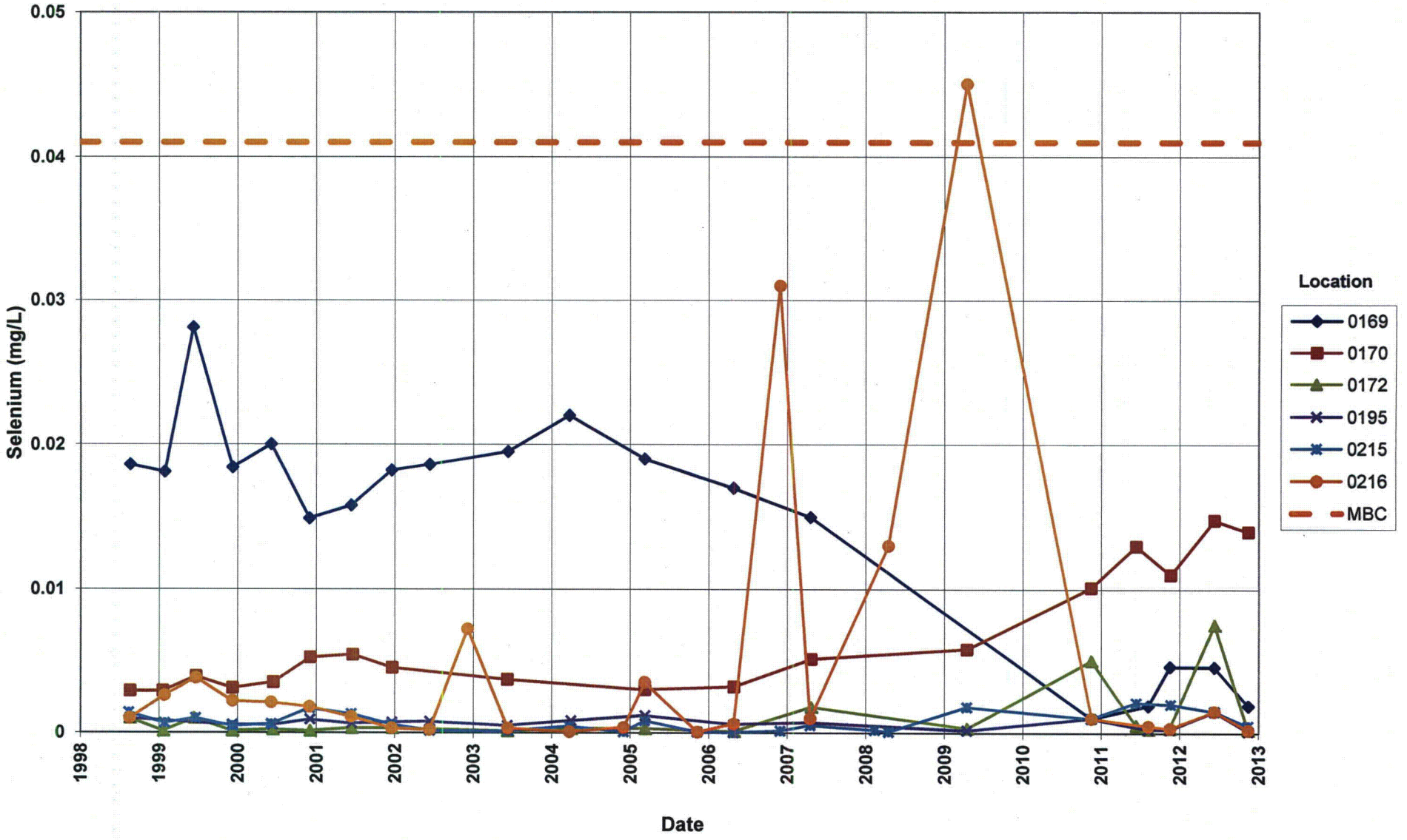
Rifle New Processing Site
Selenium Concentration
Maximum Background Concentration (MBC) = 0.041 mg/L



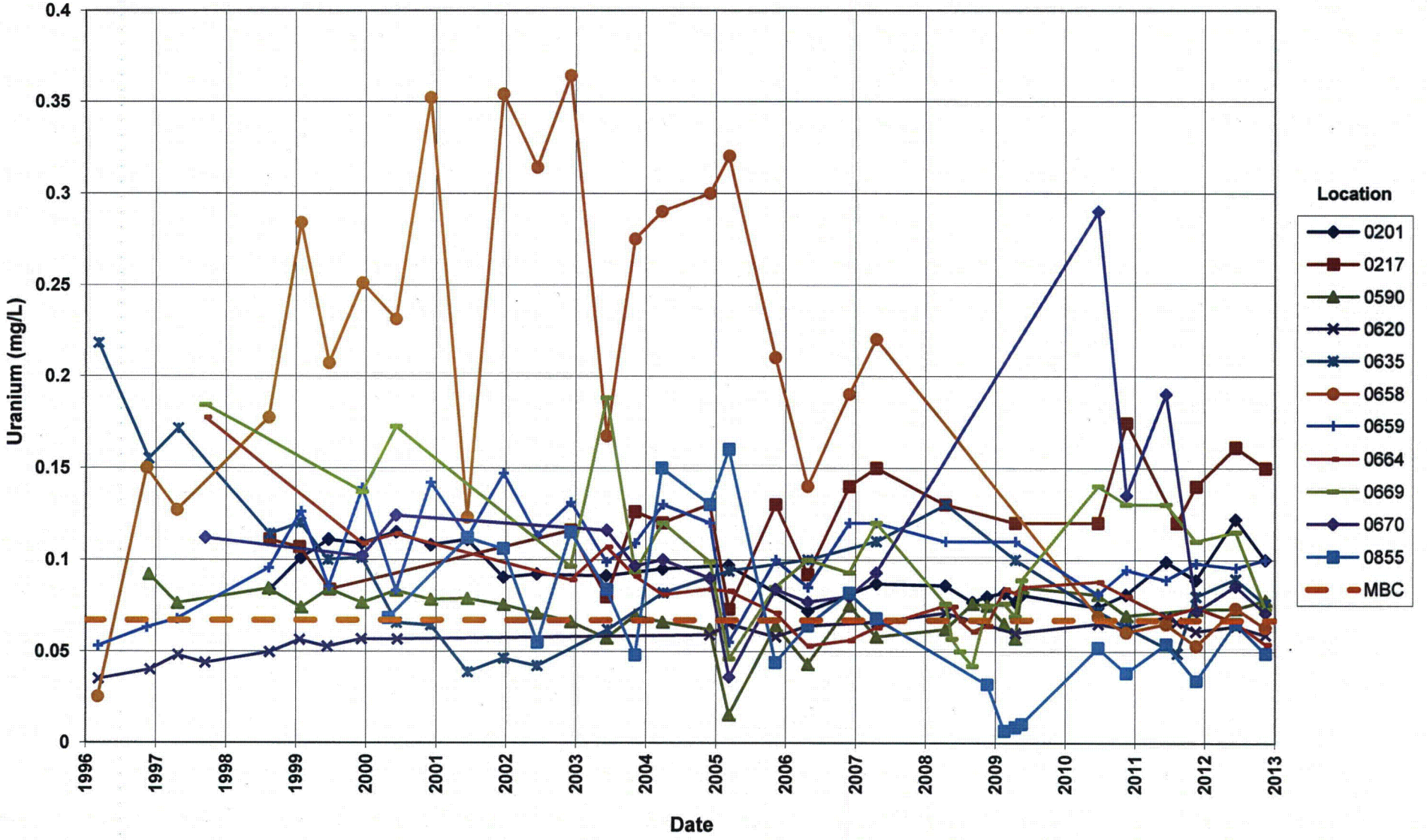
Rifle New Processing Site
Selenium Concentration
Maximum Background Concentration (MBC) = 0.041 mg/L

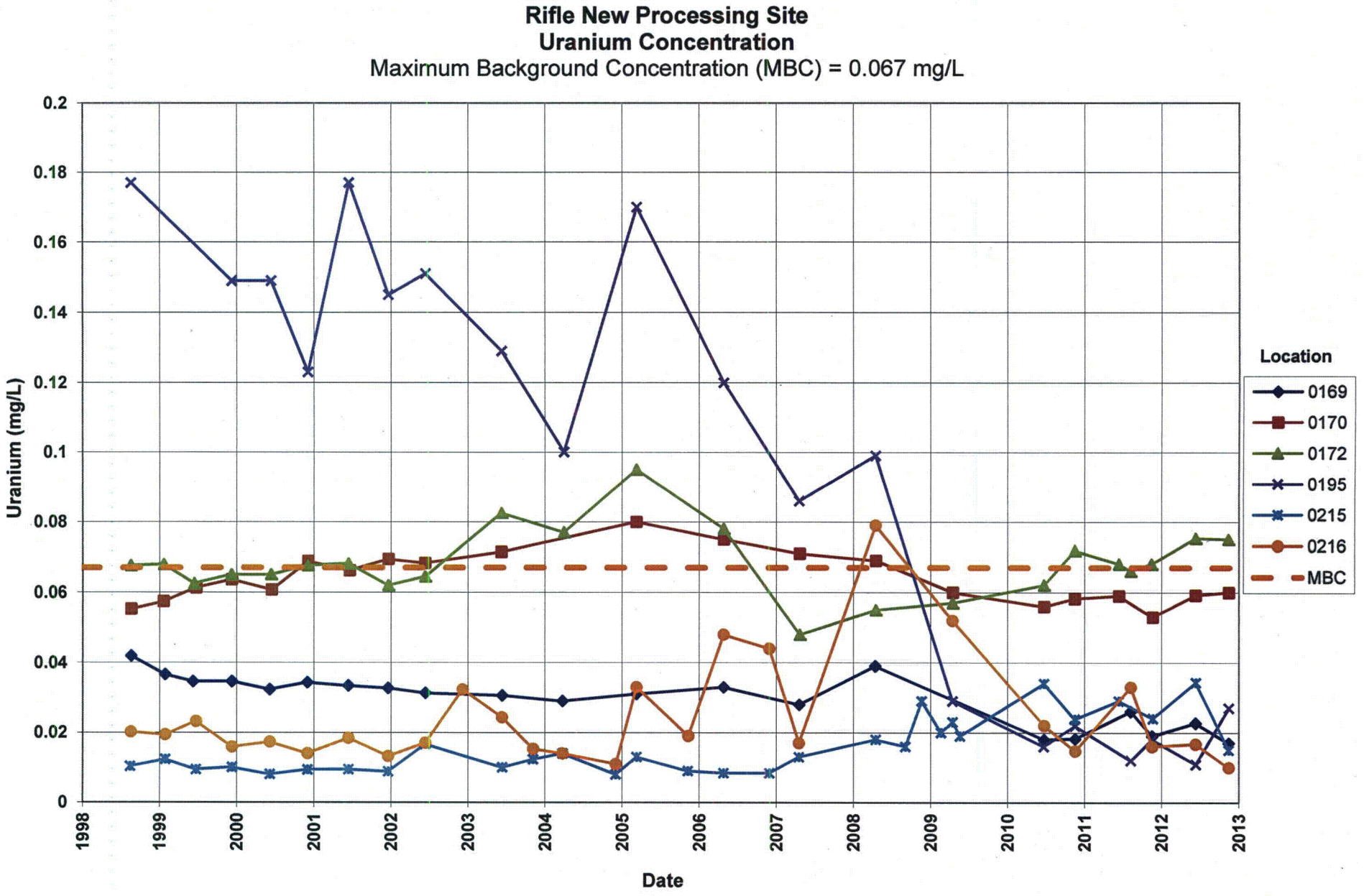


Rifle New Processing Site
Selenium Concentration
Maximum Background Concentration (MBC) = 0.041 mg/L

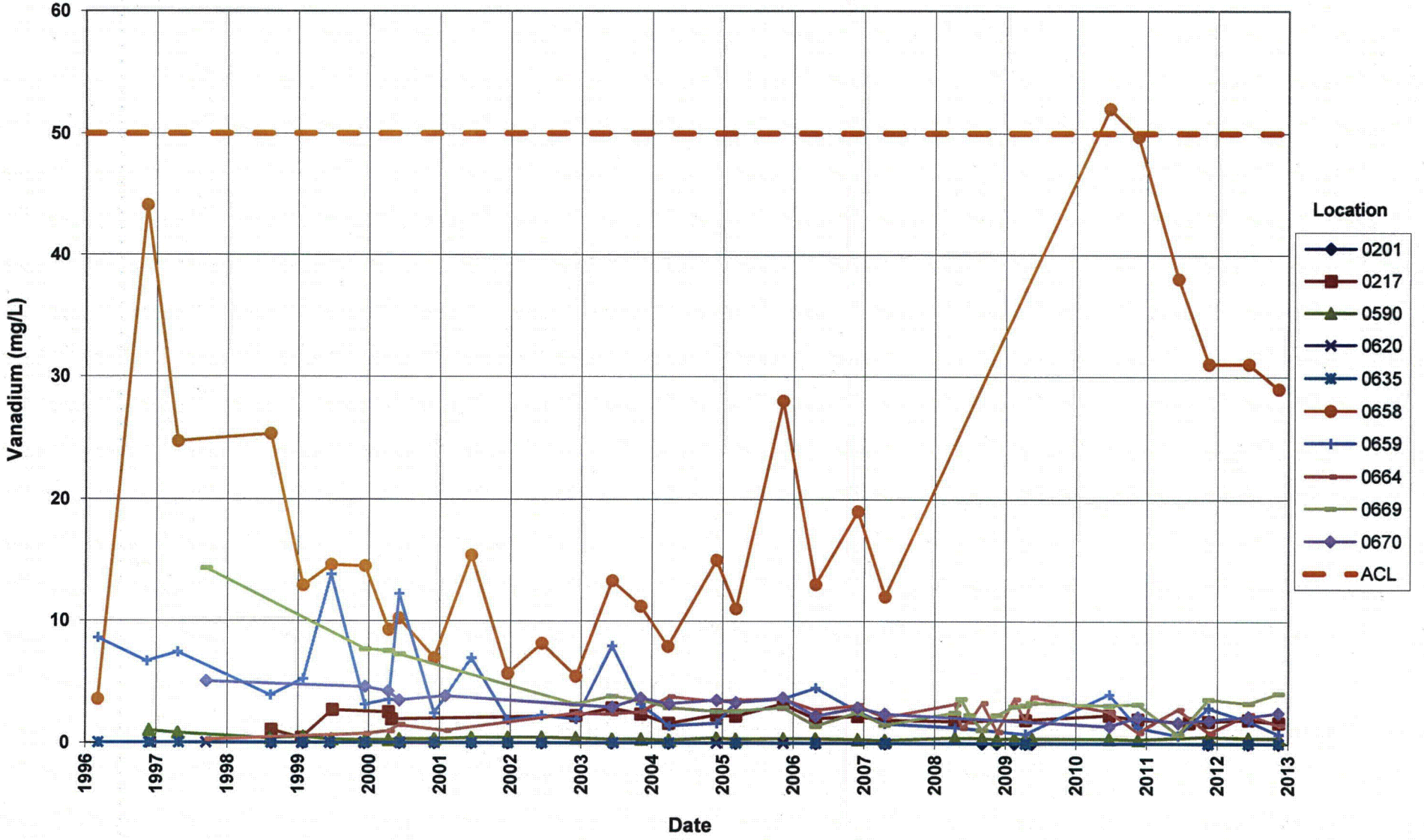


Rifle New Processing Site
Uranium Concentration
Maximum Background Concentration (MBC) = 0.067 mg/L

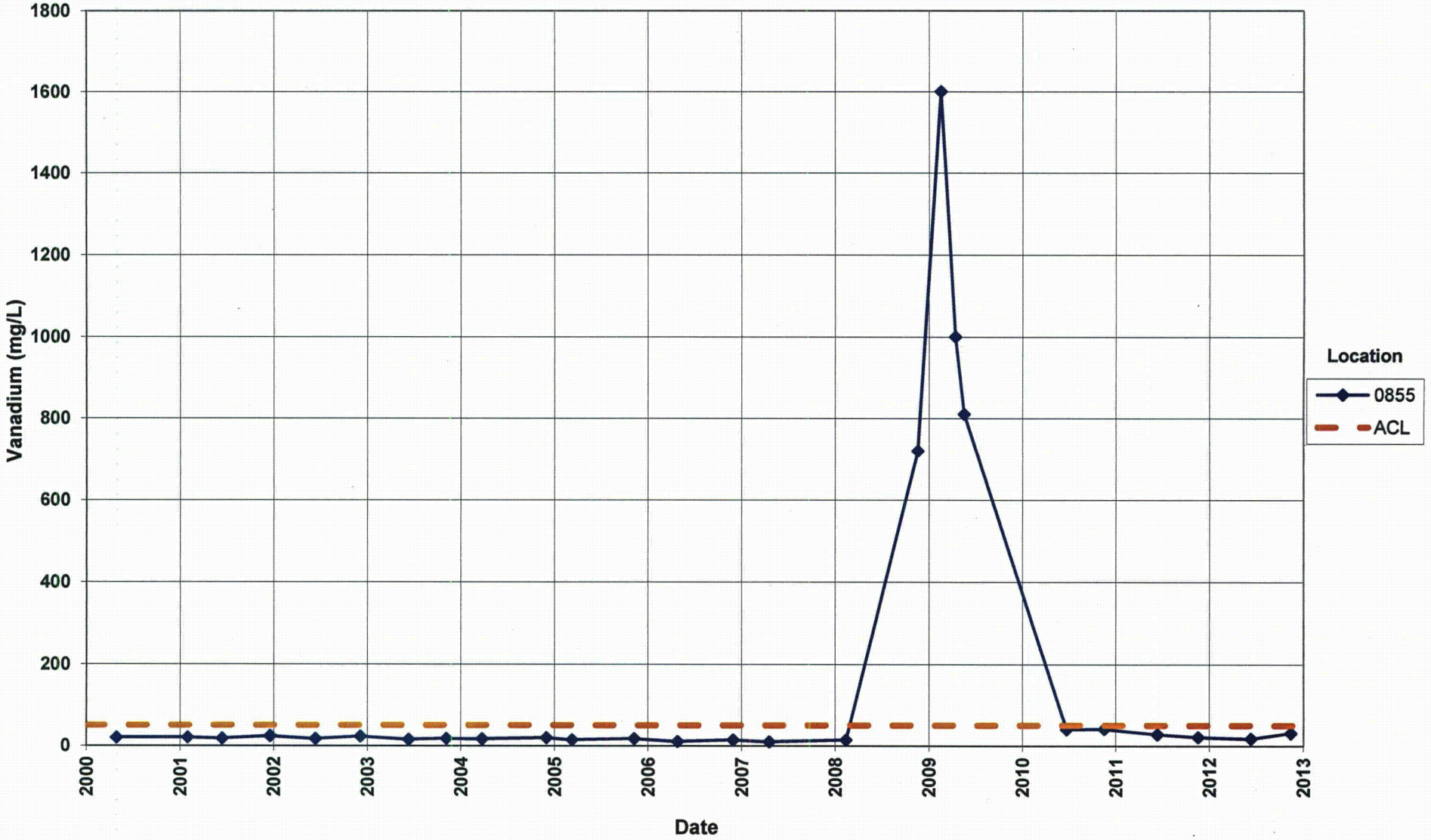



Rifle New Processing Site
Uranium Concentration
Maximum Background Concentration (MBC) = 0.067 mg/L
Uranium (mg/L)
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
0169
0170
0172
0195
0215
0216
MBC

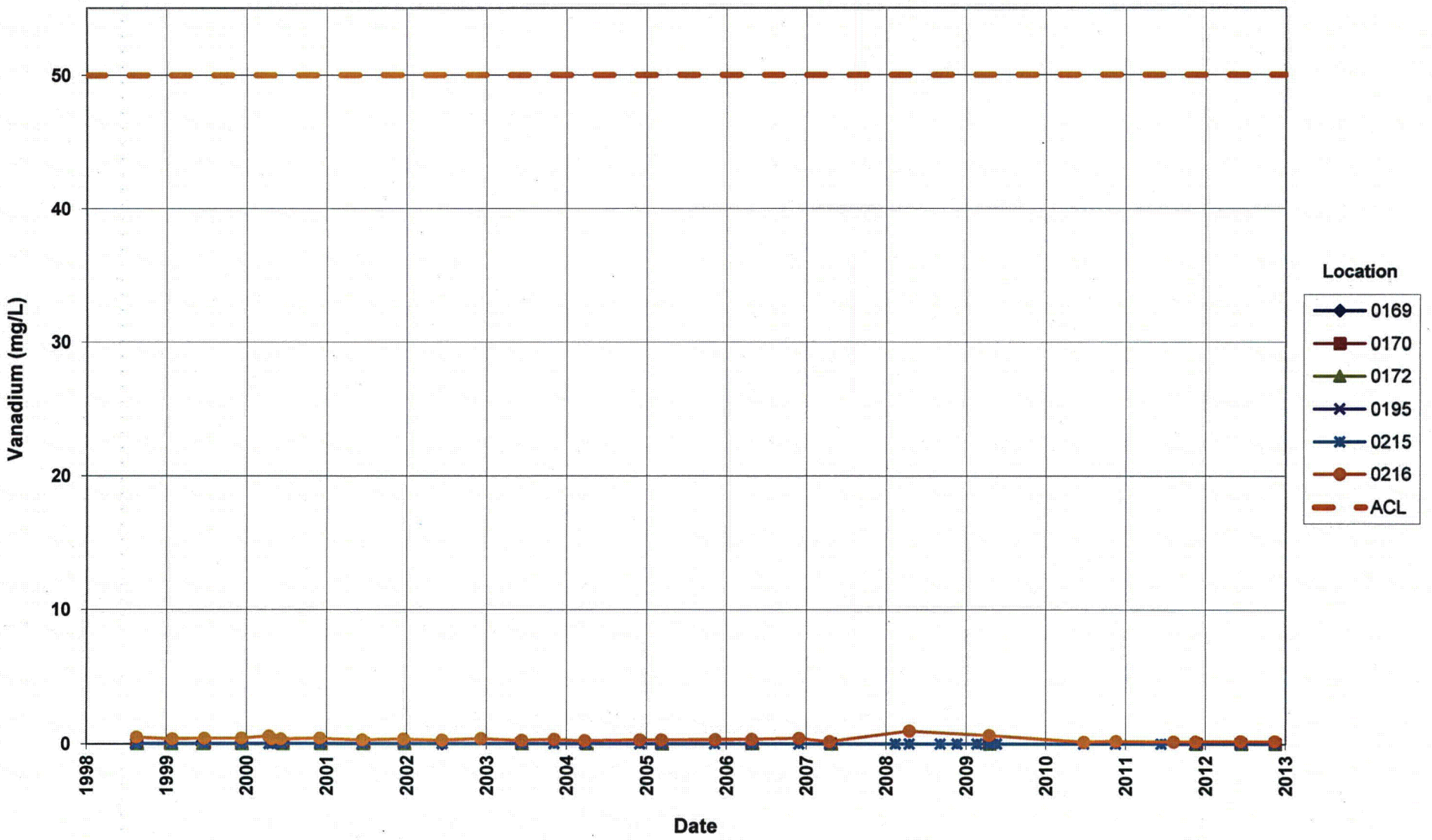
Rifle New Processing Site
Vanadium Concentration
Proposed Alternate Concentration Limit (ACL) = 50 mg/L



Rifle New Processing Site
Vanadium Concentration
Proposed Alternate Concentration Limit (ACL) = 50 mg/L



Rifle New Processing Site
Vanadium Concentration
Proposed Alternate Concentration Limit (ACL) = 50 mg/L



Old Rifle Groundwater
Time-Concentration Graphs

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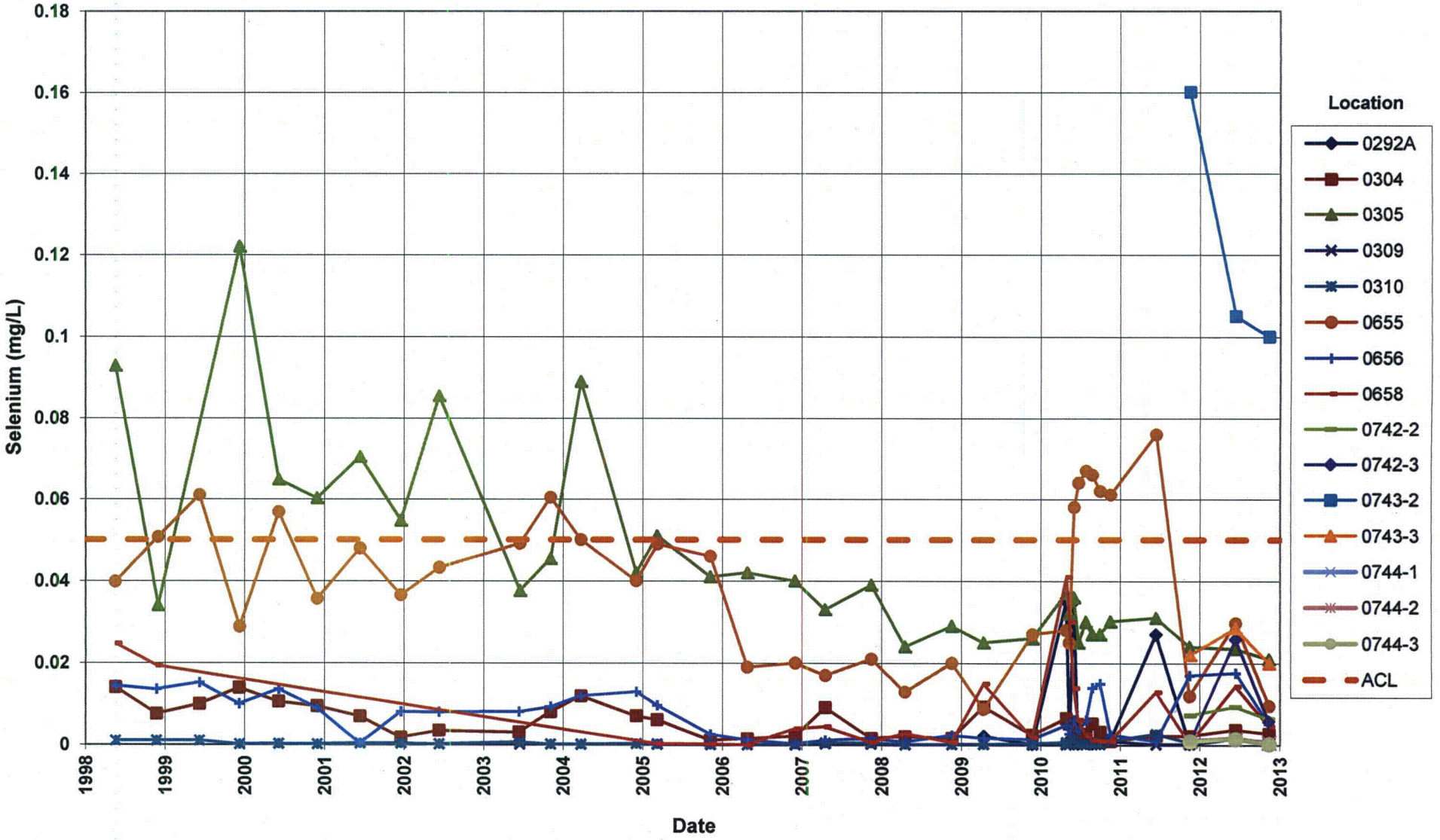
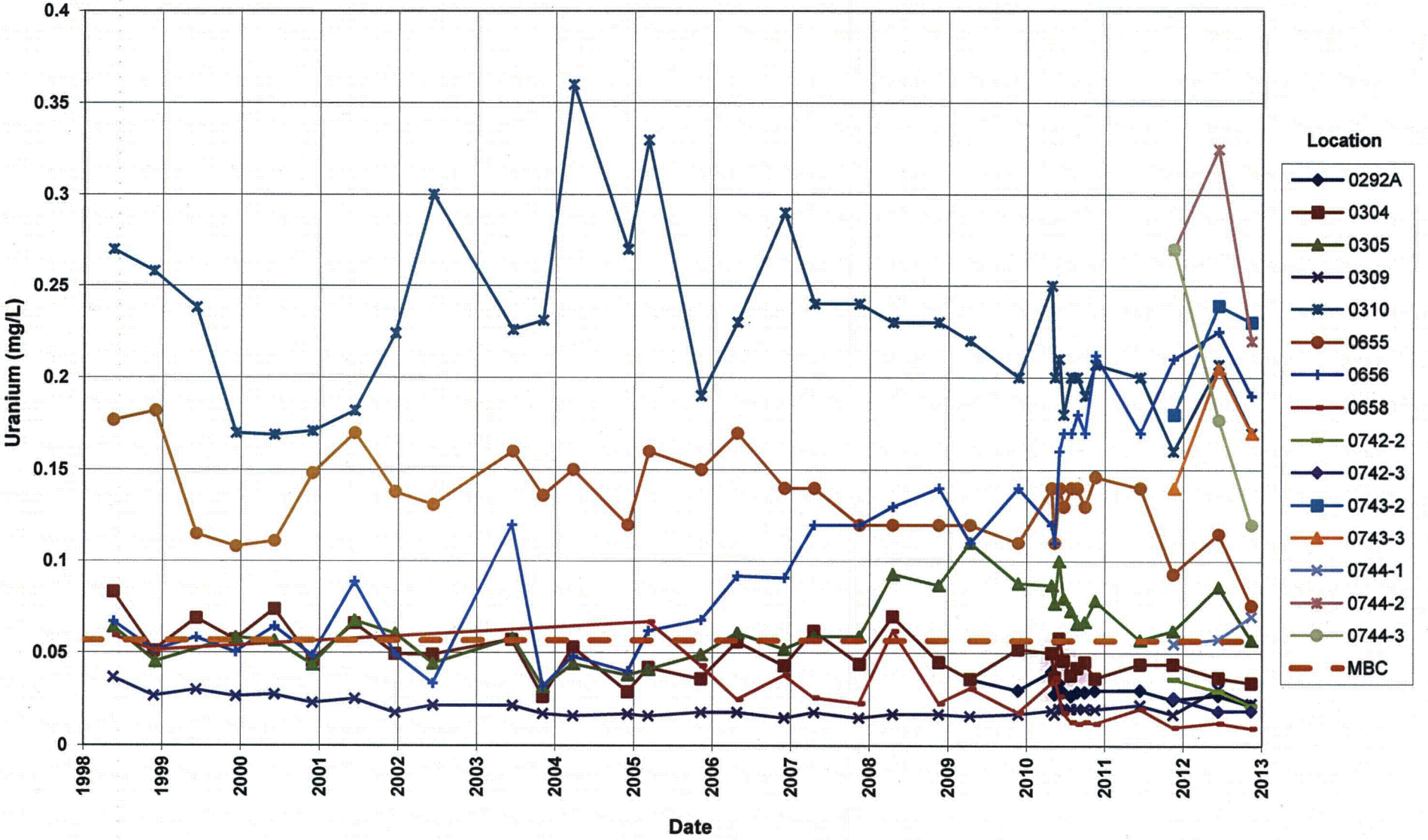
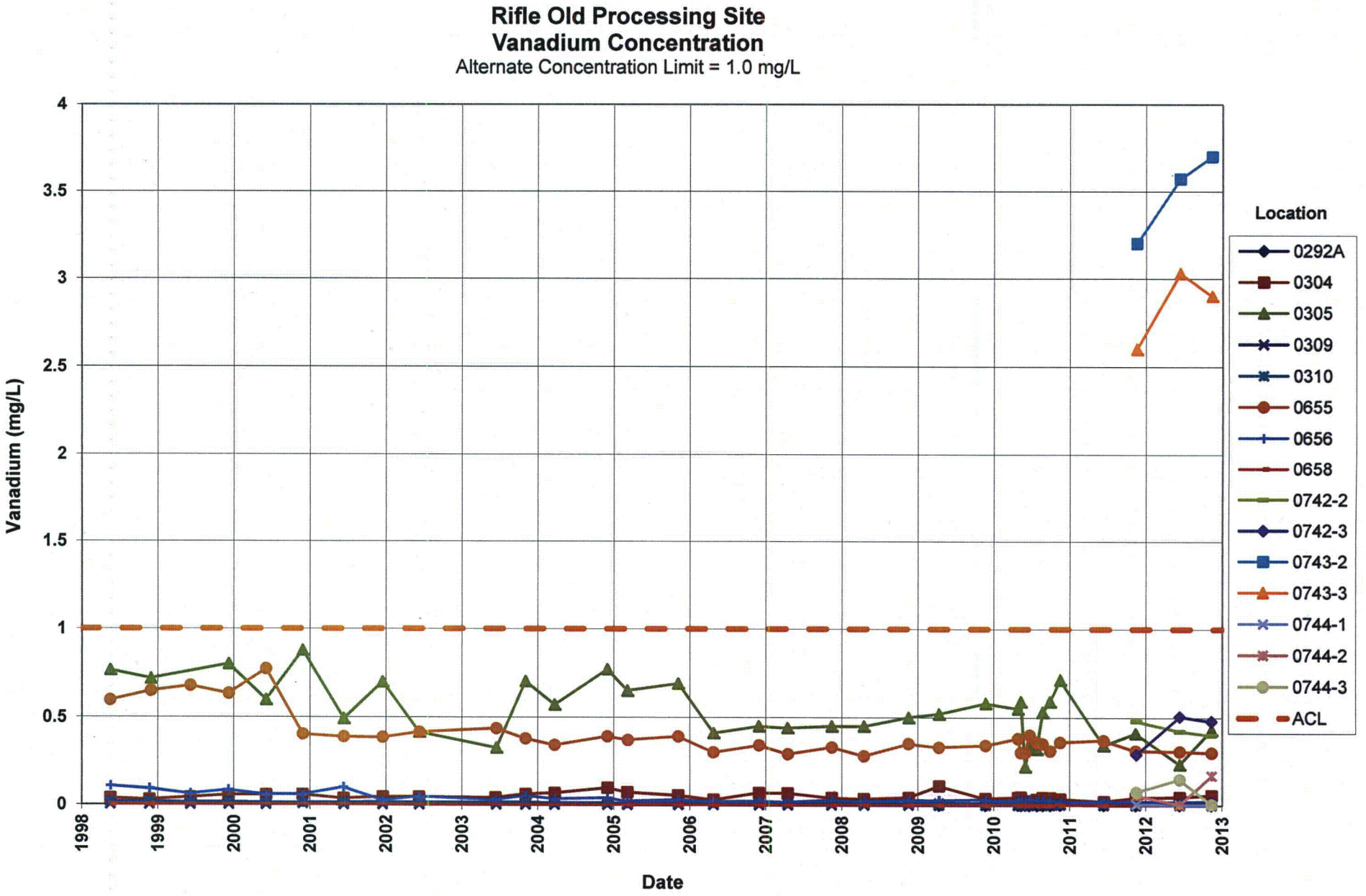
Rifle Old Processing Site
Selenium Concentration
Alternate Concentration Limit (ACL) = 0.05 mg/L



Rifle Old Processing Site
Uranium Concentration
Maximum Background Concentration = 0.0567 mg/L




Rifle Old Processing Site
Vanadium Concentration
Alternate Concentration Limit = 1.0 mg/L
Vanadium (mg/L)
4
3.5
3
2.5
2
1.5
1
0.5
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
0292A
0304
0305
0309
0310
0655
0656
0658
0742-2
0742-3
0743-2
0743-3
0744-1
0744-2
0744-3
ACL

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Attachment 3
Sampling and Analysis Work Order

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Stoller

established 1959

Task Order LM00-501
Control Number 13-0032

October 17, 2012

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

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller) November 2012 Environmental Sampling at Rifle (Old and New), Colorado, Processing Sites

REFERENCE: Task Order LM00-501-02-116-402, Rifle (Old and New), Colorado, Processing Sites

Dear Mr. Bush:

The purpose of this letter is to inform you of the upcoming sampling event at Rifle, Colorado. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Rifle (Old and New) sites. Water quality data will be collected from these sites as part of the environmental sampling currently scheduled to begin the week of November 12, 2012.

The following lists show the monitoring wells and surface water locations scheduled to be sampled during this event.

Monitoring Wells*

New Rifle

169 Al	195 Al	216 Al	620 Al	658 Al	664 AL	670 Al
170 Al	201 Al	217 Al	635 Al	659 Al	669 Al	855 Al
172 Al	215 Al	590 Al				

Old Rifle

292A Al	305 Al	310 Al	656 Al	742 Nr	744 Nr
304 Al	309 Al	655 Al	658 Al	743 Nr	

*NOTE: Al = alluvium; Nr = no recovery of data for classifying

Surface Locations

New Rifle

320	322	323	324	452	453	575

Old Rifle
294 395 396 398 741

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites.* Access agreements are being reviewed and are expected to be complete by the beginning of fieldwork.

Please contact me at (970) 248-6375 if you have any questions.

Sincerely,

Richard Dayvault
Site Lead

RD/lcg/lb

Enclosures (3)

cc: (electronic)
Karl Stoeckle, DOE
Richard Dayvault, Stoller
Steve Donivan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
rc-grand.junction
File: RFN 410.02(A)
File: RFO 410.02(A)

Sampling Frequencies for Locations at Rifle, Colorado

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
New Rifle						
169		X				
170		X				
172		X				
195		X				
201		X				Data logger
215		X				
216		X				
217		X				
590		X				Data logger
620		X				
635		X				
658		X				
659		X				
664		X				
669		X				
670		X				
855		X				
Old Rifle						
292A		X				GCAP; bkgd well
304		X				GCAP
305		X				GCAP
309		X				GCAP
310		X				GCAP; data logger
655		X				GCAP; data logger
656		X				GCAP
658		X				Background well
742		X				Background well
743		X				Background well
744		X				Background well
Surface Locations						
New Rifle						
320		X				Wetland Pond
322		X				Colorado River
323		X				Gravel pit pond
324		X				Colorado River downgradient
452		X				Wetland Pond
453		X				Wetland Pond
575		X				Gravel pit pond

Sampling Frequencies for Locations at Rifle, Colorado

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Old Rifle						
294		X				River, upstream
395		X				Seep, upgradient
396		X				River
398		X				Ditch, onsite
741		X				River

Semi-annual sampling conducted in June and November.

Constituent Sampling Breakdown

Site	Rifle							
Analyte	Groundwater		Surface Water			Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr	35		15					
Field Measurements								
Alkalinity	X		X					
Dissolved Oxygen								
Redox Potential	X		X					
pH	X		X					
Specific Conductance	X		X					
Turbidity	X							
Temperature	X		X					
Laboratory Measurements	*RFO	*RFN	RFO	RFN	RFL			
Aluminum								
Ammonia as N (NH3-N)		X		X		0.1	EPA 350.1	WCH-A-005
Arsenic		X		X		0.0001	SW-846 6020	LMM-02
Calcium								
Chloride								
Chromium								
Gross Alpha								
Gross Beta								
Iron								
Lead								
Magnesium								
Manganese								
Molybdenum		X		X		0.003	SW-846 6020	LMM-02
Nickel								
Nickel-63								
Nitrate + Nitrite as N (NO_3+NO_2)-N		X		X		0.05	EPA 353.1	WCH-A-022
Potassium								
Radium-226								
Radium-228								
Selenium	X	X	X	X		0.0001	SW-846 6020	LMM-02
Silica								
Sodium								
Strontium								
Sulfate								
Sulfide								
Total Dissolved Solids								
Total Organic Carbon								
Uranium	X	X	X	X	X	0.0001	SW-846 6020	LMM-02
Vanadium	X	X	X	X	X	0.0003	SW-846 6020	LMM-02
Zinc								
Total No. of Analytes	3	7	3	7	2			

*RFN = New Rifle; *RFO = Old Rifle

Note: All private well samples are to be unfiltered. The total number of analytes does not include field parameters.

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Attachment 4
Trip Report

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Stoller

established 1959

Memorandum

DATE: November 27, 2012

TO: Richard Dayvault

FROM: Gretchen Baer

SUBJECT: Trip Report

Site: New Rifle and Old Rifle, Colorado, Processing Sites

Dates of Sampling Event: November 12-15, 2012

Team Members: Gretchen Baer, Kent Moe, Jeff Price, and Joe Treviño

Number of Locations Sampled: Samples were collected as follows:

Site ID	Site	Location Type	Locations That Were Sampled	Planned Locations (Identified on the sampling notification letter)
RFN01	New Rifle	Monitoring Wells	19 (0609 & 0680 were added)	17
RFN01	New Rifle	Surface Water	6	7
RFO01	Old Rifle	Monitoring Wells	15	17*
RFO01	Old Rifle	Surface Water	5	5

* Three of the RFO01 monitoring wells are 3-port Continuous Multichannel Tubing (CMT) wells.

Locations Not Sampled/Reason: The RFO01 CMT ports 0742-1 and 0743-1 were dry. Surface water location RFN01 0452 was dry.

Location Specific Information:

Site ID	Location IDs	Comments
RFN01	0172	Water has fuel odor.
RFN01	0195	Small root particles in purge water.
RFN01	0609	Well was covered by a fallen tree. The well is still accessible and did not appear to be damaged. A data logger was in place. D. Atkinson removed the data logger on 11/21/12.
RFN01	0669	Category II well.
RFO01	0294	This river sample was collected from the main river channel, rather than from a side channel that is shown on the map. The side channel had very little water and was frozen.
RFO01	0310	Equipment (a Sonde and a data logger) was removed during sampling to allow drop hole tubing to be installed. Equipment was replaced immediately after sampling.
RFO01	0395	This surface water is a seep with fairly good flow but no puddles were found. Samples were collected as follows: Dug small hole. Allowed water to fill hole. When water had visibly cleared, samples were collected by peristaltic pump and dedicated tubing.
RFO01	0742 0743 0744	These locations are 3-port CMT wells. Dedicated tubing has been cut for all nine ports. This tubing was saved in labeled bags. These bags are stored in Building 32 in a labeled box near the tubing storage area.
RFO01	0744-1	Category II well.

Quality Control Sample Cross Reference: The following are the false identifications assigned to the quality control samples.

RIN	False ID	Ticket Number	True ID	Sample Type	Analytes
12114947	2238	KMU 365	Associated with RFN01-0320, 0323, 0324, 0453, 0575 & RFO01-0294, 0396	Equipment Blank	All metals, anions, nitrate/ammonia, UISO
	2948	KMU 333	RFN01 0855	Duplicate	
	2949	KMU 334	RFN01 0620	Duplicate	
	2237	KMU 358	RFO01 0742-2	Duplicate	Se, U, V
12114955	2431	KMW 640	Associated with RFN01-0320, 0323, 0575 & RFO01-0294	Equipment Blank	Stable isotopes
	2427	KMV 565	RFN01 0658	Duplicate	
	2428	KMV 566	RFO01 0292A	Duplicate	

Report Identification Numbers (RINs) Assigned: 12114947 for the normal analyte set and isotopic uranium (ALS Laboratory Group) and 12114955 for d-O18 and d-H2 (Reston Stable Isotope Laboratories). Field data sheets can be found in the sample management system on Crow under requisition number 12114947 in the Field Data folder.

Sample Shipment: Samples were shipped overnight via Fedex from Grand Junction to their respective laboratories on November 20, 2012.

Water Level Measurements: Water levels were measured in all sampled wells.

Well Inspection Summary: No issues were identified.

Field Variance:

- CMT wells 0742, 0743, and 0744: WL stability cannot be verified in CMT wells because the ports are too narrow to accommodate a WL probe and sample tubing at the same time. These wells were sampled according to Category I purging stability requirements.
- RFN01 0609, RFO01 0744-1: Turbidity stability criteria could not be met during purge. Samples were filtered.

Equipment: All equipment functioned properly. All wells were sampled using the low-flow procedure. Wells were sampled with a peristaltic pump and dedicated tubing or a dedicated bladder pump. Surface waters were sampled using a peristaltic pump and tubing reel, or by container immersion. An equipment blank was collected after decontamination of the tubing reel. All other equipment was dedicated or disposable.

Regulatory: Nothing to note.

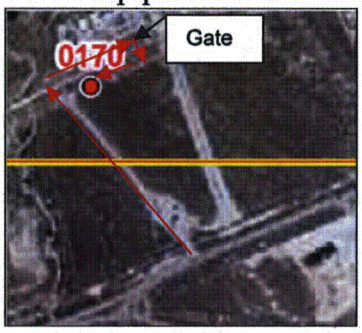
Institutional Controls:

Fences, Gates, and Locks: Nothing to note.
Signs: Nothing to note.
Trespassing/Site Disturbances: None observed.

Site Issues:

Disposal Cell/Drainage Structure Integrity: N/A
Vegetation/Noxious Weed Concerns: None observed.
Maintenance Requirements: None observed.
Safety Issues: None.
Access Issues:

- Vehicle access to RFN01 locations 0620 and 0324 is blocked by a locked gate owned by Williams Production. The combination to the lock has been provided by Bryan Hotard of Williams. *See the Field Notebook for the combination.*
- RFN01 0170: To access this well, drive around to a gate slightly east of the well and follow a pipeline road:



- RFO01 0658: In past sampling events, this well was difficult to access because of Port-o-potties stored close to the well. For this event, the Port-o-potties had been moved away and the well was easy to reach by truck.
- RFN01 0195: Area was too wet to be able to drive to the well. Accessed well on foot.
- New Rifle site: Active construction is underway west of the Caca Loco site. Roads and utilities are being installed for commercial lots. Wells in the area were accessible and undamaged. A contact for this construction project is Brian Punty, Construction Inspector, City of Rifle Public Works. *See the Field Notebook for his contact information.*

Corrective Action Required: Well RFN01 0609 should be developed.

(GB/lg)

cc: (electronic)
Rich Bush, DOE
Steve Donivan, Stoller
EDD Delivery

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