

Data Validation Package

November 2010
Groundwater and Surface Water
Sampling at the Rifle, Colorado,
Old and New Processing Sites

February 2011



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

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Sampling Event Summary

Site: Old and New Rifle, Colorado, Processing Sites

Sampling Period: November 16–18, 2010

Water samples were collected at the New Rifle and Old Rifle, Colorado, Processing Sites during this event. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated). Duplicate samples were collected from New Rifle locations 0452 and 0453 and Old Rifle location 0292A. One equipment blank was collected.

Additional sampling and analysis for locations at both Old and New Rifle was performed during this sampling event as part of a special study. The resulting data are not part of this data validation package.

New Rifle Site

Samples were collected at the New Rifle site from 17 monitoring wells and 7 surface locations in compliance with the 2008 *Ground Water Compliance Action Plan for the New Rifle, Colorado, Processing Site*. Water levels were measured at each sampled well.

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

Table 1. New Rifle Locations that Exceed Standards

Analyte	Standard ^a	MBC ^b	Location	Concentration (mg/L)
Arsenic	0.05 mg/L	0.03 mg/L	0658	0.151
			0855	0.814
Molybdenum	0.10 mg/L	0.03 mg/L	0201	1.75
			0217	1.64
			0590	1.17
			0635	0.442
			0658	2.17
			0659	2.08
			0664	0.48
			0669	1.56
			0670	0.37
			0855	1.75

Table 1 (continued). New Rifle Locations that Exceed Standard

Analyte	Standard ^a	MBC ^b	Location	Concentration (mg/L)
Nitrate + Nitrite as Nitrogen	10 mg/L	5.22 mg/L	0170	16.4
			0201	72.5
			0590	29.5
			0620	27.8
			0658	30.2
			0664	10.2
			0669	26.3
			0855	18.4
Selenium	0.01 mg/L	0.036 mg/L	0201	0.055
			0217	0.211
			0590	0.0375
			0658	1.43
			0659	0.0566
			0664	0.0786
			0670	0.599
			0855	1.58
Uranium	0.044 mg/L	0.067 mg/L	0172	0.0718
			0201	0.081
			0217	0.174
			0590	0.0694
			0659	0.0945
			0664	0.0801
			0670	0.135

^a Standards are listed in 40 CFR 192.02 Table 1 to Subpart A.

^b Maximum background concentration listed in *Ground Water Compliance Action Plan for the New Rifle, Colorado, Processing Site*.

Time-concentration graphs from the locations sampled are included with the analytical data. Data analysis indicates that the concentrations of the COCs are stable or decreasing at most locations. The concentrations of arsenic, molybdenum, selenium, and vanadium in well 0855 continue to decrease after spiking in 2009. The vanadium in well 0658 remains high, at a concentration near the proposed ACL. Some COCs (most notably nitrate + nitrite as nitrogen and uranium) in well 0670 continue to fluctuate widely.

The surface water locations were sampled to monitor the impact of groundwater discharge. No large variations in the data were noted.

Old Rifle Site

Samples were collected at the Old Rifle site from 8 monitoring wells and 4 surface locations as specified in the 2001 *Ground Water Compliance Action Plan for the Old Rifle, Colorado, UMTRA Project Site*. One surface water location (0571) was dry and could not be sampled. Water levels were measured at each sampled well.

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

Table 2. Old Rifle Locations that Exceed Standards or ACLs

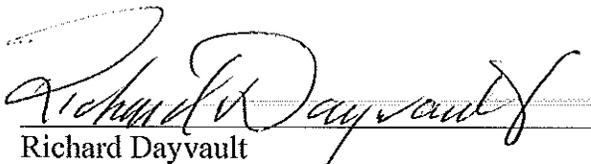
Analyte	Standard ^a	ACL	Location	Concentration (mg/L)
Selenium	0.01 mg/L	0.05 mg/L ^b	0305	0.0301
			0655	0.0611
Uranium	0.044 mg/L	-----	0305	0.0787
			0310	0.207
			0655	0.146
			0656	0.212

^a Groundwater standards are listed in 40 CFR 192.02 Table 1 to Subpart A.

^b ACL proposed in *Ground Water Compliance Action Plan for the Old Rifle, Colorado, UMTRA Project Site (GCAP)*.

Time-concentration graphs from the locations sampled are included with the analytical data. Data analysis indicates that the concentrations of the COCs are generally stable with fluctuations that may be partially attributable to a seasonal effect with the following exceptions. The selenium in well 0655 has increased since 2009; the concentration remains above the ACL for this event. The uranium in well 0656 is showing an upward trend since 2005. There is no indication of unexpected plume movement from this sampling event.

Analytical results for surface locations 0396 and 0741 that are adjacent to and downgradient of the site along the Colorado River are below the ACL at generally stable concentrations.



Richard Dayvault
Site Lead, S. M. Stoller Corporation



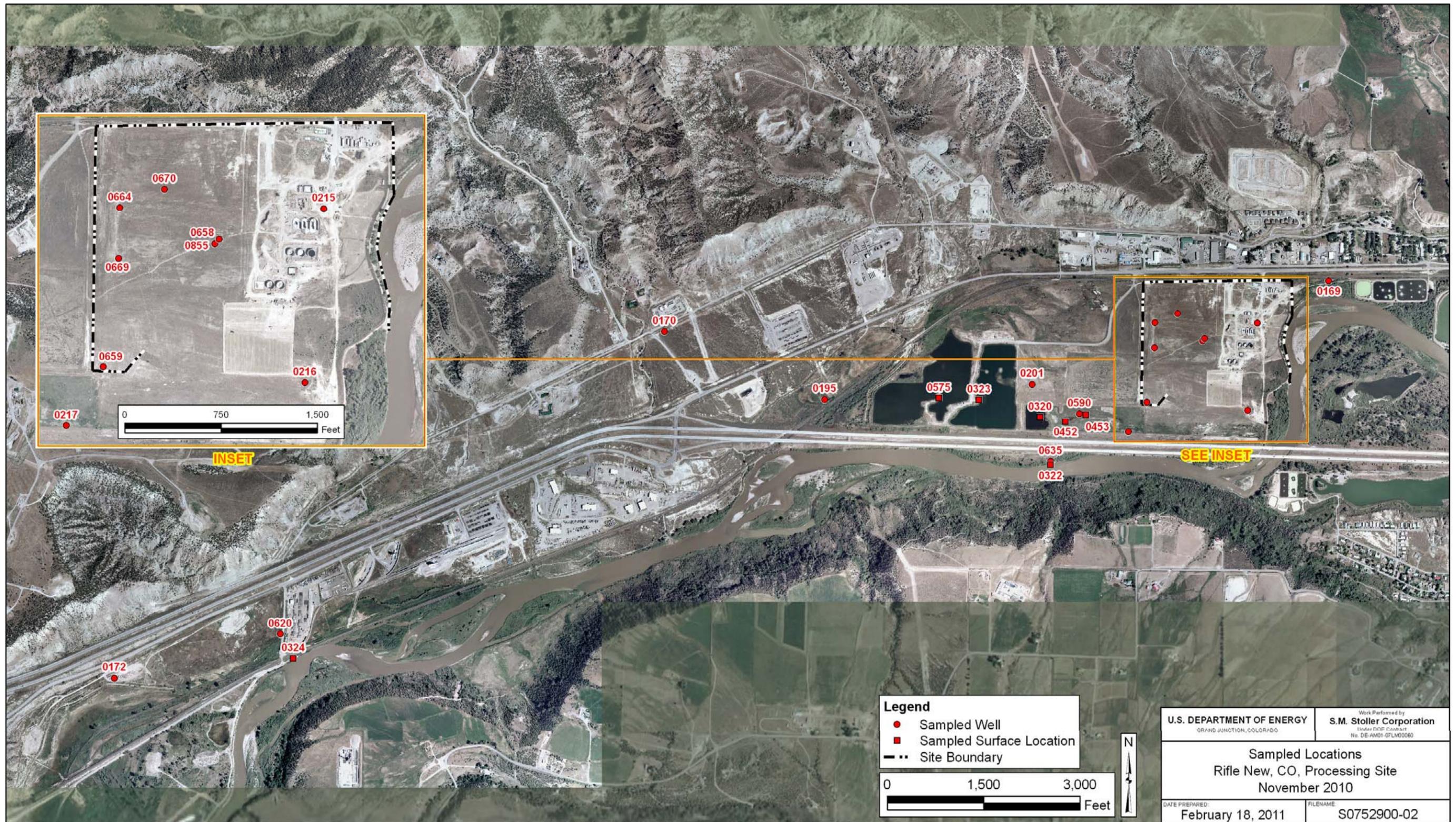
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Sampled Locations Rifle Old, CO, Processing Site



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Sampled Locations Rifle New, CO, Processing Site

Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	<u>Rife, Colorado</u>	Date(s) of Water Sampling	<u>November 16–18, 2010</u>
Date(s) of Verification	<u>February 8, 2011</u>	Name of Verifier	<u>Gretchen Baer</u>

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOPs, instructions.	<u>Yes</u>	<u>Work Order Letter dated October 19, 2010.</u>
2. Were the sampling locations specified in the planning documents sampled?	<u>No</u>	<u>One surface water location (RFO01 0571) was dry.</u>
3. Was a pre-trip calibration conducted as specified in the above-named documents?	<u>Yes</u>	<u>Pre-trip calibrations were performed on November 15 & 16, 2010.</u>
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	<u>Yes</u> <u>Yes</u>	<u>End-of-trip checks were also performed.</u>
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	<u>Yes</u>	
6. Was the category of the well documented?	<u>Yes</u>	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling? Did the water level stabilize prior to sampling? Did pH, specific conductance, and turbidity measurements stabilize prior to sampling? Was the flow rate less than 500 mL/min? If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	<u>Yes</u> <u>Yes</u> <u>Yes</u> <u>Yes</u> <u>NA</u>	<u>With one exception: the specific conductance at RFN01 0855 was slightly outside stability criteria; spec cond value has been qualified.</u>

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well: Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	Duplicate samples were collected from locations RFN 0452 and 0453, and RFO 0292A.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	Yes	One equipment blank was collected.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number? Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDSC) report?	Yes	Location IDs 2076, 2077, 2948, & 2949 were used for QC samples.
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the "Date Signed" fields (FDSC)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	(Note that ice was not required at some locations where only metals samples were collected).
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN): 10113444
 Sample Event: November 16–18, 2010
 Site(s): Rifle Processing Sites, Colorado
 Laboratory: GEL Laboratories, Charleston, South Carolina
 Work Order No.: 267431
 Analysis: Organics, Metals, and Wet Chemistry
 Validator: Gretchen Baer
 Review Date: February 8, 2011

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

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N	WCH-A-005	MCAWW 350.2	MCAWW 350.1
Arsenic, Molybdenum, Selenium, Uranium, Vanadium	LMM-02	SW-846 3005A	SW-846 3005/6020
Herbicides	HER-A-001	SW-846 8151A	SW-846 8151A
Nitrate + Nitrite as N	WCH-A-022	MCAWW 353.2	MCAWW 353.2

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
267431001	Equipment Blank, 2076	Molybdenum	U	Less than 5 times the calibration blank
267431001	Equipment Blank, 2076	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431004	0169	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431006	0172	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431007	0195	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431009	0215	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431010	0216	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431011	0217	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431021	0320	Selenium	J	Matrix spike failure
267431023	0323	Nitrate + Nitrite as N	R	Over-dilution

Table 4 (continued). Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
267431024	0324	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431025	0452	Nitrate + Nitrite as N	R	Over-dilution
267431026	0453	Nitrate + Nitrite as N	R	Over-dilution
267431027	0575	Nitrate + Nitrite as N	U	Less than 5 times the method blank
267431032	0304	Vanadium	J	Reporting limit verification failure
267431037	0310	Vanadium	J	Reporting limit verification failure

Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received 49 water samples on November 20, 2010, 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 air bill numbers were listed in the receiving documentation. The Chain of Custody form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipments were received intact with the temperature inside the iced coolers at 3 and 6 °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.

Laboratory Instrument Calibration

Compliance requirements for 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 and of producing a linear curve. 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 in accordance with the cited methods.

Method MCAWW 350.1

Calibrations for ammonia as N were performed using five calibration standards on November 30 and December 1, 2010. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the method detection limit (MDL). Initial and continuing calibration verification checks were made at the required frequency resulting in 11 verification checks. All calibration check results were within the acceptance criteria.

Method MCAWW 353.2

Calibrations for nitrate + nitrite as N were performed using seven calibration standards on November 24, 2010. 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. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in seven verification checks. All calibration check results were within the acceptance criteria.

Method SW-846 6020

Calibrations were performed for arsenic, molybdenum, selenium, uranium, and vanadium December 14–15, 2010, using seven calibration standards. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in 38 verification checks. 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 practical quantitation limit (PQL) and all results were within the acceptance range with the following exception. One vanadium check result was above the acceptance range. Associated results near the PQL and above the detection limit are qualified with a “J” flag (estimated). 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.

Metals and Wet Chemistry

All method blank and calibration blank results associated with the samples were below the PQLs. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a “U” flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spikes met the

recovery and precision criteria for all analytes evaluated with the following exception. A selenium MS recovery was above the acceptance range at location RFN01 0320, which is a pond (surface water) sample. The associated result is qualified with a “J” flag (estimated). The spike recoveries of ammonia as N (81 and 82 percent) exceeded the laboratory’s acceptance criteria, but were within the ± 25 percent requirement.

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 (or less than the laboratory-derived control limits for organics). For results that are less than the PQL, the range should be no greater than the PQL. The replicate results met these criteria, demonstrating acceptable laboratory precision.

Laboratory Control Sample

LCSs and laboratory control sample duplicates (LCSDs) 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. Method 6020 serial dilution data are evaluated when the concentration of the undiluted sample is greater than 100 times the PQL. All evaluated serial dilution data were acceptable.

Detection Limits/Dilutions

Some samples were diluted in the analysis of nitrate + nitrite as N and selenium to reduce interferences. Samples were diluted in a consistent and acceptable manner when required, with the exception of some nitrate + nitrite as N samples, which were over-diluted and reported as non-detects. These results are qualified with an “R” flag (rejected). The required detection limits were met for all analytes with the exception of arsenic, selenium, and vanadium.

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 December 20, 2010. 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: 10113444 Lab Code: GEN Validator: Gretchen Baer Validation Date: 2/4/2011

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

of Samples: 49 Matrix: Water Requested Analysis Completed: Yes

· Chain of Custody

Present: OK Signed: OK Dated: OK

· Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

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

All analyses were completed within the applicable holding times.

There are 118 detection limit failures.

There was 1 trip/equipment blank evaluated.

There were 3 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 10113444 Lab Code: GEN

Project: Rifle Disposal/Processing Site (old/new)

Validation Date: 2/4/2011

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
IMY 960	0169	267431004	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 960	0169	267431004	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 961	0170	267431005	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 961	0170	267431005	LMM-02	EPA 3005/6020	Selenium	10.1	N	1	0.1	µg/L
IMY 962	0172	267431006	LMM-02	EPA 3005/6020	Selenium	5.00	UN	1	0.1	µg/L
IMY 962	0172	267431006	LMM-02	EPA 3005/6020	Arsenic	5.67		1.6	0.1	µg/L
IMY 963	0195	267431007	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 963	0195	267431007	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 964	0201	267431008	LMM-02	EPA 3005/6020	Selenium	55	N	1	0.1	µg/L
IMY 964	0201	267431008	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 965	0215	267431009	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 965	0215	267431009	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 965	0215	267431009	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 966	0216	267431010	LMM-02	EPA 3005/6020	Arsenic	34.1		1.6	0.1	µg/L
IMY 966	0216	267431010	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 966	0216	267431010	LMM-02	EPA 3005/6020	Vanadium	201		3	0.3	µg/L
IMY 967	0217	267431011	LMM-02	EPA 3005/6020	Selenium	211	N	1	0.1	µg/L
IMY 967	0217	267431011	LMM-02	EPA 3005/6020	Vanadium	1980		3	0.3	µg/L
IMY 967	0217	267431011	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 957	0292A	267431003	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 957	0292A	267431003	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 999	0294	267431043	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 999	0294	267431043	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 988	0304	267431032	LMM-02	EPA 3005/6020	Vanadium	36.1		3	0.3	µg/L

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 10113444 Lab Code: GEN

Project: Rifle Disposal/Processing Site (old/new)

Validation Date: 2/4/2011

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
IMY 988	0304	267431032	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 989	0305	267431033	LMM-02	EPA 3005/6020	Vanadium	713		3	0.3	µg/L
IMY 989	0305	267431033	LMM-02	EPA 3005/6020	Selenium	30.1	N	1	0.1	µg/L
IMY 991	0309	267431035	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 991	0309	267431035	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 993	0310	267431037	LMM-02	EPA 3005/6020	Vanadium	8.06	B	3	0.3	µg/L
IMY 993	0310	267431037	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 977	0320	267431021	LMM-02	EPA 3005/6020	Vanadium	214		3	0.3	µg/L
IMY 977	0320	267431021	LMM-02	EPA 3005/6020	Selenium	31.8	N	1	0.1	µg/L
IMY 977	0320	267431021	LMM-02	EPA 3005/6020	Arsenic	3.28	B	1.6	0.1	µg/L
IMY 978	0322	267431022	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 978	0322	267431022	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 978	0322	267431022	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 979	0323	267431023	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 979	0323	267431023	LMM-02	EPA 3005/6020	Selenium	9.59	N	1	0.1	µg/L
IMY 979	0323	267431023	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 980	0324	267431024	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 980	0324	267431024	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 980	0324	267431024	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMZ 000	0394	267431044	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMZ 000	0394	267431044	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMZ 001	0395	267431045	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMZ 001	0395	267431045	LMM-02	EPA 3005/6020	Selenium	2.13	BN	1	0.1	µg/L
IMZ 002	0396	267431046	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 10113444 Lab Code: GEN

Project: Rifle Disposal/Processing Site (old/new)

Validation Date: 2/4/2011

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
IMZ 002	0396	267431046	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMZ 003	0398	267431047	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMZ 003	0398	267431047	LMM-02	EPA 3005/6020	Selenium	1.03	BN	1	0.1	µg/L
IMZ 004	0399	267431048	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMZ 004	0399	267431048	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 981	0452	267431025	LMM-02	EPA 3005/6020	Vanadium	1460		3	0.3	µg/L
IMY 981	0452	267431025	LMM-02	EPA 3005/6020	Selenium	69.5	N	1	0.1	µg/L
IMY 981	0452	267431025	LMM-02	EPA 3005/6020	Arsenic	22.6		1.6	0.1	µg/L
IMY 982	0453	267431026	LMM-02	EPA 3005/6020	Vanadium	2310		3	0.3	µg/L
IMY 982	0453	267431026	LMM-02	EPA 3005/6020	Selenium	82.7	N	1	0.1	µg/L
IMY 982	0453	267431026	LMM-02	EPA 3005/6020	Arsenic	32.3		1.6	0.1	µg/L
IMY 983	0575	267431027	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 983	0575	267431027	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 983	0575	267431027	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 968	0590	267431012	LMM-02	EPA 3005/6020	Arsenic	3.96	B	1.6	0.1	µg/L
IMY 968	0590	267431012	LMM-02	EPA 3005/6020	Vanadium	313		3	0.3	µg/L
IMY 968	0590	267431012	LMM-02	EPA 3005/6020	Selenium	37.5	N	1	0.1	µg/L
IMY 969	0620	267431013	LMM-02	EPA 3005/6020	Selenium	23.7	N	1	0.1	µg/L
IMY 969	0620	267431013	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 970	0635	267431014	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 970	0635	267431014	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 995	0655	267431039	LMM-02	EPA 3005/6020	Vanadium	359		3	0.3	µg/L
IMY 995	0655	267431039	LMM-02	EPA 3005/6020	Selenium	61.1	N	1	0.1	µg/L
IMY 997	0656	267431041	LMM-02	EPA 3005/6020	Vanadium	18.3		3	0.3	µg/L

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 10113444 Lab Code: GEN

Project: Rifle Disposal/Processing Site (old/new)

Validation Date: 2/4/2011

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
IMY 997	0656	267431041	LMM-02	EPA 3005/6020	Selenium	2.5	BN	1	0.1	µg/L
IMY 971	0658	267431015	LMM-02	EPA 3005/6020	Vanadium	49700		3	0.3	µg/L
IMY 971	0658	267431015	LMM-02	EPA 3005/6020	Selenium	1430	N	1	0.1	µg/L
IMY 971	0658	267431015	LMM-02	EPA 3005/6020	Arsenic	151		1.6	0.1	µg/L
IMY 998	0658	267431042	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 998	0658	267431042	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 972	0659	267431016	LMM-02	EPA 3005/6020	Vanadium	1300		3	0.3	µg/L
IMY 972	0659	267431016	LMM-02	EPA 3005/6020	Selenium	56.6	N	1	0.1	µg/L
IMY 972	0659	267431016	LMM-02	EPA 3005/6020	Arsenic	17.9		1.6	0.1	µg/L
IMY 973	0664	267431017	LMM-02	EPA 3005/6020	Vanadium	903		3	0.3	µg/L
IMY 973	0664	267431017	LMM-02	EPA 3005/6020	Selenium	78.6	N	1	0.1	µg/L
IMY 973	0664	267431017	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMY 974	0669	267431018	LMM-02	EPA 3005/6020	Vanadium	3200		3	0.3	µg/L
IMY 974	0669	267431018	LMM-02	EPA 3005/6020	Selenium	14.5	N	1	0.1	µg/L
IMY 974	0669	267431018	LMM-02	EPA 3005/6020	Arsenic	7.54		1.6	0.1	µg/L
IMY 975	0670	267431019	LMM-02	EPA 3005/6020	Vanadium	2150		3	0.3	µg/L
IMY 975	0670	267431019	LMM-02	EPA 3005/6020	Selenium	599	N	1	0.1	µg/L
IMY 975	0670	267431019	LMM-02	EPA 3005/6020	Arsenic	17.5		1.6	0.1	µg/L
IMY 986	0689	267431030	LMM-02	EPA 3005/6020	Selenium	858	N	1	0.1	µg/L
IMY 986	0689	267431030	LMM-02	EPA 3005/6020	Arsenic	12.6		1.6	0.1	µg/L
IMY 987	0690	267431031	LMM-02	EPA 3005/6020	Selenium	245	N	1	0.1	µg/L
IMY 987	0690	267431031	LMM-02	EPA 3005/6020	Arsenic	2.57	B	1.6	0.1	µg/L
IMZ 006	0741	267431049	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMZ 006	0741	267431049	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 976	0855	267431020	LMM-02	EPA 3005/6020	Vanadium	41200		3	0.3	µg/L
IMY 976	0855	267431020	LMM-02	EPA 3005/6020	Selenium	1580	N	1	0.1	µg/L

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 10113444 Lab Code: GEN

Project: Rifle Disposal/Processing Site (old/new)

Validation Date: 2/4/2011

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
IMY 976	0855	267431020	LMM-02	EPA 3005/6020	Arsenic	814		1.6	0.1	µg/L
IMQ 475	2076	267431001	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMQ 475	2076	267431001	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMQ 475	2076	267431001	LMM-02	EPA 3005/6020	Arsenic	1.60	U	1.6	0.1	µg/L
IMQ 476	2077	267431002	LMM-02	EPA 3005/6020	Vanadium	1420		3	0.3	µg/L
IMQ 476	2077	267431002	LMM-02	EPA 3005/6020	Selenium	59.9	N	1	0.1	µg/L
IMQ 476	2077	267431002	LMM-02	EPA 3005/6020	Arsenic	24.5		1.6	0.1	µg/L
IMY 984	2948	267431028	LMM-02	EPA 3005/6020	Vanadium	2400		3	0.3	µg/L
IMY 984	2948	267431028	LMM-02	EPA 3005/6020	Selenium	79.3	N	1	0.1	µg/L
IMY 984	2948	267431028	LMM-02	EPA 3005/6020	Arsenic	35.7		1.6	0.1	µg/L
IMY 985	2949	267431029	LMM-02	EPA 3005/6020	Vanadium	3.00	U	3	0.3	µg/L
IMY 985	2949	267431029	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 990	B-04	267431034	LMM-02	EPA 3005/6020	Vanadium	1460		3	0.3	µg/L
IMY 990	B-04	267431034	LMM-02	EPA 3005/6020	Selenium	30	N	1	0.1	µg/L
IMY 992	LQ-107	267431036	LMM-02	EPA 3005/6020	Vanadium	571		3	0.3	µg/L
IMY 992	LQ-107	267431036	LMM-02	EPA 3005/6020	Selenium	1.00	UN	1	0.1	µg/L
IMY 996	LQ-108	267431040	LMM-02	EPA 3005/6020	Vanadium	5220		3	0.3	µg/L
IMY 996	LQ-108	267431040	LMM-02	EPA 3005/6020	Selenium	102	N	1	0.1	µg/L
IMY 994	LQ-109	267431038	LMM-02	EPA 3005/6020	Vanadium	7.11	B	3	0.3	µg/L
IMY 994	LQ-109	267431038	LMM-02	EPA 3005/6020	Selenium	1.14	BN	1	0.1	µg/L

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 10113444Lab Code: GENDate Due: 12/18/2010Matrix: WaterSite Code: RFLDate Completed: 12/20/2010

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
		Int.	R^2	ICV	CCV	ICB	CCB								
10Molybdenum	12/15/2010	0.0000	1.0000	OK	OK	OK	OK						99.0		116.0
10Selenium	12/15/2010	0.0000	1.0000	OK	OK	OK	OK						100.0		114.0
10Vanadium	12/15/2010	0.0000	1.0000	OK	OK	OK	OK						111.0		119.0
11Arsenic	12/15/2010	0.0000	1.0000	OK	OK	OK	OK	OK	104.0	111.0			111.0		117.0
11Molybdenum	12/15/2010	0.0000	1.0000	OK	OK	OK	OK	OK	105.0			3.0	102.0	0.3	118.0
11Selenium	12/15/2010	0.0000	1.0000	OK	OK	OK	OK	OK	107.0	131.0		6.0	103.0	4.9	120.0
11Vanadium	12/15/2010	0.0000	1.0000	OK	OK	OK	OK	OK	103.0	94.2		3.0	115.0		131.1
1Arsenic	12/14/2010	0.0000	1.0000	OK	OK	OK	OK	OK	103.0	94.0			112.0		126.0
1Molybdenum	12/14/2010	0.0000	1.0000	OK	OK	OK	OK	OK	94.0	94.1			97.0		80.0
1Selenium	12/14/2010	0.0000	1.0000	OK	OK	OK	OK	OK	105.0	107.0			97.0		111.0
1Vanadium	12/14/2010	0.0000	1.0000	OK	OK	OK	OK	OK	102.0	96.1		10.0	117.0		120.0
3Selenium	12/14/2010	0.0000	1.0000	OK	OK	OK	OK	OK	102.0	91.1			100.0		119.0
3Vanadium	12/14/2010	0.0000	1.0000	OK	OK	OK	OK	OK	83.1	99.9			111.0		118.0
5Uranium	12/15/2010	0.0000	1.0000	OK	OK	OK	OK	OK	99.0	84.0		6.0	119.0		101.0
7Uranium	12/14/2010	0.0000	1.0000	OK	OK	OK	OK						119.0		99.0
8Molybdenum	12/14/2010	0.0000	1.0000	OK	OK	OK	OK						97.0		101.0
8Selenium	12/14/2010	0.0000	1.0000	OK	OK	OK	OK						98.0		108.0

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 10113444Lab Code: GENDate Due: 12/18/2010Matrix: WaterSite Code: RFLDate Completed: 12/20/2010

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
		Int.	R^2	ICV	CCV	ICB	CCB								
8Vanadium	12/14/2010	0.0000	1.0000	OK	OK	OK	OK					109.0		109.0	
9Uranium	12/15/2010	0.0000	1.0000	OK	OK	OK	OK	108.0	96.9		3.0	119.5	5.8	112.0	
9Uranium	12/15/2010						OK	102.0	101.0				6.4		

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 10113444 **Lab Code:** GEN **Date Due:** 12/18/2010
Matrix: Water **Site Code:** RFL **Date Completed:** 12/20/2010

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
NH3 as N	11/30/2010	-0.036	0.9999	OK	OK	OK	OK	OK	94.00	81.1	81.5	0	
NH3 as N	11/30/2010											2.00	
NH3 as N	12/01/2010	-0.004	0.9998	OK	OK	OK	OK	OK	105.00			11.00	
NH3 as N	12/01/2010											8.00	
NO2+NO3 as N	11/24/2010	-0.011	0.9999	OK	OK	OK	OK	OK	101.00	100.0		2.00	
NO2+NO3 as N	11/24/2010							OK	103.00	95.2			
NO2+NO3 as N	11/24/2010									98.0			

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:

- New Rifle wells 0669 and 0670 were classified as Category II.

The sample results for these two wells were qualified with a “Q” flag, indicating the data are qualitative because of the sampling technique.

The specific conductance measurements did not stabilize prior to sampling at RFN01 0855. The specific conductance measurement is qualified with a “J” flag (estimated).

Equipment Blank Assessment

An equipment blank (field ID 2076) was collected after decontamination of the tubing reel used to collect the surface water samples. Molybdenum and nitrate + nitrite as N were detected in the blank by the laboratory, but these analytes were qualified during data validation with a “U” flag as not detected. The equipment blank results indicate adequate decontamination of the sampling equipment.

Field Duplicate Assessment

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than the PQL, the range should be no greater than the PQL. Duplicate samples were collected at locations RFN01 0452, RFN01 0453, and RFO01 0292A (field IDs 2077, 2948, and 2949, respectively). The difference in nitrate + nitrite as N results at locations 0452 and 0453 are outside acceptance limits. The nitrate + nitrite as N non-detect results at these locations have been rejected for dilution errors. All other duplicate results met the criteria, demonstrating acceptable overall precision.

Certification

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

Laboratory Coordinator:

Steve Donivan
Steve Donivan

2-22-2011
Date

Data Validation Lead:

Gretchen Baer
Gretchen Baer

2-22-2011
Date

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Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

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

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

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

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the SEEPro database. The application compares the new data set 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.

Eighteen results were identified as potentially anomalous. All other sample results meet these criteria and are acceptable for use as qualified. Nine of the potentially anomalous results (for arsenic, selenium, or vanadium) were high outliers, but the results were reported as non-detects at detection limits that are higher than any of the historical maximums; these results are not misrepresentative of the population. Other outliers were the result of upward trending in the data. Two results (selenium in RFN01 0169 and arsenic in RFN01 0670) may be anomalous and future measurements should be closely examined. At this time, all data from this sampling event may be treated as validated results.

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: GEL Laboratories

RIN: 10113444

Report Date: 2/9/2011

Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Current Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0169	N001	11/18/2010	Ammonia Total as N	0.078	J	F	0.11		F	0.1	U	F	6	5	No
RFN01	0169	N001	11/18/2010	Arsenic	0.0016	U	F	0.001	U		0.00011	B		16	6	Yes
RFN01	0169	N001	11/18/2010	Selenium	0.001	UN	F	0.0281			0.0149			16	0	No
RFN01	0170	N001	11/16/2010	Ammonia Total as N	0.321		F	0.25		F	0.1	U	F	6	3	No
RFN01	0170	N001	11/16/2010	Arsenic	0.0016	U	F	0.001	U		0.00013	B	F	13	6	Yes
RFN01	0170	N001	11/16/2010	Nitrate + Nitrite as Nitrogen	16.4		F	37		F	17		F	6	0	No
RFN01	0170	N001	11/16/2010	Selenium	0.0101	N	F	0.0058		F	0.0029	B		13	0	Yes
RFN01	0172	N001	11/17/2010	Selenium	0.005	UN	F	0.0018		F	0.000096	B	F	14	8	No
RFN01	0195	N001	11/17/2010	Ammonia Total as N	0.309		F	46		F	0.97		FJ	8	0	No
RFN01	0195	N001	11/17/2010	Molybdenum	0.0334		F	0.6		FJ	0.035		F	17	0	No
RFN01	0201	N001	11/16/2010	Ammonia Total as N	82		F	130		F	93		F	9	0	No
RFN01	0201	N001	11/16/2010	Arsenic	0.0016	U	F	0.001	U		0.00021	B	F	18	5	Yes
RFN01	0215	N001	11/16/2010	Ammonia Total as N	0.556		F	13		F	3.2		F	13	0	No
RFN01	0215	N001	11/16/2010	Molybdenum	0.0115		F	0.1	U		0.013		F	23	1	No
RFN01	0217	N001	11/18/2010	Ammonia Total as N	45.9		F	110		F	53		FJ	10	0	No
RFN01	0217	N001	11/18/2010	Nitrate + Nitrite as Nitrogen	0.48	J	UF	23		F	1		F	10	0	No
RFN01	0217	N001	11/18/2010	Selenium	0.211	N	F	0.17		F	0.0018	B		13	0	No
RFN01	0217	N001	11/18/2010	Uranium	0.174		F	0.15		F	0.073		FJ	16	0	No

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: GEL Laboratories

RIN: 10113444

Report Date: 2/9/2011

Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Current Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0320	N001	11/18/2010	Molybdenum	3.01			2.7		J	1.09			11	0	No
RFN01	0320	N001	11/18/2010	Uranium	0.321			0.248			0.132			11	0	No
RFN01	0322	N001	11/17/2010	Arsenic	0.0016	U		0.0006	U		0.0002	B		13	6	Yes
RFN01	0322	N001	11/17/2010	Selenium	0.001	UN		0.00094		J	0.00014			13	0	No
RFN01	0323	N001	11/16/2010	Ammonia Total as N	23.5			44			26	J		10	0	No
RFN01	0323	N001	11/16/2010	Arsenic	0.0016	U		0.00057			0.00021			8	0	Yes
RFN01	0323	N001	11/16/2010	Molybdenum	3.02			2.5			1.1	J		11	0	No
RFN01	0323	N001	11/16/2010	Uranium	0.353			0.29			0.164			11	0	No
RFN01	0324	N001	11/17/2010	Ammonia Total as N	0.237			0.1	U	J	0.1	U	J	9	9	No
RFN01	0324	N001	11/17/2010	Selenium	0.001	UN		0.00069		J	0.00013			6	0	No
RFN01	0324	N001	11/17/2010	Uranium	0.00285			0.0025			0.00098			10	0	No
RFN01	0324	N001	11/17/2010	Vanadium	0.003	U		0.0026		J	0.00006	B		10	0	Yes
RFN01	0452	N002	11/18/2010	Ammonia Total as N	16.9			98			21	J		7	0	No
RFN01	0452	N001	11/18/2010	Ammonia Total as N	18.3			98			21	J		7	0	No
RFN01	0452	N002	11/18/2010	Arsenic	0.0245			0.018			0.002	B		5	0	No
RFN01	0452	N001	11/18/2010	Arsenic	0.0226			0.018			0.002	B		5	0	No
RFN01	0452	N001	11/18/2010	Selenium	0.0695	N		0.037			0.011			5	0	No
RFN01	0452	N002	11/18/2010	Selenium	0.0599	N		0.037			0.011			5	0	No

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: GEL Laboratories

RIN: 10113444

Report Date: 2/9/2011

Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Current Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0452	N002	11/18/2010	Vanadium	1.42			1.3			0.0449			8	0	No
RFN01	0452	N001	11/18/2010	Vanadium	1.46			1.3			0.0449			8	0	No
RFN01	0453	N001	11/18/2010	Nitrate + Nitrite as Nitrogen	2.5	U	R	210			28			7	0	No
RFN01	0453	N002	11/18/2010	Selenium	0.0793	N		0.039			0.013			6	0	Yes
RFN01	0453	N001	11/18/2010	Selenium	0.0827	N		0.039			0.013			6	0	Yes
RFN01	0590	N001	11/18/2010	Nitrate + Nitrite as Nitrogen	29.5		F	140		F	58		F	10	0	No
RFN01	0620	N001	11/17/2010	Ammonia Total as N	0.931		F	0.1	U	F	0.1	U	F	8	8	No
RFN01	0620	N001	11/17/2010	Selenium	0.0237	N	F	0.02	UI		0.0001	U		23	17	No
RFN01	0635	N001	11/17/2010	Ammonia Total as N	84.6		F	210		F	99		FJ	8	0	No
RFN01	0635	N001	11/17/2010	Selenium	0.001	UN	F	0.057	+	J	0.0018		F	25	2	No
RFN01	0658	N001	11/17/2010	Selenium	1.43	N	F	0.929			0.0671		FQ	21	0	No
RFN01	0659	N001	11/18/2010	Ammonia Total as N	32.3		F	92		F	35		FJ	13	0	No
RFN01	0659	N001	11/18/2010	Molybdenum	2.08		F	7.7			2.1		F	29	0	No
RFN01	0659	N001	11/18/2010	Nitrate + Nitrite as Nitrogen	9.18		F	50		F	14		F	13	0	No
RFN01	0664	N001	11/18/2010	Ammonia Total as N	17.5		F	57		F	34		FQ	12	0	No
RFN01	0669	0001	11/17/2010	Nitrate + Nitrite as Nitrogen	26.3		FQ	19		FQ	0.23		FQ	10	0	Yes
RFN01	0670	N001	11/18/2010	Arsenic	0.0175		FQ	0.0069		L	0.0045		F	12	0	Yes
RFN01	0670	N001	11/18/2010	Selenium	0.599	N	FQ	0.42		F	0.19			12	0	Yes

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: GEL Laboratories

RIN: 10113444

Report Date: 2/9/2011

Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Current Qualifiers		Historical Maximum Qualifiers			Historical Minimum Qualifiers			Number of Data Points		Statistical Outlier
						Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFO01	0294	N001	11/16/2010	Selenium	0.001	UN		0.00066			0.00024			9	0	Yes
RFO01	0294	N001	11/16/2010	Vanadium	0.003	U		0.00081			0.0003			9	0	Yes
RFO01	0304	N001	11/17/2010	Selenium	0.001	UN	F	0.0141			0.0011	F		29	0	No
RFO01	0396	N001	11/17/2010	Selenium	0.001	UN		0.00081			0.00017	B		21	1	No
RFO01	0656	N001	11/17/2010	Uranium	0.212		F	0.17	F		0.0318	F		29	0	Yes
RFO01	0658	N001	11/16/2010	Uranium	0.012		F	0.067	FJ		0.018	F		19	0	No
RFO01	0658	N001	11/16/2010	Vanadium	0.003	U	F	0.0023	F		0.00031	F		19	2	Yes
RFO01	0741	N001	11/17/2010	Uranium	0.0027			0.0025			0.00091			26	2	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

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Anomalous Data Review Checksheet

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Anomalous Data Review Checksheet

Site: New and Old Rifle Processing Site

Sampling Data: Groundwater and Surface Water

Reviewer: Gretchen Baer
Name (print)

[Signature]
Signature

2-22-2011
Date

Site Hydrologist: Richard Dayvault
Name (print)

[Signature]
Signature

2/22/11
Date

Date of Review: February 10, 2011

Loc. No.	Analyte	Type of Anomaly	Disposition
RFN01 0169	Arsenic	High	Result=non-detect at high det limit. Does not require further review.
RFN01 0169	Selenium	Below historical minimum	Compare to future results.
RFN01 0170	Arsenic	High	Result=non-detect at high det limit. Does not require further review.
RFN01 0170	Selenium	High	Upward trend. Does not require further review.
RFN01 0201	Arsenic	High	Result=non-detect at high det limit. Does not require further review.
RFN01 0322	Arsenic	High	Result=non-detect at high det limit. Does not require further review.
RFN01 0323	Arsenic	High	Result=non-detect at high det limit. Does not require further review.
RFN01 0323	Nitrate + Nitrite as Nitrogen	Low	Result was rejected due to lab error. Does not require further review.
RFN01 0324	Nitrate + Nitrite as Nitrogen	High	Result is close to detection limits. Does not require further review.
RFN01 0324	Vanadium	High	Result=non-detect at high det limit. Does not require further review.
RFN01 0453	Selenium	High	Upward trend. Verified by field dup & similar trend in nearby 0452. Does not require further review.
RFN01 0669	Nitrate + Nitrite as Nitrogen	High	Upward trend. Does not require further review.
RFN01 0670	Arsenic	High	Compare to future results.
RFN01 0670	Selenium	High	Upward trend. Does not require further review.
RFO01 0294	Selenium	High	Result=non-detect at high det limit. Does not require further review.
RFO01 0294	Vanadium	High	Result=non-detect at high det limit. Does not require further review.
RFO01 0656	Uranium	High	Upward trend. Does not require further review.
RFO01 0658	Vanadium	High	Result=non-detect at high det limit. Does not require further review.

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Attachment 2

Data Presentation

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**New Rifle
Groundwater Quality Data**

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

REPORT DATE: 2/10/2011

Location: 0169 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	3.13	- 18.13	418		F	#		
Ammonia Total as N	mg/L	11/18/2010	N001	3.13	- 18.13	0.078	J	F	#	0.016	
Arsenic	mg/L	11/18/2010	N001	3.13	- 18.13	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	3.13	- 18.13	0.00883		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	3.13	- 18.13	0.533	J	UF	#	0.25	
Oxidation Reduction Potential	mV	11/18/2010	N001	3.13	- 18.13	-41.9		F	#		
pH	s.u.	11/18/2010	N001	3.13	- 18.13	6.87		F	#		
Selenium	mg/L	11/18/2010	N001	3.13	- 18.13	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	3.13	- 18.13	1983		F	#		
Temperature	C	11/18/2010	N001	3.13	- 18.13	15.12		F	#		
Turbidity	NTU	11/18/2010	N001	3.13	- 18.13	1.75		F	#		
Uranium	mg/L	11/18/2010	N001	3.13	- 18.13	0.0182		F	#	0.00005	

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

REPORT DATE: 2/10/2011

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

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	92.23 - 112.23	506		F	#		
Ammonia Total as N	mg/L	11/16/2010	N001	92.23 - 112.23	0.321		F	#	0.016	
Arsenic	mg/L	11/16/2010	N001	92.23 - 112.23	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/16/2010	N001	92.23 - 112.23	0.00393		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2010	N001	92.23 - 112.23	16.4		F	#	0.25	
Oxidation Reduction Potential	mV	11/16/2010	N001	92.23 - 112.23	-11		F	#		
pH	s.u.	11/16/2010	N001	92.23 - 112.23	6.84		F	#		
Selenium	mg/L	11/16/2010	N001	92.23 - 112.23	0.0101	N	F	#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	92.23 - 112.23	3408		F	#		
Temperature	C	11/16/2010	N001	92.23 - 112.23	13.64		F	#		
Turbidity	NTU	11/16/2010	N001	92.23 - 112.23	0.91		F	#		
Uranium	mg/L	11/16/2010	N001	92.23 - 112.23	0.0582		F	#	0.00005	

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

REPORT DATE: 2/10/2011

Location: 0172 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	6.98	- 31.98	770		F	#		
Ammonia Total as N	mg/L	11/17/2010	N001	6.98	- 31.98	0.016	U	F	#	0.016	
Arsenic	mg/L	11/17/2010	N001	6.98	- 31.98	0.00567		F	#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	6.98	- 31.98	0.00689		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	6.98	- 31.98	0.458	J	UF	#	0.25	
Oxidation Reduction Potential	mV	11/17/2010	N001	6.98	- 31.98	-115		F	#		
pH	s.u.	11/17/2010	N001	6.98	- 31.98	6.93		F	#		
Selenium	mg/L	11/17/2010	N001	6.98	- 31.98	0.005	UN	F	#	0.005	
Specific Conductance	umhos/cm	11/17/2010	N001	6.98	- 31.98	19100		F	#		
Temperature	C	11/17/2010	N001	6.98	- 31.98	13.8		F	#		
Turbidity	NTU	11/17/2010	N001	6.98	- 31.98	5.01		F	#		
Uranium	mg/L	11/17/2010	N001	6.98	- 31.98	0.0718		F	#	0.00005	

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

REPORT DATE: 2/10/2011

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

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	5.29 - 25.29	565		F	#		
Ammonia Total as N	mg/L	11/17/2010	N001	5.29 - 25.29	0.309		F	#	0.016	
Arsenic	mg/L	11/17/2010	N001	5.29 - 25.29	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	5.29 - 25.29	0.0334		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	5.29 - 25.29	0.435	J	UF	#	0.25	
Oxidation Reduction Potential	mV	11/17/2010	N001	5.29 - 25.29	-170		F	#		
pH	s.u.	11/17/2010	N001	5.29 - 25.29	6.93		F	#		
Selenium	mg/L	11/17/2010	N001	5.29 - 25.29	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	5.29 - 25.29	1780		F	#		
Temperature	C	11/17/2010	N001	5.29 - 25.29	13.4		F	#		
Turbidity	NTU	11/17/2010	N001	5.29 - 25.29	6.53		F	#		
Uranium	mg/L	11/17/2010	N001	5.29 - 25.29	0.0219		F	#	0.00005	

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

REPORT DATE: 2/10/2011

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

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	7.35 - 22.35	244		F	#		
Ammonia Total as N	mg/L	11/16/2010	N001	7.35 - 22.35	82		F	#	0.8	
Arsenic	mg/L	11/16/2010	N001	7.35 - 22.35	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/16/2010	N001	7.35 - 22.35	1.75		F	#	0.00835	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2010	N001	7.35 - 22.35	72.5		F	#	0.5	
Oxidation Reduction Potential	mV	11/16/2010	N001	7.35 - 22.35	6		F	#		
pH	s.u.	11/16/2010	N001	7.35 - 22.35	6.74		F	#		
Selenium	mg/L	11/16/2010	N001	7.35 - 22.35	0.055	N	F	#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	7.35 - 22.35	4537		F	#		
Temperature	C	11/16/2010	N001	7.35 - 22.35	13.36		F	#		
Turbidity	NTU	11/16/2010	N001	7.35 - 22.35	1.34		F	#		
Uranium	mg/L	11/16/2010	N001	7.35 - 22.35	0.081		F	#	0.00005	

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

REPORT DATE: 2/10/2011

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

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	6.84 - 21.84	278		F	#		
Ammonia Total as N	mg/L	11/16/2010	N001	6.84 - 21.84	0.556		F	#	0.016	
Arsenic	mg/L	11/16/2010	N001	6.84 - 21.84	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/16/2010	N001	6.84 - 21.84	0.0115		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2010	N001	6.84 - 21.84	0.42	J	UF	#	0.25	
Oxidation Reduction Potential	mV	11/16/2010	N001	6.84 - 21.84	-13		F	#		
pH	s.u.	11/16/2010	N001	6.84 - 21.84	7.13		F	#		
Selenium	mg/L	11/16/2010	N001	6.84 - 21.84	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	6.84 - 21.84	1620		F	#		
Temperature	C	11/16/2010	N001	6.84 - 21.84	13.55		F	#		
Turbidity	NTU	11/16/2010	N001	6.84 - 21.84	0.59		F	#		
Uranium	mg/L	11/16/2010	N001	6.84 - 21.84	0.0238		F	#	0.00005	
Vanadium	mg/L	11/16/2010	N001	6.84 - 21.84	0.003	U	F	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0216 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	5.5	- 20.5	200		F	#		
Ammonia Total as N	mg/L	11/18/2010	N001	5.5	- 20.5	5.23		F	#	0.08	
Arsenic	mg/L	11/18/2010	N001	5.5	- 20.5	0.0341		F	#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	5.5	- 20.5	0.0523		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	5.5	- 20.5	0.468	J	UF	#	0.25	
Oxidation Reduction Potential	mV	11/18/2010	N001	5.5	- 20.5	40		F	#		
pH	s.u.	11/18/2010	N001	5.5	- 20.5	7.46		F	#		
Selenium	mg/L	11/18/2010	N001	5.5	- 20.5	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	5.5	- 20.5	855		F	#		
Temperature	C	11/18/2010	N001	5.5	- 20.5	13.7		F	#		
Turbidity	NTU	11/18/2010	N001	5.5	- 20.5	2.33		F	#		
Uranium	mg/L	11/18/2010	N001	5.5	- 20.5	0.0147		F	#	0.00005	
Vanadium	mg/L	11/18/2010	N001	5.5	- 20.5	0.201		F	#	0.015	

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

REPORT DATE: 2/10/2011

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

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	7.4	- 22.4	215		F	#		
Ammonia Total as N	mg/L	11/18/2010	N001	7.4	- 22.4	45.9		F	#	0.4	
Arsenic	mg/L	11/18/2010	N001	7.4	- 22.4	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	7.4	- 22.4	1.64		F	#	0.00334	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	7.4	- 22.4	0.48	J	UF	#	0.25	
Oxidation Reduction Potential	mV	11/18/2010	N001	7.4	- 22.4	230		F	#		
pH	s.u.	11/18/2010	N001	7.4	- 22.4	6.79		F	#		
Selenium	mg/L	11/18/2010	N001	7.4	- 22.4	0.211	N	F	#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	7.4	- 22.4	3545		F	#		
Temperature	C	11/18/2010	N001	7.4	- 22.4	11.2		F	#		
Turbidity	NTU	11/18/2010	N001	7.4	- 22.4	1.37		F	#		
Uranium	mg/L	11/18/2010	N001	7.4	- 22.4	0.174		F	#	0.00025	
Vanadium	mg/L	11/18/2010	N001	7.4	- 22.4	1.98		F	#	0.06	

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

REPORT DATE: 2/10/2011

Location: 0590 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	5.21	- 19.21	330		F	#		
Ammonia Total as N	mg/L	11/18/2010	N001	5.21	- 19.21	171		F	#	1.6	
Arsenic	mg/L	11/18/2010	N001	5.21	- 19.21	0.00396	B	F	#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	5.21	- 19.21	1.17		F	#	0.00334	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	5.21	- 19.21	29.5		F	#	0.25	
Oxidation Reduction Potential	mV	11/18/2010	N001	5.21	- 19.21	215		F	#		
pH	s.u.	11/18/2010	N001	5.21	- 19.21	6.67		F	#		
Selenium	mg/L	11/18/2010	N001	5.21	- 19.21	0.0375	N	F	#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	5.21	- 19.21	6100		F	#		
Temperature	C	11/18/2010	N001	5.21	- 19.21	11.4		F	#		
Turbidity	NTU	11/18/2010	N001	5.21	- 19.21	1.79		F	#		
Uranium	mg/L	11/18/2010	N001	5.21	- 19.21	0.0694		F	#	0.00005	
Vanadium	mg/L	11/18/2010	N001	5.21	- 19.21	0.313		F	#	0.015	

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

REPORT DATE: 2/10/2011

Location: 0620 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	6.7	- 10.7	525		F	#		
Ammonia Total as N	mg/L	11/17/2010	N001	6.7	- 10.7	0.931		F	#	0.016	
Arsenic	mg/L	11/17/2010	N001	6.7	- 10.7	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	6.7	- 10.7	0.0118		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	6.7	- 10.7	27.8		F	#	0.25	
Oxidation Reduction Potential	mV	11/17/2010	N001	6.7	- 10.7	209		F	#		
pH	s.u.	11/17/2010	N001	6.7	- 10.7	7.2		F	#		
Selenium	mg/L	11/17/2010	N001	6.7	- 10.7	0.0237	N	F	#	0.001	
Specific Conductance	umhos /cm	11/17/2010	N001	6.7	- 10.7	7200		F	#		
Temperature	C	11/17/2010	N001	6.7	- 10.7	13		F	#		
Turbidity	NTU	11/17/2010	N001	6.7	- 10.7	3.52		F	#		
Uranium	mg/L	11/17/2010	N001	6.7	- 10.7	0.0625		F	#	0.00005	

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

REPORT DATE: 2/10/2011

Location: 0635 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	12	- 17	260		F	#		
Ammonia Total as N	mg/L	11/17/2010	N001	12	- 17	84.6		F	#	0.8	
Arsenic	mg/L	11/17/2010	N001	12	- 17	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	12	- 17	0.442		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	12	- 17	9.85		F	#	0.5	
Oxidation Reduction Potential	mV	11/17/2010	N001	12	- 17	-95		F	#		
pH	s.u.	11/17/2010	N001	12	- 17	6.84		F	#		
Selenium	mg/L	11/17/2010	N001	12	- 17	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	12	- 17	3400		F	#		
Temperature	C	11/17/2010	N001	12	- 17	12.4		F	#		
Turbidity	NTU	11/17/2010	N001	12	- 17	3.26		F	#		
Uranium	mg/L	11/17/2010	N001	12	- 17	0.0633		F	#	0.00005	

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

REPORT DATE: 2/10/2011

Location: 0658 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	.5	- 5.5	290		F	#		
Ammonia Total as N	mg/L	11/17/2010	N001	.5	- 5.5	57.6		F	#	0.8	
Arsenic	mg/L	11/17/2010	N001	.5	- 5.5	0.151		F	#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	.5	- 5.5	2.17		F	#	0.00835	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	.5	- 5.5	30.2		F	#	0.5	
Oxidation Reduction Potential	mV	11/17/2010	N001	.5	- 5.5	104		F	#		
pH	s.u.	11/17/2010	N001	.5	- 5.5	6.68		F	#		
Selenium	mg/L	11/17/2010	N001	.5	- 5.5	1.43	N	F	#	0.05	
Specific Conductance	umhos/cm	11/17/2010	N001	.5	- 5.5	3125		F	#		
Temperature	C	11/17/2010	N001	.5	- 5.5	13.9		F	#		
Turbidity	NTU	11/17/2010	N001	.5	- 5.5	8.15		F	#		
Uranium	mg/L	11/17/2010	N001	.5	- 5.5	0.0604		F	#	0.00005	
Vanadium	mg/L	11/17/2010	N001	.5	- 5.5	49.7		F	#	3	

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

REPORT DATE: 2/10/2011

Location: 0659 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	.5	- 10.5	190		F	#		
Ammonia Total as N	mg/L	11/18/2010	N001	.5	- 10.5	32.3		F	#	0.4	
Arsenic	mg/L	11/18/2010	N001	.5	- 10.5	0.0179		F	#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	.5	- 10.5	2.08		F	#	0.00835	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	.5	- 10.5	9.18		F	#	0.25	
Oxidation Reduction Potential	mV	11/18/2010	N001	.5	- 10.5	215		F	#		
pH	s.u.	11/18/2010	N001	.5	- 10.5	7		F	#		
Selenium	mg/L	11/18/2010	N001	.5	- 10.5	0.0566	N	F	#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	.5	- 10.5	3600		F	#		
Temperature	C	11/18/2010	N001	.5	- 10.5	12.4		F	#		
Turbidity	NTU	11/18/2010	N001	.5	- 10.5	2.59		F	#		
Uranium	mg/L	11/18/2010	N001	.5	- 10.5	0.0945		F	#	0.00005	
Vanadium	mg/L	11/18/2010	N001	.5	- 10.5	1.3		F	#	0.06	

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

REPORT DATE: 2/10/2011

Location: 0664 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	7.7	- 14.7	440		F	#		
Ammonia Total as N	mg/L	11/18/2010	N001	7.7	- 14.7	17.5		F	#	0.4	
Arsenic	mg/L	11/18/2010	N001	7.7	- 14.7	0.0016	U	F	#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	7.7	- 14.7	0.48		F	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	7.7	- 14.7	10.2		F	#	0.25	
Oxidation Reduction Potential	mV	11/18/2010	N001	7.7	- 14.7	95		F	#		
pH	s.u.	11/18/2010	N001	7.7	- 14.7	6.71		F	#		
Selenium	mg/L	11/18/2010	N001	7.7	- 14.7	0.0786	N	F	#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	7.7	- 14.7	2800		F	#		
Temperature	C	11/18/2010	N001	7.7	- 14.7	13.8		F	#		
Turbidity	NTU	11/18/2010	N001	7.7	- 14.7	8.09		F	#		
Uranium	mg/L	11/18/2010	N001	7.7	- 14.7	0.0801		F	#	0.00005	
Vanadium	mg/L	11/18/2010	N001	7.7	- 14.7	0.903		F	#	0.075	

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

REPORT DATE: 2/10/2011

Location: 0669 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	0001	4	- 10.6	330		FQ	#		
Ammonia Total as N	mg/L	11/17/2010	0001	4	- 10.6	101		FQ	#	1.6	
Arsenic	mg/L	11/17/2010	0001	4	- 10.6	0.00754		FQ	#	0.0016	
Molybdenum	mg/L	11/17/2010	0001	4	- 10.6	1.56		FQ	#	0.00835	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	0001	4	- 10.6	26.3		FQ	#	0.25	
Oxidation Reduction Potential	mV	11/17/2010	N001	4	- 10.6	55		FQ	#		
pH	s.u.	11/17/2010	N001	4	- 10.6	6.81		FQ	#		
Selenium	mg/L	11/17/2010	0001	4	- 10.6	0.0145	N	FQ	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	4	- 10.6	3915		FQ	#		
Temperature	C	11/17/2010	N001	4	- 10.6	13.5		FQ	#		
Turbidity	NTU	11/17/2010	N001	4	- 10.6	1000		FQ	#		
Uranium	mg/L	11/17/2010	0001	4	- 10.6	0.13		FQ	#	0.00025	
Vanadium	mg/L	11/17/2010	0001	4	- 10.6	3.2		FQ	#	0.15	

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

REPORT DATE: 2/10/2011

Location: 0670 WELL For Organics Study.

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	5.2	- 12.2	350		FQ	#		
Ammonia Total as N	mg/L	11/18/2010	N001	5.2	- 12.2	7.49		FQ	#	0.16	
Arsenic	mg/L	11/18/2010	N001	5.2	- 12.2	0.0175		FQ	#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	5.2	- 12.2	0.37		FQ	#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	5.2	- 12.2	2.97		FQ	#	0.5	
Oxidation Reduction Potential	mV	11/18/2010	N001	5.2	- 12.2	-4		FQ	#		
pH	s.u.	11/18/2010	N001	5.2	- 12.2	6.81		FQ	#		
Selenium	mg/L	11/18/2010	N001	5.2	- 12.2	0.599	N	FQ	#	0.02	
Specific Conductance	umhos/cm	11/18/2010	N001	5.2	- 12.2	2513		FQ	#		
Temperature	C	11/18/2010	N001	5.2	- 12.2	13.18		FQ	#		
Turbidity	NTU	11/18/2010	N001	5.2	- 12.2	5.2		FQ	#		
Uranium	mg/L	11/18/2010	N001	5.2	- 12.2	0.135		FQ	#	0.00025	
Vanadium	mg/L	11/18/2010	N001	5.2	- 12.2	2.15		FQ	#	0.15	

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

REPORT DATE: 2/10/2011

Location: 0855 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Lab	Data	QA						
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	6	-	11	250		F	#		
Ammonia Total as N	mg/L	11/17/2010	N001	6	-	11	37		F	#	0.8	
Arsenic	mg/L	11/17/2010	N001	6	-	11	0.814		F	#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	6	-	11	1.75		F	#	0.00418	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	6	-	11	18.4		F	#	0.25	
Oxidation Reduction Potential	mV	11/17/2010	N001	6	-	11	100		F	#		
pH	s.u.	11/17/2010	N001	6	-	11	6.54		F	#		
Selenium	mg/L	11/17/2010	N001	6	-	11	1.58	N	F	#	0.025	
Specific Conductance	umhos/cm	11/17/2010	N001	6	-	11	3025		JF	#		
Temperature	C	11/17/2010	N001	6	-	11	14.5		F	#		
Turbidity	NTU	11/17/2010	N001	6	-	11	2.62		F	#		
Uranium	mg/L	11/17/2010	N001	6	-	11	0.0382		F	#	0.00005	
Vanadium	mg/L	11/17/2010	N001	6	-	11	41.2		F	#	1.5	

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**

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

REPORT DATE: 2/10/2011

Location: 0292A WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	10.5	- 20.5	464		F	#		
Dissolved Oxygen	mg/L	11/16/2010	N001	10.5	- 20.5	1.81		F	#		
Field Ferrous Iron	mg/L	11/16/2010	N001	10.5	- 20.5	0.1		F	#		
Oxidation Reduction Potential	mV	11/16/2010	N001	10.5	- 20.5	4		F	#		
pH	s.u.	11/16/2010	N001	10.5	- 20.5	6.96		F	#		
Selenium	mg/L	11/16/2010	N001	10.5	- 20.5	0.001	UN	F	#	0.001	
Selenium	mg/L	11/16/2010	N002	10.5	- 20.5	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	10.5	- 20.5	2052		F	#		
Temperature	C	11/16/2010	N001	10.5	- 20.5	13.93		F	#		
Turbidity	NTU	11/16/2010	N001	10.5	- 20.5	2.74		F	#		
Uranium	mg/L	11/16/2010	N001	10.5	- 20.5	0.0298		F	#	0.00005	
Uranium	mg/L	11/16/2010	N002	10.5	- 20.5	0.0295		F	#	0.00005	
Vanadium	mg/L	11/16/2010	N001	10.5	- 20.5	0.003	U	F	#	0.003	
Vanadium	mg/L	11/16/2010	N002	10.5	- 20.5	0.003	U	F	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0304 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	13.2	- 18.2	281		F	#		
Dissolved Oxygen	mg/L	11/17/2010	N001	13.2	- 18.2	1.37		F	#		
Field Ferrous Iron	mg/L	11/17/2010	N001	13.2	- 18.2	0.31		F	#		
Oxidation Reduction Potential	mV	11/17/2010	N001	13.2	- 18.2	17		F	#		
pH	s.u.	11/17/2010	N001	13.2	- 18.2	7.03		F	#		
Selenium	mg/L	11/17/2010	N001	13.2	- 18.2	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	13.2	- 18.2	1919		F	#		
Temperature	C	11/17/2010	N001	13.2	- 18.2	14.15		F	#		
Turbidity	NTU	11/17/2010	N001	13.2	- 18.2	1.92		F	#		
Uranium	mg/L	11/17/2010	N001	13.2	- 18.2	0.0364		F	#	0.00005	
Vanadium	mg/L	11/17/2010	N001	13.2	- 18.2	0.0361		JF	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0305 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	13.76 - 18.76	360		F	#		
Dissolved Oxygen	mg/L	11/17/2010	N001	13.76 - 18.76	0.67		F	#		
Field Ferrous Iron	mg/L	11/17/2010	N001	13.76 - 18.76	0.03		F	#		
Oxidation Reduction Potential	mV	11/17/2010	N001	13.76 - 18.76	38		F	#		
pH	s.u.	11/17/2010	N001	13.76 - 18.76	7.11		F	#		
Selenium	mg/L	11/17/2010	N001	13.76 - 18.76	0.0301	N	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	13.76 - 18.76	1907		F	#		
Temperature	C	11/17/2010	N001	13.76 - 18.76	14.01		F	#		
Turbidity	NTU	11/17/2010	N001	13.76 - 18.76	0.94		F	#		
Uranium	mg/L	11/17/2010	N001	13.76 - 18.76	0.0787		F	#	0.00005	
Vanadium	mg/L	11/17/2010	N001	13.76 - 18.76	0.713		F	#	0.03	

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

REPORT DATE: 2/10/2011

Location: 0309 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	16.93 - 21.93	348		F	#		
Dissolved Oxygen	mg/L	11/17/2010	N001	16.93 - 21.93	1.56		F	#		
Field Ferrous Iron	mg/L	11/17/2010	N001	16.93 - 21.93	0.48		F	#		
Oxidation Reduction Potential	mV	11/17/2010	N001	16.93 - 21.93	-25		F	#		
pH	s.u.	11/17/2010	N001	16.93 - 21.93	6.94		F	#		
Selenium	mg/L	11/17/2010	N001	16.93 - 21.93	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	16.93 - 21.93	2429		F	#		
Temperature	C	11/17/2010	N001	16.93 - 21.93	14.81		F	#		
Turbidity	NTU	11/17/2010	N001	16.93 - 21.93	1.34		F	#		
Uranium	mg/L	11/17/2010	N001	16.93 - 21.93	0.0197		F	#	0.00005	
Vanadium	mg/L	11/17/2010	N001	16.93 - 21.93	0.003	U	F	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0310 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	17.93 - 22.93	440		F	#		
Dissolved Oxygen	mg/L	11/17/2010	N001	17.93 - 22.93	1.1		F	#		
Field Ferrous Iron	mg/L	11/17/2010	N001	17.93 - 22.93	0.7		F	#		
Oxidation Reduction Potential	mV	11/17/2010	N001	17.93 - 22.93	5		F	#		
pH	s.u.	11/17/2010	N001	17.93 - 22.93	7.01		F	#		
Selenium	mg/L	11/17/2010	N001	17.93 - 22.93	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	17.93 - 22.93	2875		F	#		
Temperature	C	11/17/2010	N001	17.93 - 22.93	14.45		F	#		
Turbidity	NTU	11/17/2010	N001	17.93 - 22.93	2.96		F	#		
Uranium	mg/L	11/17/2010	N001	17.93 - 22.93	0.207		F	#	0.00025	
Vanadium	mg/L	11/17/2010	N001	17.93 - 22.93	0.00806	B	JF	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0655 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	13.6	- 23.6	440		F	#		
Dissolved Oxygen	mg/L	11/17/2010	N001	13.6	- 23.6	1.14		F	#		
Field Ferrous Iron	mg/L	11/17/2010	N001	13.6	- 23.6	0.02		F	#		
Oxidation Reduction Potential	mV	11/17/2010	N001	13.6	- 23.6	-11		F	#		
pH	s.u.	11/17/2010	N001	13.6	- 23.6	6.85		F	#		
Selenium	mg/L	11/17/2010	N001	13.6	- 23.6	0.0611	N	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	13.6	- 23.6	2801		F	#		
Temperature	C	11/17/2010	N001	13.6	- 23.6	14.39		F	#		
Turbidity	NTU	11/17/2010	N001	13.6	- 23.6	2.07		F	#		
Uranium	mg/L	11/17/2010	N001	13.6	- 23.6	0.146		F	#	0.00025	
Vanadium	mg/L	11/17/2010	N001	13.6	- 23.6	0.359		F	#	0.015	

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

REPORT DATE: 2/10/2011

Location: 0656 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	6.35 - 21.35	360		F	#		
Dissolved Oxygen	mg/L	11/17/2010	N001	6.35 - 21.35	0.83		F	#		
Field Ferrous Iron	mg/L	11/17/2010	N001	6.35 - 21.35	0.03		F	#		
Oxidation Reduction Potential	mV	11/17/2010	N001	6.35 - 21.35	-25		F	#		
pH	s.u.	11/17/2010	N001	6.35 - 21.35	6.91		F	#		
Selenium	mg/L	11/17/2010	N001	6.35 - 21.35	0.0025	BN	F	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	6.35 - 21.35	2198		F	#		
Temperature	C	11/17/2010	N001	6.35 - 21.35	16.76		F	#		
Turbidity	NTU	11/17/2010	N001	6.35 - 21.35	1.04		F	#		
Uranium	mg/L	11/17/2010	N001	6.35 - 21.35	0.212		F	#	0.00025	
Vanadium	mg/L	11/17/2010	N001	6.35 - 21.35	0.0183		F	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0658 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	2.3	- 17.3	454		F	#		
Dissolved Oxygen	mg/L	11/16/2010	N001	2.3	- 17.3	0.74		F	#		
Field Ferrous Iron	mg/L	11/16/2010	N001	2.3	- 17.3	0.01		F	#		
Oxidation Reduction Potential	mV	11/16/2010	N001	2.3	- 17.3	-11		F	#		
pH	s.u.	11/16/2010	N001	2.3	- 17.3	6.81		F	#		
Selenium	mg/L	11/16/2010	N001	2.3	- 17.3	0.001	UN	F	#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	2.3	- 17.3	1617		F	#		
Temperature	C	11/16/2010	N001	2.3	- 17.3	10.89		F	#		
Turbidity	NTU	11/16/2010	N001	2.3	- 17.3	0.9		F	#		
Uranium	mg/L	11/16/2010	N001	2.3	- 17.3	0.012		F	#	0.00005	
Vanadium	mg/L	11/16/2010	N001	2.3	- 17.3	0.003	U	F	#	0.003	

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.

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**New Rifle
Surface Water Quality Data**

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

REPORT DATE: 2/10/2011

Location: 0320 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	115			#		
Ammonia Total as N	mg/L	11/18/2010	N001	11.2			#	0.16	
Arsenic	mg/L	11/18/2010	N001	0.00328	B		#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	3.01			#	0.000835	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	23.2			#	0.25	
Oxidation Reduction Potential	mV	11/18/2010	N001	210			#		
pH	s.u.	11/18/2010	N001	7.02			#		
Selenium	mg/L	11/18/2010	N001	0.0318	N	J	#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	9900			#		
Temperature	C	11/18/2010	N001	5			#		
Turbidity	NTU	11/18/2010	N001	5.2			#		
Uranium	mg/L	11/18/2010	N001	0.321			#	0.00025	
Vanadium	mg/L	11/18/2010	N001	0.214			#	0.015	

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

REPORT DATE: 2/10/2011

Location: 0322 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	140		#		
Ammonia Total as N	mg/L	11/17/2010	N001	0.124		#	0.016	
Arsenic	mg/L	11/17/2010	N001	0.0016	U	#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	0.0053		#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	0.25	U	#	0.25	
Oxidation Reduction Potential	mV	11/17/2010	N001	-90		#		
pH	s.u.	11/17/2010	N001	8.46		#		
Selenium	mg/L	11/17/2010	N001	0.001	UN	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	1260		#		
Temperature	C	11/17/2010	N001	6.34		#		
Turbidity	NTU	11/17/2010	N001	9.2		#		
Uranium	mg/L	11/17/2010	N001	0.00296		#	0.00005	
Vanadium	mg/L	11/17/2010	N001	0.003	U	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0323 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	172			#		
Ammonia Total as N	mg/L	11/16/2010	N001	23.5			#	0.4	
Arsenic	mg/L	11/16/2010	N001	0.0016	U		#	0.0016	
Molybdenum	mg/L	11/16/2010	N001	3.02			#	0.000835	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2010	N001	2.5	U	R	#	2.5	
Oxidation Reduction Potential	mV	11/16/2010	N001	13			#		
pH	s.u.	11/16/2010	N001	7.88			#		
Selenium	mg/L	11/16/2010	N001	0.00959	N		#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	9664			#		
Temperature	C	11/16/2010	N001	7.07			#		
Turbidity	NTU	11/16/2010	N001	1.77			#		
Uranium	mg/L	11/16/2010	N001	0.353			#	0.00025	
Vanadium	mg/L	11/16/2010	N001	0.003	U		#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0324 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	130			#		
Ammonia Total as N	mg/L	11/17/2010	N001	0.237			#	0.016	
Arsenic	mg/L	11/17/2010	N001	0.0016	U		#	0.0016	
Molybdenum	mg/L	11/17/2010	N001	0.00828			#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2010	N001	0.518	J	U	#	0.25	
Oxidation Reduction Potential	mV	11/17/2010	N001	160			#		
pH	s.u.	11/17/2010	N001	8.2			#		
Selenium	mg/L	11/17/2010	N001	0.001	UN		#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	1270			#		
Temperature	C	11/17/2010	N001	5.4			#		
Turbidity	NTU	11/17/2010	N001	4.51			#		
Uranium	mg/L	11/17/2010	N001	0.00285			#	0.00005	
Vanadium	mg/L	11/17/2010	N001	0.003	U		#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0452 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	140			#		
Ammonia Total as N	mg/L	11/18/2010	N001	18.3			#	0.4	
Arsenic	mg/L	11/18/2010	N001	0.0226			#	0.0016	
Molybdenum	mg/L	11/18/2010	N001	4.14			#	0.00334	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	2.5	U	R	#	2.5	
Oxidation Reduction Potential	mV	11/18/2010	N001	195			#		
pH	s.u.	11/18/2010	N001	7.56			#		
Selenium	mg/L	11/18/2010	N001	0.0695	N		#	0.001	
Specific Conductance	umhos/cm	11/18/2010	N001	7470			#		
Temperature	C	11/18/2010	N001	4.2			#		
Turbidity	NTU	11/18/2010	N001	9.85			#		
Uranium	mg/L	11/18/2010	N001	0.0864			#	0.00005	
Vanadium	mg/L	11/18/2010	N001	1.46			#	0.06	
Ammonia Total as N	mg/L	11/18/2010	N002	16.9			#	0.16	
Arsenic	mg/L	11/18/2010	N002	0.0245			#	0.0016	
Molybdenum	mg/L	11/18/2010	N002	4.19			#	0.0167	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N002	62.5			#	2.5	
Selenium	mg/L	11/18/2010	N002	0.0599	N		#	0.001	
Uranium	mg/L	11/18/2010	N002	0.0949			#	0.00005	
Vanadium	mg/L	11/18/2010	N002	1.42			#	0.06	

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

REPORT DATE: 2/10/2011

Location: 0453 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO3)	mg/L	11/18/2010	N001	60			#	
Ammonia Total as N	mg/L	11/18/2010	N001	31.3			#	0.4
Arsenic	mg/L	11/18/2010	N001	0.0323			#	0.0016
Molybdenum	mg/L	11/18/2010	N001	3.3			#	0.00835
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N001	2.5	U	R	#	2.5
Oxidation Reduction Potential	mV	11/18/2010	N001	215			#	
pH	s.u.	11/18/2010	N001	7.07			#	
Selenium	mg/L	11/18/2010	N001	0.0827	N		#	0.001
Specific Conductance	umhos/cm	11/18/2010	N001	5065			#	
Temperature	C	11/18/2010	N001	2.9			#	
Turbidity	NTU	11/18/2010	N001	2.6			#	
Uranium	mg/L	11/18/2010	N001	0.0207			#	0.00005
Vanadium	mg/L	11/18/2010	N001	2.31			#	0.15
Ammonia Total as N	mg/L	11/18/2010	N002	30.6			#	0.4
Arsenic	mg/L	11/18/2010	N002	0.0357			#	0.0016
Molybdenum	mg/L	11/18/2010	N002	3.28			#	0.00835
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2010	N002	28			#	2.5
Selenium	mg/L	11/18/2010	N002	0.0793	N		#	0.001
Uranium	mg/L	11/18/2010	N002	0.0208			#	0.00005
Vanadium	mg/L	11/18/2010	N002	2.4			#	0.15

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

REPORT DATE: 2/10/2011

Location: 0575 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	200			#		
Ammonia Total as N	mg/L	11/16/2010	N001	0.321			#	0.016	
Arsenic	mg/L	11/16/2010	N001	0.0016	U		#	0.0016	
Molybdenum	mg/L	11/16/2010	N001	0.0377			#	0.000167	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2010	N001	0.458	J	U	#	0.25	
Oxidation Reduction Potential	mV	11/16/2010	N001	-27			#		
pH	s.u.	11/16/2010	N001	8.28			#		
Selenium	mg/L	11/16/2010	N001	0.001	UN		#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	1700			#		
Temperature	C	11/16/2010	N001	7.77			#		
Turbidity	NTU	11/16/2010	N001	3.76			#		
Uranium	mg/L	11/16/2010	N001	0.0187			#	0.00005	
Vanadium	mg/L	11/16/2010	N001	0.003	U		#	0.003	

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
Surface Water Quality Data**

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

REPORT DATE: 2/10/2011

Location: 0294 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO3)	mg/L	11/16/2010	N001	152		#		
Dissolved Oxygen	mg/L	11/16/2010	N001	10.27		#		
Field Ferrous Iron	mg/L	11/16/2010	N001	0.07		#		
Oxidation Reduction Potential	mV	11/16/2010	N001	27		#		
pH	s.u.	11/16/2010	N001	8.14		#		
Selenium	mg/L	11/16/2010	N001	0.001	UN	#	0.001	
Specific Conductance	umhos/cm	11/16/2010	N001	1188		#		
Temperature	C	11/16/2010	N001	4.68		#		
Turbidity	NTU	11/16/2010	N001	3.18		#		
Uranium	mg/L	11/16/2010	N001	0.00269		#	0.00005	
Vanadium	mg/L	11/16/2010	N001	0.003	U	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0396 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	125		#		
Dissolved Oxygen	mg/L	11/17/2010	N001	11.57		#		
Field Ferrous Iron	mg/L	11/17/2010	N001	0.05		#		
Oxidation Reduction Potential	mV	11/17/2010	N001	-4		#		
pH	s.u.	11/17/2010	N001	8		#		
Selenium	mg/L	11/17/2010	N001	0.001	UN	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	1299		#		
Temperature	C	11/17/2010	N001	5.6		#		
Turbidity	NTU	11/17/2010	N001	4.07		#		
Uranium	mg/L	11/17/2010	N001	0.00266		#	0.00005	
Vanadium	mg/L	11/17/2010	N001	0.003	U	#	0.003	

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

REPORT DATE: 2/10/2011

Location: 0741 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Alkalinity, Total (As CaCO3)	mg/L	11/17/2010	N001	124		#		
Dissolved Oxygen	mg/L	11/17/2010	N001	10.96		#		
Field Ferrous Iron	mg/L	11/17/2010	N001	0.01		#		
Oxidation Reduction Potential	mV	11/17/2010	N001	-26		#		
pH	s.u.	11/17/2010	N001	7.93		#		
Selenium	mg/L	11/17/2010	N001	0.001	UN	#	0.001	
Specific Conductance	umhos/cm	11/17/2010	N001	1187		#		
Temperature	C	11/17/2010	N001	10.82		#		
Turbidity	NTU	11/17/2010	N001	3.49		#		
Uranium	mg/L	11/17/2010	N001	0.0027		#	0.00005	
Vanadium	mg/L	11/17/2010	N001	0.003	U	#	0.003	

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

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

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

Equipment Blank Data

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BLANKS REPORT

LAB: GENERAL ENGINEERING (Charleston, SC)

RIN: 10113444

Report Date: 2/10/2011

Parameter	Site Code	Location ID	Sample		Units	Result	Qualifiers		Detection Limit	Uncertainty	Sample Type
			Date	ID			Lab	Data			
Ammonia Total as N	RFO01	0999	11/16/2010	N001	mg/L	0.016	U		0.016		E
Arsenic	RFO01	0999	11/16/2010	N001	mg/L	0.0016	U		0.0016		E
Molybdenum	RFO01	0999	11/16/2010	N001	mg/L	0.000249	B	U	0.000167		E
Nitrate + Nitrite as Nitrogen	RFO01	0999	11/16/2010	N001	mg/L	0.44	J	U	0.25		E
Selenium	RFO01	0999	11/16/2010	N001	mg/L	0.001	UN		0.001		E
Uranium	RFO01	0999	11/16/2010	N001	mg/L	0.00005	U		0.00005		E
Vanadium	RFO01	0999	11/16/2010	N001	mg/L	0.003	U		0.003		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.

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Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 2/10/2011

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
0169	U	5275.47	11/18/2010	11:55:23	9.21	5266.26	
0170	D	5332.97	11/16/2010	13:40:49	93.99	5238.98	
0172	D	5229.45	11/17/2010	12:00:51	15.88	5213.57	
0195	D	5253.1	11/17/2010	12:40:02	9.8	5243.3	
0201	D	5261.07	11/16/2010	15:00:51	13.14	5247.93	
0215	O	5271.42	11/16/2010	15:40:41	11.89	5259.53	
0216	O	5265.41	11/18/2010	12:05:57	7.81	5257.6	
0217	D	5256.98	11/18/2010	11:00:29	5.11	5251.87	
0590	D	5256.37	11/18/2010	10:05:53	7.2	5249.17	
0620	D	5231.22	11/17/2010	10:50:25	10.2	5221.02	
0635	D	5253.12	11/17/2010	13:35:00	5.82	5247.3	
0658	O	5265.91	11/17/2010	14:45:18	7.51	5258.4	
0659	O	5261.33	11/18/2010	11:35:49	7.22	5254.11	
0664	O	5270.17	11/18/2010	12:30:04	13.74	5256.43	
0669	O	5266.56	11/17/2010	15:15:50	10.39	5256.17	
0670	O	5270.94	11/18/2010	12:10:19	13.5	5257.44	
0855	O	5267.24	11/17/2010	14:25:05	8.89	5258.35	

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 E TOP OF CASING ELEVATION DATA NOT AVAILABLE

STATIC WATER LEVELS (USEE700) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 2/10/2011

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0292A		5323.08	11/16/2010	11:35:58	12.24	5310.84	
0304	O	5310.63	11/17/2010	10:00:45	11.5	5299.13	
0305	O	5312.08	11/17/2010	09:40:13	12.43	5299.65	
0309	O	5313.37	11/17/2010	11:55:40	15.84	5297.53	
0310	O	5311.64	11/17/2010	10:50:28	13.74	5297.9	
0655	O	5312.87	11/17/2010	13:00:49	13.59	5299.28	
0656	O	5313.28	11/17/2010	15:05:02	13.3	5299.98	
0658	U	5323.07	11/16/2010	12:10:29	7.72	5315.35	

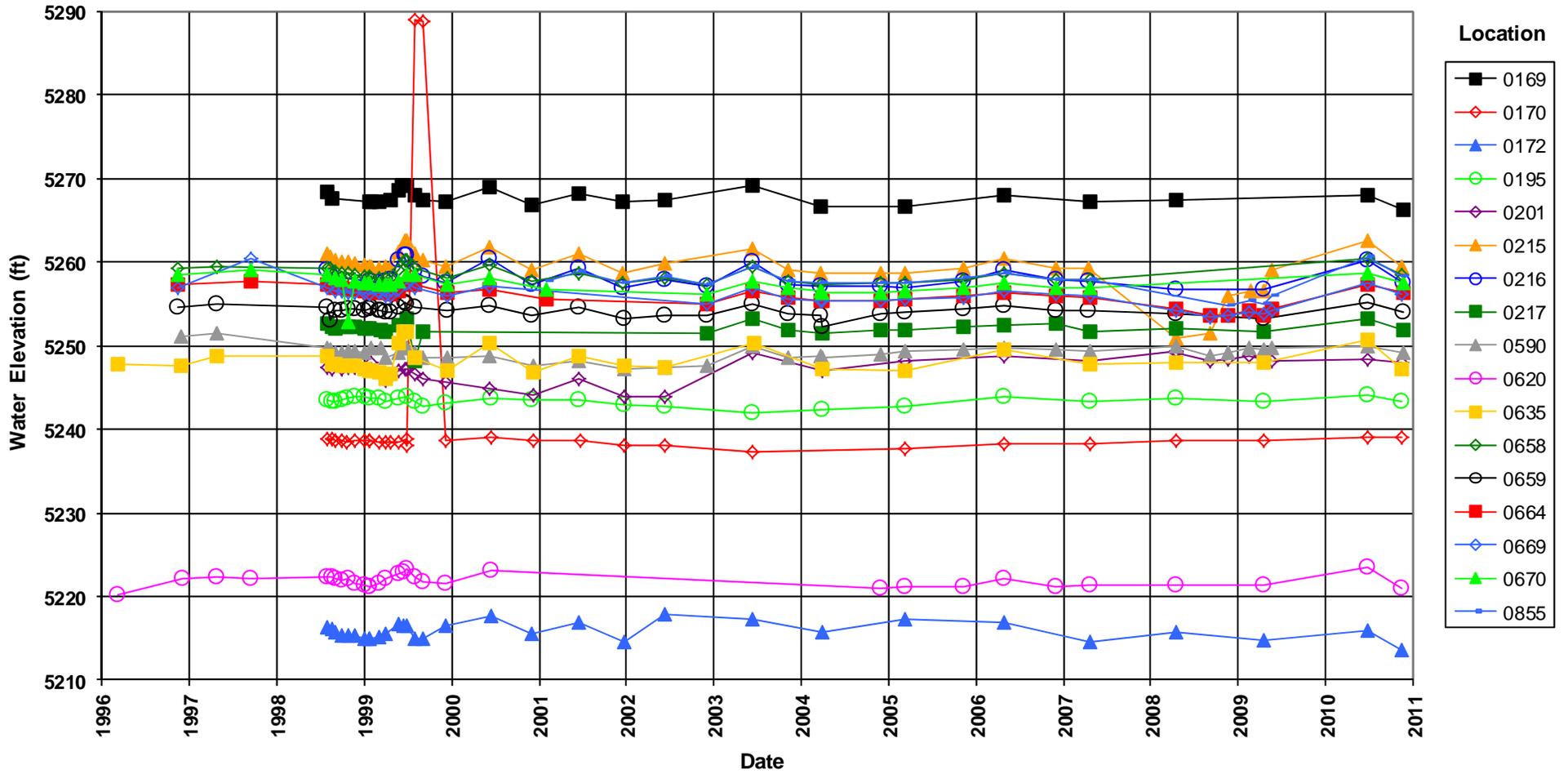
FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
 N UNKNOWN O ON SITE U UPGRADIENT

WATER LEVEL FLAGS: D Dry F FLOWING E TOP OF CASING ELEVATION DATA NOT AVAILABLE

New Rifle Hydrograph

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Rifle New Processing Site Hydrograph

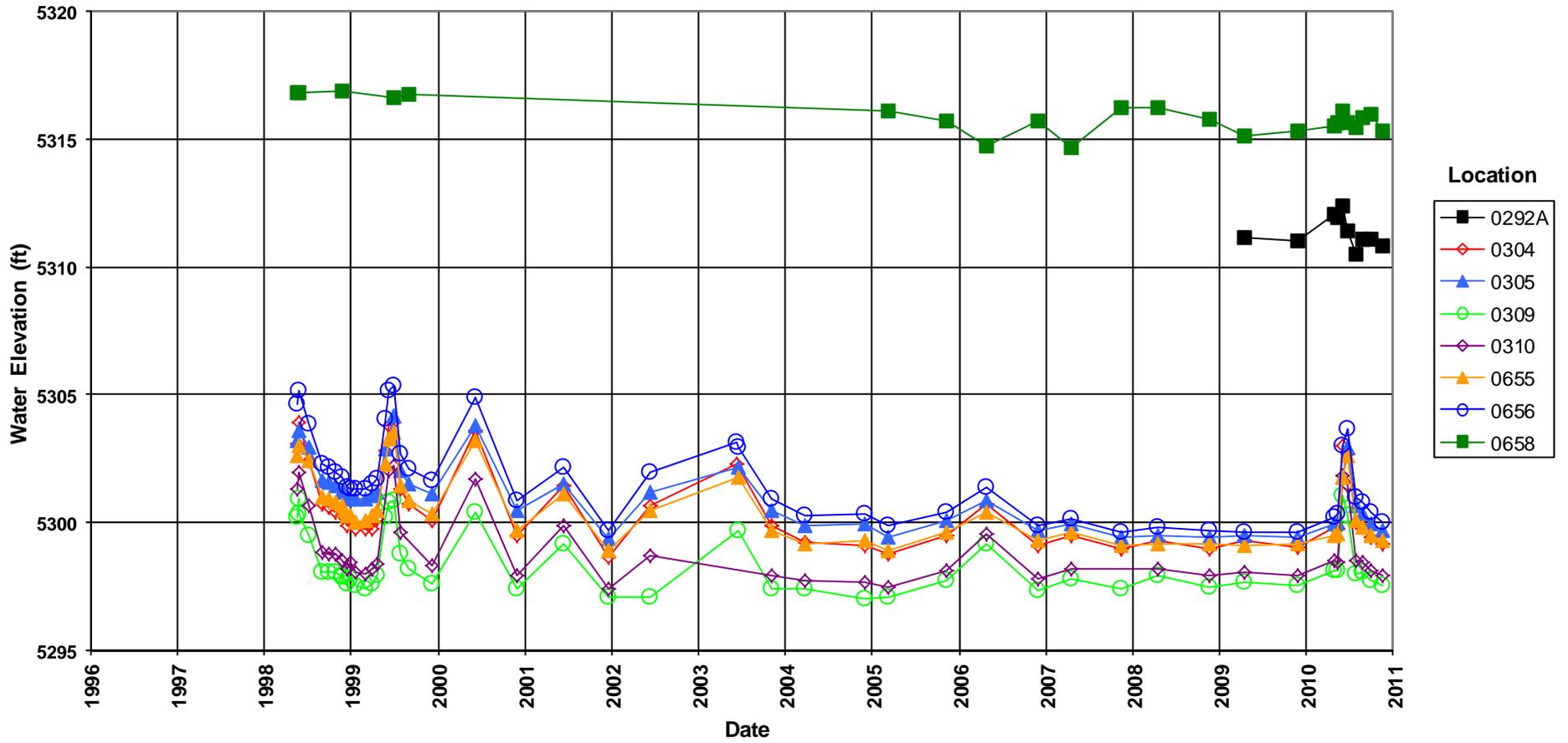


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Old Rifle Hydrograph

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Rifle Old Processing Site Hydrograph

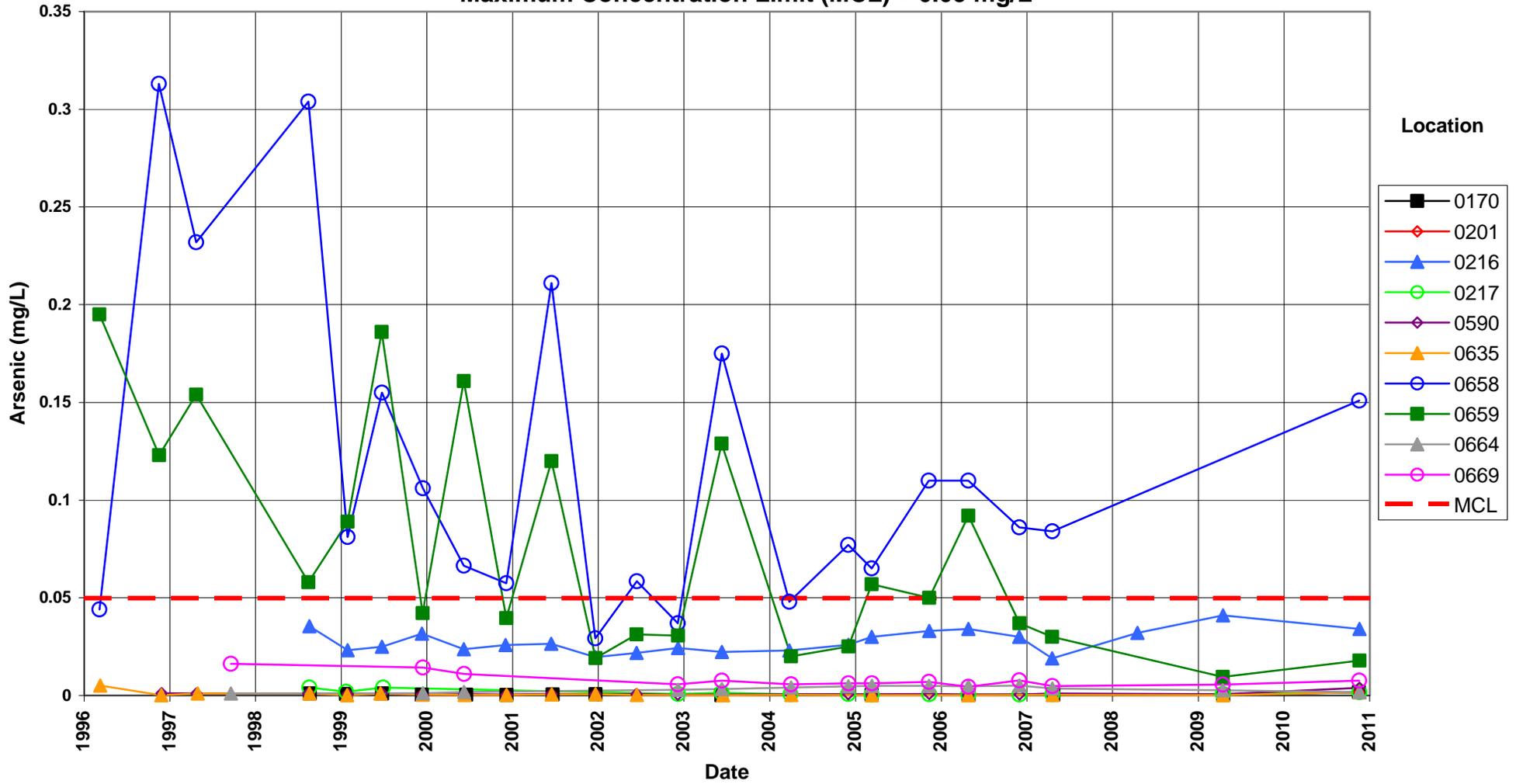


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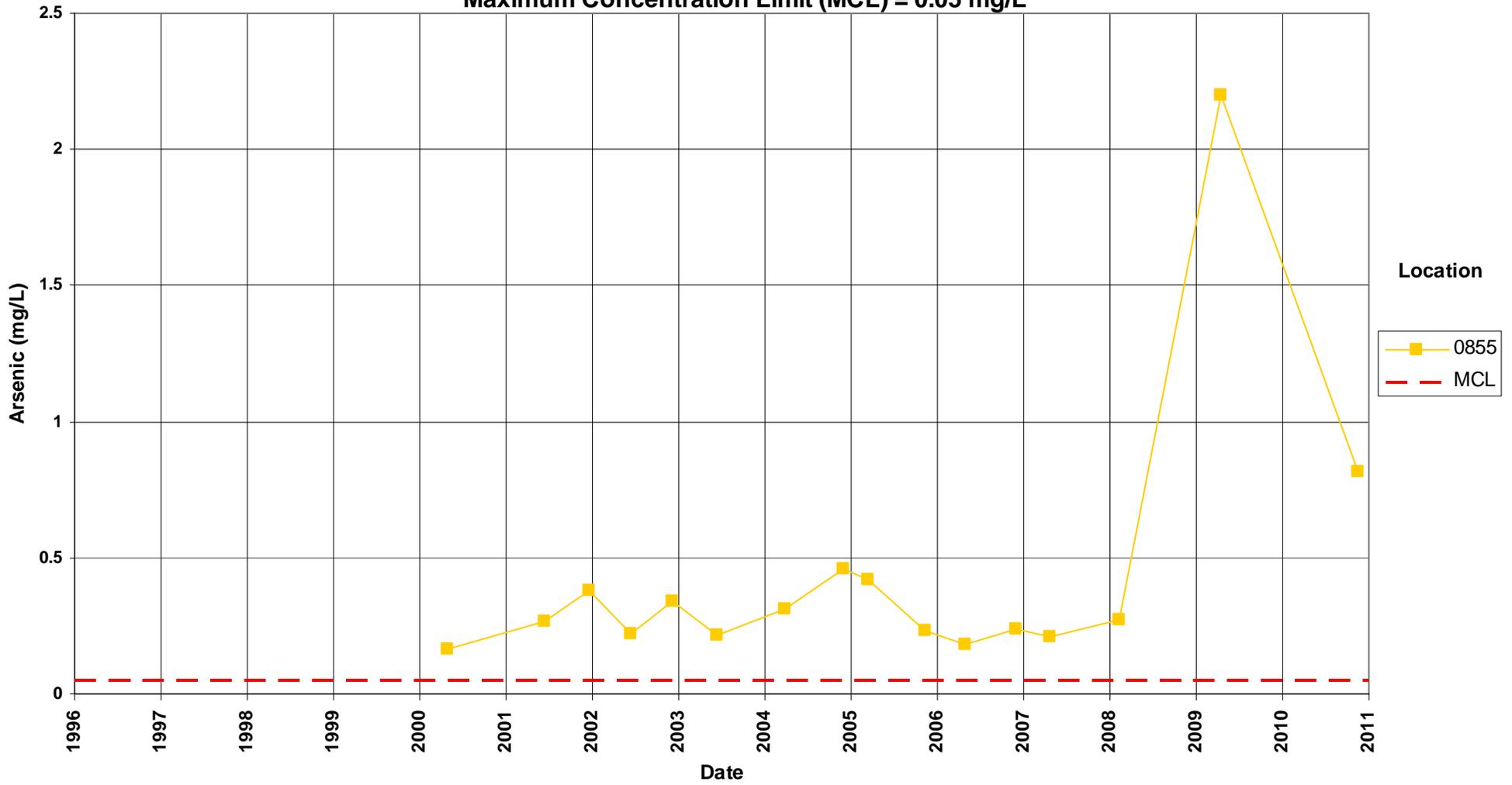
**New Rifle
Time-Concentration Graphs
Groundwater**

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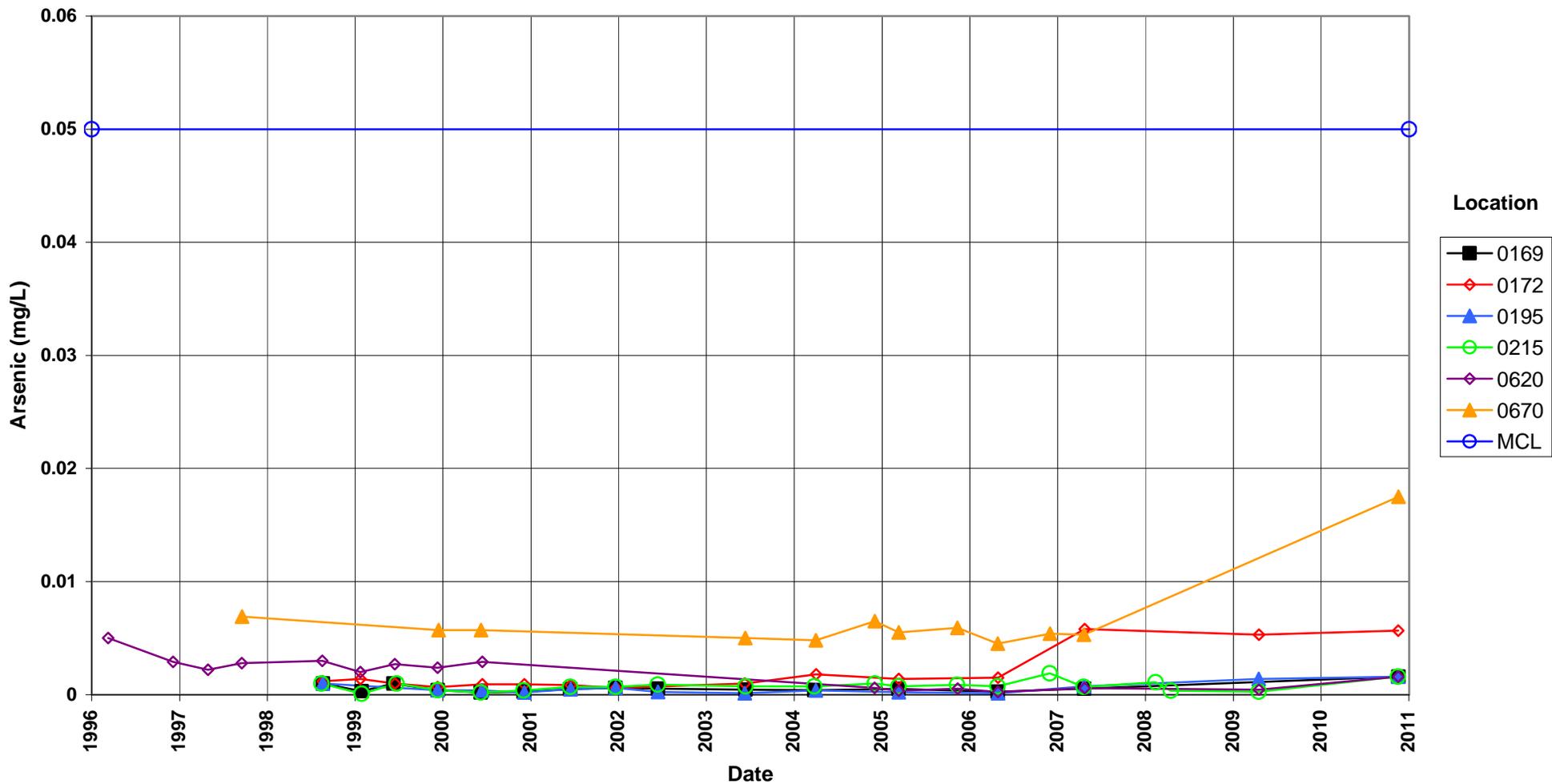
**Rifle New Processing Site
Arsenic Concentration
Maximum Concentration Limit (MCL) = 0.05 mg/L**



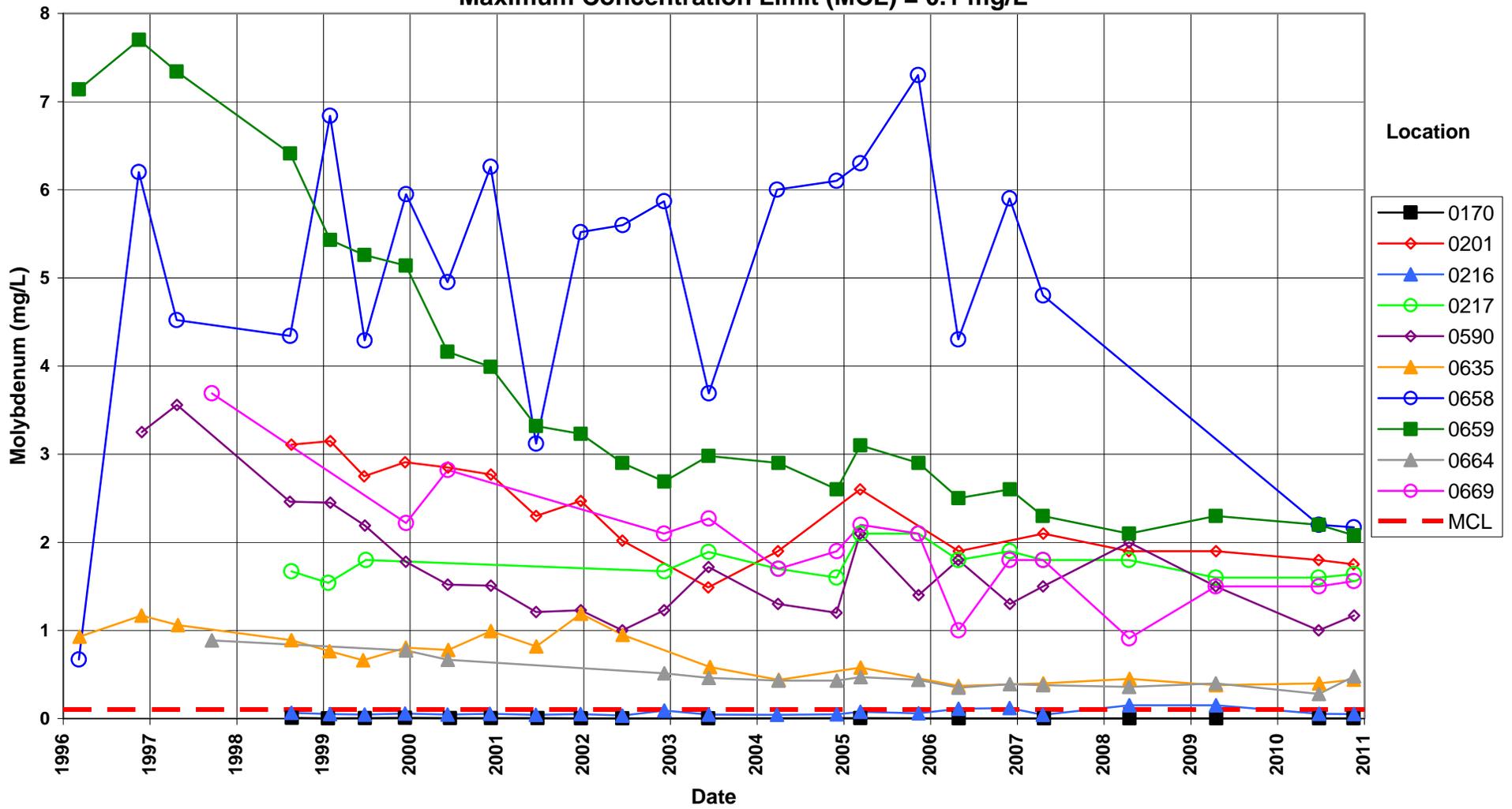
Rifle New Processing Site
Arsenic Concentration
Maximum Concentration Limit (MCL) = 0.05 mg/L



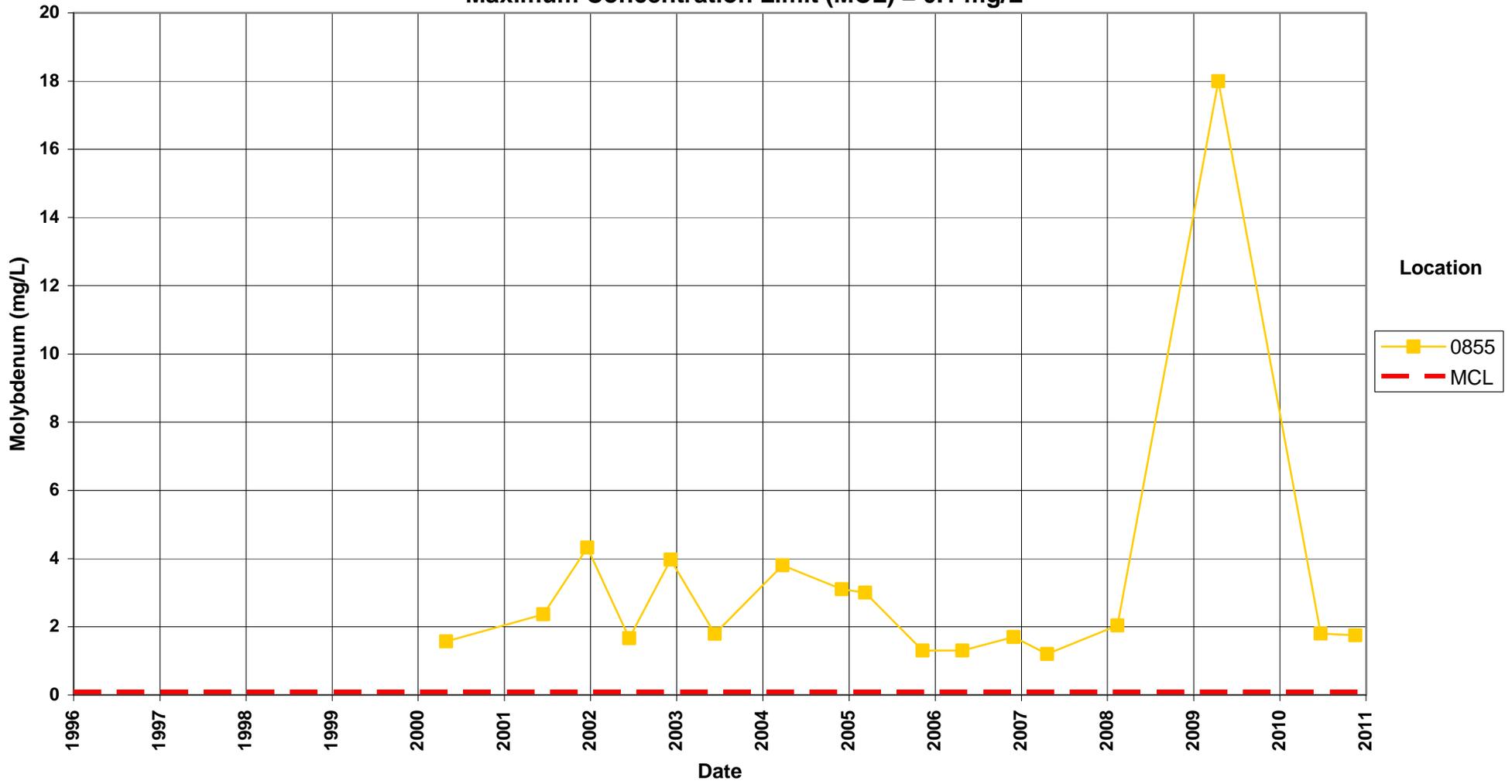
Rifle New Processing Site
Arsenic Concentration
Maximum Concentration Limit (MCL) = 0.05 mg/L



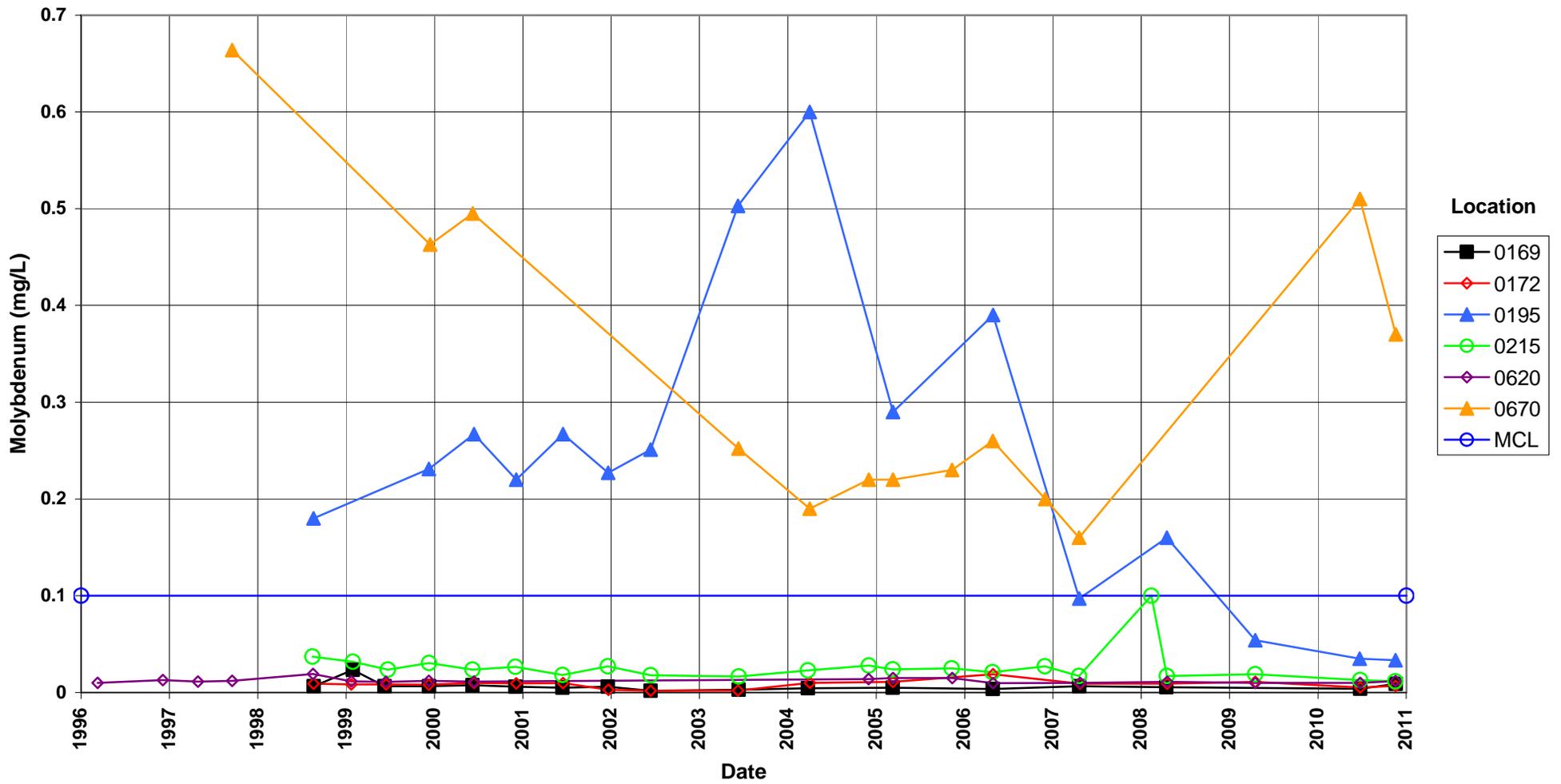
**Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L**



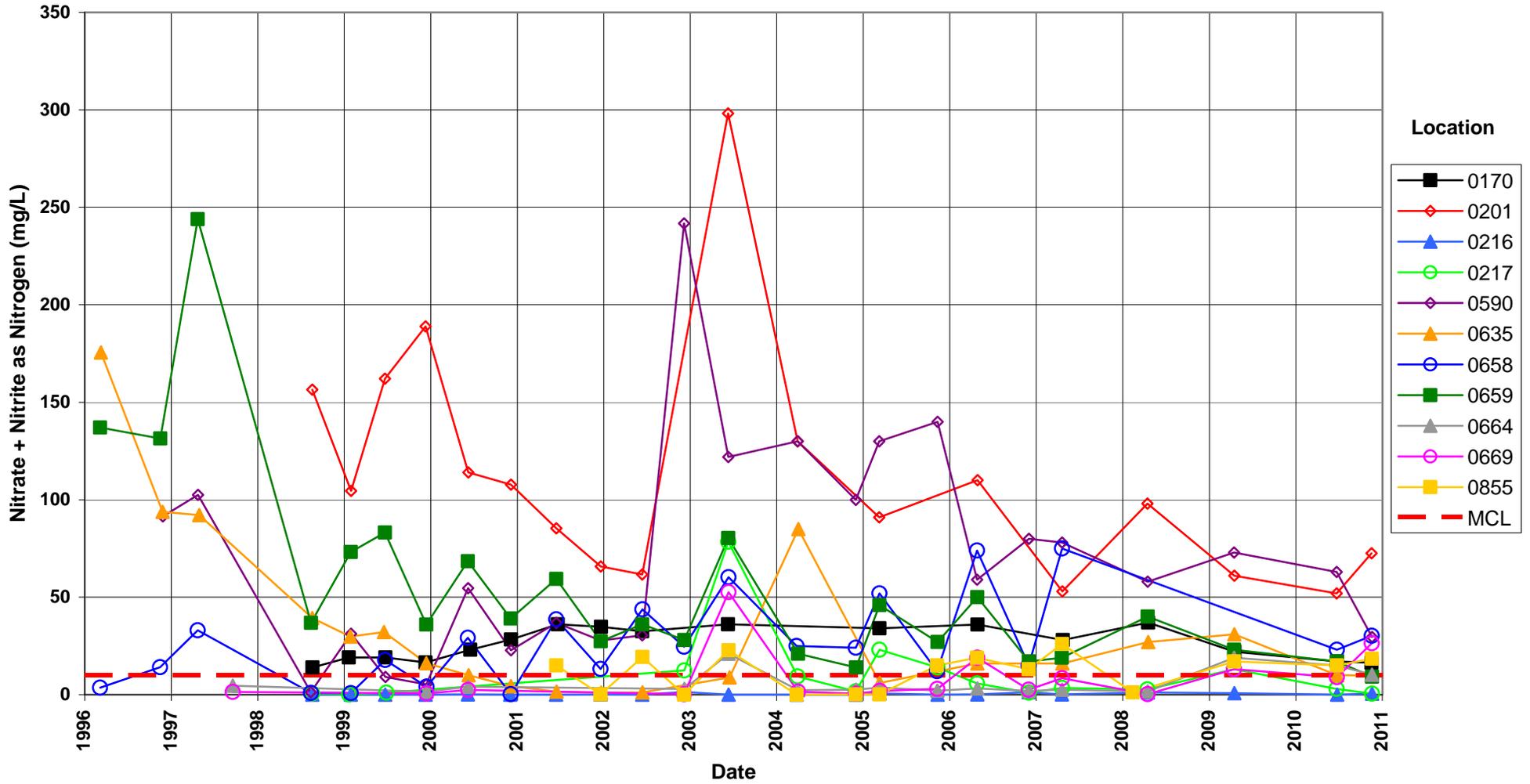
Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L



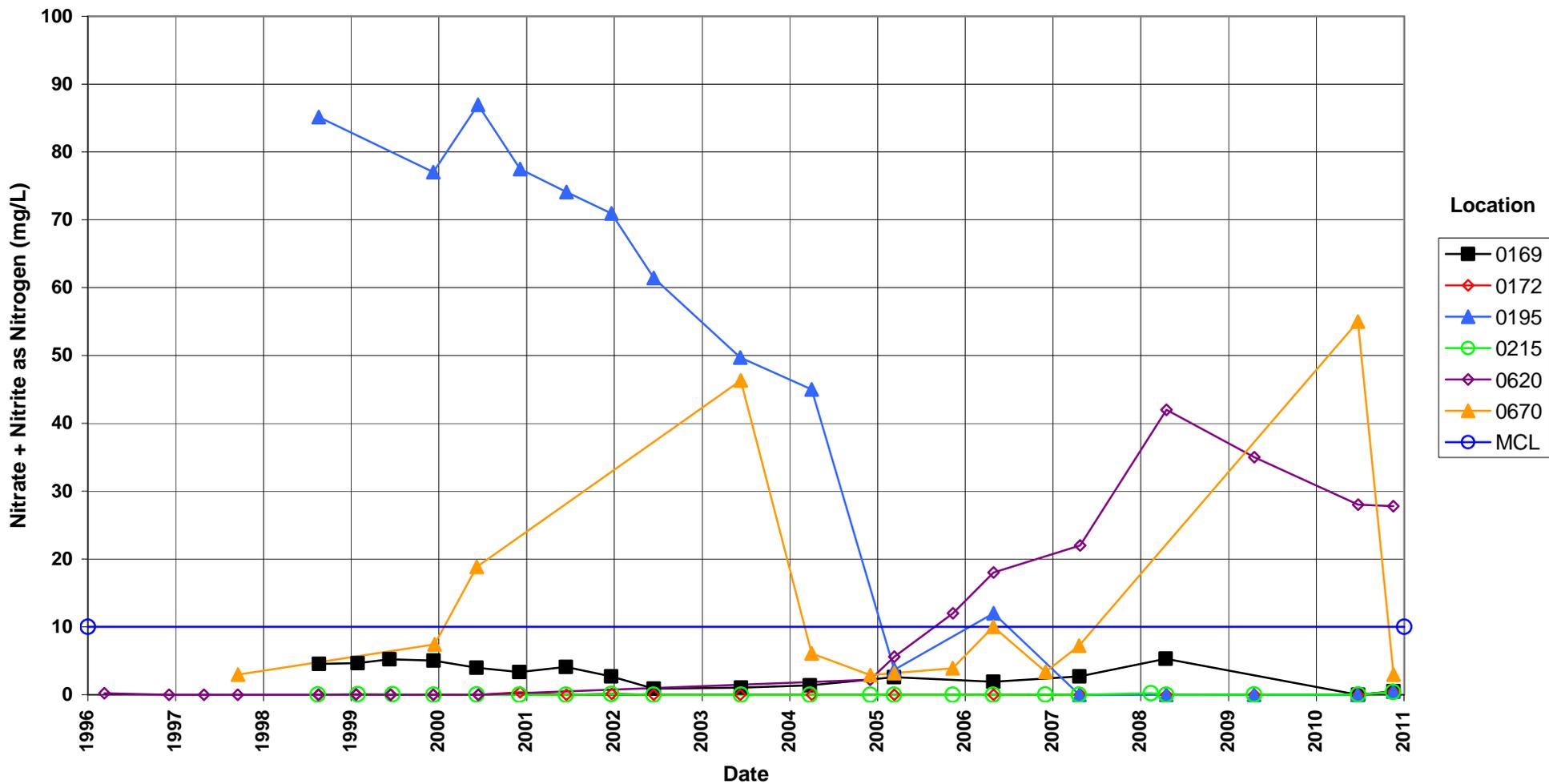
Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L



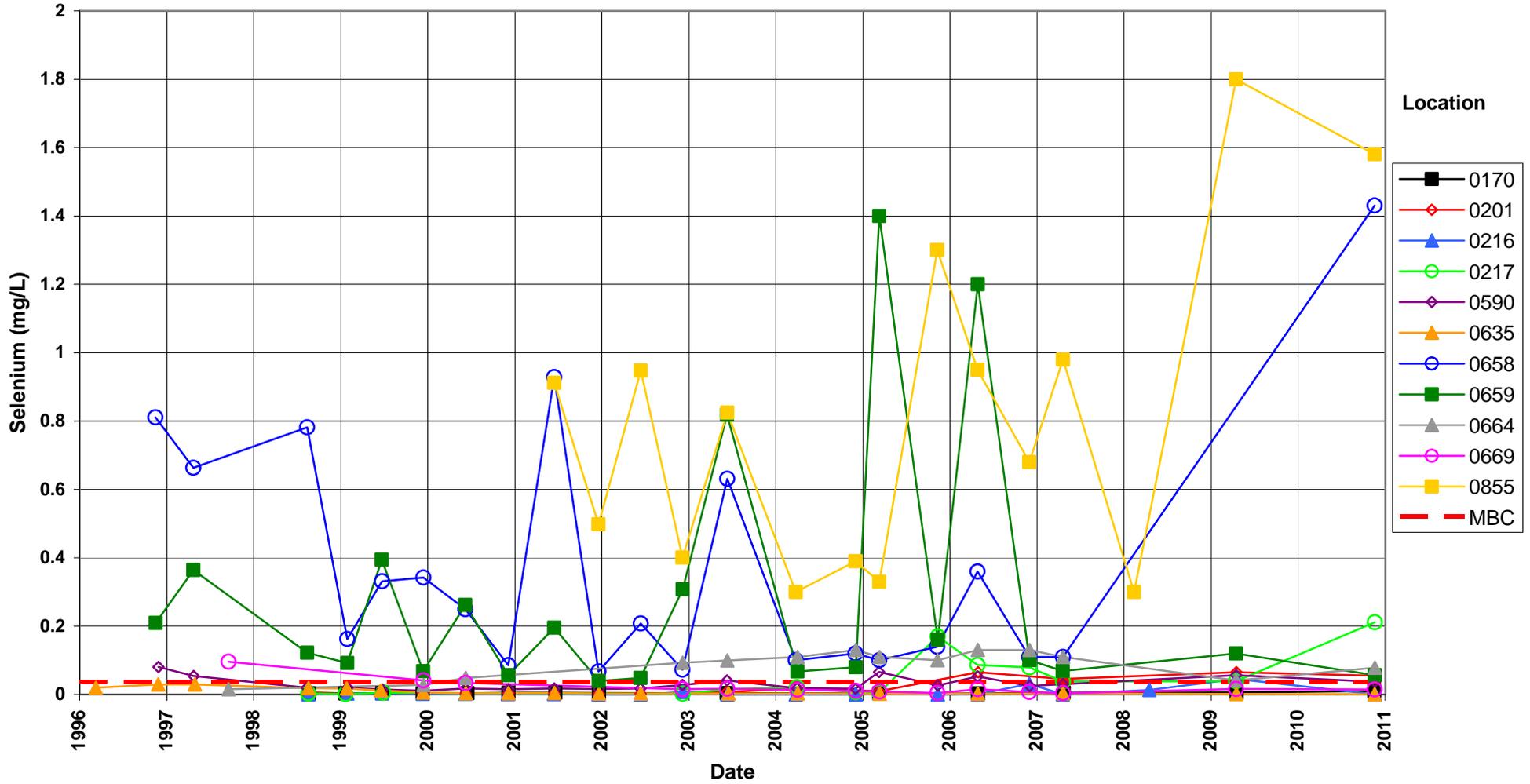
Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10.0 mg/L



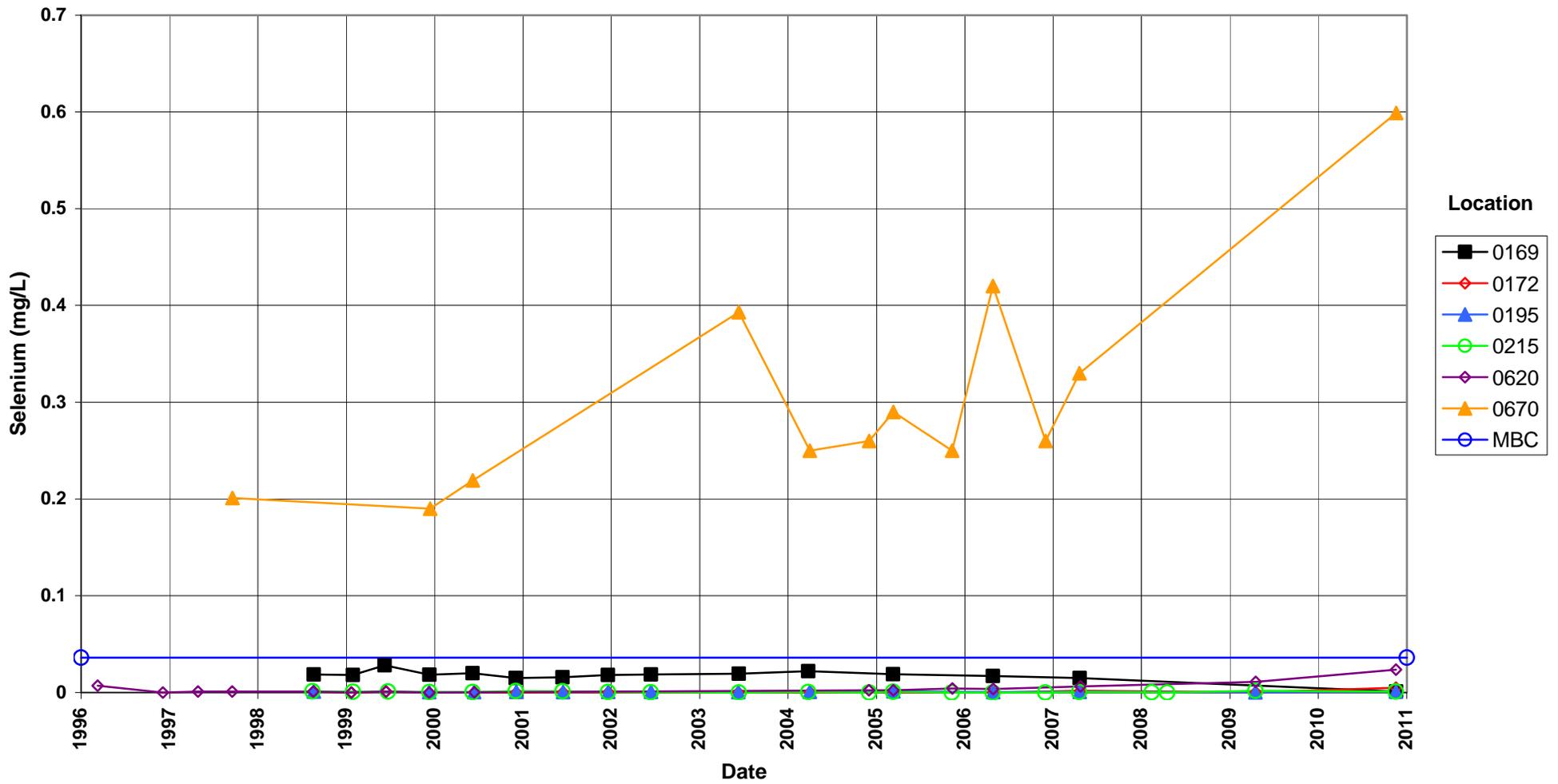
Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10.0 mg/L



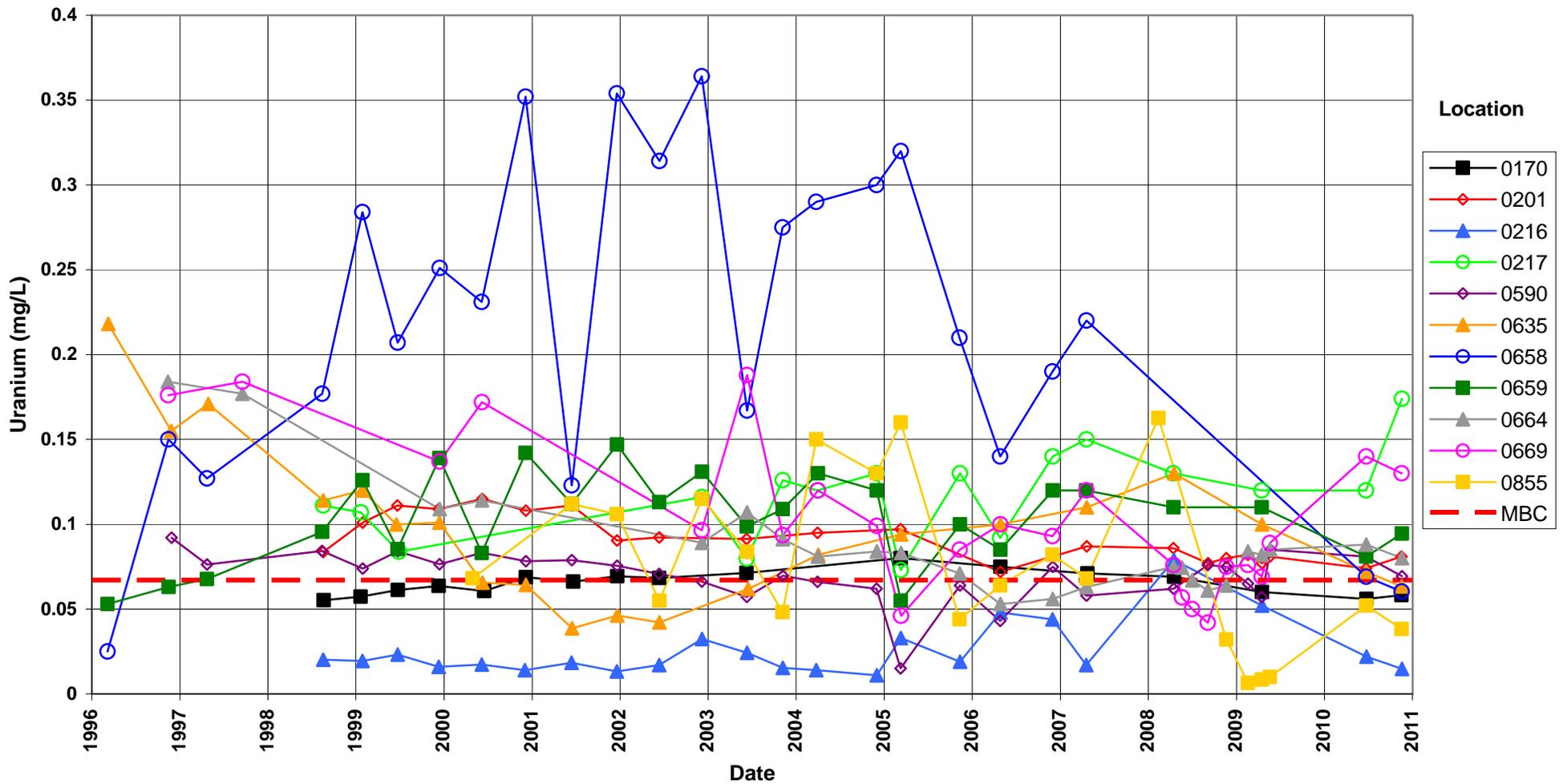
**Rifle New Processing Site
Selenium Concentration
Maximum Background Concentration (MBC) = 0.036 mg/L**



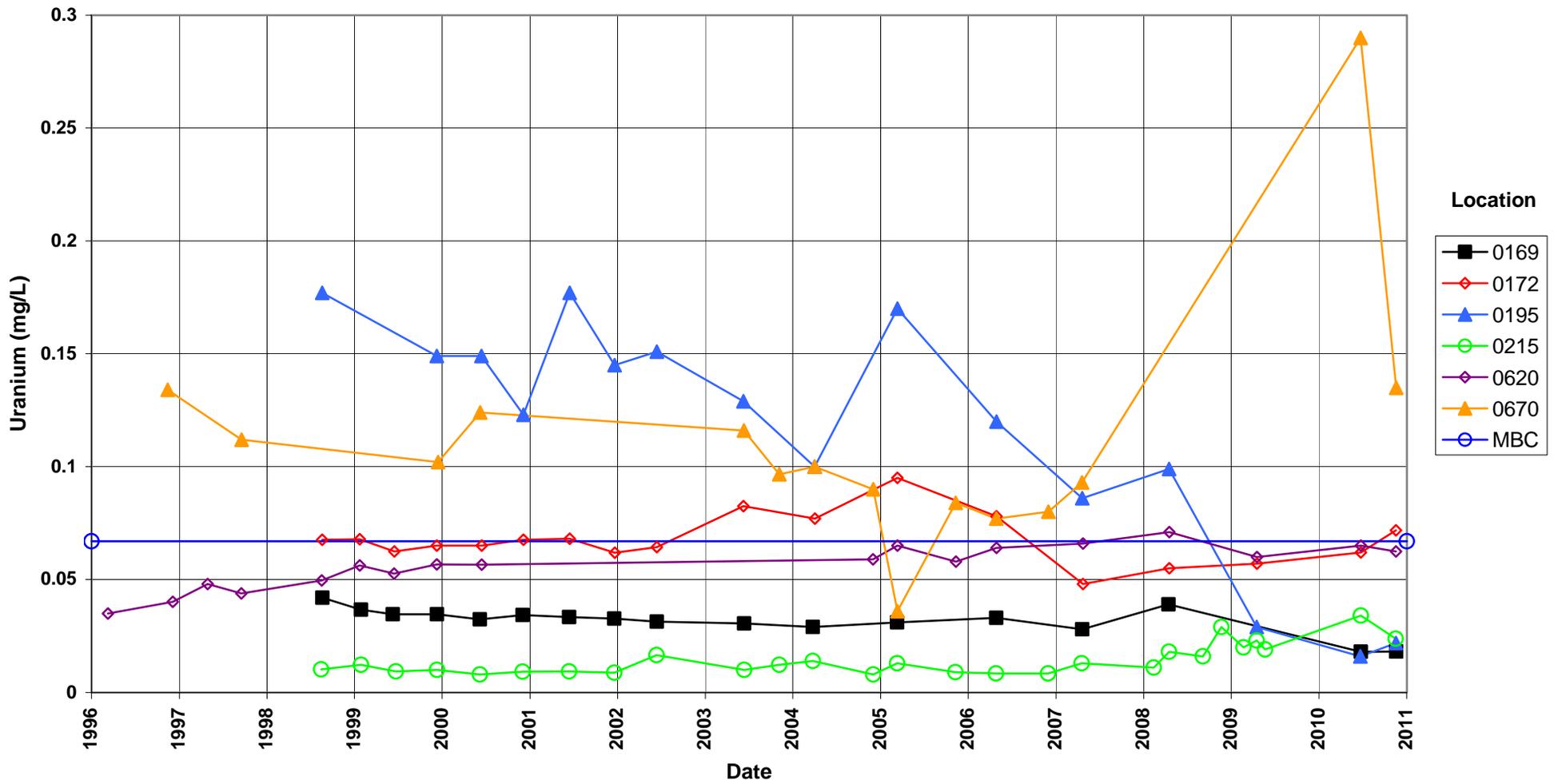
Rifle New Processing Site
Selenium Concentration
Maximum Background Concentration (MBC) = 0.036 mg/L



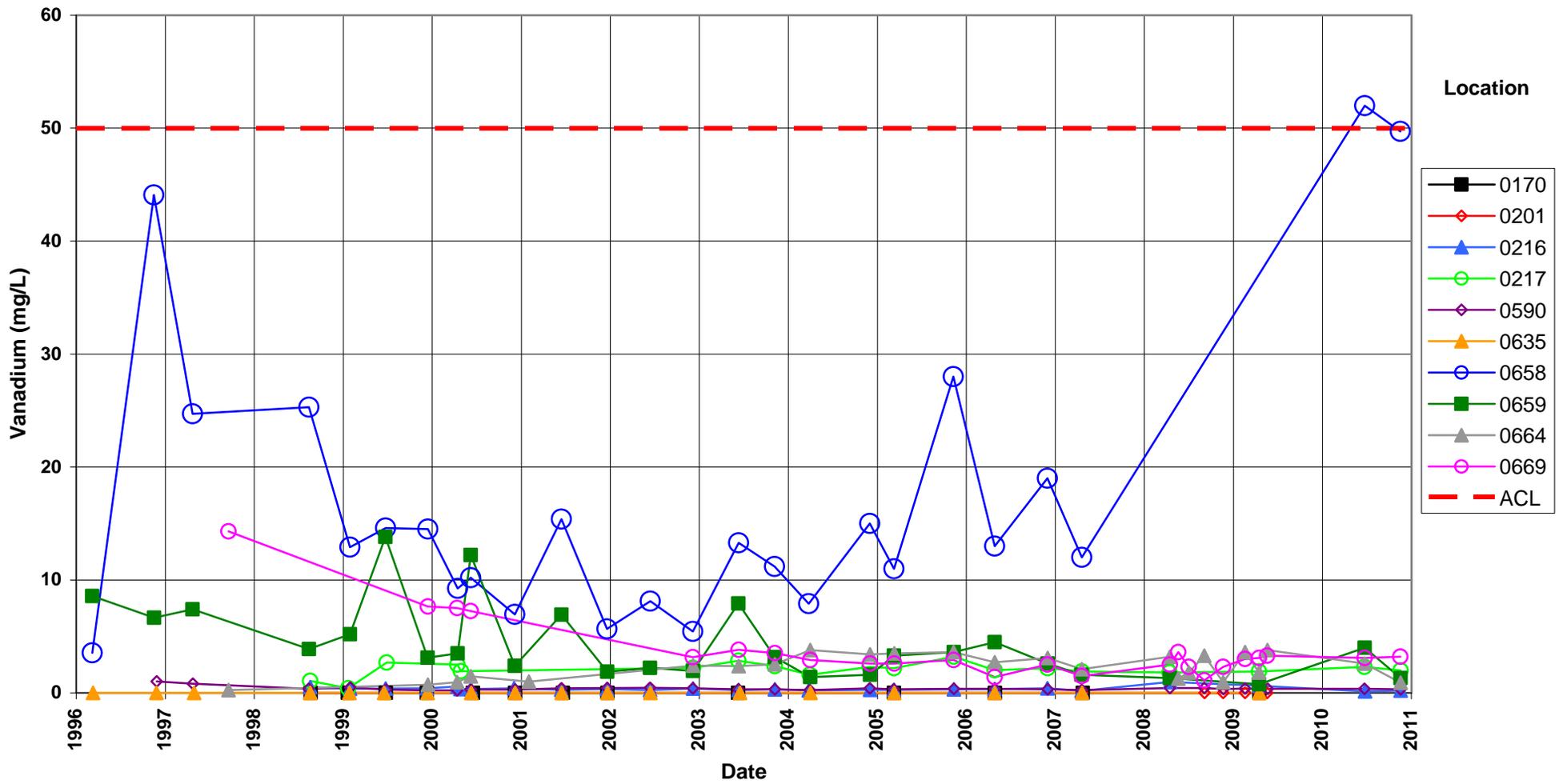
**Rifle New Processing Site
Uranium Concentration
Maximum Background Concentration (MBC) = 0.067 mg/L**



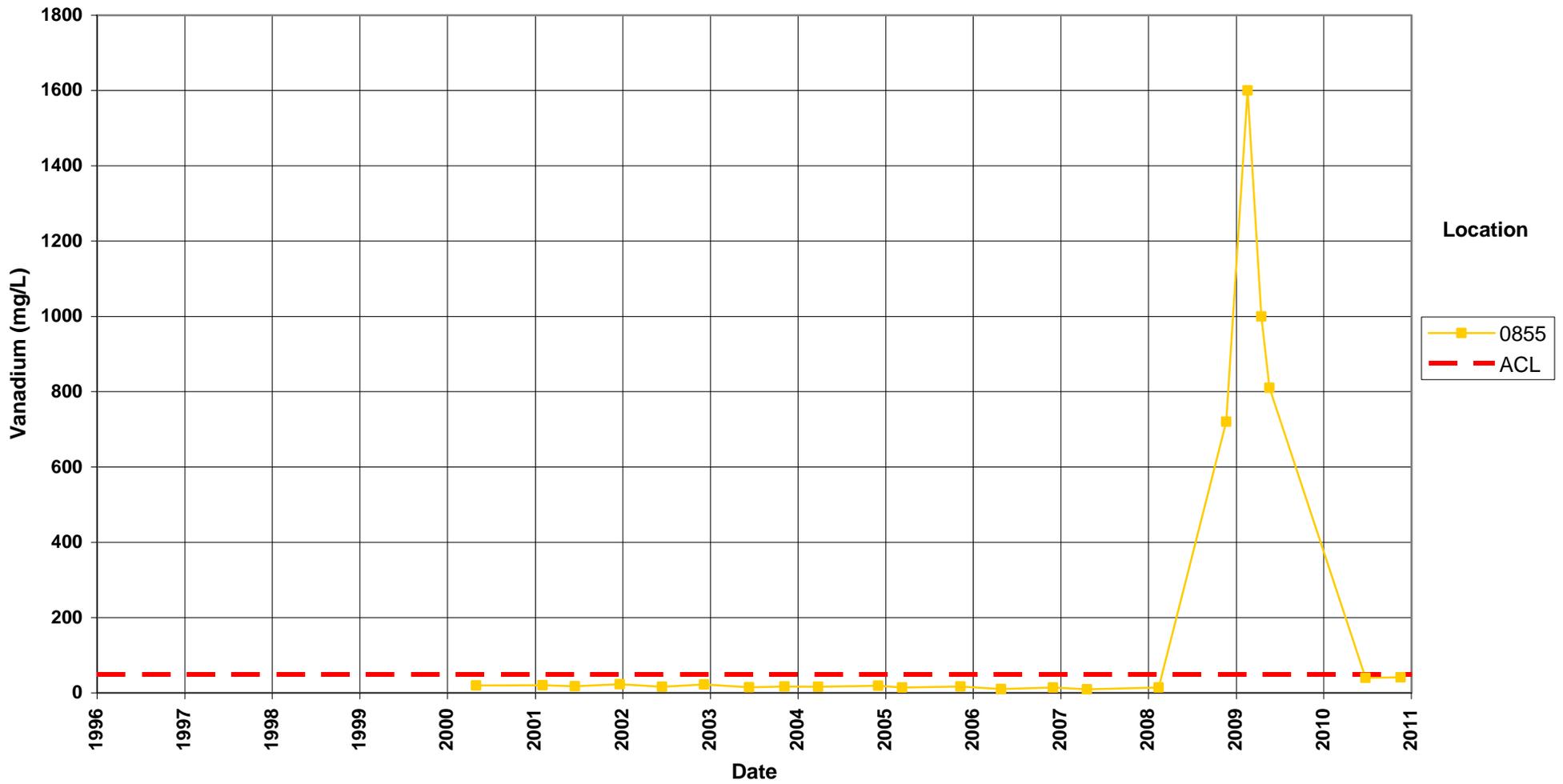
**Rifle New Processing Site
Uranium Concentration
Maximum Background Concentration (MBC) = 0.067 mg/L**



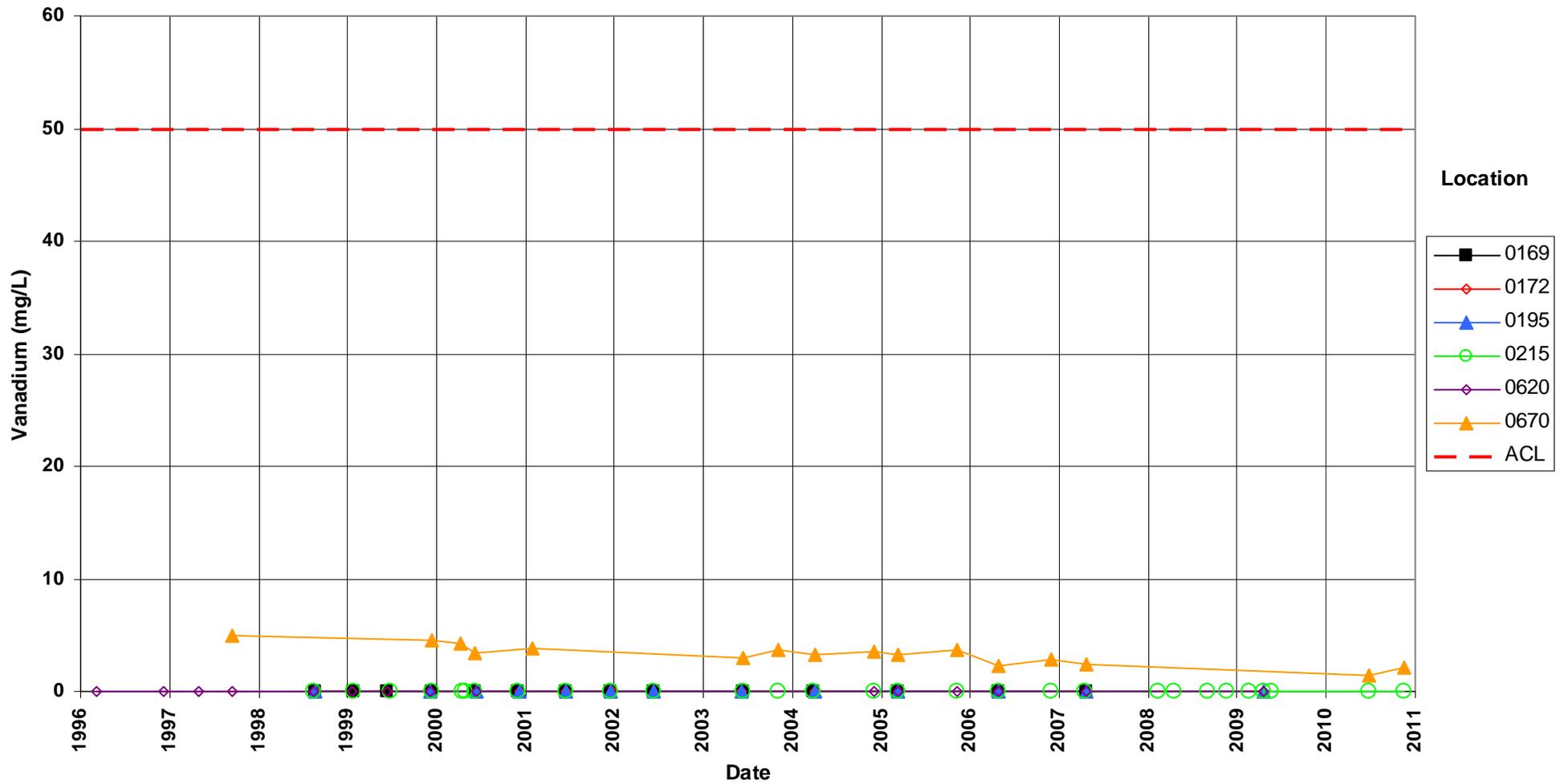
Rifle New Processing Site
Vanadium Concentration
Proposed Alternate Concentration Limit (ACL) = 50 mg/L



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



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

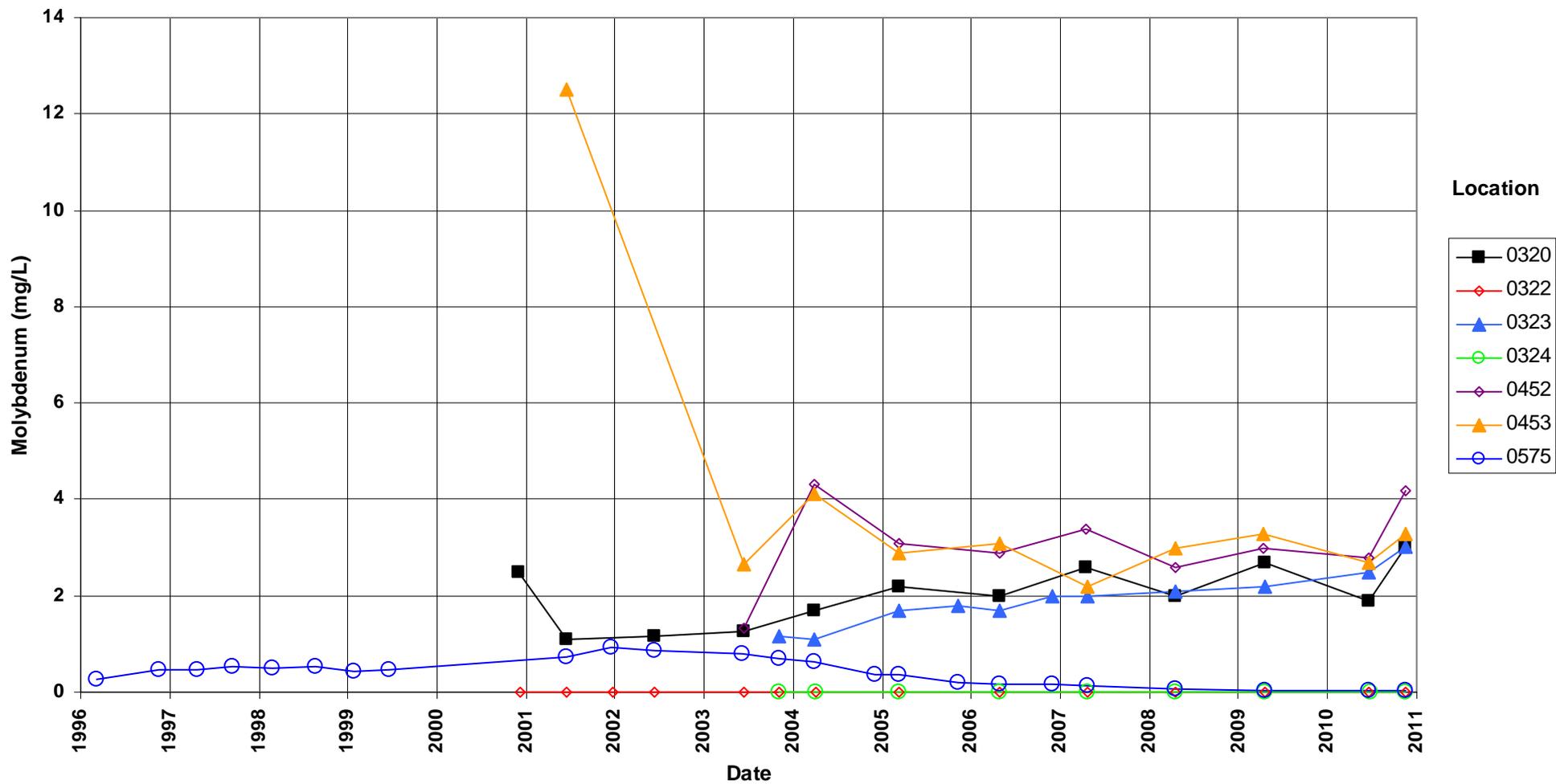


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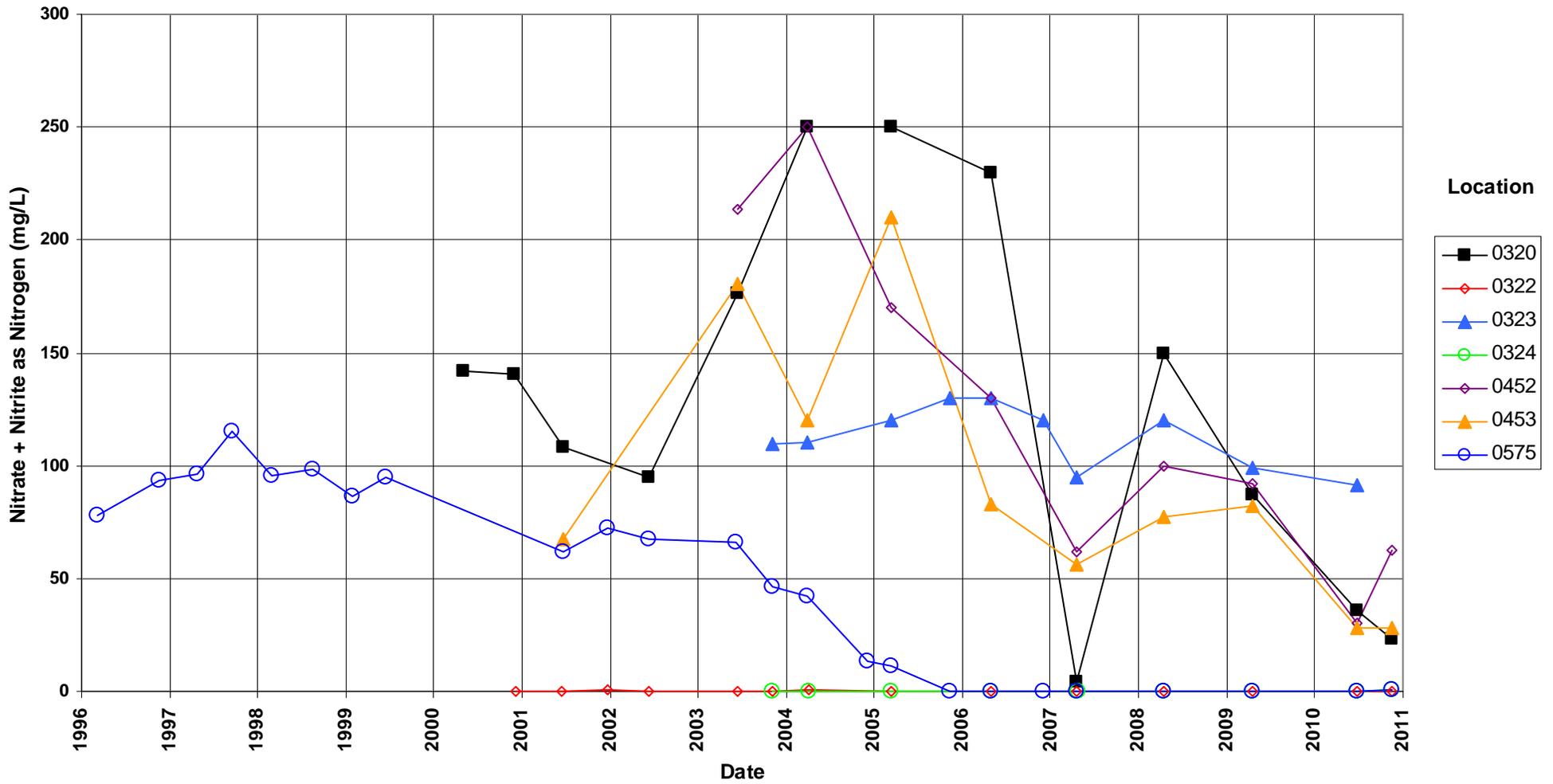
**New Rifle
Time-Concentration Graphs
Surface Water**

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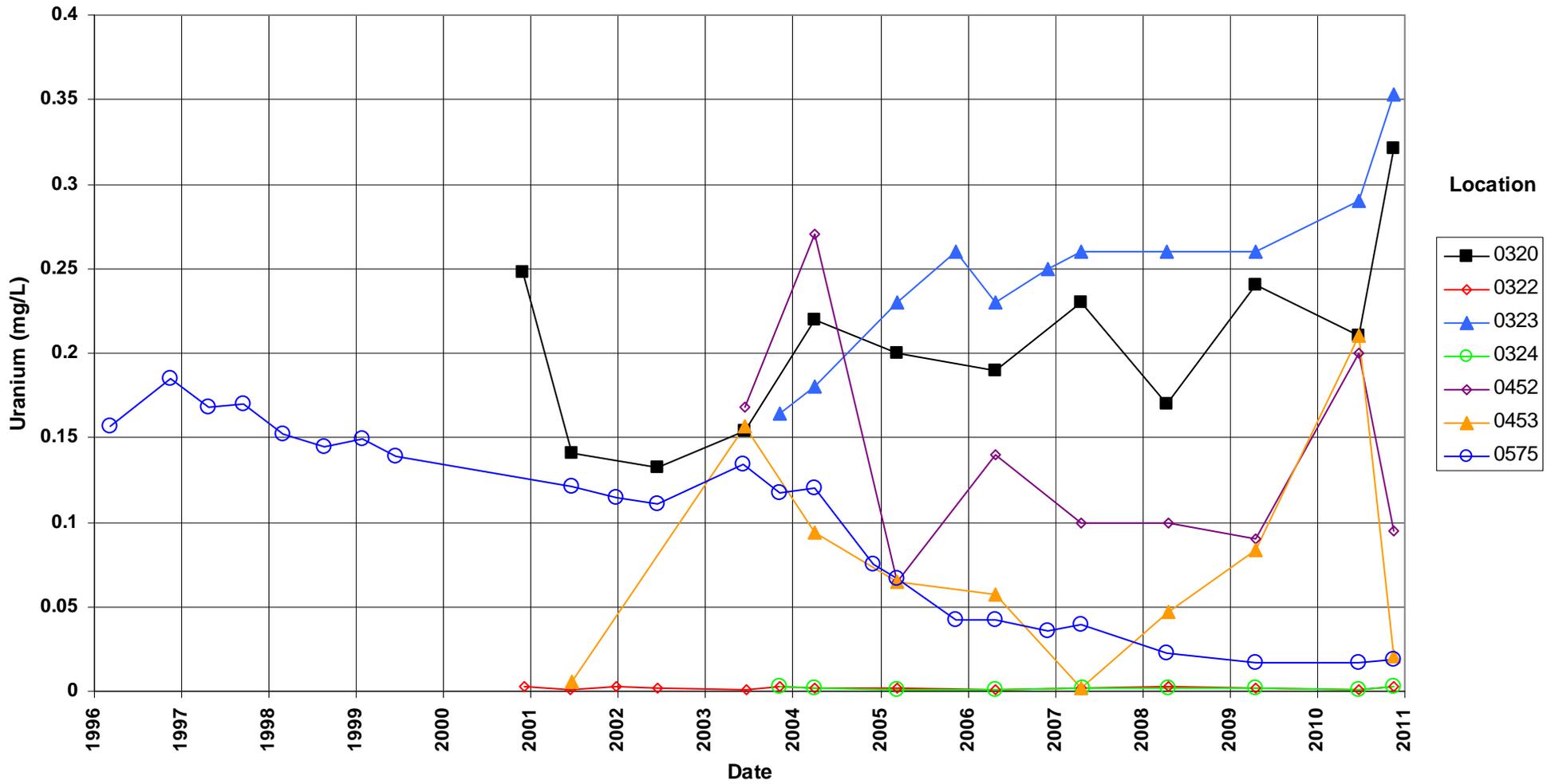
Rifle New Processing Site Molybdenum Concentration Surface Water



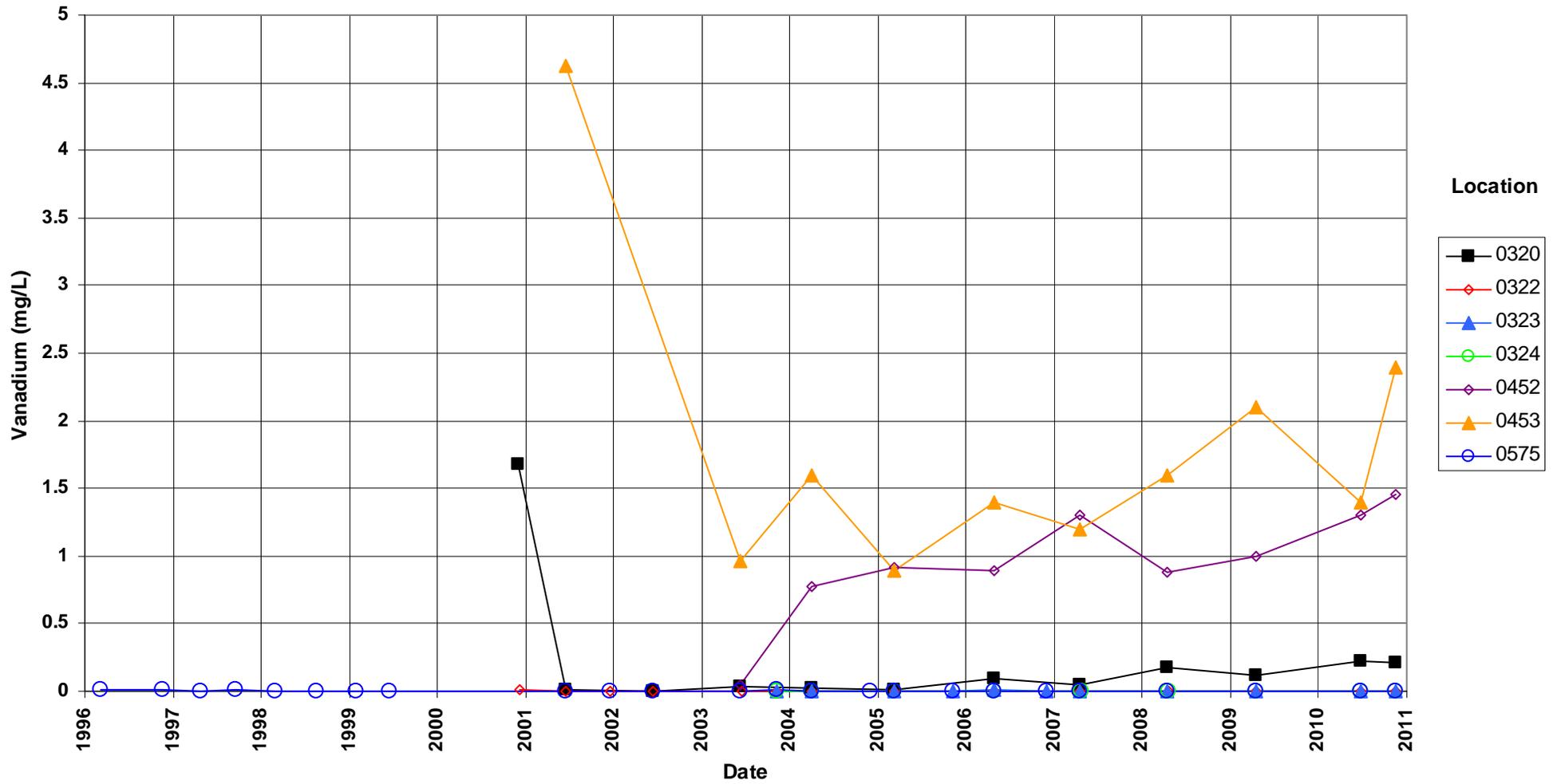
Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Surface Water



Rifle New Processing Site
Uranium Concentration
Surface Water



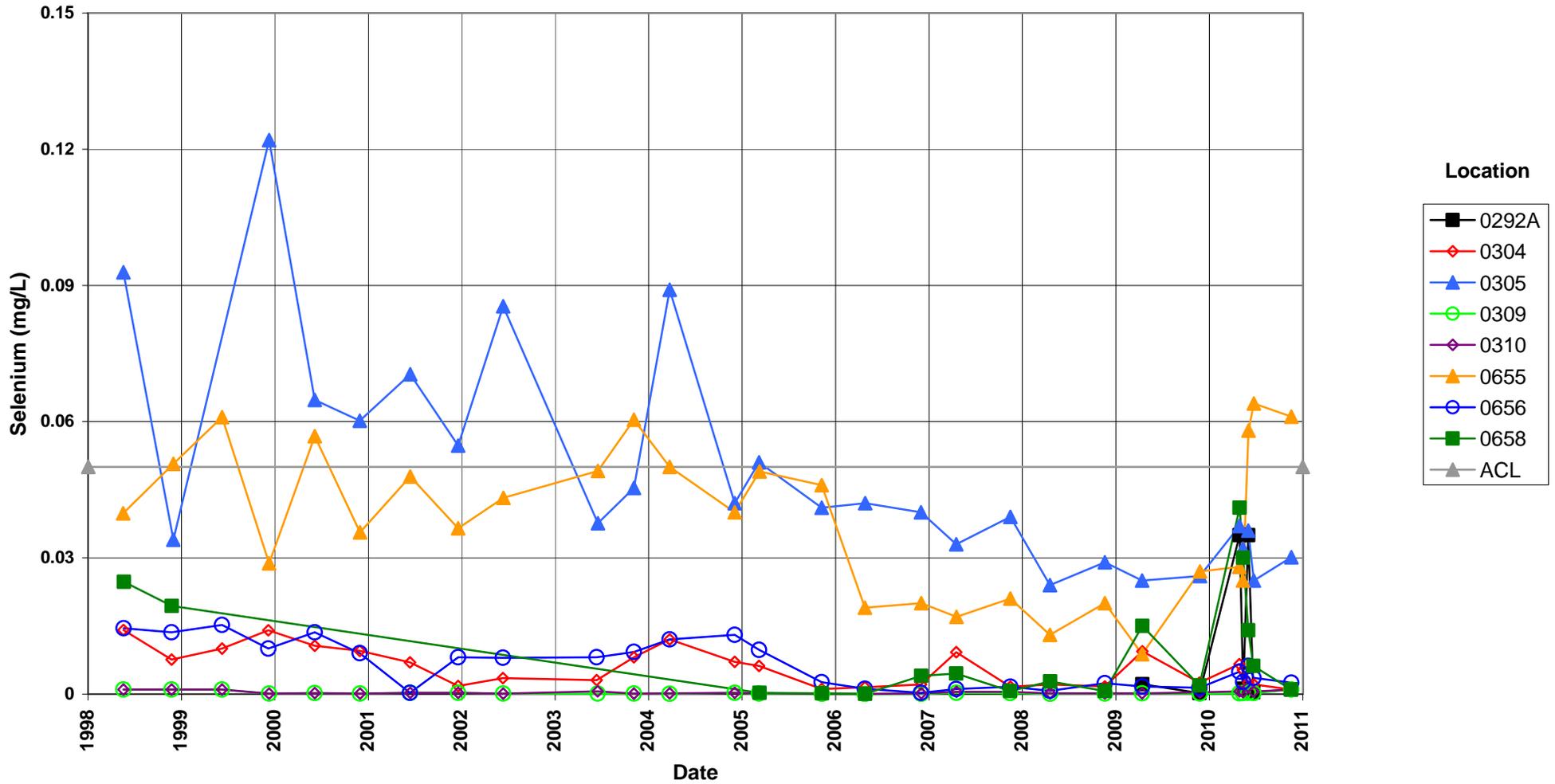
Rifle New Processing Site Vanadium Concentration Surface Water



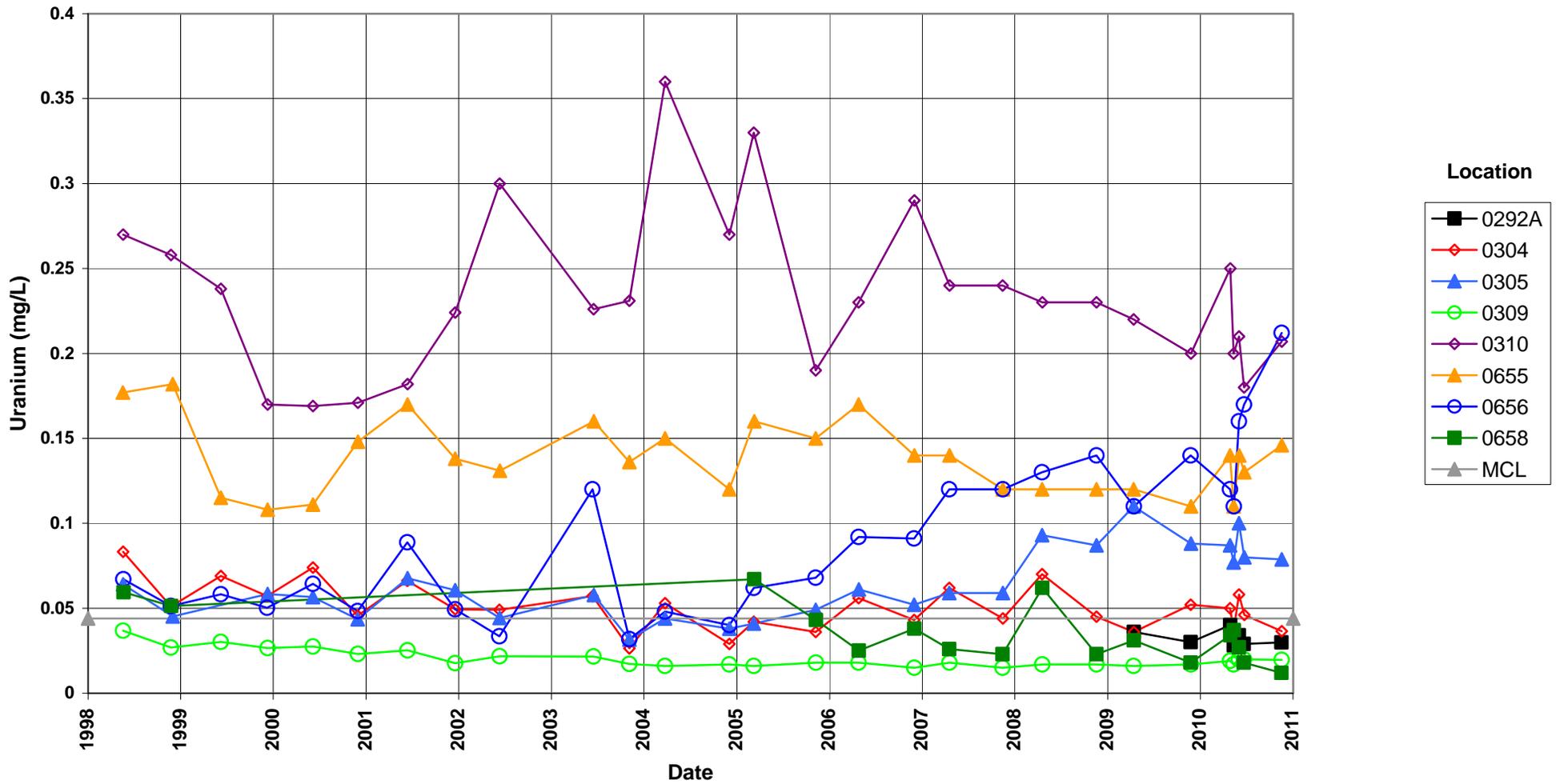
**Old Rifle
Time-Concentration Graphs
Groundwater**

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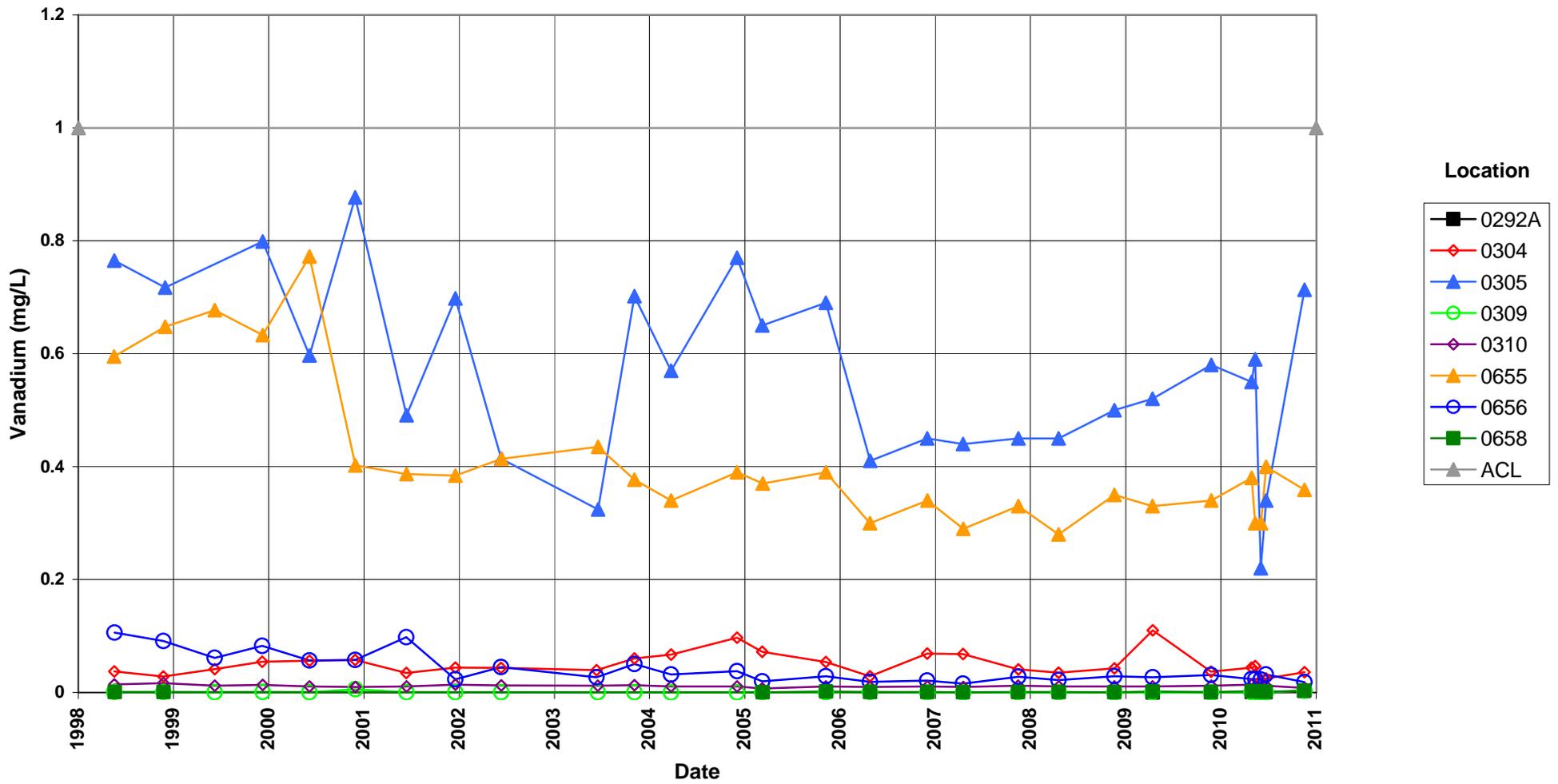
**Rifle Old Processing Site
Selenium Concentration
Alternate Concentration Limit (ACL) = 0.05 mg/L**



**Rifle Old Processing Site
Uranium Concentration
Maximum Concentration Limit (MCL) = 0.044 mg/L**



**Rifle Old Processing Site
Vanadium Concentration
Alternate Concentration Limit (ACL) = 1.0 mg/L**

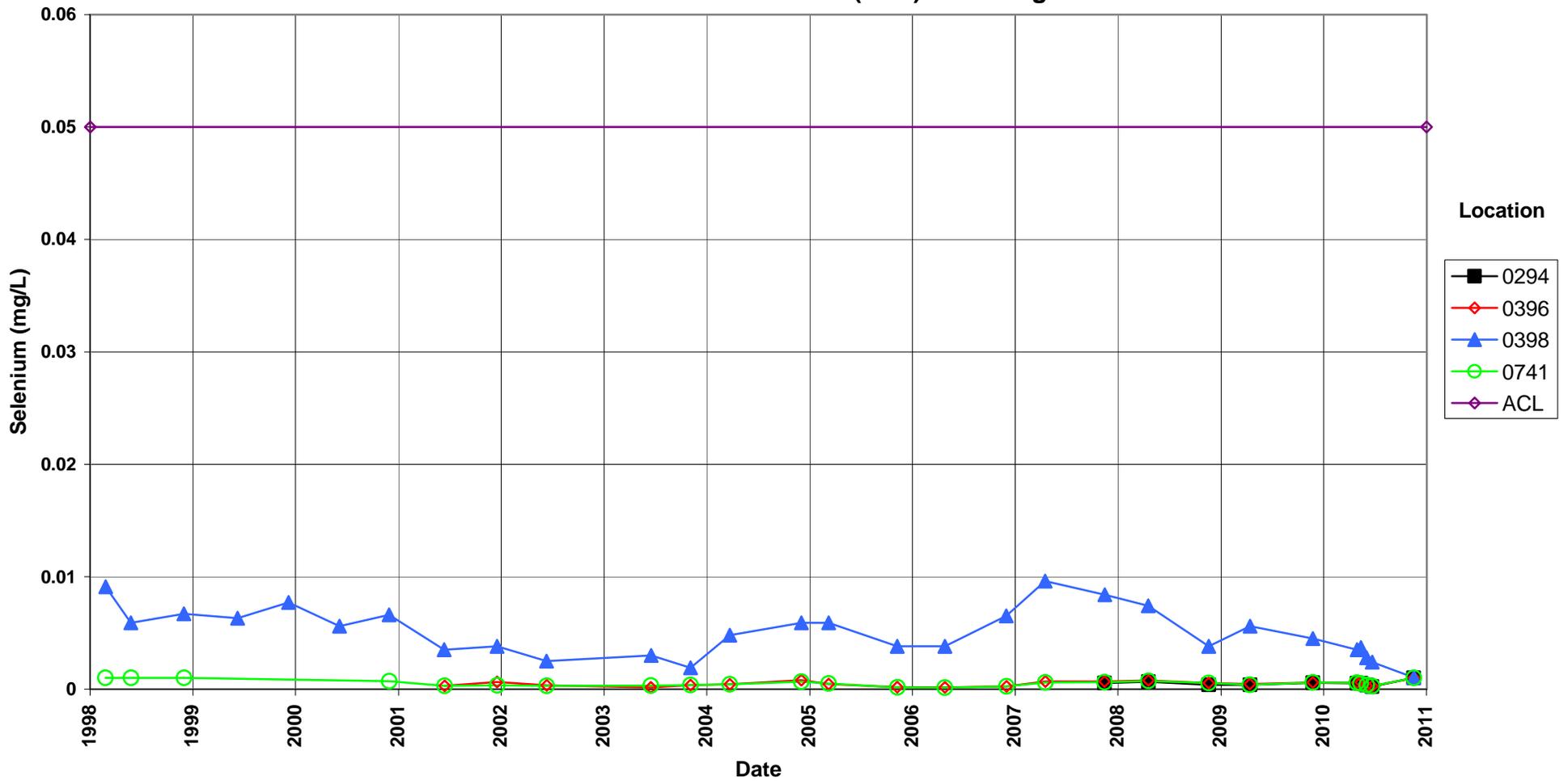


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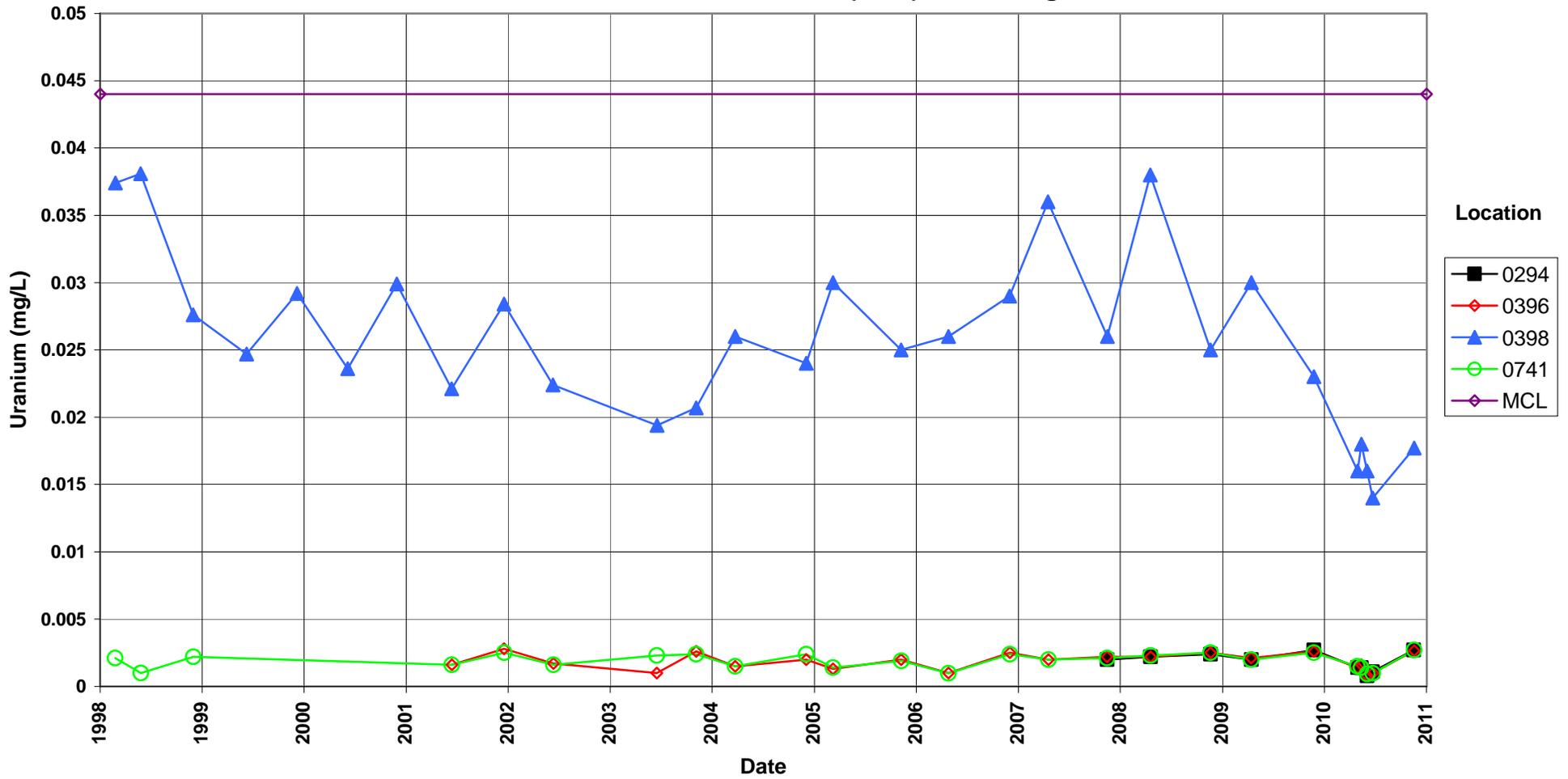
**Old Rifle
Time-Concentration Graphs
Surface Water**

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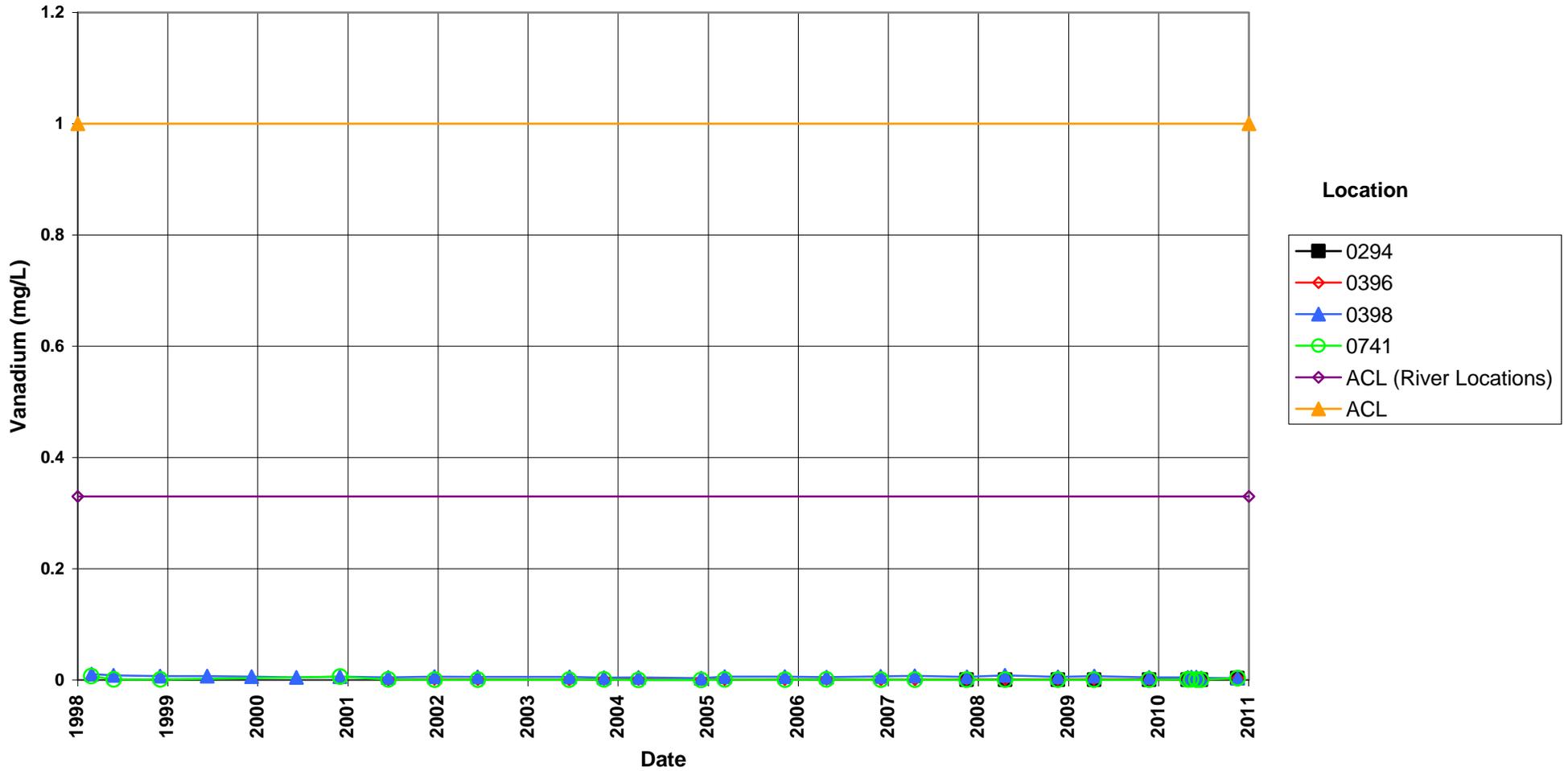
Rifle Old Processing Site
Selenium Concentration
Surface Water
Alternate Concentration Limit (ACL) = 0.05 mg/L



Rifle Old Processing Site
Uranium Concentration
Surface Locations
Maximum Concentration Limit (MCL) = 0.044 mg/L



Rifle Old Processing Site
Vanadium Concentration
Surface Water
Alternate Concentration Limit (ACL) = 1.0 mg/L (0.33 mg/L for River Locations)



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Attachment 3
Sampling and Analysis Work Order

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established 1959

Task Order LM00-501
Control Number 11-0036

October 19, 2010

U.S. Department of Energy
Office of Legacy Management
ATTN: Richard Bush
Site Manager
2597 B ¼ Road
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
November 2010 Environmental Sampling at Rifle, Colorado

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

Dear Mr. Bush:

The purpose of this letter is to inform you of the upcoming sampling event at Rifle, Colorado. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Rifle New and Old processing sites. Water quality data will be collected from this site as part of the environmental sampling currently scheduled to begin the week of November 15, 2010.

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

Monitoring Wells*

New Rifle

169	195 AI	216 AI	620 AI	659 AI	670 AI	690 AI
170 AI	201 AI	217 AI	635 AI	664 AL	689 AI	855 AI
172 AI	215 AI	590 AI	658 AI	669 AI		

Old Rifle

292A AI	305 AI	309 AI	310 AI	655 AI	656 AI	658 AI
304 AI	B-04	LQ-107	LQ-108	LQ-109		

*NOTE: AI = alluvium

Surface Locations

New Rifle

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

Old Rifle

294	395	396	398	399	571	741
394						

The S.M. Stoller Corporation 2597 B ¼ Road Grand Junction, CO 81503 (970) 248-6000 Fax: (970) 248-6040

Richard Bush
Control Number 11-0036
Page 2

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 or concerns.

Sincerely,



Richard Dayvault
Site Lead

RD/lcg/lb

Enclosures (3)

cc: (electronic)

Cheri Bahrke, Stoller
Richard Dayvault, Stoller
Steve Donovan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
rc-grand.junction

Constituent Sampling Breakdown

Site	Rifle					Required Detection Limit (mg/L)	Analytical Method	Line Item Code
	Groundwater	Surface Water						
Analyte								
Approx. No. Samples/yr	35	15						
Field Measurements								
Alkalinity								
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				
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	0215, 0216, 0217, 0590, 0658, 0659, 0664, 0669, 0670, and 0855 only	X	X	X	0.0003	SW-846 6020	LMM-02
Zinc								
Total No. of Analytes	3	7	3	7	2			

*RFN = New Rifle; *RFO = Old Rifle

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

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Attachment 4 Trip Report

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Memorandum

DATE: December 6, 2010
 TO: Richard Dayvault
 FROM: Gretchen Baer
 SUBJECT: Sampling Trip Report

Site: New Rifle and Old Rifle, Colorado, Processing Sites, including some Environmental Remediation Sciences Program locations

Dates of Sampling Event: November 16-18, 2010.

Team Members: Gretchen Baer, David Atkinson, Joe Treviño, and Jeff Price

Number of Locations Sampled: A total of 45 locations were sampled.

Site ID	Site	# of Monitoring Wells	# of Surface Water Locations	Analytes	Field Measurements
RFN01	New Rifle	19	7	As, Mo, Se, U Nitrate plus Nitrite as N Ammonia as N V, Herbicides, Pesticides at some locations	ORP, pH, Conductivity, Turbidity, Temperature, Alkalinity
RFO01	Old Rifle	8	7	Se, U, V	ORP, pH, Conductivity, Turbidity, Temperature, Alkalinity, Dissolved Oxygen, Ferrous Iron
RFO01	Environmental Remediation Sciences Program	4	-----		

Locations Not Sampled/Reason: One surface water location (RFO01 0571) was dry.

Location Specific Information/Field Variance:

Site ID	Location IDs	Comments
RFN01	0172	Strong petroleum odor.
RFN01	0195	Roots in well.
RFN01	0216	Bacterial slime in well.
RFN01	0669	Very high turbidity. Needs to be re-developed.

Site ID	Location IDs	Comments
RFN01	0669, 0670	Cat II based on WL drop at slow purge rate.
RFN01	0689 & 0690	Cat III based on WL drop at slow purge rate and WL within screened interval. Turbidity > 10 NTUs. Herbicides & pesticides were collected non-filtered. Well went to dryness rapidly during purge and while attempting to collect samples. Collected all requested sample volumes by repeatedly letting the well recover for short periods then pumping to dryness. Did NOT collect laboratory QC volumes.
RFO01	0310	Removed data logger to sample. Replaced logger immediately after sampling.
RFO01	0399	Small pool of water had oily sheen.
RFO01	0571	SW location was dry.
	All surface water locations	Although not requested, turbidity was measured to determine whether filtration was required.

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

False ID	True ID	Ticket Number	Sample Type	Associated Matrix
2076	Associated with RFO01 locations 0394, 0395, 0399	IMQ 475	Equipment Blank	Water
2077	RFN01 0452	IMQ 476	Duplicate	Groundwater
2948	RFN01 0453	IMY 984	Duplicate	Groundwater
2949	RFO01 0292A	IMY 985	Duplicate	Groundwater

RIN Number Assigned: 10113444.

Sample Shipment: Samples were shipped from Grand Junction to GEL Laboratories, Charleston, South Carolina on November 19, 2010.

Well Inspection Summary: Well inspections were conducted at all sampled wells. Well RFN01 0669 needs to be re-developed. It was noted in a previous trip report that well RFN01 0195 may have a broken screen or well casing.

Equipment: All wells were sampled using the low-flow procedure. All wells were sampled using a peristaltic pump and dedicated downhole tubing except well RFN01 0170, which had a dedicated bladder pump. Surface waters were sampled using a peristaltic pump and tubing reel or by container immersion. An equipment blank was collected after decontamination of the tubing reel. All other equipment was dedicated or disposable. All equipment functioned properly.

Water Level Measurements: Water levels were collected at all sampled wells.

Institutional Controls: All gates were appropriately closed and locked during the sampling event.

Fences, Gates, Locks: All were in good condition.

Signs: No missing or vandalized signs were observed.

Trespassing/Site Disturbances: None observed.

Richard Dayvault
December 6, 2010
Page 3

Site Issues:

Disposal Cell/Drainage Structure Integrity: N/A.

Vegetation/Noxious Weed Concerns: None observed.

Maintenance Requirements: None observed.

Safety Issues: None.

Access: Vehicle access to RFN01 locations 0620 and 0324 is blocked by a locked gate owned by Williams Production. The combination to the lock was provided by Bryan Hotard of Williams (970-361-2006 & 970-263-2754). The combination is 2-0-0-6.

Corrective Action Required/Taken:

- The well cover for the flush-mount at RFN01 0635 was leaking. It was replaced with a cover with a better seal.
- Well RFN01 0669 needs to be re-developed.
- It was noted in a previous trip report that well RFN01 0195 may have a broken screen or well casing and that there is a need to investigate with a downhole camera.

(GB/lcg)

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

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