

Data Validation Package

September 2013
Groundwater, Surface Water, and
Alternate Water Supply System
Sampling at the Riverton, Wyoming,
Processing Site

December 2013



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

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Contents

Sampling Event Summary	1
Riverton, Wyoming, Sample Location Map	5
Data Assessment Summary	7
Water Sampling Field Activities Verification Checklist	9
Laboratory Performance Assessment	11
Sampling Quality Control Assessment	24
Certification	29

Attachment 1—Assessment of Anomalous Data

Potential Outliers Report

Attachment 2—Data Presentation

Groundwater Quality Data
Surface Water Quality Data
Alternate Water Supply System Quality Data
Equipment Blank Data
Static Water Level Data
Time-Concentration Graphs

Attachment 3—Sampling and Analysis Work Order

Attachment 4—Trip Report

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Sampling Event Summary

Site: Riverton, Wyoming, Processing Site

Sampling Period: September 17–20, 2013

This quarterly event comprised sampling 18 monitoring wells, 9 surface water locations, and 8 domestic wells at the Riverton, Wyoming, Processing Site. Sampling and analyses were conducted as specified in the *Sampling and Analysis Plan for the U. S. Department of Energy Office of Legacy Management Sites (SAP)* (LMS/PRO/S04351, continually updated). Water levels were measured at all sampled monitoring wells and 13 additional monitoring wells that were not sampled.

Sampling was also conducted in support of semiannual flushing of the alternate water supply system (AWSS) in accordance with the *Alternate Water Supply System Flushing Plan Riverton, Wyoming* (January 2013). Four domestic tap locations and eight hydrant locations on the AWSS were sampled. Domestic tap location 0814 was not sampled because the home was vacant. Two samples were collected at six of the eight hydrant locations – one sample 5 minutes into the flush and one sample at the end of the flush as specified in the plan. Only end-of-flush samples were collected at hydrant locations 0834 and 0843 because of the short flushing time.

Monitoring at hydrant and tap locations is performed to determine the effectiveness of the flushing program in reducing the naturally occurring radionuclide concentrations and maintaining them at acceptable levels. The flushing program is considered successful when (1) the combined radium-226 and radium-228 concentrations are below the Federal drinking water maximum contaminant level of 5 picocuries per liter (pCi/L) and (2) the uranium concentrations at all locations are below the maximum contaminant level of 0.03 milligram per liter (mg/L) in the post-flush samples. Although the radium-226 and radium-228 concentration (6.07 pCi/L) in the 5-minute sample collected from location 0818 exceeded the maximum contaminant level, the end-of-flush sample radium-226 and radium-228 concentration was 0.944 pCi/L, which indicates the effectiveness of the flushing at this location. The overall effectiveness of the flushing program was demonstrated, with the maximum post-flushing combined radium-226 and radium-228 concentration of 1.25 pCi/L, and maximum observed uranium concentration of 0.0001 mg/L.

Concentrations of molybdenum and uranium in samples collected from semi-confined aquifer monitoring wells were below their respective U.S. Environmental Protection Agency (EPA) (Title 40 *Code of Federal Regulations* [CFR] Part 192) groundwater standard.

The EPA groundwater standards for molybdenum and uranium were exceeded in samples collected from surficial aquifer monitoring wells listed in Table 1. Time-concentration graphs are included in the Data Presentation section.

Table 1. Riverton Wells with Samples that Equaled or Exceeded EPA Groundwater Standards in September 2013

Analyte	Standard ^a	Location	Concentration in mg/L
Molybdenum	0.1	0707	0.85
		0789	0.56
Uranium	0.044	0707	0.73
		0716	0.23
		0718	0.11
		0722R	0.52
		0789	1.5

^a Standards are listed in 40 CFR 192.02 Table 1 to Subpart A.
mg/L = milligrams per liter

Results from domestic wells (Table 2) did not indicate any impacts from the Riverton site. Concentrations of molybdenum in samples collected from domestic wells were two orders of magnitude below the EPA groundwater standard, and uranium concentrations in samples collected from domestic wells were one to three orders of magnitude below the drinking water standard.

Table 2. Concentrations of Molybdenum and Uranium in Samples from Domestic Wells

Analyte	Standard ^a	Location	Concentration in mg/L
Molybdenum	0.1	0405	0.002
		0422	0.001
		0430	0.002
		0436	0.003
		0460	0.002
		0828	0.003
		0841	0.004
		0842	0.003
Uranium	0.03	0405	0.00008
		0422	0.0014
		0430	0.00004
		0436	0.00007
		0460	0.00007
		0828	0.00008
		0841	0.0018
		0842	0.00034

^a Standards are listed in 40 CFR 192.02 Table 1 to Subpart A (molybdenum) and EPA's National Primary Drinking Water Regulations (uranium).
mg/L = milligrams per liter
ND = not detected

Surface water uranium results were compared to statistical benchmark values derived using historical data from the Little Wind River location 0794, which is located upstream of the site

and represents background conditions. After first determining that the data were normally distributed and free of outliers, the benchmark value was calculated as the 95 percent upper tolerance limit from a data set containing 29 observations collected since 1997. As shown in Table 3, the benchmark value was exceeded only in the oxbow lake (0747), which was formed by a shift in the river path in 1994. Hydraulic and water quality data indicate that the oxbow lake is fed by the discharge of contaminated groundwater; therefore, elevated concentrations are expected. At the time of this sampling event, water was not flowing from the river into the lake. All other surface water locations had uranium concentrations below the benchmark value, which indicates minimal site-related impact on the water quality of the Little Wind River and of the other surface water features. Time-concentration graphs of molybdenum and uranium results at all surface water locations are included in the Data Presentation section.


Table 3. Comparison of Surface Water Concentrations (September 2013) to Benchmark

Location		Uranium Concentration (mg/L)
Benchmark		0.010
0794	Little Wind River, Benchmark Location	0.0038
0796	Little Wind River	0.0034
0811	Little Wind River	0.0034
0812	Little Wind River	0.0030
0747	Oxbow Lake	0.280
0810	Constructed Wetlands	0.0051
0822	West Side Irrigation Ditch	0.0056
0823	Gravel Pit Pond	0.0064
0749	Sulfuric acid plant ditch	0.0003

mg/L = milligrams per liter

The sulfate concentration (390 mg/L) at the ditch that discharges from the Chemtrade sulfuric acid plant (location 0749) remains lower than that observed in previous years. This is a result of a process change made by Chemtrade prior to the June 2013 sampling event. Reduced sulfate is also evident downstream, in the west side irrigation ditch (220 mg/L at location 0822).

Water samples from location 0822 (west side irrigation ditch) were analyzed for radium-226 and radium-228 in response to potentially elevated concentrations of these constituents in the sediments within the ditch. The radium-226 concentration was slightly above the Decision Level Concentrations (DLC) with a combined radium 226+228 concentration of 0.5 pCi/L. Historically, the combined radium concentration at this location has been low, averaging 1.1 pCi/L, indicating no impact to water quality in the ditch.

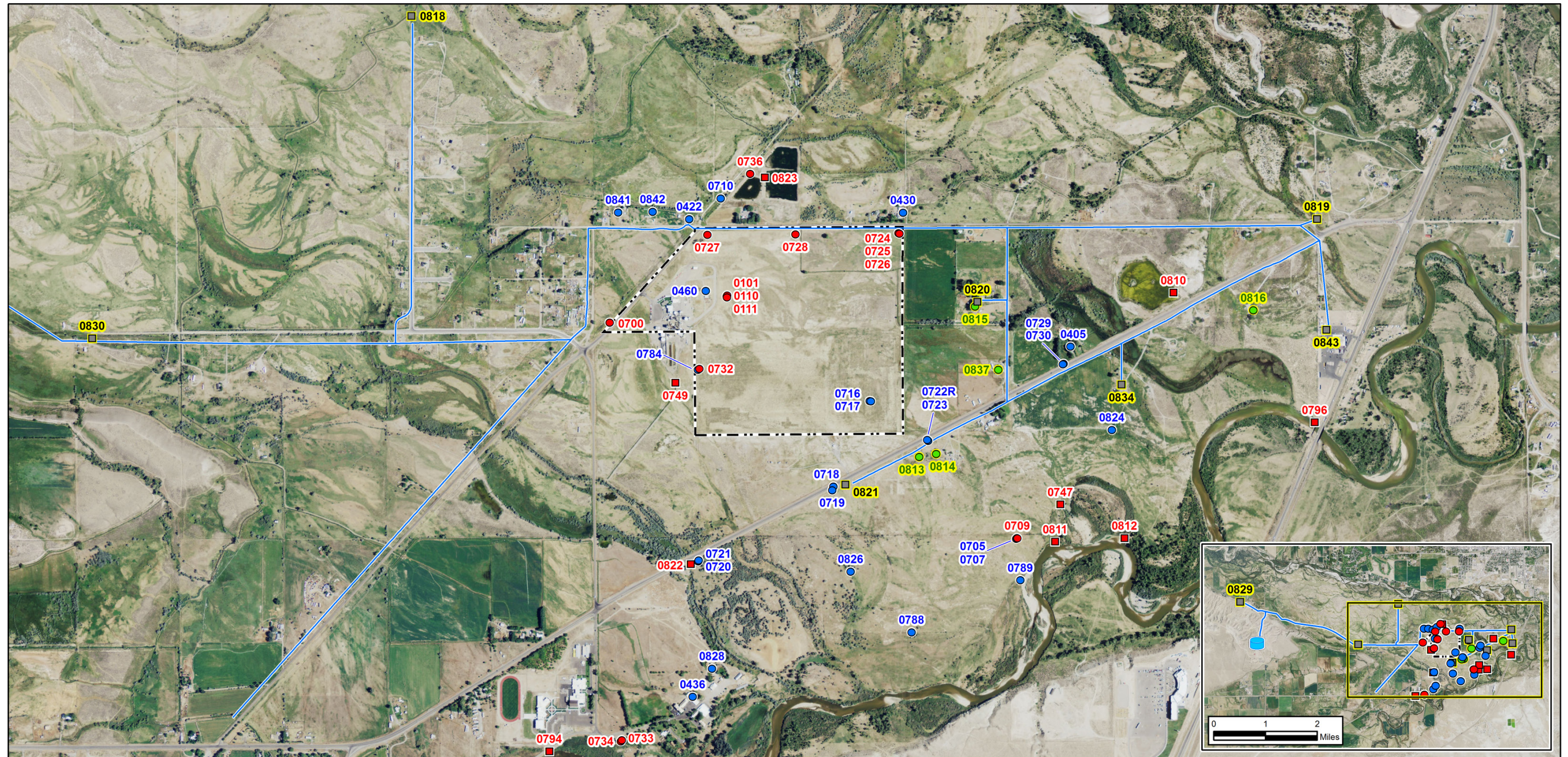


 Sam Campbell
 Site Lead, S.M. Stoller Corporation

1/7/2014

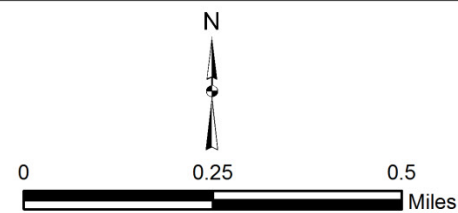
 Date

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LEGEND

- MONITORING WELL TO BE SAMPLED
- WELL TO BE SAMPLED - WATER LEVEL ONLY
- SURFACE LOCATION TO BE SAMPLED
- SITE BOUNDARY
- **HYDRANT MONITORING LOCATION**
- **TAP MONITORING LOCATION**
- ALTERNATE WATER SUPPLY LINE
- ALTERNATE WATER SUPPLY STORAGE TANK



U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Planned Sampling Map Riverton, WY, Processing Site September 2013	
DATE PREPARED: August 20, 2013	FILENAME: S1053200

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Riverton, Wyoming, Sample Location Map

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Riverton, Wyoming	Date(s) of Water Sampling	September 17–20, 2013
Date(s) of Verification	December 3, 2013	Name of Verifier	Stephen Donovan

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List any Program Directives or other documents, SOPs, instructions.	Yes	Work Order letter dated August 22, 2013, and Alternate Water Supply System Flushing Plan Riverton, Wyoming.
2. Were the sampling locations specified in the planning documents sampled?	Yes	Domestic tap location 0814 was not sampled because the home was vacant.
3. Were calibrations conducted as specified in the above-named documents?	Yes	Instrument calibration was performed on September 13, 2013.
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	Yes Yes	Operational checks were performed as required.
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Were wells categorized correctly?	Yes	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling? Did the water level stabilize prior to sampling? Did pH, specific conductance, and turbidity measurements meet criteria prior to sampling? Was the flow rate less than 500 mL/min?	Yes Yes Yes Yes	

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	Duplicates were collected at locations 0788, 0837, and 0842.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	Yes	One equipment blank was collected.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were the true identities of the QC samples documented?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	All groundwater and surface water samples were analyzed for iron per DOE request.
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Was all pertinent information documented on the field data sheets?	Yes	
18. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
19. Were water levels measured at the locations specified in the planning documents?	Yes	Water levels were measured at all sampled monitoring wells and 13 additional monitoring wells.

Laboratory Performance Assessment

General Information

Report Number (RIN): 13095603
Sample Event: September 17-20, 2013
Site(s): Riverton, Wyoming
Laboratory: ALS Laboratory Group, Fort Collins, Colorado
Work Order No.: 1309379
Analysis: Metals, Wet Chemistry, and Radiochemistry
Validator: Stephen Donovan
Review Date: November 19, 2013

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/POL/S04325, continually updated) “Standard Practice for Validation of Environmental Data.” The procedure was applied at Level 3, Data Validation. 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 4.

Table 4. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Chloride	MIS-A-045	SW-846 9056	SW-846 9056
Metals: Ca, Fe, K, Mg, Mn, Na	LMM-01	SW-846 3005A	SW-846 6010B
Metals: Mo, U	LMM-02	SW-846 3005A	SW-846 6020A
Radium-226	GPC-A-018	PA SOP712	PA SOP724
Radium-228	GPC-A-020	PA SOP749	PA SOP724
Sulfate	MIS-A-045	SW-846 9056	SW-846 9056

Data Qualifier Summary

Analytical results were qualified as listed in Table 5. Refer to the sections below for an explanation of the data qualifiers applied.

Table 5. Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
1309379-1	0405	Iron	U	Less than 5 times the calibration blank
1309379-1	0405	Potassium	U	Less than 5 times the calibration blank
1309379-3	0430	Potassium	U	Less than 5 times the method blank
1309379-4	0436	Potassium	U	Less than 5 times the method blank
1309379-5	0460	Iron	U	Less than 5 times the calibration blank
1309379-5	0460	Potassium	U	Less than 5 times the method blank
1309379-6	0705	Potassium	U	Less than 5 times the calibration blank
1309379-7	0707	Iron	U	Less than 5 times the calibration blank
1309379-8	0710	Iron	U	Less than 5 times the calibration blank
1309379-14	0721	Potassium	U	Less than 5 times the method blank
1309379-15	0722R	Iron	U	Less than 5 times the calibration blank
1309379-17	0729	Iron	U	Less than 5 times the calibration blank
1309379-21	0784	Iron	U	Less than 5 times the calibration blank
1309379-22	0788	Iron	U	Less than 5 times the calibration blank
1309379-24	0794	Calcium	J	Less than 10 times the equipment blank
1309379-24	0794	Iron	J	Less than 10 times the equipment blank
1309379-24	0794	Magnesium	J	Less than 10 times the equipment blank
1309379-24	0794	Uranium	J	Less than 10 times the equipment blank
1309379-25	0796	Calcium	J	Less than 10 times the equipment blank
1309379-25	0796	Iron	U	Less than 5 times the calibration blank
1309379-25	0796	Magnesium	J	Less than 10 times the equipment blank
1309379-25	0796	Uranium	J	Less than 10 times the equipment blank
1309379-26	0810	Calcium	J	Less than 10 times the equipment blank
1309379-26	0810	Iron	U	Less than 5 times the calibration blank
1309379-26	0810	Magnesium	J	Less than 10 times the equipment blank
1309379-27	0811	Calcium	J	Less than 10 times the equipment blank
1309379-27	0811	Magnesium	J	Less than 10 times the equipment blank
1309379-27	0811	Uranium	J	Less than 10 times the equipment blank
1309379-28	0812	Calcium	J	Less than 10 times the equipment blank
1309379-28	0812	Magnesium	J	Less than 10 times the equipment blank
1309379-28	0812	Uranium	J	Less than 10 times the equipment blank
1309379-29	0813	Radium-228	J	Less than the determination limit
1309379-30	0815	Radium-226	J	Less than the determination limit
1309379-30	0815	Radium-228	J	Less than the determination limit
1309379-31	0816	Radium-228	J	Less than the determination limit
1309379-33	0818	Radium-226	J	Less than the determination limit
1309379-33	0818	Radium-228	J	Less than the determination limit
1309379-34	0819	Radium-226	J	Less than the determination limit
1309379-34	0819	Radium-228	J	Less than the determination limit
1309379-35	0819	Radium-226	J	Less than the determination limit
1309379-35	0819	Radium-228	J	Less than the determination limit

Table 5 (continued). Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
1309379-36	0820	Radium-226	J	Less than the determination limit
1309379-36	0820	Radium-228	J	Less than the determination limit
1309379-37	0820	Radium-226	J	Less than the determination limit
1309379-37	0820	Radium-228	J	Less than the determination limit
1309379-38	0821	Radium-228	J	Less than the determination limit
1309379-39	0821	Radium-226	J	Less than the determination limit
1309379-39	0821	Radium-228	J	Less than the determination limit
1309379-40	0822	Potassium	J	Serial dilution result
1309379-40	0822	Iron	J	Less than 10 times the equipment blank
1309379-40	0822	Manganese	J	Serial dilution result
1309379-40	0822	Magnesium	J	Less than 10 times the equipment blank
1309379-40	0822	Radium-226	J	Less than the determination limit
1309379-40	0822	Uranium	J	Serial dilution result
1309379-41	0823	Iron	J	Less than 10 times the equipment blank
1309379-44	0828	Iron	U	Less than 5 times the calibration blank
1309379-44	0828	Potassium	U	Less than 5 times the method blank
1309379-46	0829	Radium-228	J	Less than the determination limit
1309379-47	0830	Radium-226	J	Less than the determination limit
1309379-47	0830	Radium-228	J	Less than the determination limit
1309379-48	0830	Radium-228	J	Less than the determination limit
1309379-49	0834	Radium-226	J	Less than the determination limit
1309379-49	0834	Radium-228	J	Less than the determination limit
1309379-50	0837	Radium-228	J	Less than the determination limit
1309379-51	0841	Iron	U	Less than 5 times the calibration blank
1309379-52	0842	Potassium	U	Less than 5 times the method blank
1309379-54	0842 Duplicate	Potassium	U	Less than 5 times the method blank
1309379-55	0788 Duplicate	Iron	U	Less than 5 times the calibration blank
1309379-56	Equipment blank	Potassium	U	Less than 5 times the method blank
1309379-56	Equipment blank	Sodium	U	Less than 5 times the method blank
1309379-57	0837 Duplicate	Radium-226	J	Less than the determination limit
1309379-57	0837 Duplicate	Radium-228	J	Less than the determination limit

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 57 water samples on September 25, 2013, accompanied by a Chain of Custody (COC) form. The COC 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 sample submittal documents had no errors or omissions with the following exception. Sample 0813 was marked on the COC form as not present, but was included in the sample shipment.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature inside the iced cooler at 0.2 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses with one exception. The dissolved organic carbon aliquot from location 0729 was received with a pH value of 6. The aliquot was acidified by the laboratory to a pH less than 2 and allowed to equilibrate prior to analysis. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The method detection limit (MDL) was reported for all metal and wet chemical analytes as required. The MDL, as defined in 40 CFR 136, is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. The practical quantitation limit (PQL) for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL.

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

The reported MDLs for all metal and wet chemical analytes, and MDCs for radiochemical analytes demonstrate compliance with contractual requirements.

Laboratory Instrument Calibration

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

Method SW-846 6010, Metals

Calibrations for calcium, potassium, magnesium, and manganese were performed on October 17, 2013. Calibrations for iron were performed on October 17 and 21, 2013. The calibration curve generated using four calibration standards had correlation coefficient values greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL.

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

Method SW-846 6020, Molybdenum, Uranium

Calibrations for molybdenum and uranium were performed on October 18, 2013, using four calibration standards. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency with all calibration checks meeting the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method SW-846 9056, Chloride, Sulfate

The calibrations for chloride and sulfate were performed using five calibration standards on September 9, 2013. The calibration curve correlation coefficient values were greater than 0.995 and the absolute value of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency. All calibration checks met the acceptance criteria.

Radium-226

Instrument calibration was performed August 2013. Daily instrument checks performed October 1, 2013, met the acceptance criteria. The chemical recoveries met the acceptance criteria of 40 to 110 percent for all samples.

Radium-228

Instrument calibration was performed May 2013. Daily instrument checks performed on October 17, 2013, met the acceptance criteria. The chemical recoveries met the acceptance criteria of 40 to 110 percent for all samples.

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 for all analytes. All method, initial calibration, and continuing 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.

Radiochemistry

The radium-226 and radium-228 method blank results were below the DLC.

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 samples are used to measure method performance in the sample matrix. The spike recoveries met the acceptance criteria for all analytes evaluated.

Laboratory Replicate Analysis

Laboratory replicate sample results demonstrate acceptable laboratory precision. The relative percent difference values for the non-radiochemical sample replicates and matrix spike replicates were less than 20 percent for results that are greater than 5 times the PQL, indicating acceptable precision. The radiochemical relative error ratio (calculated using the one-sigma total propagated uncertainty) for the laboratory control sample replicates was less than three, indicating acceptable precision.

Laboratory Control Sample

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

Metals Serial Dilution

Serial dilutions were prepared and analyzed for the metals analyses to monitor chemical or physical interferences in the sample matrix. Serial dilution data are evaluated when the concentration of the undiluted sample is greater than 50 times the MDL. The serial dilution results met the acceptance criteria with the following exceptions. The potassium, manganese, and uranium results for the serial dilution prepared from sample 0822 did not meet the acceptance criteria. The associated sample results are qualified with a "J" flag as estimated values.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers. The analytical report included the MDL (MDC for radiochemistry) and PQL for all analytes and all required supporting documentation.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. All peak integrations were satisfactory.

Electronic Data Deliverable (EDD) File

The EDD file arrived on October 23, 2013. The Sample Management System EDD validation module was used to verify that the EDD files were complete and in compliance with requirements. The module compares the contents of the files 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: 13095603 Lab Code: PAR Validator: Stephen Donovan Validation Date: 11/19/2013
Project: Riverton Analysis Type: Metals General Chem Rad Organics
of Samples: 57 Matrix: WATER Requested Analysis Completed: Yes

Chain of Custody

Present: OK Signed: OK Dated: OK

Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

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

All analyses were completed within the applicable holding times.

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

There was 1 trip/equipment blank evaluated.

There were 3 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 13095603

Lab Code: PAR

Date Due: 10/23/2013

Matrix: Water

Site Code: RVT01

Date Completed: 10/23/2013

Analyte	Method Type	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	CCV	CCB								
Calcium	ICP/ES	10/17/2013			OK	OK	OK	97.0	90.0	89.0	0.0	101.0	2.0	105.0
Calcium	ICP/ES	10/18/2013			OK	OK	OK	99.0	95.0	98.0	2.0	102.0	3.0	104.0
Calcium	ICP/ES	10/18/2013					OK	99.0	86.0	82.0	1.0	102.0	1.0	104.0
Iron	ICP/ES	10/18/2013			OK	OK	OK	94.0	91.0	96.0	6.0	103.0		98.0
Iron	ICP/ES	10/18/2013					OK	97.0	94.0	93.0	1.0	105.0		102.0
Iron	ICP/ES	10/21/2013			OK	OK	OK	92.0	89.0	91.0	2.0	108.0		96.0
Magnesium	ICP/ES	10/17/2013			OK	OK	OK	97.0	93.0	93.0	0.0	105.0	4.0	105.0
Magnesium	ICP/ES	10/18/2013			OK	OK	OK	101.0	97.0	98.0	1.0	99.0	1.0	103.0
Magnesium	ICP/ES	10/18/2013					OK	98.0	95.0	93.0	1.0	102.0	3.0	101.0
Manganese	ICP/ES	10/17/2013			OK	OK	OK	92.0	90.0	91.0	1.0	97.0	16.0	112.0
Manganese	ICP/ES	10/18/2013			OK	OK	OK	100.0	97.0	97.0	1.0	93.0	3.0	108.0
Manganese	ICP/ES	10/18/2013					OK	104.0	100.0	99.0	1.0	95.0		111.0
Molybdenum	ICP/MS	10/18/2013			OK	OK	OK	91.0	97.0	95.0	2.0			102.0
Molybdenum	ICP/MS	10/18/2013					OK	91.0	100.0	99.0	1.0			94.0
Molybdenum	ICP/MS	10/18/2013					OK	94.0	96.0	94.0	2.0			
Potassium	ICP/ES	10/17/2013			OK	OK	OK	97.0	119.0	120.0	1.0		15.0	85.0
Potassium	ICP/ES	10/18/2013			OK	OK	OK	102.0	105.0	105.0	1.0			84.0
Potassium	ICP/ES	10/18/2013					OK	99.0	113.0	113.0	0.0			83.0

SAMPLE MANAGEMENT SYSTEM
Metals Data Validation Worksheet

RIN: 13095603 Lab Code: PAR Date Due: 10/23/2013
 Matrix: Water Site Code: RVT01 Date Completed: 10/23/2013

Analyte	Method Type	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	CCV	CCB								
Sodium	ICP/ES	10/17/2013			OK	OK	OK	99.0	96.0	100.0	1.0		7.0	84.0
Sodium	ICP/ES	10/18/2013			OK	OK	OK	103.0	106.0	108.0	1.0		8.0	85.0
Sodium	ICP/ES	10/18/2013					OK	101.0	101.0	96.0	2.0		3.0	85.0
Uranium	ICP/MS	10/18/2013			OK	OK	OK	101.0	105.0	102.0	3.0		14.0	100.0
Uranium	ICP/MS	10/18/2013					OK	101.0	105.0	107.0	1.0			104.0
Uranium	ICP/MS	10/18/2013					OK	101.0	99.0	102.0	3.0			

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 13095603 **Lab Code:** PAR **Date Due:** 10/23/2013
Matrix: Water **Site Code:** RVT01 **Date Completed:** 10/23/2013

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
0813	Radium-226	10/21/2013			92.5			
0815	Radium-226	10/21/2013			89.9			
0816	Radium-226	10/21/2013			93.0			
0818	Radium-226	10/21/2013			95.1			
0818	Radium-226	10/21/2013			95.8			
0819	Radium-226	10/21/2013			91.1			
0819	Radium-226	10/21/2013			95.6			
0820	Radium-226	10/21/2013			97.4			
0820	Radium-226	10/21/2013			95.3			
0821	Radium-226	10/21/2013			95.1			
0821	Radium-226	10/21/2013			94.9			
0822	Radium-226	10/21/2013			94.1			
0829	Radium-226	10/21/2013			95.0			
0829	Radium-226	10/21/2013			97.3			
0830	Radium-226	10/21/2013			93.7			
0830	Radium-226	10/21/2013			93.3			
0834	Radium-226	10/21/2013			93.1			
0837	Radium-226	10/21/2013			96.0			
0843	Radium-226	10/21/2013			96.7			
2469	Radium-226	10/21/2013			93.2			
Blank_Spike	Radium-226	10/21/2013			91.4	92.70		
Blank_Spike_Du	Radium-226	10/21/2013			97.1	92.00		0.05
Blank	Radium-226	10/21/2013	0.1370	U	94.2			
0813	Radium-228	10/17/2013			94.1			
0815	Radium-228	10/17/2013			95.9			
0816	Radium-228	10/17/2013			95.3			
0818	Radium-228	10/17/2013			94.7			
0818	Radium-228	10/17/2013			96.4			
0819	Radium-228	10/17/2013			96.9			
0819	Radium-228	10/17/2013			93.6			
0820	Radium-228	10/17/2013			93.7			
0820	Radium-228	10/17/2013			96.2			

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 13095603 **Lab Code:** PAR **Date Due:** 10/23/2013
Matrix: Water **Site Code:** RVT01 **Date Completed:** 10/23/2013

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
0821	Radium-228	10/17/2013			94.9			
0821	Radium-228	10/17/2013			95.0			
0822	Radium-228	10/17/2013			78.6			
0829	Radium-228	10/17/2013			97.0			
0829	Radium-228	10/17/2013			97.3			
0830	Radium-228	10/17/2013			94.8			
0830	Radium-228	10/17/2013			96.9			
0834	Radium-228	10/17/2013			96.8			
0837	Radium-228	10/17/2013			96.3			
0843	Radium-228	10/17/2013			97.2			
2469	Radium-228	10/17/2013			98.3			
Blank_Spike	Radium-228	10/17/2013			98.1	123.00		
Blank_Spike_Du	Radium-228	10/17/2013			98.6	118.00		0.20
Blank	Radium-228	10/17/2013	0.1520	U	95.5			

SAMPLE MANAGEMENT SYSTEM
Wet Chemistry Data Validation Worksheet

RIN: 13095603 **Lab Code:** PAR **Date Due:** 10/23/2013
Matrix: Water **Site Code:** RVT01 **Date Completed:** 10/23/2013

Analyte	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	CCV	CCB						
CHLORIDE	10/05/2013	0.000	0.9999	OK	OK	OK	99.00	101.0	103.0	1.00	
CHLORIDE	10/05/2013			OK	OK	OK	102.00				
SULFATE	10/05/2013	0.000	0.9999	OK	OK	OK	97.00	92.0	100.0	2.00	
SULFATE	10/05/2013			OK	OK	OK	101.00	102.0	100.0	1.00	

Sampling Quality Control Assessment

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

Sampling Protocol

Surface water locations were sampled using a peristaltic pump and tubing reel. Monitoring wells were sampled using a peristaltic pump and dedicated tubing. Domestic wells (0405, 0422, 0430, 0436, 0460, 0828, 0841, and 0842) were sampled by filling bottles at the discharge point.

Sample results for all monitoring wells met the Category I or II low-flow sampling criteria and were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. Criteria for Category I wells (wells with sufficient yield), which involves more rigor than Category II wells, specifies that water-level and field parameter (pH, specific conductance, and turbidity) measurements must stabilize during the purging process prior to sampling. Criteria for Category II well (low-producing wells) involves sampling immediately after a tubing volume is removed with no water-level or parameter stability required. Wells 0705, 0719, and 0730 were classified as Category II wells because the low-yield of the well (water-level draw-down at flow-rate 100 mL/minute). Because sampling of Category II well involves less rigor, results from these wells were qualified with a “Q” flag as specified in the SAP, indicating the data are qualitative because of the sampling technique.

Equipment Blank

An equipment blank was collected after decontamination of the non-dedicated sampling equipment used at some surface water locations. Calcium, magnesium, manganese, iron, and uranium were detected in the equipment blank. Reanalysis of the equipment blank confirmed the reported results. Associated sample results for these analytes that are less than 5 times (10 times for calcium and magnesium) the blank concentration are qualified with a “J” flag as estimated values.

Field Duplicate Assessment

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. Duplicate samples were collected from locations 0788, 0837, and 0842. For non-radiochemical measurements, the relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. The RPD is not used to evaluate results that are less than 5 times the PQL. For these results (RPD is NA on the Field Duplicates report), the range should be no greater than the PQL. For radiochemical measurements, the relative error ratio (the ratio of the absolute difference between the sample and duplicate results and the sum of the 1-sigma uncertainties) is used to evaluate duplicate results and should be less than 3. All duplicate results met these criteria demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Equipment/Trip Blanks

RIN: 13095603 Lab Code: PAR Project: Riverton Validation Date: 12/03/2013

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1309379-56	SW6010	Calcium	6700		12	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1309379-19	LKW 027	0747	150000	1		
1309379-24	LKW 029	0794	55000	1		J
1309379-25	LKW 030	0796	59000	1		J
1309379-26	LKW 031	0810	15000	1		J
1309379-27	LKW 032	0811	58000	1		J
1309379-28	LKW 033	0812	53000	1		J
1309379-40	LKW 034	0822	87000	1		
1309379-41	LKW 035	0823	180000	1		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1309379-56	SW6010	Magnesium	1600		13	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1309379-19	LKW 027	0747	55000	1		
1309379-24	LKW 029	0794	19000	1		
1309379-25	LKW 030	0796	21000	1		
1309379-26	LKW 031	0810	94000	1		
1309379-27	LKW 032	0811	21000	1		
1309379-28	LKW 033	0812	19000	1		
1309379-40	LKW 034	0822	23000	1		
1309379-41	LKW 035	0823	92000	1		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1309379-56	SW6010	Manganese	73		0.11	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1309379-19	LKW 027	0747	400	1		
1309379-24	LKW 029	0794	10	1		J
1309379-25	LKW 030	0796	4.6	1	B	J
1309379-26	LKW 031	0810	5.3	1		J

SAMPLE MANAGEMENT SYSTEM

Validation Report: Equipment/Trip Blanks

RIN: 13095603 Lab Code: PAR Project: Riverton Validation Date: 12/03/2013

Blank Data							
Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1309379-56		Manganese				

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1309379-27	LKW 032	0811	8.2	1		J
1309379-28	LKW 033	0812	9.5	1		J
1309379-40	LKW 034	0822	15	1	E	J
1309379-41	LKW 035	0823	660	1		

Blank Data							
Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1309379-56	SW6010	Iron	3300		4.9	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1309379-19	LKW 027	0747	4.9	1	U	
1309379-24	LKW 029	0794	36	1	B	J
1309379-25	LKW 030	0796	6.2	1	B	J
1309379-26	LKW 031	0810	6.6	1	B	J
1309379-27	LKW 032	0811	4.9	1	U	
1309379-28	LKW 033	0812	4.9	1	U	
1309379-40	LKW 034	0822	150	1		J
1309379-41	LKW 035	0823	160	1		J

Blank Data							
Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1309379-56	SW6020	Uranium	0.97		0.029	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1309379-19	LKW 027	0747	280	50		
1309379-24	LKW 029	0794	3.8	10		J
1309379-25	LKW 030	0796	3.4	10		J
1309379-26	LKW 031	0810	5.1	10		
1309379-27	LKW 032	0811	3.4	10		J
1309379-28	LKW 033	0812	3	10		J
1309379-40	LKW 034	0822	5.6	10	E	

SAMPLE MANAGEMENT SYSTEM

Validation Report: Equipment/Trip Blanks

RIN: 13095603 Lab Code: PAR Project: Riverton Validation Date: 12/03/2013

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1309379-56		Uranium				

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1309379-41	LKW 035	0823	6.4	10		

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

Page 1 of 1

RIN: 13095603 Lab Code: PAR Project: Riverton Validation Date: 11/19/2013

Duplicate: 2175

Sample: 0842

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Calcium	50000			1	47000			1	6.19		UG/L
CHLORIDE	15			1	15			1	0		MG/L
Iron	60	B		1	70	B		1	15.38		UG/L
Magnesium	5500			1	5100			1	7.55		UG/L
Manganese	50			1	47			1	6.19		UG/L
Molybdenum	2.9			10	2.2			10	NA		UG/L
Potassium	910	B		1	770	B		1	16.67		UG/L
Sodium	79000			1	76000			1	3.87		UG/L
SULFATE	150			5	150			5	0		MG/L
Uranium	0.34			10	0.27			10	NA		UG/L

Duplicate: 2353

Sample: 0788

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Calcium	260000			1	260000			1	0		UG/L
CHLORIDE	49			50	49			50			MG/L
Iron	32	B		1	22	B		1			UG/L
Magnesium	68000			1	68000			1	0		UG/L
Manganese	200			1	200			1	0		UG/L
Molybdenum	21			10	21			10	0		UG/L
Potassium	11000			1	11000			1	0		UG/L
Sodium	490000			50	500000			50	2.02		UG/L
SULFATE	1500			50	1500			50	0		MG/L
Uranium	43			10	41			10	4.76		UG/L

Duplicate: 2469

Sample: 0837

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Radium-226	0.577		0.266	1	0.415		0.221	1		0.9	pCi/L
Radium-228	0.491		0.306	1	0.565		0.271	1		0.4	pCi/L
Uranium	0.1			10	0.11			10			UG/L

Certification

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

Laboratory Coordinator: Stephen Donovan 1-7-2014
Stephen Donovan Date

Data Validation Lead: Stephen Donovan 1-7-2014
Stephen Donovan 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 environmental database. The application compares the new data set (in standard environmental database units) with historical data and lists the new data that fall outside the historical data range. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition. The review should include an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

Six analytical results were identified as potentially anomalous. There were no errors noted during the review of the data associated with these results. The data for this RIN are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters

Comparison: All historical Data Beginning 01/01/2004

Laboratory: ALS Laboratory Group

RIN: 13095603

Report Date: 12/03/2013

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RVT01	0405	N001	09/19/2013	Molybdenum	0.0024			0.0051			0.0027	J		19	0	NA
RVT01	0422	N001	09/18/2013	Uranium	0.0014			0.0038			0.0016			8	0	No
RVT01	0710	N001	09/18/2013	Molybdenum	0.0024		F	0.0023	E	F	0.00032	U	F	20	4	NA
RVT01	0716	N001	09/18/2013	Molybdenum	0.094		F	0.19		F	0.12		F	26	0	No
RVT01	0720	N001	09/19/2013	Manganese	0.00011	U	F	0.3		F	0.00029	B	F	20	1	No
RVT01	0720	N001	09/19/2013	Sulfate	96		F	760		F	100		F	20	0	NA
RVT01	0722R	N001	09/20/2013	Manganese	0.00011	U	F	0.0208		F	0.00013	B	JF	14	2	No
RVT01	0730	N001	09/19/2013	Manganese	0.037		FQ	0.18		FQ	0.039		FQ	20	0	No
RVT01	0730	N001	09/19/2013	Sulfate	120		FQ	310		FQ	140		FQ	20	0	NA
RVT01	0749	0001	09/18/2013	Sulfate	390			2700			550			21	0	Yes
RVT01	0784	N001	09/18/2013	Manganese	0.19		F	1		F	0.26		F	16	0	No
RVT01	0784	N001	09/18/2013	Sulfate	670		F	3400		F	1900		F	17	0	NA
RVT01	0784	N001	09/18/2013	Uranium	0.0015		F	0.035		F	0.0018		F	17	0	No
RVT01	0810	0001	09/19/2013	Manganese	0.0053			0.49			0.023			19	0	NA
RVT01	0818	N002	09/17/2013	Radium-226	2.51			1.58		J	0.344	U		16	6	Yes
RVT01	0818	N002	09/17/2013	Radium-228	3.56			2.31			0.443		J	16	4	Yes
RVT01	0823	0001	09/18/2013	Manganese	0.66			0.28			0.0019	B		17	1	No

Data Validation Outliers Report - No Field Parameters

Comparison: All historical Data Beginning 01/01/2004

Laboratory: ALS Laboratory Group

RIN: 13095603

Report Date: 12/03/2013

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RVT01	0824	N001	09/20/2013	Manganese	0.027		F	0.0083		F	0.00042	B	UF	14	3	Yes
RVT01	0824	N001	09/20/2013	Molybdenum	0.0026		F	0.0064		F	0.0027		F	14	0	No
RVT01	0824	N001	09/20/2013	Sulfate	63		F	330		F	65		F	14	0	No
RVT01	0824	N001	09/20/2013	Uranium	0.0083		F	0.02		F	0.0085		F	14	0	No
RVT01	0826	N001	09/19/2013	Molybdenum	0.018		F	0.0468		F	0.019		F	15	0	NA
RVT01	0829	N002	09/17/2013	Radium-226	1.97			0.991		J	0.323	U		12	6	Yes
RVT01	0829	N001	09/17/2013	Radium-228	0.378		J	0.907		J	0.47		J	12	7	No
RVT01	0829	N002	09/17/2013	Radium-228	1.88			0.907		J	0.47		J	12	7	Yes
RVT01	0830	N001	09/17/2013	Radium-228	0.534		J	1.25		J	0.564	U		12	5	No

STATISTICAL TESTS:

The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test

Outliers are identified using Dixon's Test when there are 25 or fewer data points.

Outliers are identified using Rosner's Test when there are 26 or more data points.

See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

NA: Data are not normally or lognormally distributed.

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Attachment 2

Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0405 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	-	106			#		
Calcium	mg/L	09/19/2013	N001	-	6.2			#	0.012	
Chloride	mg/L	09/19/2013	N001	-	17			#	1	
Dissolved Oxygen	mg/L	09/19/2013	N001	-	4.32			#		
Iron	mg/L	09/19/2013	N001	-	0.13		U	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	-	0.013	U		#	0.013	
Manganese	mg/L	09/19/2013	N001	-	0.0041	B		#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	-	0.0024			#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	-	156.9			#		
pH	s.u.	09/19/2013	N001	-	8.7			#		
Potassium	mg/L	09/19/2013	N001	-	0.63	B	U	#	0.11	
Sodium	mg/L	09/19/2013	N001	-	200			#	0.066	
Specific Conductance	umhos /cm	09/19/2013	N001	-	908			#		
Sulfate	mg/L	09/19/2013	N001	-	280			#	2.5	
Temperature	C	09/19/2013	N001	-	12.7			#		
Turbidity	NTU	09/19/2013	N001	-	6.74			#		
Uranium	mg/L	09/19/2013	N001	-	0.00008	B		#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0422 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	-	135			#		
Calcium	mg/L	09/18/2013	N001	-	40			#	0.012	
Chloride	mg/L	09/18/2013	N001	-	4.1			#	0.2	
Dissolved Oxygen	mg/L	09/18/2013	N001	-	3.42			#		
Iron	mg/L	09/18/2013	N001	-	0.02	B		#	0.0049	
Magnesium	mg/L	09/18/2013	N001	-	9.2			#	0.013	
Manganese	mg/L	09/18/2013	N001	-	0.00011	U		#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	-	0.0014			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	-	158.8			#		
pH	s.u.	09/18/2013	N001	-	7.73			#		
Potassium	mg/L	09/18/2013	N001	-	2			#	0.11	
Sodium	mg/L	09/18/2013	N001	-	23			#	0.0066	
Specific Conductance	umhos /cm	09/18/2013	N001	-	371			#		
Sulfate	mg/L	09/18/2013	N001	-	52			#	0.5	
Temperature	C	09/18/2013	N001	-	16.51			#		
Turbidity	NTU	09/18/2013	N001	-	1.15			#		
Uranium	mg/L	09/18/2013	N001	-	0.0014			#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0430 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	-	171			#		
Calcium	mg/L	09/18/2013	N001	-	3.7			#	0.012	
Chloride	mg/L	09/18/2013	N001	-	9.5			#	1	
Dissolved Oxygen	mg/L	09/18/2013	N001	-	6.15			#		
Iron	mg/L	09/18/2013	N001	-	0.16			#	0.0049	
Magnesium	mg/L	09/18/2013	N001	-	0.013	U		#	0.013	
Manganese	mg/L	09/18/2013	N001	-	0.0062			#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	-	0.0022			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	-	187.5			#		
pH	s.u.	09/18/2013	N001	-	8.5			#		
Potassium	mg/L	09/18/2013	N001	-	0.59	B	U	#	0.11	
Sodium	mg/L	09/18/2013	N001	-	150			#	0.0066	
Specific Conductance	umhos /cm	09/18/2013	N001	-	750			#		
Sulfate	mg/L	09/18/2013	N001	-	180			#	2.5	
Temperature	C	09/18/2013	N001	-	14.76			#		
Turbidity	NTU	09/18/2013	N001	-	3.38			#		
Uranium	mg/L	09/18/2013	N001	-	0.00004	B		#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0436 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	-	159			#		
Calcium	mg/L	09/18/2013	N001	-	3.3			#	0.012	
Chloride	mg/L	09/18/2013	N001	-	13			#	1	
Dissolved Oxygen	mg/L	09/18/2013	N001	-	2.82			#		
Iron	mg/L	09/18/2013	N001	-	0.0049	U		#	0.0049	
Magnesium	mg/L	09/18/2013	N001	-	0.013	U		#	0.013	
Manganese	mg/L	09/18/2013	N001	-	0.0022	B		#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	-	0.0028			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	-	138.6			#		
pH	s.u.	09/18/2013	N001	-	8.81			#		
Potassium	mg/L	09/18/2013	N001	-	0.59	B	U	#	0.11	
Sodium	mg/L	09/18/2013	N001	-	170			#	0.066	
Specific Conductance	umhos /cm	09/18/2013	N001	-	822			#		
Sulfate	mg/L	09/18/2013	N001	-	200			#	2.5	
Temperature	C	09/18/2013	N001	-	21.3			#		
Turbidity	NTU	09/18/2013	N001	-	1.15			#		
Uranium	mg/L	09/18/2013	N001	-	0.00007	B		#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0460 WELL Sulfuric Acid Plant

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	-	160			#		
Calcium	mg/L	09/18/2013	N001	-	3.1			#	0.012	
Chloride	mg/L	09/18/2013	N001	-	10			#	1	
Dissolved Oxygen	mg/L	09/18/2013	N001	-	4.36			#		
Iron	mg/L	09/18/2013	N001	-	0.018	B	U	#	0.0049	
Magnesium	mg/L	09/18/2013	N001	-	0.013	U		#	0.013	
Manganese	mg/L	09/18/2013	N001	-	0.006			#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	-	0.0023			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	-	151.8			#		
pH	s.u.	09/18/2013	N001	-	8.77			#		
Potassium	mg/L	09/18/2013	N001	-	0.55	B	U	#	0.11	
Sodium	mg/L	09/18/2013	N001	-	140			#	0.0066	
Specific Conductance	umhos /cm	09/18/2013	N001	-	716			#		
Sulfate	mg/L	09/18/2013	N001	-	170			#	2.5	
Temperature	C	09/18/2013	N001	-	18.96			#		
Turbidity	NTU	09/18/2013	N001	-	1.39			#		
Uranium	mg/L	09/18/2013	N001	-	0.00007	B		#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0705 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	0001	44.95	- 44.95	69		FQ	#		
Calcium	mg/L	09/19/2013	0001	44.95	- 44.95	28		FQ	#	0.012	
Chloride	mg/L	09/19/2013	0001	44.95	- 44.95	54		FQ	#	2	
Dissolved Oxygen	mg/L	09/19/2013	N001	44.95	- 44.95	0.78		FQ	#		
Iron	mg/L	09/19/2013	0001	44.95	- 44.95	0.0049	U	FQ	#	0.0049	
Magnesium	mg/L	09/19/2013	0001	44.95	- 44.95	0.41	B	FQ	#	0.013	
Manganese	mg/L	09/19/2013	0001	44.95	- 44.95	0.00011	U	FQ	#	0.00011	
Molybdenum	mg/L	09/19/2013	0001	44.95	- 44.95	0.0026		FQ	#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	44.95	- 44.95	130.6		FQ	#		
pH	s.u.	09/19/2013	N001	44.95	- 44.95	8.19		FQ	#		
Potassium	mg/L	09/19/2013	0001	44.95	- 44.95	0.86	B	UFQ	#	0.11	
Sodium	mg/L	09/19/2013	0001	44.95	- 44.95	230		FQ	#	0.066	
Specific Conductance	umhos/cm	09/19/2013	N001	44.95	- 44.95	1224		FQ	#		
Sulfate	mg/L	09/19/2013	0001	44.95	- 44.95	440		FQ	#	5	
Temperature	C	09/19/2013	N001	44.95	- 44.95	11.73		FQ	#		
Turbidity	NTU	09/19/2013	N001	44.95	- 44.95	240		FQ	#		
Uranium	mg/L	09/19/2013	0001	44.95	- 44.95	0.00029		FQ	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0707 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	11.4	-	11.4	349		F	#		
Calcium	mg/L	09/19/2013	N001	11.4	-	11.4	420		F	#	0.012	
Chloride	mg/L	09/19/2013	N001	11.4	-	11.4	73		F	#	10	
Dissolved Oxygen	mg/L	09/19/2013	N001	11.4	-	11.4	0.26		F	#		
Iron	mg/L	09/19/2013	N001	11.4	-	11.4	0.0086	B	UF	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	11.4	-	11.4	120		F	#	0.013	
Manganese	mg/L	09/19/2013	N001	11.4	-	11.4	1		F	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	11.4	-	11.4	0.85		F	#	0.0016	
Oxidation Reduction Potential	mV	09/19/2013	N001	11.4	-	11.4	124.7		F	#		
pH	s.u.	09/19/2013	N001	11.4	-	11.4	6.93		F	#		
Potassium	mg/L	09/19/2013	N001	11.4	-	11.4	21		F	#	0.11	
Sodium	mg/L	09/19/2013	N001	11.4	-	11.4	350		F	#	0.33	
Specific Conductance	umhos/cm	09/19/2013	N001	11.4	-	11.4	4737		F	#		
Sulfate	mg/L	09/19/2013	N001	11.4	-	11.4	2600		F	#	25	
Temperature	C	09/19/2013	N001	11.4	-	11.4	13.25		F	#		
Turbidity	NTU	09/19/2013	N001	11.4	-	11.4	7.22		F	#		
Uranium	mg/L	09/19/2013	N001	11.4	-	11.4	0.73		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0710 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	12.75	- 12.75	164		F	#		
Calcium	mg/L	09/18/2013	N001	12.75	- 12.75	52		F	#	0.012	
Chloride	mg/L	09/18/2013	N001	12.75	- 12.75	6.6		F	#	0.2	
Dissolved Oxygen	mg/L	09/18/2013	N001	12.75	- 12.75	0.82		F	#		
Iron	mg/L	09/18/2013	N001	12.75	- 12.75	0.036	B	UF	#	0.0049	
Magnesium	mg/L	09/18/2013	N001	12.75	- 12.75	12		F	#	0.013	
Manganese	mg/L	09/18/2013	N001	12.75	- 12.75	0.029		F	#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	12.75	- 12.75	0.0024		F	#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	12.75	- 12.75	172.7		F	#		
pH	s.u.	09/18/2013	N001	12.75	- 12.75	7.44		F	#		
Potassium	mg/L	09/18/2013	N001	12.75	- 12.75	1.8		F	#	0.11	
Sodium	mg/L	09/18/2013	N001	12.75	- 12.75	33		F	#	0.0066	
Specific Conductance	umhos/cm	09/18/2013	N001	12.75	- 12.75	564		F	#		
Sulfate	mg/L	09/18/2013	N001	12.75	- 12.75	83		F	#	0.5	
Temperature	C	09/18/2013	N001	12.75	- 12.75	14.26		F	#		
Turbidity	NTU	09/18/2013	N001	12.75	- 12.75	5.13		F	#		
Uranium	mg/L	09/18/2013	N001	12.75	- 12.75	0.0026		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0716 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	10.03	- 10.03	290		F	#		
Calcium	mg/L	09/18/2013	N001	10.03	- 10.03	140		F	#	0.012	
Chloride	mg/L	09/18/2013	N001	10.03	- 10.03	37		F	#	4	
Dissolved Oxygen	mg/L	09/18/2013	N001	10.03	- 10.03	0.86		F	#		
Iron	mg/L	09/18/2013	N001	10.03	- 10.03	0.15		F	#	0.0049	
Magnesium	mg/L	09/18/2013	N001	10.03	- 10.03	30		F	#	0.013	
Manganese	mg/L	09/18/2013	N001	10.03	- 10.03	0.31		F	#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	10.03	- 10.03	0.094		F	#	0.0016	
Oxidation Reduction Potential	mV	09/18/2013	N001	10.03	- 10.03	24.1		F	#		
pH	s.u.	09/18/2013	N001	10.03	- 10.03	7.07		F	#		
Potassium	mg/L	09/18/2013	N001	10.03	- 10.03	6.3		F	#	0.11	
Sodium	mg/L	09/18/2013	N001	10.03	- 10.03	150		F	#	0.0066	
Specific Conductance	umhos/cm	09/18/2013	N001	10.03	- 10.03	1485		F	#		
Sulfate	mg/L	09/18/2013	N001	10.03	- 10.03	470		F	#	10	
Temperature	C	09/18/2013	N001	10.03	- 10.03	16.07		F	#		
Turbidity	NTU	09/18/2013	N001	10.03	- 10.03	1.77		F	#		
Uranium	mg/L	09/18/2013	N001	10.03	- 10.03	0.23		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0717 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	45.1	-	45.1	209		F	#		
Calcium	mg/L	09/18/2013	N001	45.1	-	45.1	90		F	#	0.012	
Chloride	mg/L	09/18/2013	N001	45.1	-	45.1	46		F	#	5	
Dissolved Oxygen	mg/L	09/18/2013	N001	45.1	-	45.1	0.38		F	#		
Iron	mg/L	09/18/2013	N001	45.1	-	45.1	0.16		F	#	0.0049	
Magnesium	mg/L	09/18/2013	N001	45.1	-	45.1	5.8		F	#	0.013	
Manganese	mg/L	09/18/2013	N001	45.1	-	45.1	0.16		F	#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	45.1	-	45.1	0.0068		F	#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	45.1	-	45.1	-40.1		F	#		
pH	s.u.	09/18/2013	N001	45.1	-	45.1	7.68		F	#		
Potassium	mg/L	09/18/2013	N001	45.1	-	45.1	1.5		F	#	0.11	
Sodium	mg/L	09/18/2013	N001	45.1	-	45.1	330		F	#	0.066	
Specific Conductance	umhos/cm	09/18/2013	N001	45.1	-	45.1	1911		F	#		
Sulfate	mg/L	09/18/2013	N001	45.1	-	45.1	690		F	#	12	
Temperature	C	09/18/2013	N001	45.1	-	45.1	14.08		F	#		
Turbidity	NTU	09/18/2013	N001	45.1	-	45.1	1.24		F	#		
Uranium	mg/L	09/18/2013	N001	45.1	-	45.1	0.00005	B	F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0718 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/20/2013	N001	13.02	-	13.02	336		F	#		
Calcium	mg/L	09/20/2013	N001	13.02	-	13.02	320		F	#	0.012	
Chloride	mg/L	09/20/2013	N001	13.02	-	13.02	120		F	#	10	
Dissolved Oxygen	mg/L	09/20/2013	N001	13.02	-	13.02	0.33		F	#		
Iron	mg/L	09/20/2013	N001	13.02	-	13.02	0.045	B	F	#	0.0049	
Magnesium	mg/L	09/20/2013	N001	13.02	-	13.02	81		F	#	0.013	
Manganese	mg/L	09/20/2013	N001	13.02	-	13.02	0.51		F	#	0.00011	
Molybdenum	mg/L	09/20/2013	N001	13.02	-	13.02	0.091		F	#	0.0016	
Oxidation Reduction Potential	mV	09/20/2013	N001	13.02	-	13.02	3.5		F	#		
pH	s.u.	09/20/2013	N001	13.02	-	13.02	7.07		F	#		
Potassium	mg/L	09/20/2013	N001	13.02	-	13.02	20		F	#	0.11	
Sodium	mg/L	09/20/2013	N001	13.02	-	13.02	740		F	#	0.33	
Specific Conductance	umhos/cm	09/20/2013	N001	13.02	-	13.02	4563		F	#		
Sulfate	mg/L	09/20/2013	N001	13.02	-	13.02	2300		F	#	25	
Temperature	C	09/20/2013	N001	13.02	-	13.02	13.49		F	#		
Turbidity	NTU	09/20/2013	N001	13.02	-	13.02	4.33		F	#		
Uranium	mg/L	09/20/2013	N001	13.02	-	13.02	0.11		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0719 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Alkalinity, Total (As CaCO3)	mg/L	09/20/2013	N001	35.34	-	35.34	106	FQ	#		
Calcium	mg/L	09/20/2013	N001	35.34	-	35.34	71	FQ	#	0.012	
Chloride	mg/L	09/20/2013	N001	35.34	-	35.34	38	FQ	#	2	
Dissolved Oxygen	mg/L	09/20/2013	N001	35.34	-	35.34	0.52	FQ	#		
Iron	mg/L	09/20/2013	N001	35.34	-	35.34	0.18	FQ	#	0.0049	
Magnesium	mg/L	09/20/2013	N001	35.34	-	35.34	2.4	FQ	#	0.013	
Manganese	mg/L	09/20/2013	N001	35.34	-	35.34	0.095	FQ	#	0.00011	
Molybdenum	mg/L	09/20/2013	N001	35.34	-	35.34	0.0098	FQ	#	0.00032	
Oxidation Reduction Potential	mV	09/20/2013	N001	35.34	-	35.34	-64.5	FQ	#		
pH	s.u.	09/20/2013	N001	35.34	-	35.34	7.72	FQ	#		
Potassium	mg/L	09/20/2013	N001	35.34	-	35.34	1.3	FQ	#	0.11	
Sodium	mg/L	09/20/2013	N001	35.34	-	35.34	190	FQ	#	0.066	
Specific Conductance	umhos/cm	09/20/2013	N001	35.34	-	35.34	1220	FQ	#		
Sulfate	mg/L	09/20/2013	N001	35.34	-	35.34	470	FQ	#	5	
Temperature	C	09/20/2013	N001	35.34	-	35.34	11.37	FQ	#		
Turbidity	NTU	09/20/2013	N001	35.34	-	35.34	5.87	FQ	#		
Uranium	mg/L	09/20/2013	N001	35.34	-	35.34	0.00034	FQ	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0720 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	7.94	-	7.94	217		F	#		
Calcium	mg/L	09/19/2013	N001	7.94	-	7.94	69		F	#	0.012	
Chloride	mg/L	09/19/2013	N001	7.94	-	7.94	4		F	#	0.2	
Dissolved Oxygen	mg/L	09/19/2013	N001	7.94	-	7.94	2.6		F	#		
Iron	mg/L	09/19/2013	N001	7.94	-	7.94	0.0049	U	F	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	7.94	-	7.94	17		F	#	0.013	
Manganese	mg/L	09/19/2013	N001	7.94	-	7.94	0.00011	U	F	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	7.94	-	7.94	0.0015		F	#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	7.94	-	7.94	64.5		F	#		
pH	s.u.	09/19/2013	N001	7.94	-	7.94	7.25		F	#		
Potassium	mg/L	09/19/2013	N001	7.94	-	7.94	2.7		F	#	0.11	
Sodium	mg/L	09/19/2013	N001	7.94	-	7.94	29		F	#	0.0066	
Specific Conductance	umhos/cm	09/19/2013	N001	7.94	-	7.94	582		F	#		
Sulfate	mg/L	09/19/2013	N001	7.94	-	7.94	96		F	#	0.5	
Temperature	C	09/19/2013	N001	7.94	-	7.94	14.29		F	#		
Turbidity	NTU	09/19/2013	N001	7.94	-	7.94	0.39		F	#		
Uranium	mg/L	09/19/2013	N001	7.94	-	7.94	0.0038		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0721 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	45.13	-	45.13	97		F	#		
Calcium	mg/L	09/19/2013	N001	45.13	-	45.13	7.8		F	#	0.012	
Chloride	mg/L	09/19/2013	N001	45.13	-	45.13	23		F	#	1	
Dissolved Oxygen	mg/L	09/19/2013	N001	45.13	-	45.13	0.15		F	#		
Iron	mg/L	09/19/2013	N001	45.13	-	45.13	0.0049	U	F	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	45.13	-	45.13	0.013	U	F	#	0.013	
Manganese	mg/L	09/19/2013	N001	45.13	-	45.13	0.0017	B	F	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	45.13	-	45.13	0.0023		F	#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	45.13	-	45.13	38.3		F	#		
pH	s.u.	09/19/2013	N001	45.13	-	45.13	8.65		F	#		
Potassium	mg/L	09/19/2013	N001	45.13	-	45.13	0.49	B	UF	#	0.11	
Sodium	mg/L	09/19/2013	N001	45.13	-	45.13	170		F	#	0.066	
Specific Conductance	umhos/cm	09/19/2013	N001	45.13	-	45.13	890		F	#		
Sulfate	mg/L	09/19/2013	N001	45.13	-	45.13	270		F	#	2.5	
Temperature	C	09/19/2013	N001	45.13	-	45.13	11.82		F	#		
Turbidity	NTU	09/19/2013	N001	45.13	-	45.13	0.67		F	#		
Uranium	mg/L	09/19/2013	N001	45.13	-	45.13	0.00009	B	F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0722R WELL Replacement well for destroyed well 0722.

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/20/2013	N001	13.02	-	13.02	260		F	#		
Calcium	mg/L	09/20/2013	N001	13.02	-	13.02	290		F	#	0.012	
Chloride	mg/L	09/20/2013	N001	13.02	-	13.02	17		F	#	4	
Dissolved Oxygen	mg/L	09/20/2013	N001	13.02	-	13.02	0.66		F	#		
Iron	mg/L	09/20/2013	N001	13.02	-	13.02	0.0069	B	UF	#	0.0049	
Magnesium	mg/L	09/20/2013	N001	13.02	-	13.02	28		F	#	0.013	
Manganese	mg/L	09/20/2013	N001	13.02	-	13.02	0.00011	U	F	#	0.00011	
Molybdenum	mg/L	09/20/2013	N001	13.02	-	13.02	0.067		F	#	0.0016	
Oxidation Reduction Potential	mV	09/20/2013	N001	13.02	-	13.02	25.4		F	#		
pH	s.u.	09/20/2013	N001	13.02	-	13.02	6.9		F	#		
Potassium	mg/L	09/20/2013	N001	13.02	-	13.02	9.5		F	#	0.11	
Sodium	mg/L	09/20/2013	N001	13.02	-	13.02	100		F	#	0.0066	
Specific Conductance	umhos/cm	09/20/2013	N001	13.02	-	13.02	1781		F	#		
Sulfate	mg/L	09/20/2013	N001	13.02	-	13.02	780		F	#	10	
Temperature	C	09/20/2013	N001	13.02	-	13.02	15.53		F	#		
Turbidity	NTU	09/20/2013	N001	13.02	-	13.02	1.08		F	#		
Uranium	mg/L	09/20/2013	N001	13.02	-	13.02	0.52		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0723 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO3)	mg/L	09/20/2013	N001	44.67	- 44.67	347		F	#		
Calcium	mg/L	09/20/2013	N001	44.67	- 44.67	290		F	#	0.012	
Chloride	mg/L	09/20/2013	N001	44.67	- 44.67	54		F	#	10	
Dissolved Oxygen	mg/L	09/20/2013	N001	44.67	- 44.67	0.33		F	#		
Iron	mg/L	09/20/2013	N001	44.67	- 44.67	0.45		F	#	0.0049	
Magnesium	mg/L	09/20/2013	N001	44.67	- 44.67	11		F	#	0.013	
Manganese	mg/L	09/20/2013	N001	44.67	- 44.67	0.34		F	#	0.00011	
Molybdenum	mg/L	09/20/2013	N001	44.67	- 44.67	0.00032	U	F	#	0.00032	
Oxidation Reduction Potential	mV	09/20/2013	N001	44.67	- 44.67	-30.4		F	#		
pH	s.u.	09/20/2013	N001	44.67	- 44.67	7.13		F	#		
Potassium	mg/L	09/20/2013	N001	44.67	- 44.67	2.9		F	#	0.11	
Sodium	mg/L	09/20/2013	N001	44.67	- 44.67	630		F	#	0.33	
Specific Conductance	umhos/cm	09/20/2013	N001	44.67	- 44.67	3724		F	#		
Sulfate	mg/L	09/20/2013	N001	44.67	- 44.67	1800		F	#	25	
Temperature	C	09/20/2013	N001	44.67	- 44.67	12.95		F	#		
Turbidity	NTU	09/20/2013	N001	44.67	- 44.67	1.62		F	#		
Uranium	mg/L	09/20/2013	N001	44.67	- 44.67	0.00008	B	F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0729 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	11.75	- 11.75	275		F	#		
Calcium	mg/L	09/19/2013	N001	11.75	- 11.75	85		F	#	0.012	
Chloride	mg/L	09/19/2013	N001	11.75	- 11.75	6.9		F	#	0.2	
Dissolved Oxygen	mg/L	09/19/2013	N001	11.75	- 11.75	0.37		F	#		
Iron	mg/L	09/19/2013	N001	11.75	- 11.75	0.0065	B	UF	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	11.75	- 11.75	21		F	#	0.013	
Manganese	mg/L	09/19/2013	N001	11.75	- 11.75	0.003	B	F	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	11.75	- 11.75	0.0026		F	#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	11.75	- 11.75	86.8		F	#		
pH	s.u.	09/19/2013	N001	11.75	- 11.75	7.09		F	#		
Potassium	mg/L	09/19/2013	N001	11.75	- 11.75	7.9		F	#	0.11	
Sodium	mg/L	09/19/2013	N001	11.75	- 11.75	23		F	#	0.0066	
Specific Conductance	umhos/cm	09/19/2013	N001	11.75	- 11.75	663		F	#		
Sulfate	mg/L	09/19/2013	N001	11.75	- 11.75	73		F	#	0.5	
Temperature	C	09/19/2013	N001	11.75	- 11.75	17.05		F	#		
Turbidity	NTU	09/19/2013	N001	11.75	- 11.75	1.43		F	#		
Uranium	mg/L	09/19/2013	N001	11.75	- 11.75	0.0035		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0730 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	32.18	- 32.18	317		FQ #		
Calcium	mg/L	09/19/2013	N001	32.18	- 32.18	76		FQ #	0.012	
Chloride	mg/L	09/19/2013	N001	32.18	- 32.18	6.4		FQ #	1	
Dissolved Oxygen	mg/L	09/19/2013	N001	32.18	- 32.18	0.42		FQ #		
Iron	mg/L	09/19/2013	N001	32.18	- 32.18	0.099	B	FQ #	0.0049	
Magnesium	mg/L	09/19/2013	N001	32.18	- 32.18	13		FQ #	0.013	
Manganese	mg/L	09/19/2013	N001	32.18	- 32.18	0.037		FQ #	0.00011	
Molybdenum	mg/L	09/19/2013	N001	32.18	- 32.18	0.0038		FQ #	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	32.18	- 32.18	35.6		FQ #		
pH	s.u.	09/19/2013	N001	32.18	- 32.18	7.39		FQ #		
Potassium	mg/L	09/19/2013	N001	32.18	- 32.18	2.5		FQ #	0.11	
Sodium	mg/L	09/19/2013	N001	32.18	- 32.18	94		FQ #	0.0066	
Specific Conductance	umhos/cm	09/19/2013	N001	32.18	- 32.18	861		FQ #		
Sulfate	mg/L	09/19/2013	N001	32.18	- 32.18	120		FQ #	2.5	
Temperature	C	09/19/2013	N001	32.18	- 32.18	14.33		FQ #		
Turbidity	NTU	09/19/2013	N001	32.18	- 32.18	3.93		FQ #		
Uranium	mg/L	09/19/2013	N001	32.18	- 32.18	0.0045		FQ #	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0784 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	7.04	-	7.04	136		F	#		
Calcium	mg/L	09/18/2013	N001	7.04	-	7.04	79		F	#	0.012	
Chloride	mg/L	09/18/2013	N001	7.04	-	7.04	16		F	#	2	
Dissolved Oxygen	mg/L	09/18/2013	N001	7.04	-	7.04	0.55		F	#		
Iron	mg/L	09/18/2013	N001	7.04	-	7.04	0.01	B	UF	#	0.0049	
Magnesium	mg/L	09/18/2013	N001	7.04	-	7.04	3.3		F	#	0.013	
Manganese	mg/L	09/18/2013	N001	7.04	-	7.04	0.19		F	#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	7.04	-	7.04	0.01		F	#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	7.04	-	7.04	154.5		F	#		
pH	s.u.	09/18/2013	N001	7.04	-	7.04	7.71		F	#		
Potassium	mg/L	09/18/2013	N001	7.04	-	7.04	5.4		F	#	0.11	
Sodium	mg/L	09/18/2013	N001	7.04	-	7.04	290		F	#	0.066	
Specific Conductance	umhos/cm	09/18/2013	N001	7.04	-	7.04	1652		F	#		
Sulfate	mg/L	09/18/2013	N001	7.04	-	7.04	670		F	#	12	
Temperature	C	09/18/2013	N001	7.04	-	7.04	19.05		F	#		
Turbidity	NTU	09/18/2013	N001	7.04	-	7.04	1.16		F	#		
Uranium	mg/L	09/18/2013	N001	7.04	-	7.04	0.0015		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0788 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	09/19/2013	N001	13.51	- 13.51	445		F	#		
Calcium	mg/L	09/19/2013	N001	13.51	- 13.51	260		F	#	0.012	
Calcium	mg/L	09/19/2013	N002	13.51	- 13.51	260		F	#	0.012	
Chloride	mg/L	09/19/2013	N001	13.51	- 13.51	49		F	#	10	
Chloride	mg/L	09/19/2013	N002	13.51	- 13.51	49		F	#	10	
Dissolved Oxygen	mg/L	09/19/2013	N001	13.51	- 13.51	0.27		F	#		
Iron	mg/L	09/19/2013	N001	13.51	- 13.51	0.032	B	UF	#	0.0049	
Iron	mg/L	09/19/2013	N002	13.51	- 13.51	0.022	B	UF	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	13.51	- 13.51	68		F	#	0.013	
Magnesium	mg/L	09/19/2013	N002	13.51	- 13.51	68		F	#	0.013	
Manganese	mg/L	09/19/2013	N001	13.51	- 13.51	0.2		F	#	0.00011	
Manganese	mg/L	09/19/2013	N002	13.51	- 13.51	0.2		F	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	13.51	- 13.51	0.021		F	#	0.00032	
Molybdenum	mg/L	09/19/2013	N002	13.51	- 13.51	0.021		F	#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	13.51	- 13.51	106.5		F	#		
pH	s.u.	09/19/2013	N001	13.51	- 13.51	7.13		F	#		
Potassium	mg/L	09/19/2013	N001	13.51	- 13.51	11		F	#	0.11	
Potassium	mg/L	09/19/2013	N002	13.51	- 13.51	11		F	#	0.11	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0788 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Sodium	mg/L	09/19/2013	N001	13.51	-	13.51	490	F	#	0.33	
Sodium	mg/L	09/19/2013	N002	13.51	-	13.51	500	F	#	0.33	
Specific Conductance	umhos/cm	09/19/2013	N001	13.51	-	13.51	3314	F	#		
Sulfate	mg/L	09/19/2013	N001	13.51	-	13.51	1500	F	#	25	
Sulfate	mg/L	09/19/2013	N002	13.51	-	13.51	1500	F	#	25	
Temperature	C	09/19/2013	N001	13.51	-	13.51	13.42	F	#		
Turbidity	NTU	09/19/2013	N001	13.51	-	13.51	0.89	F	#		
Uranium	mg/L	09/19/2013	N001	13.51	-	13.51	0.043	F	#	0.000029	
Uranium	mg/L	09/19/2013	N002	13.51	-	13.51	0.041	F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0789 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	14.62	-	14.62	473		F	#		
Calcium	mg/L	09/19/2013	N001	14.62	-	14.62	360		F	#	0.012	
Chloride	mg/L	09/19/2013	N001	14.62	-	14.62	210		F	#	20	
Dissolved Oxygen	mg/L	09/19/2013	N001	14.62	-	14.62	0.46		F	#		
Iron	mg/L	09/19/2013	N001	14.62	-	14.62	0.098	B	F	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	14.62	-	14.62	220		F	#	0.013	
Manganese	mg/L	09/19/2013	N001	14.62	-	14.62	0.84		F	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	14.62	-	14.62	0.56		F	#	0.0032	
Oxidation Reduction Potential	mV	09/19/2013	N001	14.62	-	14.62	131.4		F	#		
pH	s.u.	09/19/2013	N001	14.62	-	14.62	7.06		F	#		
Potassium	mg/L	09/19/2013	N001	14.62	-	14.62	28		F	#	0.11	
Sodium	mg/L	09/19/2013	N001	14.62	-	14.62	1500		F	#	0.33	
Specific Conductance	umhos/cm	09/19/2013	N001	14.62	-	14.62	8304		F	#		
Sulfate	mg/L	09/19/2013	N001	14.62	-	14.62	4600		F	#	50	
Temperature	C	09/19/2013	N001	14.62	-	14.62	12.6		F	#		
Turbidity	NTU	09/19/2013	N001	14.62	-	14.62	0.73		F	#		
Uranium	mg/L	09/19/2013	N001	14.62	-	14.62	1.5		F	#	0.00029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0824 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/20/2013	N001	12.46	-	12.46	422		F	#		
Calcium	mg/L	09/20/2013	N001	12.46	-	12.46	100		F	#	0.012	
Chloride	mg/L	09/20/2013	N001	12.46	-	12.46	4.9		F	#	1	
Dissolved Oxygen	mg/L	09/20/2013	N001	12.46	-	12.46	0.29		F	#		
Iron	mg/L	09/20/2013	N001	12.46	-	12.46	0.1		F	#	0.0049	
Magnesium	mg/L	09/20/2013	N001	12.46	-	12.46	25		F	#	0.013	
Manganese	mg/L	09/20/2013	N001	12.46	-	12.46	0.027		F	#	0.00011	
Molybdenum	mg/L	09/20/2013	N001	12.46	-	12.46	0.0026		F	#	0.00032	
Oxidation Reduction Potential	mV	09/20/2013	N001	12.46	-	12.46	78.8		F	#		
pH	s.u.	09/20/2013	N001	12.46	-	12.46	6.93		F	#		
Potassium	mg/L	09/20/2013	N001	12.46	-	12.46	7.3		F	#	0.11	
Sodium	mg/L	09/20/2013	N001	12.46	-	12.46	38		F	#	0.0066	
Specific Conductance	umhos/cm	09/20/2013	N001	12.46	-	12.46	797		F	#		
Sulfate	mg/L	09/20/2013	N001	12.46	-	12.46	63		F	#	2.5	
Temperature	C	09/20/2013	N001	12.46	-	12.46	17.67		F	#		
Turbidity	NTU	09/20/2013	N001	12.46	-	12.46	7.31		F	#		
Uranium	mg/L	09/20/2013	N001	12.46	-	12.46	0.0083		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0826 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/19/2013	N001	9.21	-	9.21	344		F	#		
Calcium	mg/L	09/19/2013	N001	9.21	-	9.21	300		F	#	0.012	
Chloride	mg/L	09/19/2013	N001	9.21	-	9.21	45		F	#	10	
Dissolved Oxygen	mg/L	09/19/2013	N001	9.21	-	9.21	0.29		F	#		
Iron	mg/L	09/19/2013	N001	9.21	-	9.21	0.07	B	F	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	9.21	-	9.21	81		F	#	0.013	
Manganese	mg/L	09/19/2013	N001	9.21	-	9.21	2.3		F	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	9.21	-	9.21	0.018		F	#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	9.21	-	9.21	101.3		F	#		
pH	s.u.	09/19/2013	N001	9.21	-	9.21	7.06		F	#		
Potassium	mg/L	09/19/2013	N001	9.21	-	9.21	12		F	#	0.11	
Sodium	mg/L	09/19/2013	N001	9.21	-	9.21	480		F	#	0.33	
Specific Conductance	umhos/cm	09/19/2013	N001	9.21	-	9.21	3416		F	#		
Sulfate	mg/L	09/19/2013	N001	9.21	-	9.21	1700		F	#	25	
Temperature	C	09/19/2013	N001	9.21	-	9.21	12.52		F	#		
Turbidity	NTU	09/19/2013	N001	9.21	-	9.21	0.5		F	#		
Uranium	mg/L	09/19/2013	N001	9.21	-	9.21	0.04		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0828 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	-	162			#		
Calcium	mg/L	09/18/2013	N001	-	3.6			#	0.012	
Chloride	mg/L	09/18/2013	N001	-	13			#	1	
Dissolved Oxygen	mg/L	09/18/2013	N001	-	2.12			#		
Iron	mg/L	09/18/2013	N001	-	0.0069	B	U	#	0.0049	
Magnesium	mg/L	09/18/2013	N001	-	0.079	B		#	0.013	
Manganese	mg/L	09/18/2013	N001	-	0.0047	B		#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	-	0.0025			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	-	128.9			#		
pH	s.u.	09/18/2013	N001	-	8.74			#		
Potassium	mg/L	09/18/2013	N001	-	0.66	B	U	#	0.11	
Sodium	mg/L	09/18/2013	N001	-	170			#	0.066	
Specific Conductance	umhos /cm	09/18/2013	N001	-	800			#		
Sulfate	mg/L	09/18/2013	N001	-	210			#	2.5	
Temperature	C	09/18/2013	N001	-	19.26			#		
Turbidity	NTU	09/18/2013	N001	-	0.82			#		
Uranium	mg/L	09/18/2013	N001	-	0.00008	B		#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0841 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/18/2013	N001	-	163			#		
Calcium	mg/L	09/18/2013	N001	-	63			#	0.012	
Chloride	mg/L	09/18/2013	N001	-	13			#	1	
Dissolved Oxygen	mg/L	09/18/2013	N001	-	3.51			#		
Iron	mg/L	09/18/2013	N001	-	0.0068	B	U	#	0.0049	
Magnesium	mg/L	09/18/2013	N001	-	11			#	0.013	
Manganese	mg/L	09/18/2013	N001	-	0.077			#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	-	0.004			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	-	168.3			#		
pH	s.u.	09/18/2013	N001	-	7.72			#		
Potassium	mg/L	09/18/2013	N001	-	2.7			#	0.11	
Sodium	mg/L	09/18/2013	N001	-	63			#	0.0066	
Specific Conductance	umhos /cm	09/18/2013	N001	-	686			#		
Sulfate	mg/L	09/18/2013	N001	-	150			#	2.5	
Temperature	C	09/18/2013	N001	-	17.45			#		
Turbidity	NTU	09/18/2013	N001	-	5.36			#		
Uranium	mg/L	09/18/2013	N001	-	0.0018			#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0842 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	09/18/2013	N001	-	134			#		
Calcium	mg/L	09/18/2013	N001	-	50			#	0.012	
Calcium	mg/L	09/18/2013	N002	-	47			#	0.012	
Chloride	mg/L	09/18/2013	N001	-	15			#	0.2	
Chloride	mg/L	09/18/2013	N002	-	15			#	0.2	
Dissolved Oxygen	mg/L	09/18/2013	N001	-	4.07			#		
Iron	mg/L	09/18/2013	N001	-	0.06	B		#	0.0049	
Iron	mg/L	09/18/2013	N002	-	0.07	B		#	0.0049	
Magnesium	mg/L	09/18/2013	N001	-	5.5			#	0.013	
Magnesium	mg/L	09/18/2013	N002	-	5.1			#	0.013	
Manganese	mg/L	09/18/2013	N001	-	0.05			#	0.00011	
Manganese	mg/L	09/18/2013	N002	-	0.047			#	0.00011	
Molybdenum	mg/L	09/18/2013	N001	-	0.0029			#	0.00032	
Molybdenum	mg/L	09/18/2013	N002	-	0.0022			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	-	183			#		
pH	s.u.	09/18/2013	N001	-	7.83			#		
Potassium	mg/L	09/18/2013	N001	-	0.91	B	U	#	0.11	
Potassium	mg/L	09/18/2013	N002	-	0.77	B	U	#	0.11	
Sodium	mg/L	09/18/2013	N001	-	79			#	0.0066	
Sodium	mg/L	09/18/2013	N002	-	76			#	0.0066	
Specific Conductance	umhos/cm	09/18/2013	N001	-	637			#		

Groundwater Quality Data by Location (USEE100) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/12/2013

Location: 0842 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	09/18/2013	N001	-	150			#	2.5	
Sulfate	mg/L	09/18/2013	N002	-	150			#	2.5	
Temperature	C	09/18/2013	N001	-	13.65			#		
Turbidity	NTU	09/18/2013	N001	-	3.24			#		
Uranium	mg/L	09/18/2013	N001	-	0.00034			#	0.000029	
Uranium	mg/L	09/18/2013	N002	-	0.00027			#	0.000029	

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

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

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0747 SURFACE LOCATION 8/26/97 State plane east changed from 594497.14 to an estimation close to river

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/19/2013	0001	261			#		
Calcium	mg/L	09/19/2013	0001	150			#	0.012	
Chloride	mg/L	09/19/2013	0001	23			#	5	
Dissolved Oxygen	mg/L	09/19/2013	N001	11.53			#		
Iron	mg/L	09/19/2013	0001	0.0049	U		#	0.0049	
Magnesium	mg/L	09/19/2013	0001	55			#	0.013	
Manganese	mg/L	09/19/2013	0001	0.4			#	0.00011	
Molybdenum	mg/L	09/19/2013	0001	0.027			#	0.0016	
Oxidation Reduction Potential	mV	09/19/2013	N001	109.9			#		
pH	s.u.	09/19/2013	N001	8.13			#		
Potassium	mg/L	09/19/2013	0001	9.9			#	0.11	
Sodium	mg/L	09/19/2013	0001	190			#	0.066	
Specific Conductance	umhos/cm	09/19/2013	N001	1822			#		
Sulfate	mg/L	09/19/2013	0001	750			#	12	
Temperature	C	09/19/2013	N001	25.17			#		
Turbidity	NTU	09/19/2013	N001	656			#		
Uranium	mg/L	09/19/2013	0001	0.28			#	0.00015	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0749 SURFACE LOCATION 8/26/97 State plane east changed from 589532.71 to an estimation close to river

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/18/2013	0001	118			#		
Calcium	mg/L	09/18/2013	0001	58			#	0.012	
Chloride	mg/L	09/18/2013	0001	250			#	5	
Dissolved Oxygen	mg/L	09/18/2013	N001	8.3			#		
Iron	mg/L	09/18/2013	0001	0.17			#	0.0049	
Magnesium	mg/L	09/18/2013	0001	0.43	B		#	0.013	
Manganese	mg/L	09/18/2013	0001	0.02			#	0.00011	
Molybdenum	mg/L	09/18/2013	0001	0.0059			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	166			#		
pH	s.u.	09/18/2013	N001	8.18			#		
Potassium	mg/L	09/18/2013	0001	2.8			#	0.11	
Sodium	mg/L	09/18/2013	0001	320			#	0.066	
Specific Conductance	umhos/cm	09/18/2013	N001	1783			#		
Sulfate	mg/L	09/18/2013	0001	390			#	12	
Temperature	C	09/18/2013	N001	23.06			#		
Turbidity	NTU	09/18/2013	N001	11.3			#		
Uranium	mg/L	09/18/2013	0001	0.00027			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0794 SURFACE LOCATION 8/26/97 State plane north changed from 844178.27 to an estimation close to river

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/18/2013	0001	137			#		
Calcium	mg/L	09/18/2013	0001	55		J	#	0.012	
Chloride	mg/L	09/18/2013	0001	5.5			#	0.2	
Dissolved Oxygen	mg/L	09/18/2013	N001	10.69			#		
Iron	mg/L	09/18/2013	0001	0.036	B	J	#	0.0049	
Magnesium	mg/L	09/18/2013	0001	19		J	#	0.013	
Manganese	mg/L	09/18/2013	0001	0.01			#	0.00011	
Molybdenum	mg/L	09/18/2013	0001	0.001			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	116.8			#		
pH	s.u.	09/18/2013	N001	8.19			#		
Potassium	mg/L	09/18/2013	0001	2.7			#	0.11	
Sodium	mg/L	09/18/2013	0001	31			#	0.0066	
Specific Conductance	umhos/cm	09/18/2013	N001	564			#		
Sulfate	mg/L	09/18/2013	0001	170			#	2.5	
Temperature	C	09/18/2013	N001	19.97			#		
Turbidity	NTU	09/18/2013	N001	182			#		
Uranium	mg/L	09/18/2013	0001	0.0038			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0796 SURFACE LOCATION Was possibly historically sampled ~900 ft E from current location

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/19/2013	0001	135			#		
Calcium	mg/L	09/19/2013	0001	59		J	#	0.012	
Chloride	mg/L	09/19/2013	0001	5.8			#	0.2	
Dissolved Oxygen	mg/L	09/19/2013	N001	8.35			#		
Iron	mg/L	09/19/2013	0001	0.0062	B	U	#	0.0049	
Magnesium	mg/L	09/19/2013	0001	21		J	#	0.013	
Manganese	mg/L	09/19/2013	0001	0.0046	B		#	0.00011	
Molybdenum	mg/L	09/19/2013	0001	0.001	B		#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	180.8			#		
pH	s.u.	09/19/2013	N001	7.62			#		
Potassium	mg/L	09/19/2013	0001	2.8			#	0.11	
Sodium	mg/L	09/19/2013	0001	33			#	0.0066	
Specific Conductance	umhos/cm	09/19/2013	N001	602			#		
Sulfate	mg/L	09/19/2013	0001	180			#	2.5	
Temperature	C	09/19/2013	N001	11.93			#		
Turbidity	NTU	09/19/2013	N001	81.5			#		
Uranium	mg/L	09/19/2013	0001	0.0034			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0810 SURFACE LOCATION Gravel Pit Pond

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/19/2013	0001	385			#		
Calcium	mg/L	09/19/2013	0001	15		J	#	0.012	
Chloride	mg/L	09/19/2013	0001	42			#	5	
Dissolved Oxygen	mg/L	09/19/2013	N001	8.19			#		
Iron	mg/L	09/19/2013	0001	0.0066	B	U	#	0.0049	
Magnesium	mg/L	09/19/2013	0001	94		J	#	0.013	
Manganese	mg/L	09/19/2013	0001	0.0053			#	0.00011	
Molybdenum	mg/L	09/19/2013	0001	0.0018			#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	176.8			#		
pH	s.u.	09/19/2013	N001	9.08			#		
Potassium	mg/L	09/19/2013	0001	18			#	0.11	
Sodium	mg/L	09/19/2013	0001	250			#	0.066	
Specific Conductance	umhos/cm	09/19/2013	N001	1706			#		
Sulfate	mg/L	09/19/2013	0001	540			#	12	
Temperature	C	09/19/2013	N001	12.64			#		
Turbidity	NTU	09/19/2013	N001	15.7			#		
Uranium	mg/L	09/19/2013	0001	0.0051		J	#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0811 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/19/2013	0001	164			#		
Calcium	mg/L	09/19/2013	0001	58		J	#	0.012	
Chloride	mg/L	09/19/2013	0001	5.5			#	0.2	
Dissolved Oxygen	mg/L	09/19/2013	N001	9			#		
Iron	mg/L	09/19/2013	0001	0.0049	U		#	0.0049	
Magnesium	mg/L	09/19/2013	0001	21		J	#	0.013	
Manganese	mg/L	09/19/2013	0001	0.0082			#	0.00011	
Molybdenum	mg/L	09/19/2013	0001	0.0012			#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	69.7			#		
pH	s.u.	09/19/2013	N001	8.36			#		
Potassium	mg/L	09/19/2013	0001	2.7			#	0.11	
Sodium	mg/L	09/19/2013	0001	31			#	0.0066	
Specific Conductance	umhos/cm	09/19/2013	N001	609			#		
Sulfate	mg/L	09/19/2013	0001	180			#	2.5	
Temperature	C	09/19/2013	N001	19.65			#		
Turbidity	NTU	09/19/2013	N001	153			#		
Uranium	mg/L	09/19/2013	0001	0.0034		J	#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0812 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/20/2013	0001	146			#		
Calcium	mg/L	09/20/2013	0001	53		J	#	0.012	
Chloride	mg/L	09/20/2013	0001	5.1			#	0.2	
Dissolved Oxygen	mg/L	09/20/2013	N001	8.81			#		
Iron	mg/L	09/20/2013	0001	0.0049	U		#	0.0049	
Magnesium	mg/L	09/20/2013	0001	19		J	#	0.013	
Manganese	mg/L	09/20/2013	0001	0.0095			#	0.00011	
Molybdenum	mg/L	09/20/2013	0001	0.0011			#	0.00032	
Oxidation Reduction Potential	mV	09/20/2013	N001	78.1			#		
pH	s.u.	09/20/2013	N001	8.23			#		
Potassium	mg/L	09/20/2013	0001	2.4			#	0.11	
Sodium	mg/L	09/20/2013	0001	28			#	0.0066	
Specific Conductance	umhos/cm	09/20/2013	N001	547			#		
Sulfate	mg/L	09/20/2013	0001	160			#	2.5	
Temperature	C	09/20/2013	N001	13.4			#		
Turbidity	NTU	09/20/2013	N001	81.9			#		
Uranium	mg/L	09/20/2013	0001	0.003		J	#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0822 SURFACE LOCATION west-side irrigation ditch

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/19/2013	N001	258			#		
Calcium	mg/L	09/19/2013	N001	87			#	0.012	
Chloride	mg/L	09/19/2013	N001	11			#	1	
Dissolved Oxygen	mg/L	09/19/2013	N001	9.53			#		
Iron	mg/L	09/19/2013	N001	0.15		J	#	0.0049	
Magnesium	mg/L	09/19/2013	N001	23		J	#	0.013	
Manganese	mg/L	09/19/2013	N001	0.015	E	J	#	0.00011	
Molybdenum	mg/L	09/19/2013	N001	0.0017			#	0.00032	
Oxidation Reduction Potential	mV	09/19/2013	N001	91.8			#		
pH	s.u.	09/19/2013	N001	8.06			#		
Potassium	mg/L	09/19/2013	N001	6.5	E	J	#	0.11	
Radium-226	pCi/L	09/19/2013	N001	0.3		J	#	0.19	0.19
Radium-228	pCi/L	09/19/2013	N001	0.42	U		#	0.42	0.262
Sodium	mg/L	09/19/2013	N001	79			#	0.0066	
Specific Conductance	umhos/cm	09/19/2013	N001	891			#		
Sulfate	mg/L	09/19/2013	N001	220			#	2.5	
Temperature	C	09/19/2013	N001	15.08			#		
Turbidity	NTU	09/19/2013	N001	5.39			#		
Uranium	mg/L	09/19/2013	N001	0.0056	E	J	#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0823 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/18/2013	0001	136			#		
Calcium	mg/L	09/18/2013	0001	180			#	0.012	
Chloride	mg/L	09/18/2013	0001	240			#	5	
Dissolved Oxygen	mg/L	09/18/2013	N001	7.89			#		
Iron	mg/L	09/18/2013	0001	0.16		J	#	0.0049	
Magnesium	mg/L	09/18/2013	0001	92			#	0.013	
Manganese	mg/L	09/18/2013	0001	0.66			#	0.00011	
Molybdenum	mg/L	09/18/2013	0001	0.0023			#	0.00032	
Oxidation Reduction Potential	mV	09/18/2013	N001	216.3			#		
pH	s.u.	09/18/2013	N001	7.66			#		
Potassium	mg/L	09/18/2013	0001	18			#	0.11	
Sodium	mg/L	09/18/2013	0001	390			#	0.33	
Specific Conductance	umhos/cm	09/18/2013	N001	2802			#		
Sulfate	mg/L	09/18/2013	0001	1200			#	12	
Temperature	C	09/18/2013	N001	16.54			#		
Turbidity	NTU	09/18/2013	N001	35.7			#		
Uranium	mg/L	09/18/2013	0001	0.0064			#	0.000029	

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.

Alternate Water Supply System Quality Data

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General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0813 DOMESTIC SUPPLY

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/17/2013	N001	0	-	0	154			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.33			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	6.75			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	438.3			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.86			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.604			#	0.17	0.276
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.493		J	#	0.32	0.245
Specific Conductance	umhos/cm	09/17/2013	N001	0	-	0	648			#		
Temperature	C	09/17/2013	N001	0	-	0	17.05			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	0.92			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.00011			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0815 DOMESTIC SUPPLY

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/17/2013	N001	0	-	0	145			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.32			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	6.23			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	433.4			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.86			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.47		J	#	0.18	0.242
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.638		J	#	0.33	0.272
Specific Conductance	umhos/cm	09/17/2013	N001	0	-	0	650			#		
Temperature	C	09/17/2013	N001	0	-	0	16.75			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	0.87			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.0001			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0816 DOMESTIC SUPPLY

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/17/2013	N001	0	-	0	148			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.34			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	6.2			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	419.9			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.97			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.514			#	0.17	0.251
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.557		J	#	0.35	0.266
Specific Conductance	umhos/cm	09/17/2013	N001	0	-	0	650			#		
Temperature	C	09/17/2013	N001	0	-	0	15.99			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	0.94			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.0001			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0818 DOMESTIC SUPPLY, five minute flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N002	0	-	0	168			#		
Chlorine, Total Residual	mg/L	09/17/2013	N002	0	-	0	0.38			#		
Dissolved Oxygen	mg/L	09/17/2013	N002	0	-	0	4.84			#		
Oxidation Reduction Potential	mV	09/17/2013	N002	0	-	0	357.2			#		
pH	s.u.	09/17/2013	N002	0	-	0	8.86			#		
Radium-226	pCi/L	09/17/2013	N002	0	-	0	2.51			#	0.17	0.775
Radium-228	pCi/L	09/17/2013	N002	0	-	0	3.56			#	0.33	0.892
Specific Conductance	umhos /cm	09/17/2013	N002	0	-	0	645			#		
Temperature	C	09/17/2013	N002	0	-	0	18.85			#		
Turbidity	NTU	09/17/2013	N002	0	-	0	13.5			#		
Uranium	mg/L	09/17/2013	N002	0	-	0	0.0001			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0818 DOMESTIC SUPPLY, end of flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N001	0	-	0	170			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.33			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	3.04			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	378.2			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.81			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.391		J	#	0.19	0.216
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.553		J	#	0.34	0.26
Specific Conductance	umhos /cm	09/17/2013	N001	0	-	0	649			#		
Temperature	C	09/17/2013	N001	0	-	0	16.5			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	3.88			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.0001			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0819 DOMESTIC SUPPLY, five minute flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N002	0	-	0	186			#		
Chlorine, Total Residual	mg/L	09/17/2013	N002	0	-	0	0.37			#		
Dissolved Oxygen	mg/L	09/17/2013	N002	0	-	0	2.43			#		
Oxidation Reduction Potential	mV	09/17/2013	N002	0	-	0	388.9			#		
pH	s.u.	09/17/2013	N002	0	-	0	8.88			#		
Radium-226	pCi/L	09/17/2013	N002	0	-	0	0.382		J	#	0.19	0.218
Radium-228	pCi/L	09/17/2013	N002	0	-	0	0.585		J	#	0.35	0.274
Specific Conductance	umhos /cm	09/17/2013	N002	0	-	0	642			#		
Temperature	C	09/17/2013	N002	0	-	0	17.27			#		
Turbidity	NTU	09/17/2013	N002	0	-	0	1.89			#		
Uranium	mg/L	09/17/2013	N002	0	-	0	0.00011			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0819 DOMESTIC SUPPLY , end of flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N001	0	-	0	162			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.34			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	3.14			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	387			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.99			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.5		J	#	0.18	0.248
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.569		J	#	0.36	0.275
Specific Conductance	umhos /cm	09/17/2013	N001	0	-	0	655			#		
Temperature	C	09/17/2013	N001	0	-	0	16.81			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	1.37			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.00013			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0820 DOMESTIC SUPPLY, five minute flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N002	0	-	0	168			#		
Chlorine, Total Residual	mg/L	09/17/2013	N002	0	-	0	0.32			#		
Dissolved Oxygen	mg/L	09/17/2013	N002	0	-	0	3.31			#		
Oxidation Reduction Potential	mV	09/17/2013	N002	0	-	0	410.6			#		
pH	s.u.	09/17/2013	N002	0	-	0	8.97			#		
Radium-226	pCi/L	09/17/2013	N002	0	-	0	0.391		J	#	0.18	0.216
Radium-228	pCi/L	09/17/2013	N002	0	-	0	0.438		J	#	0.36	0.255
Specific Conductance	umhos /cm	09/17/2013	N002	0	-	0	651			#		
Temperature	C	09/17/2013	N002	0	-	0	17.05			#		
Turbidity	NTU	09/17/2013	N002	0	-	0	1.69			#		
Uranium	mg/L	09/17/2013	N002	0	-	0	0.0001			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0820 DOMESTIC SUPPLY , end of flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N001	0	-	0	159			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.35			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	5.36			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	423.5			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.81			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.409		J	#	0.19	0.221
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.463		J	#	0.35	0.251
Specific Conductance	umhos /cm	09/17/2013	N001	0	-	0	649			#		
Temperature	C	09/17/2013	N001	0	-	0	16.68			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	0.96			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.00012			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0821 DOMESTIC SUPPLY , five minute flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N002	0	-	0	154			#		
Chlorine, Total Residual	mg/L	09/17/2013	N002	0	-	0	0.4			#		
Dissolved Oxygen	mg/L	09/17/2013	N002	0	-	0	2.58			#		
Oxidation Reduction Potential	mV	09/17/2013	N002	0	-	0	401.1			#		
pH	s.u.	09/17/2013	N002	0	-	0	8.95			#		
Radium-226	pCi/L	09/17/2013	N002	0	-	0	0.769			#	0.2	0.332
Radium-228	pCi/L	09/17/2013	N002	0	-	0	0.697		J	#	0.35	0.294
Specific Conductance	umhos /cm	09/17/2013	N002	0	-	0	649			#		
Temperature	C	09/17/2013	N002	0	-	0	17.41			#		
Turbidity	NTU	09/17/2013	N002	0	-	0	8.38			#		
Uranium	mg/L	09/17/2013	N002	0	-	0	0.0001			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0821 DOMESTIC SUPPLY , end of flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N001	0	-	0	161			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.32			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	3.82			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	412.1			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.88			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.338		J	#	0.18	0.2
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.461		J	#	0.36	0.257
Specific Conductance	umhos /cm	09/17/2013	N001	0	-	0	651			#		
Temperature	C	09/17/2013	N001	0	-	0	17.02			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	3.06			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.00011			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0829 DOMESTIC SUPPLY, five minute flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Lab	Data	QA						
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N002	0	-	0	135			#		
Chlorine, Total Residual	mg/L	09/17/2013	N002	0	-	0	0.28			#		
Dissolved Oxygen	mg/L	09/17/2013	N002	0	-	0	3.85			#		
Oxidation Reduction Potential	mV	09/17/2013	N002	0	-	0	107.1			#		
pH	s.u.	09/17/2013	N002	0	-	0	8.64			#		
Radium-226	pCi/L	09/17/2013	N002	0	-	0	1.97			#	0.19	0.642
Radium-228	pCi/L	09/17/2013	N002	0	-	0	1.88			#	0.34	0.524
Specific Conductance	umhos/cm	09/17/2013	N002	0	-	0	649			#		
Temperature	C	09/17/2013	N002	0	-	0	18.05			#		
Turbidity	NTU	09/17/2013	N002	0	-	0	4.37			#		
Uranium	mg/L	09/17/2013	N002	0	-	0	0.00009	B		#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0829 DOMESTIC SUPPLY , end of flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Lab	Data	QA						
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N001	0	-	0	148			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.3			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	2.4			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	283			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.82			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.556			#	0.17	0.261
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.378		J	#	0.33	0.232
Specific Conductance	umhos /cm	09/17/2013	N001	0	-	0	647			#		
Temperature	C	09/17/2013	N001	0	-	0	15.07			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	2.61			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.00011			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0830 DOMESTIC SUPPLY , five minute flush sample

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N002	0	-	0	155			#		
Chlorine, Total Residual	mg/L	09/17/2013	N002	0	-	0	0.33			#		
Dissolved Oxygen	mg/L	09/17/2013	N002	0	-	0	3.1			#		
Oxidation Reduction Potential	mV	09/17/2013	N002	0	-	0	320.3			#		
pH	s.u.	09/17/2013	N002	0	-	0	8.96			#		
Radium-226	pCi/L	09/17/2013	N002	0	-	0	0.376		J	#	0.17	0.208
Radium-228	pCi/L	09/17/2013	N002	0	-	0	0.632		J	#	0.34	0.278
Specific Conductance	umhos /cm	09/17/2013	N002	0	-	0	655			#		
Temperature	C	09/17/2013	N002	0	-	0	17.71			#		
Turbidity	NTU	09/17/2013	N002	0	-	0	1.33			#		
Uranium	mg/L	09/17/2013	N002	0	-	0	0.00011			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/16/2013

Location: 0830 DOMESTIC SUPPLY , end of flush sampling

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	09/17/2013	N001	0	-	0	148			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.29			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	2.53			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	351.3			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.83			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.714			#	0.18	0.309
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.534		J	#	0.41	0.296
Specific Conductance	umhos /cm	09/17/2013	N001	0	-	0	658			#		
Temperature	C	09/17/2013	N001	0	-	0	18.07			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	1.04			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.00009	B		#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site
 REPORT DATE: 12/03/2013
 Location: 0834 DOMESTIC SUPPLY

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/17/2013	N001	0 - 0	140			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0 - 0	0.27			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0 - 0	4.15			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0 - 0	425			#		
pH	s.u.	09/17/2013	N001	0 - 0	8.9			#		
Radium-226	pCi/L	09/17/2013	N001	0 - 0	0.361		J	#	0.17	0.203
Radium-228	pCi/L	09/17/2013	N001	0 - 0	0.538		J	#	0.38	0.28
Specific Conductance	umhos/cm	09/17/2013	N001	0 - 0	649			#		
Temperature	C	09/17/2013	N001	0 - 0	16.61			#		
Turbidity	NTU	09/17/2013	N001	0 - 0	1.05			#		
Uranium	mg/L	09/17/2013	N001	0 - 0	0.0001			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0837 DOMESTIC SUPPLY Domestic System, Tap Location

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (as CaCO ₃)	mg/L	09/17/2013	N001	0	-	0	158			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.34			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	2.91			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	432.1			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.94			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	0.577			#	0.17	0.266
Radium-226	pCi/L	09/17/2013	N002	0	-	0	0.415		J	#	0.17	0.221
Radium-228	pCi/L	09/17/2013	N001	0	-	0	0.491		J	#	0.44	0.306
Radium-228	pCi/L	09/17/2013	N002	0	-	0	0.565		J	#	0.35	0.271
Specific Conductance	umhos/cm	09/17/2013	N001	0	-	0	648			#		
Temperature	C	09/17/2013	N001	0	-	0	16.73			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	0.78			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.0001			#	0.000029	
Uranium	mg/L	09/17/2013	N002	0	-	0	0.00011			#	0.000029	

General Water Quality Data by Location (USEE105) FOR SITE RVT01, Riverton Processing Site

REPORT DATE: 12/03/2013

Location: 0843 DOMESTIC SUPPLY

Parameter	Units	Sample		Depth Range		(Ft)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	BLS)	Lab			Data	QA			
Alkalinity, Total (as CaCO ₃)	mg/L	09/17/2013	N001	0	-	0	182			#		
Chlorine, Total Residual	mg/L	09/17/2013	N001	0	-	0	0.34			#		
Dissolved Oxygen	mg/L	09/17/2013	N001	0	-	0	7.17			#		
Oxidation Reduction Potential	mV	09/17/2013	N001	0	-	0	398.6			#		
pH	s.u.	09/17/2013	N001	0	-	0	8.93			#		
Radium-226	pCi/L	09/17/2013	N001	0	-	0	2.02			#	0.17	0.645
Radium-228	pCi/L	09/17/2013	N001	0	-	0	2.03			#	0.38	0.565
Specific Conductance	umhos/cm	09/17/2013	N001	0	-	0	644			#		
Temperature	C	09/17/2013	N001	0	-	0	17.63			#		
Turbidity	NTU	09/17/2013	N001	0	-	0	4.98			#		
Uranium	mg/L	09/17/2013	N001	0	-	0	0.00012			#	0.000029	

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

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

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

Equipment Blank Data

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BLANKS REPORT

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

RIN: 13095603

Report Date: 12/03/2013

Parameter	Site Code	Location ID	Sample		Units	Result	Qualifiers		Detection Limit	Uncertainty	Sample Type
			Date	ID			Lab	Data			
Calcium	RVT01	0999	09/19/2013	N001	mg/L	6.7			0.012		E
Chloride	RVT01	0999	09/19/2013	N001	mg/L	0.2	U		0.2		E
Iron	RVT01	0999	09/19/2013	N001	mg/L	3.3			0.0049		E
Magnesium	RVT01	0999	09/19/2013	N001	mg/L	1.6			0.013		E
Manganese	RVT01	0999	09/19/2013	N001	mg/L	0.073			0.00011		E
Molybdenum	RVT01	0999	09/19/2013	N001	mg/L	0.00032	U		0.00032		E
Potassium	RVT01	0999	09/19/2013	N001	mg/L	0.73	B	U	0.11		E
Sodium	RVT01	0999	09/19/2013	N001	mg/L	0.37	B	U	0.0066		E
Sulfate	RVT01	0999	09/19/2013	N001	mg/L	0.5	U		0.5		E
Uranium	RVT01	0999	09/19/2013	N001	mg/L	0.00097			0.000029		E

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

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

SAMPLE TYPES:

E Equipment Blank.

Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE RVT01, Riverton Processing Site
REPORT DATE: 12/03/2013

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)
0101	O	4946.58	09/18/2013	12:48:00	11.03	4935.55
0110	O	4950.19	09/18/2013	12:49:00	13.97	4936.22
0111	O	4946.87	09/18/2013	12:46:00	10.66	4936.21
0700	U	4951.38	09/18/2013	16:10:00	6.7	4944.68
0705	D	4930.8	09/19/2013	16:25:30	7.01	4923.79
0707	D	4931	09/19/2013	16:55:05	6.24	4924.76
0710	U	4947.9	09/18/2013	12:15:26	6.7	4941.2
0716	O	4939.12	09/18/2013	15:25:59	8.58	4930.54
0717	O	4938.8	09/18/2013	14:50:39	7.77	4931.03
0718	D	4937.6	09/20/2013	08:50:37	9.13	4928.47
0719	D	4937.55	09/20/2013	08:20:03	8.62	4928.93
0720	C	4940.46	09/19/2013	11:05:33	4.89	4935.57
0721	C	4940.47	09/19/2013	10:45:57	8.75	4931.72
0722R		4937.06	09/20/2013	09:50:13	8.75	4928.31
0723	D	4936.01	09/20/2013	09:25:27	7.5	4928.51
0724	U	4941.36	09/18/2013	14:17:00	6.73	4934.63
0725	U	4941.66	09/18/2013	14:16:00	6.96	4934.7
0726	U	4942	09/18/2013	14:15:00	8.47	4933.53
0727	U	4951.69	09/18/2013	13:56:00	10.88	4940.81
0728	U	4946.01	09/18/2013	13:59:00	9.24	4936.77
0729	D	4932.75	09/19/2013	09:50:59	5.15	4927.6
0730	D	4933.08	09/19/2013	09:30:54	5.78	4927.3
0732	U	4945.07	09/18/2013	13:16:00	8.89	4936.18
0733	U	4946.76	09/18/2013	16:41:00	3.35	4943.41
0734	U	4946.08	09/18/2013	16:42:00	5.74	4940.34
0736	U	4946	09/18/2013	09:45:00	8.2	4937.8
0784	U	4945.45	09/18/2013	13:25:31	7.39	4938.06
0788	C	4935.09	09/19/2013	13:50:16	9.98	4925.11

STATIC WATER LEVELS (USEE700) FOR SITE RVT01, Riverton Processing Site
REPORT DATE: 12/03/2013

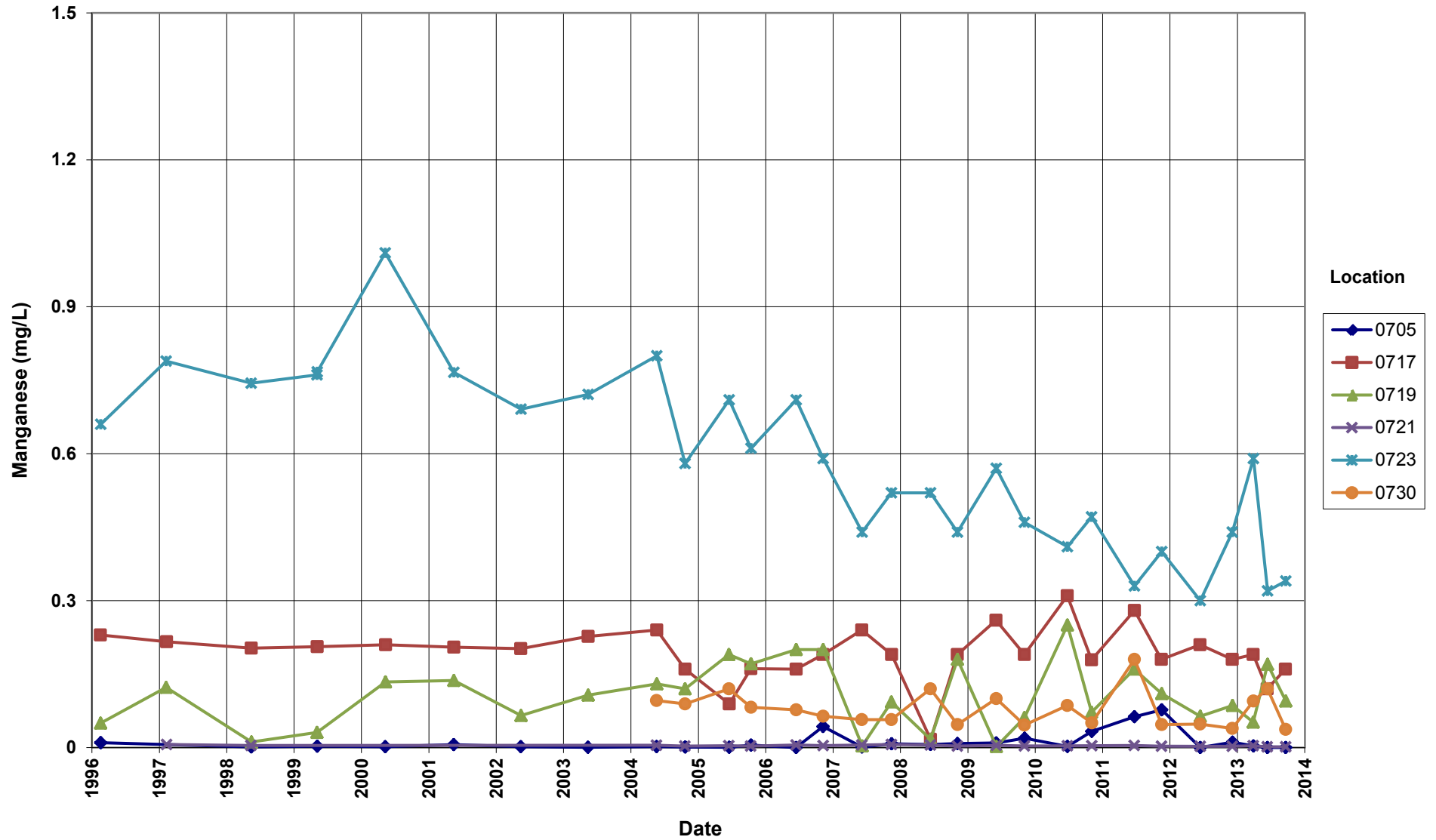
Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)
0789	D	4933.66	09/19/2013	14:25:31	9.42	4924.24
0824		4928.27	09/20/2013	11:20:18	4.7	4923.57
0826		4936.98	09/19/2013	13:10:44	8.88	4928.1

FLOW CODES: C CROSS GRADIENT D DOWN GRADIENT
 O ON SITE U UPGRADIENT

Time-Concentration Graphs

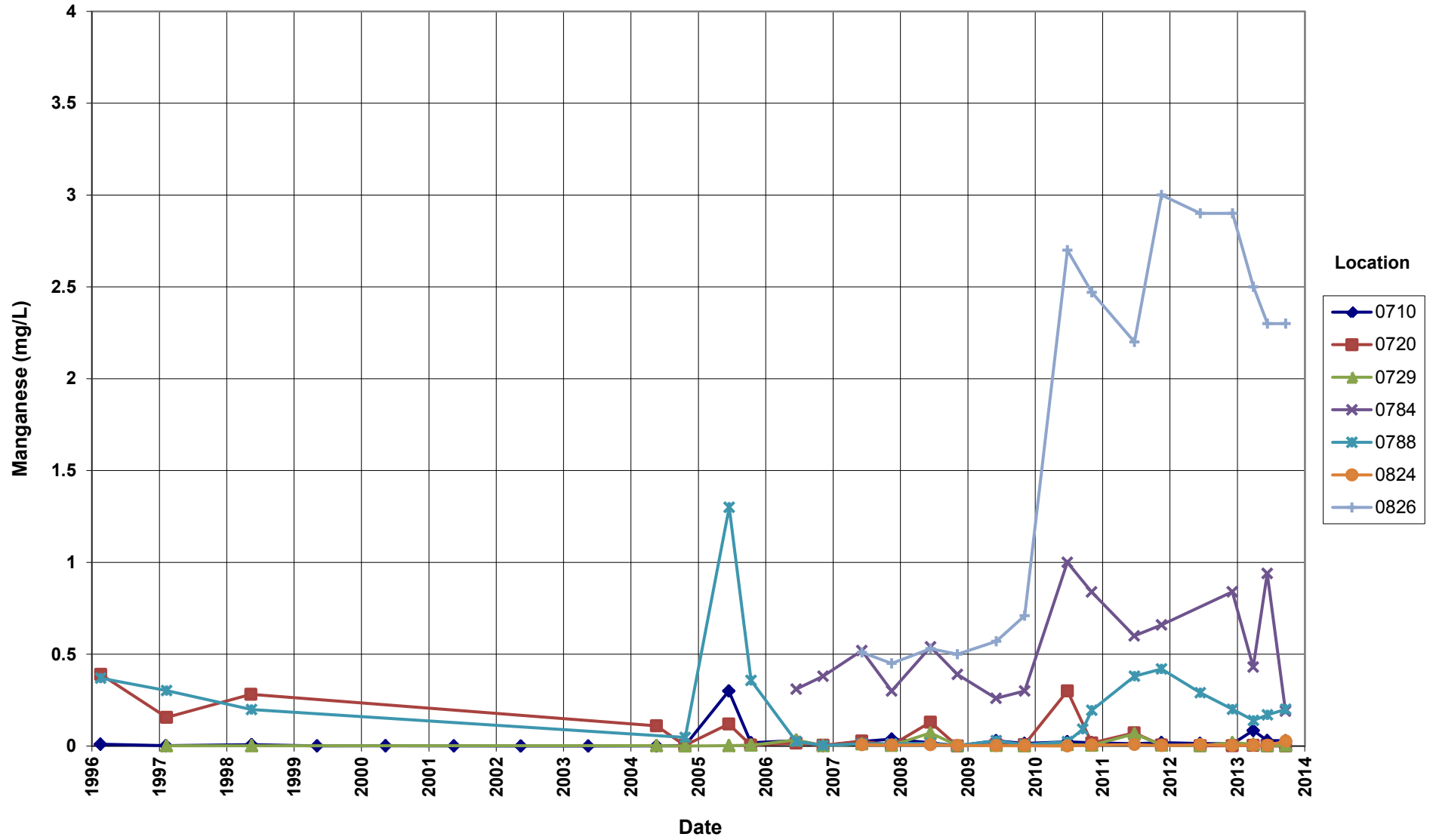
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Riverton Processing Site
Manganese Concentration
Semi-Confined Aquifer Locations



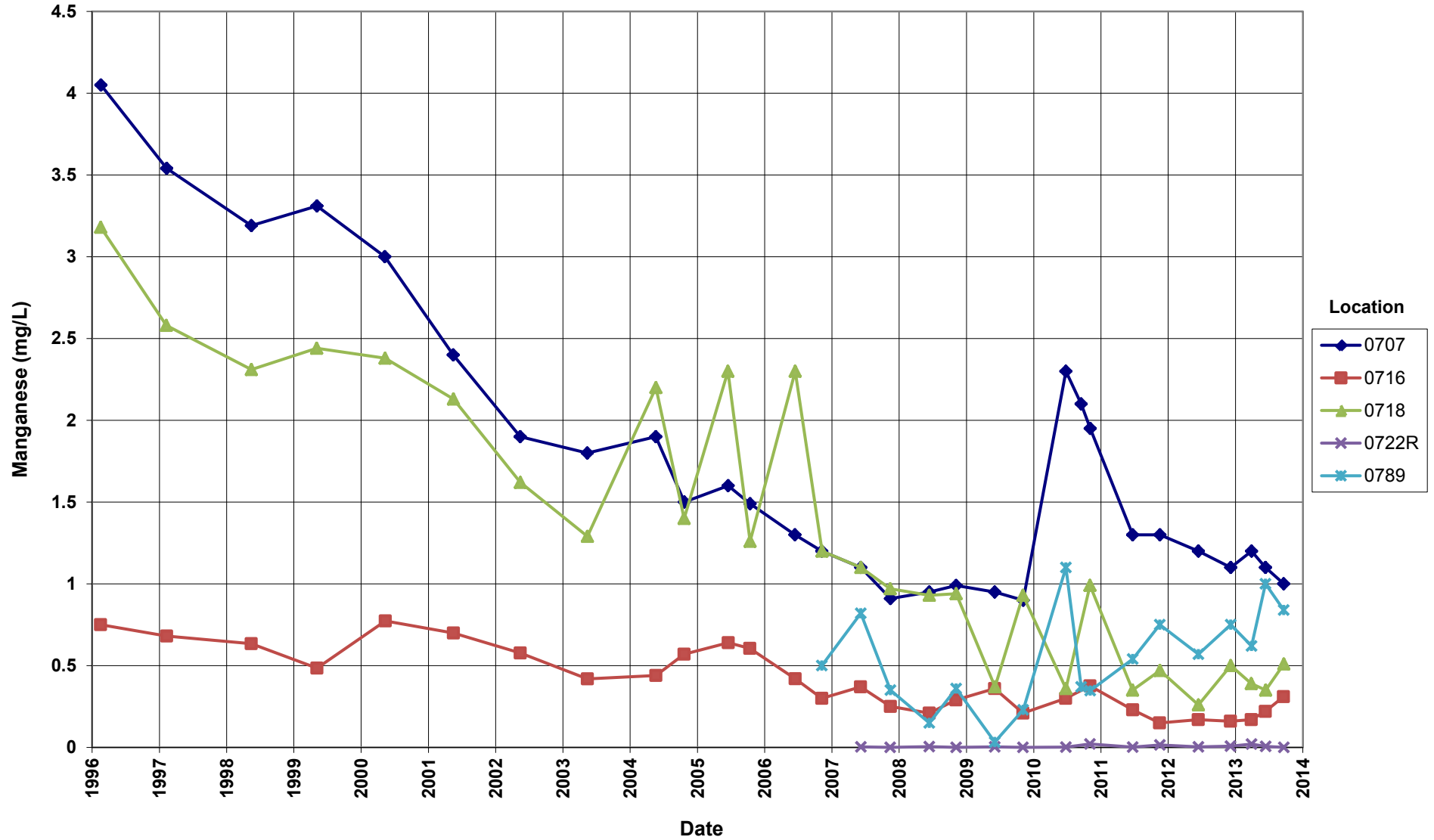
Riverton Processing Site Manganese Concentration

Surficial Aquifer Locations

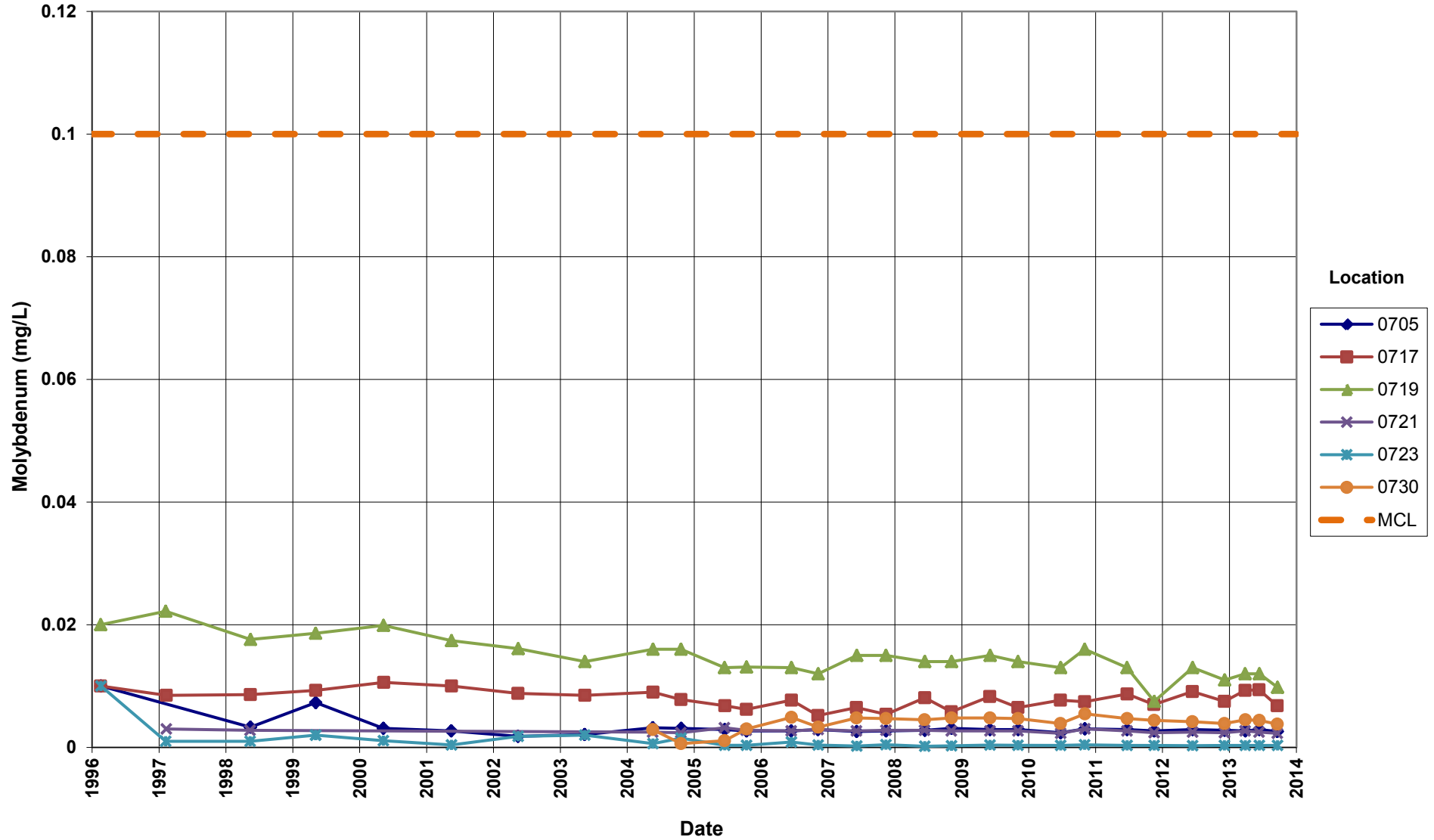


Riverton Processing Site Manganese Concentration

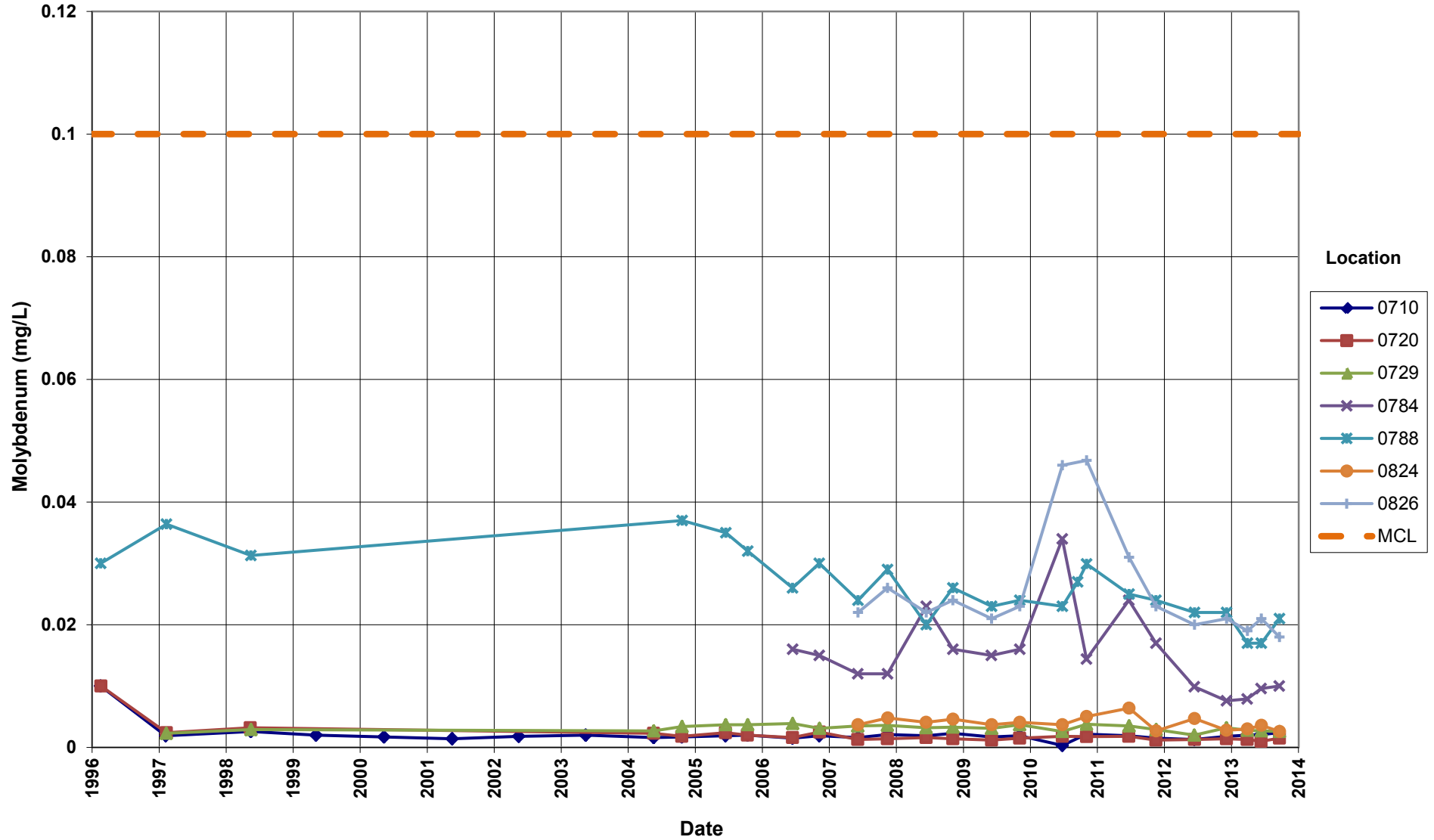
Surficial Aquifer Locations



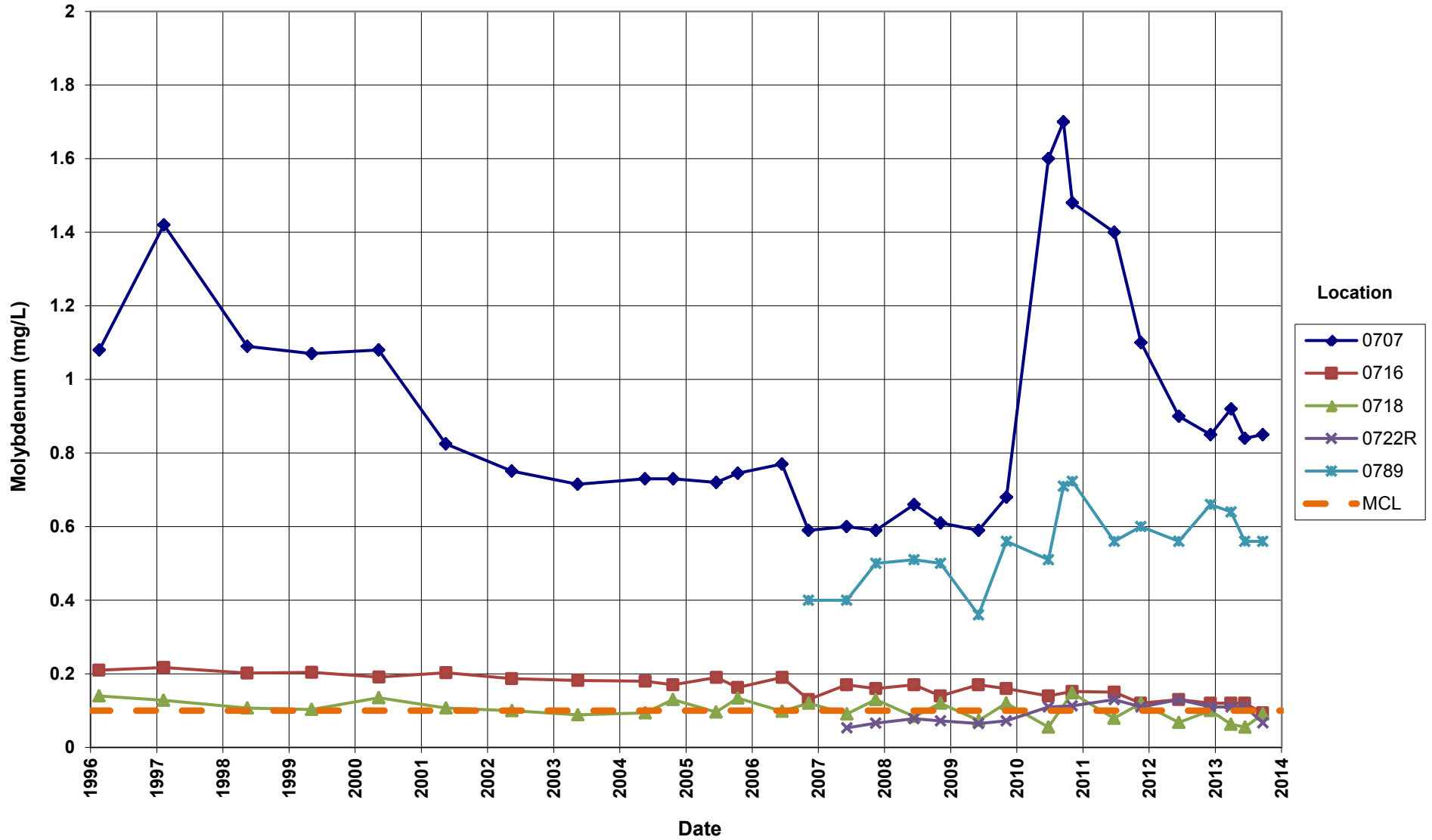
Riverton Processing Site
Molybdenum Concentration
Semi-confined Aquifer Locations
Maximum Concentration Limit (MCL) = 0.1 mg/L



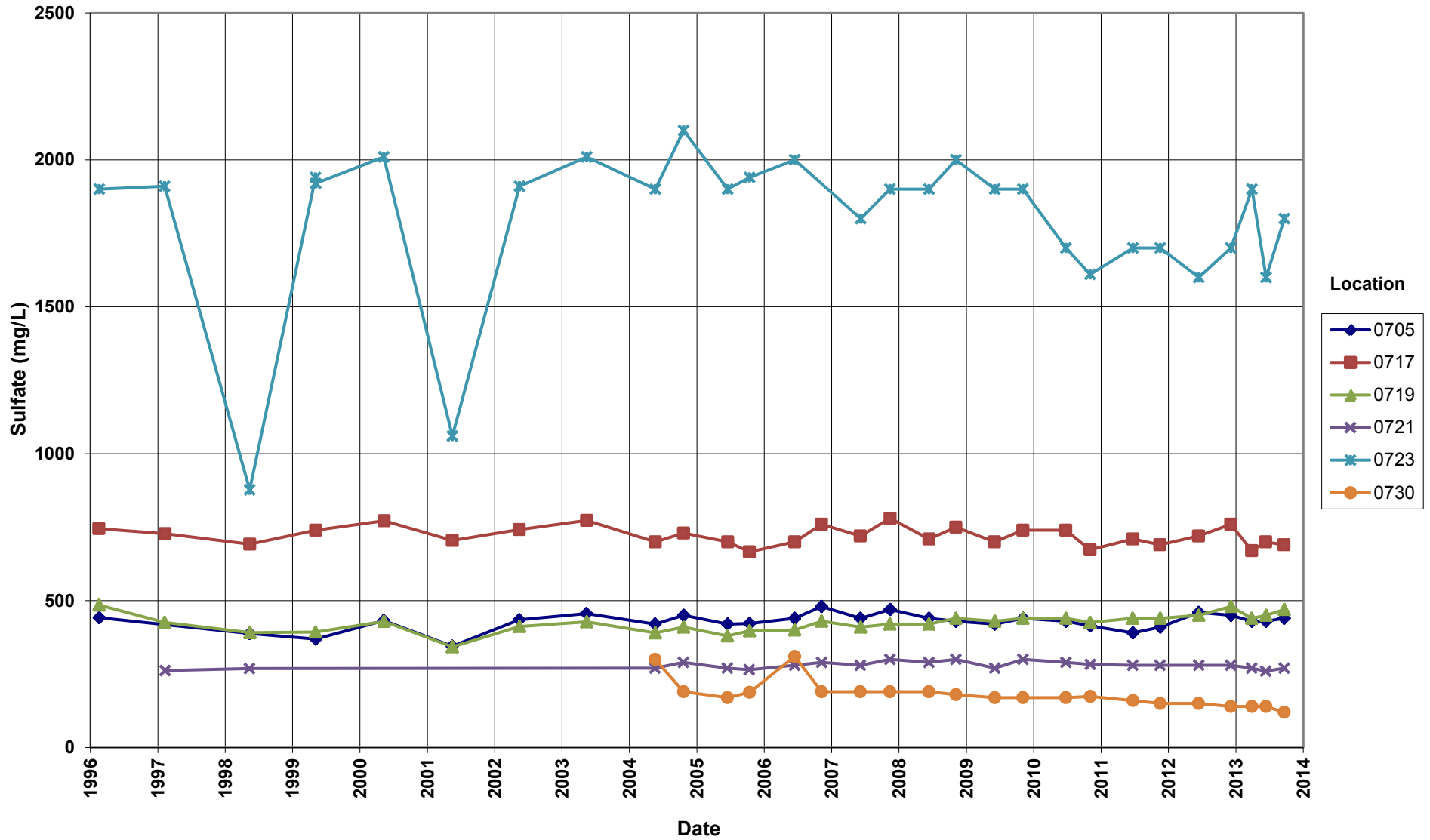
Riverton Processing Site
Molybdenum Concentration
 Surficial Aquifer Locations
 Maximum Concentration Limit (MCL) = 0.1 mg/L



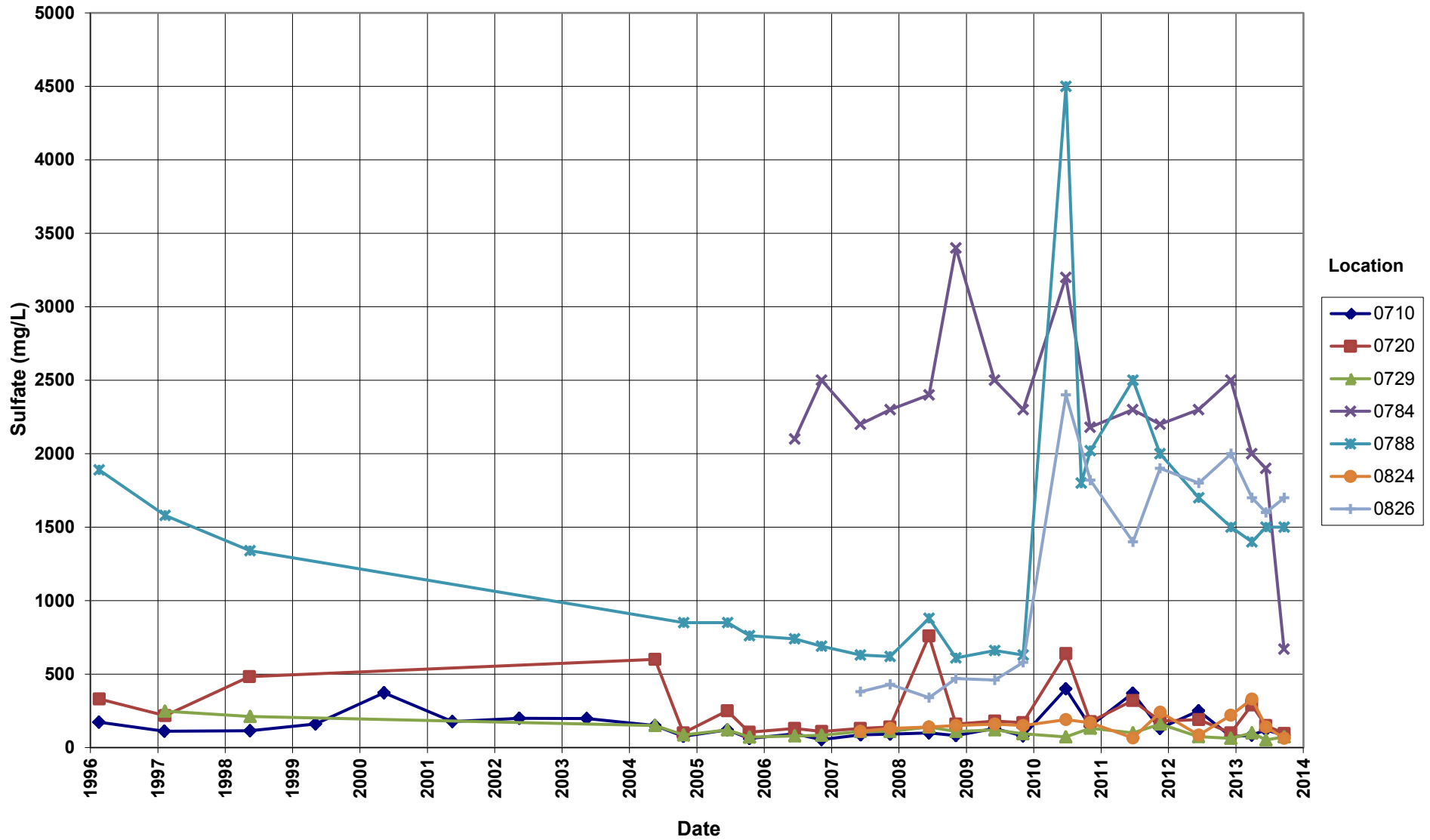
Riverton Processing Site
Molybdenum Concentration
 Surficial Aquifer Locations
 Maximum Concentration Limit (MCL) = 0.1 mg/L



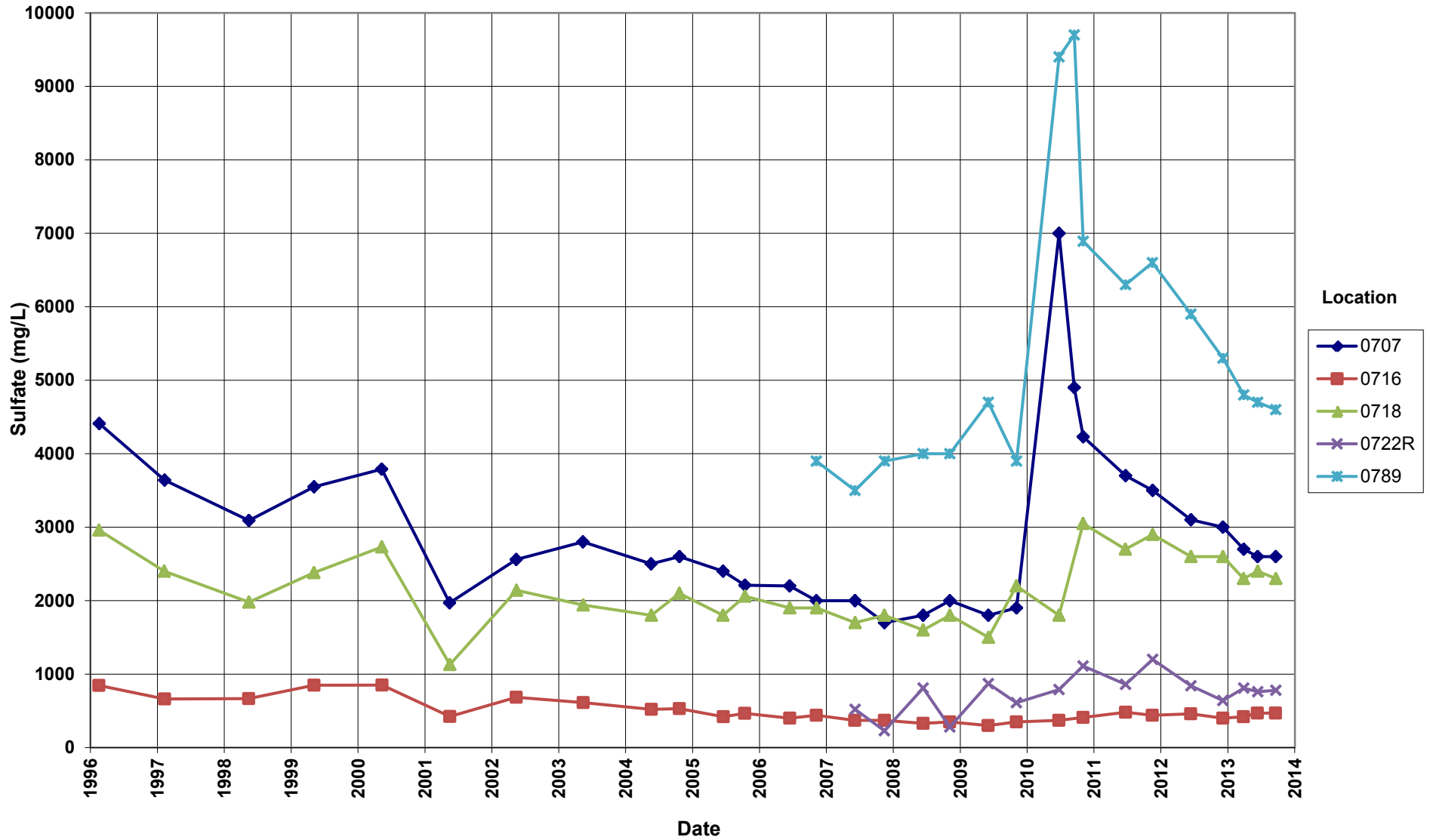
Riverton Processing Site
Sulfate Concentration
 Semi-Confined Aquifer Locations



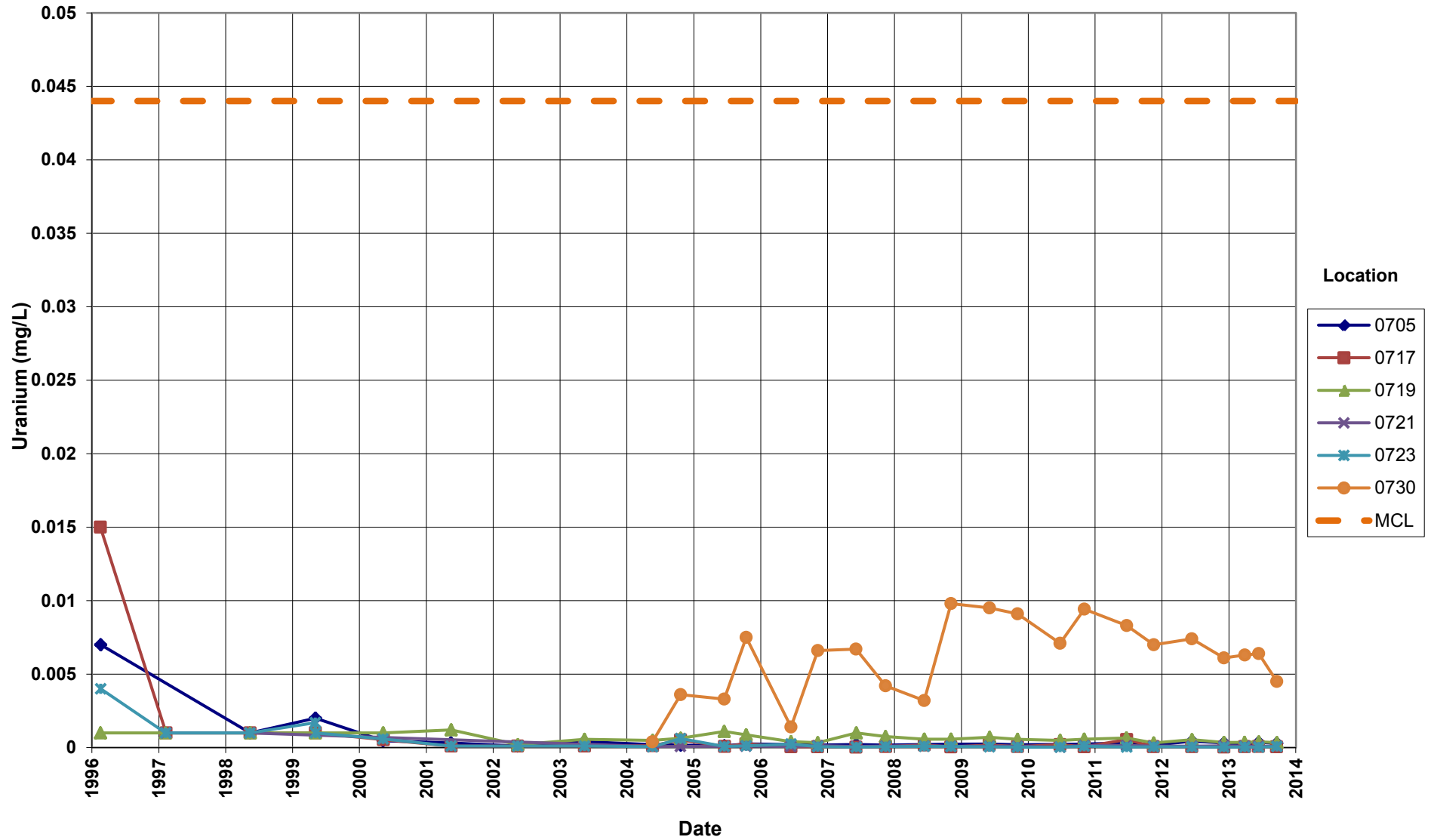
Riverton Processing Site
Sulfate Concentration
Surficial Aquifer Locations



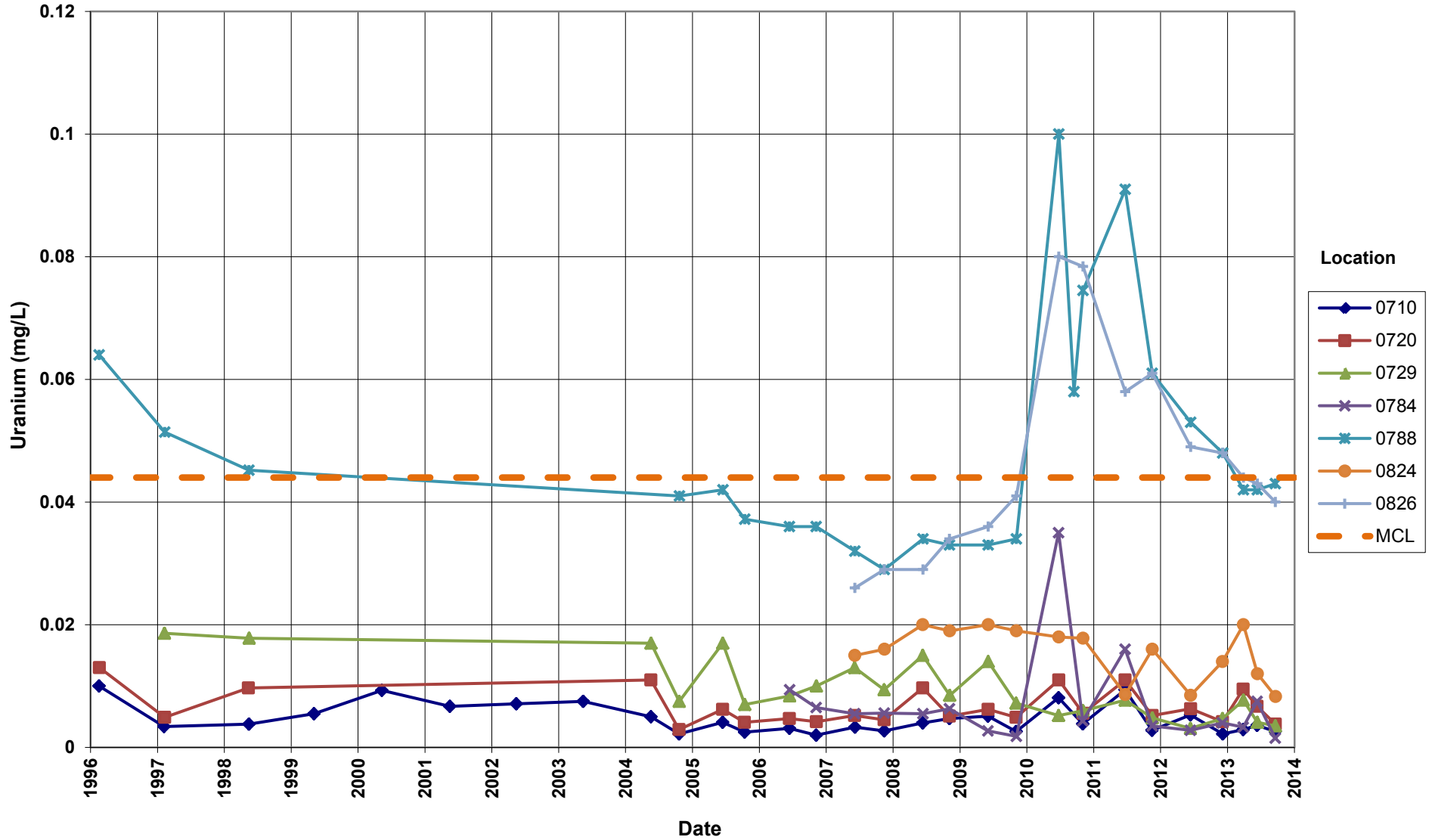
Riverton Processing Site
Sulfate Concentration
Surficial Aquifer Locations



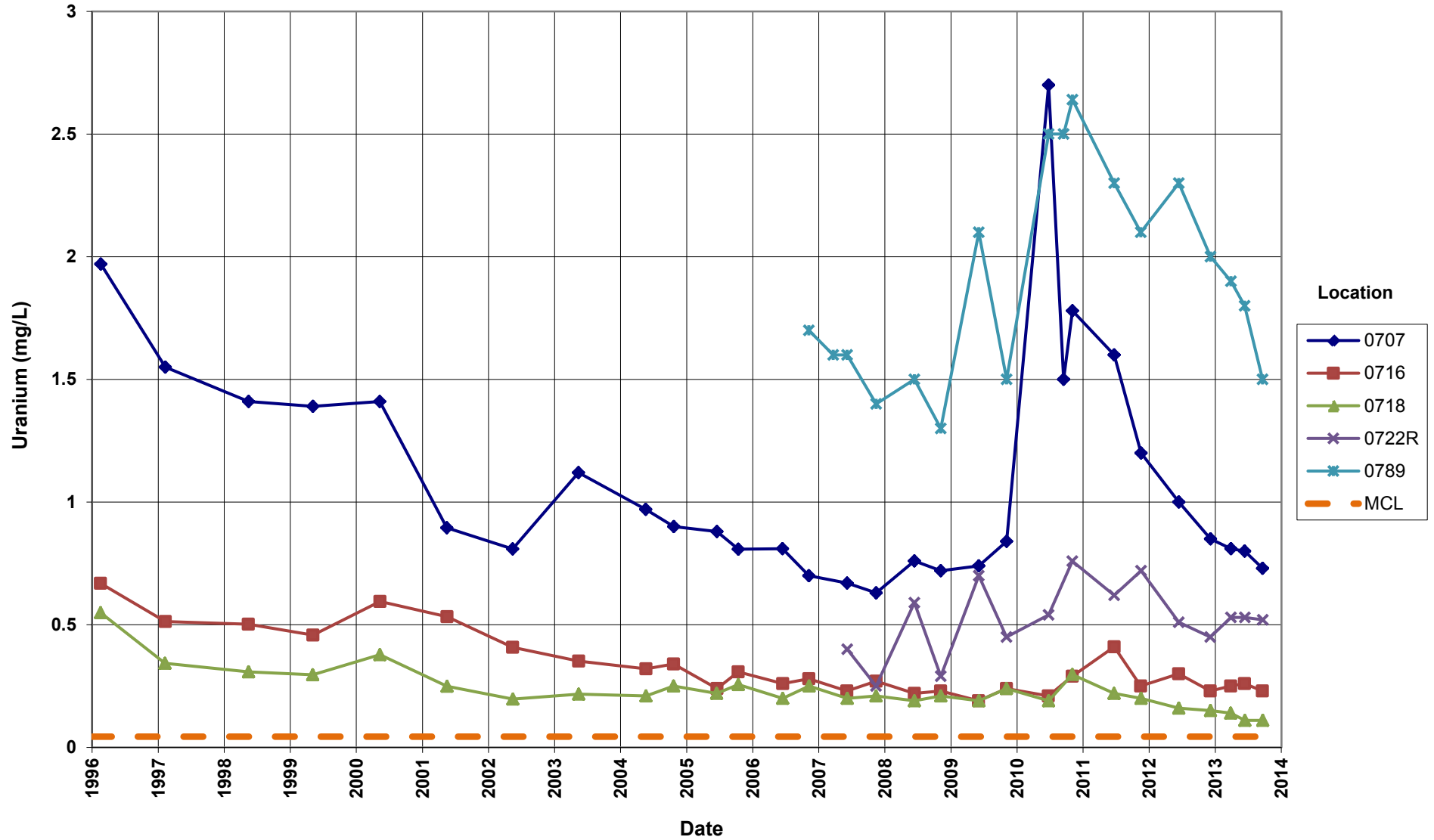
Riverton Processing Site
Uranium Concentration
Semi-Confined Aquifer Locations
Maximum Concentration Limit (MCL) = 0.044 mg/L



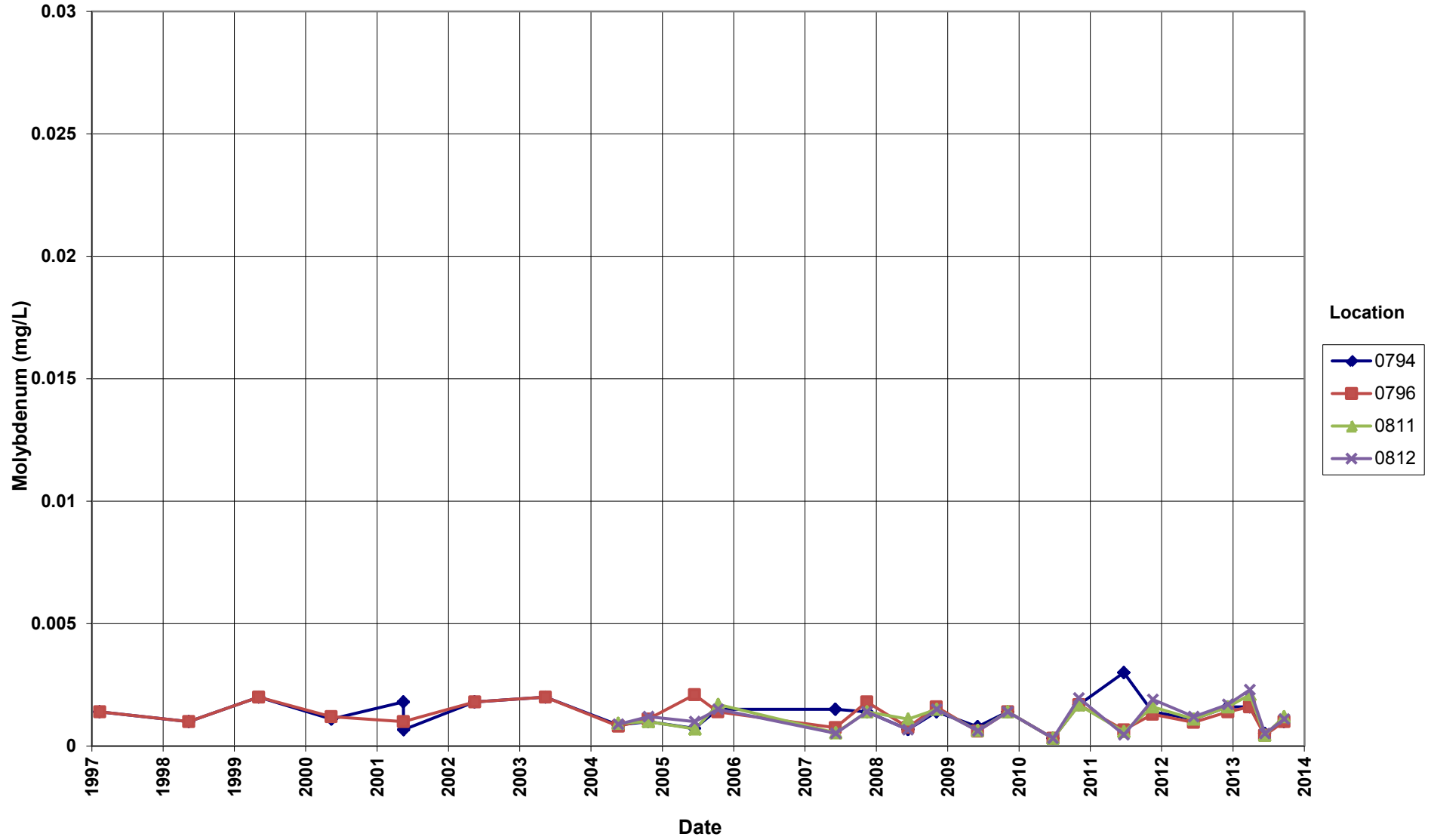
Riverton Processing Site
Uranium Concentration
 Surficial Aquifer Locations
 Maximum Concentration Limit (MCL) = 0.044 mg/L



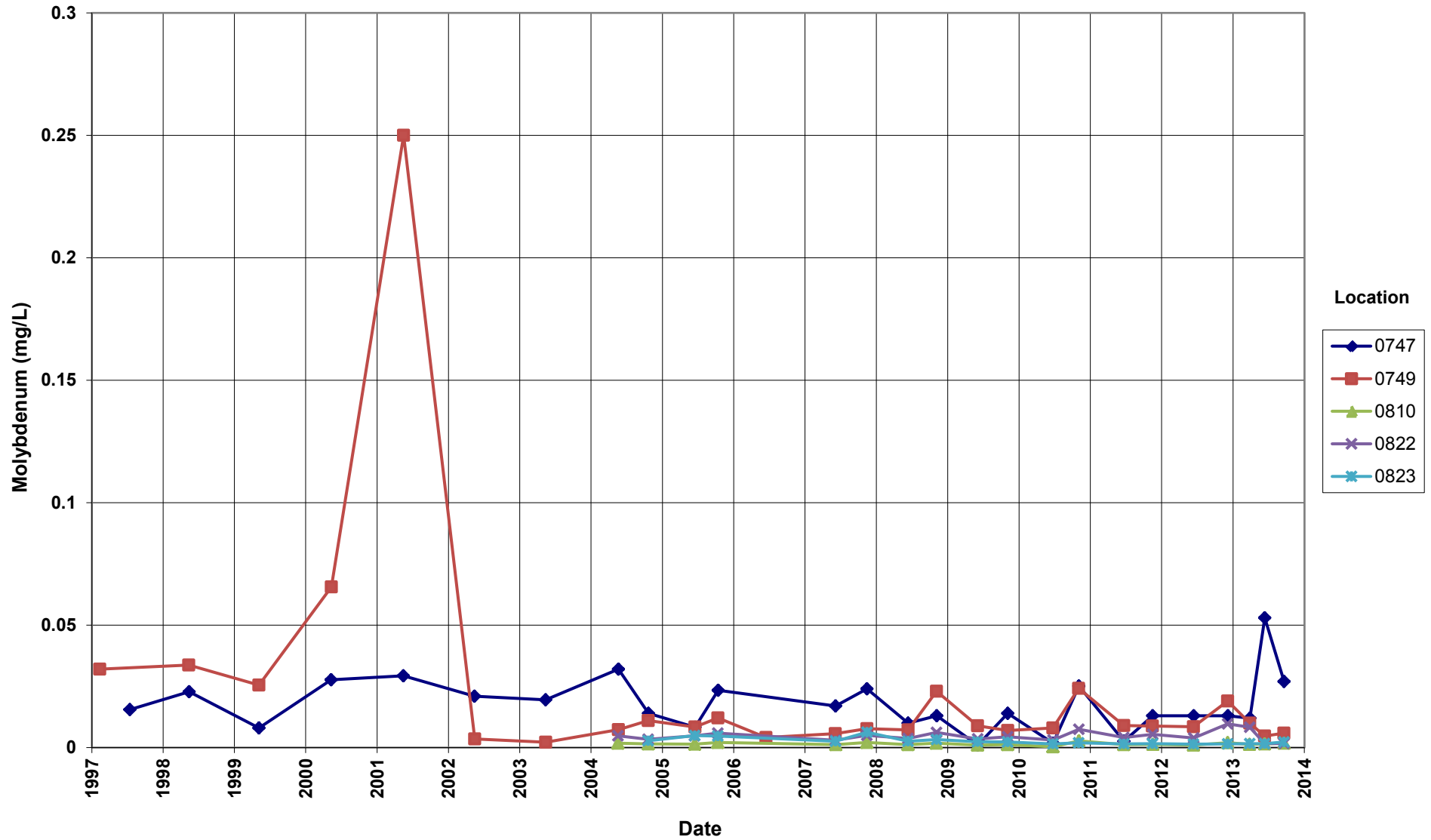
Riverton Processing Site
Uranium Concentration
 Surficial Aquifer Locations
 Maximum Concentration Limit (MCL) = 0.044 mg/L



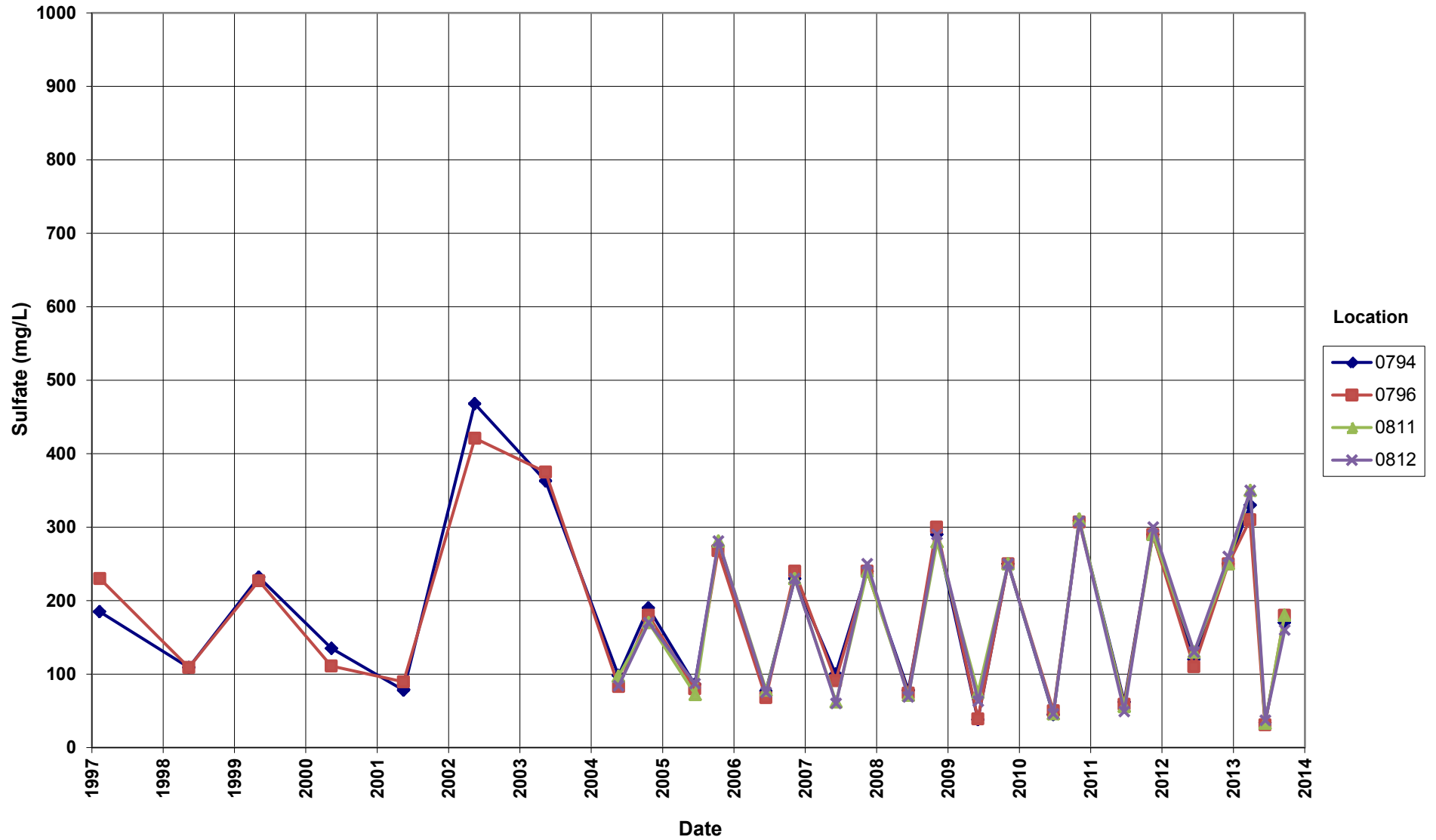
Riverton Processing Site
Molybdenum Concentration
Little Wind River Surface Water Locations



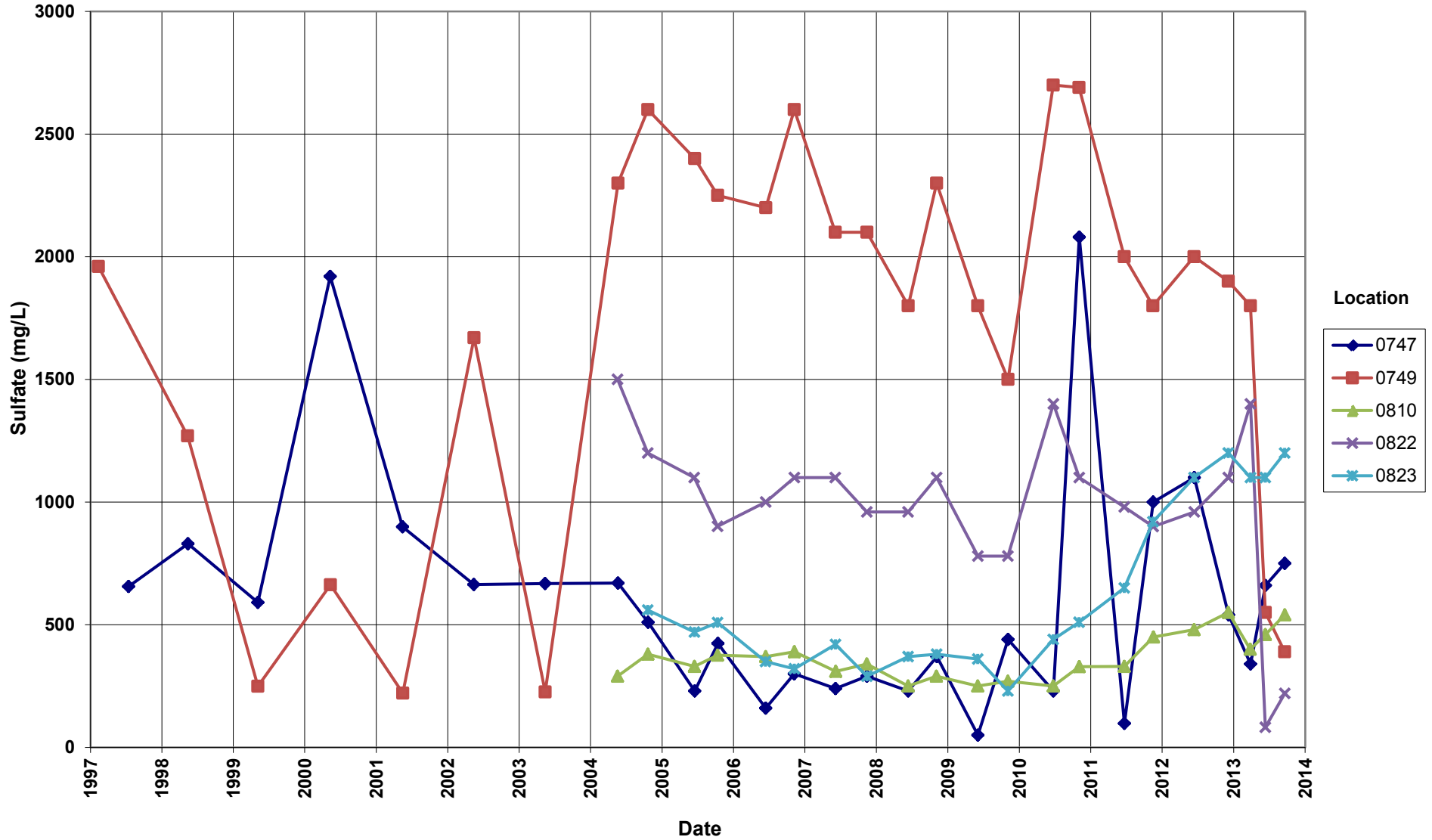
Riverton Processing Site
Molybdenum Concentration
Oxbow Lake, Wetlands, Ditch & Pond Surface Water Locations



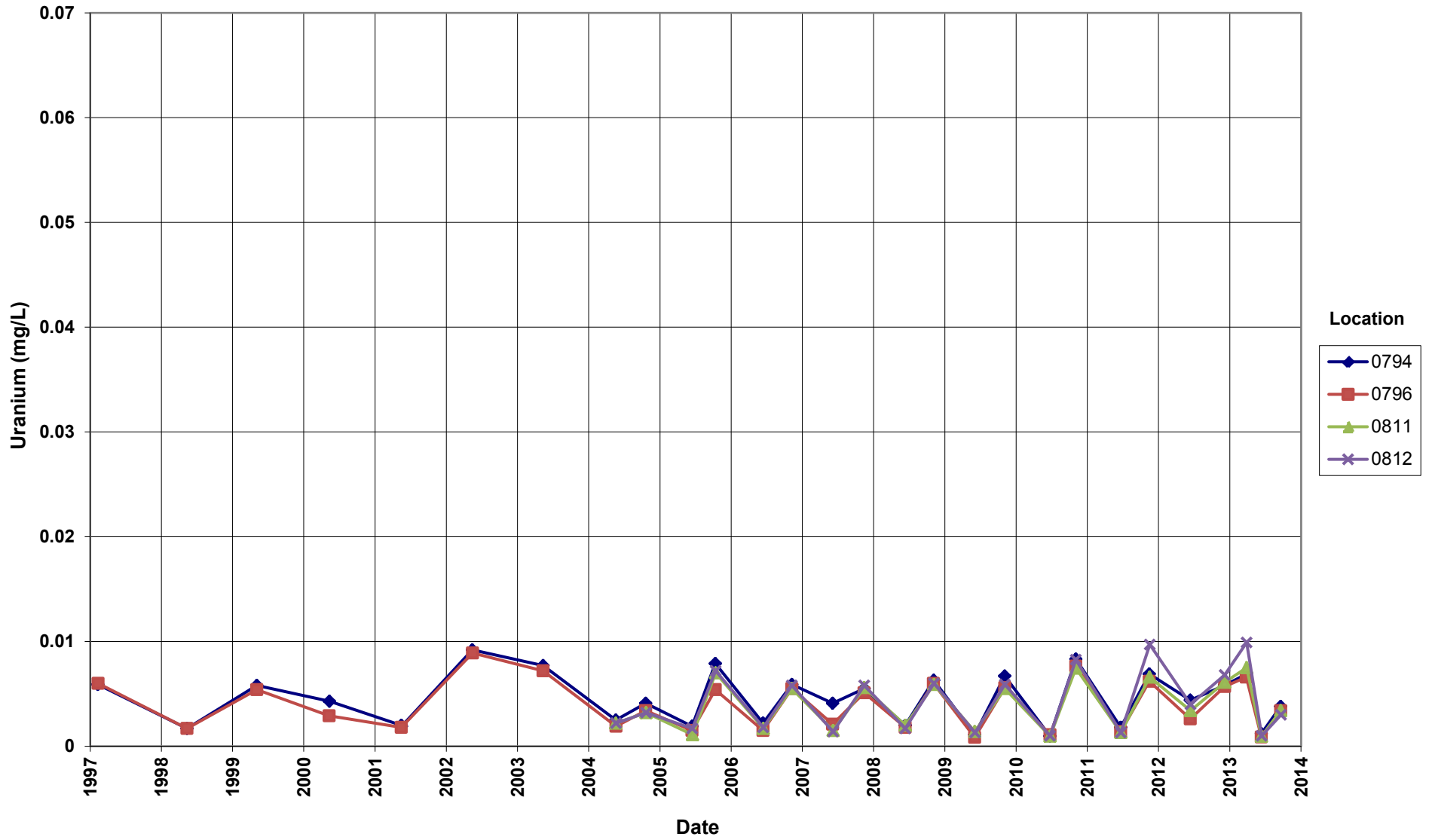
Riverton Processing Site
Sulfate Concentration
Little Wind River Surface Water Locations



**Riverton Processing Site
Sulfate Concentration**
Oxbow Lake, Wetlands, Ditch & Pond Surface Water Locations

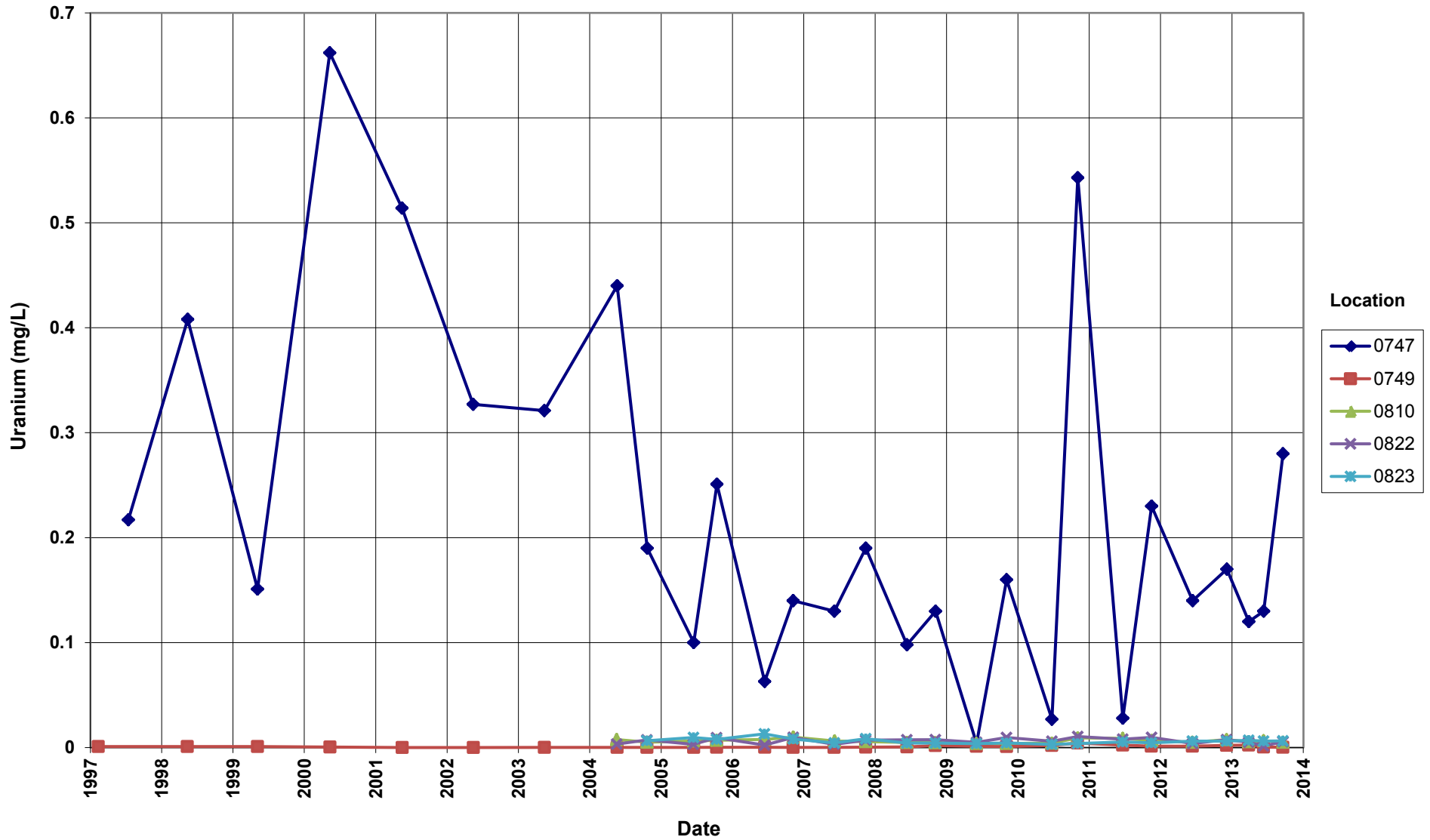


Riverton Processing Site
Uranium Concentration
Little Wind River Surface Water Locations



Riverton Processing Site Uranium Concentration

Oxbow Lake, Wetlands, Ditch & Pond Surface Water Locations



Attachment 3
Sampling and Analysis Work Order

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established 1959

Task Order LM-501
Control Number 13-0760

August 22, 2013

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

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
September 2013 Environmental Sampling at the Riverton, Wyoming,
Processing Site

Reference: Task Order LM-501-02-117-402, Riverton, Wyoming, Processing Site

Dear Mr. Dam:

The purpose of this letter is to inform you of the upcoming sampling event at Riverton, Wyoming. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Riverton processing site. Water quality data will be collected from monitoring wells, domestic wells, and surface locations; flushing of the Alternate Water Supply System also will occur as part of the routine environmental sampling currently scheduled to begin the week of September 16, 2013.

The following lists show the monitoring wells (with zone of completion), surface locations, domestic wells, and water supply system locations scheduled to be sampled during this event.

Monitoring Wells*

705 Se	716 Sf	719 Se	722R Sf	730 Se	788 Sf	824 Sf
707 Sf	717 Se	720 Sf	723 Se	784 Sf	789 Sf	826 Sf
710 Sf	718 Sf	721 Se	729 Sf			

*NOTE: Se = Semi-confined sandstone; Sf = surficial

Surface Locations

747	794	810	811	812	822	823
749	796					

Domestic Wells

405	430	436	460	828	841	842
422						

Alternate Water Supply System

813	815	818	820	829	834	843
814	816	819	821	830	837	

Alternate Water Supply System samples will be collected as directed in the *Alternate Water Supply System Flushing Plan Riverton, Wyoming*. Access agreements are being reviewed and are expected to be complete by the beginning of fieldwork.

Please contact me at (970) 248-6654 if you have any questions.

Sincerely,



Sam Campbell
Site Lead

SC/lcg/lb

Enclosures (3)

cc: (electronic)
Christina Pennal, DOE
Sam Campbell, Stoller
Steve Donovan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
rc-grand.junction
File: RVT410.02 (A)

Sampling Frequencies for Locations at Riverton, Wyoming

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
101					X	WL only
110					X	WL only
111					X	WL only
700					X	WL only
702					X	Data logger
705	X					
707	X					Data logger
709					X	WL only; Data logger
710	X					
716	X					
717	X					
718	X					
719	X					
720	X					
721	X					
722R	X					
723	X					
724					X	WL only
725					X	WL only
726					X	WL only
727					X	WL only
728					X	WL only
729	X					
730	X					
732					X	WL only
733					X	WL only
734					X	WL only
736					X	WL only
784	X					
788	X					
789	X					Data logger
824	X					
825					X	Not drilled yet
826	X					
Surface Locations						
747	X					
749	X					
794	X					
796	X					
810	X					Gravel pit
811	X					Little Wind River
812	X					Little Wind River
822	X					
823	X					

Sampling Frequencies for Locations at Riverton, Wyoming

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Domestic Wells						
405	X					921 Rendezvous Road
422	X					10 Whitetail Drive
430	X					204 Goes in Lodge Road
436	X					33 St Stephens Road
440					X	898 Rendezvous Road; on hold
441					X	898 Rendezvous Road; pending owner's permission
460	X					140 Goes in Lodge Road
828	X					33 St Stephens Road
841	X					22 Whitetail Dr
842	X					14 Whitetail Dr
Alternate Water Supply System						
813		X				
814		X				
815		X				
816		X				
818		X				
819		X				
820		X				
821		X				
829		X				
830		X				
834		X				
837		X				
843		X				

Semiannual sampling conducted in September and March

Constituent Sampling Breakdown

Site	Riverton					
Analyte	Groundwater	Surface Water	AWSS	Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr	138	36	38			
<i>Field Measurements</i>						
Alkalinity	X	X				
Dissolved Oxygen	X	X	X			
Redox Potential	X	X	X			
Residual Chlorine			X			
pH	X	X	X			
Specific Conductance	X	X	X			
Turbidity	X	X	X			
Temperature	X	X	X			
<i>Laboratory Measurements</i>						
Aluminum						
Ammonia as N (NH3-N)						
Calcium	X	X		5	SW-846 6010	LMM-01
Chloride	X	X		0.5	SW-846 9056	MIS-A-039
Chromium						
Gross Alpha						
Gross Beta						
Iron						
Lead						
Magnesium	X	X		5	SW-846 6010	LMM-01
Manganese	X	X		0.005	SW-846 6010	LMM-01
Molybdenum	X	X		0.003	SW-846 6020	LMM-02
Nickel						
Nickel-63						
Nitrate + Nitrite as N (NO ₃ +NO ₂)-N						
Potassium	X	X		1	SW-846 6010	LMM-01
Radium-226		0822 only	X	1 pCi/L	Gas Proportional Counter	GPC-A-018
Radium-228		0822 only	X	1 pCi/L	Gas Proportional Counter	GPC-A-020
Selenium						
Silica						
Sodium	X	X		1	SW-846 6010	LMM-01
Strontium						
Sulfate	X	X		0.5	SW-846 9056	MIS-A-044

Constituent Sampling Breakdown

Site	Riverton					
Analyte	Groundwater	Surface Water	AWSS	Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Sulfide						
Total Dissolved Solids						
Total Organic Carbon						
Uranium	X	X	X	0.0001	SW-846 6020	LMM-02
Vanadium						
Zinc						
Total No. of Analytes	9	11	3			

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

Attachment 4

Trip Report

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Memorandum

Control Number N/A

DATE: October 7, 2013
TO: Distribution
FROM: Sam Campbell
SUBJECT: Trip Report

Site: Riverton, Wyoming, Processing Site.

Dates of Sampling Event: September 16 to September 20, 2013

Team Members: David Atkinson and Sam Campbell

Number of Locations Sampled: 18 monitoring wells, 9 surface water locations, 8 domestic wells, 8 alternate water supply system (AWSS) hydrants, and 4 AWSS taps.

Locations Not Sampled/Reason: AWSS tap location 0814 was not sampled because the house was vacant.

Location Specific Information: Monitoring wells 0705, 0719, and 0730 were purged and sampled using Category II criteria; all other monitoring wells were purged and sampled using Category I criteria.

The Little Wind River was not flowing into the Oxbow Lake at the time of sampling, although flow into the lake may have occurred prior to sampling because of regionally heavy rainfall.

New contact information was obtained for surface location 0823/well 0736.

New elevation data was obtained for monitoring well 0789.

All groundwater and surface water samples were submitted for iron analysis per DOE request.

Depth of sample tubing was adjusted upward in monitoring wells 0710, 0717, 0719, and 0730 to get farther into the screened interval. The current configuration of sample-tubing depths/pump intakes is shown in Table 1.

Table 1. Updated Riverton Pump Intakes¹

Well ID	Tubing Depth ²	Measured Well Depth ²	Distance Above Bottom Of Well	Sump Length	Distance Above Bottom Of Screen	Screen Length
0705	45.65	49.65	4	2	2	10
0707	12	15.45	3.45	2	1.45	5
0710	13.45	17.57	4.12	2	2.12	5
0716	12.75	14.89	2.14	0	2.14	5
0717	47.5	51.76	4.26	2	2.26	10
0718	13.2	16.95	3.75	0	3.75	5
0719	35.48	39.98	4.5	2	2.5	10
0720	10.5	12.99	2.49	0	2.49	5
0721	47.7	50.78	3.08	2	1.08	10
0722R	13.22	16.22	3	0.5	2.5	5
0723	44.93	48.13	3.2	2	1.2	10
0729	11.78	14.58	2.8	0	2.8	5
0730	32.2	37	4.8	2	2.8	10
0732	40.8	43.1	2.3	0	2.3	15
0736	33.55	35.91	2.36	0.4	1.96	15
0784	9.39	11.51	2.12	0.45	1.67	4.45
0788	16.2	18.25	2.05	0.4	1.65	12
0789	16.42	18.56	2.14	0.4	1.74	12
0824	12.5	14.8	2.3	0.3	2	5
0826	11.82	14.69	2.87	0.3	2.57	5

¹All units are in feet.

²Measured from top of casing

Survey data was collected for monitoring well 0789 using a survey level and rod with monitoring well 0705 as a reference. Data are shown in Table 2.

Table 2. Survey Data for Monitoring Well 0789

Location	Rod Height	Difference from 0705 elevation	Elevation of 0705	New Elevation of 0789
0705 initial	4.37	-	4930.80	-
0789 ground	4.62	-0.25	-	4930.55
0789 casing	2.31	+2.06	-	4932.86
0705 return	4.37	0	4930.80	-

Hydrant Flushing: A summary of the hydrant flushing data is shown in Table 3.

Table 3. Hydrant flushing Summary

Hydrant Location	Flushing Time (min)	Total Volume (gal)	Average Flow Rate (gpm)	Average Velocity (ft/sec)
0829	42.3	20,590	487	3.11
0830	64.2	33,750	526	3.36
0818	34.3	20,728	604	6.86
0819	69.4	45,851	661	4.22
0843	7.9	2,840	359	4.07
0821	33	19,015	576	6.54
0820	13.5	5,000	370	4.20
0834	2.5	1,118	447	5.07

Field Variance: None.

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

False ID	True ID	Sample Type	Ticket Number
2469	0837	Duplicate	LKW 057
2175	0842	Duplicate	LKW 041
2353	0788	Duplicate	LKW 045
2433	Equipment Blank	Equipment Blank	LKW 046

Requisition Numbers Assigned: All samples were assigned to requisition index number (RIN) 13095603 and were shipped to the ALS Laboratory Group on September 24, 2013.

Water Level Measurements: Water levels were measured at all sampled monitoring wells and 13 additional monitoring wells. PDAs with the Water Level Recorder program were not available, so additional water-level data were entered into an Excel spreadsheet using the Toughbook computer.

Water level data was downloaded from pressure transducers at monitoring wells 0101, 0707, 0710, 0716, 0789, and 0826, and pressure transducers were installed in monitoring wells 0722R and 0729.

Well Inspection Summary: All monitoring wells were in good condition.

Equipment: All equipment functioned properly.

Stakeholder/Regulatory: Hydrant flushing was conducted in conjunction with the Great Plains Utility Organization (GPUO). Mike Quiver (GPUO) conducted the flushing including installation of flow meters and opening/closing hydrant valves. Pat Moss (GPUO), Travis Brockie (Tribal Engineer's Office), and John Arneach (Tribal Engineer's Office) observed flushing activities at selected locations.

Co-sampling was conducted with Wind River Environmental Quality Commission (WREQC) representatives Ricki Trosper and Steve Babits. Co-sampling was conducted at selected AWSS hydrant, AWSS tap, monitoring well, and surface water locations.

Stoller personnel assisted with sample collection by WREQC representatives at a domestic well owned by Tribal Council Member Ron McElroy. Co-sampling was not conducted at this location because it is outside the Institutional Control boundary.

A meeting was held with Dawn Schmidt to discuss plans for a community garden at St. Stephens School as part community outreach project with DOE. Ground breaking and set-up for the garden is scheduled for March 2014.

Institutional Controls

Fences, Gates, Locks: No issues identified.

Signs: The three warning signs installed around the oxbow lake were in place and in acceptable condition.

Trespassing/Site Disturbances: There was no evidence of new gravel pits or well drilling within the institutional control boundary

Access Issues: None

Corrective Action Required/Taken: An email was sent to the Real Property group with new homeowner contact information for surface water location 0823/monitoring well 0736.

Water-level data will need to be entered into the environmental database.

New elevation data for monitoring well 0789 will need to be loaded into the environmental database.

(SEC/lcg)

cc: (electronic)
Bill Dam, DOE
Sam Campbell, Stoller
Steve Donovan, Stoller
Bev Gallagher, Stoller
Judy Miller, Stoller
EDD Delivery