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Office of Environmental Management – Grand Junction

MOAB UTAH

UMTRA Project

February 2006 Water Sampling

Validation Data Package For Ground Water Interim Action Monthly Sampling Moab, Utah

June 2006

U.S. Department of Energy

Office of Environmental Management

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February 2006 Water Sampling

Validation Data Package
for
Ground Water Interim Action
Monthly Sampling
Moab, Utah

June 2006

Moab, Utah

February 2006

Data Package Contents

This data package includes the following information:

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Sampling Event Summary

Site: Moab, Utah

Sampling Period: February 14–16, 2006

The purpose of this sampling was to collect data that can be used to evaluate the performance of all configurations of the Interim Action well field. This report is a compilation of all sampling activities conducted during the month of February.

Sampling and analysis were conducted in accordance with the *Operations, Maintenance, and Performance Monitoring Plan for the Interim Action Ground Water Treatment System,* March 2005. Although not listed here, the normal set of locations were sampled. Please refer to the attached trip reports for specific locations sampled and an explanation of why some locations were not sampled.

According to the United States Geological Survey Cisco Gaging Station, the mean daily Colorado River flow rates varied between 2,820 and 3,120 cubic feet (ft) per second.

Time versus concentration graphs for selected key performance indicator wells and major contaminants of concern are included. Data presented in these graphs indicate that contaminant concentrations are at expected levels. Ammonia and uranium concentrations have generally stabilized.

Configuration1 and Configuration 3 extraction wells were not operating due to winter conditions. These remediation wells had been shut down on December 7, 2005. Also, no sampling was conducted for the wells associated with Configuration 2. Therefore, the February sampling event was limited to the Baseline area.

There were no anomalous data points identified for this sampling event. In addition to the standard analytes (ammonia, bromide, chloride, sulfate, TDS, and uranium), other laboratory analyses were conducted. These analyses are listed in the attached trip report for the biogeochemical sampling event. The data are included in this package, but the results will be incorporated and discussed in an upcoming Performance Assessment Report of the Interim Action Well Field for 2006.

The data validations indicate that the data meet the quality control criteria specified for this project. No significant discrepancies were noted regarding sample shipping and receiving, preservation and holding times, instrument calibration, method blanks, or matrix spikes, etc., except as qualified.

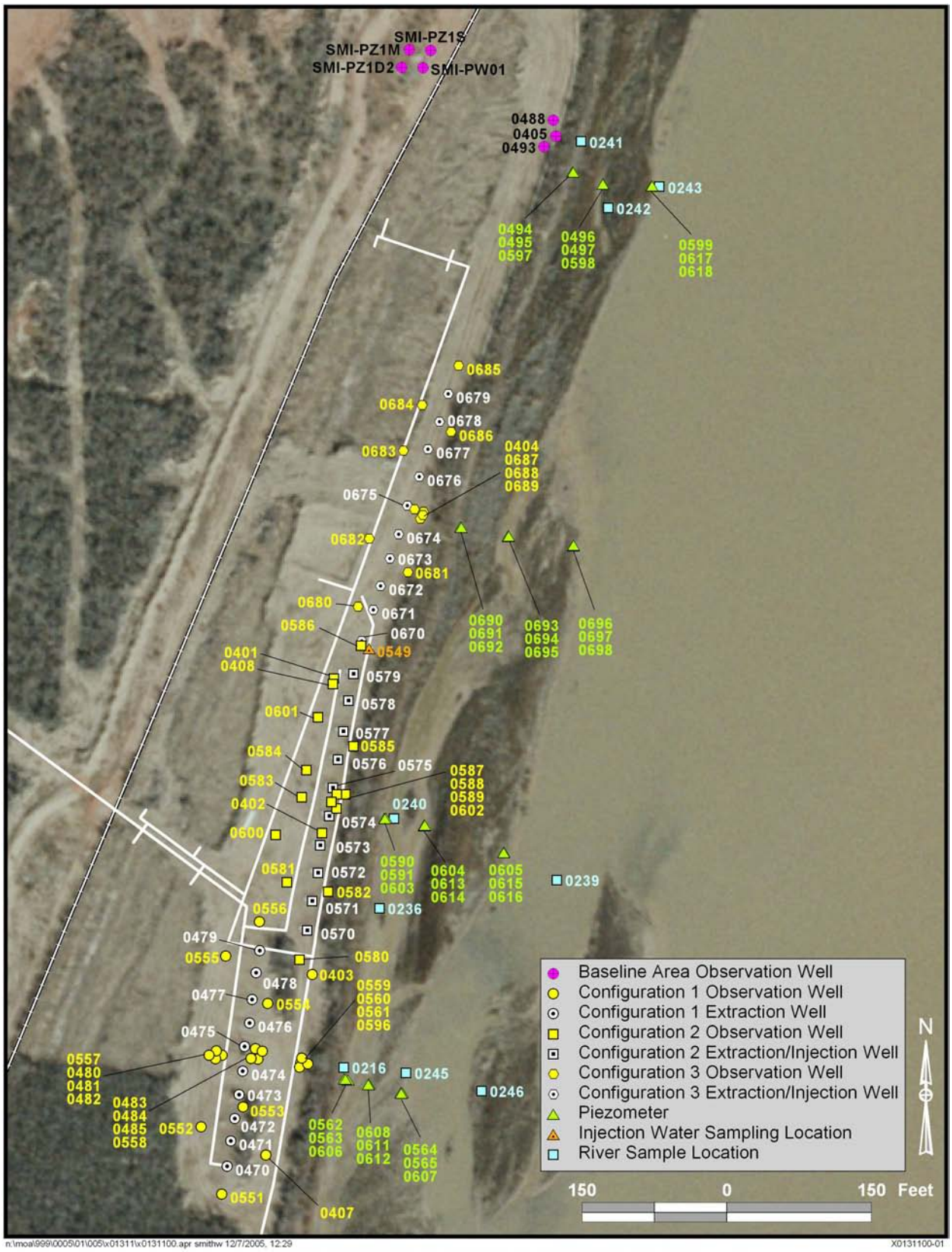
John R. Ford
Ground Water Lead

6-29-2006
Date

End of current text

Sample Location Maps

Sample Locations at the Interim Action Well Field and Baseline Area (may include locations not sampled)



Existing Well Locations

Data Assessment Summary

Water Sampling Field Activities Verification Checklist

Project	Moab, Utah	**Date(s) of Water Sampling**	February 14–16, 2006
Date(s) of Verification	June 19, 2006	**Name of Verifier**	Jeff Price

		Response (Yes, No, NA)	Comments
1.	Is the SAP the primary document directing field procedures?	Yes	
	List other documents, SOP's, instructions.	NA	
2.	Were the sampling locations specified in the planning documents sampled?	No	See trip report for explanation.
3.	Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	
4.	Was an operational check of the field equipment conducted twice daily?	Yes	
	Did the operational checks meet criteria?	Yes	
5.	Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6.	Was the category of the well documented?	Yes	
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?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	Yes	
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?	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 (COC) records completed, and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members?	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

Requisition No. (RIN):	06020305
Sample Event:	February 14–16, 2006
Site(s):	Moab, Utah
Laboratory:	Paragon Analytics
Work Order No.:	0602159
Analysis:	Metals and Inorganics
Validator:	Steve Donivan
Review Date:	March 20, 2005

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data", GT-9(P). 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 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N, NH_3-N	WCH-A-005	MCAWW 350.1	MCAWW 350.1
Bromide, Br	MIS-A-038	SW-846 9056	SW-846 9056
Chloride, Cl	MIS-A-039	SW-846 9056	SW-846 9056
Sulfate, SO4	MIS-A-044	SW-846 9056	SW-846 9056
Total Dissolved Solids, TDS	WCH-A-033	MCAWW 160.1	MCAWW 160.1
Uranium, U	GJO-01	SW-846 3005A	SW-846 6020A

Data Qualifier Summary

Analytical results were qualified as listed in Table 2. Refer to the attached validation worksheets and the sections below for an explanation of the data qualifiers applied.

Table 2. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
0602159-10	2228 (Equip. Blank)	U	U	Less than 5 times the calibration blank

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received 15 samples on February 17, 2006, 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 with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The relinquishment date was entered as 2-16-05 rather than 2-16-06. The sample submittal documents, including the COC form and the sample tickets, had no other errors or omissions.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature within the cooler of 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, and 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.

Method SW-846 6020A

Calibration for uranium was performed on February 21, 2006. The initial calibration was performed using six 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 Method Detection Limit (MDL). Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification (CCV) checks were made at the required frequency, resulting in nine CCVs. All calibration check results met the acceptance criteria. A reporting limit verification check was made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit. The check was within the acceptance criteria range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries were stable and within acceptable ranges.

Method SW-846 9056

The initial calibrations for bromide, chloride, and sulfate were performed using five calibration standards each on February 22, 2006. The calibration curve r^2 values were greater than 0.995 and intercepts were less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration checks were made at the required frequency resulting in five CCVs. The calibration checks met the acceptance criteria.

Method MCAWW 350.1

The initial calibrations for ammonia as N were performed using six calibration standards on February 27, 2006, resulting in a calibration curve with an r^2 value greater than 0.995 and an intercept less than 3 times the MDL. Initial and continuing calibration checks were made at the required frequency resulting in two CCVs. All calibration check results were within the acceptance criteria.

Method MCAWW 160.1

There is no initial or continuing calibration requirement associated with the determination of Total Dissolved Solids (TDS).

Method and Calibration Blanks

The uranium initial and continuing calibration blanks were below the practical quantitation limits but greater than the MDL. The uranium result for sample 0602159-10 was less than 5 times the concentration of the associated continuing calibration blank and is qualified as "U". The bromide, chloride, sulfate, ammonia as N, and TDS method blanks, and initial and continuing calibration blanks were below the MDLs.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) pairs were analyzed for uranium, bromide, and ammonia as N as a measure of method performance in the sample matrix. The spike recoveries met the recovery and precision criteria for all analytes.

Laboratory Replicate Analysis

The relative percent difference values for the laboratory replicate sample and MSD sample results for all analytes were less than 20 percent, indicating acceptable laboratory precision.

Laboratory Control Samples

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 results were acceptable for all analytes.

Metals Serial Dilution

Serial dilutions were performed during the uranium analysis to monitor physical or chemical interferences that may exist in the sample matrix. The result was slightly above the acceptance range. The results were not further qualified because there was no other evidence of a matrix interference.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of uranium to reduce interferences. The required detection limits were achieved 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 ion chromatography data. There were no manual integrations performed, and all peak integrations were satisfactory.

Electronic Data Deliverable File

The electronic data deliverable (EDD) file arrived on March 16, 2006. 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.

General Information

Requisition No. (RIN):	06020306
Sample Event:	February 15, 2006
Site(s):	Moab, Utah
Laboratory:	Severn Trent, St. Louis
Work Order No.:	F6B170205
Analysis:	Metals, Inorganics
Validator:	Steve Donivan
Review Date:	March 10, 2006

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data", GT-9(P) (2004). See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N, NH_3-N	WCH-A-005	MCAWW 350.1	MCAWW 350.1
Bromide, Br	MIS-A-038	MCAWW 300.0A	MCAWW 300.0A
Chemical Oxygen Demand, COD	WCH-A-010	MCAWW 410.4	MCAWW 410.4
Chloride, Cl	MIS-A-039	MCAWW 300.0A	MCAWW 300.0A
Dissolved Organic Carbon, DOC	WCH-A-024	MCAWW 415.1	MCAWW 415.1
Iron, Fe	GJO-16	SW-846 3005A	SW-846 6010B
Manganese, Mn	GJO-17	SW-846 3005A	SW-846 6010B
Nitrite/Nitrate as N, NO_2/NO_3-N	WCH-A-005	MCAWW 353.2	MCAWW 353.2
Phosphate as P	WCH-A-029	MCAWW 365.2	MCAWW 365.2
Selenium, Se	GJO-14	SW-846 3005A	SW-846 6020A
Sulfate, SO_4	MIS-A-044	MCAWW 300.0A	MCAWW 300.0A
Total Dissolved Solids, TDS	WCH-A-033	MCAWW 160.1	MCAWW 160.1
Total Inorganic Carbon, TIC	GJO-49	MCAWW 415.1	MCAWW 415.1
Total Kjeldahl Nitrogen, TKN	WCH-A-039	MCAWW 351.2	MCAWW 351.2
Total Organic Carbon, TOC	WCH-A-025	MCAWW 415.1	MCAWW 415.1
Uranium, U	GJO-01	SW-846 3005A	SW-846 6020A

Data Qualifier Summary

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

Table 4. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
F6B170205-1	0405	COD	J	Matrix spike failure
F6B170205-1	0405	TIC	J	Matrix spike failure
F6B170205-1	0405	TKN	J	Matrix spike failure
F6B170205-4	0488	COD	J	Matrix spike failure
F6B170205-4	0488	TIC	J	Matrix spike failure
F6B170205-4	0488	TKN	J	Matrix spike failure
F6B170205-6	0597	COD	J	Matrix spike failure
F6B170205-8	2229 (0405 Dup)	COD	J	Matrix spike failure
F6B170205-8	2229 (0405 Dup)	TIC	J	Matrix spike failure
F6B170205-8	2229 (0405 Dup)	TKN	J	Matrix spike failure

Sample Shipping/Receiving

Severn Trent Laboratories in St. Louis, Missouri received five water samples on February 17, 2006, accompanied by a COC form. The COC form was checked to confirm that all of the samples were listed on the form with sample collection dates and times, 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.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature within the coolers of 2 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

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.

Method SW-846 6010B

Calibrations for iron and manganese were performed on February 20, 2006, using three calibration standards resulting in calibration curves with r^2 values greater than 0.995. The absolute values of the calibration curve intercepts were less than 3 times the MDL. Calibration and laboratory spike standards were prepared from independent sources. Initial and CCV checks were made at the required frequency, resulting in four CCVs. All calibration checks met the

acceptance criteria. Reporting limit verification checks were made at the beginning and end of the analytical sequence to verify the linearity of the calibration curve near the practical quantitation limit. All results were within the acceptance range.

Method SW-846 6020A

Calibrations for selenium and uranium were performed on February 21, 2006, and February 22, 2006. The initial calibrations were performed using five calibration standards, resulting in calibration curves with r^2 values greater than 0.995. The absolute values of the curve intercepts were less than 3 times the MDL. Calibration and laboratory spike standards were prepared from independent sources. Initial and CCV checks were made at the required frequency, resulting in seven CCVs. All calibration check results met the acceptance criteria. A reporting limit verification check was made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit. The check results for all analytes were within the acceptance criteria range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries were stable and within acceptable ranges.

Method MCAWW 300.0A

The initial calibrations for bromide, chloride, and sulfate were performed using five calibration standards each on February 26, 2006. The calibration curve r^2 values were greater than 0.995 and intercepts were less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration checks were made at the required frequency, resulting in five CCVs. All calibration checks met the acceptance criteria.

Method MCAWW 160.1

There is no initial or continuing calibration requirement associated with the determination of TDS.

Method MCAWW 350.1

The initial calibrations for ammonia as N were performed using six calibration standards on February 22, 2006, resulting in a calibration curve with an r^2 value greater than 0.995 and an intercept less than 3 times the MDL. Initial and CCV checks were made at the required frequency, resulting in two CCVs. All calibration check results met the acceptance criteria.

Method MCAWW 351.2

The initial calibrations for total Kjeldahl nitrogen were performed using five calibration standards on February 22, 2006, resulting in calibration curves with r^2 values greater than 0.995 and intercepts less than 3 times the MDL. Initial and CCV checks were made at the required frequency, resulting in four CCVs. All calibration check results met the acceptance criteria.

Method MCAWW 353.2

The initial calibrations for nitrite/nitrate as N were performed using seven calibration standards on February 23, 2006, resulting in calibration curves with r^2 values greater than 0.995 and intercepts less than 3 times the MDL. Initial and CCV checks were made at the required frequency, resulting in eight CCVs. All calibration check results met the acceptance criteria.

Method MCAWW 365.2

The initial calibrations for phosphate as P were performed using four calibration standards on February 26, 2006, resulting in calibration curves with r^2 values greater than 0.995 and intercepts less than 3 times the MDL. Initial and CCV checks were made at the required frequency resulting in two CCVs. All calibration check results met the acceptance criteria.

Method MCAWW 410.4

There is no initial or continuing calibration requirement associated with the determination of chemical oxygen demand (COD).

Method MCAWW 415.1 Organic Carbon, Total and Dissolved

The initial calibrations for organic carbon were performed using three calibration standards on February 26, 2006, resulting in a calibration curve with an r^2 value greater than 0.995 and an intercept less than 3 times the MDL. Initial and CCV checks were made at the required frequency, resulting in five CCVs. All calibration check results met the acceptance criteria.

Method MCAWW 415.1 Total Inorganic Carbon

The initial calibrations for total inorganic carbon were performed using three calibration standards on February 26, 2006, resulting in calibration curves with r^2 values greater than 0.995 and intercepts less than 3 times the MDL. Initial and CCV checks were made at the required frequency, resulting in three CCVs. All calibration check results met 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. All method blanks and calibration blanks were below the required

detection limits. In cases where blank concentration exceeds the instrument detection limit, the associated sample results are qualified with a "U" flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

MS samples were analyzed for all analytes as a measure of method performance in the sample matrix. The spike recoveries met the recovery and precision criteria for all analytes with the following exceptions: the chemical oxygen demand, total inorganic carbon, and total Kjeldahl nitrogen spike recoveries were outside the acceptance range. All results are qualified with a "J" flag as estimated values.

Laboratory Replicate Analysis

The relative percent difference values for the laboratory replicate sample and MSD sample results for all analytes were less than 20 percent for results that are greater than 5 times the practical quantitation limit, indicating 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 results were acceptable for all analytes.

Metals Serial Dilution

Serial dilutions were performed during the metals analysis to monitor physical or chemical interferences that may exist in the sample matrix. All results met the acceptance criteria.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of selenium and uranium to reduce interferences. The required detection limits were achieved 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 ion chromatography data. There were no manual integrations performed, and all peak integrations were satisfactory.

Electronic Data Deliverable File

The EDD file arrived on March 3, 2006. 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.

General Information

Requisition No. (RIN):	06020307
Sample Event:	February 15, 2006
Site(s):	Moab, Utah
Laboratory:	Microseeps, Pittsburgh, PA
Work Order No.:	P0602269
Analysis:	Dissolved Gasses, Reduced Metals
Validator:	Steve Donivan
Review Date:	March 9, 2006

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data," GT-9(P) (2004). 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
Dissolved Gasses	GJO-52	AM20GAX	AM20GAX
Manganese (II)	GJO-53	Mod.7199	Mod.7199
Iron (II)	GJO-54	Mod.7199	Mod.7199

Data Qualifier Summary

None of the analytical results required qualification.

Sample Shipping/Receiving

Microseeps, Inc., located in Pittsburgh, Pennsylvania, received five water samples on February 17, 2006, accompanied by a COC form. The COC form was checked to confirm that all of the samples were listed on the form 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.

Preservation and Holding Times

The sample shipment was received cool and intact on February 17, 2006. All samples were received in the correct container types and had been preserved correctly for the requested analyses. There are no standard holding times for these analytes, and the analyses were completed as quickly as possible.

Laboratory Instrument Calibration

Data for this RIN were reported at Analysis Service Level C (results plus quality control) and do not include calibration data.

Method Blanks

All method blank results were below the practical quantitation limits.

Matrix Spike Analysis

MS and MSD were analyzed for iron (II) and manganese (II) as a measure of method performance in the sample matrix. The MS/MSD analyses resulted in acceptable recovery and precision for all analytes.

Laboratory Replicate Analysis

The relative percent difference values for the LCS duplicate samples and MSD sample results for all analytes were less than 20 percent indicating acceptable 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 analysis categories.

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.

Electronic Data Deliverable File

The EDD file arrived on March 8, 2006. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Field Analyses/Activities

The following information summarizes the field analyses and activities for this sampling event period.

Field Activities

All monitor well results were purged and sampled using the low-flow sampling method; extraction wells are not sampled using the low-flow sampling method.

One equipment blank was collected and analyzed for the same constituents as the Moab environmental samples. Analyte concentrations measured in the equipment blanks were below their respective contract-required detection limits and are considered acceptable. Two duplicate samples were collected. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, U.S. Environmental Protection Agency (EPA) guidance for laboratory duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. With the exception of one dissolved organic carbon, methane, phosphorous, total inorganic carbon, chemical oxygen demand, and dissolved oxygen, all other results met the criteria of +/-20 relative percent difference and are considered acceptable.

Certification

Results were reported in correct units for all analytes requested. Appropriate contract-required laboratory qualifiers and target analyte lists were used. The required detection limits were met when possible or an explanation of why they were not met was given in the laboratory case narrative. All analytical quality control criteria were met except as qualified on the Ground Water Quality Data by Parameter, Surface Water Quality by Parameter, or equipment/trip blank database printouts. The meaning of data qualifiers is defined on the database printouts or defined in the EPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration, Document Number ILMO2.0, 1991. All data in this package are considered validated and may be treated as final results.

Laboratory Validation Lead: Steve Donivan _____ 6-29-2006 Date

Field Activities Validation Lead: for Jeff Price _____ 6-29-2006 Date

Attachment 1

Data Presentation

Minimums and Maximums Report

Minimums and Maximums Report

The Minimums and Maximums Report is generated by a data validation application (DataVal) used to query the SEEPro database. The DataVal compares the new data set with historical data and lists all new data that fall outside the historical data range. Values listed in the report are further screened and the results are not considered anomalous if: (1) identified low concentrations are the result of low detection limits; (2) the concentration detected is within 50 percent of historical minimum or maximum values; or (3) there were fewer than five historical samples for comparison. There were no anomalous data identified from this sampling event.

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 06020305
HISTORY BEGIN DATE: comparing to all historical data
REPORT DATE: 06/19/06 12:08:28: PM

				CURRENT			HISTORICAL MAXIMUM			HISTORICAL MINIMUM			COUNT	
SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIERS LAB	DATA	RESULT	QUALIFIERS LAB	DATA	RESULT	QUALIFIERS LAB	DATA	N	N BELOW DETECT
MOA01	SMI-PZ1M	02/14/2006	Chloride	6100		F	14600			6600		F	5	0
MOA01	SMI-PZ1M	02/14/2006	Uranium	3.9		F	3.6126			3.4		F	5	0
MOA01	SMI-PZ1S	02/14/2006	Ammonia Total as N	390		F	565			430		F	5	0
MOA01	SMI-PZ1S	02/14/2006	Chloride	1300		F	1800		F	1442.7			5	0

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

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- C Pesticide result confirmed by GC-MS.
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- D Analyte determined in diluted sample.
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- > Result above upper detection limit.
- J Estimated

DATA QUALIFIERS:

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

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters
LAB CODE: MSP, MICROSEEPS LABORATORY (Pittsburgh, PA)
LAB REQUISITION(S): 06020307
HISTORY BEGIN DATE: comparing to all historical data
REPORT DATE: 06/19/06 01:20:22: PM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	CURRENT RESULT	CURRENT QUALIFIERS LAB	CURRENT QUALIFIERS DATA	HISTORICAL MAXIMUM RESULT	HISTORICAL MAXIMUM QUALIFIERS LAB	HISTORICAL MAXIMUM QUALIFIERS DATA	HISTORICAL MINIMUM RESULT	HISTORICAL MINIMUM QUALIFIERS LAB	HISTORICAL MINIMUM QUALIFIERS DATA	COUNT N	COUNT N BELOW DETECT
MOA01	0405	02/15/2006	Dissolved Oxygen	4.1		F	3.8		F	0.97		F	7	0

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

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
C	Pesticide result confirmed by GC-MS.
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
D	Analyte determined in diluted sample.
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
>	Result above upper detection limit.
J	Estimated

DATA QUALIFIERS:

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

Water Quality Data

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Ammonia Total as N	mg/L	0243	SL	02/15/2006	0001	0.00 - 0.00	0.28			#	0.1	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	392.000		F	#	2.19	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	408.000		F	#	4.39	-
	mg/L	0488	WL	02/15/2006	0001	39.00 - 39.00	740		F	#	50	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	700.000		F	#	8.78	-
	mg/L	0493	WL	02/15/2006	0001	54.00 - 54.00	920		F	#	50	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	144.000		QF	#	2.19	-
	mg/L	0497	WL, PZ	02/15/2006	0001	4.80 - 4.80	370		QF	#	50	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	419.000		QF	#	4.39	-
	mg/L	0598	WL, PZ	02/15/2006	0001	9.60 - 9.60	530		F	#	50	-
	mg/L	0599	WL, PZ	02/15/2006	0001	9.90 - 9.90	480		QF	#	50	-
	mg/L	0617	WL, PZ	02/15/2006	0001	2.20 - 2.20	130		QF	#	10	-
	mg/L	0618	WL, PZ	02/15/2006	0001	5.80 - 5.80	450		QF	#	50	-
	mg/L	SMI-PW01	WL	02/14/2006	0001	40.00 - 40.00	700		F	#	50	-
	mg/L	SMI-PW01	WL	02/14/2006	0002	40.00 - 40.00	700		F	#	50	-
	mg/L	SMI-PZ1D2	WL	02/14/2006	0001	73.00 - 73.00	1800		F	#	50	-
	mg/L	SMI-PZ1M	WL	02/14/2006	0001	57.00 - 57.00	1100		F	#	50	-
	mg/L	SMI-PZ1S	WL	02/14/2006	0001	18.00 - 18.00	390		F	#	50	-
Bromide	mg/L	0243	SL	02/15/2006	0001	0.00 - 0.00	0.4	U		#	0.4	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	0.88	B	F	#	0.26	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	0.66	B	F	#	0.26	-
	mg/L	0488	WL	02/15/2006	0001	39.00 - 39.00	4	U	F	#	4	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	0.83	B	F	#	0.26	-
	mg/L	0493	WL	02/15/2006	0001	54.00 - 54.00	10	U	F	#	10	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	1.5	B	QF	#	0.26	-
	mg/L	0496	WL, PZ	02/15/2006	0001	2.70 - 2.70	4	U	QF	#	4	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Bromide	mg/L	0497	WL, PZ	02/15/2006	0001	4.80 - 4.80	4	U	QF	#	4	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	0.67	B	QF	#	0.26	-
	mg/L	0598	WL, PZ	02/15/2006	0001	9.60 - 9.60	4	U	F	#	4	-
	mg/L	0599	WL, PZ	02/15/2006	0001	9.90 - 9.90	4	U	QF	#	4	-
	mg/L	0617	WL, PZ	02/15/2006	0001	2.20 - 2.20	10	U	QF	#	10	-
	mg/L	0618	WL, PZ	02/15/2006	0001	5.80 - 5.80	4	U	QF	#	4	-
	mg/L	SMI-PW01	WL	02/14/2006	0001	40.00 - 40.00	4	U	F	#	4	-
	mg/L	SMI-PW01	WL	02/14/2006	0002	40.00 - 40.00	4	U	F	#	4	-
	mg/L	SMI-PZ1D2	WL	02/14/2006	0001	73.00 - 73.00	20	U	F	#	20	-
	mg/L	SMI-PZ1M	WL	02/14/2006	0001	57.00 - 57.00	10	U	F	#	10	-
	mg/L	SMI-PZ1S	WL	02/14/2006	0001	18.00 - 18.00	4	U	F	#	4	-
Carbon Dioxide	mg/L	0405	WL	02/15/2006	0002	18.00 - 18.00	170.000		F	#	0.53	-
	mg/L	0405	WL	02/15/2006	0004	18.00 - 18.00	160.000		F	#	0.53	-
	mg/L	0488	WL	02/15/2006	0002	26.00 - 26.00	110.000		F	#	0.53	-
	mg/L	0495	WL, PZ	02/15/2006	0002	5.10 - 5.10	91.000		QF	#	0.53	-
	mg/L	0597	WL, PZ	02/15/2006	0002	9.80 - 9.80	22.000		QF	#	0.53	-
Chemical Oxygen Demand	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	510		JF	#	9.2	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	347		JF	#	9.2	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	337		JF	#	9.2	-
Chloride	mg/L	0243	SL	02/15/2006	0001	0.00 - 0.00	150			#	4	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	1540		F	#	25	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	1540		F	#	25	-
	mg/L	0488	WL	02/15/2006	0001	39.00 - 39.00	1800		F	#	100	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	1500		F	#	25	-
	mg/L	0493	WL	02/15/2006	0001	54.00 - 54.00	7800		F	#	100	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	3660		QF	#	25	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Chloride	mg/L	0496	WL, PZ	02/15/2006	0001	2.70 - 2.70	2600		QF	#	100	-
	mg/L	0497	WL, PZ	02/15/2006	0001	4.80 - 4.80	2400		QF	#	100	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	1940		QF	#	25	-
	mg/L	0598	WL, PZ	02/15/2006	0001	9.60 - 9.60	2500		F	#	100	-
	mg/L	0599	WL, PZ	02/15/2006	0001	9.90 - 9.90	2100		QF	#	100	-
	mg/L	0617	WL, PZ	02/15/2006	0001	2.20 - 2.20	4100		QF	#	100	-
	mg/L	0618	WL, PZ	02/15/2006	0001	5.80 - 5.80	2200		QF	#	100	-
	mg/L	SMI-PW01	WL	02/14/2006	0001	40.00 - 40.00	1500		F	#	100	-
	mg/L	SMI-PW01	WL	02/14/2006	0002	40.00 - 40.00	1600		F	#	40	-
	mg/L	SMI-PZ1D2	WL	02/14/2006	0001	73.00 - 73.00	44000		F	#	1000	-
	mg/L	SMI-PZ1M	WL	02/14/2006	0001	57.00 - 57.00	6100		F	#	100	-
	mg/L	SMI-PZ1S	WL	02/14/2006	0001	18.00 - 18.00	1300		F	#	40	-
Dissolved Organic Carbon	mg/L	0405	WL	02/15/2006	N005	18.00 - 18.00	5.3		F	#	0.95	-
	mg/L	0405	WL	02/15/2006	N006	18.00 - 18.00	8.4		F	#	0.47	-
	mg/L	0488	WL	02/15/2006	N005	26.00 - 26.00	5.6		F	#	0.47	-
	mg/L	0597	WL, PZ	02/15/2006	N005	9.80 - 9.80	4.7		QF	#	0.47	-
Dissolved Oxygen	mg/L	0243	SL	02/15/2006	N001	0.00 - 0.00	13.36			#	-	-
	mg/L	0405	WL	02/15/2006	0002	18.00 - 18.00	2.900		F	#	0.07	-
	mg/L	0405	WL	02/15/2006	0004	18.00 - 18.00	4.100		F	#	0.07	-
	mg/L	0405	WL	02/15/2006	N005	18.00 - 18.00	1.30		F	#	-	-
	mg/L	0488	WL	02/15/2006	0002	26.00 - 26.00	3.700		F	#	0.07	-
	mg/L	0488	WL	02/15/2006	N001	39.00 - 39.00	0.68		F	#	-	-
	mg/L	0488	WL	02/15/2006	N005	26.00 - 26.00	0.79		F	#	-	-
	mg/L	0493	WL	02/15/2006	N001	46.00 - 46.00	1.12		F	#	-	-
	mg/L	0493	WL	02/15/2006	N001	54.00 - 54.00	0.44		F	#	-	-
	mg/L	0495	WL, PZ	02/15/2006	0002	5.10 - 5.10	4.300		QF	#	0.07	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Dissolved Oxygen	mg/L	0495	WL, PZ	02/15/2006	N005	5.10 - 5.10	4.11		QF	#	-	-
	mg/L	0496	WL, PZ	02/15/2006	N001	2.70 - 2.70	6.43		QF	#	-	-
	mg/L	0497	WL, PZ	02/15/2006	N001	4.80 - 4.80	3.62		QF	#	-	-
	mg/L	0597	WL, PZ	02/15/2006	0002	9.80 - 9.80	2.700		QF	#	0.07	-
	mg/L	0597	WL, PZ	02/15/2006	N005	9.80 - 9.80	3.90		QF	#	-	-
	mg/L	0598	WL, PZ	02/15/2006	N001	9.60 - 9.60	2.37		F	#	-	-
	mg/L	0599	WL, PZ	02/15/2006	N001	9.90 - 9.90	2.30		QF	#	-	-
	mg/L	0617	WL, PZ	02/15/2006	N001	2.20 - 2.20	6.87		QF	#	-	-
	mg/L	0618	WL, PZ	02/15/2006	N001	5.80 - 5.80	7.16		QF	#	-	-
	mg/L	SMI-PW01	WL	02/14/2006	N001	40.00 - 40.00	1.30		F	#	-	-
	mg/L	SMI-PZ1D2	WL	02/14/2006	N001	73.00 - 73.00	0.78		F	#	-	-
	mg/L	SMI-PZ1M	WL	02/14/2006	N001	57.00 - 57.00	0.82		F	#	-	-
	mg/L	SMI-PZ1S	WL	02/14/2006	N001	18.00 - 18.00	1.53		F	#	-	-
Iron	mg/L	0405	WL	02/15/2006	0001	18.00 - 18.00	0.05		F	#	0.03	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	0.125	U	F	#	0.125	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	0.125	U	F	#	0.125	-
	mg/L	0488	WL	02/15/2006	0001	26.00 - 26.00	0.03		F	#	0.03	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	0.125	U	F	#	0.125	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	0.230	B	QF	#	0.125	-
	mg/L	0495	WL, PZ	02/16/2006	0001	5.10 - 5.10	0.14		QF	#	0.03	-
	mg/L	0597	WL, PZ	02/15/2006	0001	9.80 - 9.80	0.56		QF	#	0.03	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	0.407	B	QF	#	0.125	-
Iron (II)	mg/L	0405	WL	02/15/2006	0002	18.00 - 18.00	0.5	J	F	#	0.1	-
	mg/L	0405	WL	02/15/2006	0004	18.00 - 18.00	0.5	J	F	#	0.1	-
	mg/L	0488	WL	02/15/2006	0002	26.00 - 26.00	0.5	J	F	#	0.1	-
	mg/L	0495	WL, PZ	02/15/2006	0002	5.10 - 5.10	0.4	J	QF	#	0.1	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Iron (II)	mg/L	0597	WL, PZ	02/15/2006	0002	9.80 - 9.80	1.0	U	QF	#	0.1	-
Manganese	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	6.520		F	#	0.0123	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	6.510		F	#	0.0123	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	6.080		F	#	0.0123	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	4.760		QF	#	0.0123	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	2.770		QF	#	0.0123	-
Manganese (II)	mg/L	0405	WL	02/15/2006	0002	18.00 - 18.00	11.0		F	#	-	-
	mg/L	0405	WL	02/15/2006	0004	18.00 - 18.00	10.0		F	#	-	-
	mg/L	0488	WL	02/15/2006	0002	26.00 - 26.00	11.0		F	#	-	-
	mg/L	0495	WL, PZ	02/15/2006	0002	5.10 - 5.10	6.5		QF	#	-	-
	mg/L	0597	WL, PZ	02/15/2006	0002	9.80 - 9.80	4.2		QF	#	-	-
Methane	ug/L	0405	WL	02/15/2006	0002	18.00 - 18.00	2.600		F	#	0.011	-
	ug/L	0405	WL	02/15/2006	0004	18.00 - 18.00	0.880		F	#	0.011	-
	ug/L	0488	WL	02/15/2006	0002	26.00 - 26.00	3.000		F	#	0.011	-
	ug/L	0495	WL, PZ	02/15/2006	0002	5.10 - 5.10	3.100		QF	#	0.011	-
	ug/L	0597	WL, PZ	02/15/2006	0002	9.80 - 9.80	0.900		QF	#	0.011	-
Nitrate + Nitrite as Nitrogen	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	109.000		F	#	1.24	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	105.000		F	#	0.618	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	50.000		F	#	0.309	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	200.000		QF	#	1.24	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	114.000		QF	#	0.618	-
Nitrogen, Total	mg/L	0405	WL	02/15/2006	0002	18.00 - 18.00	18.000		F	#	0.06	-
	mg/L	0405	WL	02/15/2006	0004	18.00 - 18.00	20.000		F	#	0.06	-
	mg/L	0488	WL	02/15/2006	0002	26.00 - 26.00	18.000		F	#	0.06	-
	mg/L	0495	WL, PZ	02/15/2006	0002	5.10 - 5.10	19.000		QF	#	0.06	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Nitrogen, Total	mg/L	0597	WL, PZ	02/15/2006	0002	9.80 - 9.80	14.000		QF	#	0.06	-
Phosphorus	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	0.403		F	#	0.0101	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	0.153		F	#	0.0101	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	0.0996		F	#	0.0101	-
Selenium	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	0.0201	B	F	#	0.005	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	0.0210	B	F	#	0.005	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	0.0103	B	F	#	0.005	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	0.0230	B	QF	#	0.005	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	0.0050	U	QF	#	0.005	-
Sulfate	mg/L	0243	SL	02/15/2006	0001	0.00 - 0.00	240			#	10	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	7520		F	#	61.2	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	7440		F	#	61.2	-
	mg/L	0488	WL	02/15/2006	0001	39.00 - 39.00	11000		F	#	250	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	9400		F	#	61.2	-
	mg/L	0493	WL	02/15/2006	0001	54.00 - 54.00	16000		F	#	250	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	13500		QF	#	61.2	-
	mg/L	0496	WL, PZ	02/15/2006	0001	2.70 - 2.70	8800		QF	#	250	-
	mg/L	0497	WL, PZ	02/15/2006	0001	4.80 - 4.80	9700		QF	#	250	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	8230		QF	#	61.2	-
	mg/L	0598	WL, PZ	02/15/2006	0001	9.60 - 9.60	9700		F	#	250	-
	mg/L	0599	WL, PZ	02/15/2006	0001	9.90 - 9.90	8800		QF	#	250	-
	mg/L	0617	WL, PZ	02/15/2006	0001	2.20 - 2.20	15000		QF	#	250	-
	mg/L	0618	WL, PZ	02/15/2006	0001	5.80 - 5.80	9200		QF	#	250	-
	mg/L	SMI-PW01	WL	02/14/2006	0001	40.00 - 40.00	9300		F	#	250	-
	mg/L	SMI-PW01	WL	02/14/2006	0002	40.00 - 40.00	9700		F	#	100	-
	mg/L	SMI-PZ1D2	WL	02/14/2006	0001	73.00 - 73.00	8300		F	#	50	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Sulfate	mg/L	SMI-PZ1M	WL	02/14/2006	0001	57.00 - 57.00	17000		F	#	250	-
	mg/L	SMI-PZ1S	WL	02/14/2006	0001	18.00 - 18.00	7300		F	#	100	-
Total Dissolved Solids	mg/L	0243	SL	02/15/2006	0001	0.00 - 0.00	700			#	40	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	13500		F	#	3.5	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	13500		F	#	3.5	-
	mg/L	0488	WL	02/15/2006	0001	39.00 - 39.00	18000		F	#	400	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	15200		F	#	3.5	-
	mg/L	0493	WL	02/15/2006	0001	54.00 - 54.00	33000		F	#	1000	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	25100		QF	#	3.5	-
	mg/L	0496	WL, PZ	02/15/2006	0001	2.70 - 2.70	16000		QF	#	400	-
	mg/L	0497	WL, PZ	02/15/2006	0001	4.80 - 4.80	17000		QF	#	400	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	13900		QF	#	3.5	-
	mg/L	0598	WL, PZ	02/15/2006	0001	9.60 - 9.60	18000		F	#	400	-
	mg/L	0599	WL, PZ	02/15/2006	0001	9.90 - 9.90	16000		QF	#	400	-
	mg/L	0617	WL, PZ	02/15/2006	0001	2.20 - 2.20	29000		QF	#	400	-
	mg/L	0618	WL, PZ	02/15/2006	0001	5.80 - 5.80	17000		QF	#	400	-
	mg/L	SMI-PW01	WL	02/14/2006	0001	40.00 - 40.00	16000		F	#	400	-
	mg/L	SMI-PW01	WL	02/14/2006	0002	40.00 - 40.00	16000		F	#	400	-
	mg/L	SMI-PZ1D2	WL	02/14/2006	0001	73.00 - 73.00	78000		F	#	2000	-
	mg/L	SMI-PZ1M	WL	02/14/2006	0001	57.00 - 57.00	31000		F	#	1000	-
	mg/L	SMI-PZ1S	WL	02/14/2006	0001	18.00 - 18.00	12000		F	#	400	-
Total Inorganic Carbon	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	85.6		JF	#	11.1	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	238		JF	#	44.4	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	259		JF	#	44.4	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	213		JQF	#	44.4	-
Total Kjeldahl Nitrogen	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	553		JF	#	58	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Total Kjeldahl Nitrogen	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	547		JF	#	58	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	1110		JF	#	116	-
Uranium	mg/L	0243	SL	02/15/2006	0001	0.00 - 0.00	0.012			#	2.4E-06	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	2.600		F	#	0.0105	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	2.680		F	#	0.0105	-
	mg/L	0488	WL	02/15/2006	0001	39.00 - 39.00	2.600		F	#	0.00024	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	2.430		F	#	0.0105	-
	mg/L	0493	WL	02/15/2006	0001	54.00 - 54.00	3.500		F	#	0.00024	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	13.400		QF	#	0.0105	-
	mg/L	0497	WL, PZ	02/15/2006	0001	4.80 - 4.80	1.200		QF	#	0.00024	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	1.290		QF	#	0.0105	-
	mg/L	0598	WL, PZ	02/15/2006	0001	9.60 - 9.60	3.700		F	#	0.00012	-
	mg/L	0599	WL, PZ	02/15/2006	0001	9.90 - 9.90	3.000		QF	#	0.00024	-
	mg/L	0617	WL, PZ	02/15/2006	0001	2.20 - 2.20	2.700		QF	#	0.00024	-
	mg/L	0618	WL, PZ	02/15/2006	0001	5.80 - 5.80	0.710		QF	#	0.00012	-
	mg/L	SMI-PW01	WL	02/14/2006	0001	40.00 - 40.00	2.400		F	#	0.00024	-
	mg/L	SMI-PW01	WL	02/14/2006	0002	40.00 - 40.00	2.300		F	#	0.00024	-
	mg/L	SMI-PZ1D2	WL	02/14/2006	0001	73.00 - 73.00	1.100		F	#	0.00012	-
	mg/L	SMI-PZ1M	WL	02/14/2006	0001	57.00 - 57.00	3.900		F	#	0.00024	-
	mg/L	SMI-PZ1S	WL	02/14/2006	0001	18.00 - 18.00	1.600	E	F	#	0.00012	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:27 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY

RECORDS: SELECTED FROM USEE200 WHERE site_code='MOA01' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND cas in('NH3+NH4-N','BROMIDE','00124-38-9','COD','CHLORIDE','DOC','07782-44-7','07439-89-6','FE (II)','07439-96-5','MN (II)','000074-82-8','NO3+NO2 AS N','07727-37-9','007723-14-0','07782-49-2','SULFATE','TDS','TIC','TKN','TOC','07440-61-1') AND DATE_SAMPLED between #2/12/2006# and #2/17/2006#

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

LOCATION TYPES: SL SURFACE LOCATION WL WELL

LOCATION SUBTYPES: PZ Piezometer

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: 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
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

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

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

Environmental Sciences Laboratory
Water Quality Data

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:09 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Biochemical Oxygen Dema	mg/L	0405	WL	02/15/2006	N001	18.00 - 18.00	-0.9	U	F	#	0.1	-
	mg/L	0488	WL	02/15/2006	N001	26.00 - 26.00	0.29		F	#	0.1	-
	mg/L	0495	WL, PZ	02/16/2006	N001	5.10 - 5.10	2.51		QF	#	0.1	-
	mg/L	0597	WL, PZ	02/15/2006	N001	9.80 - 9.80	-1.1	U	QF	#	0.1	-
Iron	mg/L	0405	WL	02/15/2006	0001	18.00 - 18.00	0.05		F	#	0.03	-
	mg/L	0405	WL	02/15/2006	0005	18.00 - 18.00	0.125	U	F	#	0.125	-
	mg/L	0405	WL	02/15/2006	0006	18.00 - 18.00	0.125	U	F	#	0.125	-
	mg/L	0488	WL	02/15/2006	0001	26.00 - 26.00	0.03		F	#	0.03	-
	mg/L	0488	WL	02/15/2006	0005	26.00 - 26.00	0.125	U	F	#	0.125	-
	mg/L	0495	WL, PZ	02/15/2006	0005	5.10 - 5.10	0.230	B	QF	#	0.125	-
	mg/L	0495	WL, PZ	02/16/2006	0001	5.10 - 5.10	0.14		QF	#	0.03	-
	mg/L	0597	WL, PZ	02/15/2006	0001	9.80 - 9.80	0.56		QF	#	0.03	-
	mg/L	0597	WL, PZ	02/15/2006	0005	9.80 - 9.80	0.407	B	QF	#	0.125	-
Nitrifying Bacteria	cfu/mL	0405	WL	02/15/2006	N001	18.00 - 18.00	10000		F	#	1000	-
	cfu/mL	0488	WL	02/15/2006	N001	26.00 - 26.00	100000		F	#	1000	-
	cfu/mL	0495	WL, PZ	02/16/2006	N001	5.10 - 5.10	1000	U	QF	#	1000	-
	cfu/mL	0597	WL, PZ	02/15/2006	N001	9.80 - 9.80	10000		QF	#	1000	-
Nitrite as Nitrogen	mg/L	0405	WL	02/15/2006	0001	18.00 - 18.00	0.017		F	#	0.005	-
	mg/L	0488	WL	02/15/2006	0001	26.00 - 26.00	0.024		F	#	0.005	-
	mg/L	0495	WL, PZ	02/16/2006	0001	5.10 - 5.10	0.035		QF	#	0.005	-
	mg/L	0597	WL, PZ	02/15/2006	0001	9.80 - 9.80	1.44		QF	#	0.005	-
ortho-Phosphate	mg/L	0405	WL	02/15/2006	0001	18.00 - 18.00	0.3	U	F	#	0.3	-
	mg/L	0488	WL	02/15/2006	0001	26.00 - 26.00	0.3	U	F	#	0.3	-
	mg/L	0495	WL, PZ	02/16/2006	0001	5.10 - 5.10	0.3	U	QF	#	0.3	-
	mg/L	0597	WL, PZ	02/15/2006	0001	9.80 - 9.80	2.3		QF	#	0.3	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:09 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Sulfide	mg/L	0405	WL	02/15/2006	0001	18.00 - 18.00	0.01	U	F	#	0.01	-
	mg/L	0488	WL	02/15/2006	0001	26.00 - 26.00	0.01	U	F	#	0.01	-
	mg/L	0495	WL, PZ	02/16/2006	0001	5.10 - 5.10	0.01		QF	#	0.01	-
	mg/L	0597	WL, PZ	02/15/2006	0001	9.80 - 9.80	0.01	U	QF	#	0.01	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 6/19/2006 4:09 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY

RECORDS: SELECTED FROM USEE200 WHERE site_code='MOA01' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND cas in('00010-26-4','07439-89-6','NITRIF BACTE','NITRITE AS N','00011-36-9','SULFIDE') AND DATE_SAMPLED between #2/12/2006# and #2/17/2006#

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

LOCATION TYPES: WL WELL

LOCATION SUBTYPES: PZ Piezometer

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
>	Result above upper detection limit.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: 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
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

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

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 6/20/2006 8:53 am

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0405	O	3968.47	02/15/2006	10:50	14.37	3954.10	
0488		3968.48	02/15/2006	09:50	14.25	3954.23	
0493		3967.89	02/15/2006	12:57	13.84	3954.05	
0494		3959.27	02/14/2006			-	D
0495		3957.81	02/14/2006	14:00	4.01	3953.80	
0496		3957.48	02/14/2006	14:15	3.73	3953.75	
0497		3955.66	02/14/2006	14:19	2.08	3953.58	
0597		3959.67	02/14/2006	14:06	5.98	3953.69	
0598		3957.38	02/14/2006	14:25	4.72	3952.66	
0599		3955.93	02/14/2006	14:53	2.31	3953.62	
0617		3956.76	02/14/2006	14:40	3.57	3953.19	
0618		3954.96	02/14/2006	14:48	1.73	3953.23	
SMI-PW01	O	3968.45	02/14/2006	16:43	14.00	3954.45	
SMI-PZ1D2	O	3968.26	02/14/2006	16:11	14.64	3953.62	
SMI-PZ1M	O	3968.29	02/14/2006	15:52	13.86	3954.43	
SMI-PZ1S	O	3969.13	02/14/2006	15:32	14.74	3954.39	

RECORDS: SELECTED FROM USEE700 WHERE site_code='MOA01' AND LOG_DATE between #2/10/2006# and #2/18/2006#

FLOW CODES: O ON-SITE

WATER LEVEL FLAGS:
D Dry

Blanks Report

BLANKS REPORT
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 06020305
REPORT DATE: 06/19/06 12:08:08: PM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	ID	UNITS	RESULT	QUALIFIERS LAB	DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
Ammonia Total as N	MOA01	0999	02/16/2006	0001	mg/L	0.1	U		0.1		E
Bromide	MOA01	0999	02/16/2006	0001	mg/L	0.2	U		0.2		E
Chloride	MOA01	0999	02/16/2006	0001	mg/L	0.2	U		0.2		E
Sulfate	MOA01	0999	02/16/2006	0001	mg/L	0.52			0.5		E
Total Dissolved Solids	MOA01	0999	02/16/2006	0001	mg/L	20	U		20		E
Uranium	MOA01	0999	02/16/2006	0001	mg/L	0.000021	B	U	0.0000024		E

BLANKS REPORT
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 06020305
REPORT DATE: 06/19/06 12:08:08: PM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	ID	UNITS	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE

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

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
C	Pesticide result confirmed by GC-MS.
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
D	Analyte determined in diluted sample.
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
>	Result above upper detection limit.
J	Estimated

DATA QUALIFIERS:

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

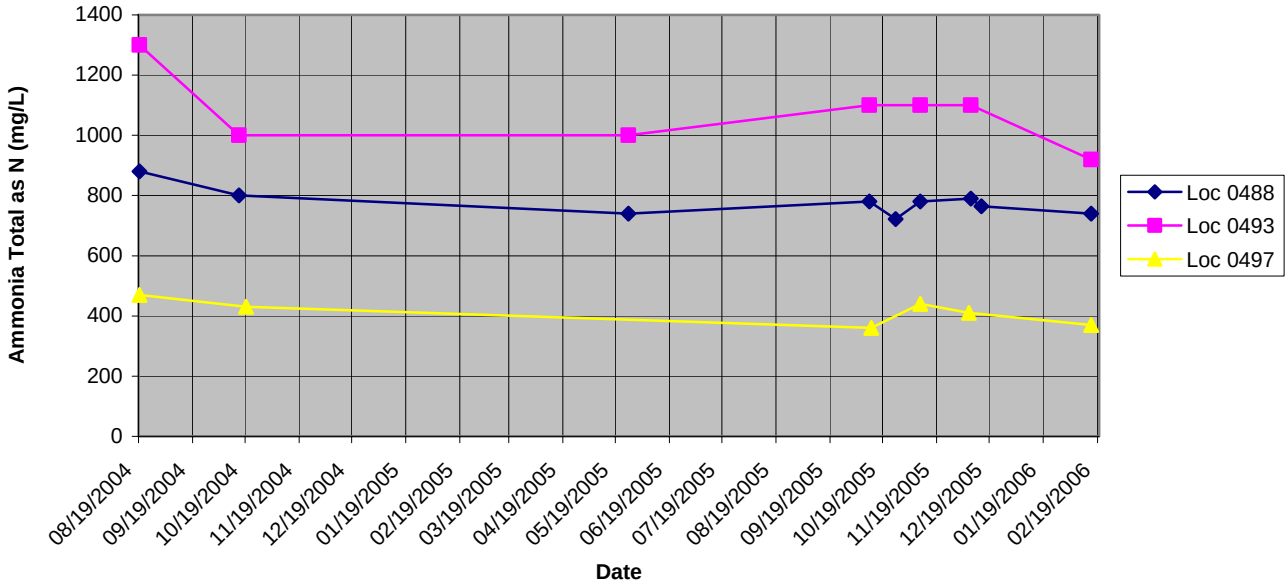
SAMPLE TYPES:

E	EQUIPMENT BLANK

Time Versus Concentration Graphs

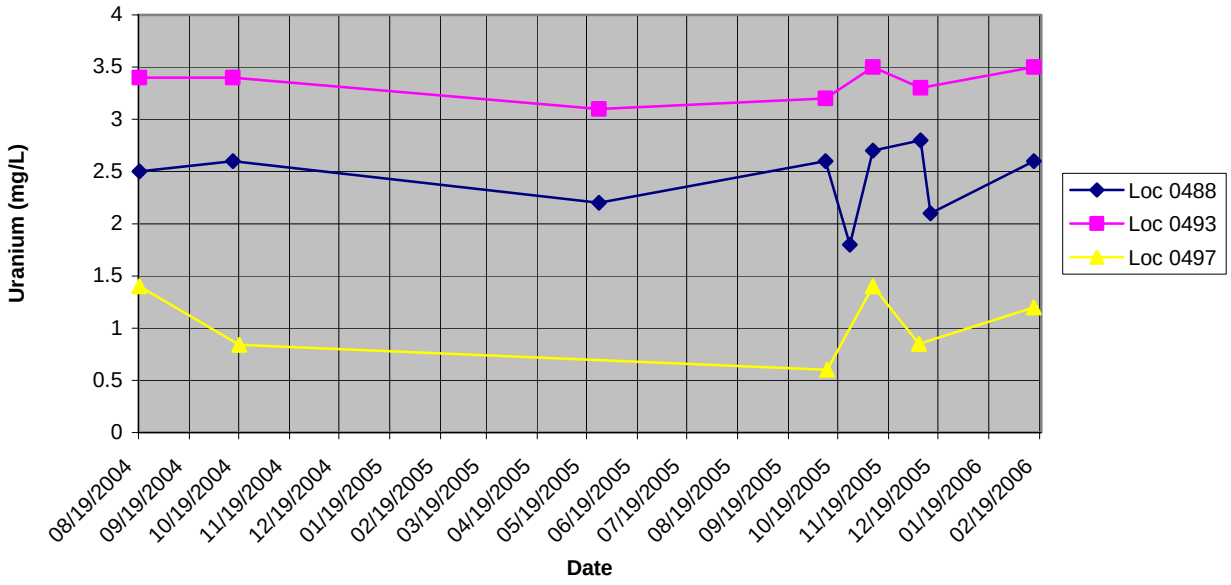
Moab Site (MOA01)

Ammonia Total as N Concentration



Moab Site (MOA01)

Uranium Concentration



Attachment 2

Trip Reports

Stoller

established 1959

DATE: March 16, 2006

TO: John Ford

FROM: K. G. Pill

SUBJECT: Trip Report

Site: Moab – Interim Action Baseline Area Well Field Monthly Sampling – February 2006.

Date of Sampling Event: February 14 through 16, 2006.

Team Members: Ken Pill and Emile Bettez.

Sampling Event Background: This sampling event represents the first time the baseline area has been sampled in 2006.

Number of Locations Sampled: Six observation wells (0488, 0493, SMI-PW01, SMI-PZ1D2, SMI-PZ1M, and SMI-PZ1S), six piezometers (0496, 0497, 0598, 0599, 0617, and 0618), and one surface water location (0243) were sampled. Including one duplicate and one equipment blank, a total of 15 samples were collected.

Locations in Which Field Parameters Were Measured Only: Field parameters were measured at observation well 0493 from a depth of 46 feet (ft) below ground surface (bgs). This sample was not submitted to Paragon for laboratory analysis.

Locations Not Sampled/Reason: Observation wells 0405 and 0488 (from 26 ft bgs) and piezometers 0495 and 0597 were sampled during this same time frame as part of the biogeochemistry sampling event (details are provided in a separate trip report). Surface water locations 0241 and 0242 and piezometer 0494 were dry. As a result, samples were not collected from these locations.

Sample Analysis: Submitted samples were analyzed for ammonia as N, bromide, chloride, sulfate, total dissolved solids, and uranium.

Field Variance: Only a 125-milliliter (mL) sample was collected for uranium analysis, as opposed to the standard 500-mL sample volume for metals. No other metals are being sampled, and this volume is sufficient for the uranium analysis. Limited sample volume was available for analysis from locations 0496 and 0617. These samples were split and preserved as directed by the laboratory for proper analysis.

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

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
2227	SMI-PW01	Duplicate from 40 ft bgs	Ground Water	NFB-046
2228	NA	Equipment Blank – GW Equip	DI Water	NFA-037

RIN Number Assigned: All samples were assigned to RIN **06020305**.

Sample Shipment: All samples were shipped in one cooler overnight via FedEx to Paragon Analytics, Inc. from Moab, Utah, on February 16, 2006 (Airbill No. 8527 5847 7484).

Location Specific Information – Observation Wells: All observation wells were sampled using micro-purge techniques with a peristaltic pump and dedicated downhole tubing. Sample depths and water levels for each observation well are listed below.

Well No.	Date	Time	Depth to Water (ft btoc*)	Sample Depth (ft bgs)
0488	2/15/06	10:26	14.25	39
0493	2/15/06	13:07	13.84	54
SMI-PW01	2/14/06	16:43	14.00	40
SMI-PZ1S	2/14/06	15:32	14.74	18
SMI-PZ1M	2/14/06	15:52	13.86	57
SMI-PZ1D2	2/14/06	16:11	14.64	73

*Below top of casing

Field parameters (only) were measured from location 0493 from a depth of 46 ft bgs. These data are presented below. This sample was not submitted for laboratory analysis.

Well No.	Date	Time	Sample Depth (ft bgs)	Depth to Water (ft btoc)	Field Parameters					
					Temp (°C)	Spec Cond (µS/cm)	D.O. (mg/L)	pH	ORP	Turb. (NTUs)
0493	2/15/06	12:57	46	13.84	16.09	24,790	1.12	6.94	175	1.49

Location Specific Information – Piezometer Sampling: The piezometers were initially purged on February 14, and sampled on February 15 and 16 (if necessary). The table below presents the water levels, stick-up height, and depth to the river surface prior to the initial purge.

PZ No.	Date	Time	Depth to Water (ft btoc)	Stick Up Height (ft)	Depth to River Surface (ft btoc)
0496	2/14/06	14:15	3.73	2.2	Dry at base
0497	2/14/06	14:19	2.08	0.6	Dry at base
0598	2/14/06	14:25	4.72	2.3	Dry at base
0599	2/14/06	14:53	2.31	2.0	Dry at base
0617	2/14/06	14:40	3.57	2.8	Dry at base
0618	2/14/06	14:48	1.73	1.2	Dry at base

Approximately 80 mLs were collected for analysis from 0496, 500 mLs from 0497, 225 mLs from 0617, and 500 mLs from 0618. These samples were split and preserved as directed by the laboratory for proper analysis. Piezometers 0598 and 0599 recharged instantaneously, and a full suite was collected.

Well Inspection Summary: A well inspection was not conducted.

Equipment: No issues to report.

Site Issues: According to the USGS Cisco Gaging Station (Station No. 09180500), the mean daily Colorado River flow rates, in cubic feet per second (cfs), during the time period of this sampling event were:

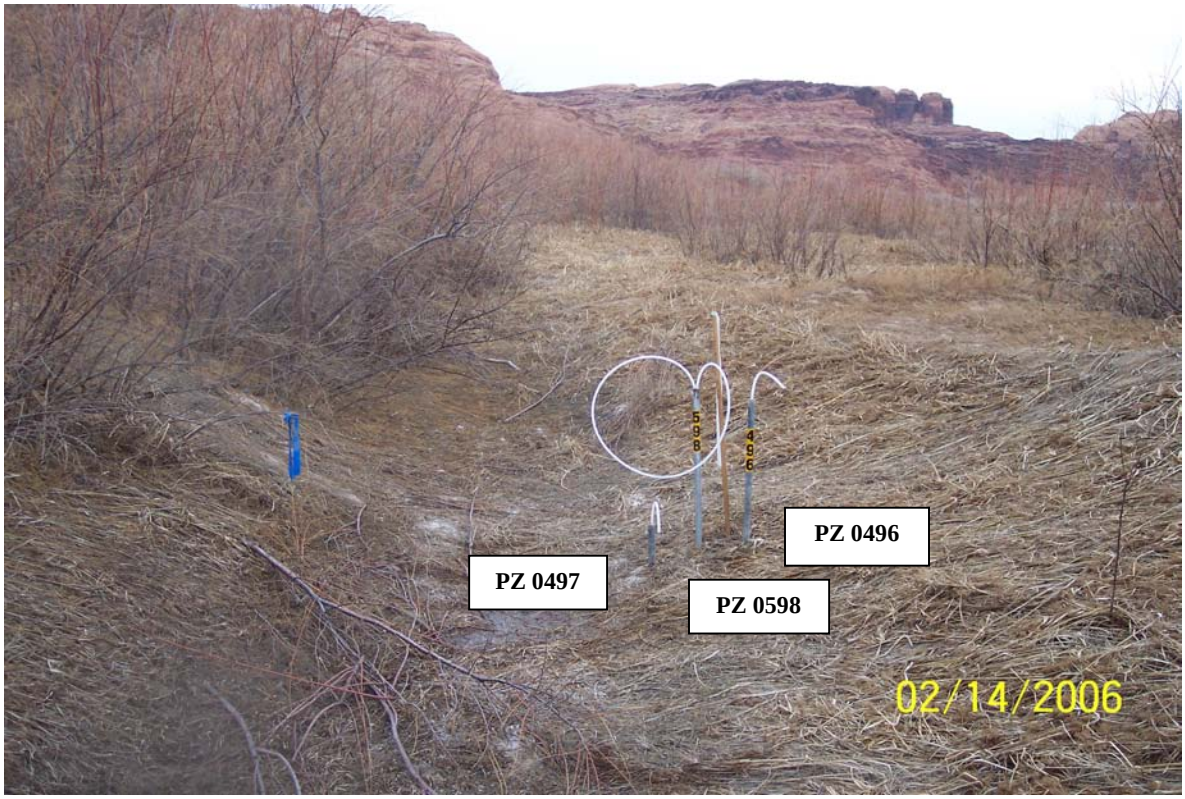
Date	Daily Mean Flow (cfs)
02/13/2006	2,820
02/14/2006	3,020
02/15/2006	3,120
02/16/2006	3,110
02/17/2006	3,100

Corrective Action Required/Taken: None.

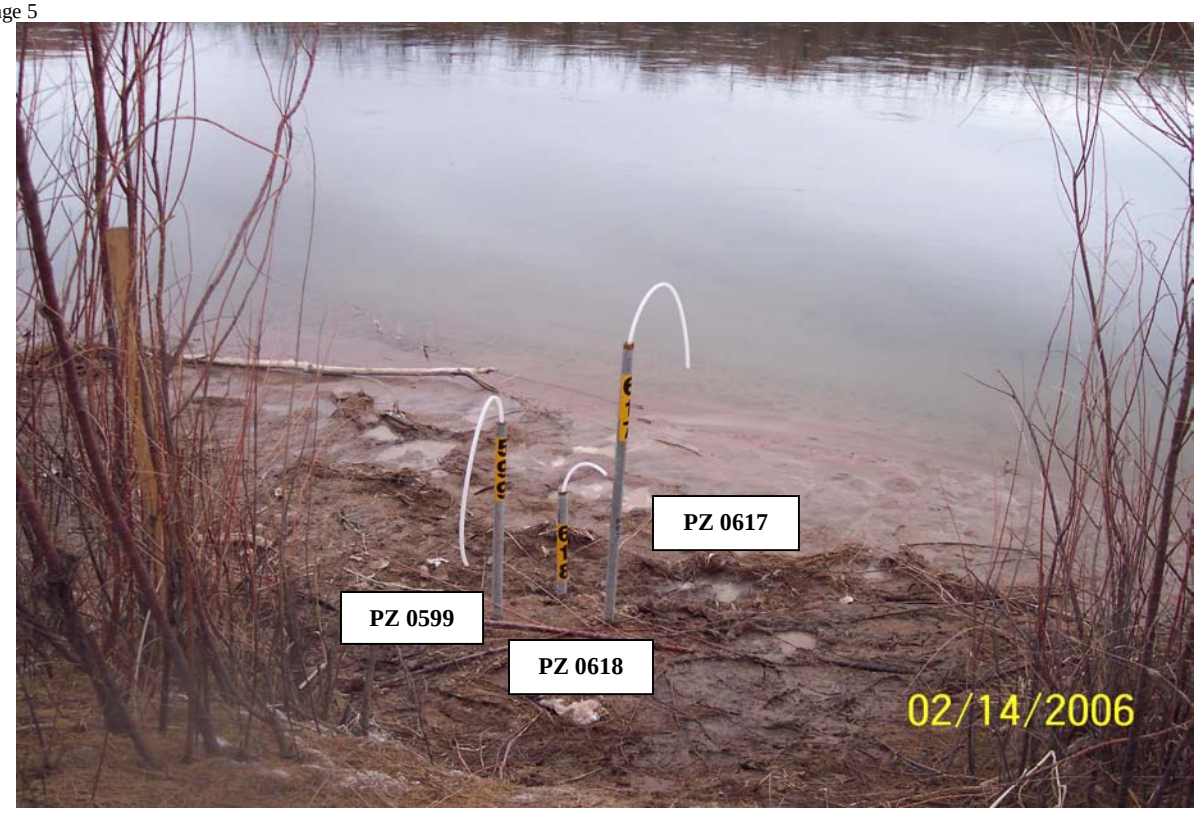
(KGP/lcg)

cc: E. B. Baker, Stoller (e)
L. E. Cummins, Stoller (e)
S. E. Donivan, Stoller (e)
J. R. Ford, Stoller (e)
K. E. Karp, Stoller (e)
K. E. Miller, Stoller
K. G. Pill, Stoller (e)
J. E. Price, Stoller (e)
Document Production (e)

Piezometer 0494



Piezometers 0496, 0497, and 0598



Piezometers 0599, 0617, and 0618

Surface Water Location 0243

Stoller

established 1959

DATE: March 16, 2006

TO: John Ford

FROM: K. G. Pill

SUBJECT: Trip Report

Site: Moab – Interim Action Baseline Area Biogeochemical Sampling – February 2006

Date of Sampling Event: February 14 through 16, 2006.

Team Members: Emile Bettez and Ken Pill.

Sampling Event Background: This biogeochemical sampling was designed to relatively measure microorganism populations in areas where the shallow aquifer intersects the riverbed of the Moab Site, and evaluate the attenuation of contaminant concentrations in ground water and the river because of biologically mediated reactions. Specific locations from the Baseline Area were sampled.

Number of Locations Sampled: Two Baseline Area observation wells (0405 and 0488 [from 26 ft bgs]), and two piezometers (0495 and 0597). Including one duplicate, a total of five samples were collected and sent to Severn Trent Laboratories and Microseeps, Inc. for analysis.

Locations Not Sampled/Reason: None.

Field Variance: Two RIN numbers were assigned to this sampling event because the samples were submitted to two different labs for analysis.

Limited sample volume was available for analysis by Severn Trent from locations 0495 and 0597. These samples were analyzed for highest priority analytes and were split and preserved as directed by the laboratory for proper analysis.

Samples were transported back to Grand Junction, CO, for ESL analysis.

Sample Analysis: Submitted samples were analyzed by Severn Trent Laboratories, Microseeps, Inc. and the Grand Junction Office Environmental Sciences Laboratory (ESL) for the following analytes:

Analyte	Laboratory	Priority
Nitrate / Nitrite as N	Severn Trent	High
Ferrous Iron / Divalent Manganese	Microseeps	
Carbon Dioxide / Methane / Nitrogen / Oxygen	Microseeps	
Bromide / Chloride / Sulfate	Severn Trent	
Nitrifying Bacteria	ESL	
Biological Oxygen Demand	ESL	
Total Dissolved Solids	Severn Trent	
Total Iron	ESL	
Nitrite as N	ESL	
Sulfide	ESL	
Orthophosphate	ESL	
Ammonia as N	Severn Trent	
Dissolved Organic Carbon / Total Inorganic Carbon	Severn Trent	
Iron / Manganese / Selenium / Uranium	Severn Trent	
Total Organic Carbon	Severn Trent	
Chemical Oxygen Demand / Total Phosphorus / Total Kjeldahl Nitrogen	Severn Trent	Low

The analytes are listed from high to low priority for locations in which sufficient sample volume was not available (i.e., riverbed piezometers) for complete analyses.

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

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
2229	0405	Duplicate from 18 ft bgs	Ground Water	NFB 050

RIN Numbers Assigned: All samples analyzed by Severn Trent Laboratories were assigned to RIN **06020306**. Samples analyzed by Microseeps, Inc. were assigned RIN **06020307.**

Sample Shipment: Two coolers were sent overnight FedEx (one cooler to Microseeps, Inc. and the other cooler to Severn Trent Laboratories) from Moab, Utah, on February 16, 2006 (Airbill Nos. 8531 7064 2730 and 8531 7064 2740, respectively).

Location-Specific Information – Baseline Area Observation Wells: All observation wells were sampled using micro-purge techniques with a peristaltic pump and downhole tubing. Sample depths and water levels for each observation well are listed below.

Well No.	Date	Time	Depth to Water (ft btoc)	Sample Depth (ft bgs)
0405	2/15/06	10:50	14.37	18
0488	2/15/06	09:50	14.25	26

Location Specific Information – Baseline Area Piezometer Sampling: The piezometers were purged on February 14 and sampled starting on February 15, 2006. The table below presents the water level, stick-up height, and depth to the river surface for the piezometers prior to the initial purge.

PZ No.	Date	Time	Depth to Water (ft btoc)	Stick Up Height (ft)	Depth to River Surface (ft btoc)
0495	2/14/06	14:00	4.01	0.4	Dry at base
0597	2/14/06	14:06	5.98	2.2	Dry at base

Limited sample volume was available for analysis from both locations. These samples were analyzed for highest priority analytes, and split and preserved as directed by the laboratory for proper analysis.

Well Inspection Summary: A well inspection was not conducted.

Equipment: No issues to report.

Site Issues: According to the USGS Cisco Gaging Station (Station No. 09180500), the mean daily Colorado River flows during this sampling event are provided below:

Date	Daily Mean Flow (cfs)
02/13/2006	2,820
02/14/2006	3,020
02/15/2006	3,120
02/16/2006	3,110
02/17/2006	3,100

Corrective Action Required/Taken: None.

(KGP/lcg)

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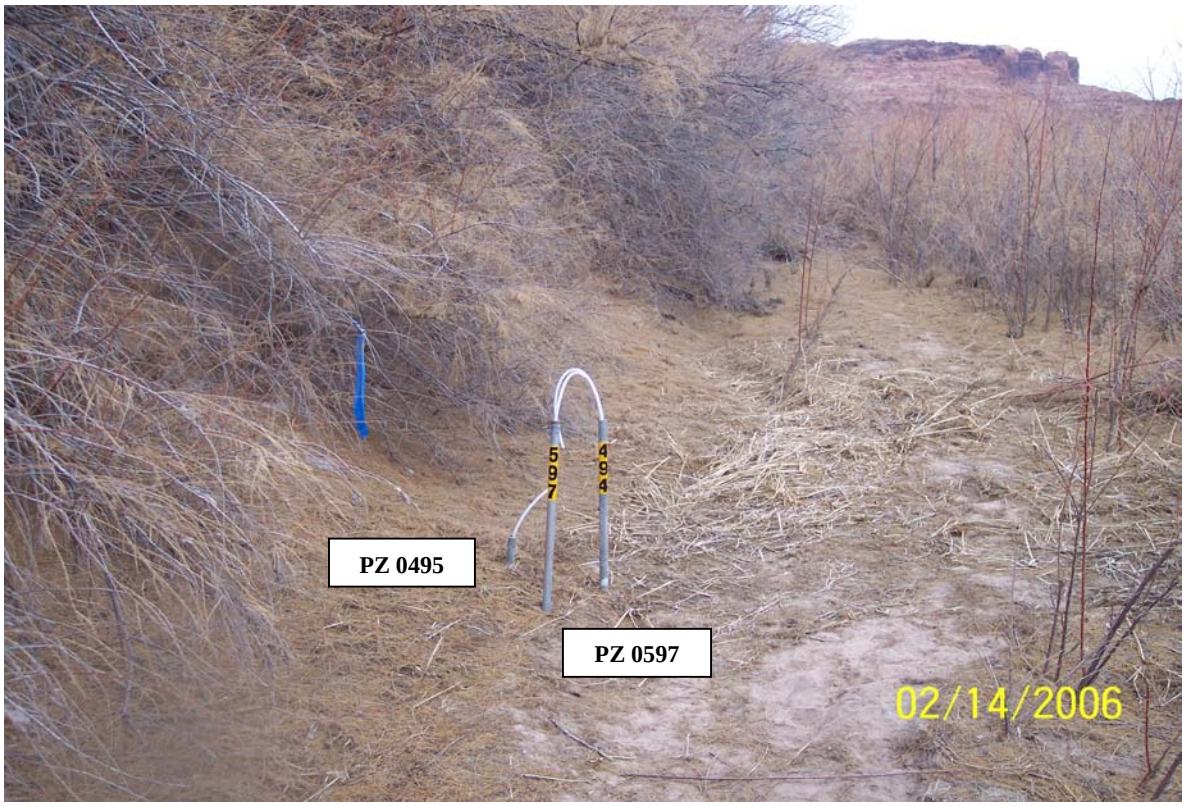
Document Production (e)



Piezometers 0495 and 0597