

Data Validation Package

**April and June 2012
Groundwater and Surface Water
Sampling at the
Gunnison, Colorado, Processing Site**

August 2012



**U.S. DEPARTMENT OF
ENERGY**

Legacy
Management

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Sampling Event Summary

Site: Gunnison, Colorado, Processing Site

Sampling Period: April 23-25 and June 4, 2012

This event included annual sampling of groundwater and surface water locations at the Gunnison, Colorado, Processing Site. Sampling and analyses were conducted as specified in *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated).

Samples were collected from 28 monitoring wells, three domestic wells, and six surface locations in April at the processing site as specified in the draft 2010 *Ground Water Compliance Action Plan for the Gunnison, Colorado, Processing Site*. Domestic wells 0476 and 0478 were sampled in June because the homes were unoccupied in April and the wells were not in use. Duplicate samples were collected from locations 0006 and 0113. One equipment blank was collected during this sampling event. Water levels were measured at all monitoring wells that were sampled.

Manganese and uranium were selected as the constituents of potential concern at the Gunnison site because they exceeded a risk-based benchmark and a groundwater standard, respectively. A variety of tailings-related contaminants were monitored in the past, which were eliminated as constituents of potential concern because concentrations did not exceed groundwater standards and/or did not pose a significant risk to human health and the environment. Monitoring wells with sample concentrations that exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) for uranium (40 CFR 192) or the EPA drinking water equivalent level (DWEL) for manganese are listed in Table 1.

Time-concentration graphs for selected processing site monitoring wells are included with the analytical data. Time-concentration graphs for manganese indicate that concentrations of manganese in groundwater beneath and downgradient of the site are above the DWEL, but concentrations are generally decreasing with time at most locations. Time-concentration graphs for uranium indicate that concentrations of uranium in groundwater beneath and downgradient of the site are above the MCL, with concentrations decreasing in some portions of the aquifer and remaining constant or increasing in others.

Uranium concentrations in the five domestic wells sampled near the processing site were all below the EPA drinking water standard (0.030 milligrams per liter [mg/L]), and manganese concentrations in these wells were all below the DWEL.

Table 1. Gunnison Locations That Exceed the Uranium MCL and Manganese DWEL

Analyte	MCL ^a	DWEL ^b	Location	Concentration ^c
Uranium	0.044		0005	0.045
			0006	0.820
			0012R	0.290
			0013	0.074
			0113	0.130
			0183	0.052
Manganese		1.6	0105	2.5
			0106	4.9
			0112	4.9
			0113	2.8
			0135	2.5

^a Uranium standard is listed in 40 CFR 192.04 Table 1 to Subpart A; units are in mg/L.

^b DWEL from EPA 's 2011 Edition of the Drinking Water Standards and Health Advisories.

^c Units are in mg/L.

Surface water uranium concentrations were compared to a statistical benchmark derived from location 0792 data, which is located on the Gunnison River upstream from the site. The benchmark value is equal to the nonparametric, 95th upper tolerance limit because there are more than 15 percent but less than 50 percent non-detects. The uranium concentration at the Gunnison River downstream location 0795 and south fork location 0250 were less than the benchmark value indicating minimal impact to the Gunnison River from site activities. Uranium concentration at the gravel pit pond (0780) is elevated compared to the benchmark as expected because the gravel pit is recharged by contaminated groundwater from the site. Uranium concentrations at Tomichi Creek locations (0248 and 0777) were elevated compared to the benchmark because Tomichi Creek receives discharge from the gravel pit pond.

Table 2. Comparison of Surface Water Uranium Concentrations to the Benchmark Value

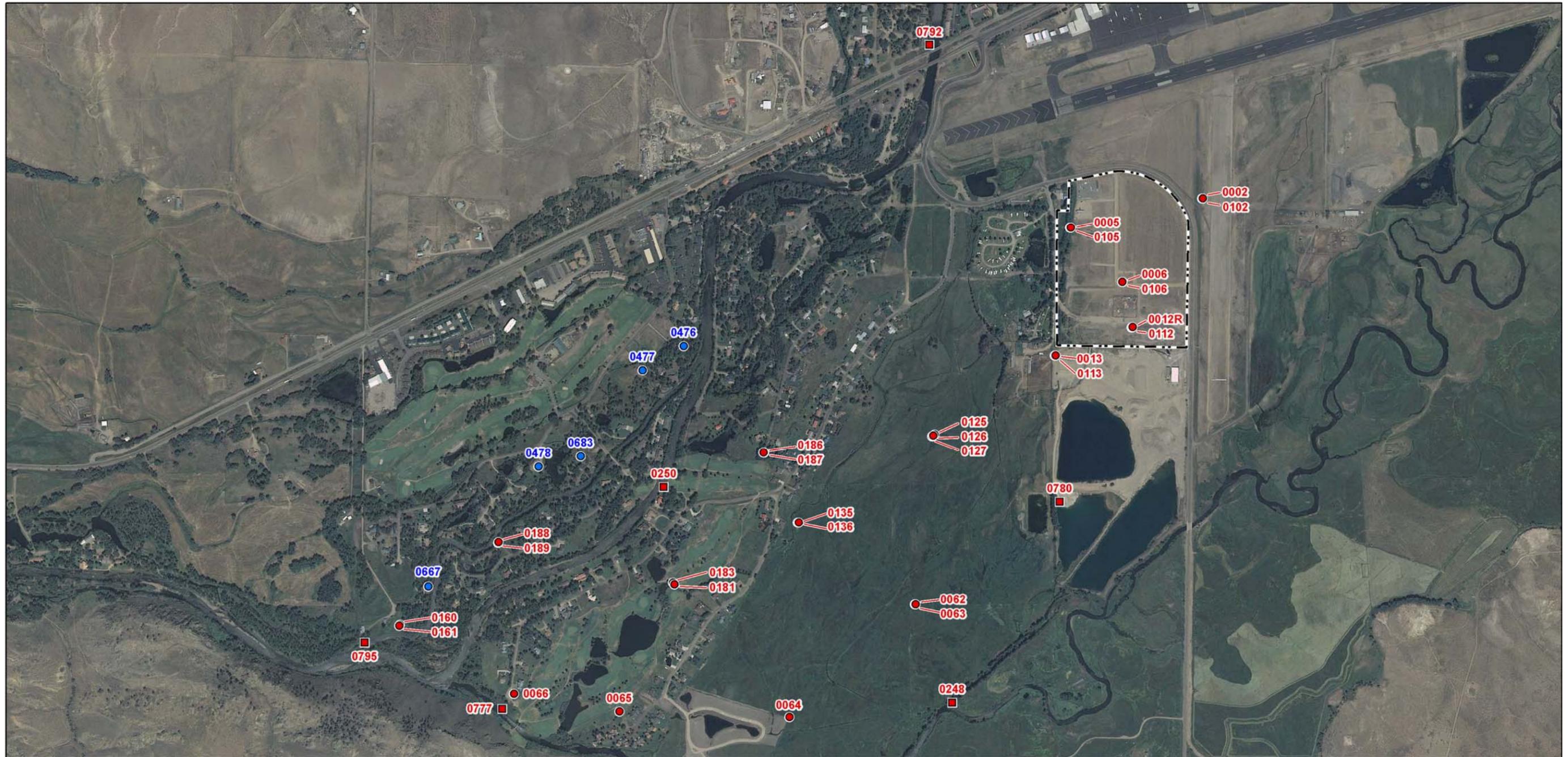
Description	Location	Uranium Concentration (mg/L)	Benchmark Value
Tomichi Creek	0248	0.012	0.0010
Gunnison River	0250	0.0008	
Tomichi Creek	0777	0.003	
Valco Pond	0780	0.036	
Gunnison River	0795	0.0008	



Sam Campbell
Site Lead, S.M. Stoller Corporation

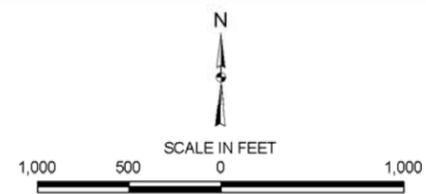
8-3-2012

Date



LEGEND

- MONITORING WELL
- DOMESTIC WELL
- SURFACE LOCATION
- SITE BOUNDARY



U.S. DEPARTMENT OF ENERGY <small>GRAND JUNCTION, COLORADO</small>	<small>Work Performed by</small> S.M. Stoller Corporation <small>Under DOE Contract No. DE-AM01-07LM00060</small>
Planned Sampling Map Gunnison, CO, Processing Site April 2012	
<small>DATE PREPARED</small> March 26, 2012	<small>FILENAME</small> S0881700

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Gunnison, Colorado, Sample Location Map

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	<u>Gunnison, Colorado</u>	Date(s) of Water Sampling	<u>April 23-25, 2012 and June 4, 2012</u>
Date(s) of Verification	<u>July 23, 2012</u>	Name of Verifier	<u>Steve Donovan</u>

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOPs, instructions.	<u>Yes</u>	<u>Work Order letter dated March 21, 2012.</u>
2. Were the sampling locations specified in the planning documents sampled?	<u>Yes</u>	
3. Was a pre-trip calibration conducted as specified in the above-named documents?	<u>Yes</u>	<u>Pre-trip calibrations were performed on April 20, 2012, and June 1, 2012.</u>
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	<u>Yes</u> <u>Yes</u>	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	<u>Yes</u>	
6. Was the category of the well documented?	<u>Yes</u>	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling? Did the water level stabilize prior to sampling? Did pH, specific conductance, and turbidity measurements stabilize prior to sampling? Was the flow rate less than 500 mL/min? If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	<u>Yes</u> <u>Yes</u> <u>Yes</u> <u>Yes</u> <u>NA</u>	

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? Was one pump/tubing volume removed prior to sampling?	NA	All wells were Category I.
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	Duplicate samples were collected from locations 0006 and 0113.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	Yes	One equipment blank was collected.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number? Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDSC) report?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the "Date Signed" fields (FDSC)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	NA	Sample cooling was not required.
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN): 12044477
Sample Event: April 23-25, 2012
Site(s): Gunnison, Colorado, Processing Site
Laboratory: ALS Laboratory Group, Fort Collins, Colorado
Work Order No.: 1204438
Analysis: Metals
Validator: Steve Donovan
Review Date: June 4, 2012

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

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Manganese, Mn	LMM-01	SW-846 3005A	SW-846 6010B
Uranium, U	LMM-02	SW-846 3005A	SW-846 6020A

Data Qualifier Summary

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

Table 4. Data Qualifier Summary

Sample Number	Location	Analyte	Flag	Reason
1204438-27	0188	Mn	J	Negative calibration blank
1204438-33	0683	Mn	J	Negative calibration blank
1204438-38	Equipment Blank	Mn	J	Negative calibration blank

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado received 40 water samples on April 27, 2012, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the forms and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal documents including the COC form, and the sample tickets had no errors or omissions. Copies of the air waybill labels were included with the receiving documentation.

Preservation and Holding Times

The sample shipments were received intact at ambient temperature, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses and all samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The method detection limit (MDL) was reported for both analytes as required. The MDL, as defined in 40 CFR 136, is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. The practical quantitation limit (PQL) for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL. The reported MDLs for both 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 6010B, Manganese

Calibrations were performed for manganese on April 28, 2012. The initial calibration was performed using three calibration standards resulting in a calibration curve with a correlation coefficient (r^2) value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in 11 verification checks. All initial and continuing calibration verification results were within the acceptance range. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curves near the PQL. The check results were within the acceptance range.

Method SW-846 6020A, Uranium

Calibration was performed for uranium on April 29, 2012. The initial calibration was performed using four calibration standards resulting in a calibration curve with a correlation coefficient (r^2) value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in 15 verification checks. All initial and continuing calibration verification results were within the acceptance range. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curves near the PQL. The check results were within the acceptance range. The mass calibration and resolution was checked at the beginning

of each analytical run in accordance with the procedure. Internal standard recoveries were stable and within acceptance ranges.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and initial and continuing calibration blank results were below the PQL for magnesium and uranium. Many of the manganese blanks were negative, with the absolute values greater than the MDL, but less than the PQL. Associated sample results that are greater than the MDL but less than 5 times the MDL are qualified with a “J” flag as estimated values.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

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

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) pairs were analyzed for manganese and uranium as a measure of method performance in the sample matrix. The MS/MSD recoveries met the acceptance criteria for both analytes.

Laboratory Replicate Analysis

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

Laboratory Control Samples (LCS)

LCS were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The LCS results were acceptable for all analyses.

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 PQL for method 6010 analytes, or 100 times the PQL for method 6020 analytes. The serial dilution data met the acceptance criteria for all data evaluated.

Completeness

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

Electronic Data Deliverable (EDD) File

The EDD file arrived on May 1, 2012. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 12044477 Lab Code: PAR Validator: Steve Donovan Validation Date: 6/4/2012
Project: Gunnison Analysis Type: Metals General Chem Rad Organics
of Samples: 40 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 2 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM
Metals Data Validation Worksheet

RIN: 12044477 Lab Code: PAR Date Due: 5/25/2012
 Matrix: Water Site Code: GUN Date Completed: 5/2/2012

Analyte	Method Type	Date Analyzed	CALIBRATION							Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB									
Manganese	ICP/ES	04/28/2012	0.0000	1.0000	OK	OK	OK	OK	OK	101.0	99.0	99.0	1.0	95.0		107.0	
Manganese	ICP/ES	04/28/2012							OK	100.0	93.0	93.0	1.0	92.0		102.0	
Uranium	ICP/MS	04/29/2012	0.0000	1.0000	OK	OK	OK	OK	OK	103.0	105.0	107.0	1.0		7.0	100.0	
Uranium	ICP/MS	04/29/2012							OK	104.0	111.0	109.0	1.0		5.0	102.0	

General Information

Report Number (RIN): 12064598
Sample Event: June 4, 2012
Site(s): Gunnison, Colorado, Processing Site
Laboratory: ALS Laboratory Group, Fort Collins, Colorado
Work Order No.: 1206068
Analysis: Metals
Validator: Steve Donovan
Review Date: July 23, 2012

This validation was performed according to the *Environmental Procedures Catalog* (LMS/PRO/S04325, continually updated), “Standard Practice for Validation of Laboratory Data.” The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 5.

Table 5. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Manganese, Mn	LMM-01	SW-846 3005A	SW-846 6010B
Uranium, U	LMM-02	SW-846 3005A	SW-846 6020A

Data Qualifier Summary

None of the analytical results required qualification.

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado received two water samples on June 6, 2012, accompanied by a COC form. The COC form was checked to confirm that all of the samples were listed on the forms and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal documents including the COC form, and the sample tickets had no errors or omissions. Copies of the air waybill labels were included with the receiving documentation.

Preservation and Holding Times

The sample shipments were received intact at ambient temperature, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses and all samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The MDL was reported for both 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 PQL for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL. The reported MDLs for both 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 6010B, Manganese

Calibrations were performed for manganese on June 11, 2012. The initial calibration was performed using three calibration standards resulting in a calibration curve with a correlation coefficient (r^2) value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in 13 verification checks. All initial and continuing calibration verification results were within the acceptance range. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curves near the PQL. The check results were within the acceptance range.

Method SW-846 6020A, Uranium

Calibration was performed for uranium on June 12, 2012. The initial calibration was performed using four calibration standards resulting in a calibration curve with a correlation coefficient (r^2) value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in seven verification checks. All initial and continuing calibration verification results were within the acceptance range. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curves near the PQL. The check results were within the acceptance range. The mass calibration and resolution was checked at the beginning of each analytical run in accordance with the procedure. Internal standard recoveries were stable and within acceptance ranges.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and initial and continuing calibration blank results were below the PQL for magnesium and uranium. Many of the manganese blanks were negative, with the absolute values greater than the MDL, but less than the PQL. The associated sample manganese results were greater than 5 times the MDL, requiring no qualification.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

ICP interference check samples ICSA and ICSAB were analyzed at the required frequency to verify the instrumental interference and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) pairs were analyzed for manganese and uranium as a measure of method performance in the sample matrix. The MS/MSD recoveries met the acceptance criteria for both analytes.

Laboratory Replicate Analysis

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

Laboratory Control Samples

LCS were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The LCS results were acceptable for all analyses.

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 PQL for method 6010 analytes, or 100 times the PQL for method 6020 analytes. The serial dilution data met the acceptance criteria for all data evaluated.

Completeness

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

Electronic Data Deliverable File

The EDD file arrived on June 28, 2012. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 12064598 Lab Code: PAR Validator: Steve Donovan Validation Date: 7/23/2012

Project: Gunnison Analysis Type: Metals General Chem Rad Organics

of Samples: 2 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.

SAMPLE MANAGEMENT SYSTEM
Metals Data Validation Worksheet

RIN: 12064598 Lab Code: PAR Date Due: 7/4/2012
 Matrix: Water Site Code: GUN Date Completed: 6/28/2012

Analyte	Method Type	Date Analyzed	CALIBRATION							Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB									
Manganese	ICP/ES	06/11/2012	0.0000	1.0000	OK	OK	OK	OK	OK	95.0	94.0	94.0	1.0	88.0		104.0	
Manganese	ICP/ES	06/11/2012												90.0		100.0	
Uranium	ICP/MS	06/12/2012	0.0000	1.0000	OK	OK	OK	OK	OK	97.0	98.0	102.0	3.0	99.0		120.0	

Sampling Quality Control Assessment

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

Sampling Protocol

Sample results for all monitoring wells met the Category I 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.

Equipment Blank Assessment

Equipment blanks are prepared and analyzed to document contamination attributable to the sample collection process. One equipment blank was submitted with these samples. Manganese was detected in this blank. The associated sample manganese results were greater than 5 times the blank concentration, not requiring qualification.

Field Duplicate Assessment

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than the PQL, the range should be no greater than the PQL. Duplicate samples were collected from locations 0006 and 0113. The duplicate results met these criteria, demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM

Page 1 of 1

Validation Report: Equipment/Trip Blanks

RIN: 12044477 Lab Code: PAR Project: Gunnison Validation Date: 6/4/2012

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1204438-38	SW6010	Manganese	0.15	B	0.11	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1204438-29	KFS 501	0248	240	1		
1204438-30	KFS 511	0250	50	1		
1204438-34	KFS 502	0777	180	1		
1204438-35	KFS 503	0780	38	1		
1204438-36	KFS 504	0792	27	1		
1204438-37	KFS 505	0795	44	1		

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

RIN: 12044477 Lab Code: PAR Project: Gunnison Validation Date: 6/4/2012

Duplicate: 2598

Sample: 0006

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Manganese	330			1	320			1	3.08		UG/L
Uranium	820			100	830			100	1.21		UG/L

Duplicate: 2748

Sample: 0113

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Manganese	2800			1	2700			1	3.64		UG/L
Uranium	130			50	130			50	0		UG/L

Certification

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

Laboratory Coordinator:

Steve Donivan
Steve Donivan

8-3-2012
Date

Data Validation Lead:

Steve Donivan
Steve Donivan

8-3-2012
Date

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Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

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

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

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

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

The manganese result for location 0248 was identified as a potential outlier. There were no errors associated with this result and the data for this RIN are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 12044477

Report Date: 6/4/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
GUN01	0012R	N001	04/24/2012	Manganese	0.57	F	0.41		F	0.0097		F	5	0	No
GUN01	0065	N001	04/25/2012	Uranium	0.026	F	0.034		F	0.028		F	7	0	No
GUN01	0106	N001	04/24/2012	Uranium	0.018	F	0.014		F	0.0002	U		34	15	No
GUN01	0127	N001	04/25/2012	Uranium	0.012	F	0.053			0.015		F	29	0	No
GUN01	0135	N001	04/24/2012	Manganese	2.5	F	4.4			2.6		F	10	0	No
GUN01	0160	N001	04/24/2012	Uranium	0.025	F	0.024		F	0.007			33	0	No
GUN01	0181	N001	04/25/2012	Uranium	0.0071	F	0.069			0.01		F	31	0	No
GUN01	0189	N001	04/25/2012	Manganese	0.8	F	2.7			0.81		FQ	31	0	No
GUN01	0248	N001	04/23/2012	Manganese	0.24		0.133			0.025			10	0	Yes
GUN01	0476	N001	06/04/2012	Uranium	0.0014		0.0016	E*	J	0.0015			5	0	No
GUN01	0683	N001	04/24/2012	Manganese	0.00036	B	J	0.01	U	0.00041	B	U	14	7	No
GUN01	0777	N001	04/25/2012	Manganese	0.18		0.149			0.04			15	0	No
GUN01	0795	N001	04/24/2012	Manganese	0.044		0.042			0.0068	B		19	0	No

STATISTICAL TESTS:

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

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

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

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

Attachment 2

Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0002 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	10	- 15	0.00011	U	F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	10	- 15	212.1		F	#		
pH	s.u.	04/25/2012	N001	10	- 15	7.41		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	10	- 15	552		F	#		
Temperature	C	04/25/2012	N001	10	- 15	8.25		F	#		
Turbidity	NTU	04/25/2012	N001	10	- 15	0.28		F	#		
Uranium	mg/L	04/25/2012	N001	10	- 15	0.0024		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0005 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	10	- 15	1.1		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	10	- 15	-18		F	#		
pH	s.u.	04/24/2012	N001	10	- 15	6.91		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	10	- 15	511		F	#		
Temperature	C	04/24/2012	N001	10	- 15	7.3		F	#		
Turbidity	NTU	04/24/2012	N001	10	- 15	7.88		F	#		
Uranium	mg/L	04/24/2012	N001	10	- 15	0.045		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0006 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	10	- 15	0.33		F	#	0.00011	
Manganese	mg/L	04/24/2012	N002	10	- 15	0.32		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	10	- 15	153.2		F	#		
pH	s.u.	04/24/2012	N001	10	- 15	6.57		F	#		
Specific Conductance	umhos/cm	04/24/2012	N001	10	- 15	2333		F	#		
Temperature	C	04/24/2012	N001	10	- 15	7.4		F	#		
Turbidity	NTU	04/24/2012	N001	10	- 15	0.71		F	#		
Uranium	mg/L	04/24/2012	N001	10	- 15	0.82		F	#	0.00029	
Uranium	mg/L	04/24/2012	N002	10	- 15	0.83		F	#	0.00029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0012R WELL Replacement well for 0012, broken casing, decommissioned

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	6.03	- 16	0.57		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	6.03	- 16	195.3		F	#		
pH	s.u.	04/24/2012	N001	6.03	- 16	6.96		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	6.03	- 16	1247		F	#		
Temperature	C	04/24/2012	N001	6.03	- 16	9.95		F	#		
Turbidity	NTU	04/24/2012	N001	6.03	- 16	9.23		F	#		
Uranium	mg/L	04/24/2012	N001	6.03	- 16	0.29		F	#	0.00029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0013 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	11	- 16	0.088		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	11	- 16	277.5		F	#		
pH	s.u.	04/24/2012	N001	11	- 16	7.16		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	11	- 16	762		F	#		
Temperature	C	04/24/2012	N001	11	- 16	10.25		F	#		
Turbidity	NTU	04/24/2012	N001	11	- 16	0.38		F	#		
Uranium	mg/L	04/24/2012	N001	11	- 16	0.074		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0062 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/23/2012	N001	47.9	- 57.9	0.002	B	F	#	0.00011	
Oxidation Reduction Potential	mV	04/23/2012	N001	47.9	- 57.9	156.4		F	#		
pH	s.u.	04/23/2012	N001	47.9	- 57.9	6.99		F	#		
Specific Conductance	umhos /cm	04/23/2012	N001	47.9	- 57.9	537		F	#		
Temperature	C	04/23/2012	N001	47.9	- 57.9	9.48		F	#		
Turbidity	NTU	04/23/2012	N001	47.9	- 57.9	3.14		F	#		
Uranium	mg/L	04/23/2012	N001	47.9	- 57.9	0.0082		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0063 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/23/2012	N001	87.9	- 97.9	0.017		F	#	0.00011	
Oxidation Reduction Potential	mV	04/23/2012	N001	87.9	- 97.9	149.5		F	#		
pH	s.u.	04/23/2012	N001	87.9	- 97.9	7.09		F	#		
Specific Conductance	umhos /cm	04/23/2012	N001	87.9	- 97.9	518		F	#		
Temperature	C	04/23/2012	N001	87.9	- 97.9	9.2		F	#		
Turbidity	NTU	04/23/2012	N001	87.9	- 97.9	7.78		F	#		
Uranium	mg/L	04/23/2012	N001	87.9	- 97.9	0.013		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0064 WELL

Parameter	Units	Sample		Depth Range		Result	Lab	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Data	QA		
Manganese	mg/L	04/23/2012	N001	86.7	- 96.7	0.031		F	#	0.00011	
Oxidation Reduction Potential	mV	04/23/2012	N001	86.7	- 96.7	79.9		F	#		
pH	s.u.	04/23/2012	N001	86.7	- 96.7	7.11		F	#		
Specific Conductance	umhos/cm	04/23/2012	N001	86.7	- 96.7	484		F	#		
Temperature	C	04/23/2012	N001	86.7	- 96.7	8.42		F	#		
Turbidity	NTU	04/23/2012	N001	86.7	- 96.7	0.38		F	#		
Uranium	mg/L	04/23/2012	N001	86.7	- 96.7	0.0093		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0065 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	49.7	- 59.7	0.04		F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	49.7	- 59.7	169.8		F	#		
pH	s.u.	04/25/2012	N001	49.7	- 59.7	7.39		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	49.7	- 59.7	710		F	#		
Temperature	C	04/25/2012	N001	49.7	- 59.7	10.34		F	#		
Turbidity	NTU	04/25/2012	N001	49.7	- 59.7	4.45		F	#		
Uranium	mg/L	04/25/2012	N001	49.7	- 59.7	0.026		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0066 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID				Lab	Data QA		
Manganese	mg/L	04/25/2012	N001	40.2	- 50.2	0.011	F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	40.2	- 50.2	154.4	F	#		
pH	s.u.	04/25/2012	N001	40.2	- 50.2	7.26	F	#		
Specific Conductance	umhos/cm	04/25/2012	N001	40.2	- 50.2	721	F	#		
Temperature	C	04/25/2012	N001	40.2	- 50.2	8.8	F	#		
Turbidity	NTU	04/25/2012	N001	40.2	- 50.2	1.34	F	#		
Uranium	mg/L	04/25/2012	N001	40.2	- 50.2	0.023	F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0102 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	42	- 47	0.00011	U	F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	42	- 47	204		F	#		
pH	s.u.	04/25/2012	N001	42	- 47	7.47		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	42	- 47	568		F	#		
Temperature	C	04/25/2012	N001	42	- 47	9.88		F	#		
Turbidity	NTU	04/25/2012	N001	42	- 47	0.52		F	#		
Uranium	mg/L	04/25/2012	N001	42	- 47	0.0039		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0105 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	42	- 47	2.5		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	42	- 47	4.2		F	#		
pH	s.u.	04/24/2012	N001	42	- 47	6.69		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	42	- 47	540		F	#		
Temperature	C	04/24/2012	N001	42	- 47	10.29		F	#		
Turbidity	NTU	04/24/2012	N001	42	- 47	2.38		F	#		
Uranium	mg/L	04/24/2012	N001	42	- 47	0.018		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0106 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	34	- 39	4.9		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	34	- 39	119.9		F	#		
pH	s.u.	04/24/2012	N001	34	- 39	6.01		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	34	- 39	1901		F	#		
Temperature	C	04/24/2012	N001	34	- 39	9.47		F	#		
Turbidity	NTU	04/24/2012	N001	34	- 39	1.38		F	#		
Uranium	mg/L	04/24/2012	N001	34	- 39	0.018		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0112 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	40	- 45	4.9		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	40	- 45	24.5		F	#		
Specific Conductance	umhos/cm	04/24/2012	N001	40	- 45	950		F	#		
Temperature	C	04/24/2012	N001	40	- 45	10.8		F	#		
Turbidity	NTU	04/24/2012	N001	40	- 45	0.69		F	#		
Uranium	mg/L	04/24/2012	N001	40	- 45	0.032		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0113 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	41	- 46	2.8		F	#	0.00011	
Manganese	mg/L	04/24/2012	N002	41	- 46	2.7		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	41	- 46	116.7		F	#		
pH	s.u.	04/24/2012	N001	41	- 46	6.85		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	41	- 46	866		F	#		
Temperature	C	04/24/2012	N001	41	- 46	11.98		F	#		
Turbidity	NTU	04/24/2012	N001	41	- 46	5.57		F	#		
Uranium	mg/L	04/24/2012	N001	41	- 46	0.13		F	#	0.00015	
Uranium	mg/L	04/24/2012	N002	41	- 46	0.13		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0125 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	17.8	- 22.8	0.0085		F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	17.8	- 22.8	186.3		F	#		
pH	s.u.	04/25/2012	N001	17.8	- 22.8	7.36		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	17.8	- 22.8	492		F	#		
Temperature	C	04/25/2012	N001	17.8	- 22.8	6.05		F	#		
Turbidity	NTU	04/25/2012	N001	17.8	- 22.8	0.43		F	#		
Uranium	mg/L	04/25/2012	N001	17.8	- 22.8	0.0091		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0126 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	54	- 59	0.012		F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	54	- 59	165.9		F	#		
pH	s.u.	04/25/2012	N001	54	- 59	7.27		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	54	- 59	617		F	#		
Temperature	C	04/25/2012	N001	54	- 59	7.57		F	#		
Turbidity	NTU	04/25/2012	N001	54	- 59	2.42		F	#		
Uranium	mg/L	04/25/2012	N001	54	- 59	0.0097		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0127 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	94	- 99	0.0043	B	F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	94	- 99	209.5		F	#		
pH	s.u.	04/25/2012	N001	94	- 99	7.5		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	94	- 99	655		F	#		
Temperature	C	04/25/2012	N001	94	- 99	6.8		F	#		
Turbidity	NTU	04/25/2012	N001	94	- 99	1.28		F	#		
Uranium	mg/L	04/25/2012	N001	94	- 99	0.012		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0135 WELL Well is knocked over!!

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	18	- 23	2.5		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	18	- 23	32.4		F	#		
pH	s.u.	04/24/2012	N001	18	- 23	6.83		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	18	- 23	456		F	#		
Temperature	C	04/24/2012	N001	18	- 23	5.94		F	#		
Turbidity	NTU	04/24/2012	N001	18	- 23	3.61		F	#		
Uranium	mg/L	04/24/2012	N001	18	- 23	0.0027		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0136 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	53	- 58	0.073		F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	53	- 58	-59.6		F	#		
pH	s.u.	04/24/2012	N001	53	- 58	7.42		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	53	- 58	751		F	#		
Temperature	C	04/24/2012	N001	53	- 58	8.48		F	#		
Turbidity	NTU	04/24/2012	N001	53	- 58	3.2		F	#		
Uranium	mg/L	04/24/2012	N001	53	- 58	0.017		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0160 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	51	- 56	0.0024	B	F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	51	- 56	147		F	#		
pH	s.u.	04/24/2012	N001	51	- 56	6.52		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	51	- 56	873		F	#		
Temperature	C	04/24/2012	N001	51	- 56	6.56		F	#		
Turbidity	NTU	04/24/2012	N001	51	- 56	0.5		F	#		
Uranium	mg/L	04/24/2012	N001	51	- 56	0.025		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0161 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	93	- 98	0.005	B	F	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	93	- 98	143.2		F	#		
pH	s.u.	04/24/2012	N001	93	- 98	6.63		F	#		
Specific Conductance	umhos /cm	04/24/2012	N001	93	- 98	871		F	#		
Temperature	C	04/24/2012	N001	93	- 98	7.02		F	#		
Turbidity	NTU	04/24/2012	N001	93	- 98	0.63		F	#		
Uranium	mg/L	04/24/2012	N001	93	- 98	0.019		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0181 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	18	- 23	0.23		F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	18	- 23	107.4		F	#		
pH	s.u.	04/25/2012	N001	18	- 23	7.03		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	18	- 23	486		F	#		
Temperature	C	04/25/2012	N001	18	- 23	6.81		F	#		
Turbidity	NTU	04/25/2012	N001	18	- 23	0.52		F	#		
Uranium	mg/L	04/25/2012	N001	18	- 23	0.0071		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0183 WELL Casing bent.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	93	- 98	0.00057	B	F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	93	- 98	56.3		F	#		
pH	s.u.	04/25/2012	N001	93	- 98	6.69		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	93	- 98	1193		F	#		
Temperature	C	04/25/2012	N001	93	- 98	8.69		F	#		
Turbidity	NTU	04/25/2012	N001	93	- 98	0.85		F	#		
Uranium	mg/L	04/25/2012	N001	93	- 98	0.052		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0186 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	53	- 58	0.00011	U	F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	53	- 58	80.2		F	#		
pH	s.u.	04/25/2012	N001	53	- 58	7.5		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	53	- 58	698		F	#		
Temperature	C	04/25/2012	N001	53	- 58	9.19		F	#		
Turbidity	NTU	04/25/2012	N001	53	- 58	0.39		F	#		
Uranium	mg/L	04/25/2012	N001	53	- 58	0.017		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0187 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	93	- 98	1		F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	93	- 98	39.9		F	#		
pH	s.u.	04/25/2012	N001	93	- 98	6.52		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	93	- 98	1186		F	#		
Temperature	C	04/25/2012	N001	93	- 98	8.85		F	#		
Turbidity	NTU	04/25/2012	N001	93	- 98	1.59		F	#		
Uranium	mg/L	04/25/2012	N001	93	- 98	0.03		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0188 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	53	- 58	0.00043	B	FJ	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	53	- 58	72.7		F	#		
pH	s.u.	04/25/2012	N001	53	- 58	7.26		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	53	- 58	713		F	#		
Temperature	C	04/25/2012	N001	53	- 58	7.44		F	#		
Turbidity	NTU	04/25/2012	N001	53	- 58	0.93		F	#		
Uranium	mg/L	04/25/2012	N001	53	- 58	0.025		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0189 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/25/2012	N001	93	- 98	0.8		F	#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	93	- 98	-54		F	#		
pH	s.u.	04/25/2012	N001	93	- 98	6.41		F	#		
Specific Conductance	umhos /cm	04/25/2012	N001	93	- 98	2162		F	#		
Temperature	C	04/25/2012	N001	93	- 98	7.96		F	#		
Turbidity	NTU	04/25/2012	N001	93	- 98	1.83		F	#		
Uranium	mg/L	04/25/2012	N001	93	- 98	0.015		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 7/23/2012

Location: 0476 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	06/04/2012	N001	-	0.0027	B		#	0.00011	
Oxidation Reduction Potential	mV	06/04/2012	N001	-	182.9			#		
pH	s.u.	06/04/2012	N001	-	6.86			#		
Specific Conductance	umhos /cm	06/04/2012	N001	-	249			#		
Temperature	C	06/04/2012	N001	-	18.52			#		
Turbidity	NTU	06/04/2012	N001	-	1.36			#		
Uranium	mg/L	06/04/2012	N001	-	0.0014			#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 7/23/2012

Location: 0477 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	06/04/2012	N001	-	0.014			#	0.00011	
Oxidation Reduction Potential	mV	06/04/2012	N001	-	90			#		
pH	s.u.	06/04/2012	N001	-	6.93			#		
Specific Conductance	umhos /cm	06/04/2012	N001	-	261			#		
Temperature	C	06/04/2012	N001	-	8.42			#		
Turbidity	NTU	06/04/2012	N001	-	10.8			#		
Uranium	mg/L	06/04/2012	N001	-	0.0014			#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0478 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	-	0.8			#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	-	165.4			#		
pH	s.u.	04/24/2012	N001	-	7.14			#		
Specific Conductance	umhos /cm	04/24/2012	N001	-	264			#		
Temperature	C	04/24/2012	N001	-	17.76			#		
Turbidity	NTU	04/24/2012	N001	-	0.41			#		
Uranium	mg/L	04/24/2012	N001	-	0.0023			#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0667 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	-	0.00011	U		#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	-	227.6			#		
pH	s.u.	04/24/2012	N001	-	7.59			#		
Specific Conductance	umhos /cm	04/24/2012	N001	-	223			#		
Temperature	C	04/24/2012	N001	-	6.53			#		
Turbidity	NTU	04/24/2012	N001	-	1.23			#		
Uranium	mg/L	04/24/2012	N001	-	0.0014			#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0683 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Manganese	mg/L	04/24/2012	N001	-	0.00036	B	J	#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	-	168.8			#		
pH	s.u.	04/24/2012	N001	-	7.32			#		
Specific Conductance	umhos /cm	04/24/2012	N001	-	255			#		
Temperature	C	04/24/2012	N001	-	9.27			#		
Turbidity	NTU	04/24/2012	N001	-	1.23			#		
Uranium	mg/L	04/24/2012	N001	-	0.0022			#	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).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

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

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

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Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0248 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Manganese	mg/L	04/23/2012	N001	0.24			#	0.00011	
Oxidation Reduction Potential	mV	04/23/2012	N001	74.4			#		
pH	s.u.	04/23/2012	N001	7.13			#		
Specific Conductance	umhos/cm	04/23/2012	N001	503			#		
Temperature	C	04/23/2012	N001	17.25			#		
Turbidity	NTU	04/23/2012	N001	2.98			#		
Uranium	mg/L	04/23/2012	N001	0.012			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0250 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Manganese	mg/L	04/25/2012	N001	0.05			#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	159.6			#		
pH	s.u.	04/25/2012	N001	8.49			#		
Specific Conductance	umhos/cm	04/25/2012	N001	214			#		
Temperature	C	04/25/2012	N001	14.77			#		
Turbidity	NTU	04/25/2012	N001	6.62			#		
Uranium	mg/L	04/25/2012	N001	0.00079			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0777 SURFACE LOCATION Tomichi Creek SSE of well 0058

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Manganese	mg/L	04/25/2012	N001	0.18			#	0.00011	
Oxidation Reduction Potential	mV	04/25/2012	N001	138.1			#		
pH	s.u.	04/25/2012	N001	8.08			#		
Specific Conductance	umhos/cm	04/25/2012	N001	325			#		
Temperature	C	04/25/2012	N001	16.33			#		
Turbidity	NTU	04/25/2012	N001	2.08			#		
Uranium	mg/L	04/25/2012	N001	0.0028			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0780 SURFACE LOCATION NE CORNER VALCO PIT

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Manganese	mg/L	04/24/2012	N001	0.038			#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	195.7			#		
pH	s.u.	04/24/2012	N001	8.5			#		
Specific Conductance	umhos/cm	04/24/2012	N001	582			#		
Temperature	C	04/24/2012	N001	16.75			#		
Turbidity	NTU	04/24/2012	N001	3.91			#		
Uranium	mg/L	04/24/2012	N001	0.036			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0792 SURFACE LOCATION KMONKS, SURFACE LOCATION, 8/11/94

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Manganese	mg/L	04/23/2012	N001	0.027			#	0.00011	
Oxidation Reduction Potential	mV	04/23/2012	N001	74.9			#		
pH	s.u.	04/23/2012	N001	7.86			#		
Specific Conductance	umhos/cm	04/23/2012	N001	228			#		
Temperature	C	04/23/2012	N001	16.84			#		
Turbidity	NTU	04/23/2012	N001	3.87			#		
Uranium	mg/L	04/23/2012	N001	0.00091			#	0.000029	

Surface Water Quality Data by Location (USEE102) FOR SITE GUN01, Gunnison Processing Site

REPORT DATE: 6/4/2012

Location: 0795 SURFACE LOCATION KMONKS, SURFACE LOCATION, 8/11/94

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Manganese	mg/L	04/24/2012	N001	0.044		#	0.00011	
Oxidation Reduction Potential	mV	04/24/2012	N001	106.2		#		
pH	s.u.	04/24/2012	N001	7.6		#		
Specific Conductance	umhos/cm	04/24/2012	N001	233		#		
Temperature	C	04/24/2012	N001	9.97		#		
Turbidity	NTU	04/24/2012	N001	6.79		#		
Uranium	mg/L	04/24/2012	N001	0.00083		#	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).
- 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: 12044477

Report Date: 6/4/2012

Parameter	Site Code	Location ID	Sample Date	Sample ID	Units	Result	Qualifiers Lab	Data	Detection Limit	Uncertainty	Sample Type
Manganese	GUN01	0999	04/24/2012	N001	mg/L	0.00015	B	J	0.00011		E
Uranium	GUN01	0999	04/24/2012	N001	mg/L	0.000029	U		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.
- L Less than 3 bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- G Possible grout contamination, pH > 9.
- Q Qualitative result due to sampling technique.
- X Location is undefined.
- J Estimated value.
- R Unusable result.

SAMPLE TYPES:

- E Equipment Blank.

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Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE GUN01, Gunnison Processing Site
REPORT DATE: 12/5/2012

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)
0002	U	7646.75	04/25/2012	09:50:10	6.3	7640.45
0005	O	7644.66	04/24/2012	11:30:41	6.56	7638.1
0006	O	7647.23	04/24/2012	10:30:59	11.55	7635.68
0012R	O	7645.95	04/24/2012	14:55:44	12.09	7633.86
0013	D	7643.75	04/24/2012	15:40:11	10.98	7632.77
0062	O	7630.61	04/23/2012	15:10:09	5.68	7624.93
0063	O	7630.34	04/23/2012	15:35:56	6.85	7623.49
0064	O	7620.76	04/23/2012	16:35:25	6.1	7614.66
0065	O	7610.27	04/25/2012	14:00:44	2.03	7608.24
0066	O	7606.22	04/25/2012	12:45:56	2.6	7603.62
0102	U	7647.3	04/25/2012	10:05:04	6.87	7640.43
0105	O	7646.11	04/24/2012	11:50:38	8.39	7637.72
0106	O	7647.22	04/24/2012	10:50:36	11.59	7635.63
0112	O	7645.74	04/24/2012	12:20:18	12.38	7633.36
0113	D	7643.83	04/24/2012	16:05:40	11.18	7632.65
0125	D	7633.52	04/25/2012	08:45:58	2.68	7630.84
0126	D	7634.14	04/25/2012	08:30:40	4.88	7629.26
0127	D	7634.64	04/25/2012	08:15:51	7.07	7627.57
0135	D	7627.03	04/24/2012	18:10:01	3.61	7623.42
0136	D	7626.24	04/24/2012	18:25:35	4.34	7621.9
0160	D	7604.39	04/24/2012	09:10:47	5.71	7598.68
0161	D	7605.63	04/24/2012	09:35:16	7.16	7598.47
0181	D	7616.38	04/25/2012	11:20:13	2.07	7614.31
0183	D	7616.27	04/25/2012	11:10:43	3.92	7612.35
0186	D	7627.21	04/25/2012	16:30:24	5.15	7622.06
0187	D	7625.91	04/25/2012	16:50:34	4.74	7621.17
0188	D	7613.65	04/25/2012	15:45:24	6.1	7607.55
0189	D	7613.56	04/25/2012	15:15:03	6.44	7607.12

FLOW CODES: B BACKGROUND
 N UNKNOWN

C CROSS GRADIENT
 O ON SITE

D DOWN GRADIENT
 U UPGRADIENT

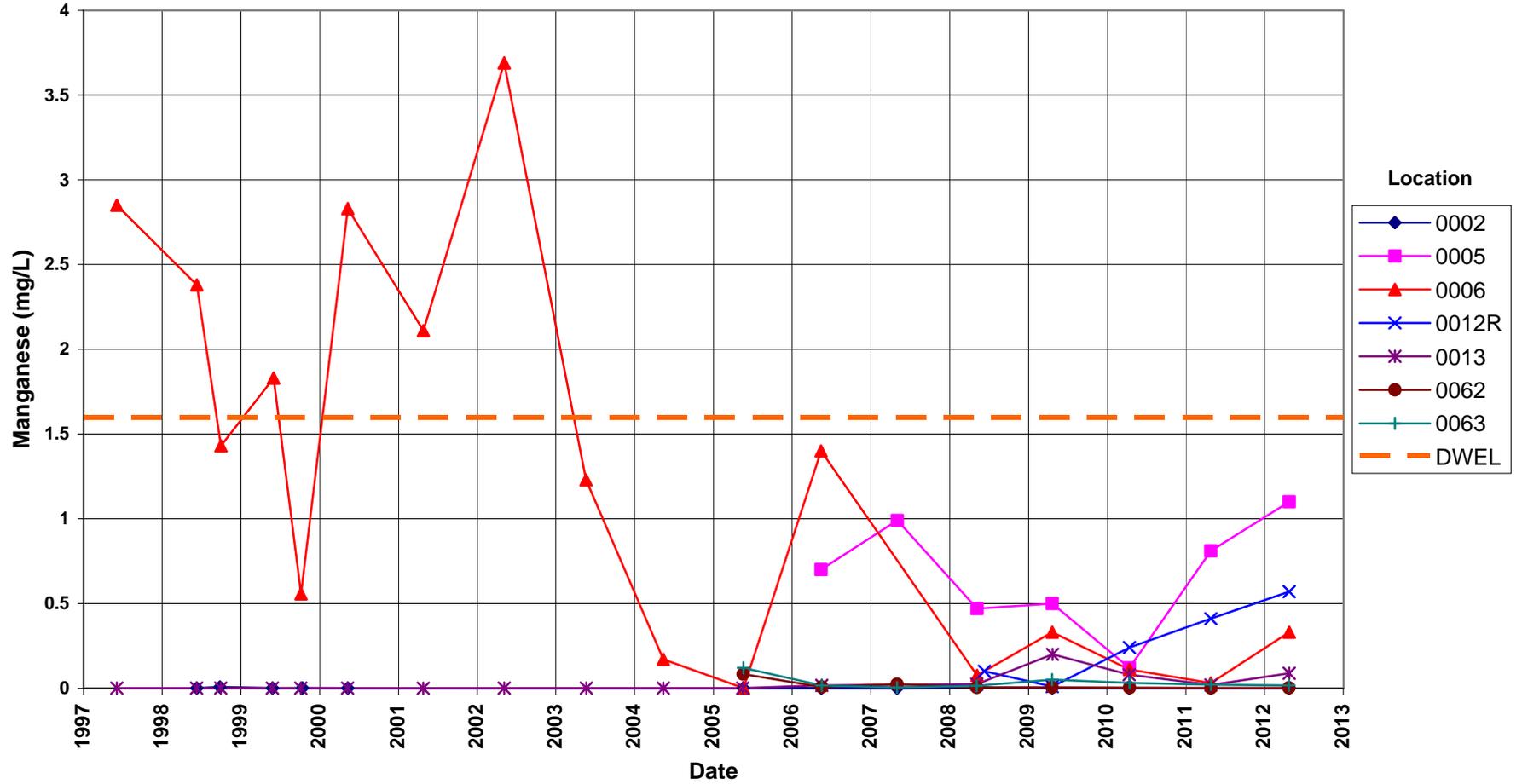
F OFF SITE

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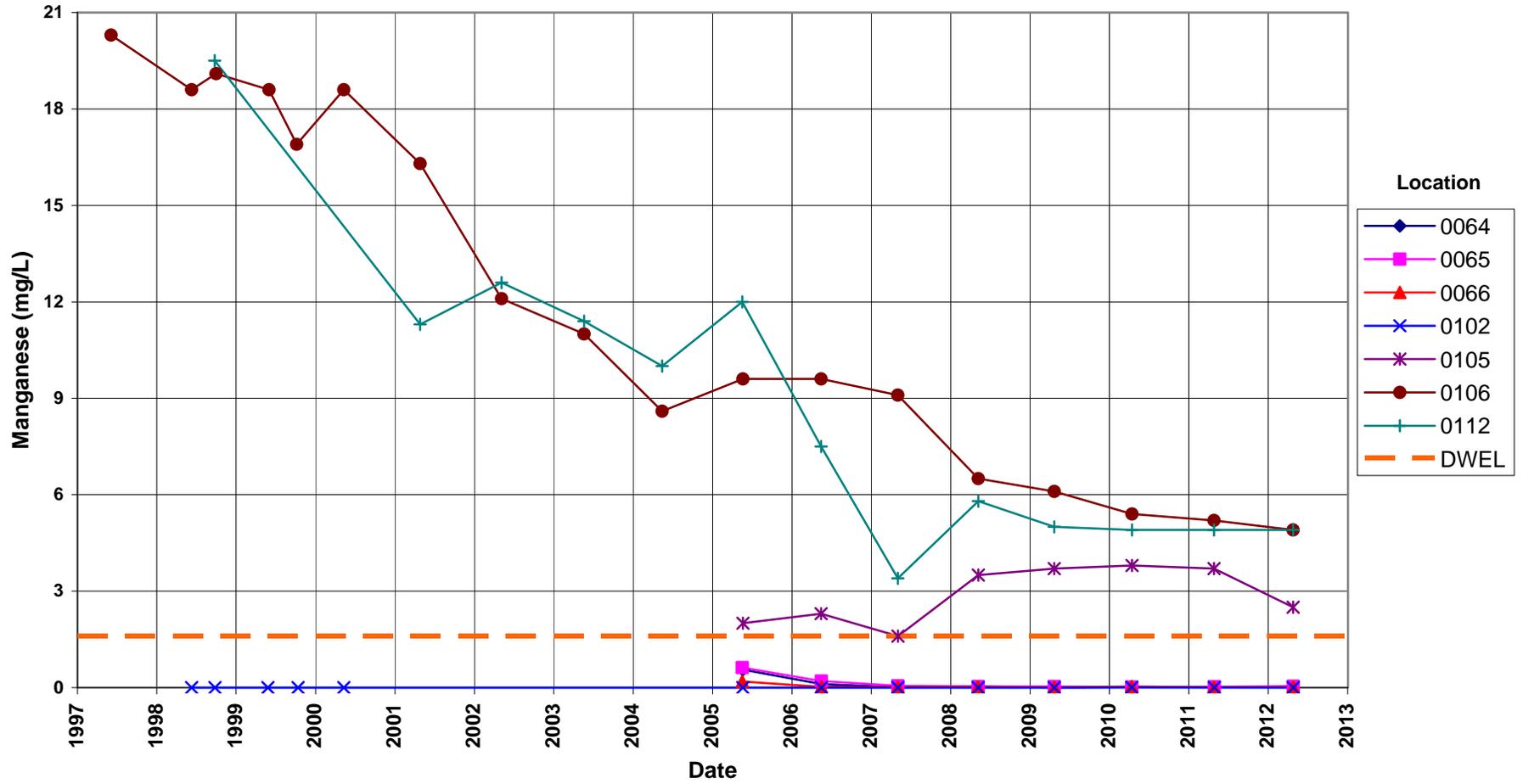
Time-Concentration Graphs

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Gunnison Processing Site
Manganese Concentration
 Drinking Water Equivalent Level (DWEL) = 1.6 mg/L

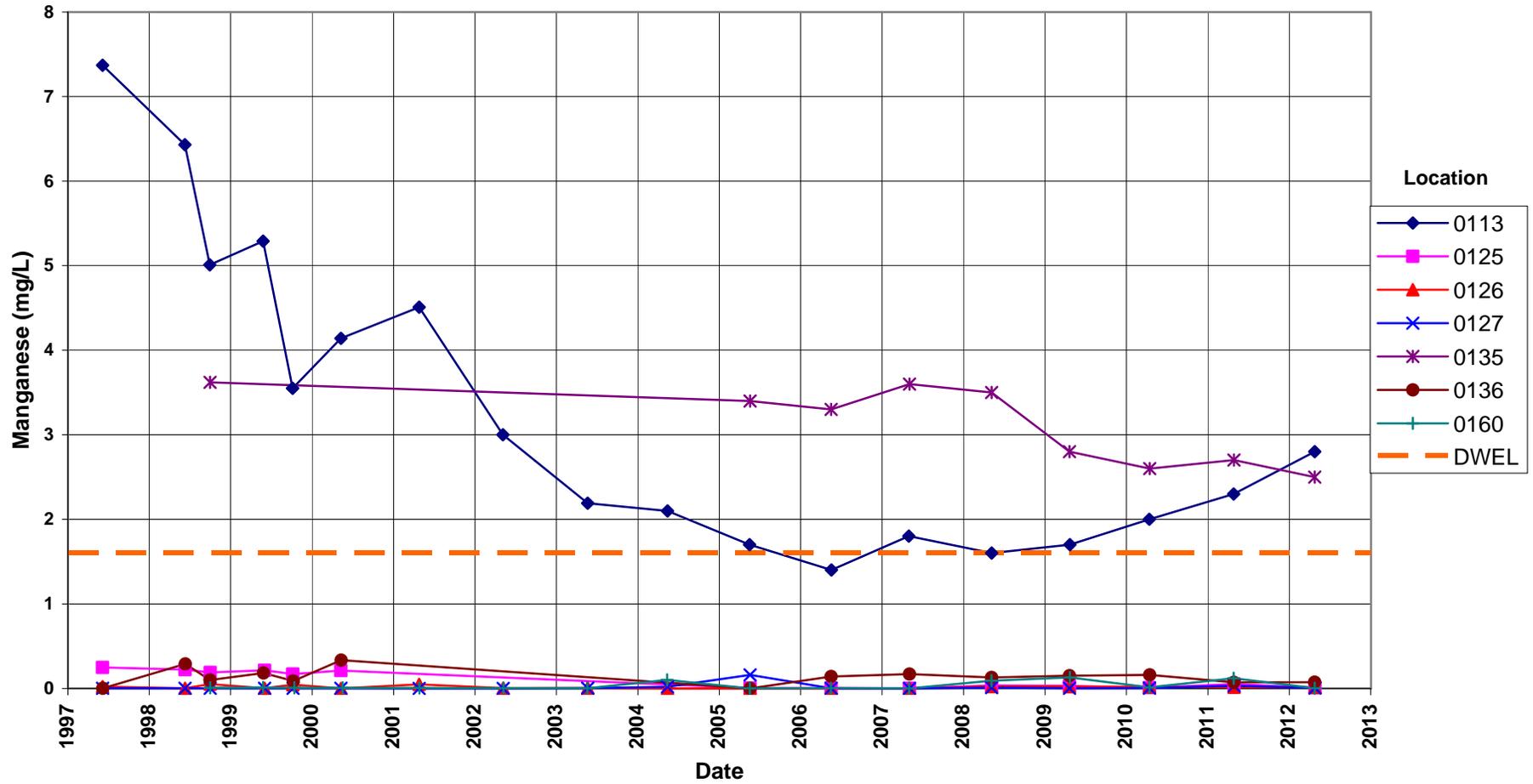


**Gunnison Processing Site
Manganese Concentration**
Drinking Water Equivalent Level (DWEL) = 1.6 mg/L

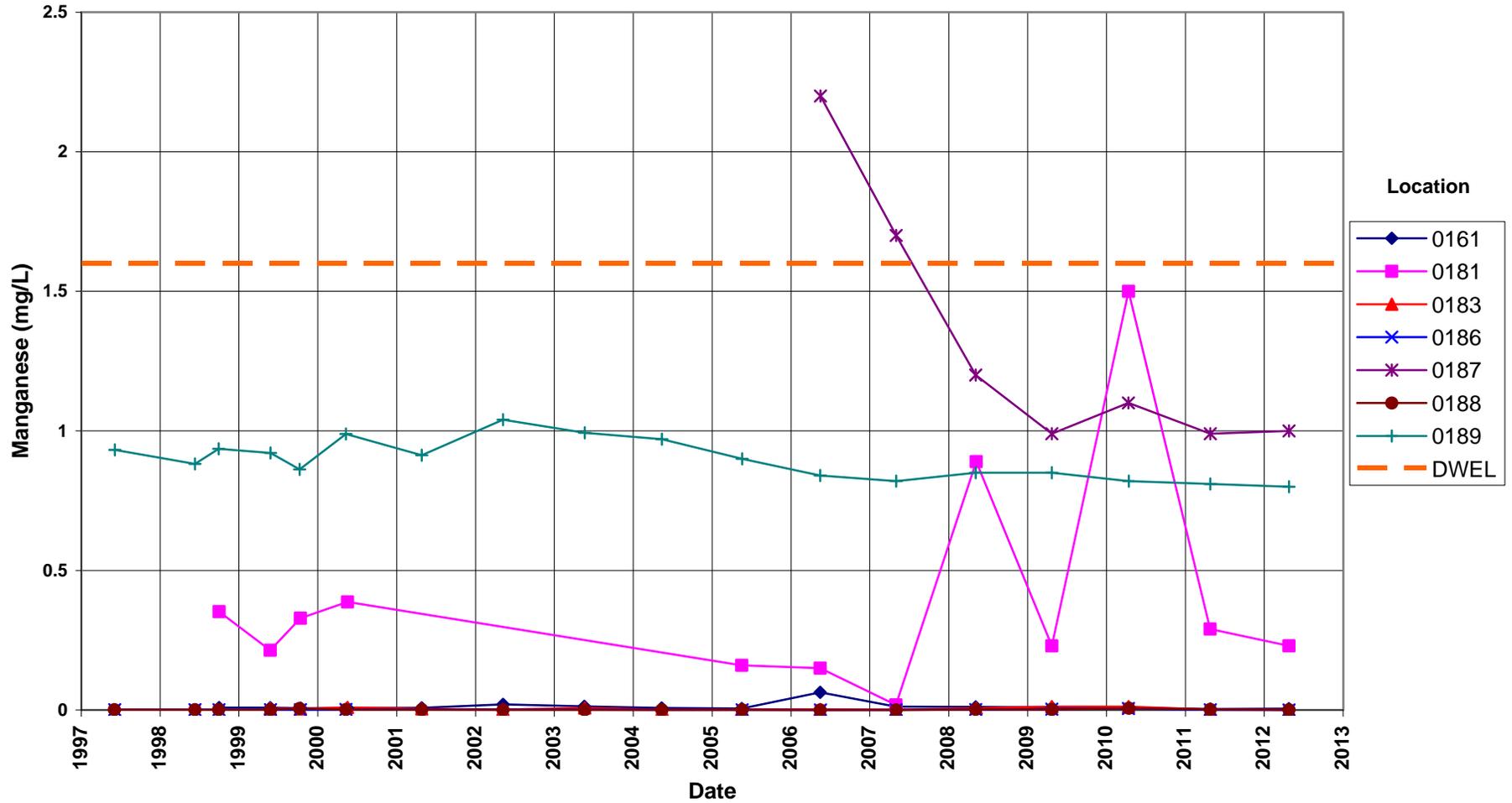


Gunnison Processing Site Manganese Concentration

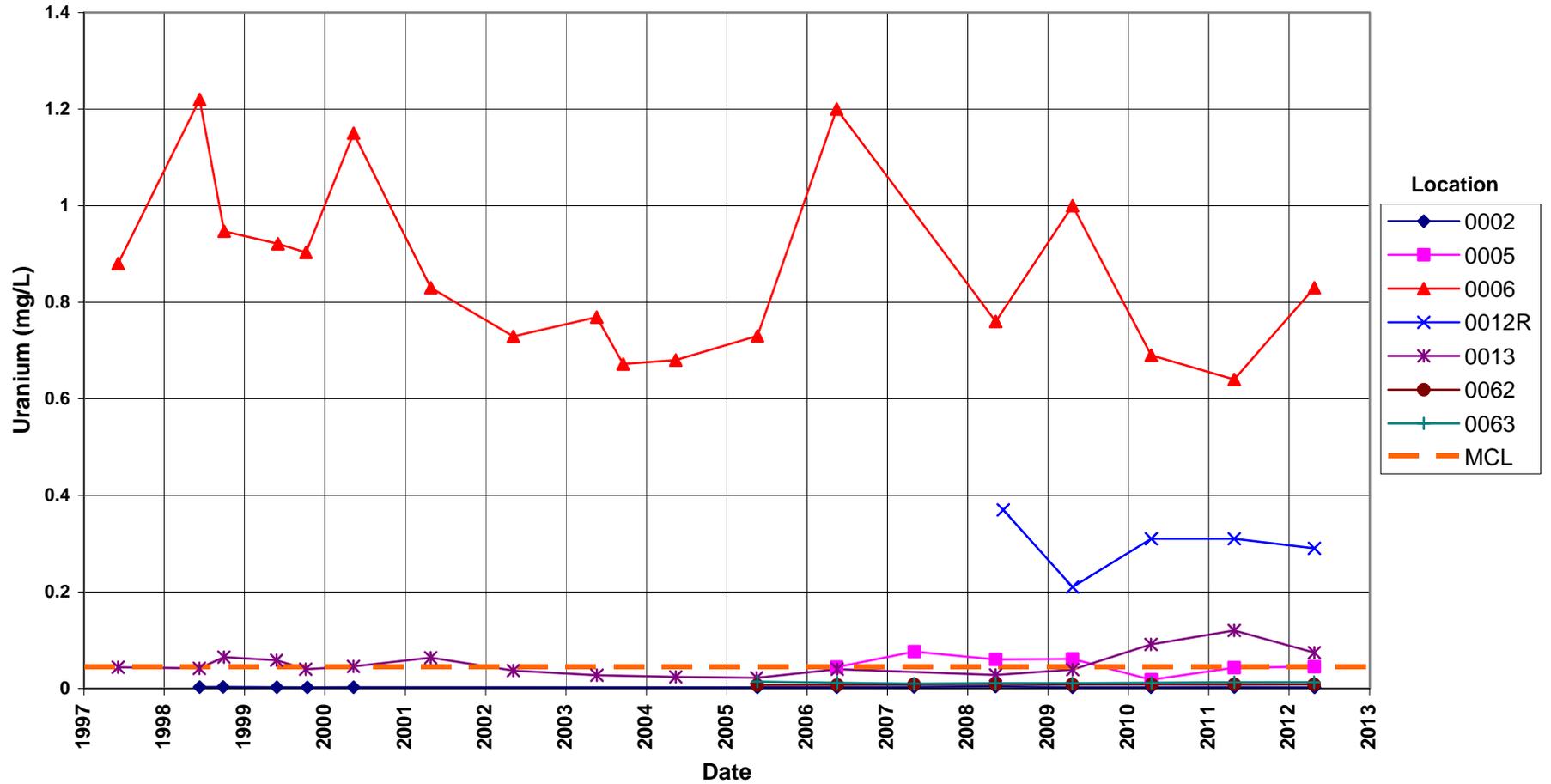
Drinking Water Equivalent Level (DWEL) = 1.6 mg/L



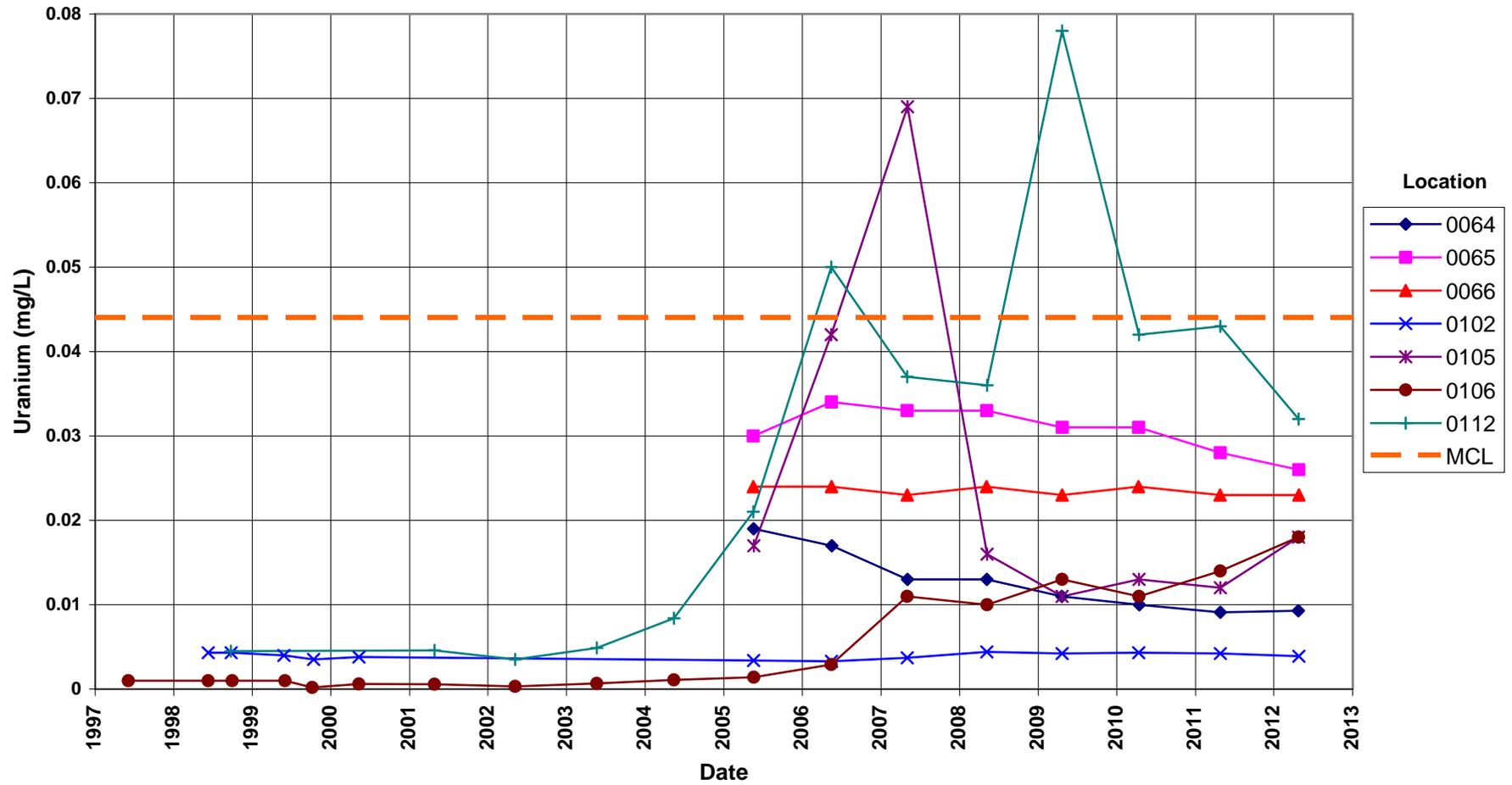
**Gunnison Processing Site
Manganese Concentration**
Drinking Water Equivalent Level (DWEL) = 1.6 mg/L



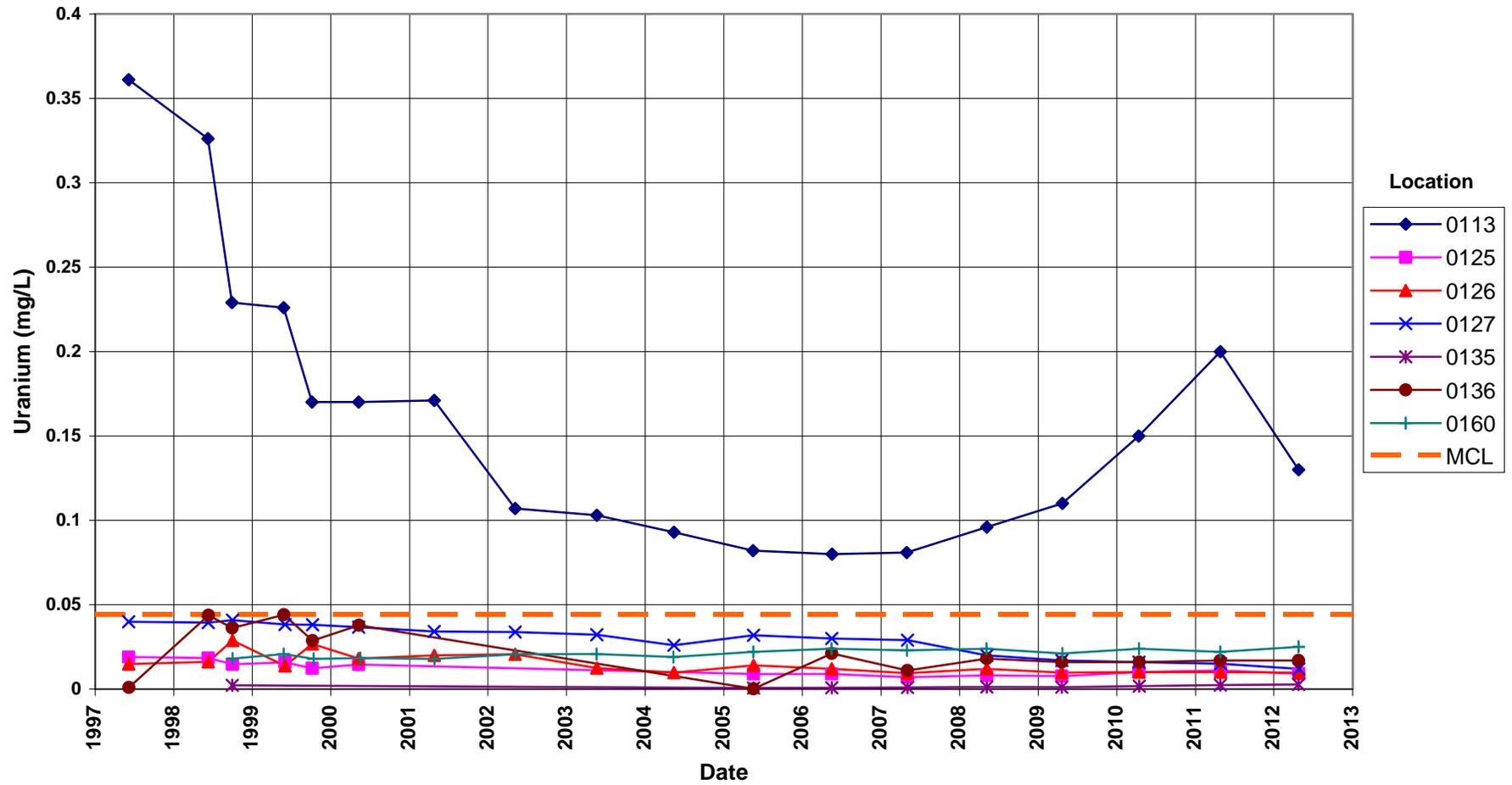
Gunnison Processing Site
Uranium Concentration
 Maximum Contaminant Limit (MCL) = 0.044 mg/L



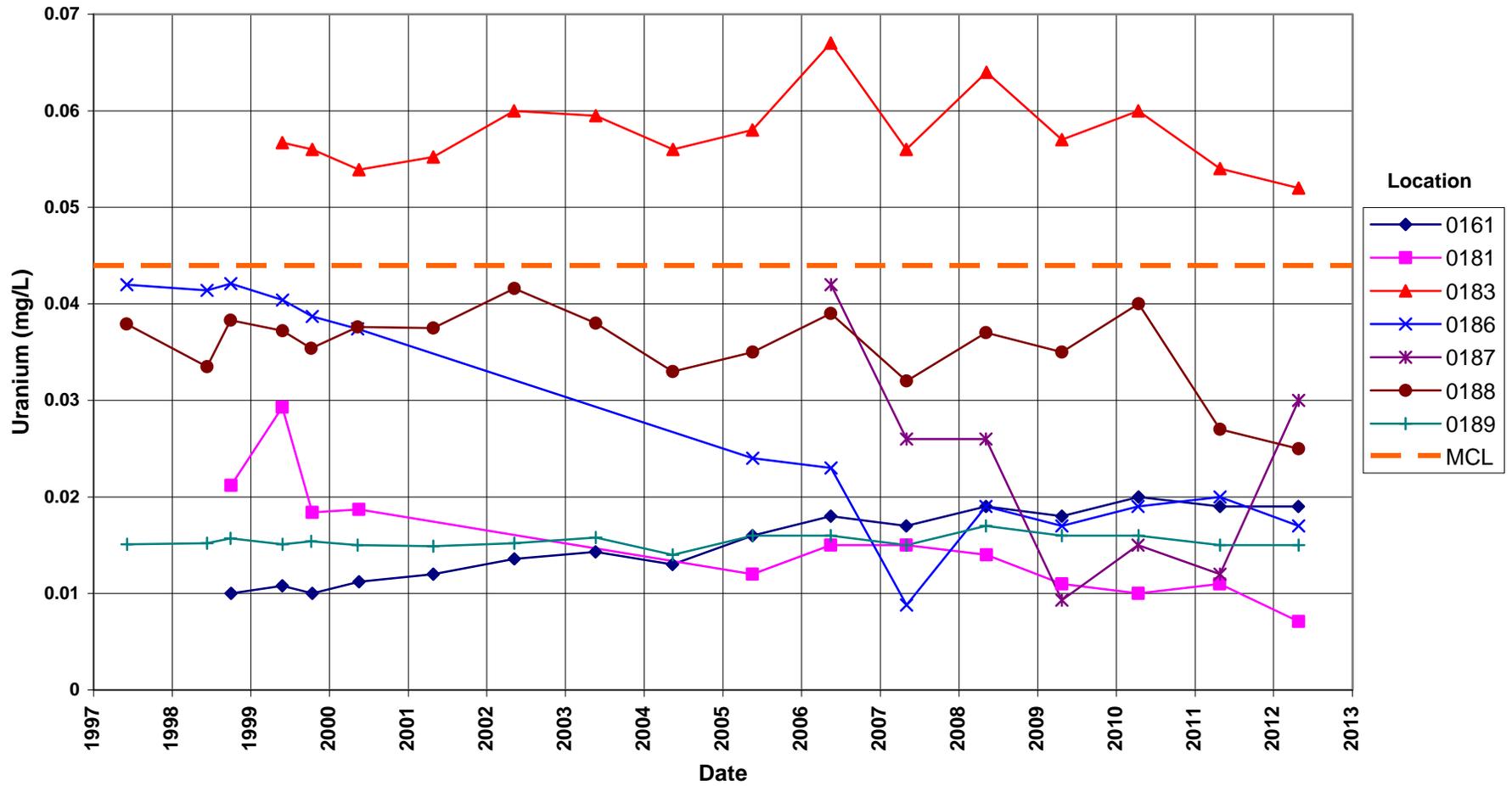
**Gunnison Processing Site
Uranium Concentration**
Maximum Contaminant Limit (MCL) = 0.044 mg/L



Gunnison Processing Site
Uranium Concentration
Maximum Contaminant Limit (MCL) = 0.044 mg/L



**Gunnison Processing Site
Uranium Concentration**
Maximum Contaminant Limit (MCL) = 0.044 mg/L



Attachment 3
Sampling and Analysis Work Order

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established 1959

Task Order LM-501
Control Number: 12-0489

March 21, 2012

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

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
April 2012 Environmental Sampling at Gunnison, Colorado, Processing Site

REFERENCE: Task Order LM00-501-02-108-402, Gunnison, Colorado, Processing Site

Dear Ms. Steckley:

The purpose of this letter is to inform you of the upcoming sampling at Gunnison, Colorado. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Gunnison site. Water quality data will be collected at this site as part of the routine environmental sampling currently scheduled to begin the week of April 23, 2012.

The following list shows the monitoring wells (with zone of completion), surface locations, and private wells scheduled to be sampled during this event.

Processing Site (GUN01) Monitoring Wells*

002 AI	013 AI	065 AI	106 AI	126 AI	160 AI	186 AI
005 AI	062 AI	066 AI	112 AI	127 AI	161 AI	187 AI
006 AI	063 AI	102 AI	113 AI	135 AI	181 AI	188 AI
012R AI	064 AI	105 AI	125 AI	136 AI	183 AI	189 AI

Processing Site (GUN01) Domestic Wells*

476 Nr	477 Nr	478 Nr	667 AI	683 Nr
--------	--------	--------	--------	--------

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

Surface Locations (GUN01)

248	250	777	780	792	795
-----	-----	-----	-----	-----	-----

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

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

Sincerely,



Sam Campbell
Site Lead

SC/lcg/lb

Enclosures (3)

cc: (electronic)

Karl Stoeckle, DOE
Sam Campbell, Stoller
Steve Donovan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
re-grand, junction
File: GUN 410.02 (A)

Sampling Frequencies for Locations at Gunnison, Colorado

Location ID	Quarterly	Semiannually	Annually	Every 5 years	Not Sampled	Notes
Monitoring Wells						
<i>GUN01</i>						
002			X			
005			X			
006			X			
012R			X			
013			X			
062			X			
063			X			
064			X			
065			X			
066			X			
102			X			
105			X			
106			X			
112			X			
113			X			
125			X			
126			X			
127			X			
135			X			
136			X			
160			X			
161			X			
181			X			
183			X			
186			X			
187			X			
188			X			
189			X			
Surface Locations						
<i>GUN01</i>						
248			X			
250			X			
777			X			
780			X			
792			X			
795			X			
Domestic Wells						
<i>GUN01</i>						
476			X			
477			X			
478			X			
667			X			
683			X			

GUN01 (Processing site) Sampling conducted in April

GUN08 (Disposal site) Sampling must not be conducted before May 15th due to CDOW requirements regarding access to this site during Sage Grouse mating.

Constituent Sampling Breakdown

Analyte	Gunnison			Required Detection Limit (mg/L)	Analytical Method	Line Item Code
	Groundwater	Surface Water				
Approx. No. Samples/yr	38		6			
Field Measurements						
Alkalinity						
Dissolved Oxygen						
Redox Potential	X	X	X			
pH	X	X	X			
Specific Conductance	X	X	X			
Turbidity	X	X	X			
Temperature	X	X	X			
Laboratory Measurements						
Aluminum						
Ammonia as N (NH ₃ -N)						
Calcium		X		5	SW-846 6010	LMM-01
Chloride		X		0.5	SW-846 9056	WCH-A-039
Chromium						
Gross Alpha						
Gross Beta						
Iron		X		0.05	SW-846 6020	LMM-02
Lead						
Magnesium		X		5	SW-846 6010	LMM-01
Manganese	X	X	X	0.005	SW-846 6010	LMM-01
Molybdenum						
Nickel						
Nickel-63						
Nitrate + Nitrite as N (NO ₃ +NO ₂)-N						
Potassium		X		1	SW-846 6010	LMM-01
Radium-226						
Radium-228						
Selenium						
Silica						
Sodium		X		1	SW-846 6010	LMM-01
Strontium						
Sulfate		X		0.5	SW-846 9056	MIS-A-044
Sulfide						
Total Dissolved Solids		X		10	SM2540 C	WCH-A-033
Total Organic Carbon						
Uranium	X	X	X	0.0001	SW-846 6020	LMM-02
Vanadium						
Zinc						
Total No. of Analytes	2	10	2			

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

DATE: May 2, 2012
 TO: Sam Campbell
 FROM: Gretchen Baer
 SUBJECT: Trip Report

Site: Gunnison, Colorado, Processing Site

Dates of Sampling Event: April 23-25, 2012

Team Members: Sam Campbell and Gretchen Baer. DOE personnel Deb Steckley and Timothy Vanek were present on April 24, 2012, to observe sampling in the morning. A copy of the JSA signed by DOE personnel is available in Crow\sms\12044477.

Number of Locations Sampled: 28 monitoring wells, 6 surface water locations, and 3 domestic wells.

Locations Not Sampled/Reason: Domestic wells 0476 and 0477 were not sampled because the homes were vacant, the wells were not in use, and the pumps were shut off. Sampling of these wells will be attempted later in the spring when the wells are in use.

Location Specific Information:

Location IDs	Comments
0005	There were large rust-colored clumps in the purge water, which cleared up before sampling.
0062, 0063, 0065, 0066	In the FDCS information for these wells, the 'Depth of Well' provided was the elevation, rather than the total depth.
0105, 0795	Small particles were present in the sample water but turbidity was <10 NTU.
0125	The top of the inner casing has been broken jaggedly. The initial water level was taken at the highest point on the casing. This point has been marked with a Sharpie, so it is expected that this measuring point has been consistently used over previous sampling events.
0186	Early during the purge, the pH rose as high as 9.6 before stabilizing at 7.5.
0189	Well was sampled with Cat I criteria (formerly classified as a Cat II) at a flow rate of 100 mL/min.

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

False ID	Ticket Number	True ID	Sample Type	Associated Matrix
2597	KFS 506	Associated with all 6 surface water samples	Equipment Blank collected on tubing reel after sampling 0780.	Water
2598	KFS 507	0006	Duplicate	Groundwater
2748	KFS 509	0113	Duplicate	Groundwater

Report Identification Number (RIN) Assigned: Samples were assigned to RIN 12044477. Field data sheets can be found in Crow\sms\12044477 in the FieldData folder.

Sample Shipment: Samples were shipped from Grand Junction to ALS Laboratory Group on April 24, 2012.

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

Well Inspection Summary: No issues were identified.

Sampling Method: Samples were collected according to the *Sampling and Analysis Plan for the U. S. Department of Energy Office of Legacy Management Sites (LMS/PLN/S04351, continually updated)*.

Field Variance: The pH measurements at monitoring well 0112 drifted downward during the purge. Poor probe performance was suspected and was confirmed with a calibration check immediately after sampling. The final pH measurement at this location only was deleted.

Equipment: All equipment functioned properly, with the exception of a pH probe at location 0112. It was observed that the pH readings during the purge were decreasing steadily. A calibration check performed immediately after sampling confirmed that the pH readings at this well were biased low. The pH measurement at 0112 was deleted as invalid. The pH probe was replaced and the new probe was calibrated before continuing to the next location. The pH measurements at the previously sampled locations were reviewed and were found to be consistent with historical readings.

Stakeholder/Regulatory: DOE personnel observed sampling at monitoring wells 0160 and 0161 and surface water location 0795. A meeting with DOE, CDPHE, and Gunnison County officials to discuss construction activities on the former millsite was attended by Sam Campbell.

Institutional Controls:

Fences, Gates, and Locks: All landowner gates were left as found.

Signs: N/A

Trespassing/Site Disturbances: N/A

Site Issues: Construction of Gunnison County facilities has been completed and the office is occupied.

Disposal Cell/Drainage Structure Integrity: N/A

Vegetation/Noxious Weed Concerns: None observed.

Maintenance Requirements: None.

Safety Issues: None.

Access Issues:

- Prior to accessing wells in the pasture south of United Sand and Gravel (owner), contact Tracy Hildreth. Tracy leases the land from the gravel company and operates a cattle ranch on the property.
- Some areas of the Hildreth pastures were flooded by irrigation so some wells had to be accessed on foot.

Corrective Action Required/Taken: Sampling of domestic wells 0476 and 0477 will be conducted later in the spring.

(GB/lcg)

cc: cc: (electronic)
Deborah Steckley, DOE
Sam Campbell, Stoller
Steve Donovan, Stoller
Bev Gallagher, Stoller
EDD Delivery

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Memorandum

Control Number N/A

DATE: June 14, 2012

TO: Distribution

FROM: Sam Campbell

SUBJECT: Trip Report

Site: Gunnison, Colorado, Processing Site.

Dates of Sampling Event: June 4, 2012

Team Members: Sam Campbell, Deb Steckley, and Dick Johnson

Number of Locations Sampled: Two domestic wells (0476 and 0477) were sampled; these wells were not sampled in April because the homes were vacant.

Locations Not Sampled/Reason: None. This completes the sampling of all locations scheduled for the 2012 event.

Location Specific Information: Wells were sampled using Category IV protocol. Because these domestic wells are used as a potable water source, samples were not filtered even though the turbidity at location 0477 was greater than 10 NTUs.

Field Variance: None.

Quality Control Samples: No quality control samples were collected – sampling of these wells was considered an extension of the sampling event conducted in April, and the required number of quality control samples has already been collected.

Requisition Numbers Assigned: Samples were assigned to report identification number (RIN) 12064598.

Water Level Measurements: None collected.

Well Inspection Summary: No inspections conducted

Equipment: Pre-trip calibration, daily operational check, and post-trip operational checks were conducted. All equipment functioned properly.

Stakeholder/Regulatory: None.

Institutional Controls: Not applicable

Site Issues: None

Access Issues: None

Corrective Action Required/Taken: None

(SEC/lcg)

cc: cc: (electronic)
Deb Steckley, DOE
Sam Campbell, Stoller
Steve Donovan, Stoller
Bev Gallagher, Stoller
EDD Delivery