

Data Validation Package

June 2013
Groundwater and Surface Water
Sampling at the Old and New Rifle,
Colorado, Processing Sites

August 2013



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

This page intentionally left blank

Contents

Sampling Event Summary	1
Sample Location Map, New Rifle, Colorado, Processing Site.....	5
Sample Location Map, Old Rifle, Colorado, Processing Site.....	6
Data Assessment Summary.....	7
Water Sampling Field Activities Verification Checklist	9
Laboratory Performance Assessment	11
Sampling Quality Control Assessment	20
Certification	25

Attachment 1—Assessment of Anomalous Data

Potential Outliers Report

Attachment 2—Data Presentation

New Rifle Groundwater Quality Data
Old Rifle Groundwater Quality Data
New Rifle Surface Water Quality Data
Old Rifle Surface Water Quality Data
Equipment Blank Data
Static Water Level Data
New Rifle Hydrographs
Old Rifle Hydrograph
New Rifle Groundwater Time-Concentration Graphs
Old Rifle Groundwater Time-Concentration Graphs
New Rifle Surface Water Time-Concentration Graphs
Old Rifle Surface Water Time-Concentration Graphs

Attachment 3—Sampling and Analysis Work Order

Attachment 4—Trip Report

This page intentionally left blank

Sampling Event Summary

Site: Old and New Rifle, Colorado, Processing Sites

Sampling Period: June 10-12, 2013

Forty–eight water samples were collected at New Rifle and Old Rifle, Colorado, Processing Sites. New Rifle surface water location 0453 was dry and could not be sampled. Old Rifle groundwater locations 0745, 0746, and 0747 were added to this sampling event. Duplicate samples were collected from New Rifle locations 0575 and 0590, and Old Rifle locations 0310 and 0743-3. One equipment blank was collected. Sampling and analyses were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351, continually updated).

New Rifle Site

Samples were collected at the New Rifle site from 17 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. The groundwater monitoring wells were sampled to monitor plume movement and natural flushing. Wells with contaminant concentrations that exceeded benchmarks 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 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 8 monitoring wells and 5 surface locations in compliance with the 2001 *Ground Water Compliance Action Plan for the Old Rifle, Colorado, UMTRA Project Site*. Water levels were measured at each sampled well. Although not part of the routine site monitoring requirements, 12 additional wells were sampled:

- Three-port continuous multichannel tubing wells installed in November 2011 (RFO-0742, RFO-0743, and RFO-0744)
- Wells 0745, 0746, and 0747

The COCs at the Old Rifle site are selenium, uranium, and vanadium. Wells with contaminant concentrations that exceeded benchmarks are listed in Table 2.

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.

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

Analyte	Benchmark (mg/L)	Location	Concentration (mg/L)
Arsenic	0.05 ^a	0855	0.20
Molybdenum	0.10 ^a	0201	1.4
		0217	1.3
		0590	1.0
		0635	0.41
		0658	0.68
		0659	1.2
		0664	0.22
		0669	0.53
		0670	0.18
		0855	0.52
Nitrate + Nitrite as Nitrogen	10 ^a	0170	11
		0201	48
		0590	34
		0620	24
		0659	18
Selenium	0.041 ^b	0658	0.79
		0659	0.11
		0664	0.14
		0670	0.31
		0855	0.69
Uranium	0.067 ^b	0172	0.067
		0201	0.090
		0217	0.13
		0590	0.073
		0659	0.090
		0669	0.091
0670	0.075		
Vanadium	Not Applicable	-----	-----

^a U.S. Environmental Protection Agency groundwater standards (40 CFR 192)

^b Maximum background value, cleanup goal

mg/L = milligrams per liter

Table 2. Old Rifle Monitoring Wells with Contaminant Concentrations that Exceed Benchmarks

Analyte	Benchmark (mg/L)	Location	Concentration (mg/L)
Selenium	0.05 ^a	0743-1	0.075
		0743-2	0.081
Uranium	0.044 ^b	0304	0.045
		0310	0.17
		0655	0.096
		0656	0.19
		0743-1	0.42
		0743-2	0.21
		0743-3	0.16
		0744-1	0.071
		0744-2	0.21
		0744-3	0.13
		0745	0.051
Vanadium	0.33 ^c	0746	0.31
		0742-2	0.39
		0742-3	0.39
		0743-2	2.7
		0743-3	2.1

^a U.S. Environmental Protection Agency Safe Drinking Water Act standard and approved alternate concentration limit

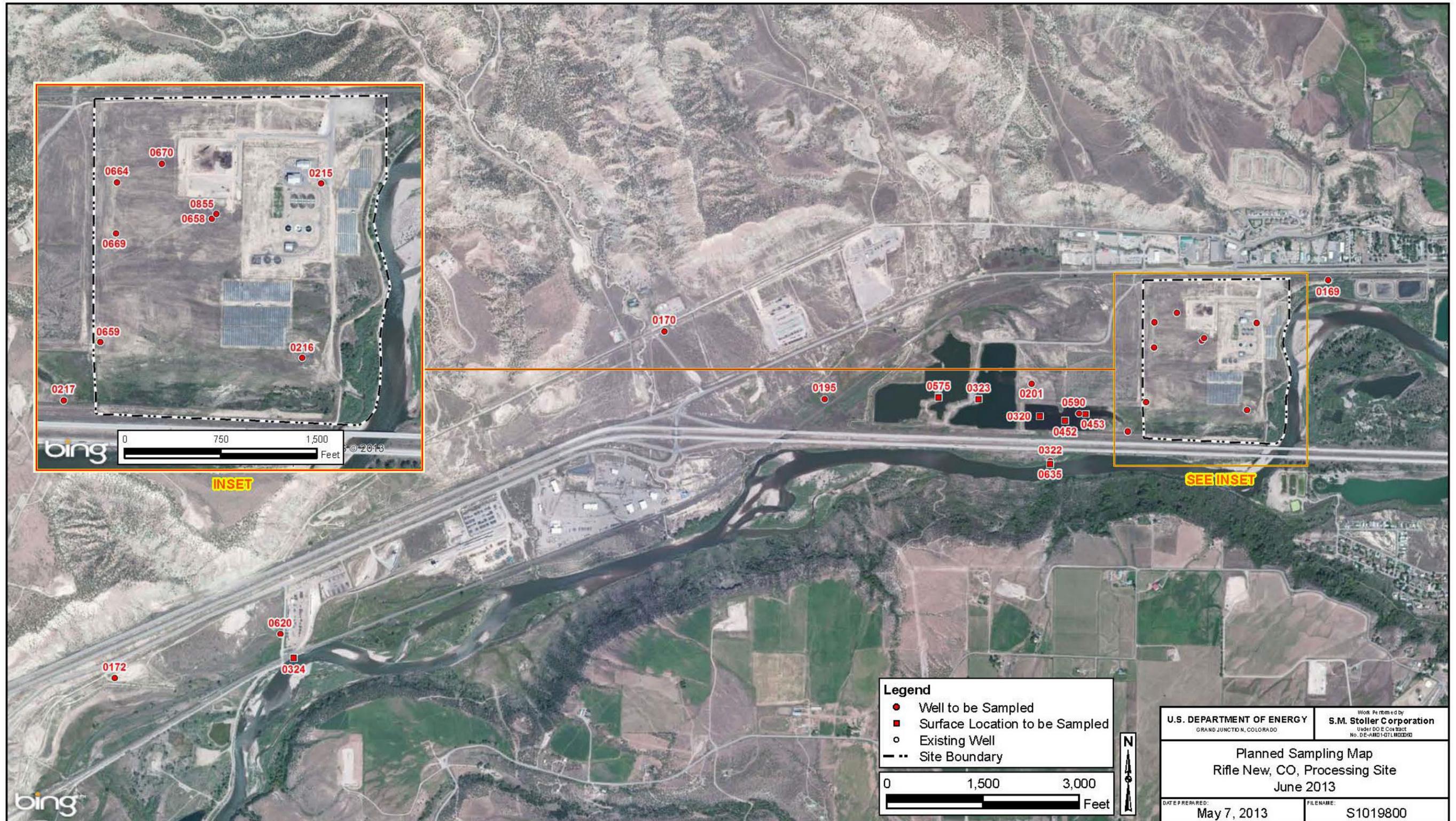
^b U.S. Environmental Protection Agency groundwater standards (40 CFR 192)

^c Risk-based concentration
mg/L = milligrams per liter


Richard Dayvault
Site Lead, S. M. Stoller Corporation

Date 9/2/2013

This page intentionally left blank



M:\LTS\111\0001\16\000\S1019800-11x17.mxd smithw 05/07/2013 4:35:25 PM

Sample Location Map, New Rifle, Colorado, Processing Site



M:\LTS\111000\116\000\S101990\S1019900-11x17.mxd smithw 08/13/2013 12:08:28 PM

Sample Location Map, Old Rifle, Colorado, Processing Site

Data Assessment Summary

This page intentionally left blank

Water Sampling Field Activities Verification Checklist

Project	Old and New Rifle, Colorado, Processing Sites	Date(s) of Water Sampling	June 10-12, 2013
Date(s) of Verification	August 8, 2013	Name of Verifier	Gretchen Baer

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List any Program Directives or other documents, SOPs, instructions.	Yes	Work Order letter dated May 13, 2013. Surface water location RFN01 0453 was dry. RFN01 wells 0745, 0746, and 0747, which were not listed in the notification letter, were sampled.
2. Were the sampling locations specified in the planning documents sampled?	No	
3. Were calibrations conducted as specified in the above-named documents?	Yes	
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	Yes Yes	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	No	An alkalinity and a turbidity measurement were inadvertently not recorded.
6. Were wells categorized correctly?	No	A Cat I location was miscategorized as Cat II. (It was sampled correctly as CAT I.)
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling? Did the water level stabilize prior to sampling? Did pH, specific conductance, and turbidity measurements meet criteria prior to sampling? Was the flow rate less than 500 mL/min?	Yes Yes No Yes	The specific conductivity did not stabilize at well 0195. Associated results have been qualified.

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	
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	Yes	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were the true identities of the QC samples documented?	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. Was all pertinent information documented on the field data sheets?	No	The measurement equipment was not listed.
18. Was the presence or absence of ice in the cooler documented at every sample location?	No	The presence of ice was inadvertently not documented at a location.
19. Were water levels measured at the locations specified in the planning documents?	Yes	Water levels were measured at each sampled monitoring well.

Laboratory Performance Assessment

General Information

Report Number (RIN): 13065380
 Sample Event: June 10-12, 2013
 Site(s): Rifle Processing Sites, Colorado
 Laboratory: ALS Laboratory Group, Fort Collins, Colorado
 Work Order No.: 1306227
 Analysis: Metals and Wet Chemistry
 Validator: Gretchen Baer
 Review Date: August 8, 2013

This validation was performed according to the *Environmental Procedures Catalog* (LMS/POL/S04325, continually updated), “Standard Practice for Validation of Environmental 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
Nitrate + Nitrite as N	WCH-A-022	EPA 353.2	EPA 353.2
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
1306227-1	0169	Ammonia as N	J	Matrix spike has negative bias
1306227-1	0169	Arsenic	J	Reporting limit verification > 130%
1306227-1	0169	Vanadium	J	Serial dilution has positive bias
1306227-2	0170	Arsenic	J	Reporting limit verification > 130%
1306227-3	0172	Selenium	J	Reporting limit verification < 70%
1306227-4	0195	Selenium	J	Reporting limit verification < 70%
1306227-4	0195	Specific Conductance	J	Purge criteria not met during sampling
1306227-5	0201	Arsenic	J	Reporting limit verification > 130%
1306227-6	0215	Arsenic	J	Reporting limit verification > 130%
1306227-7	0216	Selenium	J	Reporting limit verification < 70%

Table 4 (continued). Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
1306227-10	0322	Arsenic	J	Less than 5 times the equipment blank
1306227-10	0322	Arsenic	J	Reporting limit verification > 130%
1306227-10	0322	Molybdenum	J	Less than 5 times the equipment blank
1306227-10	0322	Selenium	J	Reporting limit verification < 70%
1306227-10	0322	Vanadium	J	Less than 5 times the equipment blank
1306227-11	0323	Vanadium	J	Less than 5 times the equipment blank
1306227-12	0324	Arsenic	J	Less than 5 times the equipment blank
1306227-12	0324	Arsenic	J	Reporting limit verification > 130%
1306227-12	0324	Molybdenum	J	Less than 5 times the equipment blank
1306227-12	0324	Selenium	J	Reporting limit verification < 70%
1306227-12	0324	Vanadium	J	Less than 5 times the equipment blank
1306227-14	0575	Selenium	J	Reporting limit verification < 70%
1306227-14	0575	Vanadium	J	Less than 5 times the equipment blank
1306227-16	0620	Arsenic	J	Reporting limit verification > 130%
1306227-17	0635	Arsenic	J	Reporting limit verification > 130%
1306227-24	Equipment Blank	Arsenic	J	Reporting limit verification > 130%
1306227-24	Equipment Blank	Selenium	J	Reporting limit verification < 70%
1306227-26	0575 Duplicate	Selenium	J	Reporting limit verification < 70%
1306227-28	0294	Selenium	J	Reporting limit verification < 70%
1306227-28	0294	Vanadium	J	Less than 5 times the equipment blank
1306227-31	0309	Selenium	J	Reporting limit verification < 70%
1306227-32	0310	Selenium	J	Reporting limit verification < 70%
1306227-33	0395	Vanadium	J	Less than 5 times the equipment blank
1306227-34	0396	Selenium	J	Reporting limit verification < 70%
1306227-34	0396	Vanadium	J	Less than 5 times the equipment blank
1306227-39	0741	Selenium	J	Reporting limit verification < 70%
1306227-39	0741	Vanadium	J	Less than 5 times the equipment blank
1306227-48	0744-3	Selenium	J	Reporting limit verification < 70%
1306227-51	0747	Selenium	J	Reporting limit verification < 70%
1306227-52	0310 Duplicate	Selenium	J	Reporting limit verification < 70%

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 53 water samples on June 14, 2013, 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 shipment was received intact with the temperature inside the iced cooler at 2.2 °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 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. The reported MDLs for all 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 350.1 Ammonia as N

Calibrations for ammonia as N were performed using six calibration standards on June 25, 2013. 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 seven calibration standards on June 27, 2013. 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 6020 Arsenic, Molybdenum, Selenium, Uranium, Vanadium

Calibrations were performed on June 24 and 26, 2013, 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. All check results were within the acceptance range of 70 percent to 130 percent recovery with the exception of arsenic and selenium analyzed on June 26, 2013. This indicates a higher degree of uncertainty in measuring arsenic and selenium at low concentrations and the associated sample results less than 5 times the PQL are qualified with a "J" flag as estimated values. 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.

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 were greater 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 exception. A spike recovery for ammonia as N was below the acceptance range with a negative bias of about 26 percent. There is no evidence of systematic matrix interference; the sample result associated with the failed spike results is qualified with a “J” flag as an estimated value.

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. All replicate 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 one exception. A serial dilution for vanadium did not meet the acceptance criteria with a positive bias of 16 percent. The associated result is qualified with a “J” flag as an estimated value.

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 July 1, 2013. 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: 13065380 Lab Code: PAR Validator: Gretchen Baer Validation Date: 8/5/2013
Project: Rifle Disposal/Processing Site (old/new) Analysis Type: Metals General Chem Rad Organics
of Samples: 53 Matrix: WATER Requested Analysis Completed: Yes

Chain of Custody

Present: OK Signed: OK Dated: OK

Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

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

All analyses were completed within the applicable holding times.

The reported detection limits are equal to or below contract requirements.

There was 1 trip/equipment blank evaluated.

There were 4 duplicates evaluated.

**SAMPLE MANAGEMENT SYSTEM
Metals Data Validation Worksheet**

RIN: 13065380

Lab Code: PAR

Date Due: 7/12/2013

Matrix: Water

Site Code: RFL01

Date Completed: 7/3/2013

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	CCV	CCB								
Arsenic	ICP/MS	06/24/2013			OK	OK	OK	90.0	91.0	92.0	1.0	100.0		106.0
Arsenic	ICP/MS	06/24/2013					OK	92.0				100.0		
Arsenic	ICP/MS	06/26/2013			OK	OK			103.0	108.0	4.0			160.0
Molybdenum	ICP/MS	06/24/2013			OK	OK	OK	94.0	110.0	112.0	0.0	90.0	4.0	96.0
Molybdenum	ICP/MS	06/24/2013					OK	90.0				100.0	6.0	
Molybdenum	ICP/MS	06/26/2013			OK	OK			105.0	105.0	0.0			101.0
Selenium	ICP/MS	06/24/2013			OK	OK	OK	103.0	98.0	97.0	1.0	101.0	9.0	106.0
Selenium	ICP/MS	06/24/2013					OK	96.0	103.0	103.0	0.0	101.0		
Selenium	ICP/MS	06/24/2013					OK	98.0					4.0	
Selenium	ICP/MS	06/26/2013			OK	OK			102.0	100.0	2.0			69.0
Uranium	ICP/MS	06/24/2013			OK	OK	OK	106.0	113.0	119.0	1.0	103.0	2.0	95.0
Uranium	ICP/MS	06/24/2013					OK	100.0	116.0	117.0	0.0	103.0	1.0	
Uranium	ICP/MS	06/24/2013					OK	103.0					2.0	
Uranium	ICP/MS	06/26/2013			OK	OK			102.0	98.0	1.0			100.0
Vanadium	ICP/MS	06/24/2013			OK	OK	OK	95.0	111.0	117.0	0.0	97.0	16.0	98.0
Vanadium	ICP/MS	06/24/2013					OK	89.0	102.0	105.0	1.0	103.0	1.0	
Vanadium	ICP/MS	06/24/2013					OK	90.0					0.0	

**SAMPLE MANAGEMENT SYSTEM
Metals Data Validation Worksheet**

RIN: 13065380

Lab Code: PAR

Date Due: 7/12/2013

Matrix: Water

Site Code: RFL01

Date Completed: 7/3/2013

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	CCV	CCB								
Vanadium	ICP/MS	06/26/2013			OK	OK		106.0	106.0	0.0			101.0	

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 13065380

Lab Code: PARDate Due: 7/12/2013Matrix: WaterSite Code: RFL01Date Completed: 7/3/2013

Analyte	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	CCV	CCB						
AMMONIA AS N	06/25/2013	-0.010	0.9999	OK	OK	OK	94	76	74	3	
AMMONIA AS N	06/25/2013			OK	OK	OK	95	87	84	1	
Nitrate+Nitrite as N	06/27/2013	0.000	0.9998	OK	OK	OK	104	105	106	1	
Nitrate+Nitrite as N	06/27/2013			OK	OK	OK	103	101	100	1	

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: Wells RFN01-0669 and -0670 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.

The specific conductance criterion was not met for well 0195. The associated result from this well is qualified with a “J” flag (estimated) because the purging criteria were not met.

Equipment Blank Assessment

An equipment blank was collected after decontamination of the tubing reel used to collect some surface water samples. Arsenic, molybdenum, selenium, uranium, and vanadium were detected in this blank. Sample results that are less than 5 times the equipment blank concentration are qualified with a “J” flag (estimated).

Field Duplicate Analysis

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. Duplicate samples were collected from locations RFO01-0310, RFN01-0590, RFN01-0575, and RFO01-0743-3. The relative percent difference (RPD) for duplicate results that are greater than 5 times the PQL should be less than 20 percent. The RPD is not used to evaluate results that are less than 5 times the PQL. For these results (RPD is ‘NA’ on the Field Duplicates report), the range should be no greater than the PQL. With one exception, the duplicate results met the criteria, demonstrating acceptable overall precision. The selenium duplicate results at location 0590 were slightly above the criterion, with an RPD of 21 percent. During the review of the duplicate data, there were no analytical errors identified and sampling difficulties were not reported on the field data sheet. For this selenium result, the precision observed may be attributed to the complex sample matrix that required sample dilution prior to analysis for all analytes. The duplicate results are acceptable as qualified.

SAMPLE MANAGEMENT SYSTEM
Validation Report: Equipment/Trip Blanks

Page 1 of 3

RIN: 13065380 Lab Code: PAR Project: Rifle Disposal/Processing Site (old/new) Validation Date: 8/5/2013

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1306227-24	SW6020	Arsenic	0.17		0.015	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1306227-10	LHV 775	0322	0.37	1		J
1306227-11	LHV 750	0323	1.5	10		
1306227-12	LHV 751	0324	0.31	1		J
1306227-13	LHV 776	0452	15	5		
1306227-14	LHV 752	0575	2.4	1		
1306227-9	LHV 774	0320	3.4	5		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1306227-24	SW6020	Molybdenum	0.42		0.032	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1306227-10	LHV 775	0322	1.3	1		J
1306227-11	LHV 750	0323	2700	10		
1306227-12	LHV 751	0324	1.2	1		J
1306227-13	LHV 776	0452	10000	5		
1306227-14	LHV 752	0575	630	1		
1306227-9	LHV 774	0320	1300	5		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1306227-24	SW6020	Selenium	0.042	B	0.032	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1306227-10	LHV 775	0322	0.3	1		
1306227-11	LHV 750	0323	6	10		
1306227-12	LHV 751	0324	0.29	1		
1306227-13	LHV 776	0452	21	5		
1306227-14	LHV 752	0575	0.42	1		
1306227-28	LHV 762	0294	0.29	1		
1306227-33	LHV 763	0395	3.5	1		
1306227-34	LHV 764	0396	0.33	1		

SAMPLE MANAGEMENT SYSTEM
Validation Report: Equipment/Trip Blanks

Page 2 of 3

RIN: 13065380 Lab Code: PAR Project: Rifle Disposal/Processing Site (old/new) Validation Date: 8/5/2013

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1306227-24		Selenium				

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1306227-39	LHV 766	0741	0.24	1		
1306227-9	LHV 774	0320	11	5		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1306227-24	SW6020	Uranium	0.051		0.0029	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1306227-10	LHV 775	0322	0.86	1		
1306227-11	LHV 750	0323	310	10		
1306227-12	LHV 751	0324	0.82	1		
1306227-13	LHV 776	0452	250	5		
1306227-14	LHV 752	0575	87	1		
1306227-28	LHV 762	0294	0.89	1		
1306227-33	LHV 763	0395	24	1		
1306227-34	LHV 764	0396	0.88	1		
1306227-39	LHV 766	0741	0.86	1		
1306227-9	LHV 774	0320	160	5		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1306227-24	SW6020	Vanadium	6.4		0.015	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1306227-10	LHV 775	0322	1.1	1		J
1306227-11	LHV 750	0323	4.5	10		J
1306227-12	LHV 751	0324	4.2	1		J
1306227-13	LHV 776	0452	1200	5		
1306227-14	LHV 752	0575	1.8	1		J
1306227-28	LHV 762	0294	0.51	1		J
1306227-33	LHV 763	0395	1.4	1		J
1306227-34	LHV 764	0396	0.56	1		J

SAMPLE MANAGEMENT SYSTEM
Validation Report: Equipment/Trip Blanks

Page 3 of 3

RIN: 13065380 Lab Code: PAR Project: Rifle Disposal/Processing Site (old/new) Validation Date: 8/5/2013

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1306227-24		Vanadium				

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1306227-39	LHV 766	0741	0.58	1		J
1306227-9	LHV 774	0320	44	5		

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

Page 1 of 1

RIN: 13065380 Lab Code: PAR Project: Rifle Disposal/Processing Site (old/new) Validation Date: 8/5/2013

Duplicate: 2237

Sample: 0310

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Selenium	0.27			1	0.34			1	NA		UG/L
Uranium	170			50	180			5	5.71		UG/L
Vanadium	9.6			1	8.2			5	15.73		UG/L

Duplicate: 2505

Sample: 0743-3

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Selenium	14			50	13			10	7.41		UG/L
Uranium	160			50	170			10	6.06		UG/L
Vanadium	2100			50	2200			10	4.65		UG/L

Duplicate: 2948

Sample: 0590

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
AMMONIAAS N	160			50	160			50	0		MG/L
Arsenic	0.82			5	0.95			1	14.69		UG/L
Molybdenum	1000			5	930			100	7.25		UG/L
Nitrate+Nitrite as N	34			50	34			50	0		MG/L
Selenium	26			5	32			1	20.69		UG/L
Uranium	73			5	71			100	2.78		UG/L
Vanadium	350			5	360			100	2.82		UG/L

Duplicate: 2949

Sample: 0575

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
AMMONIAAS N	0.11			1	0.13			1			MG/L
Arsenic	2.4			1	2.4			1	0		UG/L
Molybdenum	630			1	640			1	1.57		UG/L
Nitrate+Nitrite as N	1.5			1	1.6			2	6.45		MG/L
Selenium	0.42			1	0.46			1	9.09		UG/L
Uranium	87			1	86			1	1.16		UG/L
Vanadium	1.8			1	1.8			1	0		UG/L

Certification

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

Laboratory Coordinator: Steph Donivan 8-27-2013
Stephen Donivan Date

Data Validation Lead: Steph Donivan 8-27-2013
Gretchen Baer Date

This page intentionally left blank

Attachment 1
Assessment of Anomalous Data

This page intentionally left blank

Potential Outliers Report

This page intentionally left blank

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. The review should include an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

One result was identified as potentially anomalous. The molybdenum result for location 0452 had a concentration higher than previously observed. The molybdenum analysis was performed concurrently with arsenic, selenium, uranium, and vanadium and none of those results were anomalous, which indicates that an analytical error is unlikely. The laboratory data for this RIN are acceptable as qualified.

There were no anomalies identified during data validation for the previous sampling event (November 2012).

Potential anomalies in the field parameters were also examined for patterns of repeated high or low bias, which suggest a systematic error due to instrument malfunction. No such patterns were found and all field data from this event are acceptable as qualified.

This page intentionally left blank

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 13065380

Report Date: 8/12/2013

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0170	N001	06/10/2013	Selenium	0.017	F	0.0148		F	0.0029	B		18	0	NA
RFN01	0201	N001	06/10/2013	Molybdenum	1.4	F	3.15			1.49		F	26	0	No
RFN01	0216	N001	06/11/2013	Arsenic	0.044	F	0.041		F	0.019		F	25	0	No
RFN01	0216	N001	06/11/2013	Molybdenum	0.029	F	0.15		F	0.0345		F	26	0	NA
RFN01	0322	0001	06/11/2013	Molybdenum	0.0013	J	0.01			0.002		U	22	3	No
RFN01	0322	0001	06/11/2013	Uranium	0.00086		0.003			0.00098			22	0	No
RFN01	0323	N001	06/10/2013	Nitrate + Nitrite as Nitrogen	52		130			56			15	0	No
RFN01	0324	0001	06/11/2013	Molybdenum	0.0012	J	0.0091			0.002			15	0	No
RFN01	0324	0001	06/11/2013	Vanadium	0.0042	J	0.003		U	0.00006		B	15	3	NA
RFN01	0452	N001	06/10/2013	Ammonia Total as N	0.24		98			16.9			11	0	No
RFN01	0452	N001	06/10/2013	Molybdenum	10		4.3		J	1.17			12	0	Yes
RFN01	0590	N002	06/10/2013	Molybdenum	0.93	F	3.59			1		F	37	0	NA
RFN01	0635	N001	06/11/2013	Ammonia Total as N	62	F	210		F	72.5		F	13	0	No
RFN01	0658	N001	06/11/2013	Ammonia Total as N	37	F	180		F	40.2		F	13	0	No
RFN01	0659	N001	06/11/2013	Molybdenum	1.2	F	7.7			1.6		F	32	0	NA
RFN01	0664	N001	06/11/2013	Molybdenum	0.22	F	0.888			0.24		F	23	0	No
RFN01	0664	N001	06/11/2013	Nitrate + Nitrite as Nitrogen	1.2	F	20		F	1.6		F	17	0	NA
RFN01	0669	N001	06/11/2013	Molybdenum	0.53	FQ	3.69			0.76		FQ	20	0	No
RFN01	0670	N001	06/11/2013	Nitrate + Nitrite as Nitrogen	2.8	FQ	55		FQ	2.9		LQ	14	0	NA

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 13065380

Report Date: 8/12/2013

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers <i>Lab Data</i>	Result	Qualifiers <i>Lab Data</i>	Result	Qualifiers <i>Lab Data</i>	N	N Below Detect			
RFN01	0855	N001	06/11/2013	Molybdenum	0.52	F	18	FQ	0.69	F	21	0	NA		
RFO01	0305	N001	06/11/2013	Selenium	0.018	F	0.122		0.021	F	36	0	NA		
RFO01	0395	0001	06/12/2013	Uranium	0.024		0.042		0.025		12	0	No		
RFO01	0655	N001	06/12/2013	Vanadium	0.25	F	0.772		0.28	F	37	0	NA		
RFO01	0658	N001	06/12/2013	Uranium	0.0082	F	0.067	FJ	0.0096	F	27	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.

NA: Data are not normally or lognormally distributed.

Attachment 2

Data Presentation

This page intentionally left blank

**New Rifle
Groundwater Quality Data**

This page intentionally left blank

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0169 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	3.13	-	18.13	450		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	3.13	-	18.13	0.1	UN	JF	#	0.1	
Arsenic	mg/L	06/11/2013	N001	3.13	-	18.13	0.00046		JF	#	0.000015	
Molybdenum	mg/L	06/11/2013	N001	3.13	-	18.13	0.0028		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	3.13	-	18.13	0.13		F	#	0.01	
Oxidation Reduction Potential	mV	06/11/2013	N001	3.13	-	18.13	56.4		F	#		
pH	s.u.	06/11/2013	N001	3.13	-	18.13	7.06		F	#		
Selenium	mg/L	06/11/2013	N001	3.13	-	18.13	0.0036		F	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	3.13	-	18.13	1926		F	#		
Temperature	C	06/11/2013	N001	3.13	-	18.13	15.26		F	#		
Turbidity	NTU	06/11/2013	N001	3.13	-	18.13	1.27		F	#		
Uranium	mg/L	06/11/2013	N001	3.13	-	18.13	0.02		F	#	0.0000029	
Vanadium	mg/L	06/11/2013	N001	3.13	-	18.13	0.00087	E	JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0170 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/10/2013	N001	92.23 - 112.23	494		F	#		
Ammonia Total as N	mg/L	06/10/2013	N001	92.23 - 112.23	0.18		F	#	0.1	
Arsenic	mg/L	06/10/2013	N001	92.23 - 112.23	0.00031		JF	#	0.000015	
Molybdenum	mg/L	06/10/2013	N001	92.23 - 112.23	0.0038		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	92.23 - 112.23	11		F	#	0.1	
Oxidation Reduction Potential	mV	06/10/2013	N001	92.23 - 112.23	31.3		F	#		
pH	s.u.	06/10/2013	N001	92.23 - 112.23	7.02		F	#		
Selenium	mg/L	06/10/2013	N001	92.23 - 112.23	0.017		F	#	0.000032	
Specific Conductance	umhos/cm	06/10/2013	N001	92.23 - 112.23	3100		F	#		
Temperature	C	06/10/2013	N001	92.23 - 112.23	17.4		F	#		
Turbidity	NTU	06/10/2013	N001	92.23 - 112.23	0.69		F	#		
Uranium	mg/L	06/10/2013	N001	92.23 - 112.23	0.062		F	#	0.0000029	
Vanadium	mg/L	06/10/2013	N001	92.23 - 112.23	0.0008		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0172 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	6.98	-	31.98	787		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	6.98	-	31.98	0.1	U	F	#	0.1	
Arsenic	mg/L	06/11/2013	N001	6.98	-	31.98	0.0059		F	#	0.000015	
Molybdenum	mg/L	06/11/2013	N001	6.98	-	31.98	0.0065		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	6.98	-	31.98	0.013		F	#	0.01	
Oxidation Reduction Potential	mV	06/11/2013	N001	6.98	-	31.98	-32.9		F	#		
pH	s.u.	06/11/2013	N001	6.98	-	31.98	6.99		F	#		
Selenium	mg/L	06/11/2013	N001	6.98	-	31.98	0.00021		JF	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	6.98	-	31.98	16187		F	#		
Temperature	C	06/11/2013	N001	6.98	-	31.98	13.39		F	#		
Turbidity	NTU	06/11/2013	N001	6.98	-	31.98	1.16		F	#		
Uranium	mg/L	06/11/2013	N001	6.98	-	31.98	0.067		F	#	0.0000029	
Vanadium	mg/L	06/11/2013	N001	6.98	-	31.98	0.00028	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0195 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO ₃)	mg/L	06/10/2013	N001	5.29	- 25.29	384		F	#		
Ammonia Total as N	mg/L	06/10/2013	N001	5.29	- 25.29	9.2		F	#	0.5	
Arsenic	mg/L	06/10/2013	N001	5.29	- 25.29	0.0015		F	#	0.000015	
Molybdenum	mg/L	06/10/2013	N001	5.29	- 25.29	0.081		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	5.29	- 25.29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/10/2013	N001	5.29	- 25.29	-17.9		F	#		
pH	s.u.	06/10/2013	N001	5.29	- 25.29	7.1		F	#		
Selenium	mg/L	06/10/2013	N001	5.29	- 25.29	0.00019		JF	#	0.000032	
Specific Conductance	umhos/cm	06/10/2013	N001	5.29	- 25.29	1403		FJ	#		
Temperature	C	06/10/2013	N001	5.29	- 25.29	14.13		F	#		
Turbidity	NTU	06/10/2013	N001	5.29	- 25.29	2.2		F	#		
Uranium	mg/L	06/10/2013	N001	5.29	- 25.29	0.034		F	#	0.0000029	
Vanadium	mg/L	06/10/2013	N001	5.29	- 25.29	0.00038		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0201 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO ₃)	mg/L	06/10/2013	N001	7.35	- 22.35	242		F	#		
Ammonia Total as N	mg/L	06/10/2013	N001	7.35	- 22.35	74		F	#	5	
Arsenic	mg/L	06/10/2013	N001	7.35	- 22.35	0.00037		JF	#	0.000015	
Molybdenum	mg/L	06/10/2013	N001	7.35	- 22.35	1.4		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	7.35	- 22.35	48		F	#	0.5	
Oxidation Reduction Potential	mV	06/10/2013	N001	7.35	- 22.35	209.8		F	#		
pH	s.u.	06/10/2013	N001	7.35	- 22.35	6.85		F	#		
Selenium	mg/L	06/10/2013	N001	7.35	- 22.35	0.0052		F	#	0.000032	
Specific Conductance	umhos/cm	06/10/2013	N001	7.35	- 22.35	3878		F	#		
Temperature	C	06/10/2013	N001	7.35	- 22.35	17.99		F	#		
Turbidity	NTU	06/10/2013	N001	7.35	- 22.35	2.59		F	#		
Uranium	mg/L	06/10/2013	N001	7.35	- 22.35	0.09		F	#	0.00029	
Vanadium	mg/L	06/10/2013	N001	7.35	- 22.35	0.00062		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0215 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	6.84	-	21.84	254		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	6.84	-	21.84	1.9		F	#	0.1	
Arsenic	mg/L	06/11/2013	N001	6.84	-	21.84	0.00036		JF	#	0.000015	
Molybdenum	mg/L	06/11/2013	N001	6.84	-	21.84	0.01		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	6.84	-	21.84	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/11/2013	N001	6.84	-	21.84	68.8		F	#		
pH	s.u.	06/11/2013	N001	6.84	-	21.84	7.29		F	#		
Selenium	mg/L	06/11/2013	N001	6.84	-	21.84	0.00083		F	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	6.84	-	21.84	1497		F	#		
Temperature	C	06/11/2013	N001	6.84	-	21.84	13.63		F	#		
Turbidity	NTU	06/11/2013	N001	6.84	-	21.84	1.39		F	#		
Uranium	mg/L	06/11/2013	N001	6.84	-	21.84	0.018		F	#	0.000029	
Vanadium	mg/L	06/11/2013	N001	6.84	-	21.84	0.0018		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0216 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	5.5	-	20.5	154		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	5.5	-	20.5	5.2		F	#	0.2	
Arsenic	mg/L	06/11/2013	N001	5.5	-	20.5	0.044		F	#	0.00074	
Molybdenum	mg/L	06/11/2013	N001	5.5	-	20.5	0.029		F	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	5.5	-	20.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/11/2013	N001	5.5	-	20.5	89.9		F	#		
pH	s.u.	06/11/2013	N001	5.5	-	20.5	7.41		F	#		
Selenium	mg/L	06/11/2013	N001	5.5	-	20.5	0.00043		JF	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	5.5	-	20.5	1109		F	#		
Temperature	C	06/11/2013	N001	5.5	-	20.5	13.85		F	#		
Turbidity	NTU	06/11/2013	N001	5.5	-	20.5	6.83		F	#		
Uranium	mg/L	06/11/2013	N001	5.5	-	20.5	0.014		F	#	0.00015	
Vanadium	mg/L	06/11/2013	N001	5.5	-	20.5	0.23		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0217 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/10/2013	N001	7.4 - 22.4	194		F	#		
Ammonia Total as N	mg/L	06/10/2013	N001	7.4 - 22.4	41		F	#	2	
Arsenic	mg/L	06/10/2013	N001	7.4 - 22.4	0.00086		F	#	0.000015	
Molybdenum	mg/L	06/10/2013	N001	7.4 - 22.4	1.3		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	7.4 - 22.4	1.1		F	#	0.01	
Oxidation Reduction Potential	mV	06/10/2013	N001	7.4 - 22.4	193.3		F	#		
pH	s.u.	06/10/2013	N001	7.4 - 22.4	6.69		F	#		
Selenium	mg/L	06/10/2013	N001	7.4 - 22.4	0.013		F	#	0.000032	
Specific Conductance	umhos/cm	06/10/2013	N001	7.4 - 22.4	3390		F	#		
Temperature	C	06/10/2013	N001	7.4 - 22.4	13.69		F	#		
Turbidity	NTU	06/10/2013	N001	7.4 - 22.4	3.06		F	#		
Uranium	mg/L	06/10/2013	N001	7.4 - 22.4	0.13		F	#	0.00029	
Vanadium	mg/L	06/10/2013	N001	7.4 - 22.4	1.8		F	#	0.0015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0590 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID					Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/10/2013	N001	5.21	-	19.21	240		F	#		
Ammonia Total as N	mg/L	06/10/2013	N001	5.21	-	19.21	160		F	#	5	
Ammonia Total as N	mg/L	06/10/2013	N002	5.21	-	19.21	160		F	#	5	
Arsenic	mg/L	06/10/2013	N001	5.21	-	19.21	0.00082		F	#	0.000074	
Arsenic	mg/L	06/10/2013	N002	5.21	-	19.21	0.00095		F	#	0.000015	
Molybdenum	mg/L	06/10/2013	N001	5.21	-	19.21	1		F	#	0.00016	
Molybdenum	mg/L	06/10/2013	N002	5.21	-	19.21	0.93		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	5.21	-	19.21	34		F	#	0.5	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N002	5.21	-	19.21	34		F	#	0.5	
Oxidation Reduction Potential	mV	06/10/2013	N001	5.21	-	19.21	220.9		F	#		
pH	s.u.	06/10/2013	N001	5.21	-	19.21	6.74		F	#		
Selenium	mg/L	06/10/2013	N001	5.21	-	19.21	0.026		F	#	0.00016	
Selenium	mg/L	06/10/2013	N002	5.21	-	19.21	0.032		F	#	0.000032	
Specific Conductance	umhos/cm	06/10/2013	N001	5.21	-	19.21	5320		F	#		
Temperature	C	06/10/2013	N001	5.21	-	19.21	14.61		F	#		
Turbidity	NTU	06/10/2013	N001	5.21	-	19.21	3.65		F	#		
Uranium	mg/L	06/10/2013	N001	5.21	-	19.21	0.073		F	#	0.000015	
Uranium	mg/L	06/10/2013	N002	5.21	-	19.21	0.071		F	#	0.00029	
Vanadium	mg/L	06/10/2013	N001	5.21	-	19.21	0.35		F	#	0.000076	
Vanadium	mg/L	06/10/2013	N002	5.21	-	19.21	0.36		F	#	0.0015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0620 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	6.7	-	10.7	484		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	6.7	-	10.7	0.1	U	F	#	0.1	
Arsenic	mg/L	06/11/2013	N001	6.7	-	10.7	0.00049		JF	#	0.000015	
Molybdenum	mg/L	06/11/2013	N001	6.7	-	10.7	0.0083		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	6.7	-	10.7	24		F	#	0.2	
Oxidation Reduction Potential	mV	06/11/2013	N001	6.7	-	10.7	9.9		F	#		
pH	s.u.	06/11/2013	N001	6.7	-	10.7	7.05		F	#		
Selenium	mg/L	06/11/2013	N001	6.7	-	10.7	0.019		F	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	6.7	-	10.7	6619		F	#		
Temperature	C	06/11/2013	N001	6.7	-	10.7	13.71		F	#		
Turbidity	NTU	06/11/2013	N001	6.7	-	10.7	1.79		F	#		
Uranium	mg/L	06/11/2013	N001	6.7	-	10.7	0.06		F	#	0.0000029	
Vanadium	mg/L	06/11/2013	N001	6.7	-	10.7	0.0015		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0635 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	12 - 17	286		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	12 - 17	62		F	#	5	
Arsenic	mg/L	06/11/2013	N001	12 - 17	0.00022		JF	#	0.000015	
Molybdenum	mg/L	06/11/2013	N001	12 - 17	0.41		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	12 - 17	8.4		F	#	0.1	
Oxidation Reduction Potential	mV	06/11/2013	N001	12 - 17	180.5		F	#		
pH	s.u.	06/11/2013	N001	12 - 17	6.95		F	#		
Selenium	mg/L	06/11/2013	N001	12 - 17	0.0034		F	#	0.000032	
Specific Conductance	umhos /cm	06/11/2013	N001	12 - 17	2621		F	#		
Temperature	C	06/11/2013	N001	12 - 17	14.13		F	#		
Turbidity	NTU	06/11/2013	N001	12 - 17	3.2		F	#		
Uranium	mg/L	06/11/2013	N001	12 - 17	0.052		F	#	0.0000029	
Vanadium	mg/L	06/11/2013	N001	12 - 17	0.00056		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0658 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft	-	BLS)		Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	.5	-	5.5	268	F	#			
Ammonia Total as N	mg/L	06/11/2013	N001	.5	-	5.5	37	F	#	2		
Arsenic	mg/L	06/11/2013	N001	.5	-	5.5	0.048	F	#	0.0015		
Molybdenum	mg/L	06/11/2013	N001	.5	-	5.5	0.68	F	#	0.0032		
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	.5	-	5.5	2.2	F	#	0.05		
Oxidation Reduction Potential	mV	06/11/2013	N001	.5	-	5.5	169	F	#			
pH	s.u.	06/11/2013	N001	.5	-	5.5	6.92	F	#			
Selenium	mg/L	06/11/2013	N001	.5	-	5.5	0.79	F	#	0.0032		
Specific Conductance	umhos/cm	06/11/2013	N001	.5	-	5.5	2721	F	#			
Temperature	C	06/11/2013	N001	.5	-	5.5	14.21	F	#			
Turbidity	NTU	06/11/2013	N001	.5	-	5.5	2.86	F	#			
Uranium	mg/L	06/11/2013	N001	.5	-	5.5	0.054	F	#	0.00029		
Vanadium	mg/L	06/11/2013	N001	.5	-	5.5	19	F	#	0.0015		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0659 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	.5	-	10.5	193	F	#			
Ammonia Total as N	mg/L	06/11/2013	N001	.5	-	10.5	28	F	#	2		
Arsenic	mg/L	06/11/2013	N001	.5	-	10.5	0.034	F	#	0.00074		
Molybdenum	mg/L	06/11/2013	N001	.5	-	10.5	1.2	F	#	0.0016		
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	.5	-	10.5	18	F	#	0.1		
Oxidation Reduction Potential	mV	06/11/2013	N001	.5	-	10.5	166	F	#			
pH	s.u.	06/11/2013	N001	.5	-	10.5	7.02	F	#			
Selenium	mg/L	06/11/2013	N001	.5	-	10.5	0.11	F	#	0.0016		
Specific Conductance	umhos/cm	06/11/2013	N001	.5	-	10.5	3345	F	#			
Temperature	C	06/11/2013	N001	.5	-	10.5	17.52	F	#			
Turbidity	NTU	06/11/2013	N001	.5	-	10.5	2.93	F	#			
Uranium	mg/L	06/11/2013	N001	.5	-	10.5	0.09	F	#	0.00015		
Vanadium	mg/L	06/11/2013	N001	.5	-	10.5	2.2	F	#	0.00076		

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0664 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	7.7	-	14.7	397		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	7.7	-	14.7	31		F	#	2	
Arsenic	mg/L	06/11/2013	N001	7.7	-	14.7	0.004		F	#	0.000074	
Molybdenum	mg/L	06/11/2013	N001	7.7	-	14.7	0.22		F	#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	7.7	-	14.7	1.2		F	#	0.05	
Oxidation Reduction Potential	mV	06/11/2013	N001	7.7	-	14.7	164.3		F	#		
pH	s.u.	06/11/2013	N001	7.7	-	14.7	7.02		F	#		
Selenium	mg/L	06/11/2013	N001	7.7	-	14.7	0.14		F	#	0.00016	
Specific Conductance	umhos/cm	06/11/2013	N001	7.7	-	14.7	2251		F	#		
Temperature	C	06/11/2013	N001	7.7	-	14.7	13.39		F	#		
Turbidity	NTU	06/11/2013	N001	7.7	-	14.7	8.81		F	#		
Uranium	mg/L	06/11/2013	N001	7.7	-	14.7	0.057		F	#	0.000015	
Vanadium	mg/L	06/11/2013	N001	7.7	-	14.7	2.3		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0669 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	4 - 10.6	378		FQ	#		
Ammonia Total as N	mg/L	06/11/2013	N001	4 - 10.6	63		FQ	#	2	
Arsenic	mg/L	06/11/2013	N001	4 - 10.6	0.0038	B	FQ	#	0.00074	
Molybdenum	mg/L	06/11/2013	N001	4 - 10.6	0.53		FQ	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	4 - 10.6	3.8		FQ	#	0.05	
Oxidation Reduction Potential	mV	06/11/2013	N001	4 - 10.6	176.5		FQ	#		
pH	s.u.	06/11/2013	N001	4 - 10.6	6.93		FQ	#		
Selenium	mg/L	06/11/2013	N001	4 - 10.6	0.0072		FQ	#	0.0016	
Specific Conductance	umhos/cm	06/11/2013	N001	4 - 10.6	2660		FQ	#		
Temperature	C	06/11/2013	N001	4 - 10.6	15.22		FQ	#		
Turbidity	NTU	06/11/2013	N001	4 - 10.6	2.86		FQ	#		
Uranium	mg/L	06/11/2013	N001	4 - 10.6	0.091		FQ	#	0.00015	
Vanadium	mg/L	06/11/2013	N001	4 - 10.6	1.7		FQ	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0670 WELL For Organics Study.

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	5.2	-	12.2	382	FQ	#		
Ammonia Total as N	mg/L	06/11/2013	N001	5.2	-	12.2	14	FQ	#	1	
Arsenic	mg/L	06/11/2013	N001	5.2	-	12.2	0.0039	FQ	#	0.00015	
Molybdenum	mg/L	06/11/2013	N001	5.2	-	12.2	0.18	FQ	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	5.2	-	12.2	2.8	FQ	#	0.05	
Oxidation Reduction Potential	mV	06/11/2013	N001	5.2	-	12.2	137.2	FQ	#		
pH	s.u.	06/11/2013	N001	5.2	-	12.2	6.99	FQ	#		
Selenium	mg/L	06/11/2013	N001	5.2	-	12.2	0.31	FQ	#	0.00032	
Specific Conductance	umhos/cm	06/11/2013	N001	5.2	-	12.2	2196	FQ	#		
Temperature	C	06/11/2013	N001	5.2	-	12.2	14	FQ	#		
Turbidity	NTU	06/11/2013	N001	5.2	-	12.2	2.19	FQ	#		
Uranium	mg/L	06/11/2013	N001	5.2	-	12.2	0.075	FQ	#	0.000029	
Vanadium	mg/L	06/11/2013	N001	5.2	-	12.2	1.8	FQ	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0855 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	6	-	11	281		F	#		
Ammonia Total as N	mg/L	06/11/2013	N001	6	-	11	28		F	#	1	
Arsenic	mg/L	06/11/2013	N001	6	-	11	0.2		F	#	0.0015	
Molybdenum	mg/L	06/11/2013	N001	6	-	11	0.52		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	6	-	11	3.4		F	#	0.1	
Oxidation Reduction Potential	mV	06/11/2013	N001	6	-	11	163.9		F	#		
pH	s.u.	06/11/2013	N001	6	-	11	6.92		F	#		
Selenium	mg/L	06/11/2013	N001	6	-	11	0.69		F	#	0.0032	
Specific Conductance	umhos/cm	06/11/2013	N001	6	-	11	2257		F	#		
Temperature	C	06/11/2013	N001	6	-	11	16.56		F	#		
Turbidity	NTU	06/11/2013	N001	6	-	11	1.5		F	#		
Uranium	mg/L	06/11/2013	N001	6	-	11	0.04		F	#	0.00029	
Vanadium	mg/L	06/11/2013	N001	6	-	11	12		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.	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.

**Old Rifle
Groundwater Quality Data**

This page intentionally left blank

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0292A WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	10.5	-	20.5	466	F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	10.5	-	20.5	43.9	F	#		
pH	s.u.	06/12/2013	N001	10.5	-	20.5	7.16	F	#		
Selenium	mg/L	06/12/2013	N001	10.5	-	20.5	0.00051	F	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	10.5	-	20.5	1794	F	#		
Temperature	C	06/12/2013	N001	10.5	-	20.5	12.64	F	#		
Turbidity	NTU	06/12/2013	N001	10.5	-	20.5	5.1	F	#		
Uranium	mg/L	06/12/2013	N001	10.5	-	20.5	0.023	F	#	0.0000029	
Vanadium	mg/L	06/12/2013	N001	10.5	-	20.5	0.0005	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0304 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	13.2	-	18.2	268		F	#		
Oxidation Reduction Potential	mV	06/11/2013	N001	13.2	-	18.2	-20.7		F	#		
pH	s.u.	06/11/2013	N001	13.2	-	18.2	7.22		F	#		
Selenium	mg/L	06/11/2013	N001	13.2	-	18.2	0.0012		F	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	13.2	-	18.2	1913		F	#		
Temperature	C	06/11/2013	N001	13.2	-	18.2	13.13		F	#		
Turbidity	NTU	06/11/2013	N001	13.2	-	18.2	8.37		F	#		
Uranium	mg/L	06/11/2013	N001	13.2	-	18.2	0.045		F	#	0.0000029	
Vanadium	mg/L	06/11/2013	N001	13.2	-	18.2	0.03		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0305 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	13.76	-	18.76	288	F	#		
Oxidation Reduction Potential	mV	06/11/2013	N001	13.76	-	18.76	20.1	F	#		
pH	s.u.	06/11/2013	N001	13.76	-	18.76	7.31	F	#		
Selenium	mg/L	06/11/2013	N001	13.76	-	18.76	0.018	F	#	0.00016	
Specific Conductance	umhos/cm	06/11/2013	N001	13.76	-	18.76	1877	F	#		
Temperature	C	06/11/2013	N001	13.76	-	18.76	13.22	F	#		
Turbidity	NTU	06/11/2013	N001	13.76	-	18.76	1.31	F	#		
Uranium	mg/L	06/11/2013	N001	13.76	-	18.76	0.04	F	#	0.000015	
Vanadium	mg/L	06/11/2013	N001	13.76	-	18.76	0.28	F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0309 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	16.93	- 21.93	379		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	16.93	- 21.93	-7.7		F	#		
pH	s.u.	06/12/2013	N001	16.93	- 21.93	7.15		F	#		
Selenium	mg/L	06/12/2013	N001	16.93	- 21.93	0.00014		JF	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	16.93	- 21.93	2238		F	#		
Temperature	C	06/12/2013	N001	16.93	- 21.93	13.29		F	#		
Turbidity	NTU	06/12/2013	N001	16.93	- 21.93	3.23		F	#		
Uranium	mg/L	06/12/2013	N001	16.93	- 21.93	0.024		F	#	0.0000029	
Vanadium	mg/L	06/12/2013	N001	16.93	- 21.93	0.00022	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0310 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	17.93 - 22.93	486		F	#		
Oxidation Reduction Potential	mV	06/11/2013	N001	17.93 - 22.93	-14.9		F	#		
pH	s.u.	06/11/2013	N001	17.93 - 22.93	7.04		F	#		
Selenium	mg/L	06/11/2013	N001	17.93 - 22.93	0.00027		JF	#	0.000032	
Selenium	mg/L	06/11/2013	N002	17.93 - 22.93	0.00034		JF	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	17.93 - 22.93	2194		F	#		
Temperature	C	06/11/2013	N001	17.93 - 22.93	13.28		F	#		
Turbidity	NTU	06/11/2013	N001	17.93 - 22.93	2.62		F	#		
Uranium	mg/L	06/11/2013	N001	17.93 - 22.93	0.17		F	#	0.00015	
Uranium	mg/L	06/11/2013	N002	17.93 - 22.93	0.18		F	#	0.000015	
Vanadium	mg/L	06/11/2013	N001	17.93 - 22.93	0.0096		F	#	0.000015	
Vanadium	mg/L	06/11/2013	N002	17.93 - 22.93	0.0082		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0655 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	13.6	-	23.6	480		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	13.6	-	23.6	50.7		F	#		
pH	s.u.	06/12/2013	N001	13.6	-	23.6	7.12		F	#		
Selenium	mg/L	06/12/2013	N001	13.6	-	23.6	0.022		F	#	0.00016	
Specific Conductance	umhos/cm	06/12/2013	N001	13.6	-	23.6	2151		F	#		
Temperature	C	06/12/2013	N001	13.6	-	23.6	12.76		F	#		
Turbidity	NTU	06/12/2013	N001	13.6	-	23.6	1.22		F	#		
Uranium	mg/L	06/12/2013	N001	13.6	-	23.6	0.096		F	#	0.000015	
Vanadium	mg/L	06/12/2013	N001	13.6	-	23.6	0.25		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0656 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	6.35	-	21.35	343		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	6.35	-	21.35	88.1		F	#		
pH	s.u.	06/12/2013	N001	6.35	-	21.35	7.13		F	#		
Selenium	mg/L	06/12/2013	N001	6.35	-	21.35	0.0052		F	#	0.00016	
Specific Conductance	umhos/cm	06/12/2013	N001	6.35	-	21.35	2008		F	#		
Temperature	C	06/12/2013	N001	6.35	-	21.35	15.21		F	#		
Turbidity	NTU	06/12/2013	N001	6.35	-	21.35	3.28		F	#		
Uranium	mg/L	06/12/2013	N001	6.35	-	21.35	0.19		F	#	0.000015	
Vanadium	mg/L	06/12/2013	N001	6.35	-	21.35	0.024		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0658 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	2.3	-	17.3	268		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	2.3	-	17.3	29.1		F	#		
pH	s.u.	06/12/2013	N001	2.3	-	17.3	7.2		F	#		
Selenium	mg/L	06/12/2013	N001	2.3	-	17.3	0.0018		F	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	2.3	-	17.3	1293		F	#		
Temperature	C	06/12/2013	N001	2.3	-	17.3	10.94		F	#		
Turbidity	NTU	06/12/2013	N001	2.3	-	17.3	4.97		F	#		
Uranium	mg/L	06/12/2013	N001	2.3	-	17.3	0.0082		F	#	0.000029	
Vanadium	mg/L	06/12/2013	N001	2.3	-	17.3	0.00067		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0742-1 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	10.05	- 10.55	543		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	10.05	- 10.55	55.1		F	#		
pH	s.u.	06/12/2013	N001	10.05	- 10.55	7.05		F	#		
Selenium	mg/L	06/12/2013	N001	10.05	- 10.55	0.00071		F	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	10.05	- 10.55	1869		F	#		
Temperature	C	06/12/2013	N001	10.05	- 10.55	15.96		F	#		
Turbidity	NTU	06/12/2013	N001	10.05	- 10.55	4.97		F	#		
Uranium	mg/L	06/12/2013	N001	10.05	- 10.55	0.015		F	#	0.000029	
Vanadium	mg/L	06/12/2013	N001	10.05	- 10.55	0.1		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0742-2 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	14.05	-	14.55	277		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	14.05	-	14.55	68.5		F	#		
pH	s.u.	06/12/2013	N001	14.05	-	14.55	7.25		F	#		
Selenium	mg/L	06/12/2013	N001	14.05	-	14.55	0.014		F	#	0.00016	
Specific Conductance	umhos/cm	06/12/2013	N001	14.05	-	14.55	1894		F	#		
Temperature	C	06/12/2013	N001	14.05	-	14.55	14.73		F	#		
Turbidity	NTU	06/12/2013	N001	14.05	-	14.55	2.56		F	#		
Uranium	mg/L	06/12/2013	N001	14.05	-	14.55	0.032		F	#	0.000015	
Vanadium	mg/L	06/12/2013	N001	14.05	-	14.55	0.39		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0742-3 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	18.05	- 18.55	214		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	18.05	- 18.55	73.6		F	#		
pH	s.u.	06/12/2013	N001	18.05	- 18.55	7.44		F	#		
Selenium	mg/L	06/12/2013	N001	18.05	- 18.55	0.018		F	#	0.00016	
Specific Conductance	umhos/cm	06/12/2013	N001	18.05	- 18.55	1659		F	#		
Temperature	C	06/12/2013	N001	18.05	- 18.55	13.07		F	#		
Turbidity	NTU	06/12/2013	N001	18.05	- 18.55	3		F	#		
Uranium	mg/L	06/12/2013	N001	18.05	- 18.55	0.025		F	#	0.000015	
Vanadium	mg/L	06/12/2013	N001	18.05	- 18.55	0.39		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0743-1 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	8.2	-	8.7	464		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	8.2	-	8.7	-29.7		F	#		
pH	s.u.	06/12/2013	N001	8.2	-	8.7	6.86		F	#		
Selenium	mg/L	06/12/2013	N001	8.2	-	8.7	0.075		F	#	0.00032	
Specific Conductance	umhos/cm	06/12/2013	N001	8.2	-	8.7	2932		F	#		
Temperature	C	06/12/2013	N001	8.2	-	8.7	15.16		F	#		
Turbidity	NTU	06/12/2013	N001	8.2	-	8.7	2.24		F	#		
Uranium	mg/L	06/12/2013	N001	8.2	-	8.7	0.42		F	#	0.000029	
Vanadium	mg/L	06/12/2013	N001	8.2	-	8.7	0.091		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0743-2 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	12.2	-	12.7	424		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	12.2	-	12.7	-18.1		F	#		
pH	s.u.	06/12/2013	N001	12.2	-	12.7	7.06		F	#		
Selenium	mg/L	06/12/2013	N001	12.2	-	12.7	0.081		F	#	0.0016	
Specific Conductance	umhos/cm	06/12/2013	N001	12.2	-	12.7	2614		F	#		
Temperature	C	06/12/2013	N001	12.2	-	12.7	13.65		F	#		
Turbidity	NTU	06/12/2013	N001	12.2	-	12.7	2.66		F	#		
Uranium	mg/L	06/12/2013	N001	12.2	-	12.7	0.21		F	#	0.00015	
Vanadium	mg/L	06/12/2013	N001	12.2	-	12.7	2.7		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0743-3 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	16.2	-	16.7	428		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	16.2	-	16.7	5.8		F	#		
pH	s.u.	06/12/2013	N001	16.2	-	16.7	7.15		F	#		
Selenium	mg/L	06/12/2013	N001	16.2	-	16.7	0.014		F	#	0.0016	
Selenium	mg/L	06/12/2013	N002	16.2	-	16.7	0.013		F	#	0.00032	
Specific Conductance	umhos/cm	06/12/2013	N001	16.2	-	16.7	2765		F	#		
Temperature	C	06/12/2013	N001	16.2	-	16.7	13.89		F	#		
Turbidity	NTU	06/12/2013	N001	16.2	-	16.7	3.39		F	#		
Uranium	mg/L	06/12/2013	N001	16.2	-	16.7	0.16		F	#	0.00015	
Uranium	mg/L	06/12/2013	N002	16.2	-	16.7	0.17		F	#	0.000029	
Vanadium	mg/L	06/12/2013	N001	16.2	-	16.7	2.1		F	#	0.00076	
Vanadium	mg/L	06/12/2013	N002	16.2	-	16.7	2.2		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0744-1 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	11.2	-	11.7	565		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	11.2	-	11.7	-94.1		F	#		
pH	s.u.	06/12/2013	N001	11.2	-	11.7	6.91		F	#		
Selenium	mg/L	06/12/2013	N001	11.2	-	11.7	0.00077		F	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	11.2	-	11.7	2701		F	#		
Temperature	C	06/12/2013	N001	11.2	-	11.7	14.06		F	#		
Turbidity	NTU	06/12/2013	N001	11.2	-	11.7	1.03		F	#		
Uranium	mg/L	06/12/2013	N001	11.2	-	11.7	0.071		F	#	0.0000029	
Vanadium	mg/L	06/12/2013	N001	11.2	-	11.7	0.0027		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0744-2 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	15.2	-	15.7	473		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	15.2	-	15.7	-40.6		F	#		
pH	s.u.	06/12/2013	N001	15.2	-	15.7	7.1		F	#		
Selenium	mg/L	06/12/2013	N001	15.2	-	15.7	0.00056		F	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	15.2	-	15.7	1917		F	#		
Temperature	C	06/12/2013	N001	15.2	-	15.7	13.53		F	#		
Turbidity	NTU	06/12/2013	N001	15.2	-	15.7	1.12		F	#		
Uranium	mg/L	06/12/2013	N001	15.2	-	15.7	0.21		F	#	0.00029	
Vanadium	mg/L	06/12/2013	N001	15.2	-	15.7	0.14		F	#	0.0015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0744-3 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	19.2	-	19.7	488		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	19.2	-	19.7	-59.2		F	#		
pH	s.u.	06/12/2013	N001	19.2	-	19.7	7.19		F	#		
Selenium	mg/L	06/12/2013	N001	19.2	-	19.7	0.00019		JF	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	19.2	-	19.7	1972		F	#		
Temperature	C	06/12/2013	N001	19.2	-	19.7	13.88		F	#		
Turbidity	NTU	06/12/2013	N001	19.2	-	19.7	1.55		F	#		
Uranium	mg/L	06/12/2013	N001	19.2	-	19.7	0.13		F	#	0.000029	
Vanadium	mg/L	06/12/2013	N001	19.2	-	19.7	0.0037		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0745 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	-	296		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	-	81.8		F	#		
pH	s.u.	06/12/2013	N001	-	7.15		F	#		
Selenium	mg/L	06/12/2013	N001	-	0.013		F	#	0.000032	
Specific Conductance	umhos /cm	06/12/2013	N001	-	1788		F	#		
Temperature	C	06/12/2013	N001	-	13.47		F	#		
Turbidity	NTU	06/12/2013	N001	-	1.44		F	#		
Uranium	mg/L	06/12/2013	N001	-	0.051		F	#	0.000029	
Vanadium	mg/L	06/12/2013	N001	-	0.00058		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0746 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	-	494		F	#		
Oxidation Reduction Potential	mV	06/11/2013	N001	-	26.5		F	#		
pH	s.u.	06/11/2013	N001	-	7.07		F	#		
Selenium	mg/L	06/11/2013	N001	-	0.017		F	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	-	3285		F	#		
Temperature	C	06/11/2013	N001	-	14.88		F	#		
Turbidity	NTU	06/11/2013	N001	-	2.35		F	#		
Uranium	mg/L	06/11/2013	N001	-	0.31		F	#	0.000029	
Vanadium	mg/L	06/11/2013	N001	-	0.0035		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0747 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	-	317		F	#		
Oxidation Reduction Potential	mV	06/12/2013	N001	-	15.8		F	#		
pH	s.u.	06/12/2013	N001	-	7.22		F	#		
Selenium	mg/L	06/12/2013	N001	-	0.00047		JF	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	-	1655		F	#		
Temperature	C	06/12/2013	N001	-	14.79		F	#		
Uranium	mg/L	06/12/2013	N001	-	0.042		F	#	0.000029	
Vanadium	mg/L	06/12/2013	N001	-	0.01		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**

This page intentionally left blank

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0320 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	174		#		
Ammonia Total as N	mg/L	06/11/2013	N001	49		#	1	
Arsenic	mg/L	06/11/2013	N001	0.0034		#	0.000074	
Molybdenum	mg/L	06/11/2013	N001	1.3		#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	N001	4.7		#	0.05	
Oxidation Reduction Potential	mV	06/11/2013	N001	157.3		#		
pH	s.u.	06/11/2013	N001	8.05		#		
Selenium	mg/L	06/11/2013	N001	0.011		#	0.00016	
Specific Conductance	umhos/cm	06/11/2013	N001	6794		#		
Temperature	C	06/11/2013	N001	25.09		#		
Turbidity	NTU	06/11/2013	N001	6.69		#		
Uranium	mg/L	06/11/2013	N001	0.16		#	0.000015	
Vanadium	mg/L	06/11/2013	N001	0.044		#	0.000076	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0322 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	75			#	
Ammonia Total as N	mg/L	06/11/2013	0001	0.1	U		#	0.1
Arsenic	mg/L	06/11/2013	0001	0.00037		J	#	0.000015
Molybdenum	mg/L	06/11/2013	0001	0.0013		J	#	0.000032
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	0001	0.15			#	0.01
Oxidation Reduction Potential	mV	06/11/2013	N001	102.2			#	
pH	s.u.	06/11/2013	N001	7.87			#	
Selenium	mg/L	06/11/2013	0001	0.0003		J	#	0.000032
Specific Conductance	umhos/cm	06/11/2013	N001	327			#	
Temperature	C	06/11/2013	N001	18.11			#	
Turbidity	NTU	06/11/2013	N001	157			#	
Uranium	mg/L	06/11/2013	0001	0.00086			#	0.0000029
Vanadium	mg/L	06/11/2013	0001	0.0011		J	#	0.000015

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0323 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Ammonia Total as N	mg/L	06/10/2013	N001	21		#	1	
Arsenic	mg/L	06/10/2013	N001	0.0015		#	0.00015	
Molybdenum	mg/L	06/10/2013	N001	2.7		#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	52		#	0.5	
Oxidation Reduction Potential	mV	06/10/2013	N001	106.4		#		
pH	s.u.	06/10/2013	N001	8.06		#		
Selenium	mg/L	06/10/2013	N001	0.006		#	0.00032	
Specific Conductance	umhos/cm	06/10/2013	N001	7656		#		
Temperature	C	06/10/2013	N001	23.24		#		
Turbidity	NTU	06/10/2013	N001	2.61		#		
Uranium	mg/L	06/10/2013	N001	0.31		#	0.000029	
Vanadium	mg/L	06/10/2013	N001	0.0045	J	#	0.00015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0324 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/11/2013	N001	61			#		
Ammonia Total as N	mg/L	06/11/2013	0001	0.1	U		#	0.1	
Arsenic	mg/L	06/11/2013	0001	0.00031		J	#	0.000015	
Molybdenum	mg/L	06/11/2013	0001	0.0012		J	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/11/2013	0001	0.12			#	0.01	
Oxidation Reduction Potential	mV	06/11/2013	N001	-42.8			#		
pH	s.u.	06/11/2013	N001	8.16			#		
Selenium	mg/L	06/11/2013	0001	0.00029		J	#	0.000032	
Specific Conductance	umhos/cm	06/11/2013	N001	417			#		
Temperature	C	06/11/2013	N001	16.14			#		
Turbidity	NTU	06/11/2013	N001	51.1			#		
Uranium	mg/L	06/11/2013	0001	0.00082			#	0.0000029	
Vanadium	mg/L	06/11/2013	0001	0.0042		J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0452 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO ₃)	mg/L	06/10/2013	N001	108		#		
Ammonia Total as N	mg/L	06/10/2013	N001	0.24		#	0.1	
Arsenic	mg/L	06/10/2013	N001	0.015		#	0.000074	
Molybdenum	mg/L	06/10/2013	N001	10		#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	21		#	0.2	
Oxidation Reduction Potential	mV	06/10/2013	N001	104.3		#		
pH	s.u.	06/10/2013	N001	8.29		#		
Selenium	mg/L	06/10/2013	N001	0.021		#	0.00016	
Specific Conductance	umhos/cm	06/10/2013	N001	10905		#		
Temperature	C	06/10/2013	N001	28.55		#		
Turbidity	NTU	06/10/2013	N001	4.84		#		
Uranium	mg/L	06/10/2013	N001	0.25		#	0.000015	
Vanadium	mg/L	06/10/2013	N001	1.2		#	0.000076	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0575 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO ₃)	mg/L	06/10/2013	N001	73		#		
Ammonia Total as N	mg/L	06/10/2013	N001	0.11		#	0.1	
Ammonia Total as N	mg/L	06/10/2013	N002	0.13		#	0.1	
Arsenic	mg/L	06/10/2013	N001	0.0024		#	0.000015	
Arsenic	mg/L	06/10/2013	N002	0.0024		#	0.000015	
Molybdenum	mg/L	06/10/2013	N001	0.63		#	0.000032	
Molybdenum	mg/L	06/10/2013	N002	0.64		#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N001	1.5		#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	06/10/2013	N002	1.6		#	0.02	
Oxidation Reduction Potential	mV	06/10/2013	N001	60		#		
pH	s.u.	06/10/2013	N001	9.32		#		
Selenium	mg/L	06/10/2013	N001	0.00042		J #	0.000032	
Selenium	mg/L	06/10/2013	N002	0.00046		J #	0.000032	
Specific Conductance	umhos/cm	06/10/2013	N001	5416		#		
Temperature	C	06/10/2013	N001	25.35		#		
Turbidity	NTU	06/10/2013	N001	8.31		#		
Uranium	mg/L	06/10/2013	N001	0.087		#	0.0000029	
Uranium	mg/L	06/10/2013	N002	0.086		#	0.0000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site

REPORT DATE: 8/13/2013

Location: 0575 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Vanadium	mg/L	06/10/2013	N001	0.0018		J	#	0.000015	
Vanadium	mg/L	06/10/2013	N002	0.0018			#	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.

This page intentionally left blank

**Old Rifle
Surface Water Quality Data**

This page intentionally left blank

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0294 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	62		#		
Oxidation Reduction Potential	mV	06/12/2013	N001	20.7		#		
pH	s.u.	06/12/2013	N001	8.09		#		
Selenium	mg/L	06/12/2013	0001	0.00029	J	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	328		#		
Temperature	C	06/12/2013	N001	15.37		#		
Turbidity	NTU	06/12/2013	N001	43.7		#		
Uranium	mg/L	06/12/2013	0001	0.00089		#	0.000029	
Vanadium	mg/L	06/12/2013	0001	0.00051	J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0395 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	312		#		
Oxidation Reduction Potential	mV	06/12/2013	N001	63.6		#		
pH	s.u.	06/12/2013	N001	7.65		#		
Selenium	mg/L	06/12/2013	0001	0.0035		#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	1240		#		
Temperature	C	06/12/2013	N001	14.69		#		
Turbidity	NTU	06/12/2013	N001	28.7		#		
Uranium	mg/L	06/12/2013	0001	0.024		#	0.0000029	
Vanadium	mg/L	06/12/2013	0001	0.0014	J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0396 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	60			#		
Oxidation Reduction Potential	mV	06/12/2013	N001	-4.1			#		
pH	s.u.	06/12/2013	N001	8.07			#		
Selenium	mg/L	06/12/2013	0001	0.00033	J		#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	333			#		
Temperature	C	06/12/2013	N001	17.02			#		
Turbidity	NTU	06/12/2013	N001	43.5			#		
Uranium	mg/L	06/12/2013	0001	0.00088			#	0.000029	
Vanadium	mg/L	06/12/2013	0001	0.00056	J		#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0398 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	256		#		
Oxidation Reduction Potential	mV	06/12/2013	N001	70.6		#		
pH	s.u.	06/12/2013	N001	8.19		#		
Selenium	mg/L	06/12/2013	N001	0.0022		#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	1746		#		
Temperature	C	06/12/2013	N001	12.99		#		
Turbidity	NTU	06/12/2013	N001	2.9		#		
Uranium	mg/L	06/12/2013	N001	0.014		#	0.0000029	
Vanadium	mg/L	06/12/2013	N001	0.0031		#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site

REPORT DATE: 8/13/2013

Location: 0741 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/12/2013	N001	60			#		
Oxidation Reduction Potential	mV	06/12/2013	N001	-50.1			#		
pH	s.u.	06/12/2013	N001	8.07			#		
Selenium	mg/L	06/12/2013	0001	0.00024		J	#	0.000032	
Specific Conductance	umhos/cm	06/12/2013	N001	350			#		
Temperature	C	06/12/2013	N001	17.25			#		
Turbidity	NTU	06/12/2013	N001	34.6			#		
Uranium	mg/L	06/12/2013	0001	0.00086			#	0.000029	
Vanadium	mg/L	06/12/2013	0001	0.00058		J	#	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.

This page intentionally left blank

Equipment Blank Data

This page intentionally left blank

BLANKS REPORT

LAB: PARAGON/ALS LABORATORY GROUP (Fort Collins, CO)

RIN: 13065380

Report Date: 8/13/2013

Parameter	Site Code	Location ID	Sample Date	Sample ID	Units	Result	Qualifiers Lab Data	Detection Limit	Uncertainty	Sample Type
Ammonia Total as N	RFN01	0999	06/11/2013	N001	mg/L	0.1	U	0.1		E
Arsenic	RFN01	0999	06/11/2013	N001	mg/L	0.00017	J	0.000015		E
Molybdenum	RFN01	0999	06/11/2013	N001	mg/L	0.00042		0.000032		E
Nitrate + Nitrite as Nitrogen	RFN01	0999	06/11/2013	N001	mg/L	0.01	U	0.01		E
Selenium	RFN01	0999	06/11/2013	N001	mg/L	0.000042	B J	0.000032		E
Uranium	RFN01	0999	06/11/2013	N001	mg/L	0.000051		0.0000029		E
Vanadium	RFN01	0999	06/11/2013	N001	mg/L	0.0064		0.000015		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.
- 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.

SAMPLE TYPES:

- E Equipment Blank.

This page intentionally left blank

Static Water Level Data

This page intentionally left blank

STATIC WATER LEVELS (USEE700) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 8/13/2013

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	06/12/2013	12:00:00	10.09	5312.99	
0304	O	5310.63	06/11/2013	18:10:58	8.55	5302.08	
0305	O	5312.08	06/11/2013	18:25:34	10.20	5301.88	
0309	O	5313.37	06/12/2013	10:20:53	12.50	5300.87	
0310	O	5311.64	06/11/2013	17:05:33	10.14	5301.5	
0655	O	5312.87	06/12/2013	11:00:26	11.09	5301.78	
0656	O	5313.28	06/12/2013	09:35:13	10.95	5302.33	
0658	U	5323.07	06/12/2013	11:30:05	6.61	5316.46	
0742-1		5313.28	06/12/2013	12:30:50	12.20	5301.08	
0742-2		5313.28	06/12/2013	12:55:22	11.79	5301.49	
0742-3		5313.28	06/12/2013	13:15:14	12.20	5301.08	
0743-1		5310.43	06/12/2013	16:00:18	9.59	5300.84	
0743-2		5310.43	06/12/2013	16:10:45	9.63	5300.8	
0743-3		5310.43	06/12/2013	16:25:55	9.63	5300.8	
0744-1		5309.25	06/12/2013	14:50:57	7.50	5301.75	
0744-2		5309.25	06/12/2013	15:10:20	7.50	5301.75	
0744-3		5309.25	06/12/2013	15:35:16	7.50	5301.75	
0745			06/12/2013	09:15:47	11.61		
0746			06/11/2013	18:50:38	13.91		
0747			06/12/2013	09:55:25	13.93		

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

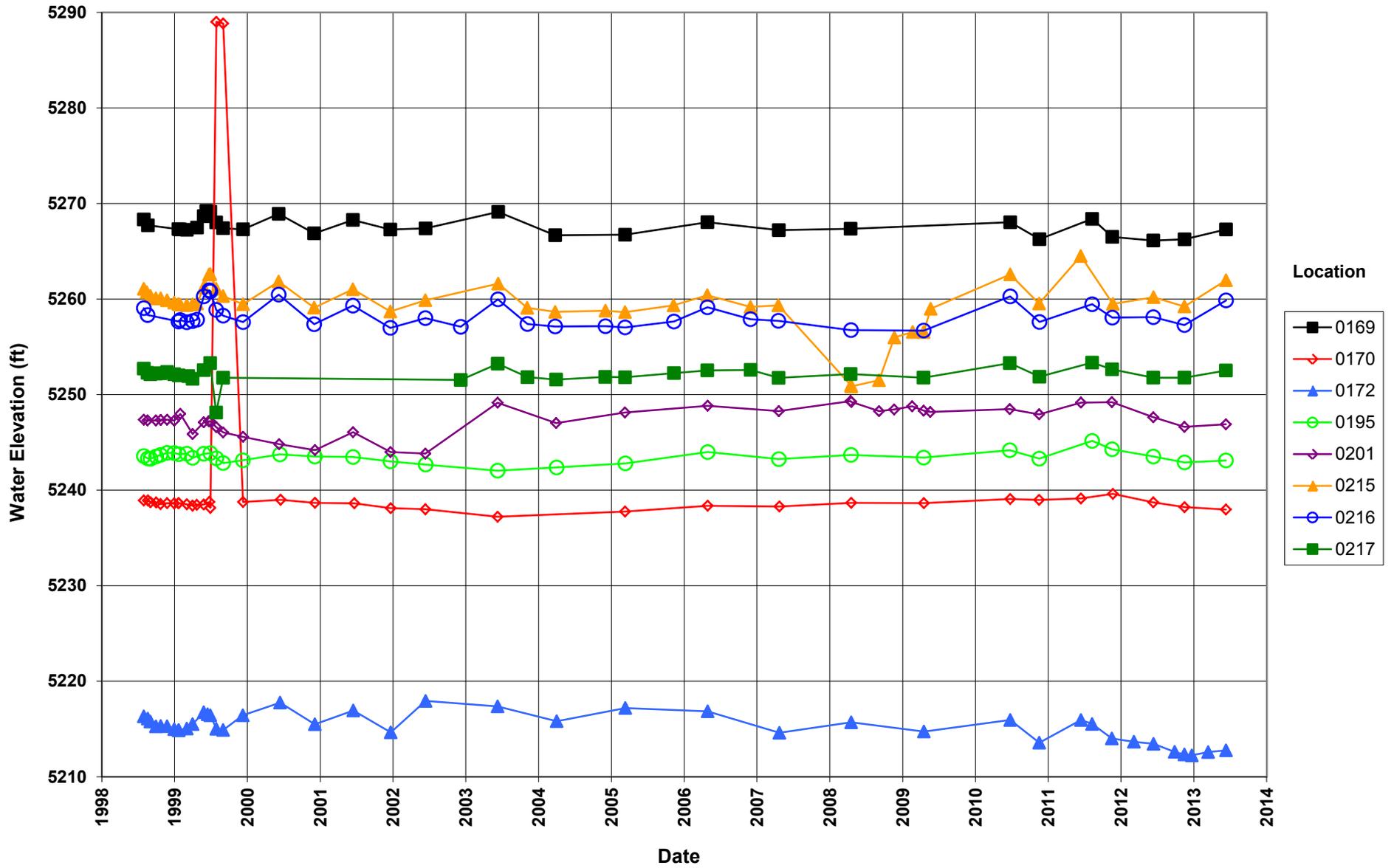
WATER LEVEL FLAGS: D Dry F Flowing B Below top of pump

This page intentionally left blank

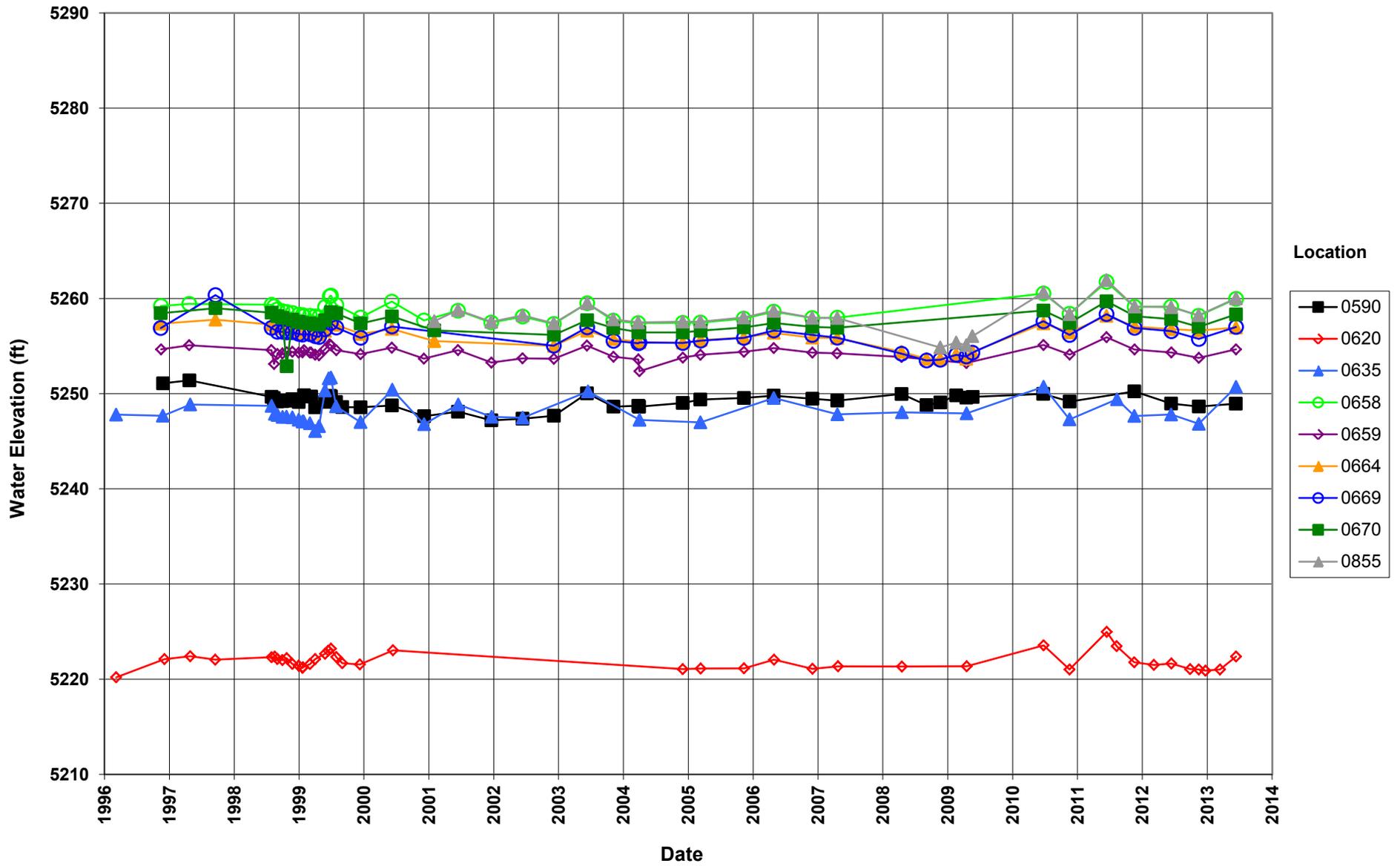
New Rifle Hydrographs

This page intentionally left blank

Rifle New Processing Site Hydrograph



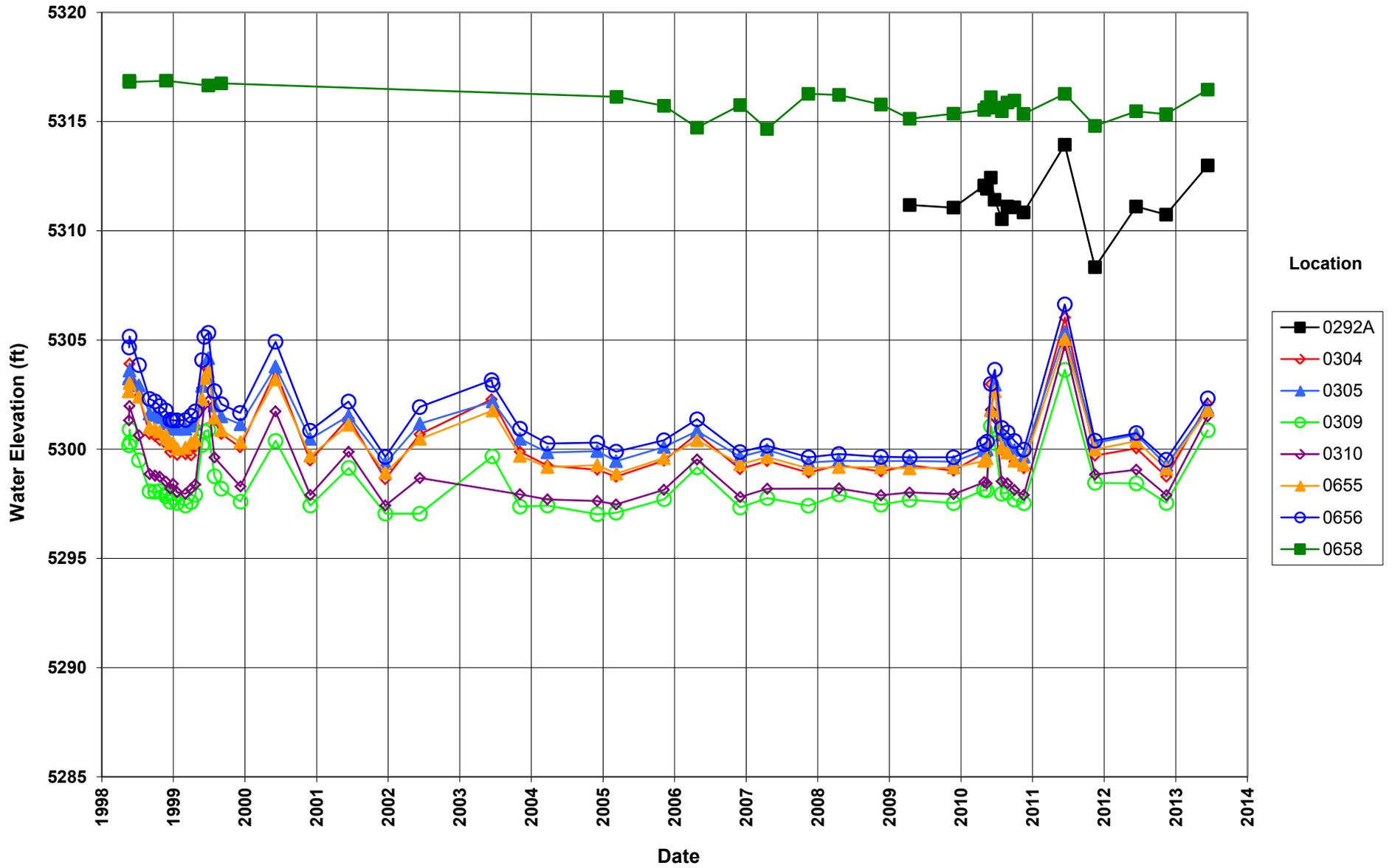
Rifle New Processing Site Hydrograph



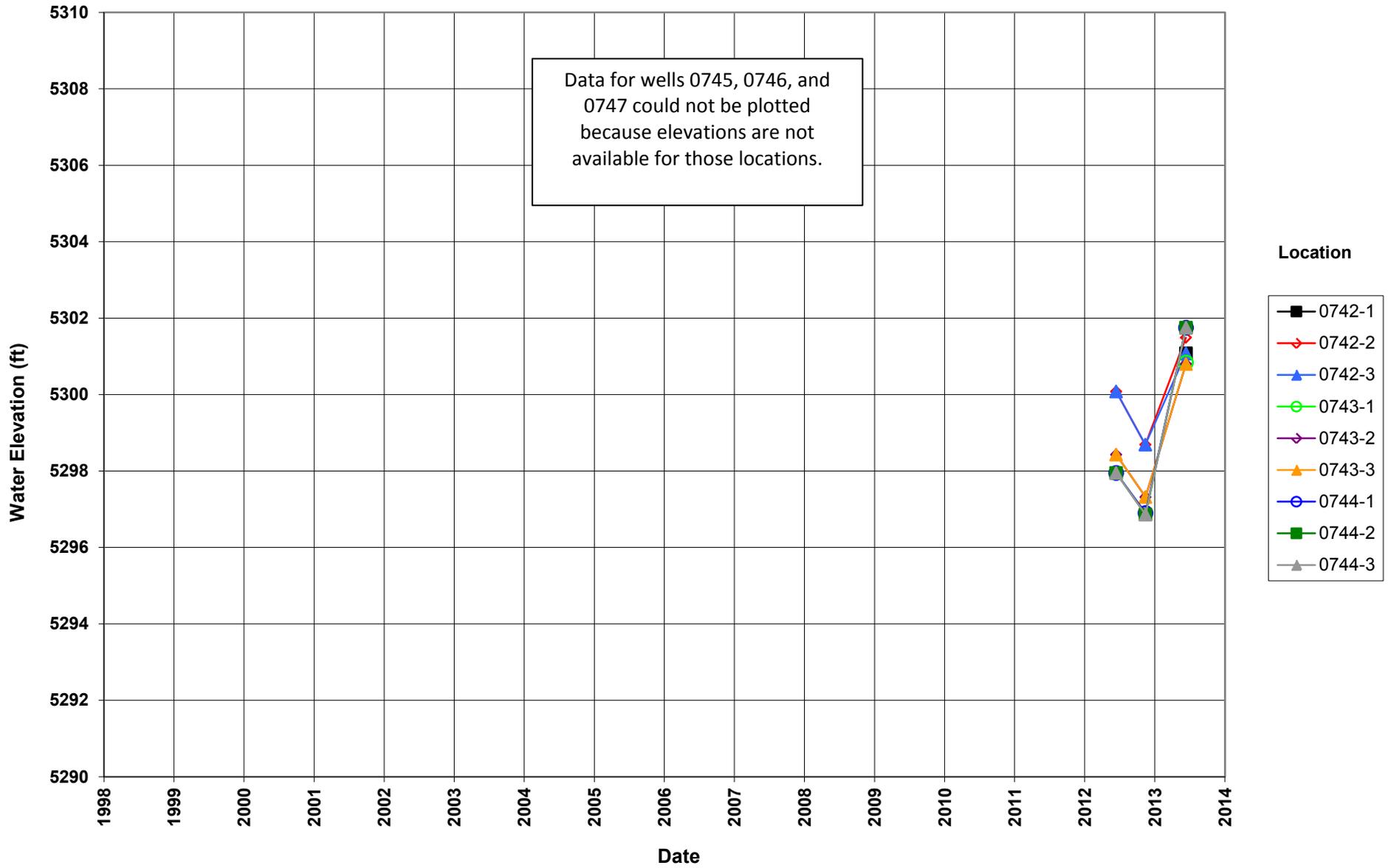
Old Rifle Hydrograph

This page intentionally left blank

Rifle Old Processing Site Hydrograph



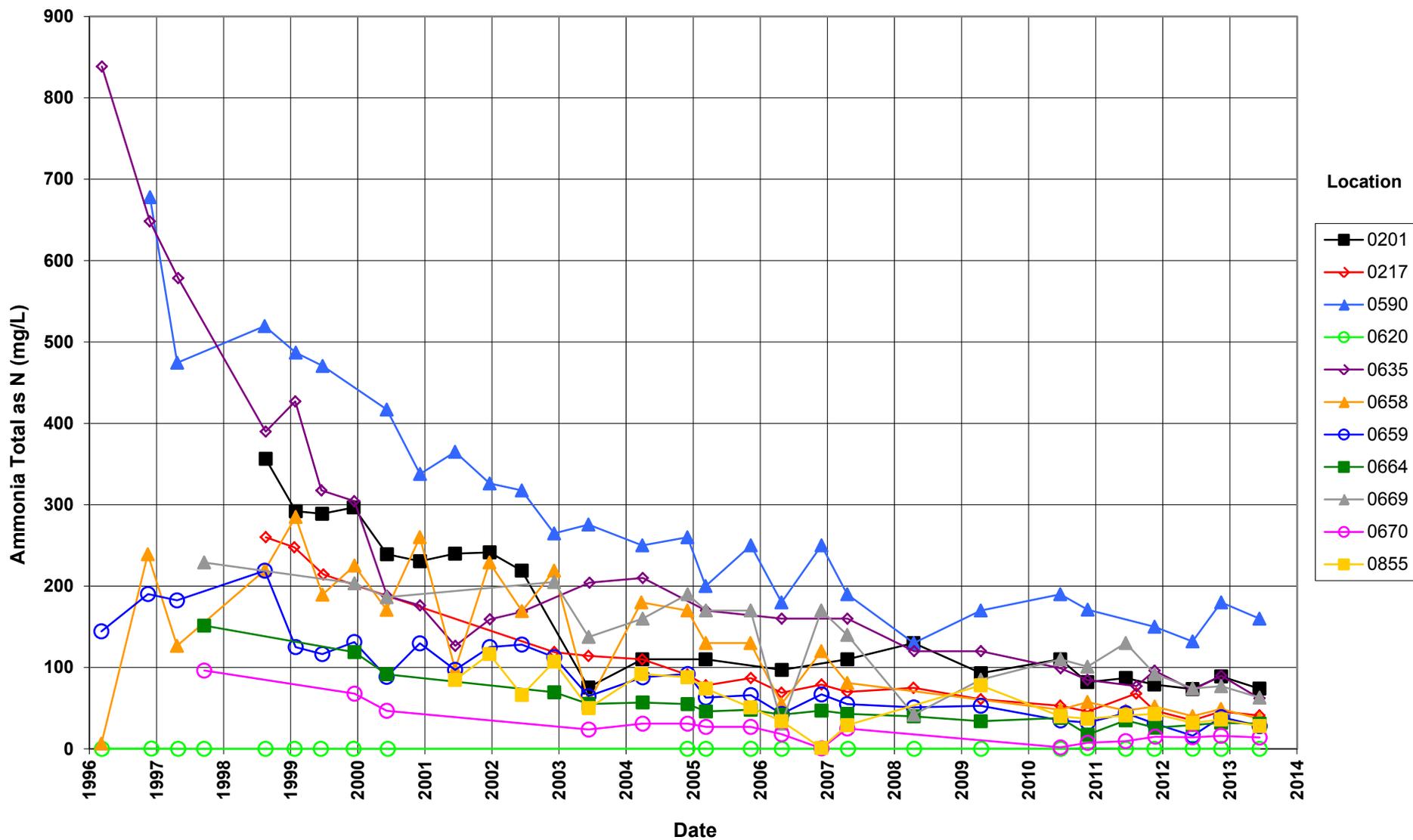
Rifle Old Processing Site Hydrograph



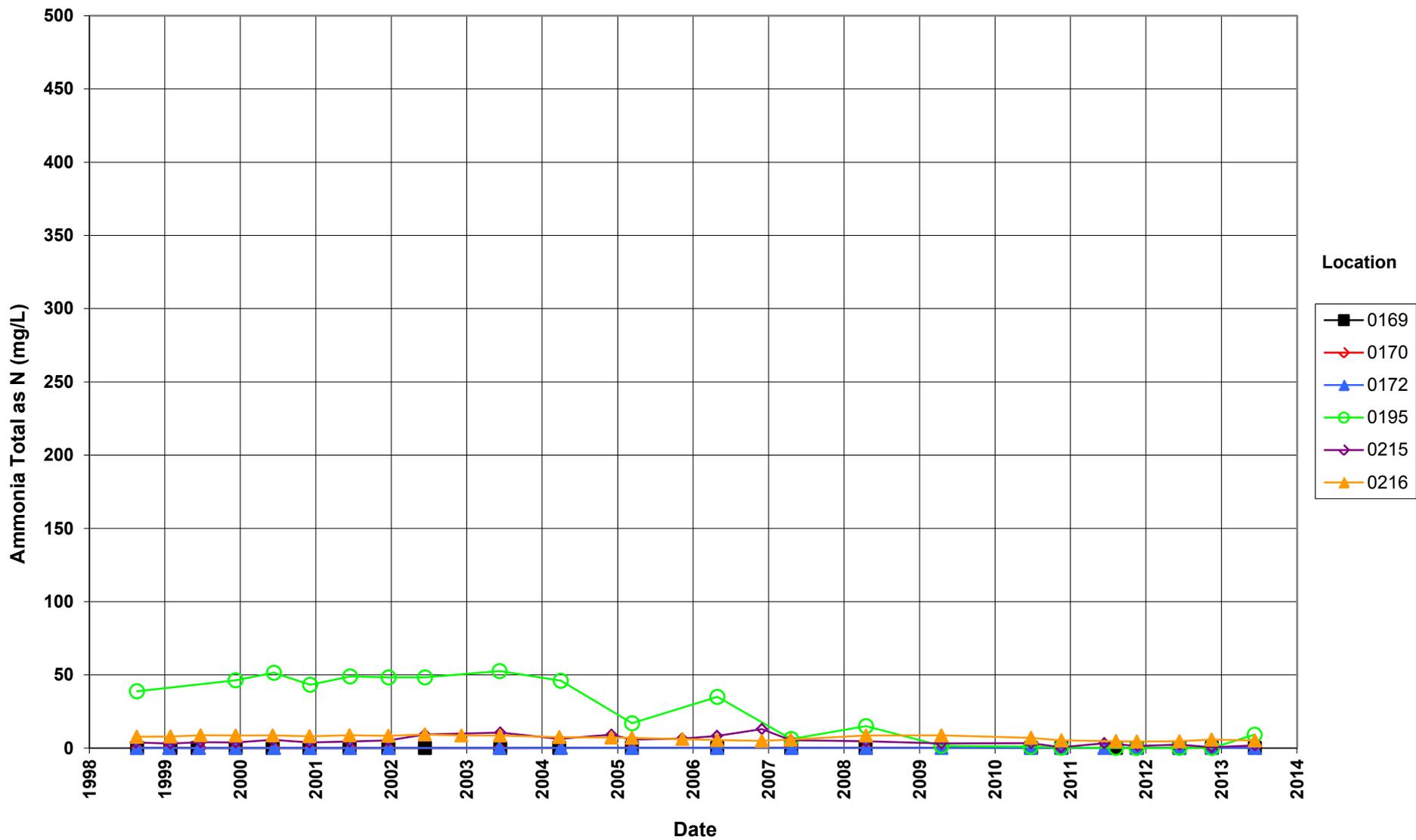
New Rifle Groundwater Time-Concentration Graphs

This page intentionally left blank

Rifle New Processing Site Ammonia Total as N Concentration

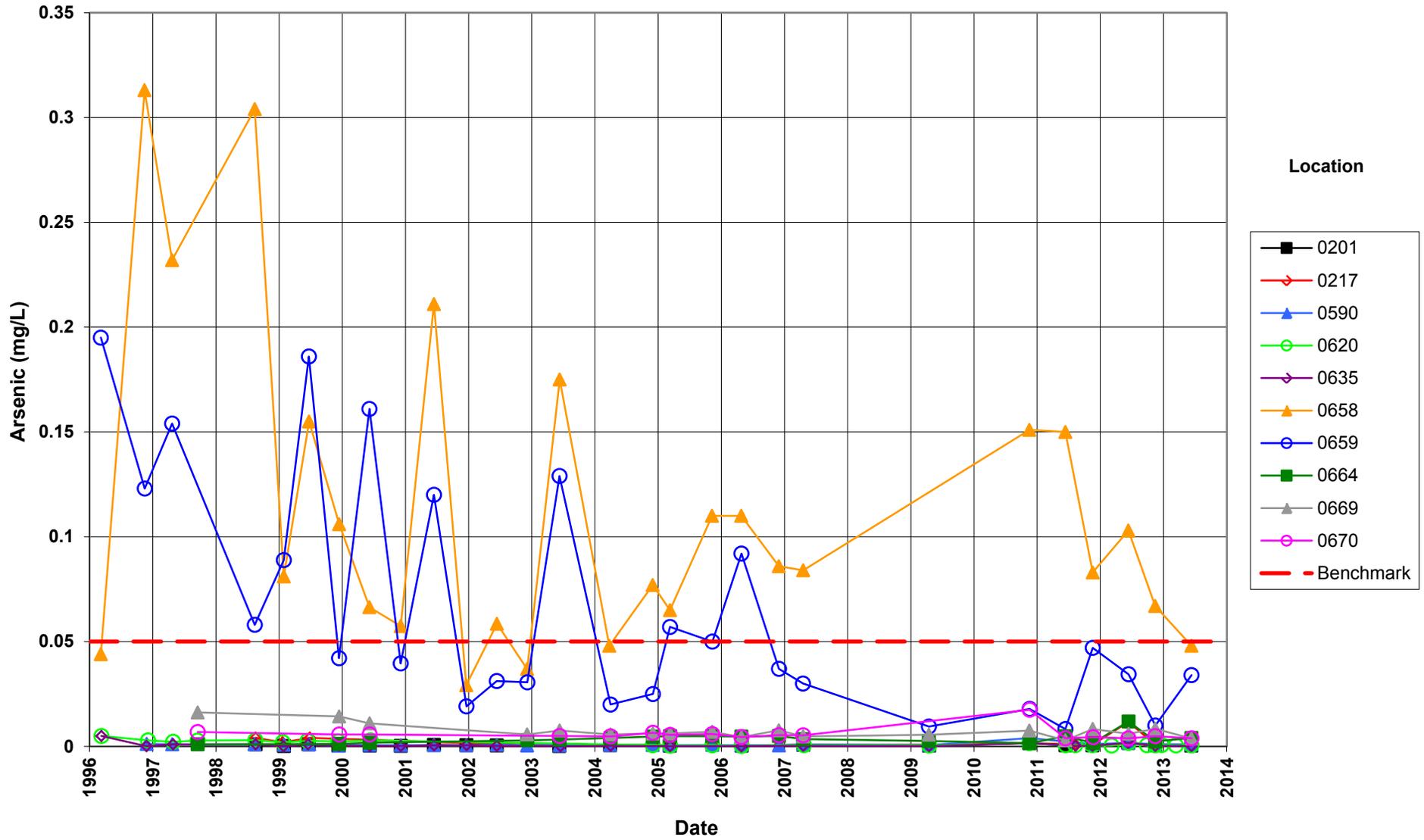


Rifle New Processing Site Ammonia Total as N Concentration

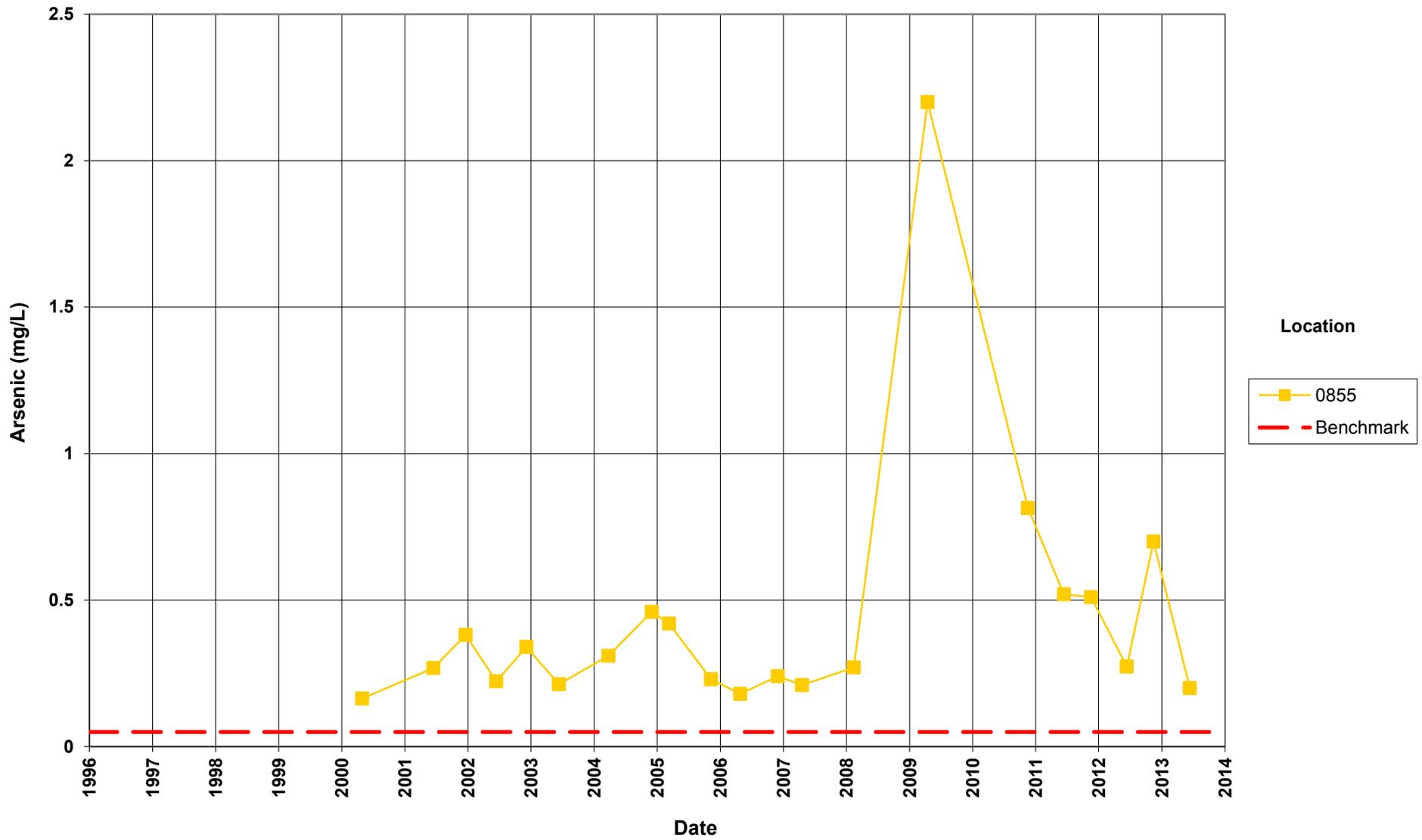


Rifle New Processing Site Arsenic Concentration

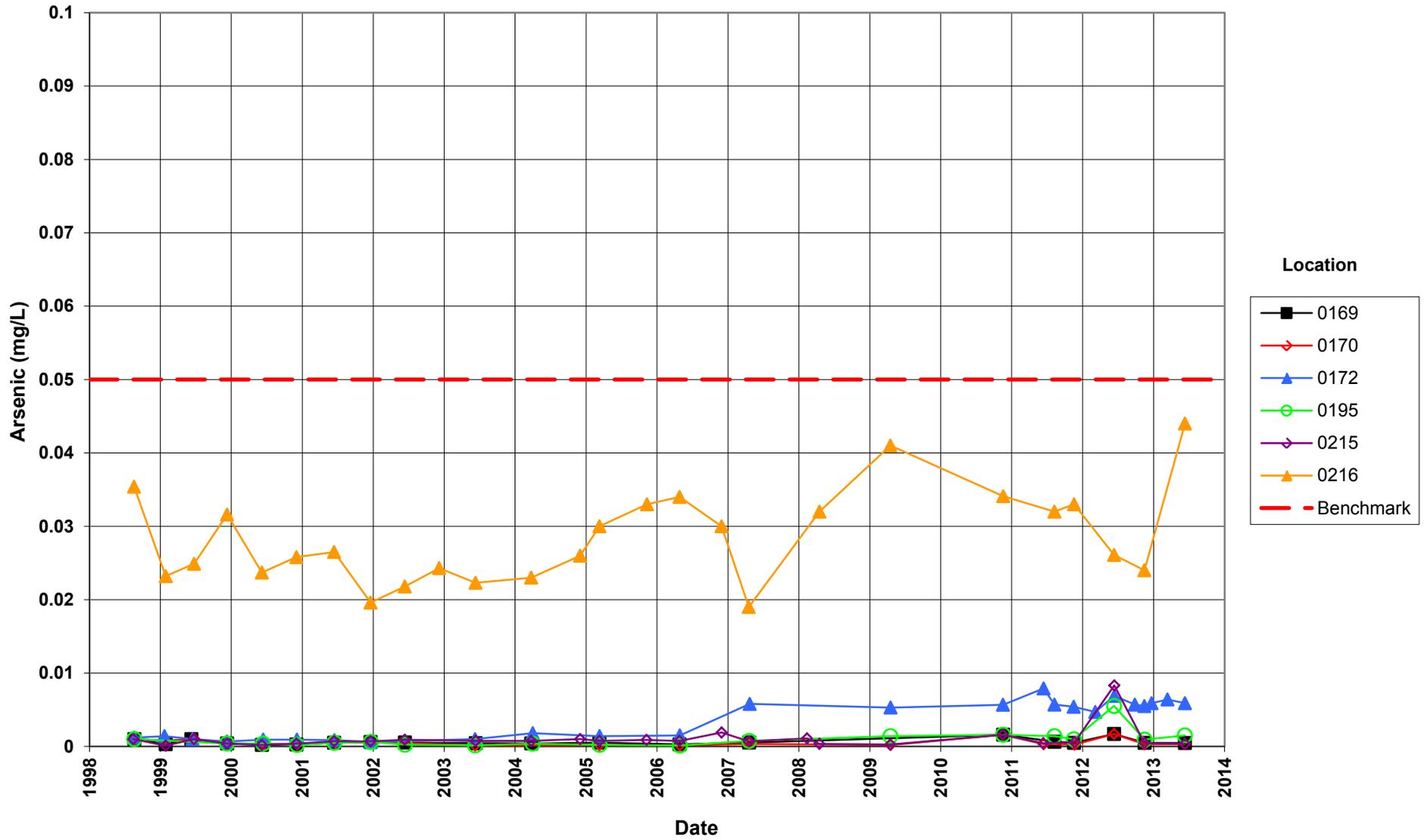
Benchmark = 0.05 mg/L



**Rifle New Processing Site
Arsenic Concentration**
Benchmark = 0.05 mg/L

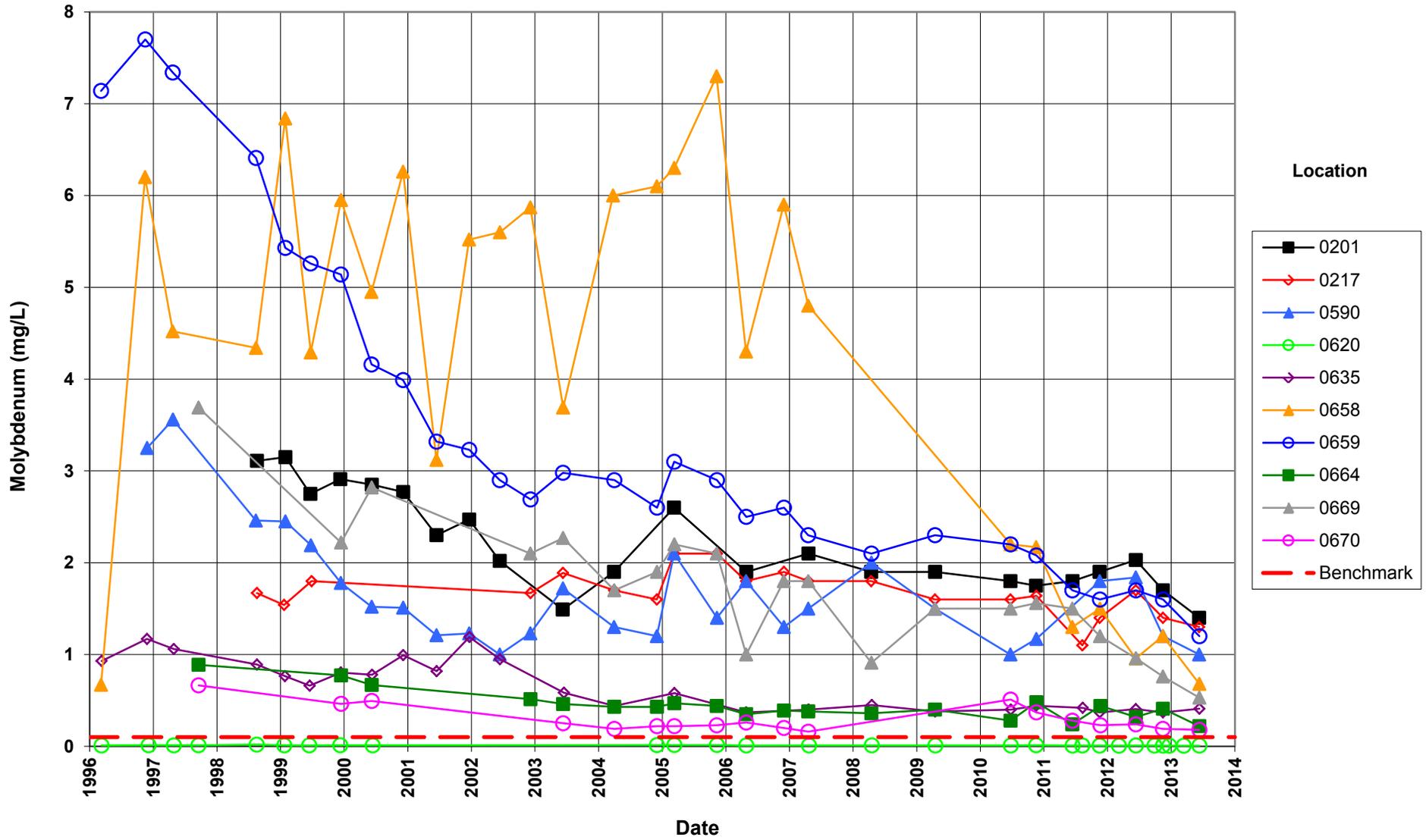


Rifle New Processing Site
Arsenic Concentration
Benchmark = 0.05 mg/L



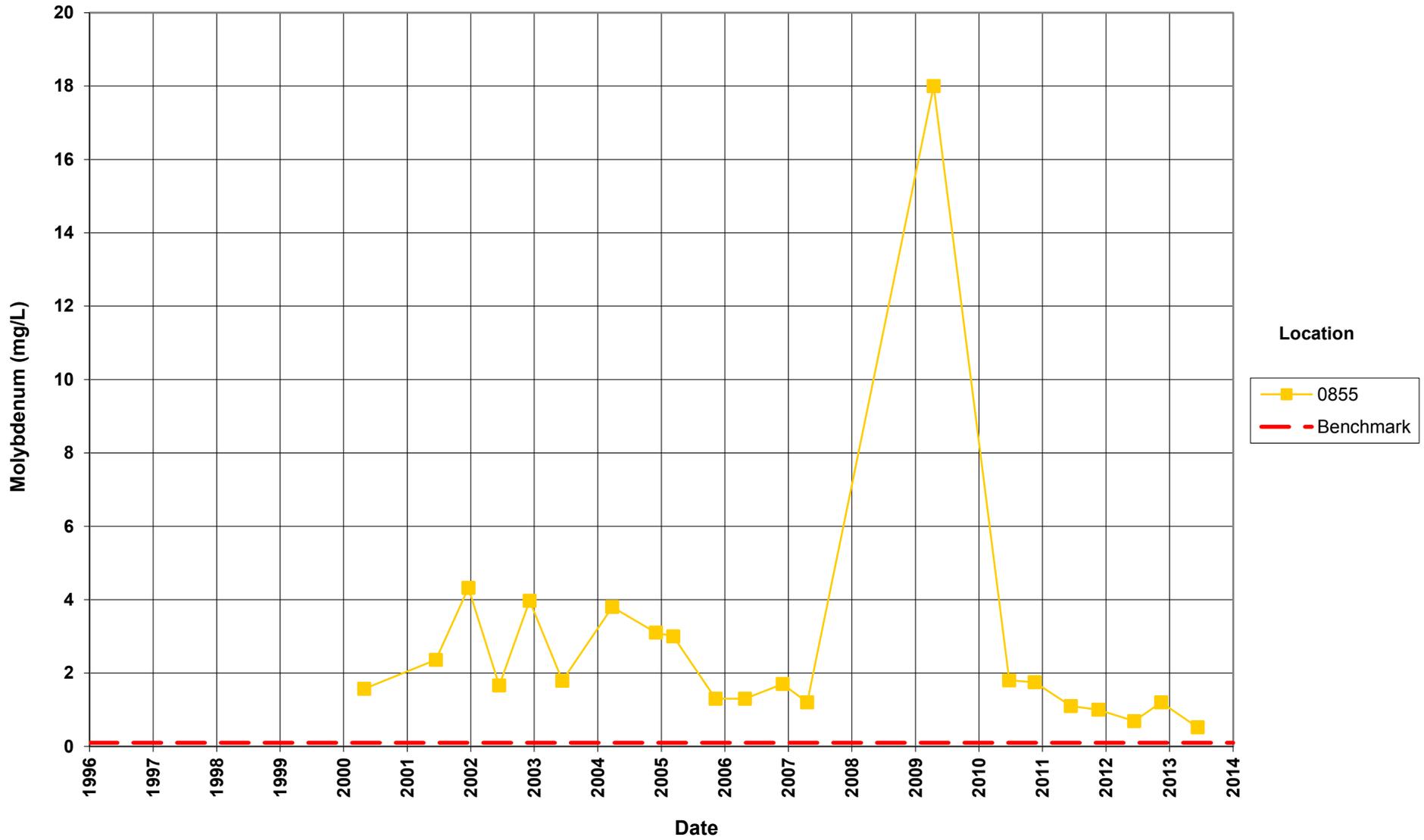
Rifle New Processing Site Molybdenum Concentration

Benchmark = 0.1 mg/L



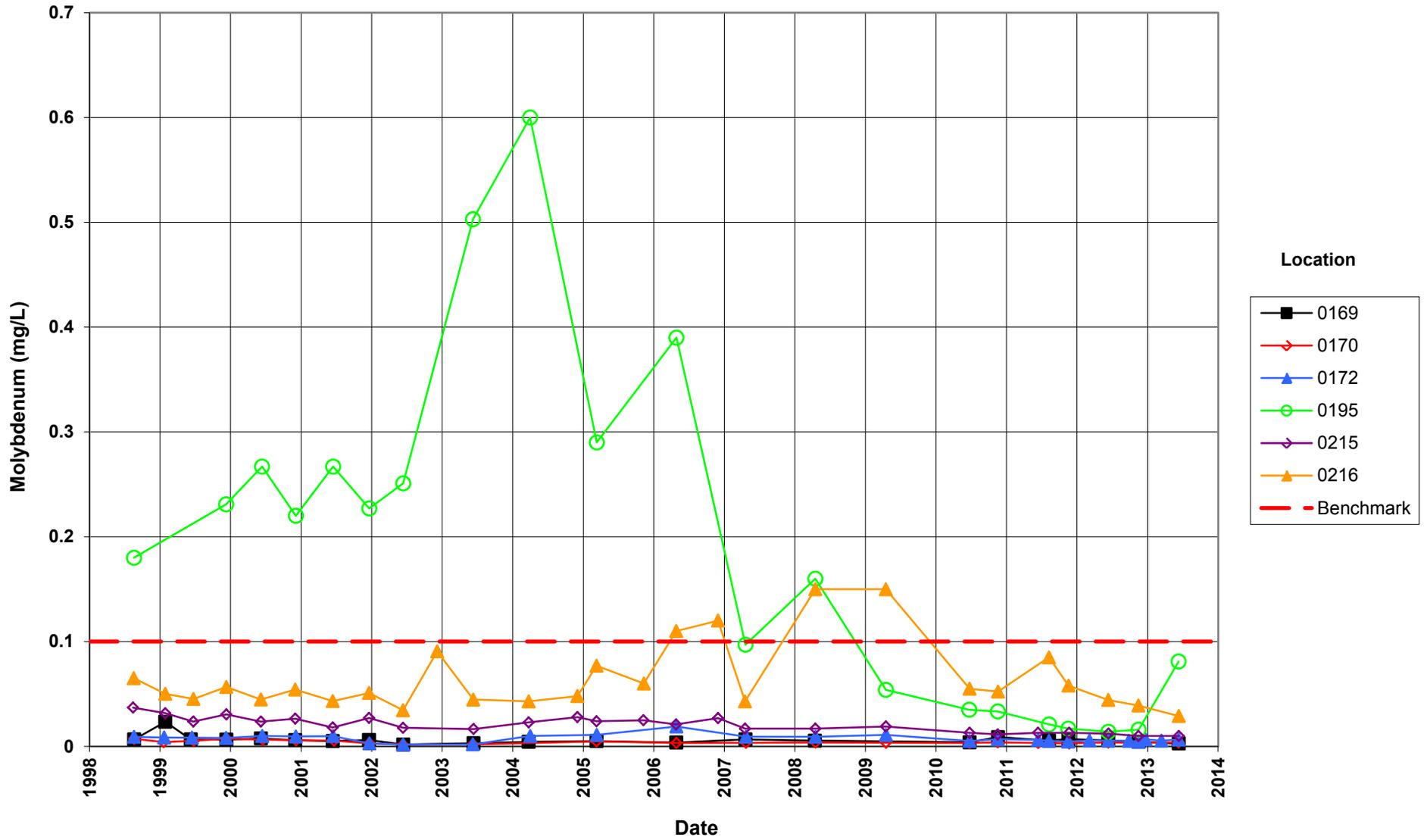
Rifle New Processing Site Molybdenum Concentration

Benchmark = 0.1 mg/L

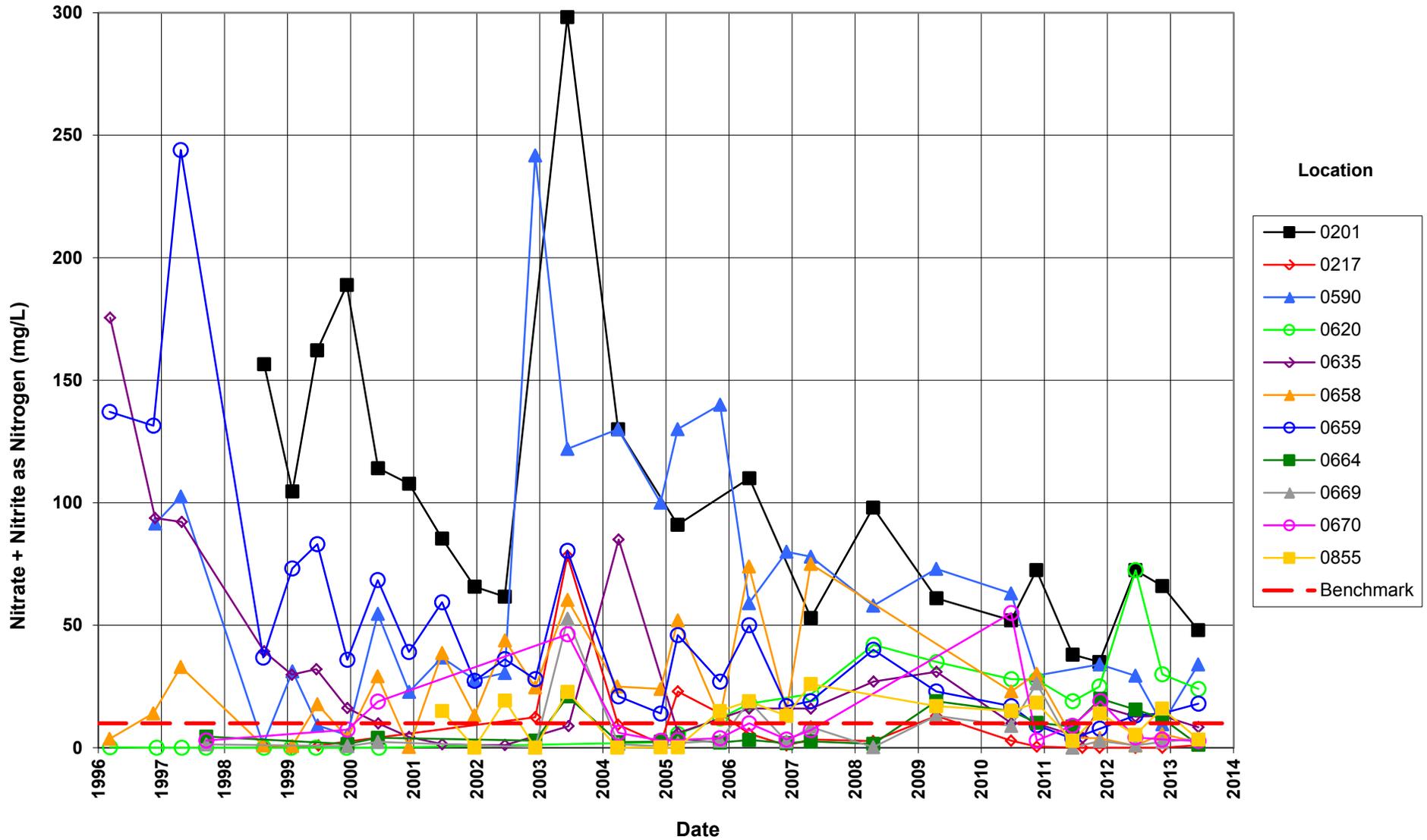


Rifle New Processing Site Molybdenum Concentration

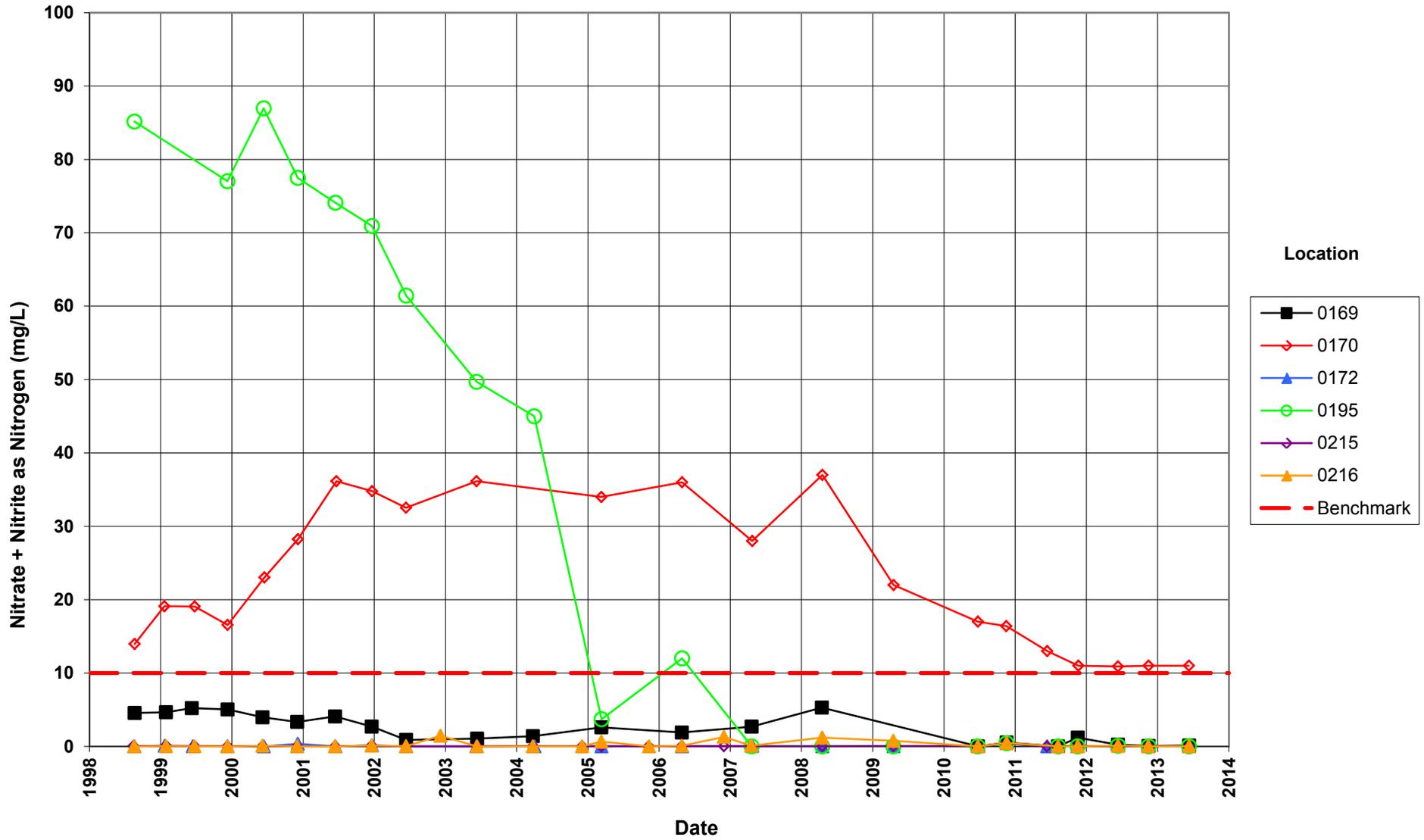
Benchmark = 0.1 mg/L



Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Benchmark = 10.0 mg/L

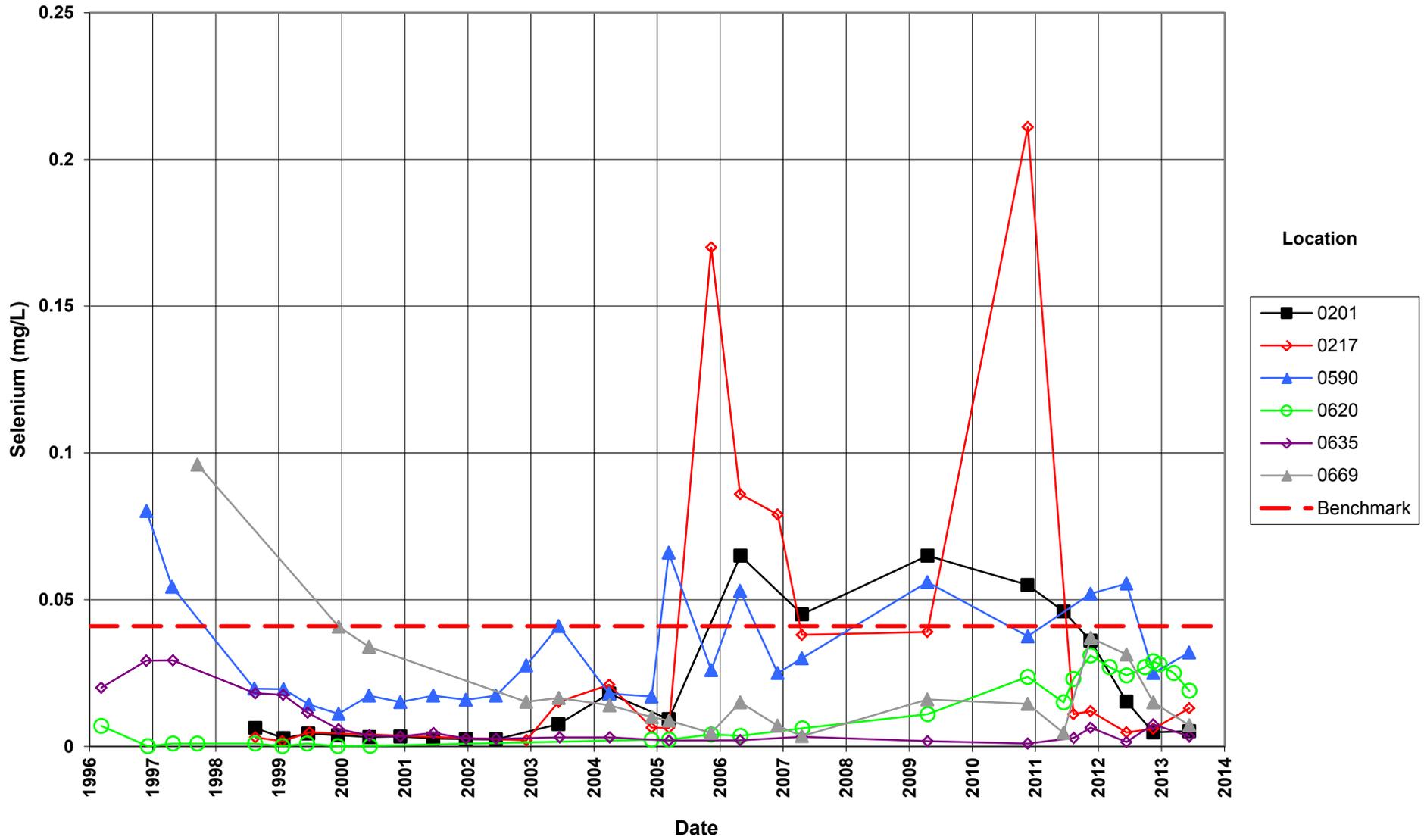


Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
 Benchmark = 10.0 mg/L

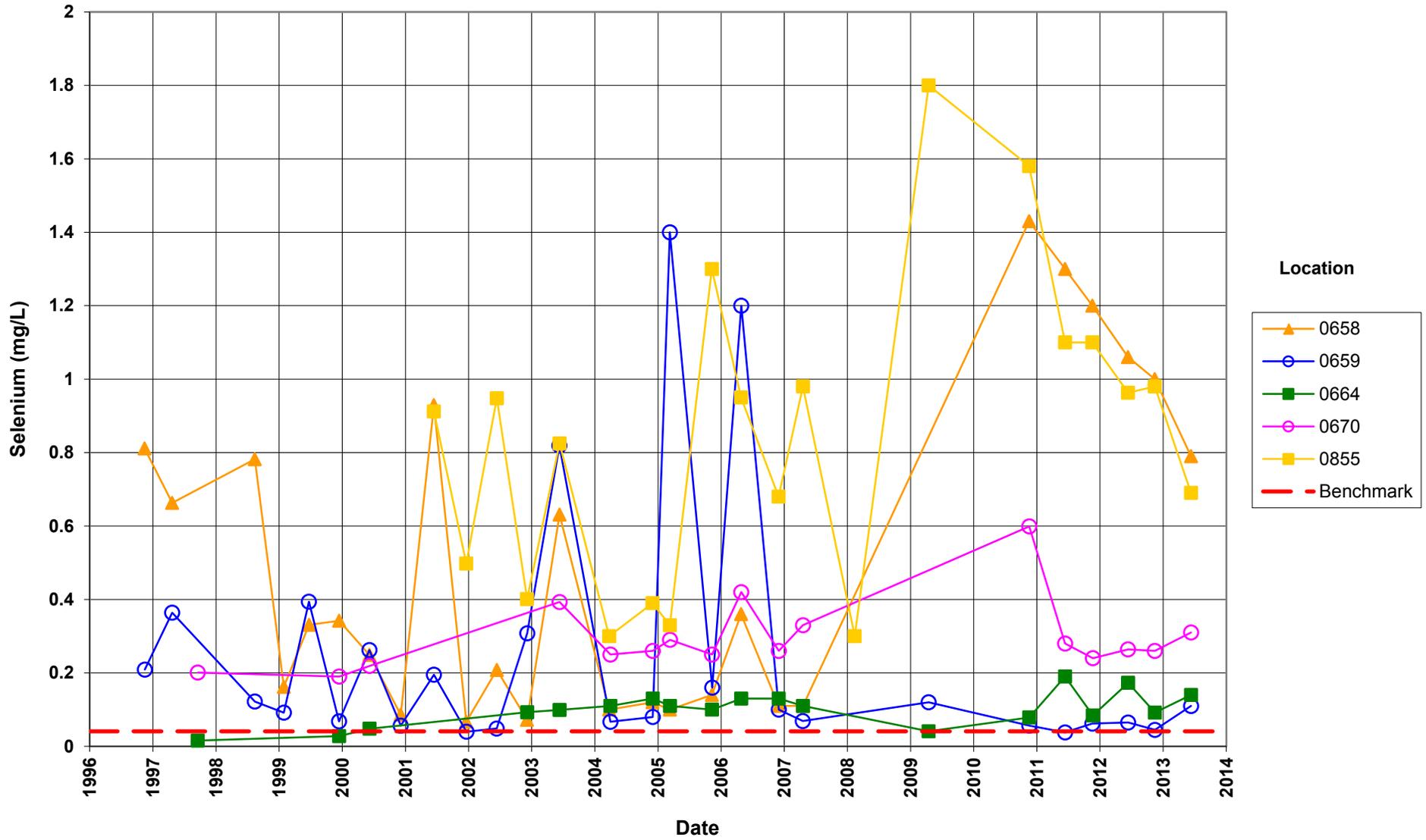


Rifle New Processing Site Selenium Concentration

Benchmark = 0.041 mg/L

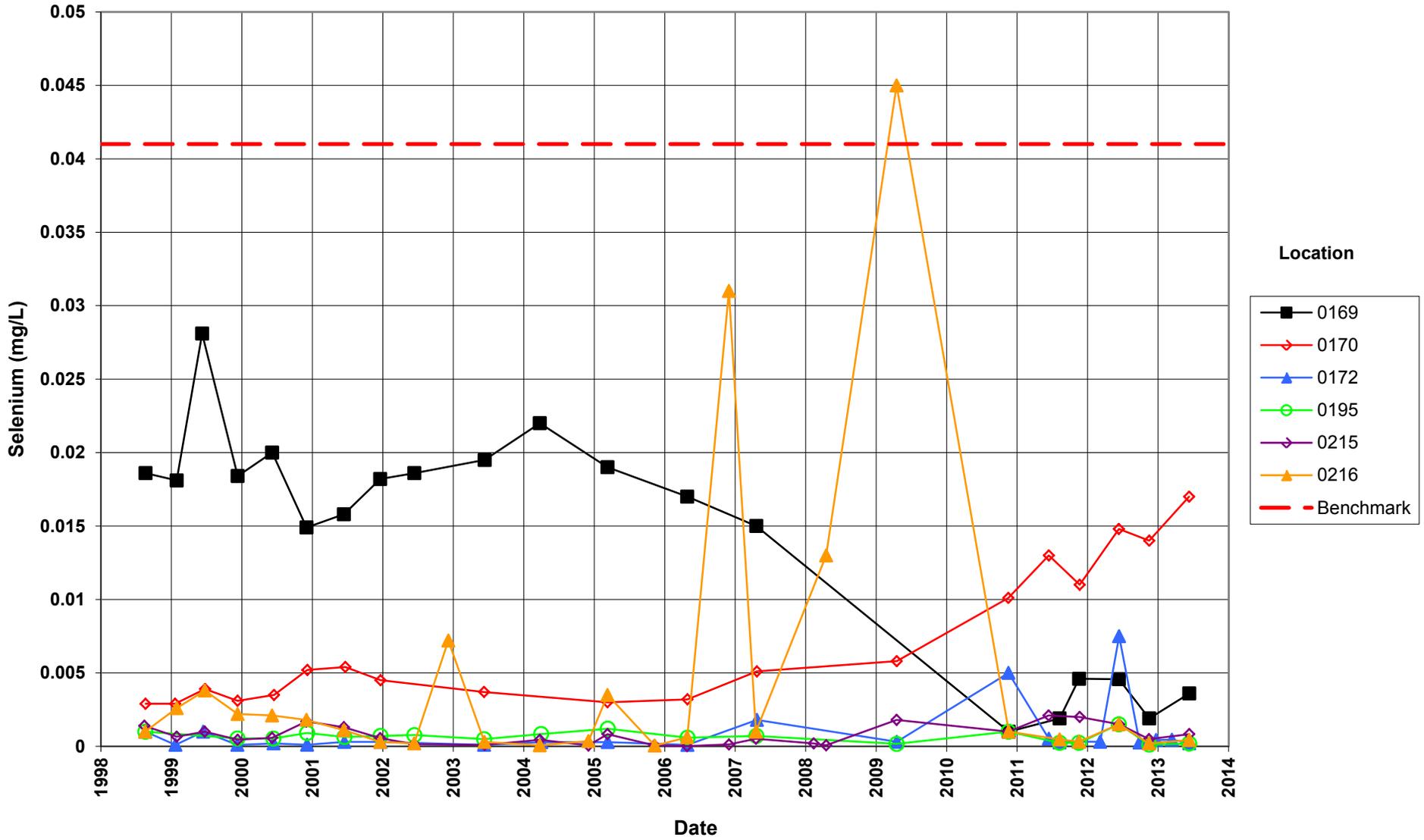


**Rifle New Processing Site
Selenium Concentration**
Benchmark = 0.041 mg/L



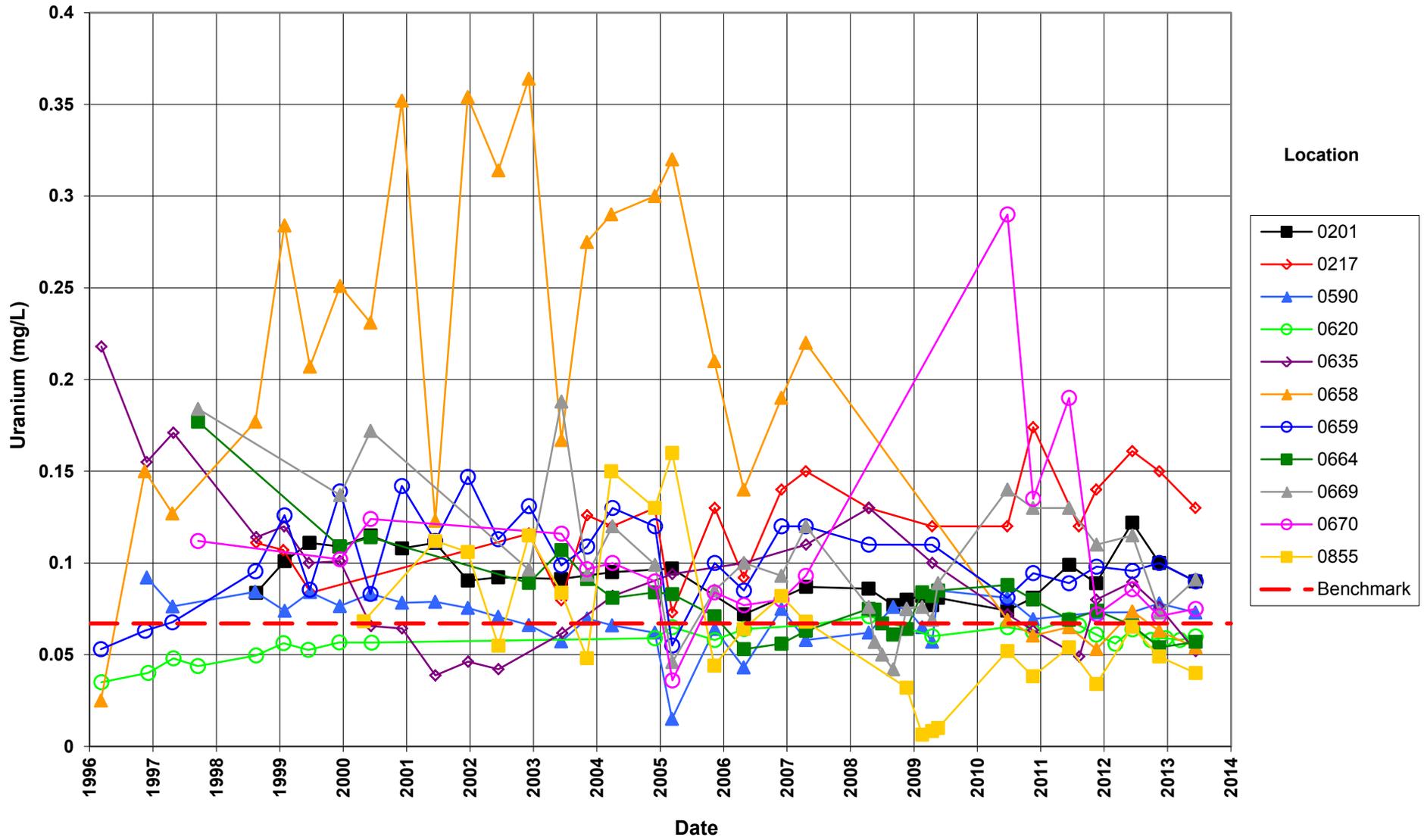
Rifle New Processing Site Selenium Concentration

Benchmark = 0.041 mg/L



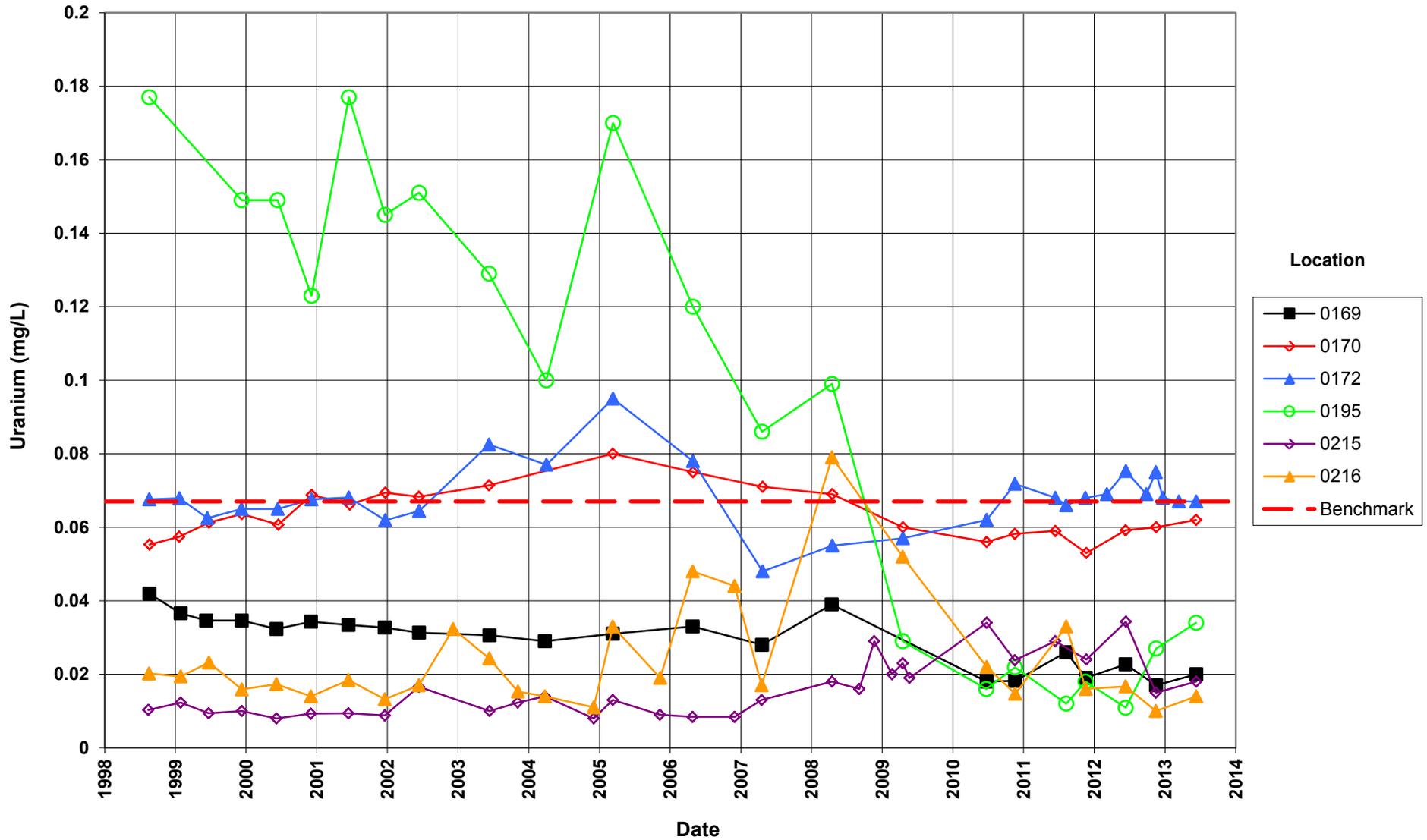
Rifle New Processing Site Uranium Concentration

Benchmark = 0.067 mg/L

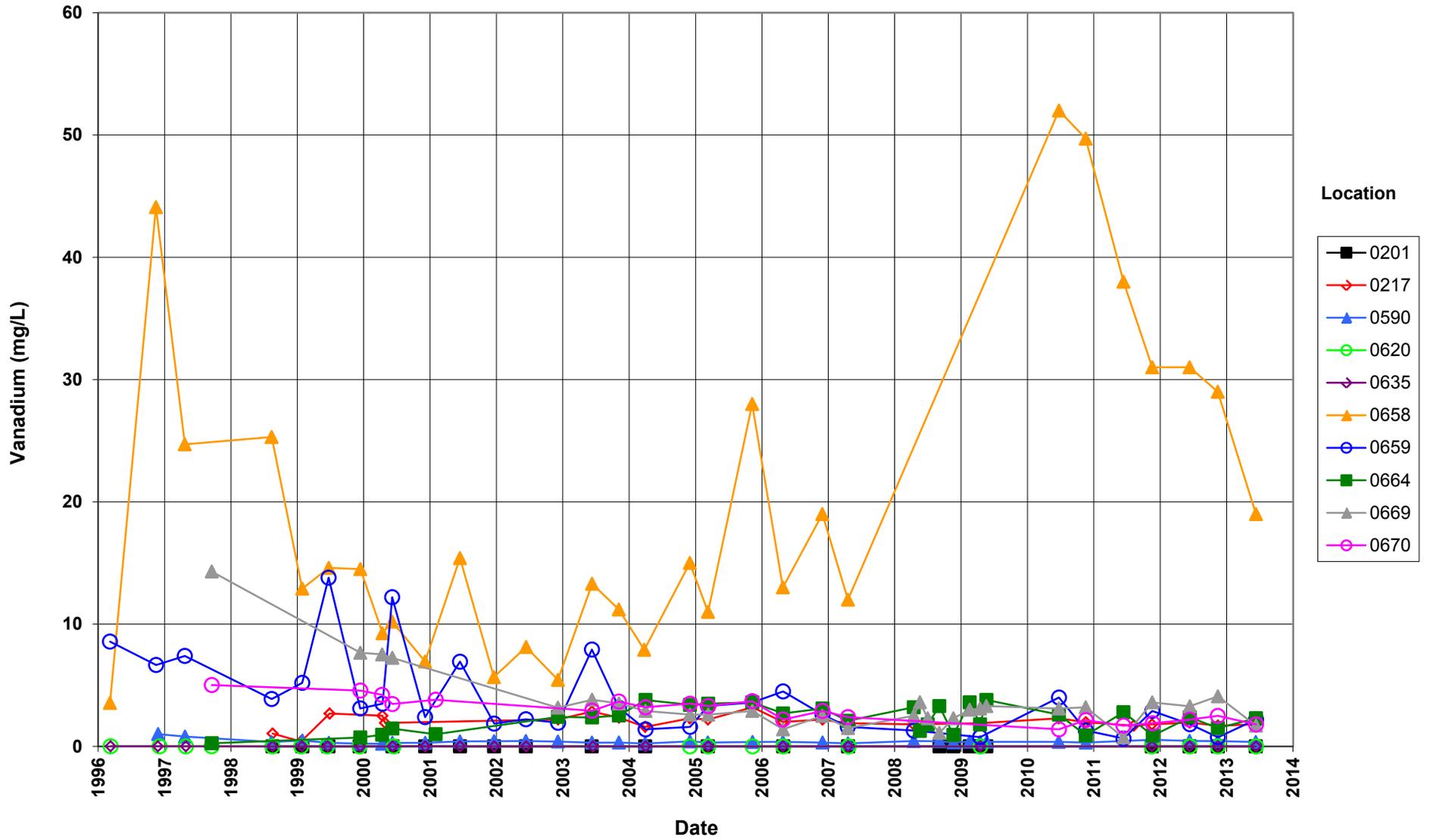


Rifle New Processing Site Uranium Concentration

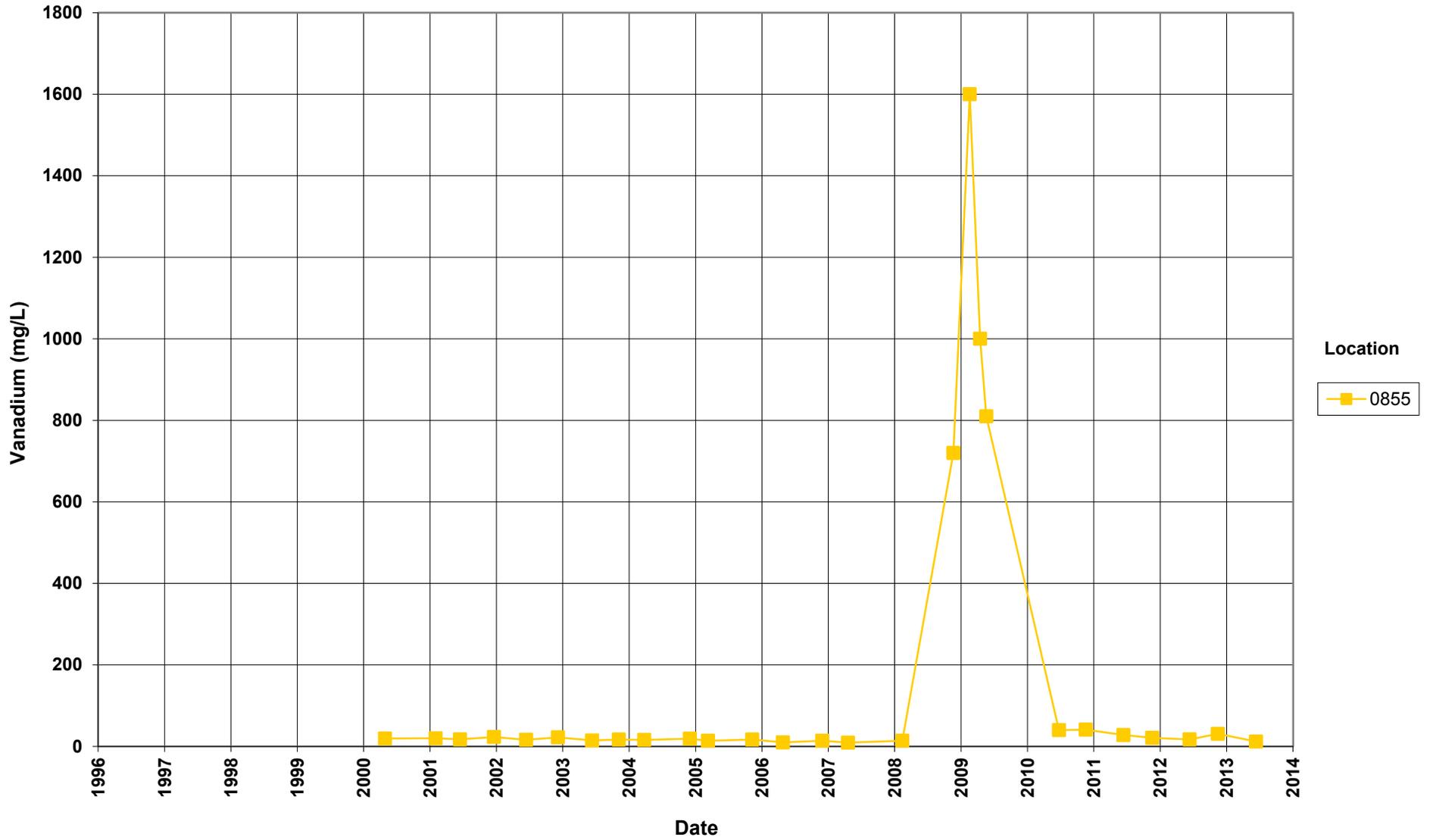
Benchmark = 0.067 mg/L



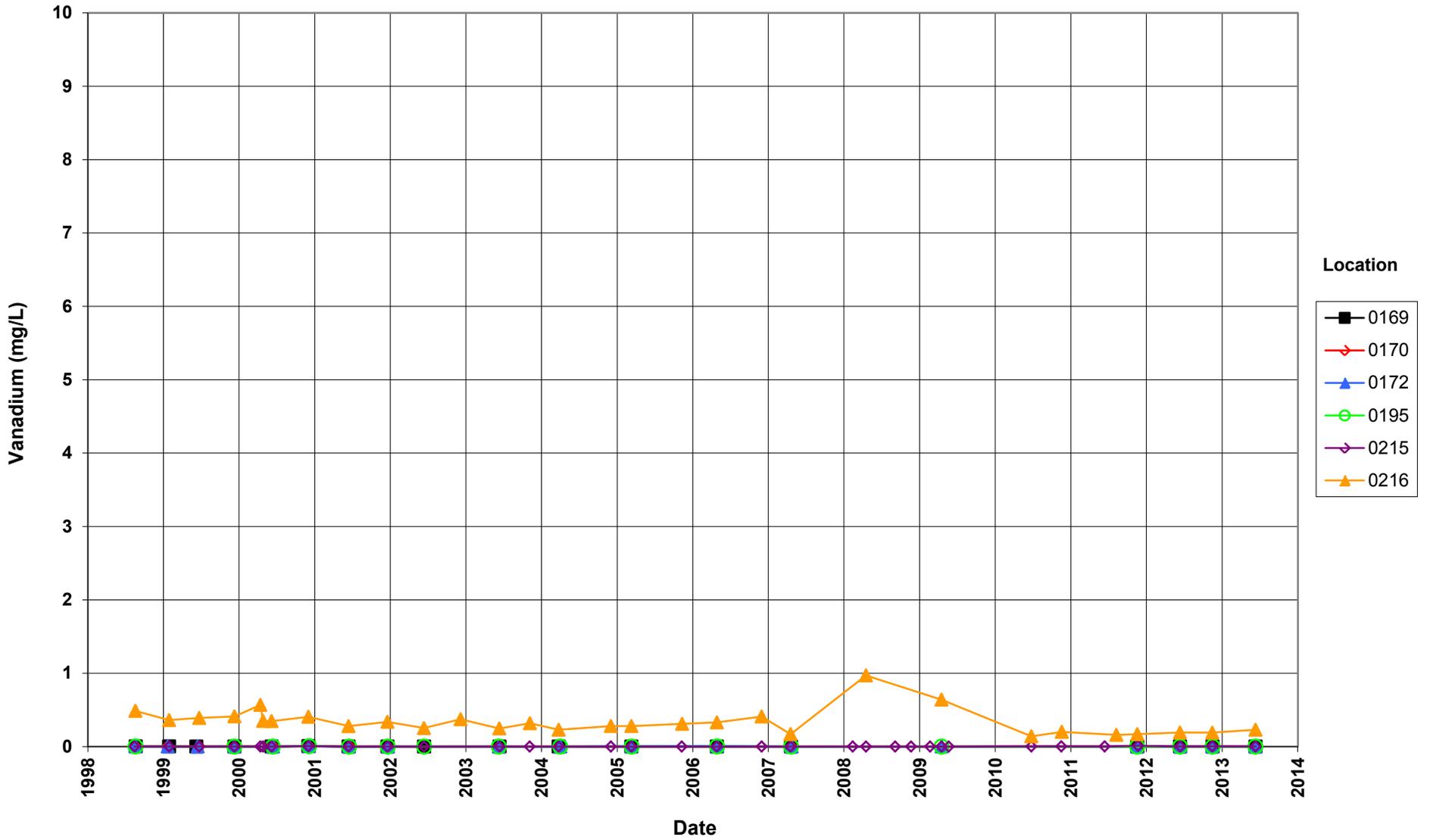
Rifle New Processing Site Vanadium Concentration



Rifle New Processing Site Vanadium Concentration



Rifle New Processing Site Vanadium Concentration

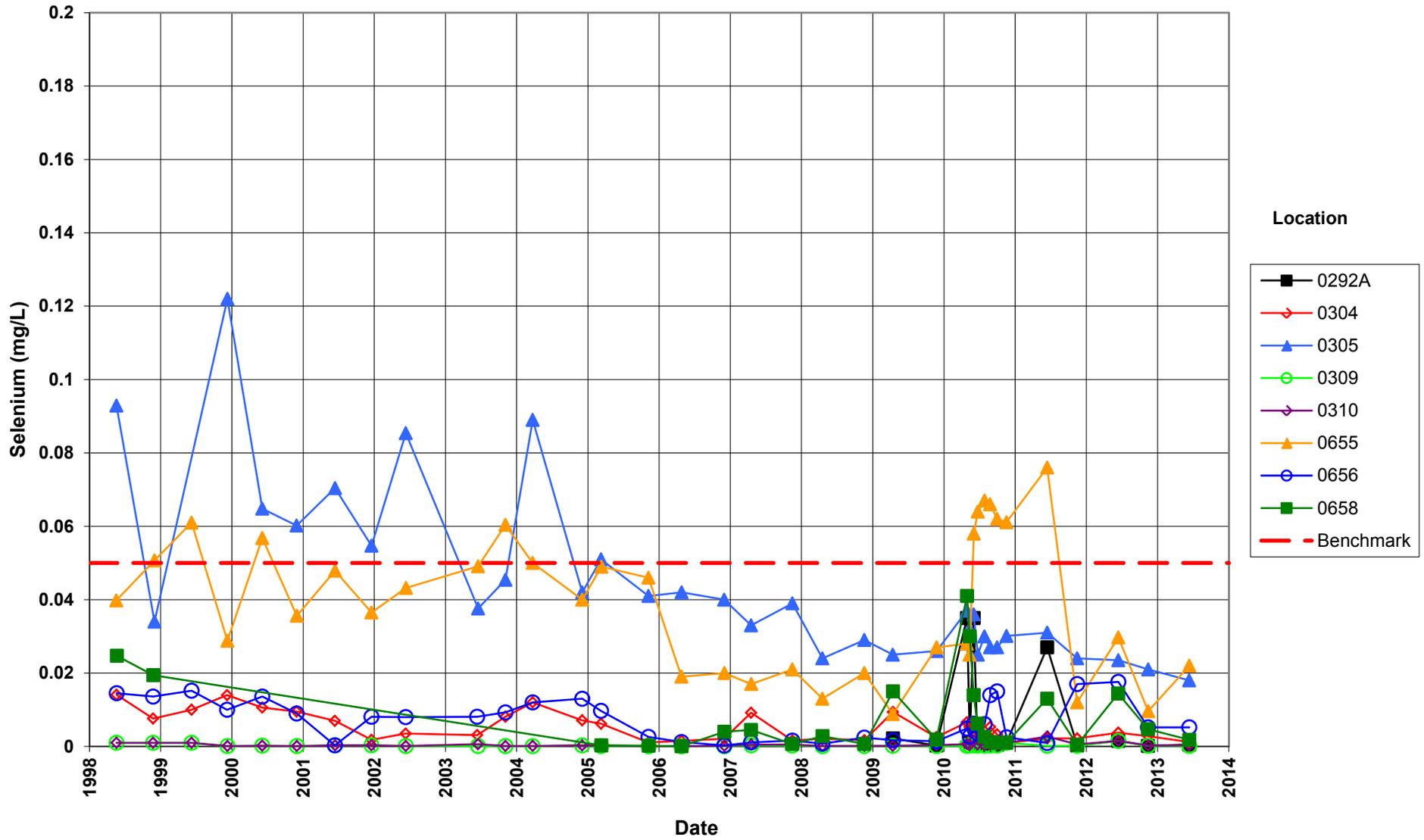


Old Rifle Groundwater Time-Concentration Graphs

This page intentionally left blank

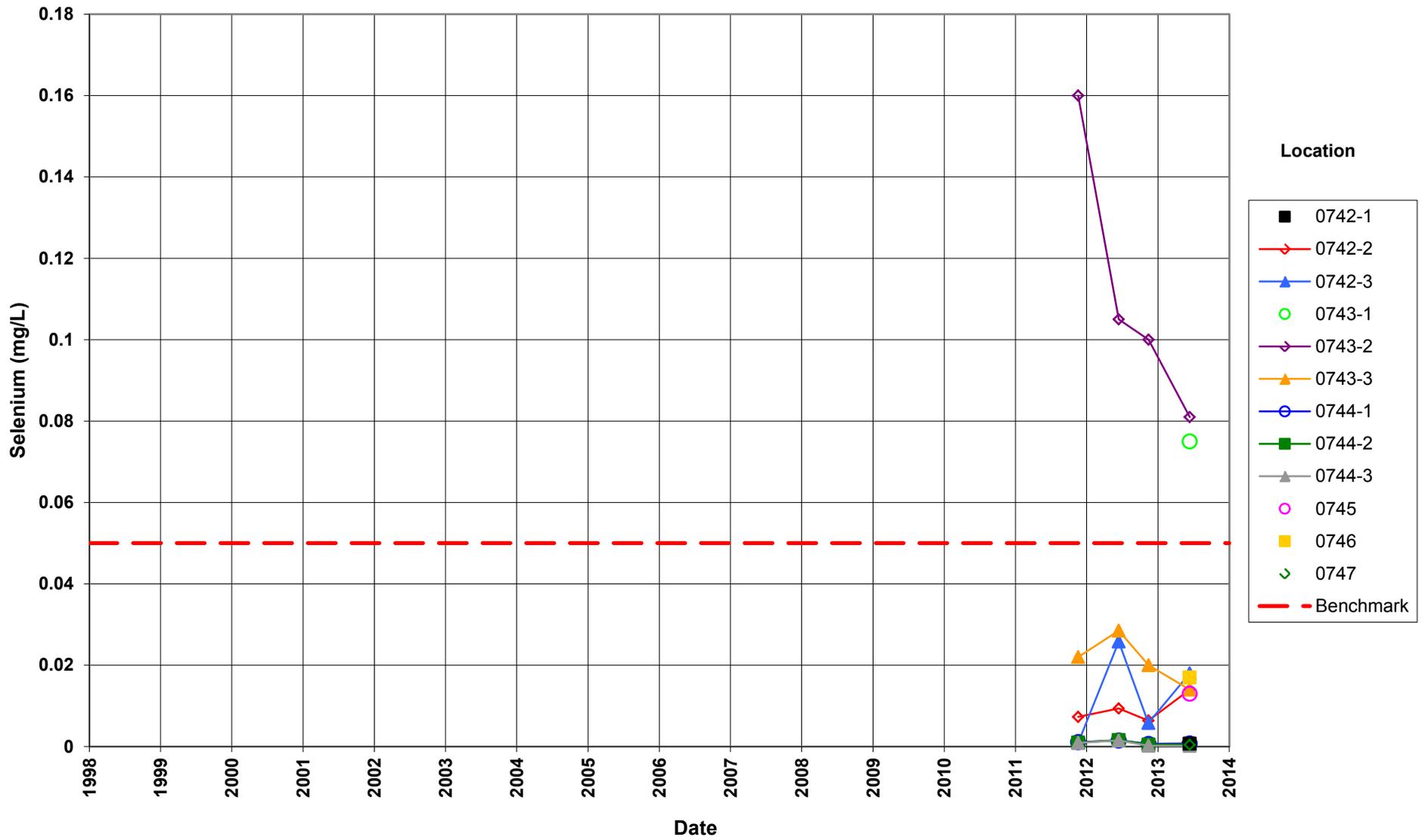
Rifle Old Processing Site Selenium Concentration

Benchmark = 0.05 mg/L



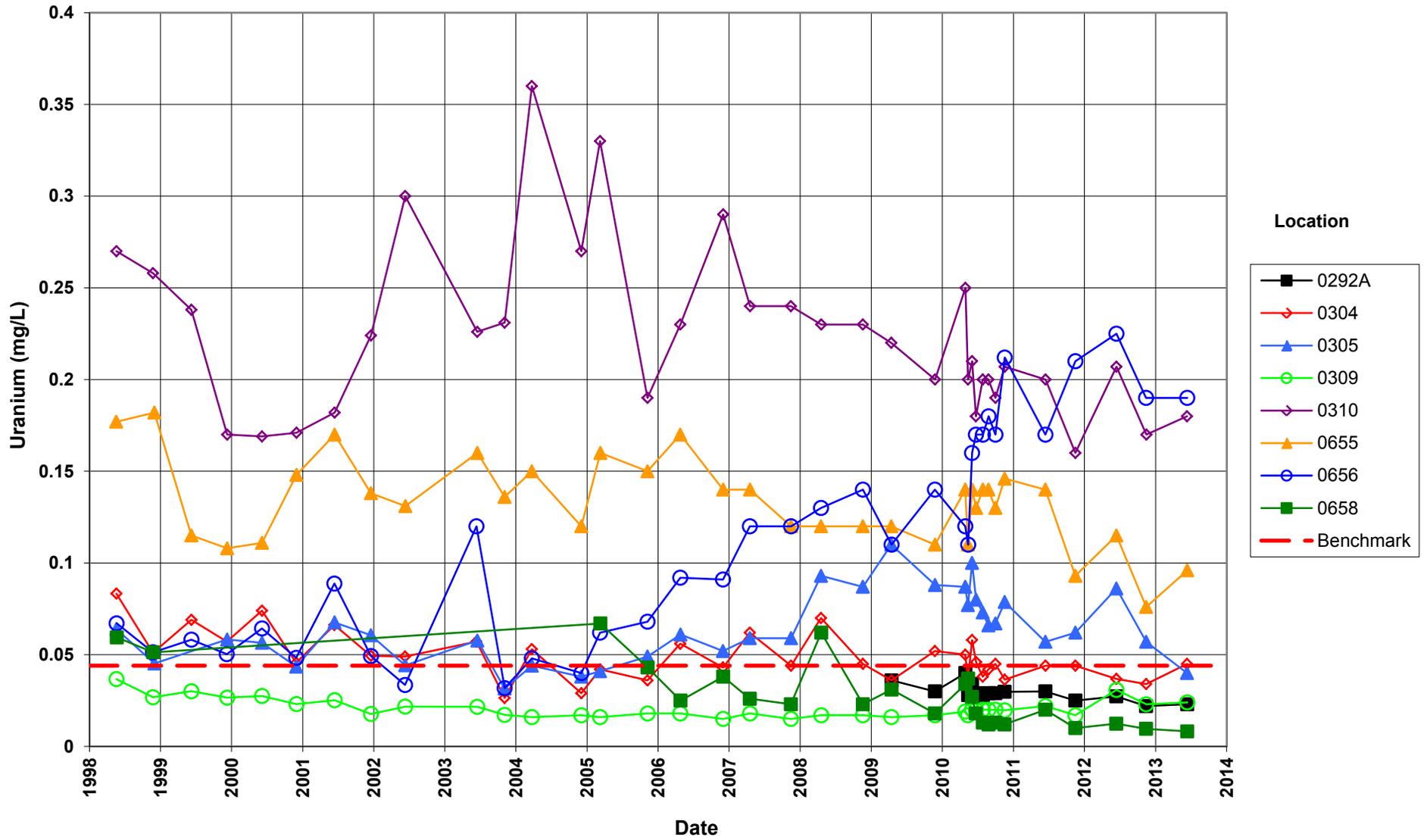
Rifle Old Processing Site Selenium Concentration

Benchmark = 0.05 mg/L

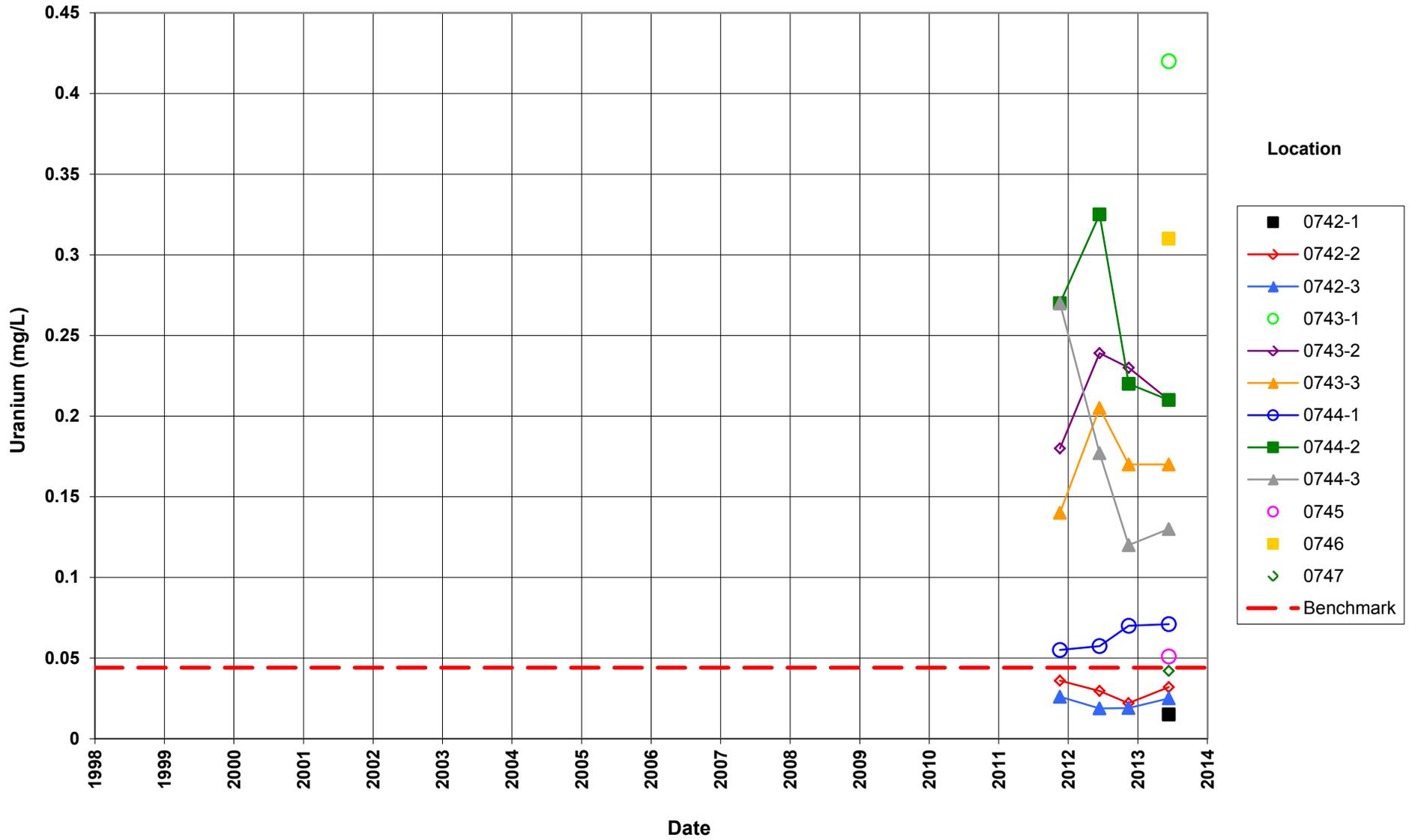


Rifle Old Processing Site Uranium Concentration

Benchmark = 0.044 mg/L

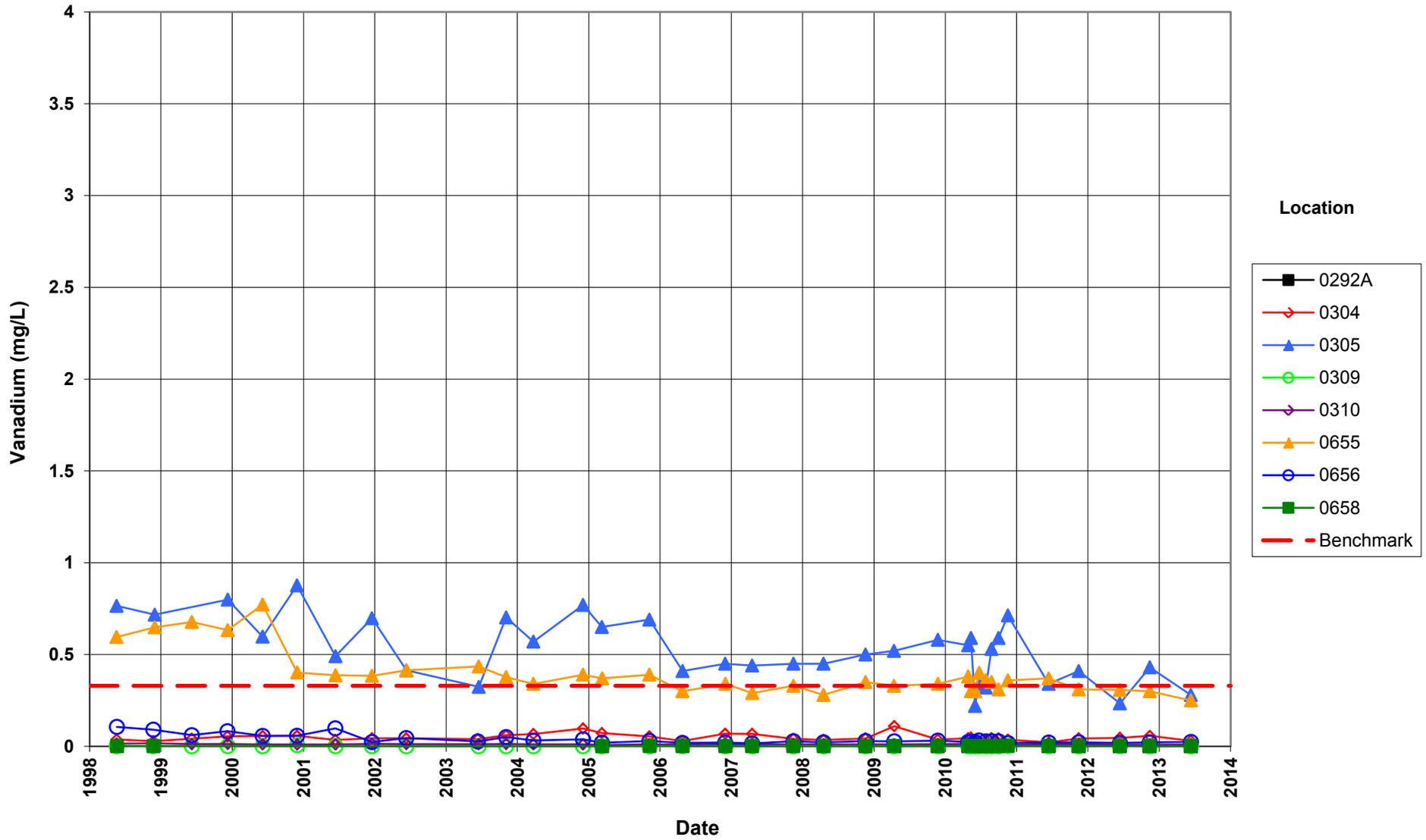


**Rifle Old Processing Site
Uranium Concentration**
Benchmark = 0.044 mg/L



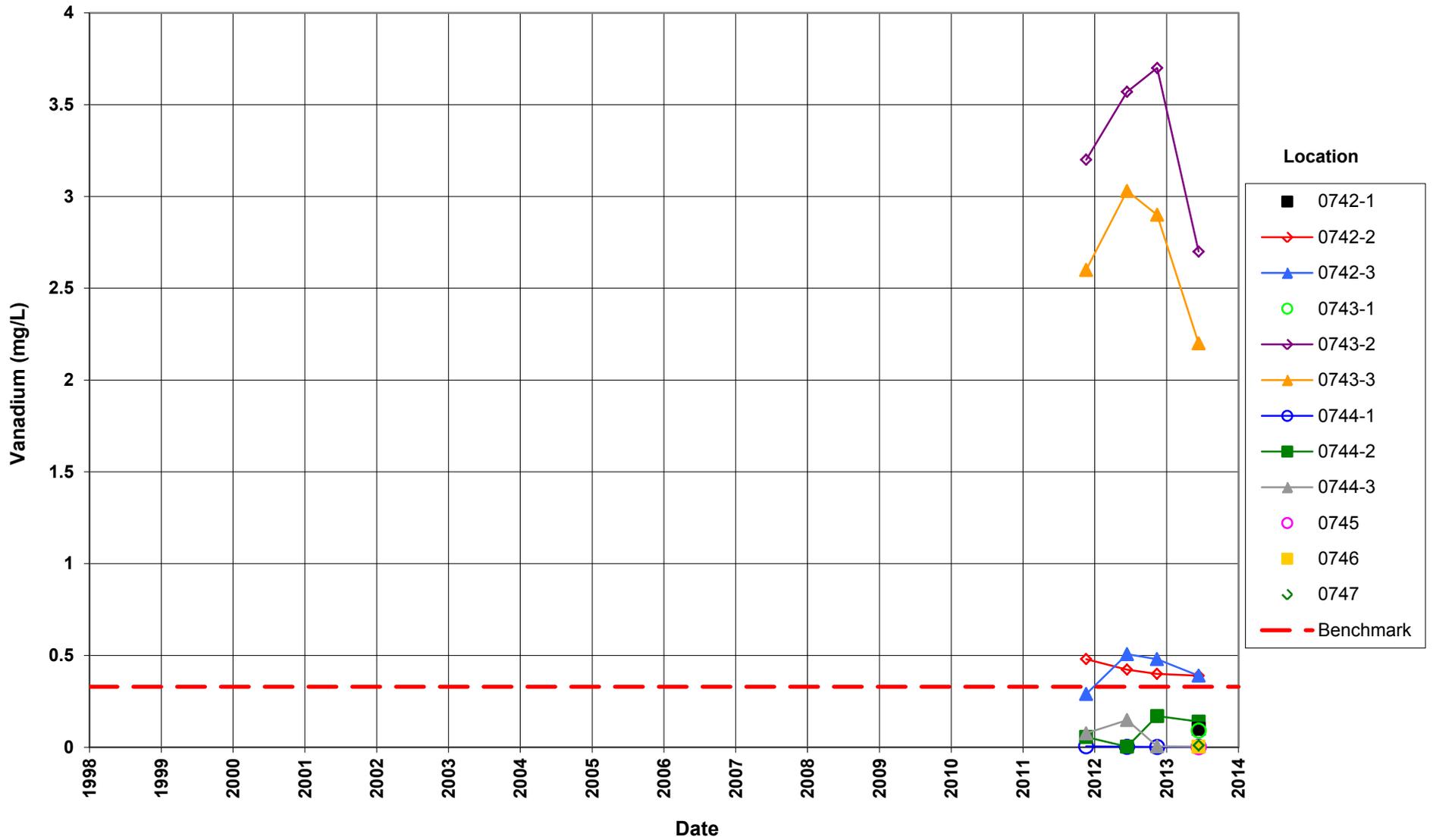
Rifle Old Processing Site Vanadium Concentration

Benchmark= 0.33 mg/L



Rifle Old Processing Site Vanadium Concentration

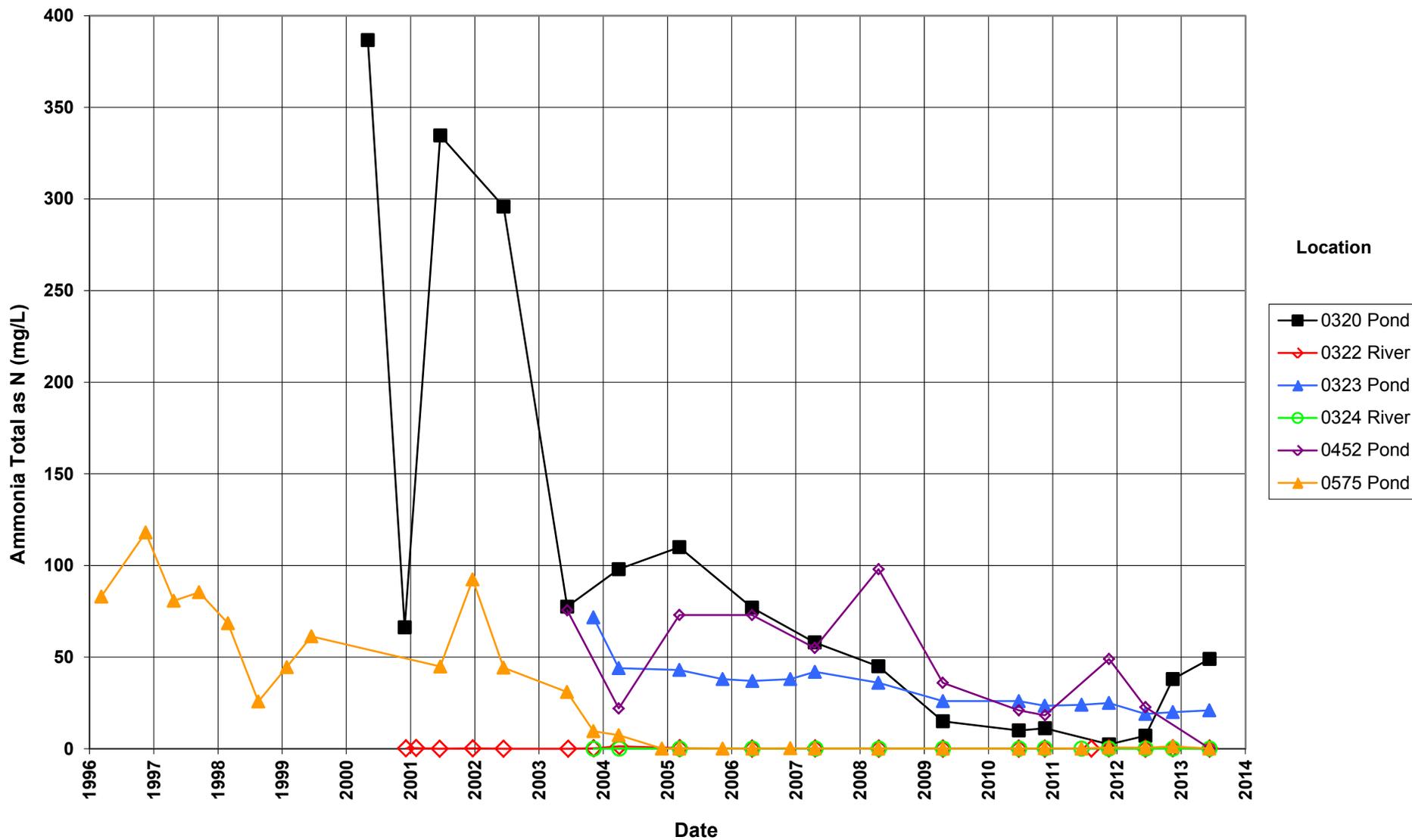
Benchmark= 0.33 mg/L



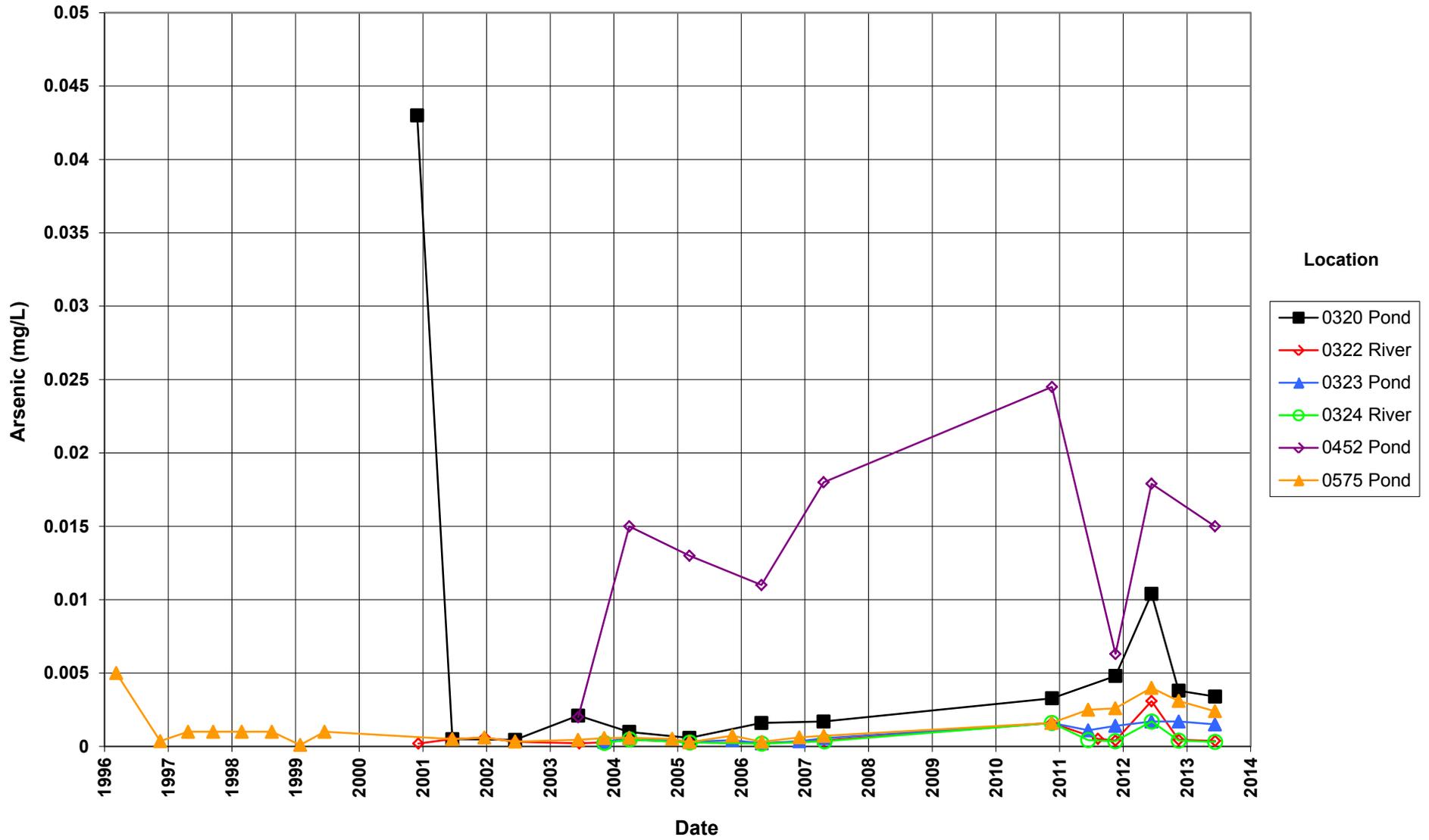
New Rifle Surface Water Time-Concentration Graphs

This page intentionally left blank

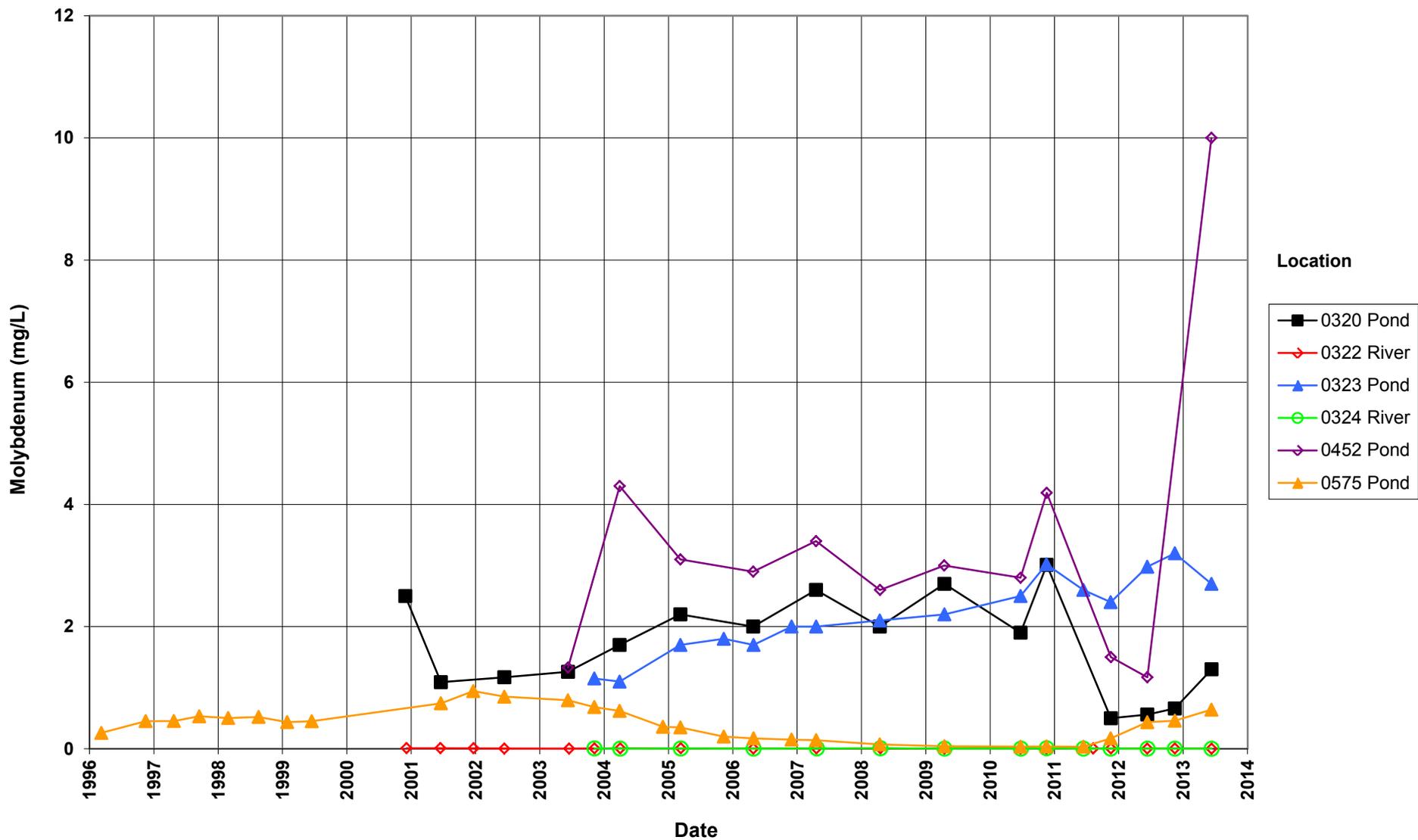
Rifle New Processing Site Ammonia Total as N Concentration



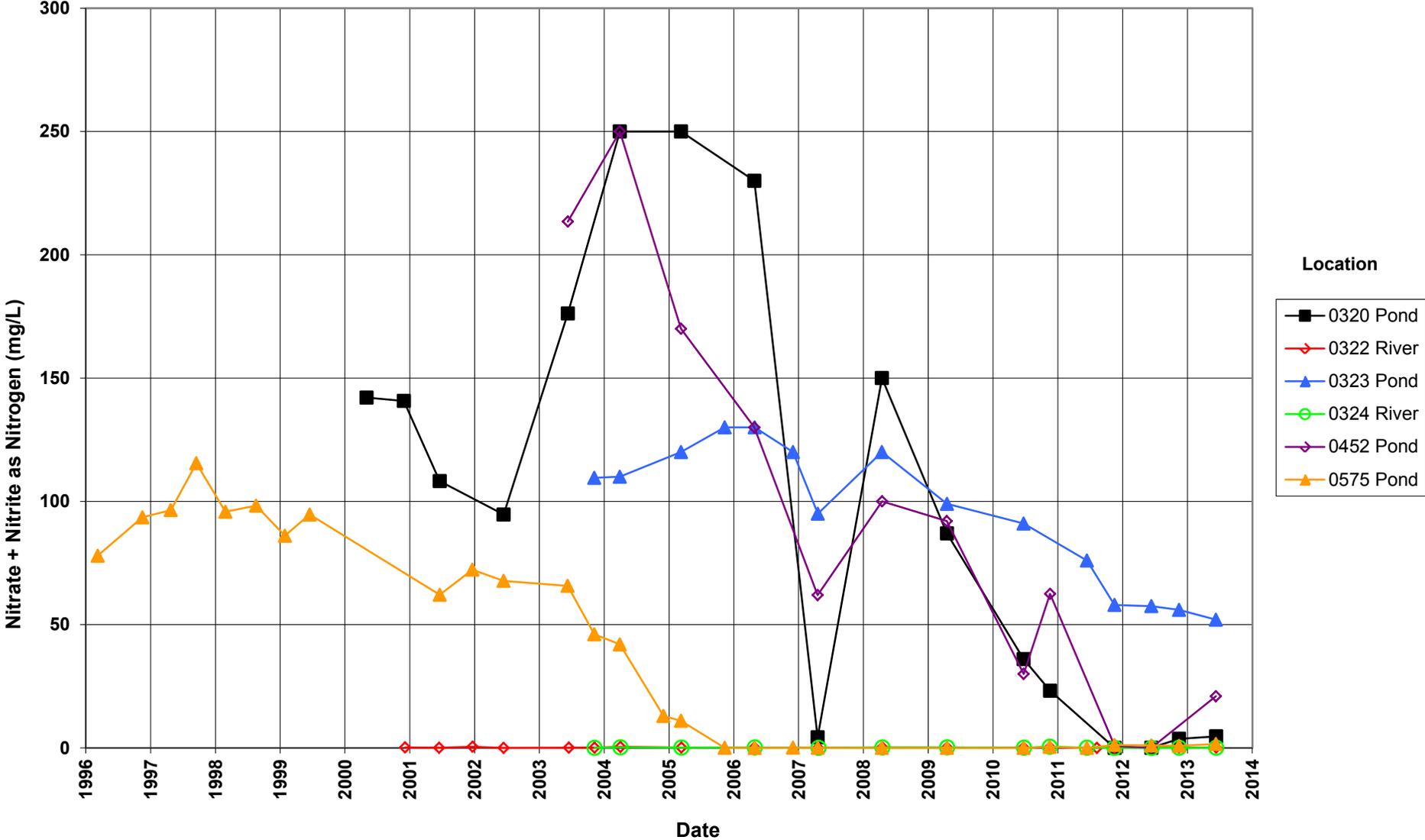
Rifle New Processing Site Arsenic Concentration



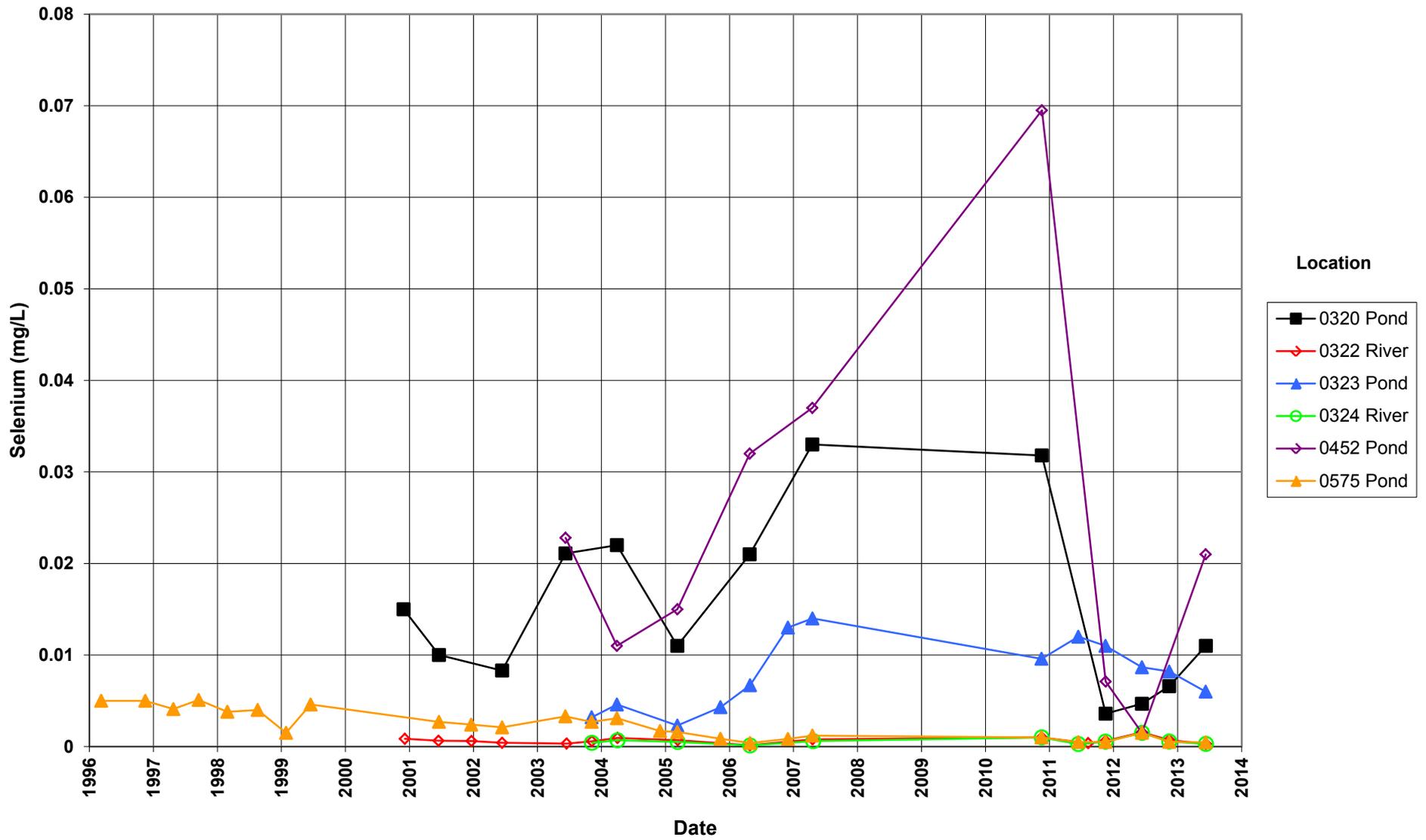
Rifle New Processing Site Molybdenum Concentration



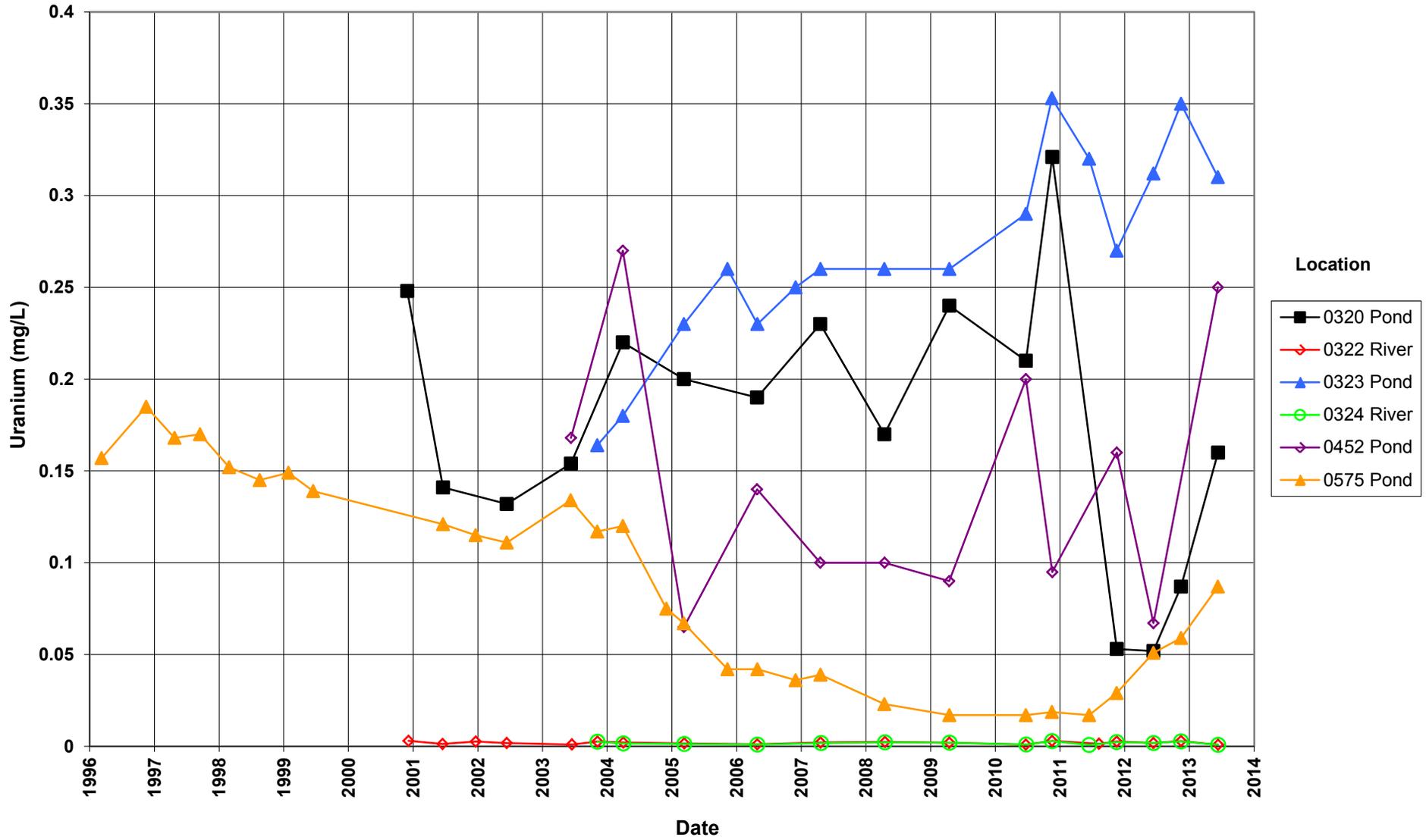
Rifle New Processing Site Nitrate + Nitrite as Nitrogen Concentration



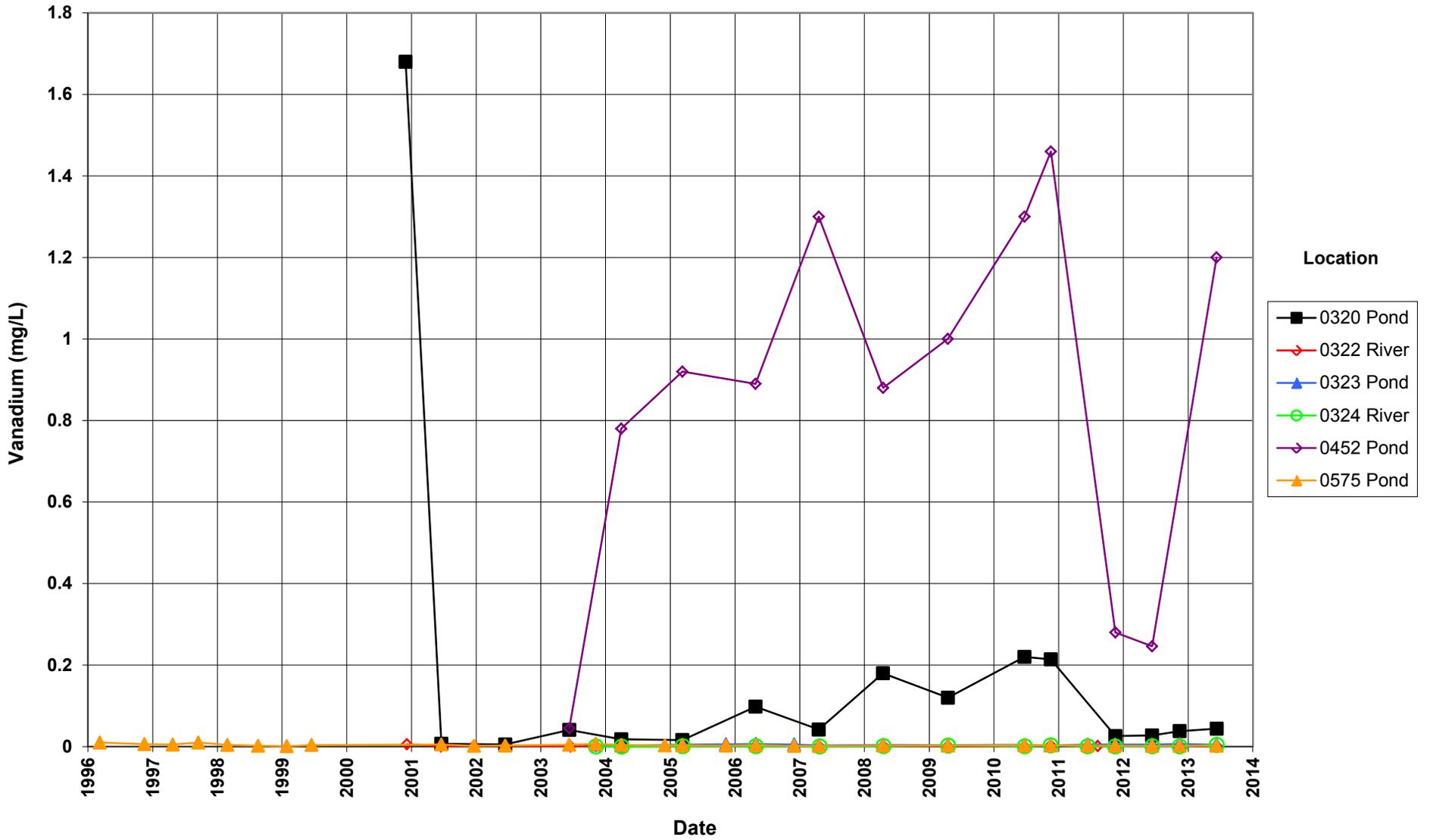
Rifle New Processing Site Selenium Concentration



Rifle New Processing Site Uranium Concentration



Rifle New Processing Site Vanadium Concentration

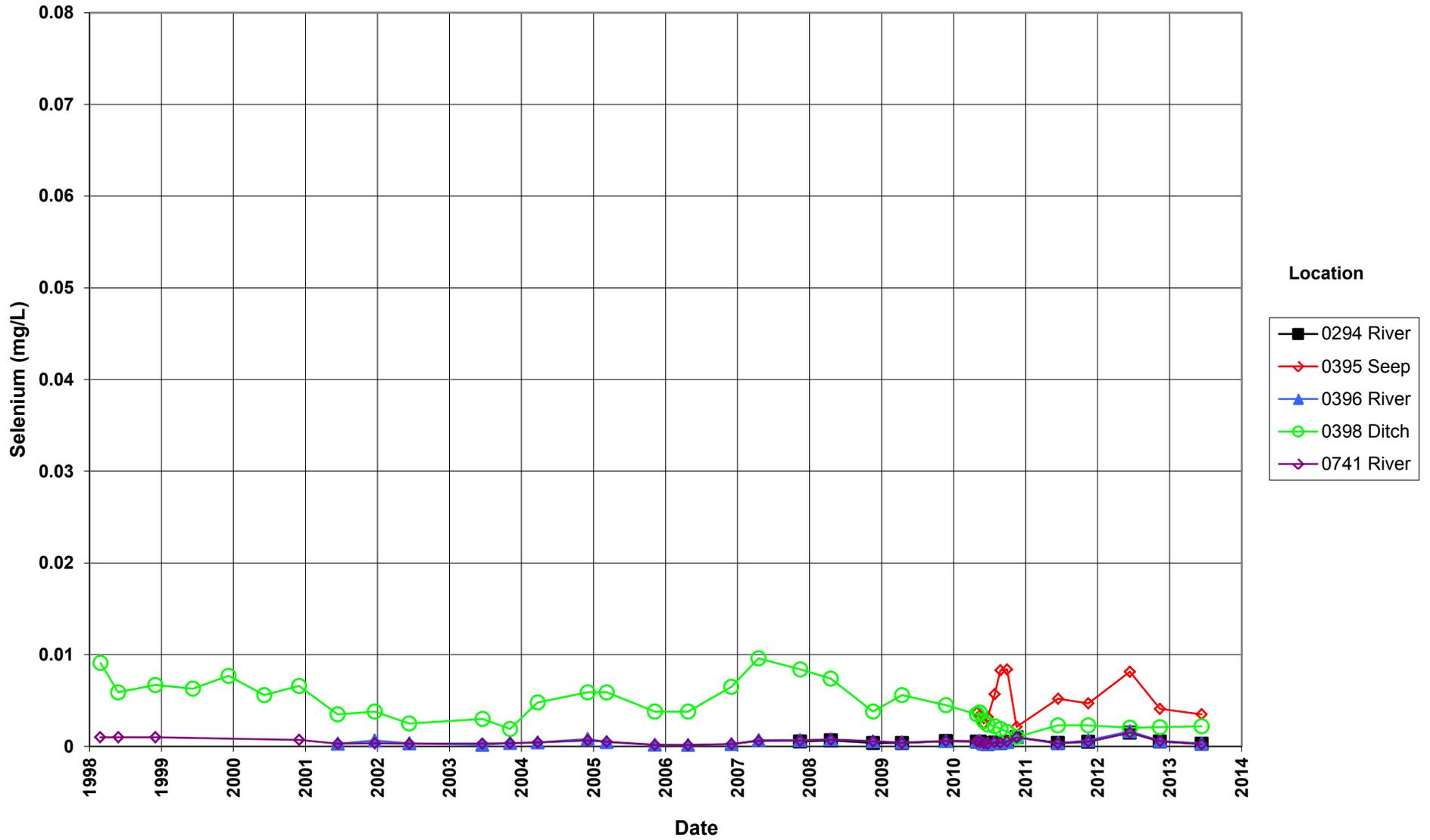


This page intentionally left blank

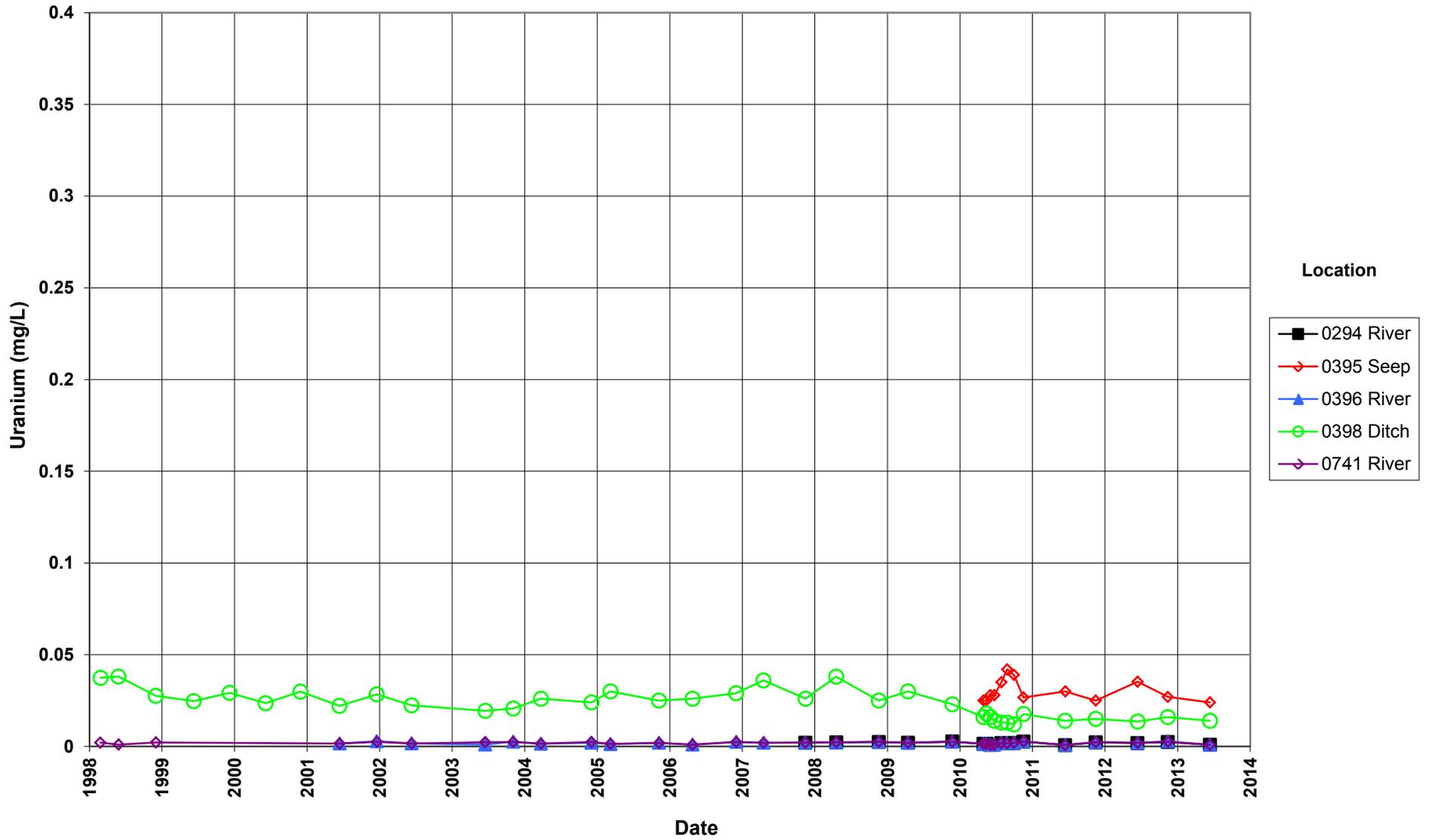
Old Rifle Surface Water Time-Concentration Graphs

This page intentionally left blank

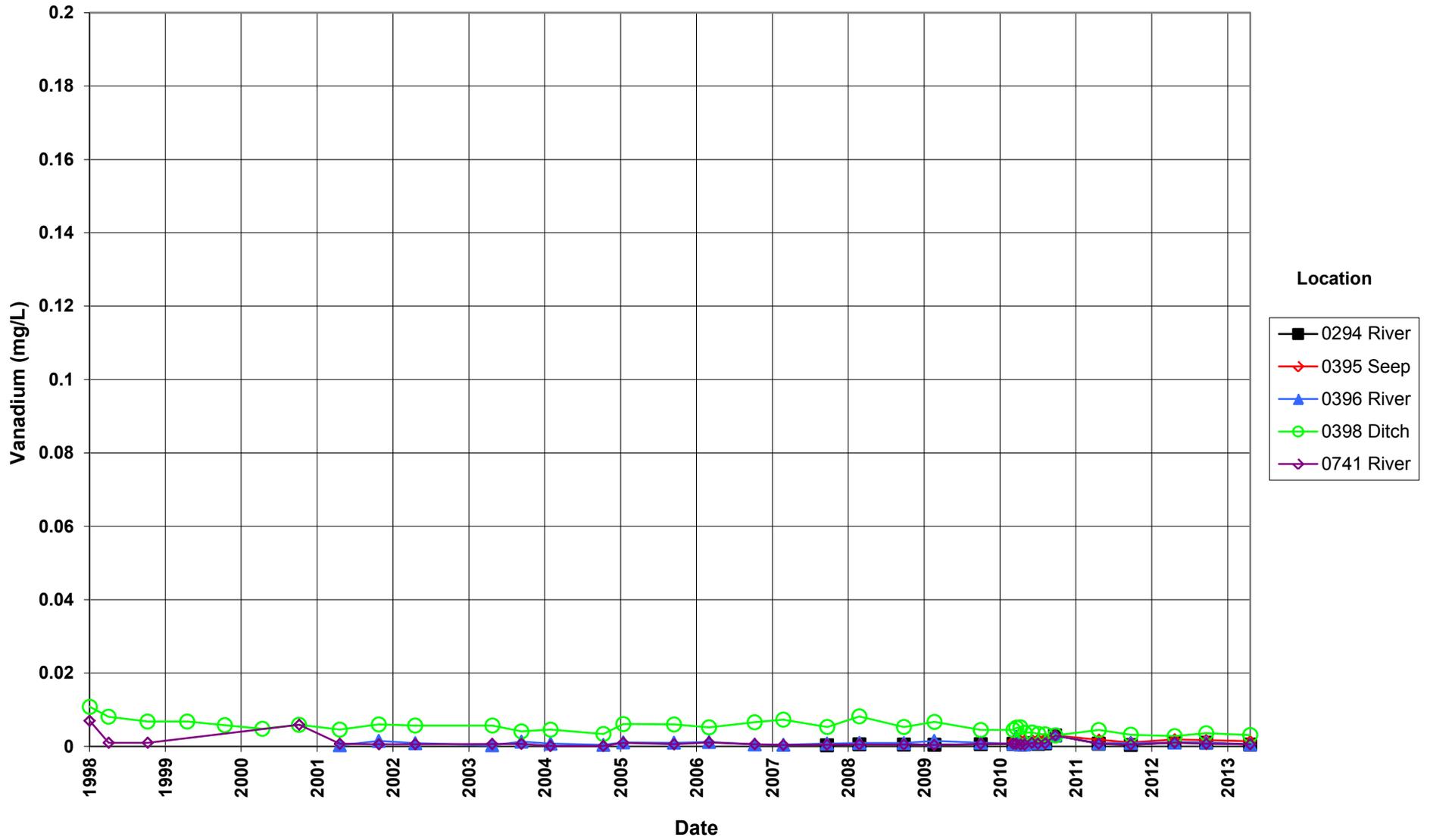
Rifle Old Processing Site Selenium Concentration



Rifle Old Processing Site Uranium Concentration



Rifle Old Processing Site Vanadium Concentration



This page intentionally left blank

Attachment 3
Sampling and Analysis Work Order

This page intentionally left blank



established 1959

Task Order LM-501
Control Number 13-0559

May 13, 2013

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)
June 2013 Environmental Sampling at Rifle, Colorado, Old and New,
Processing Sites

REFERENCE: Task Order LM00-501-02-116-402, Rifle, Colorado, Old and New,
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 maps 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 June 10, 2013.

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

Monitoring Wells*

New Rifle

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

Old Rifle

292A AI	309 AI	656 AI	742-2 Nr	743-1 Nr	743-3 Nr	744-2 Nr
304 AI	310 AI	658 AI	742-3 Nr	743-2 Nr	744-1 Nr	744-3 Nr
305 AI	655 AI	742-1 Nr				

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

Surface Locations

New Rifle

320	322	323	324	452	453	575
-----	-----	-----	-----	-----	-----	-----

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

Richard Bush
Control Number 13-0559
Page 2

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 Donovan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
rc-grand.junction
File: RFN 410.02(A)
File: RFO 410.02(A)

Constituent Sampling Breakdown

Site	Rifle					Required Detection Limit (mg/L)	Analytical Method	Line Item Code
	Groundwater	Surface Water						
Analyte								
Approx. No. Samples/yr	57	24						
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 (NO3+NO2)-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.

**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
742-1		X				Background well
742-2		X				
742-3		X				
743-1		X				Background well
743-2		X				
743-3		X				
744-1		X				
744-2		X				
744-3		X				Background well

**Sampling Frequencies for Locations at
Rifle, Colorado**

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
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
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; annual sampling conducted for Rifle Disposal Cell in July

This page intentionally left blank

Attachment 4 Trip Report

This page intentionally left blank

Memorandum

DATE: June 19, 2013
 TO: Richard Dayvault
 FROM: Daniel Sellers
 SUBJECT: Trip Report

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

Dates of Sampling Event: June 10-12, 2013

Team Members: Joe Treviño and Dan Sellers

Number of Locations Sampled: Samples were collected as follows:

Site ID	Site	Location Type	Locations That Were Sampled	Dry Locations	Planned Locations (Identified on the sampling notification letter)
RFN01	New Rifle	Monitoring Wells	17	0	17
RFN01	New Rifle	Surface Water	6	1	7
RFO01	Old Rifle	Monitoring Wells	20	0	20*
RFO01	Old Rifle	Surface Water	5	0	5

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

Locations Not Sampled/Reason: Surface water location RFN01 0453 was dry.

Location Specific Information:

Site ID	Location IDs	Comments
RFN01	0172, 0620	Sampled with Jess Vann (Olsson Associates Consulting personnel). He took co-samples. Location 0172 had no petroleum odor. Olsson personnel disposed of 0172 purge water in a nearby tank.
RFN01	0669 and 670	Category II well.
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. Water would not clear to turbidity of <10 NTUs. Samples were collected by peristaltic pump and tubing with weight and filtered.
RFO01	0745, 0746, and 0747	These wells are not CMT wells. Single cased wells.
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.

- *See Field Variance Section.

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

False ID	Ticket Number	True ID	Sample Type	Associated Matrix
2237	LHV 778	RFO01-0310	Duplicate*	Groundwater
2238	LHV 785	Associated with RFN01-0320, 0322, 0323 0324, 0452, 0575 & RFO01- 0294, 0395, 0396, and 0741	Equipment Blank	Water
2948	LHV 753	RFN01-0590	Duplicate*	Groundwater
2949	LHV 754	RFN01-0575	Duplicate	Surface water
2505	LHV 788	RFO01-0743-3	Duplicate*	Groundwater

*Duplicates were collected by filling all bottles labeled with the location number first, then filling all bottles labeled with the false ID second.

Report Identification Number (RIN) Assigned: 13065380. Field data sheets can be found in Crow\sms\13065380 in the Field Data folder.

Sample Shipment: Samples were shipped from Grand Junction to ALS Laboratory Group on June 13, 2013.

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; Purging Criteria - the most volume (1 case volume) of water calculated, from any of the three ports for each well, was figured to be no more than 330ml (11ft *30ml/ft). Therefore, 500ml was purged prior to taking parameter readings. CAT I stability criteria was used prior to sampling.

Equipment: With the exceptions noted above, 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 of the tubing reel used for sampling surface water. 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.

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

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.*

Corrective Action Required: Need to write up a Program directive for future purging of CMT wells.

(DS/lg)

cc: (electronic)
Rich Bush, DOE
Dick Dayvault, Stoller
Steve Donovan, Stoller
EDD Delivery

This page intentionally left blank