LMS/GRJ/S00810

# Data Validation Package

## August 2010
## Groundwater Sampling at the Grand Junction, Colorado, Disposal Site

October 2010

U.S. DEPARTMENT OF ENERGY | Legacy Management

This page intentionally left blank

# Contents

Sampling Event Summary .....1
Grand Junction, Colorado, Disposal Site Sample Location Map .....3
Data Assessment Summary.....5
Water Sampling Field Activities Verification Checklist .....7
Laboratory Performance Assessment .....9
Sampling Quality Control Assessment .....17
Certification .....19

**Attachment 1—Assessment of Anomalous Data**

Potential Outliers Report

**Attachment 2—Data Presentation**

Groundwater Quality Data
Static Water Level Data
Hydrograph
Time-Concentration Graphs

**Attachment 3—Sampling and Analysis Work Order**

**Attachment 4—Trip Report**

This page intentionally left blank

# Sampling Event Summary

**Site:** Grand Junction, Colorado, Disposal Site

**Sampling Period:** August 5, 2010

The 1998 *Interim Long-Term Surveillance Plan for the Cheney Disposal Site Near Grand Junction, Colorado* requires annual monitoring to assess the performance of the disposal cell. Monitoring wells 0731, 0732, and 0733 were sampled as specified in the plan. Sampling and analysis were conducted in accordance with *Sampling and Analyses Plan for the U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated).

The water level was measured at each sampled well. The water level in well 0733, located in the disposal cell, is lower than water levels in adjacent wells 0731 and 0732, indicating a hydraulic gradient toward the disposal cell. The attached hydrograph shows stable water levels in well 0733 over the past several years.

Results from this sampling event were generally consistent with results from the past several years as shown in the attached concentration versus time graphs. There have been no large changes in contaminant concentration observed over the last several years.

- Molybdenum concentrations continue to be significantly below the maximum contaminant level (MCL) of 0.1 milligram per liter (mg/L).
- Nitrate + nitrite as nitrogen concentrations exceed the standard in both wells adjacent to the cell (0731 and 0732). This contaminant is below the MCL of 10.0 mg/L and continues to trend downward in well 0733, which is located in the cell.
- Selenium concentrations continue to exceed the MCL of 0.1 mg/L in wells 0731 and 0732, but remain below the standard in well 0733. This is to be expected as selenium levels are typically elevated in sediments of the Mancos Shale in the area.
- Uranium concentrations remain below the MCL of 0.044 mg/L in wells 0731 and 0732, but exceed the MCL in well 0733 after trending upward since 2003. Higher uranium concentrations are expected in this well, located in the disposal cell.
- No polychlorinated biphenyls (PCBs) were detected in any of the wells.

Wells with sample concentrations that exceeded U.S. Environmental Protection Agency (EPA) groundwater standards (40 CFR 192) are listed in Table 1.

*Table 1. Grand Junction Disposal Site Wells Where EPA Standards Were Exceeded in August 2010*

| Analyte | Standard [a] | Location | Concentration |
|---|---|---|---|
| Nitrate + Nitrite as Nitrogen | 10 | 0731 | 26 |
| | | 0732 | 27 |
| Selenium | 0.01 | 0731 | 0.54 |
| | | 0732 | 0.34 |
| Uranium | 0.044 | 0733 | 0.11 |

[a] Standards are listed in 40 CFR 192.02 Table 1 to subpart A; units are in mg/L.

Gary Baur
Site Lead, S.M. Stoller Corporation

10/28/10
Date

*Grand Junction, Colorado, Disposal Site Sample Location Map*

This page intentionally left blank

# Data Assessment Summary

This page intentionally left blank

# Water Sampling Field Activities Verification Checklist

| | | | |
|---|---|---|---|
| **Project** | Grand Junction, Colorado | **Date(s) of Water Sampling** | August 5, 2010 |
| **Date(s) of Verification** | September 28, 2010 | **Name of Verifier** | Steve Donivan |

| | Response (Yes, No, NA) | Comments |
|---|---|---|
| 1. Is the SAP the primary document directing field procedures? | Yes | |
| List other documents, SOPs, instructions. | | Work Order Letter dated July 9, 2010. |
| 2. Were the sampling locations specified in the planning documents sampled? | Yes | |
| 3. Was a pre-trip calibration conducted as specified in the above-named documents? | Yes | Pre-trip calibration was performed on August 4, 2010. |
| 4. Was an operational check of the field equipment conducted daily? | Yes | |
| Did the operational checks meet criteria? | Yes | |
| 5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified? | Yes | |
| 6. Was the category of the well documented? | Yes | All wells were Category I. |
| 7. Were the following conditions met when purging a Category I well: | | |
| Was one pump/tubing volume purged prior to sampling? | Yes | |
| Did the water level stabilize prior to sampling? | Yes | |
| Did pH, specific conductance, and turbidity measurements stabilize prior to sampling? | Yes | |
| Was the flow rate less than 500 mL/min? | Yes | |
| If a portable pump was used, was there a 4-hour delay between pump installation and sampling? | NA | |

# Water Sampling Field Activities Verification Checklist (continued)

| | Response (Yes, No, NA) | Comments |
|---|---|---|
| 8. Were the following conditions met when purging a Category II well: | | |
| Was the flow rate less than 500 mL/min? | NA | |
| Was one pump/tubing volume removed prior to sampling? | NA | |
| 9. Were duplicates taken at a frequency of one per 20 samples? | Yes | A duplicate sample was collected from location 0732. |
| 10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment? | NA | Dedicated equipment was used to sample all wells. |
| 11. Were trip blanks prepared and included with each shipment of VOC samples? | NA | |
| 12. Were QC samples assigned a fictitious site identification number? | Yes | |
| Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report? | Yes | Location ID 2978 was used for the duplicate sample. |
| 13. Were samples collected in the containers specified? | Yes | |
| 14. Were samples filtered and preserved as specified? | Yes | |
| 15. Were the number and types of samples collected as specified? | Yes | |
| 16. Were chain of custody records completed and was sample custody maintained? | Yes | |
| 17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the “Date Signed” fields (FDCS)? | Yes | |
| 18. Was all other pertinent information documented on the field data sheets? | Yes | |
| 19. Was the presence or absence of ice in the cooler documented at every sample location? | Yes | |
| 20. Were water levels measured at the locations specified in the planning documents? | Yes | |

## Laboratory Performance Assessment

General Information

Report Number (RIN): 10073245
Sample Event: August 5, 2010
Site(s): Grand Junction, Colorado, Disposal Site
Laboratory: ALS Laboratory Group
Work Order No.: 0908059
Analysis: Metals, Organics, and Wet Chemistry
Validator: Steve Donivan
Review Date: September 28, 2010

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 2.

*Table 2. Analytes and Methods*

| Analyte | Line Item Code | Prep Method | Analytical Method |
|---|---|---|---|
| Metals: Molybdenum, Selenium, Uranium, and Vanadium | LMM-02 | SW-846 3005A | SW-846 6020A |
| Nitrate + Nitrite as N | WCH-A-022 | MCAWW 353.2 | MCAWW 353.2 |
| Polychlorinated Biphenyls (PCBs) | PEP-A-006 | SW-846 3520C, 3665A | SW-846 8082 |
| Sulfate | MIS-A-044 | SW-846 9056 | SW-846 9056 |
| Total Dissolved Solids | WCH-A-033 | MCAWW 160.1 | MCAWW 160.1 |

Data Qualifier Summary

Analytical results were qualified as listed in Table 3. Refer to the sections below for an explanation of the data qualifiers applied.

*Table 3. Data Qualifier Summary*

| Sample Number | Location | Analyte(s) | Flag | Reason |
|---|---|---|---|---|
| 1008070-1 | 0731 | Selenium | J | Serial dilution failure |

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received four water samples on August 6, 2010, accompanied by Chain of Custody (COC) forms. The air waybill numbers were listed in the receiving documentation. The COC forms were 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 COC form was complete with no errors or omissions with the following exception. There were no relinquishment signatures on the COC forms.

Preservation and Holding Times

The sample shipment was received intact with the temperature inside the iced coolers at 1.4 °C and 2.4 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

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 MCAWW 160.1*
There are no calibration requirements associated with the determination of total dissolved solids.

*Method MCAWW 353.2*
Calibrations for nitrate + nitrite as N were performed using seven calibration standards on August 6 and August 9, 2010. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the method detection limit (MDL). Initial and continuing calibration verification checks were made at the required frequency resulting in nine verification checks. All calibration check results were within the acceptance criteria.

*Method SW-846 6020A*
Calibrations for molybdenum selenium, uranium, and vanadium were performed on August 26, 2010, 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 resulting in nine verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit (PQL) and all results were within the acceptance range. 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 8082*
The initial calibrations for PCBs were performed using five calibration standards on August 19, 2010. Calibration curves were established using linear regression. Linear regression calibrations had correlation coefficient values greater than 0.99 and intercepts less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in two verification checks. All calibration checks met the acceptance criteria for all analytes on both gas chromatography columns, with three exceptions. Quantitation for surrogate and spike compounds was performed from the column that passed the initial and continuing calibration criteria. PCBs were not detected in any field sample.

*Method SW-846 9056*
Calibrations for sulfate were performed using six calibration standards on August 3, 2010. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in 10 verification checks. All calibration check results were within the acceptance criteria.

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.

*Organics*
The method blank results were below the MDL for all target compounds.

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) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spikes met the recovery and precision criteria for all analytes evaluated.

Laboratory Replicate Analysis

Laboratory replicate sample results demonstrate acceptable laboratory precision. The relative percent difference values for the sample replicates, laboratory control sample replicates, and matrix spike replicates were less than 20 percent for results that are greater than 5 times the PQL, 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. ICP-MS serial dilution data are evaluated when the concentration of the undiluted sample is greater than 100 times the PQL. All evaluated serial dilution data were acceptable with the exception of selenium. The associated sample selenium result is qualified with a “J” flag as an estimated value.

PCB Surrogate Recoveries

Laboratory performance for individual samples is established by monitoring the recovery of surrogate spikes. The PCB surrogate recoveries were within the acceptance ranges for all samples.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The required detection limits were met for all analytes.

Completeness

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

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all PCB and sulfate data. All manual integrations that were performed were acceptable and all peak integrations were satisfactory.

Electronic Data Deliverable (EDD) File

The EDD file arrived on September 1, 2010. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

# SAMPLE MANAGEMENT SYSTEM

## General Data Validation Report

**RIN:** 10073245 **Lab Code:** PAR **Validator:** Steve Donivan **Validation Date:** 9/28/2010

**Project:** Grand Junction Disp/Proc Sites **Analysis Type:** ☑ Metals ☑ General Chem ☐ Rad ☑ Organics

**# of Samples:** 4 **Matrix:** WATER **Requested Analysis Completed:** Yes

**Chain of Custody**

**Present:** OK **Signed:** OK **Dated:** OK

**Sample**

**Integrity:** OK **Preservation:** OK **Temperature:** OK

**Select Quality Parameters**

| | |
|---|---|
| ☑ Holding Times | All analyses were completed within the applicable holding times. |
| ☑ Detection Limits | There are 0 detection limit failures. |
| ☐ Field/Trip Blanks | |
| ☑ Field Duplicates | There was 1 duplicate evaluated. |

## SAMPLE MANAGEMENT SYSTEM

## Metals Data Validation Worksheet

**RIN:** 10073245 **Lab Code:** PAR **Date Due:** 9/3/2010

**Matrix:** Water **Site Code:** GRJ03 **Date Completed:** 9/2/2010

| Analyte | Date Analyzed | CALIBRATION | | | | | | Method Blank | LCS %R | MS %R | MSD %R | Dup. RPD | ICSAB %R | Serial Dil. %R | CRI %R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Int. | R^2 | ICV | CCV | ICB | CCB | | | | | | | | |
| Molybdenum | 08/26/2010 | 0.0000 | 1.0000 | OK | OK | OK | OK | OK | 97.0 | 106.0 | 104.0 | 2.0 | 110.0 | 1.0 | 101.0 |
| Selenium | 08/26/2010 | 0.0000 | 1.0000 | OK | OK | OK | OK | OK | 102.0 | 149.0 | 130.0 | 3.0 | 107.0 | 15.0 | 92.0 |
| Uranium | 08/26/2010 | 0.0000 | 1.0000 | OK | OK | OK | OK | OK | 98.0 | 104.0 | 97.0 | 2.0 | 108.0 | 3.0 | 90.0 |
| Vanadium | 08/26/2010 | 0.0000 | 1.0000 | OK | OK | OK | OK | OK | 96.0 | 114.0 | 111.0 | 2.0 | 105.0 | | 126.0 |

## SAMPLE MANAGEMENT SYSTEM

### Wet Chemistry Data Validation Worksheet

**RIN:** 10073245 **Lab Code:** PAR **Date Due:** 9/3/2010

**Matrix:** Water **Site Code:** GRJ03 **Date Completed:** 9/2/2010

| Analyte | Date Analyzed | CALIBRATION | | | | | | Method Blank | LCS %R | MS %R | MSD %R | DUP RPD | Serial Dil. %R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Int. | R^2 | ICV | CCV | ICB | CCB | | | | | | |
| Nitrate+Nitrite as N | 08/06/2010 | 0.000 | 0.9996 | OK | OK | OK | OK | OK | 97.00 | | | | |
| SULFATE | 08/10/2010 | 0.000 | 0.9999 | OK | OK | OK | OK | OK | 96.00 | | | | |
| TOTAL DISSOLVED SOLIDS | 08/11/2010 | | | | | | | OK | 105.00 | | | 1.00 | |

## SAMPLE MANAGEMENT SYSTEM
## Organics Data Validation Summary

**RIN:** 10073245 **Project:** Grand Junction Disp/Proc Site **Lab Code:** PAR **Validation Date:** 9/28/2010

**LCS Recovery:** All LCS recoveries were within the laboratory acceptance limits.

**Method Blank(s):** All method blanks results were below the method detection limit.

**MS/MSD Recovery:** All MS/MSD recoveries were within the laboratory acceptance limits.

**Surrogate Recovery:** All surrogate recoveries were within the laboratory acceptance limits.

## Sampling Quality Control Assessment

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

Sampling Protocol

Sample results for all monitoring wells were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. All wells met the Category I criteria.

Equipment Blank Assessment

An equipment blank was not required because samples were collected using dedicated equipment.

Field Duplicate Assessment

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. For results less than 5 times the PQL, the range should be no greater than the PQL. A duplicate sample was collected from location 0732. The duplicate results met these criteria, demonstrating acceptable overall precision.

# SAMPLE MANAGEMENT SYSTEM

## Validation Report: Field Duplicates

**RIN:** 10073245 **Lab Code:** PAR **Project:** Grand Junction Disp/Proc Sites **Validation Date:** 9/28/2010

**Duplicate:** 2978 **Sample:** 0732

| Analyte | Sample Result | Sample Flag | Sample Error | Sample Dilution | Duplicate Result | Duplicate Flag | Duplicate Error | Duplicate Dilution | RPD | RER | Units |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 0.087 | U | | 1 | 0.087 | U | | 1 | | | UG/L |
| Aroclor 1221 | 1.9 | U | | 1 | 1.9 | U | | 1 | | | UG/L |
| Aroclor 1232 | 0.96 | U | | 1 | 0.96 | U | | 1 | | | UG/L |
| Aroclor 1242 | 0.96 | U | | 1 | 0.96 | U | | 1 | | | UG/L |
| Aroclor 1248 | 0.96 | U | | 1 | 0.96 | U | | 1 | | | UG/L |
| Aroclor 1254 | 0.96 | U | | 1 | 0.96 | U | | 1 | | | UG/L |
| Aroclor 1260 | 0.11 | U | | 1 | 0.11 | U | | 1 | | | UG/L |
| Molybdenum | 2.3 | | | 1 | 2.3 | | | 1 | 0 | | UG/L |
| Nitrate+Nitrite as N | 27 | | | 50 | 26 | | | 20 | 3.77 | | MG/L |
| Selenium | 340 | | | 1 | 340 | | | 1 | 0 | | UG/L |
| SULFATE | 4100 | | | 50 | 4100 | | | 50 | 0 | | MG/L |
| TOTAL DISSOLVED SOLIDS | 7300 | | | 1 | 7300 | | | 1 | 0 | | MG/L |
| Uranium | 19 | | | 1 | 19 | | | 1 | 0 | | UG/L |
| Vanadium | 0.92 | | | 1 | 0.83 | | | 1 | 10.29 | | 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 — 10-27-2010 Date

Data Validation Lead: Steve Donivan — 10-27-2010 Date

This page intentionally left blank

# Attachment 1
# Assessment of Anomalous Data

This page intentionally left blank

# Potential Outliers Report

This page intentionally left blank

**Potential Outliers Report**

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

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

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

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the 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.

There were no potential outliers identified, and the data for this event are acceptable as qualified.

**Data Validation Outliers Report - No Field Parameters**
**Comparison: All Historical Data**
Laboratory: ALS Laboratory Group
RIN: 10073245
Report Date: 9/28/2010

| | | | | | Current | | | Historical Maximum | | | Historical Minimum | | | Number of Data Points | | Statistical Outlier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Qualifiers | | | Qualifiers | | | Qualifiers | | | | |
| Site Code | Location Code | Sample ID | Sample Date | Analyte | Result | *Lab* | *Data* | Result | *Lab* | *Data* | Result | *Lab* | *Data* | N | N Below Detect | |
| GRJ03 | 0732 | N001 | 08/05/2010 | Nitrate + Nitrite as Nitrogen | 27 | | F | 36 | | F | 28 | | F | 9 | 0 | No |
| GRJ03 | 0732 | N002 | 08/05/2010 | Nitrate + Nitrite as Nitrogen | 26 | | F | 36 | | F | 28 | | F | 9 | 0 | No |
| GRJ03 | 0733 | N001 | 08/05/2010 | Nitrate + Nitrite as Nitrogen | 4.6 | | F | 24 | | FQ | 6.1 | | F | 7 | 0 | No |
| GRJ03 | 0733 | N001 | 08/05/2010 | Uranium | 0.11 | | F | 0.076 | | F | 0.0175 | | F | 20 | 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

This page intentionally left blank

# Groundwater Quality Data

This page intentionally left blank

**Groundwater Quality Data by Location (USEE100) FOR SITE GRJ03, Grand Junction Disposal Site**
REPORT DATE: 9/28/2010
Location: 0731 WELL

| Parameter | Units | Sample Date | Sample ID | Depth Range (Ft BLS) | | | Result | Qualifiers Lab | Qualifiers Data | Qualifiers QA | Detection Limit | Uncertainty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 205 | | F | # | | |
| Aroclor - 1016 | ug/L | 08/05/2010 | N001 | 17 | - | 32 | 0.085 | U | F | # | 0.085 | |
| Aroclor - 1221 | ug/L | 08/05/2010 | N001 | 17 | - | 32 | 1.9 | U | F | # | 1.9 | |
| Aroclor - 1232 | ug/L | 08/05/2010 | N001 | 17 | - | 32 | 0.94 | U | F | # | 0.94 | |
| Aroclor - 1242 | ug/L | 08/05/2010 | N001 | 17 | - | 32 | 0.94 | U | F | # | 0.94 | |
| Aroclor - 1248 | ug/L | 08/05/2010 | N001 | 17 | - | 32 | 0.94 | U | F | # | 0.94 | |
| Aroclor - 1254 | ug/L | 08/05/2010 | N001 | 17 | - | 32 | 0.94 | U | F | # | 0.94 | |
| Aroclor - 1260 | ug/L | 08/05/2010 | N001 | 17 | - | 32 | 0.1 | U | F | # | 0.1 | |
| Molybdenum | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 0.0036 | | F | # | 0.000032 | |
| Nitrate + Nitrite as Nitrogen | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 26 | | F | # | 0.5 | |
| Oxidation Reduction Potential | mV | 08/05/2010 | N001 | 17 | - | 32 | 208.5 | | F | # | | |
| pH | s.u. | 08/05/2010 | N001 | 17 | - | 32 | 7.27 | | F | # | | |
| Selenium | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 0.54 | E | FJ | # | 0.000032 | |
| Specific Conductance | umhos /cm | 08/05/2010 | N001 | 17 | - | 32 | 7857 | | F | # | | |
| Sulfate | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 4300 | | F | # | 25 | |
| Temperature | C | 08/05/2010 | N001 | 17 | - | 32 | 14.72 | | F | # | | |
| Total Dissolved Solids | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 7300 | | F | # | 80 | |

**Groundwater Quality Data by Location (USEE100) FOR SITE GRJ03, Grand Junction Disposal Site**
REPORT DATE: 9/28/2010
Location: 0731 WELL

| Parameter | Units | Sample Date | Sample ID | Depth Range (Ft BLS) | | | Result | Qualifiers Lab | Qualifiers Data | Qualifiers QA | Detection Limit | Uncertainty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turbidity | NTU | 08/05/2010 | N001 | 17 | - | 32 | 1.49 | | F | # | | |
| Uranium | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 0.028 | | F | # | 0.0000029 | |
| Vanadium | mg/L | 08/05/2010 | N001 | 17 | - | 32 | 0.0013 | E | F | # | 0.000015 | |

**Groundwater Quality Data by Location (USEE100) FOR SITE GRJ03, Grand Junction Disposal Site**
REPORT DATE: 9/28/2010
Location: 0732 WELL

| Parameter | Units | Sample Date | Sample ID | Depth Range (Ft BLS) | | | Result | Qualifiers Lab | Qualifiers Data | Qualifiers QA | Detection Limit | Uncertainty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 188 | | F | # | | |
| Aroclor - 1016 | ug/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.087 | U | F | # | 0.087 | |
| Aroclor - 1016 | ug/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.087 | U | F | # | 0.087 | |
| Aroclor - 1221 | ug/L | 08/05/2010 | N001 | 17.52 | - | 33 | 1.9 | U | F | # | 1.9 | |
| Aroclor - 1221 | ug/L | 08/05/2010 | N002 | 17.52 | - | 33 | 1.9 | U | F | # | 1.9 | |
| Aroclor - 1232 | ug/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1232 | ug/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1242 | ug/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1242 | ug/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1248 | ug/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1248 | ug/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1254 | ug/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1254 | ug/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.96 | U | F | # | 0.96 | |
| Aroclor - 1260 | ug/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.11 | U | F | # | 0.11 | |
| Aroclor - 1260 | ug/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.11 | U | F | # | 0.11 | |
| Molybdenum | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.0023 | | F | # | 0.000032 | |
| Molybdenum | mg/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.0023 | | F | # | 0.000032 | |

**Groundwater Quality Data by Location (USEE100) FOR SITE GRJ03, Grand Junction Disposal Site**
REPORT DATE: 9/28/2010
Location: 0732 WELL

| Parameter | Units | Sample Date | Sample ID | Depth Range (Ft BLS) | | | Result | Qualifiers Lab | Qualifiers Data | Qualifiers QA | Detection Limit | Uncertainty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate + Nitrite as Nitrogen | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 27 | | F | # | 0.5 | |
| Nitrate + Nitrite as Nitrogen | mg/L | 08/05/2010 | N002 | 17.52 | - | 33 | 26 | | F | # | 0.2 | |
| Oxidation Reduction Potential | mV | 08/05/2010 | N001 | 17.52 | - | 33 | 218.3 | | F | # | | |
| pH | s.u. | 08/05/2010 | N001 | 17.52 | - | 33 | 7.12 | | F | # | | |
| Selenium | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.34 | | F | # | 0.000032 | |
| Selenium | mg/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.34 | | F | # | 0.000032 | |
| Specific Conductance | umhos /cm | 08/05/2010 | N001 | 17.52 | - | 33 | 8143 | | F | # | | |
| Sulfate | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 4100 | | F | # | 25 | |
| Sulfate | mg/L | 08/05/2010 | N002 | 17.52 | - | 33 | 4100 | | F | # | 25 | |
| Temperature | C | 08/05/2010 | N001 | 17.52 | - | 33 | 13.98 | | F | # | | |
| Total Dissolved Solids | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 7300 | | F | # | 80 | |
| Total Dissolved Solids | mg/L | 08/05/2010 | N002 | 17.52 | - | 33 | 7300 | | F | # | 80 | |
| Turbidity | NTU | 08/05/2010 | N001 | 17.52 | - | 33 | 2.14 | | F | # | | |
| Uranium | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.019 | | F | # | 0.0000029 | |
| Uranium | mg/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.019 | | F | # | 0.0000029 | |
| Vanadium | mg/L | 08/05/2010 | N001 | 17.52 | - | 33 | 0.00092 | | F | # | 0.000015 | |
| Vanadium | mg/L | 08/05/2010 | N002 | 17.52 | - | 33 | 0.00083 | | F | # | 0.000015 | |

**Groundwater Quality Data by Location (USEE100) FOR SITE GRJ03, Grand Junction Disposal Site**
REPORT DATE: 9/28/2010
Location: 0733 WELL

| Parameter | Units | Sample Date | Sample ID | Depth Range (Ft BLS) | | | Result | Qualifiers Lab | Qualifiers Data | Qualifiers QA | Detection Limit | Uncertainty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 470 | | F | # | | |
| Aroclor - 1016 | ug/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.088 | U | F | # | 0.088 | |
| Aroclor - 1221 | ug/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 2 | U | F | # | 2 | |
| Aroclor - 1232 | ug/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.98 | U | F | # | 0.98 | |
| Aroclor - 1242 | ug/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.98 | U | F | # | 0.98 | |
| Aroclor - 1248 | ug/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.98 | U | F | # | 0.98 | |
| Aroclor - 1254 | ug/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.98 | U | F | # | 0.98 | |
| Aroclor - 1260 | ug/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.11 | U | F | # | 0.11 | |
| Molybdenum | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.0016 | | F | # | 0.000032 | |
| Nitrate + Nitrite as Nitrogen | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 4.6 | | F | # | 0.05 | |
| Oxidation Reduction Potential | mV | 08/05/2010 | N001 | 63.8 | - | 73.8 | 226.2 | | F | # | | |
| pH | s.u. | 08/05/2010 | N001 | 63.8 | - | 73.8 | 6.78 | | F | # | | |
| Selenium | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.0045 | | F | # | 0.000032 | |
| Specific Conductance | umhos /cm | 08/05/2010 | N001 | 63.8 | - | 73.8 | 13131 | | F | # | | |
| Sulfate | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 6700 | | F | # | 50 | |
| Temperature | C | 08/05/2010 | N001 | 63.8 | - | 73.8 | 16.36 | | F | # | | |
| Total Dissolved Solids | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 12000 | | F | # | 200 | |
| Turbidity | NTU | 08/05/2010 | N001 | 63.8 | - | 73.8 | 2.03 | | F | # | | |

**Groundwater Quality Data by Location (USEE100) FOR SITE GRJ03, Grand Junction Disposal Site**
REPORT DATE: 9/28/2010
Location: 0733 WELL

| Parameter | Units | Sample Date | Sample ID | Depth Range (Ft BLS) | | | Result | Qualifiers Lab | Qualifiers Data | Qualifiers QA | Detection Limit | Uncertainty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Uranium | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.11 | | F | # | 0.0000029 | |
| Vanadium | mg/L | 08/05/2010 | N001 | 63.8 | - | 73.8 | 0.00072 | | F | # | 0.000015 | |

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

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

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

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

# Static Water Level Data

This page intentionally left blank

**STATIC WATER LEVELS (USEE700) FOR SITE GRJ03, Grand Junction Disposal Site**
**REPORT DATE: 9/28/2010**

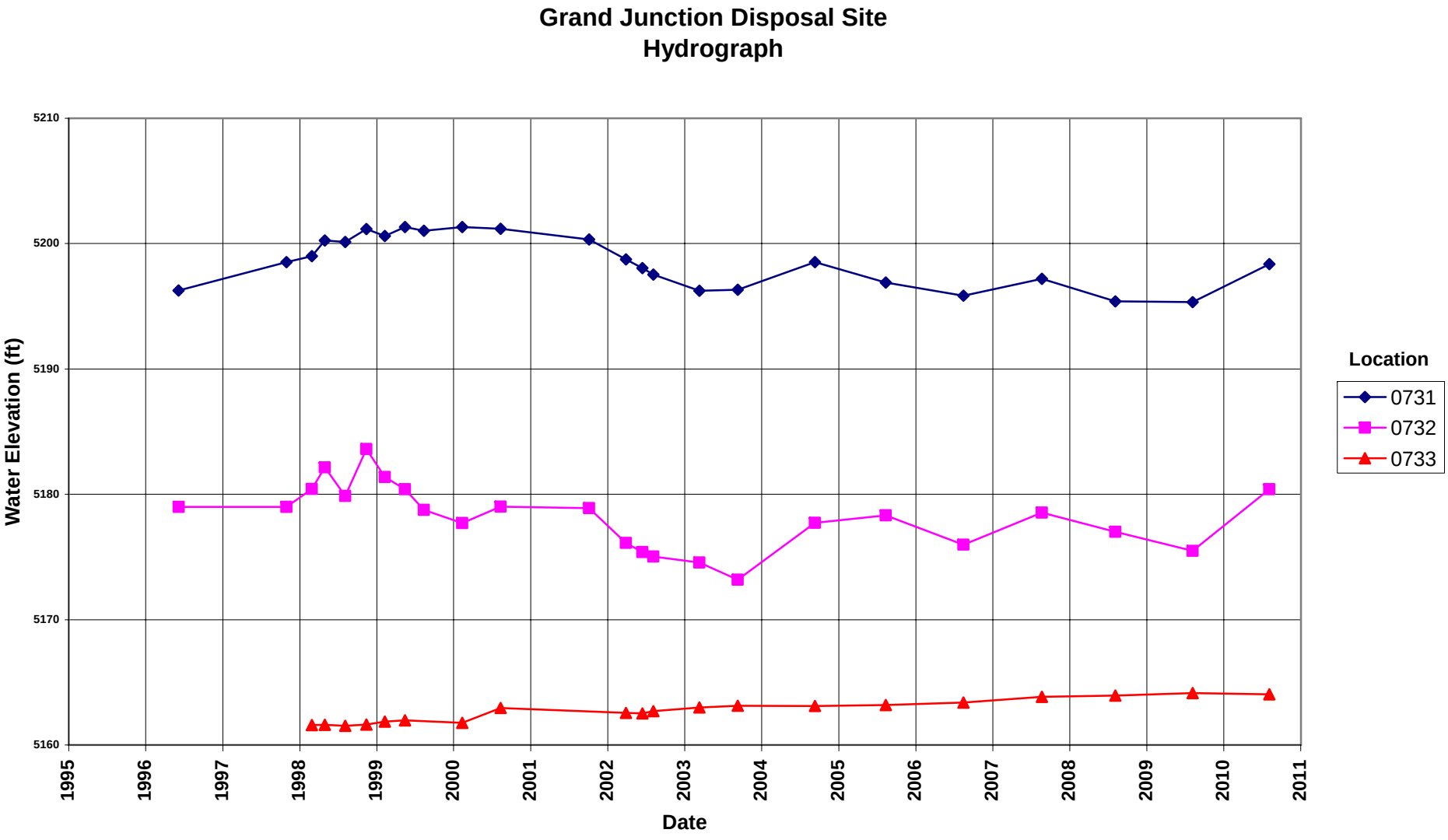
| Location Code | Flow Code | Top of Casing Elevation (Ft) | Measurement Date | Measurement Time | Depth From Top of Casing (Ft) | Water Elevation (Ft) |
|---|---|---|---|---|---|---|
| 0731 | D | 5218.52 | 08/05/2010 | 11:15:32 | 20.15 | 5198.37 |
| 0732 | C | 5202.5 | 08/05/2010 | 10:35:01 | 22.1 | 5180.4 |
| 0733 | N | 5232.84 | 08/05/2010 | 09:40:21 | 68.8 | 5164.04 |

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

This page intentionally left blank

# Hydrograph

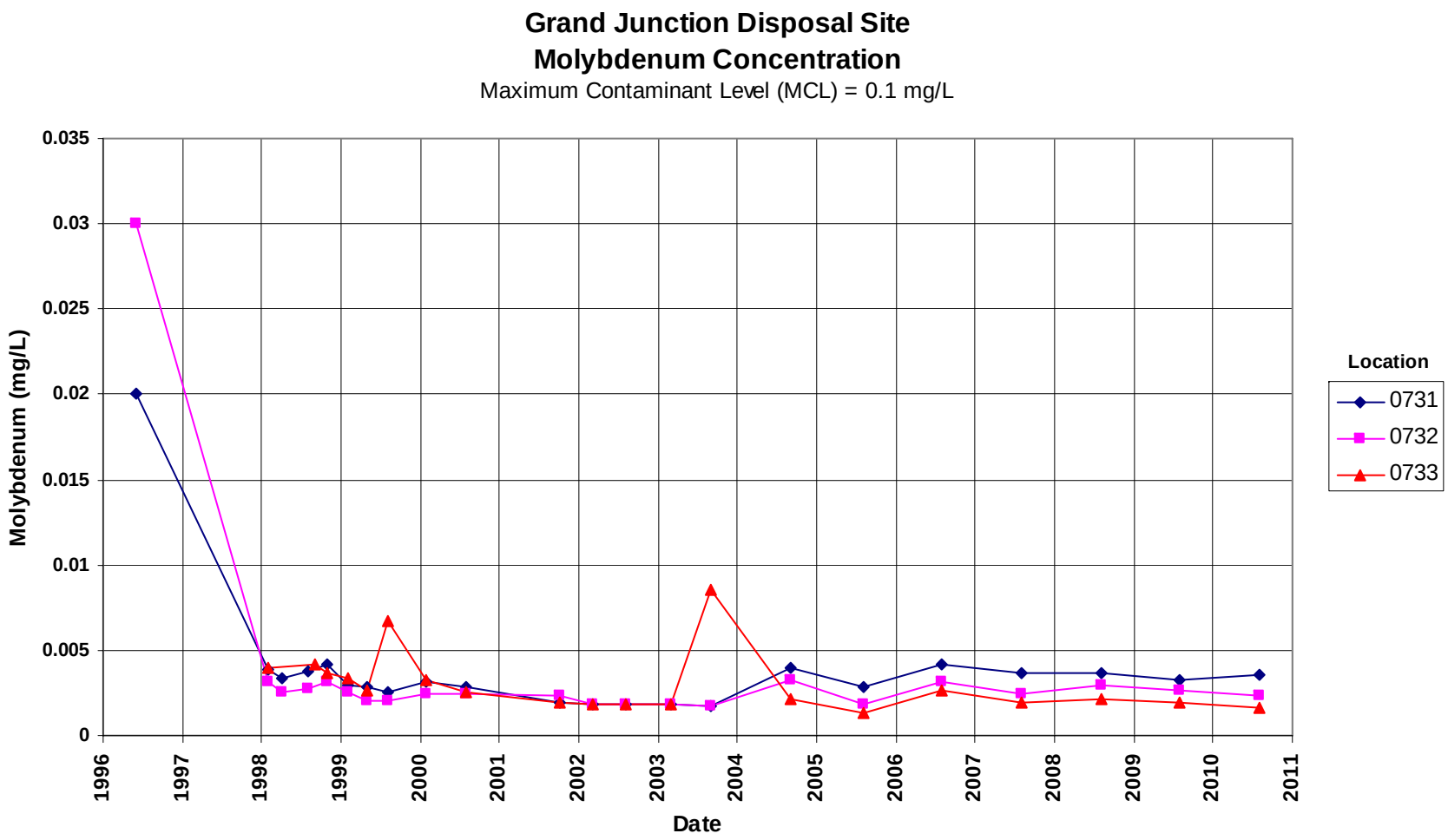
This page intentionally left blank

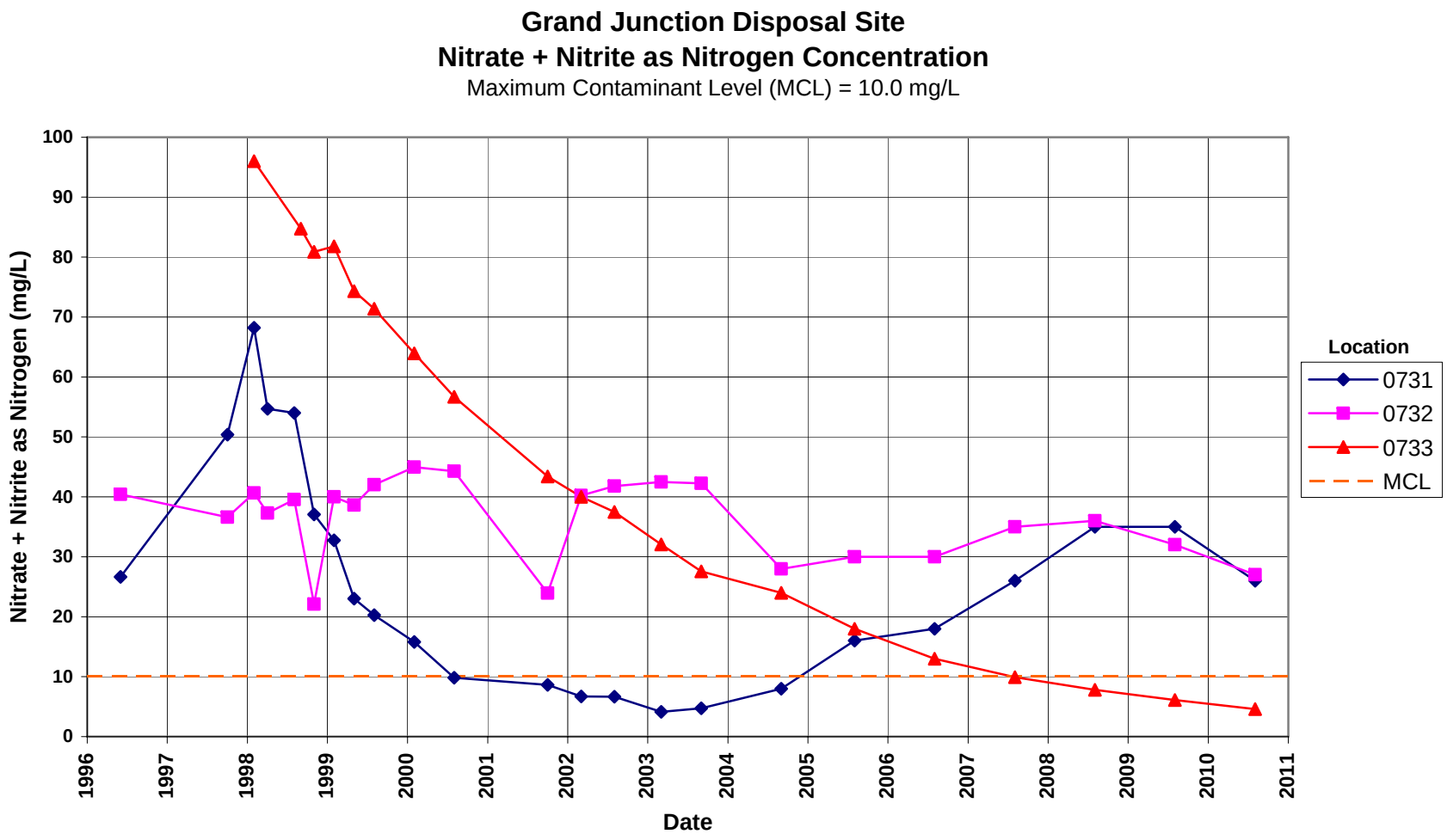

Grand Junction Disposal Site
Hydrograph
Water Elevation (ft)
5210
5200
5190
5180
5170
5160
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733

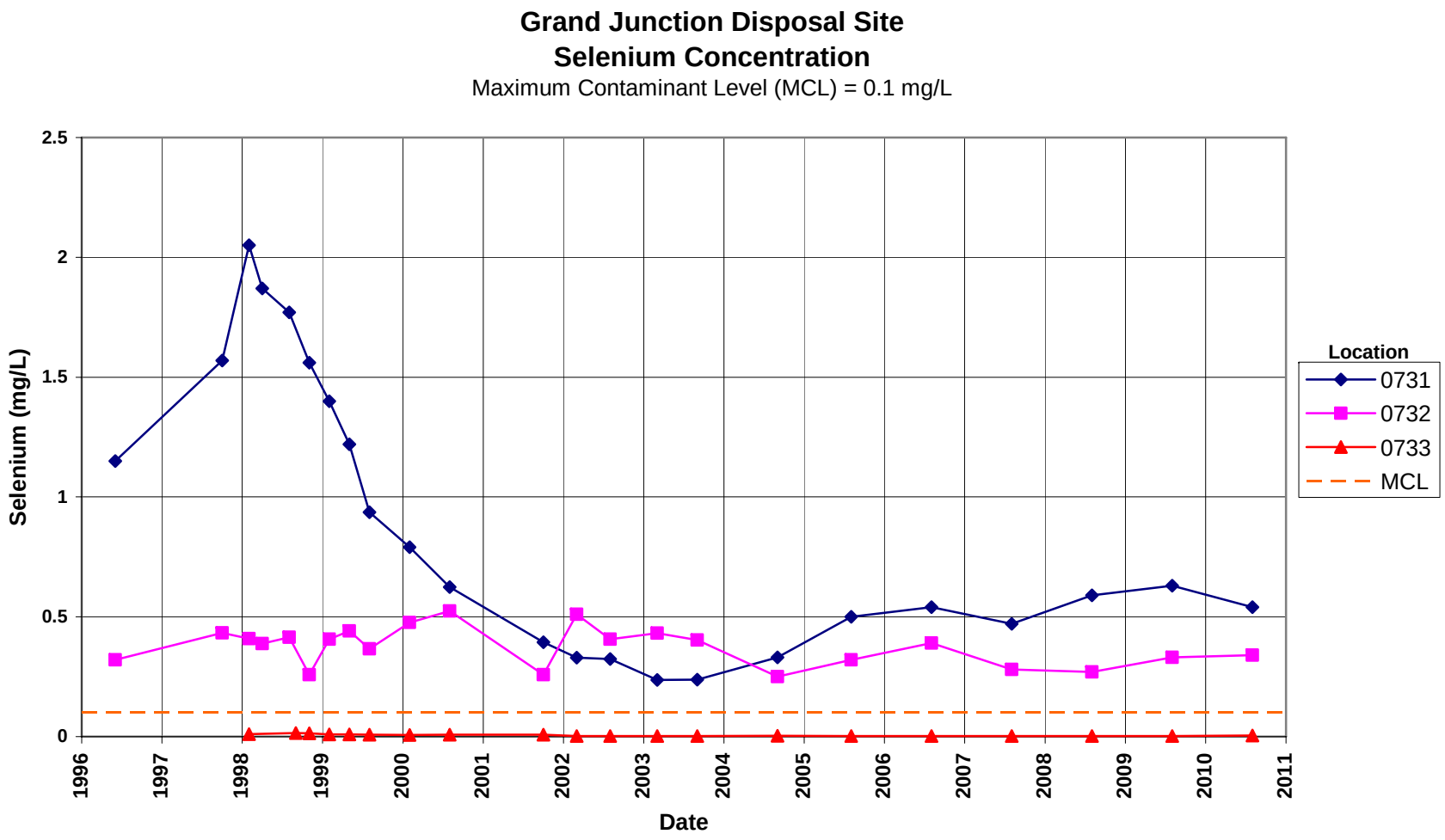
This page intentionally left blank

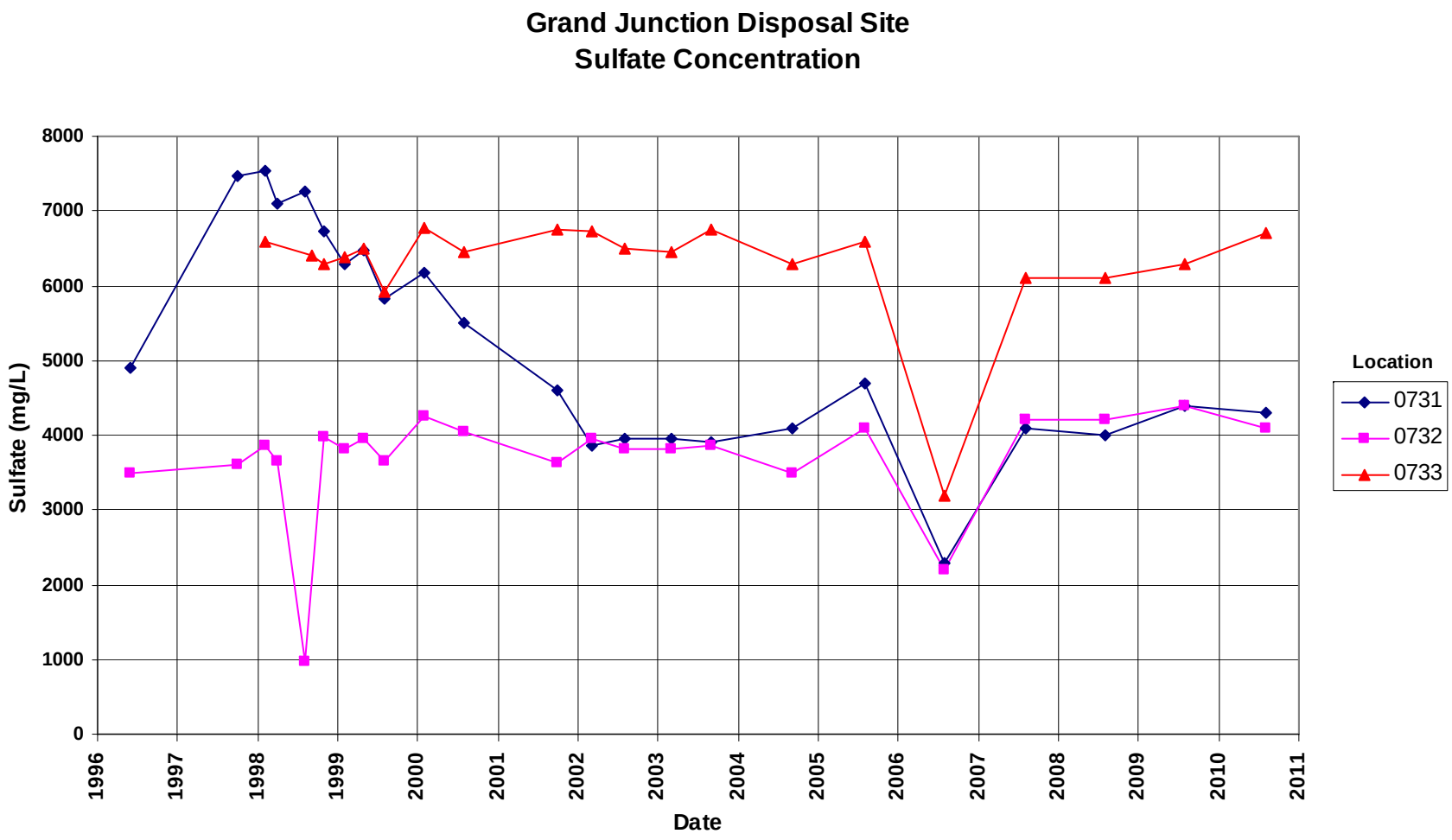
# Time-Concentration Graphs

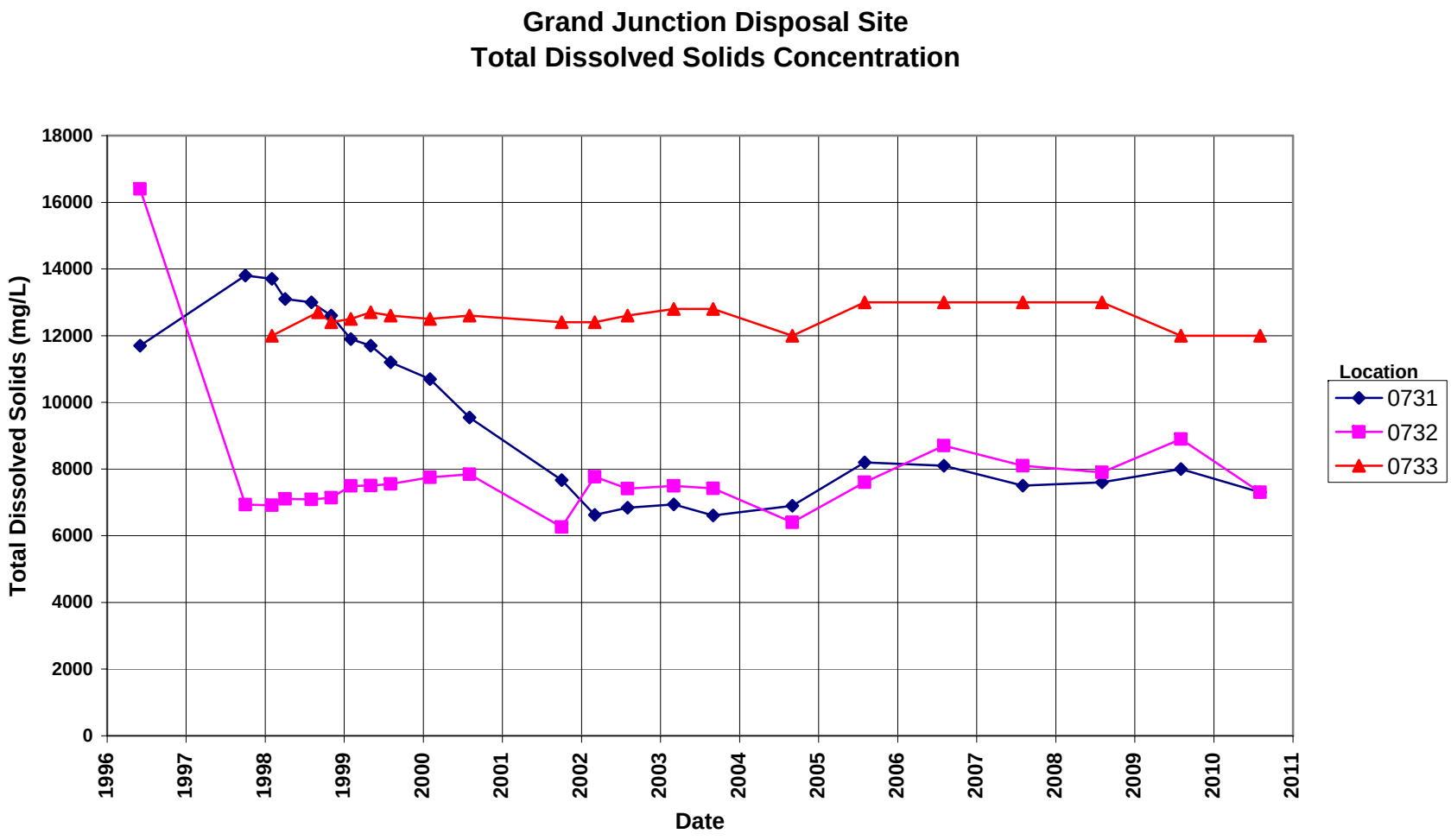
This page intentionally left blank

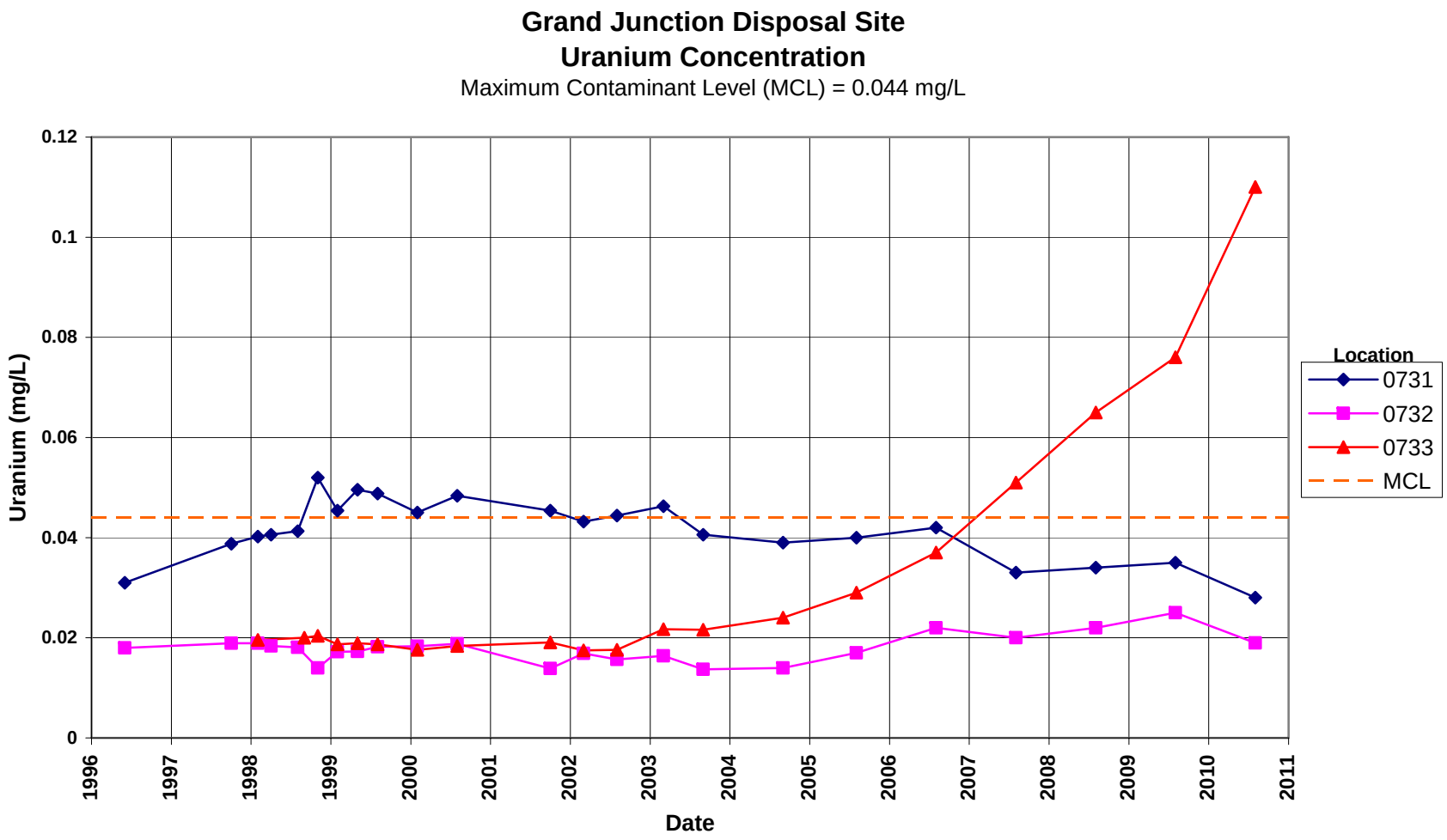

Grand Junction Disposal Site
Molybdenum Concentration
Maximum Contaminant Level (MCL) = 0.1 mg/L
Molybdenum (mg/L)
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733

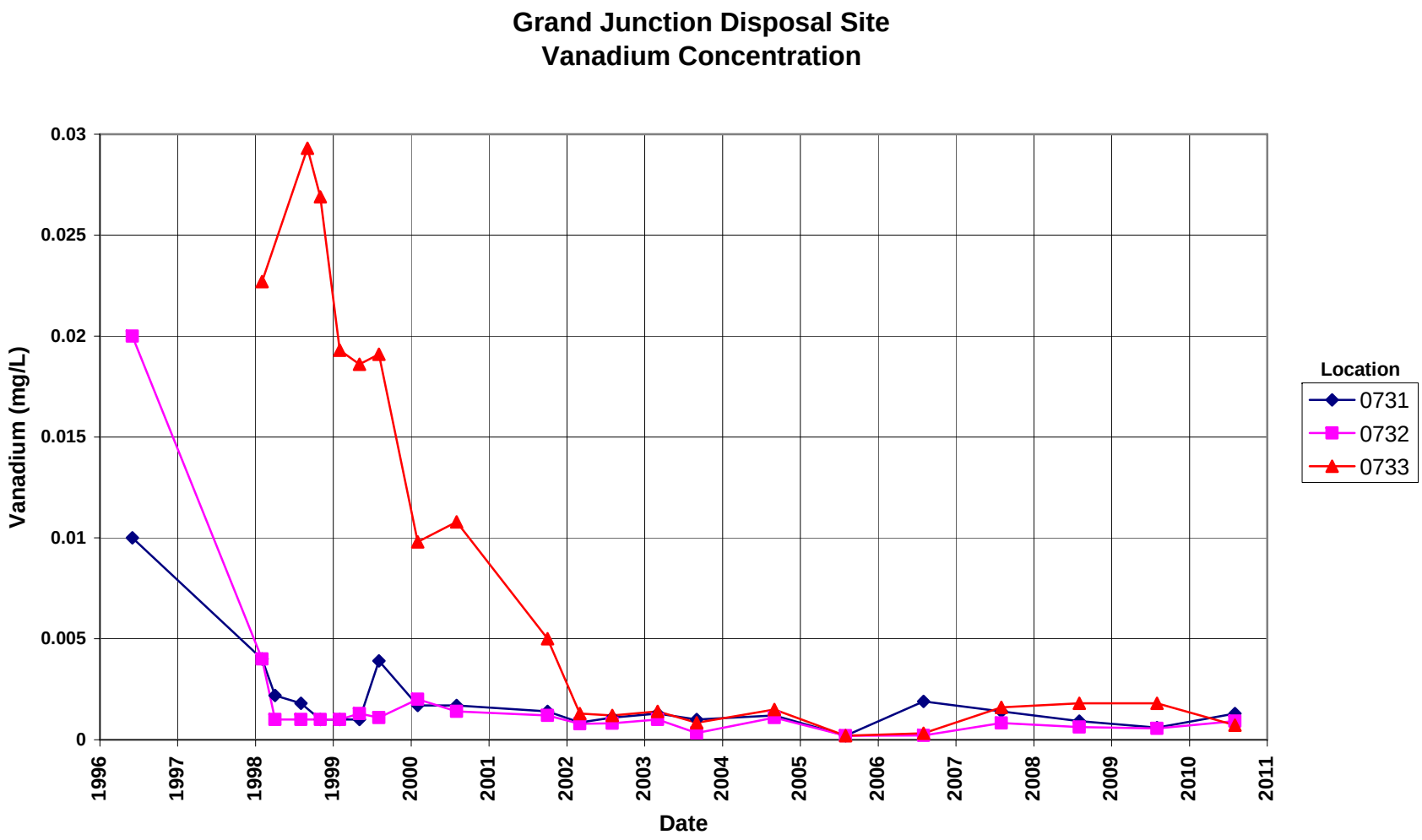

Grand Junction Disposal Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Contaminant Level (MCL) = 10.0 mg/L
Nitrate + Nitrite as Nitrogen (mg/L)
100
90
80
70
60
50
40
30
20
10
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733
MCL


Grand Junction Disposal Site
Selenium Concentration
Maximum Contaminant Level (MCL) = 0.1 mg/L
Selenium (mg/L)
2.5
2
1.5
1
0.5
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733
MCL


Grand Junction Disposal Site
Sulfate Concentration
Sulfate (mg/L)
8000
7000
6000
5000
4000
3000
2000
1000
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733


Grand Junction Disposal Site
Total Dissolved Solids Concentration
Total Dissolved Solids (mg/L)
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733


Grand Junction Disposal Site
Uranium Concentration
Maximum Contaminant Level (MCL) = 0.044 mg/L
Uranium (mg/L)
0.12
0.1
0.08
0.06
0.04
0.02
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733
MCL


Grand Junction Disposal Site
Vanadium Concentration
Vanadium (mg/L)
0.03
0.025
0.02
0.015
0.01
0.005
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0731
0732
0733

This page intentionally left blank

# Attachment 3
# Sampling and Analysis Work Order

This page intentionally left blank

Stoller

*established 1959*

Task Order LM00-501
Control Number 10-0759

July 9, 2010

U.S. Department of Energy
Office of Legacy Management
ATTN: Joseph Desormeau
Site Manager
2597 B ¾ Road
Grand Junction, CO 81503

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

REFERENCE: Task Order LM00-501-02-106-402, Grand Junction, CO, Disposal Site

Dear Mr. Desormeau:

The purpose of this letter is to inform you of the upcoming sampling event at Grand Junction, Colorado. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Grand Junction disposal site. Water quality data will be collected from monitoring wells at this site as part of the routine environmental sampling currently scheduled to begin the week of August 2, 2010.

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

**Monitoring Wells***

| | | |
|---|---|---|
| 0731 Al | 0732 Al | 0733 Tl |

*NOTE: Al = Alluvium; Tl = Tailings

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

Please contact me at (970) 248-6391 if you have any questions or concerns.

Sincerely,

Gary K. Baur
Site Lead

The S.M. Stoller Corporation 2597 B ¾ Road Grand Junction, CO 81503 (970) 248-6000 Fax: (970) 248-6040

GKB/lcg/lb

Enclosures (3)

cc: (electronic)
Cheri Bahrke, Stoller
Gary Baur, Stoller
Steve Donivan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
rc-grand.junction

The S.M. Stoller Corporation 2597 B ¾ Road Grand Junction, CO 81503 (970) 248-6000 Fax: (970) 248-6040

## Sampling Frequencies for Locations at Grand Junction Disposal Site Disposal Cell

| Location ID | Quarterly | Semiannually | Annually | Biennially | Not Sampled | Notes |
|---|---|---|---|---|---|---|
| ***Monitoring Wells*** | | | | | | |
| 731 | | | X | | | Download data logger |
| 732 | | | X | | | Download data logger |
| 733 | | | X | | | Download data logger |

Sampling conducted in August

# Constituent Sampling Breakdown

| Site | Grand Junction Disposal Site | | | | |
|---|---|---|---|---|---|
| **Analyte** | **Groundwater** | **Surface Water** | **Required Detection Limit (mg/L)** | **Analytical Method** | **Line Item Code** |
| **Approx. No. Samples/yr** | 3 | 0 | | | |
| *Field Measurements* | | | | | |
| Alkalinity | X | | | | |
| Dissolved Oxygen | | | | | |
| Redox Potential | X | | | | |
| pH | X | | | | |
| Specific Conductance | X | | | | |
| Turbidity | X | | | | |
| Temperature | X | | | | |
| *Laboratory Measurements* | | | | | |
| Aluminum | | | | | |
| Ammonia as N (NH3-N) | | | | | |
| Calcium | | | | | |
| Chloride | | | | | |
| Chromium | | | | | |
| Gross Alpha | | | | | |
| Gross Beta | | | | | |
| Iron | | | | | |
| Lead | | | | | |
| Magnesium | | | | | |
| Manganese | | | | | |
| Molybdenum | X | | 0.003 | SW-846 6020 | LMM-02 |
| Nickel | | | | | |
| Nickel-63 | | | | | |
| Nitrate + Nitrite as N (NO3+NO2)-N | X | | 0.05 | EPA 353.1 | WCH-A-022 |
| PCBs | X | | 0.0005 | SW-846 8082 | PEP-A-006 |
| Potassium | | | | | |
| Radium-226 | | | | | |
| Radium-228 | | | | | |
| Selenium | X | | 0.0001 | SW-846 6020 | LMM-02 |
| Silica | | | | | |
| Sodium | | | | | |
| 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 | | 0.0001 | SW-846 6020 | LMM-02 |
| Vanadium | X | | 0.0003 | SW-846 6020 | LMM-02 |
| Zinc | | | | | |
| **Total No. of Analytes** | 8 | 0 | | | |

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

# Attachment 4
# Trip Report

This page intentionally left blank

Stoller
Grand Junction Office
established 1959

# Memorandum

Control Number N/A

DATE: August 16, 2010

TO: Gary Baur

FROM: Daniel Sellers

SUBJECT: Trip Report

**Site:** Grand Junction Disposal Site, Colorado

**Date of Sampling Event:** August 5, 2009

**Team Members:** Dave Atkinson and Dan Sellers. Sampling at GRJ03-0733 well was monitored by Anthony Martinez, radiation control technician (RCT).

**Number of Locations Sampled:** Three monitoring wells were sampled and 1 duplicate sample was collected.

**Locations Not Sampled/Reason:** None.

**Location Specific Information:** Well 0733 is in a contamination area. All equipment, bottles, and supplies were checked by the RCT. All were clean except the water level indicator, which was left on site for any radon activity to dissipate. It will be checked again in the near future and brought back to office when clean.

| Ticket Number | Location | Sample Date | Description | Notes |
|---|---|---|---|---|
| IIR 042 | 0731 | 8/6/09 | Category I | PCBs collected in triplicate for lab QC. Data logger was downloaded |
| IIR 043 | 0732 | 8/6/09 | Category I | PCBs collected in triplicate for lab QC Data logger was downloaded, test stopped and restarted. Roots were found in well and datalogger did not connect to computer initially. Well was developed and datalogger was reinstalled. Data was recovered successfully. |
| IIR 044 | 0733 | 8/6/09 | Category I | RCT Monitored sampling Data logger was downloaded |

**Field Variance:** None.

**Quality Control Sample Cross Reference:** The following is the false identification assigned to the quality control sample:

| False ID | True ID | Sample Type | Associated Matrix | Ticket Number |
|---|---|---|---|---|
| 2978 | 0732 | Duplicate | Groundwater | IIR 045 |

**Requisition Numbers Assigned:** All samples were assigned to requisition identification number (RIN) 10073245.

**Sample Shipment:** Samples were shipped overnight by FedEx to ALS Laboratory Group, Fort Collins, CO, from Grand Junction, CO, on August 5, 2010.

**Water Level Measurements:** Water level measurements were collected in all wells.

**Well Inspection Summary:** Well inspections were conducted at all sampled wells. All wells were in good condition. Roots were observed in well 0732. This well was developed and roots were removed on August 11, 2010. The datalogger was re-installed and a new test was started.

**Equipment:** All wells were equipped with dedicated bladder pumps.

**Institutional Controls:**

**Fences, Gates, Locks:** Gates were opened and locked after sampling event and well development. Fences and locks were in good condition.
**Signs**: No missing/damaged signs were noted.
**Trespassing/Site Disturbances:** None

**Site Issues**

**Disposal Cell/Drainage Structure Integrity:** No issues identified.
**Vegetation/Noxious Weed Concerns:** No issues identified.
**Maintenance Requirements: N**one observed.
**Safety Issues:** None observed.

**Corrective Action Taken/Required:**

cc: (electronic)
Joseph Desormeau, DOE
Steve Donivan, Stoller
EDD Delivery