

Data Validation Package

July 2011

Groundwater Sampling at the
Sherwood, Washington, Disposal Site

September 2011



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

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Sampling Event Summary

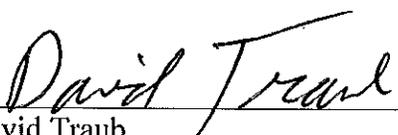
Site: Sherwood, Washington, Disposal Site

Sampling Period: July 13, 2011

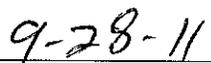
The 2001 *Long-Term Surveillance Plan (LTSP) for the U.S. Department of Energy Sherwood Project (UMTRCA Title II) Reclamation Cell, Wellpinit, Washington*, does not require groundwater compliance monitoring at the Sherwood site. However, the LTSP stipulates limited groundwater monitoring for chloride and sulfate (designated indicator parameters) and total dissolved solids (TDS) as a best management practice.

Samples were collected from the background well, MW-2B, and the two downgradient wells, MW-4 and MW-10, in accordance with the LTSP. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites (LMS/PLN/S04351, continually updated)*. Water levels were measured in the wells and in four piezometers completed in the tailings dam.

Review of time-concentration graphs included in this report indicate that the chloride, sulfate, and TDS concentrations in well MW-4 increased to historical high values. The concentrations of chloride and sulfate remain below the State of Washington water quality criteria value of 250 milligrams per liter for both parameters.



David Traub
Site Lead, S.M. Stoller Corporation



Date



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Sherwood, Washington, Disposal Site Sample Location Map

Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	<u>Sherwood, Washington</u>	Date(s) of Water Sampling	<u>July 13, 2011</u>
Date(s) of Verification	<u>August 23, 2011</u>	Name of Verifier	<u>Steve Donovan</u>

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOPs, instructions.	<u>Yes</u>	<u>Work Order letter dated June 1, 2011.</u>
2. Were the sampling locations specified in the planning documents sampled?	<u>Yes</u>	
3. Was a pre-trip calibration conducted as specified in the above-named documents?	<u>Yes</u>	<u>Pre-trip calibration was performed on July 8, 2011.</u>
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	<u>Yes</u>	<u>Operational checks were performed on July 13 and 15, 2011.</u>
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	<u>Yes</u>	
6. Was the category of the well documented?	<u>Yes</u>	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling?	<u>Yes</u>	
Did the water level stabilize prior to sampling?	<u>Yes</u>	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	<u>Yes</u>	
Was the flow rate less than 500 mL/min?	<u>Yes</u>	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	<u>NA</u>	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected from well MW-4.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	All samples were collected with dedicated equipment.
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	Location ID 2100 was used for the duplicate sample.
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the "Date Signed" fields (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

Requisition No. (RIN): 11073924
Sample Event: July 13, 2011
Site(s): Sherwood, Washington
Laboratory: ALS Laboratory Group
Work Order No.: 1107160
Analysis: Inorganics
Validator: Steve Donovan
Review Date: August 23, 2011

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) “Standard Practice for Validation of Laboratory Data.” The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Chloride, Cl	MIS-A-039	SW-846 9056	SW-846 9056
Sulfate, SO ₄	MIS-A-044	SW-846 9056	SW-846 9056
Total Dissolved Solids, TDS	WCH-A-033	MCAWW 160.1	MCAWW 160.1

Data Qualifier Summary

None of the analytical results required qualification.

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received four samples on July 14, 2011, 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 sample submittal documents, including the COC form and the sample tickets, had no errors or omissions. A copy of the air bill was included in the receiving documentation.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature inside the iced cooler at 1.0 °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 SW-846 9056

The initial calibrations for chloride and sulfate were performed using five calibration standards each on June 15, 2011. 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. Initial and continuing calibration checks were made at the required frequency resulting in nine calibration checks. 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 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 initial and continuing calibration blank results were below the method detection limits for all analytes.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) pairs are analyzed for chloride and sulfate as a measure of method performance in the sample matrix. The MS/MSD sample results were within the acceptance criteria demonstrating acceptable method performance.

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. The results were acceptable for all analytes.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. 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 (EDD) File

The EDD file arrived on August 1, 2011. 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: 11073924 Lab Code: PAR Validator: Steve Donovan Validation Date: 8/23/2011
Project: Sherwood 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
- Detection Limits
- Field/Trip Blanks
- Field Duplicates

All analyses were completed within the applicable holding times.

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

There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM
Wet Chemistry Data Validation Worksheet

RIN: 11073924 Lab Code: PAR Date Due: 8/11/2011
 Matrix: Water Site Code: SHE Date Completed: 8/2/2011

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
CHLORIDE	07/15/2011	0.000	1.0000	OK	OK	OK	OK	OK	100.00	90.0	89.0	1.00	
SULFATE	07/15/2011	0.000	1.0000	OK	OK	OK	OK	OK	98.00	98.0	96.0	1.00	
TOTAL DISSOLVED SOLIDS	07/18/2011							OK	97.00			1.00	

Sampling Quality Control Assessment

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

Sampling Protocol

Sample results for all Category I or II monitoring wells were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. Wells MW-2B and MW-4 were classified as Category II wells. The sample results for these wells were qualified with a “Q” flag, indicating the data are qualitative because of the sampling technique.

Equipment Blank Assessment

An equipment blank was not required because all wells were sampled with 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 practical quantitation limit (PQL) should be less than 20 percent. For results less than 5 times the PQL, the range should be no greater than the PQL. One duplicate sample was collected from location MW-4. The duplicate results met the acceptance criteria demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

Page 1 of 1

RIN: 11073924 Lab Code: PAR Project: Sherwood Validation Date: 8/23/2011

Duplicate: 2100

Sample: MW-4

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
CHLORIDE	61			10	66			10	7.87		MG/L
SULFATE	200			10	220			10	9.52		MG/L
TOTAL DISSOLVED SOLIDS	990			1	940			1	5.18		MG/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 Donovan 9-26-2011
Steve Donovan Date

Data Validation Lead: Steve Donovan 9-26-2011
Steve Donovan Date

Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

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

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

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

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

The chloride and sulfate results for well MW-4 were identified as potential outliers. The values for chloride, sulfate, TDS, and specific conductance all increased in this well indicating that the observed values are not due to measurement errors. Additionally, this well was sampled in duplicate with acceptable overall precision.

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 11073924

Report Date: 8/23/2011

Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Current Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
SHE01	MW-10	N001	07/13/2011	Chloride	1.1			2.7		FQ	1.2		F	13	0	No
SHE01	MW-10	N001	07/13/2011	Sulfate	33			32		F	25.5		L	13	0	No
SHE01	MW-2B	N001	07/13/2011	Chloride	2.3			2.1		FQ	0.56		FQ	17	0	No
SHE01	MW-4	N002	07/13/2011	Chloride	66			32		FQJ	0.51		FQ	10	0	Yes
SHE01	MW-4	N001	07/13/2011	Chloride	61			32		FQJ	0.51		FQ	10	0	Yes
SHE01	MW-4	N001	07/13/2011	Sulfate	200			97		FQJ	7.4		FQ	10	0	No
SHE01	MW-4	N002	07/13/2011	Sulfate	220			97		FQJ	7.4		FQ	10	0	No
SHE01	MW-4	N002	07/13/2011	Total Dissolved Solids	940			670		FQ	330		FQ	10	0	Yes
SHE01	MW-4	N001	07/13/2011	Total Dissolved Solids	990			670		FQ	330		FQ	10	0	Yes

STATISTICAL TESTS:

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

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

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

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

Attachment 2

Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE SHE01, Sherwood Disposal Site

REPORT DATE: 8/23/2011

Location: MW-10 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Chloride	mg/L	07/13/2011	N001	224 - 234	1.1		F	#	0.2	
Oxidation Reduction Potential	mV	07/13/2011	N001	224 - 234	-83		F	#		
pH	s.u.	07/13/2011	N001	224 - 234	7.16		F	#		
Specific Conductance	umhos/cm	07/13/2011	N001	224 - 234	998		F	#		
Sulfate	mg/L	07/13/2011	N001	224 - 234	33		F	#	0.5	
Temperature	C	07/13/2011	N001	224 - 234	12.81		F	#		
Total Dissolved Solids	mg/L	07/13/2011	N001	224 - 234	630		F	#	20	
Turbidity	NTU	07/13/2011	N001	224 - 234	1.37		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE SHE01, Sherwood Disposal Site

REPORT DATE: 8/23/2011

Location: MW-2B WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Chloride	mg/L	07/13/2011	N001	47.4 - 57.4	2.3		FQ	#	0.2	
Oxidation Reduction Potential	mV	07/13/2011	N001	47.4 - 57.4	-108		FQ	#		
pH	s.u.	07/13/2011	N001	47.4 - 57.4	6.65		FQ	#		
Specific Conductance	umhos/cm	07/13/2011	N001	47.4 - 57.4	273		FQ	#		
Sulfate	mg/L	07/13/2011	N001	47.4 - 57.4	5.4		FQ	#	0.5	
Temperature	C	07/13/2011	N001	47.4 - 57.4	11.74		FQ	#		
Total Dissolved Solids	mg/L	07/13/2011	N001	47.4 - 57.4	160		FQ	#	20	
Turbidity	NTU	07/13/2011	N001	47.4 - 57.4	2.3		FQ	#		

Groundwater Quality Data by Location (USEE100) FOR SITE SHE01, Sherwood Disposal Site

REPORT DATE: 8/23/2011

Location: MW-4 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Chloride	mg/L	07/13/2011	N001	184 - 197.5	61		FQ	#	2	
Chloride	mg/L	07/13/2011	N002	184 - 197.5	66		FQ	#	2	
Oxidation Reduction Potential	mV	07/13/2011	N001	184 - 197.5	-115		FQ	#		
pH	s.u.	07/13/2011	N001	184 - 197.5	7.09		FQ	#		
Specific Conductance	umhos/cm	07/13/2011	N001	184 - 197.5	1108		FQ	#		
Sulfate	mg/L	07/13/2011	N001	184 - 197.5	200		FQ	#	5	
Sulfate	mg/L	07/13/2011	N002	184 - 197.5	220		FQ	#	5	
Temperature	C	07/13/2011	N001	184 - 197.5	13.13		FQ	#		
Total Dissolved Solids	mg/L	07/13/2011	N001	184 - 197.5	990		FQ	#	40	
Total Dissolved Solids	mg/L	07/13/2011	N002	184 - 197.5	940		FQ	#	20	
Turbidity	NTU	07/13/2011	N001	184 - 197.5	3.45		FQ	#		

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

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.

J Estimated
N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
U Analytical result below detection limit.
W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

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

QA QUALIFIER:

Validated according to quality assurance guidelines.

Static Water Level Data

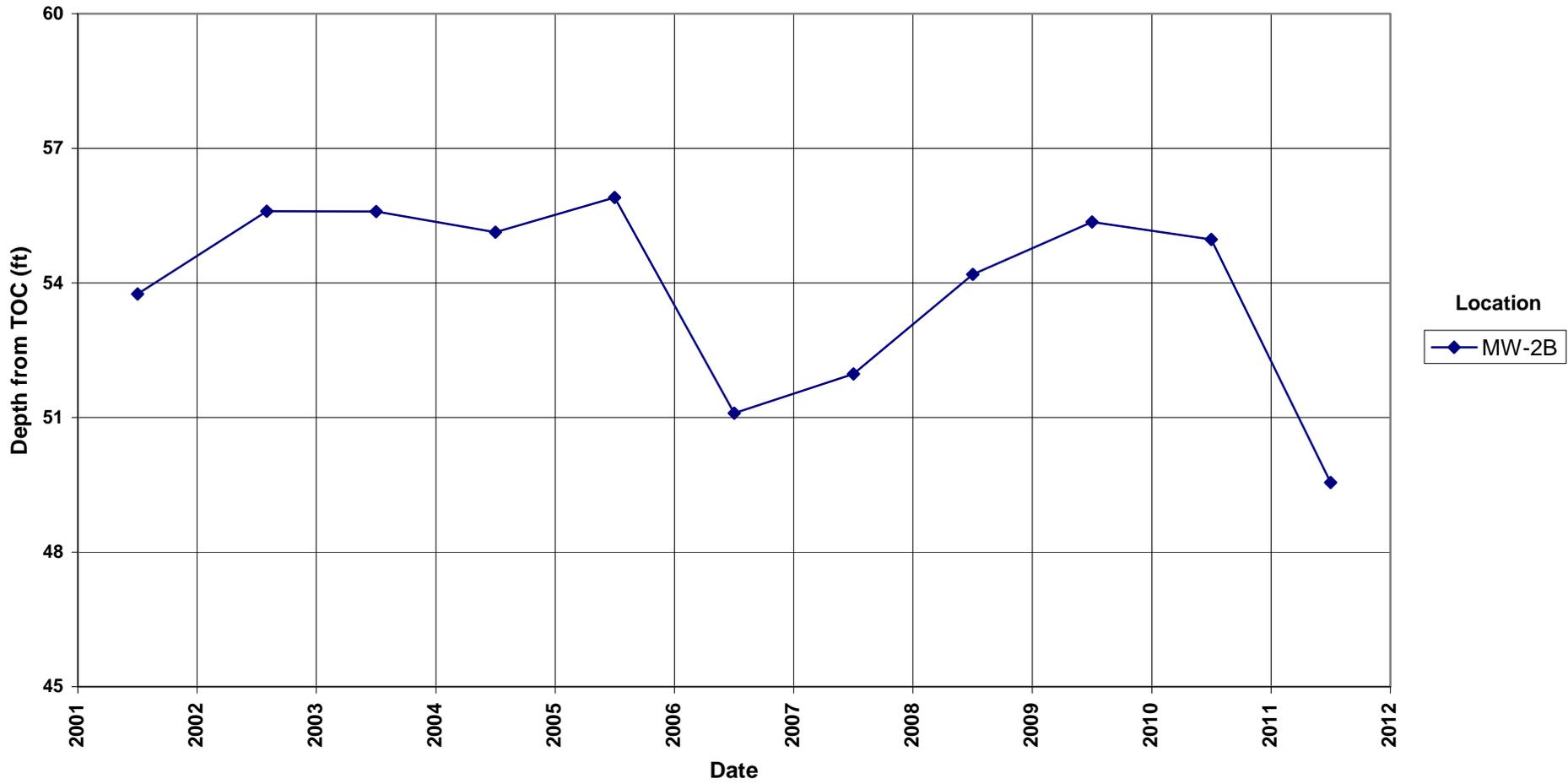
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Hydrographs

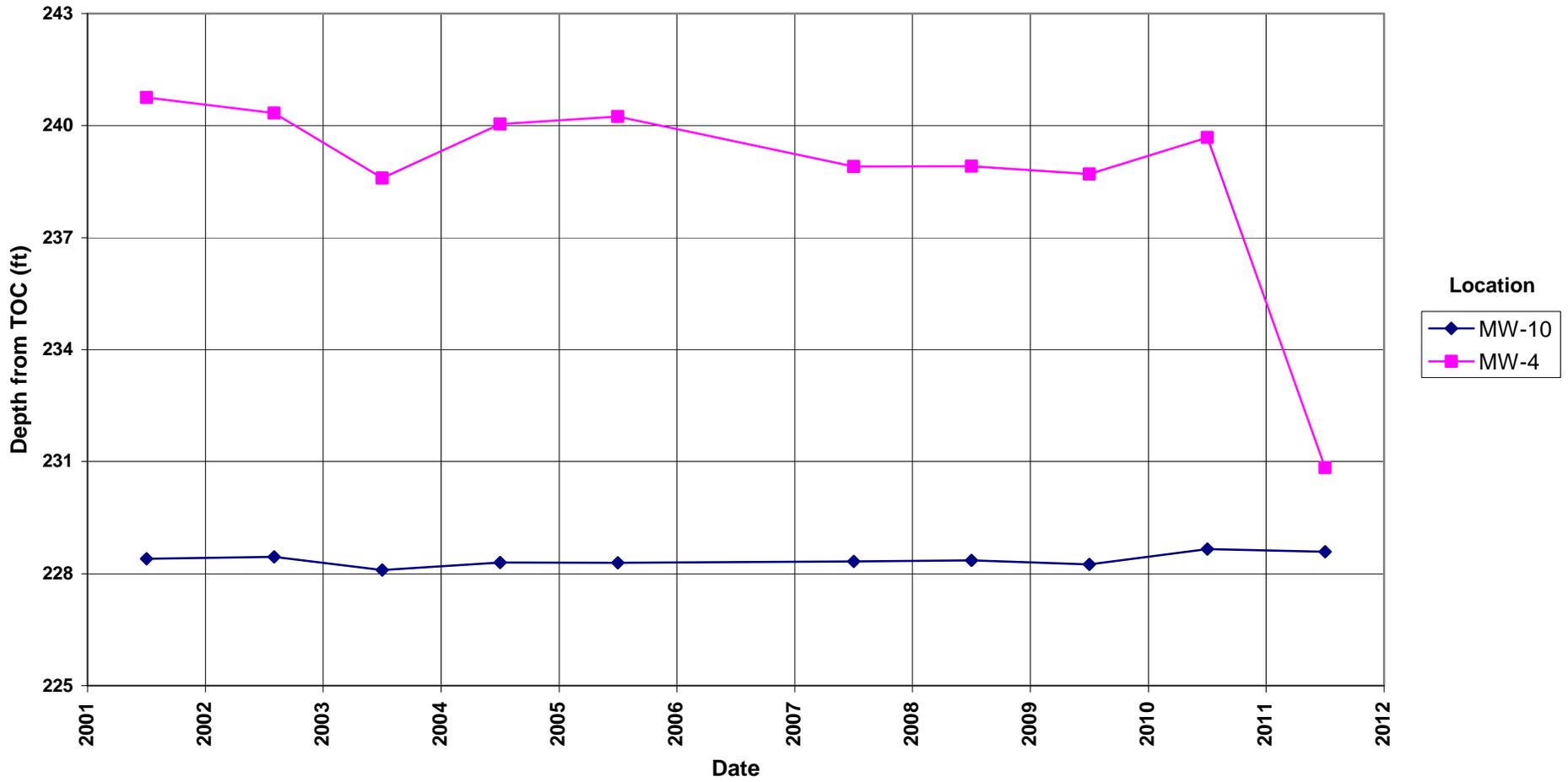
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Sherwood Disposal Site
Hydrograph
Background Well
(depth from top of casing)



Sherwood Disposal Site Hydrograph

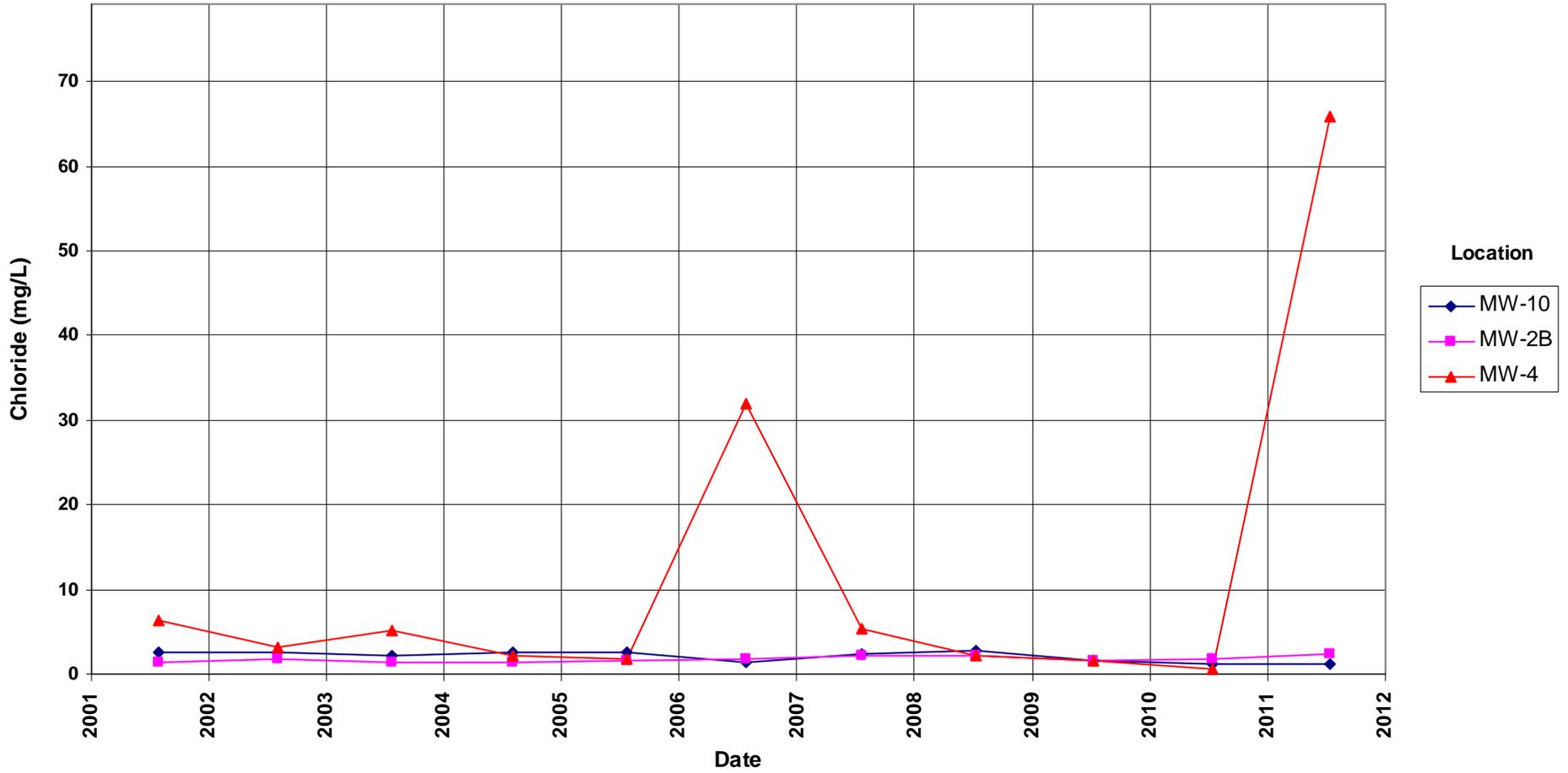
(water level depth from top of casing)



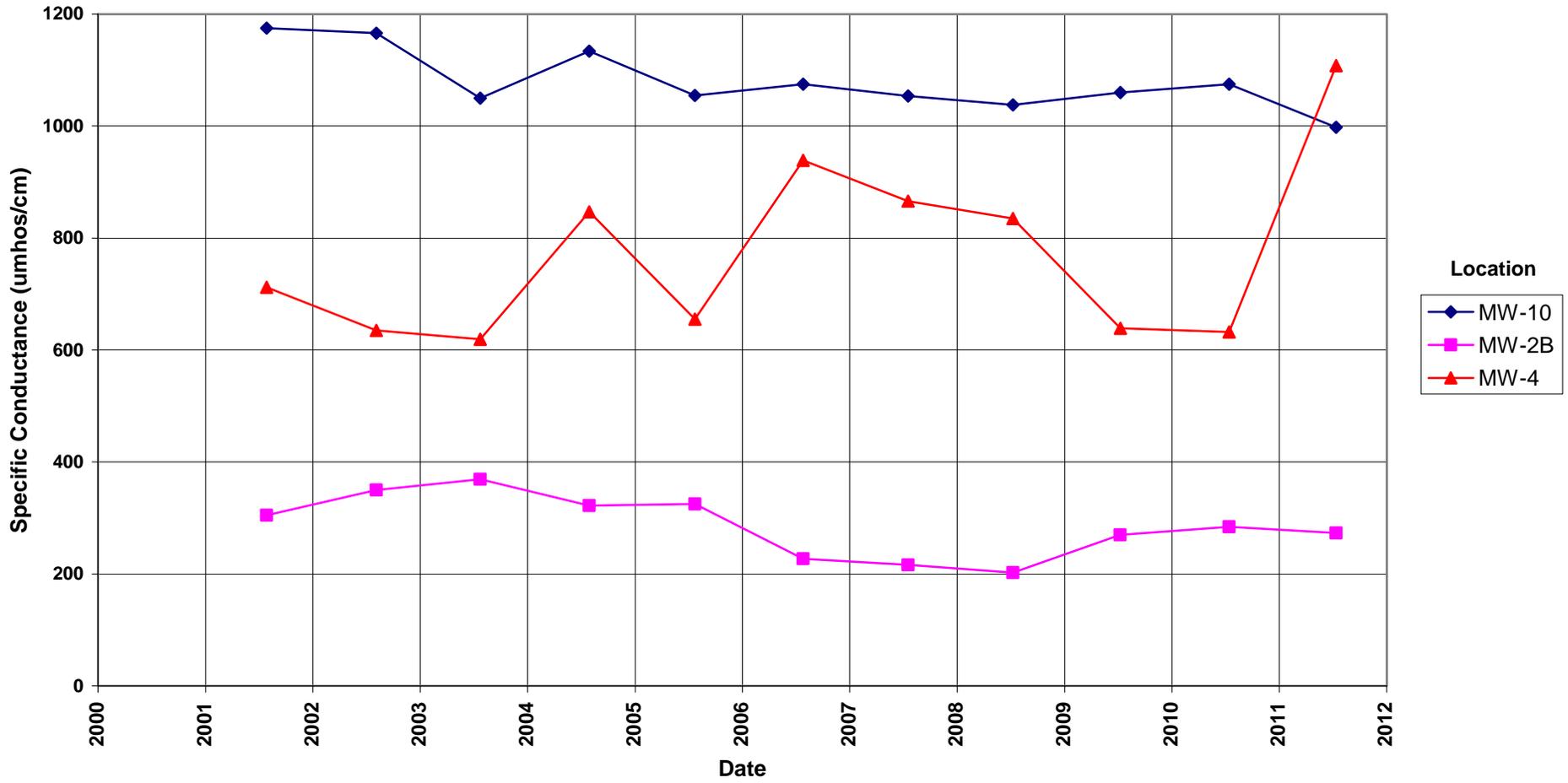
Time-Concentration Graphs

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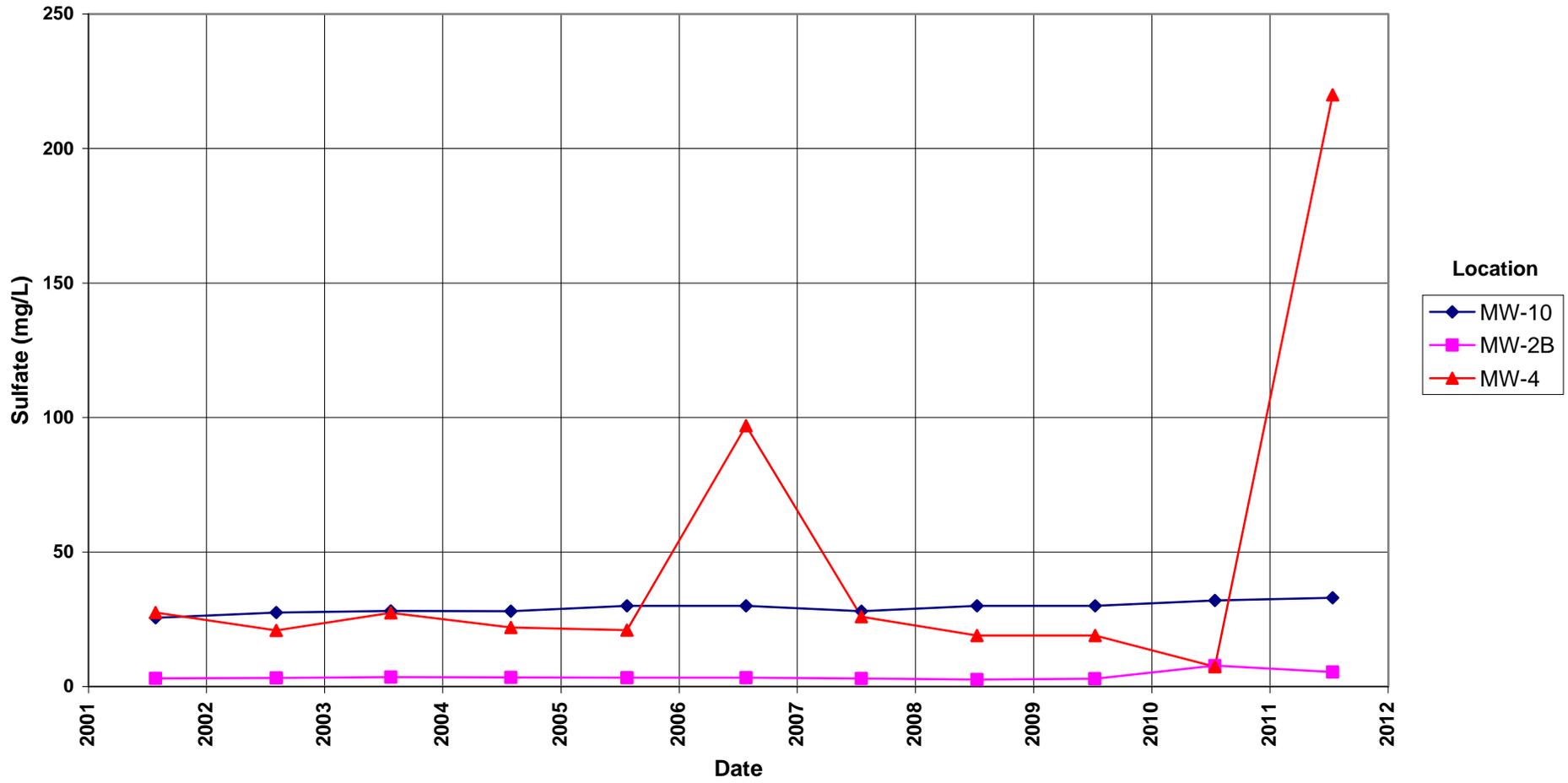
Sherwood Disposal Site Chloride Concentration



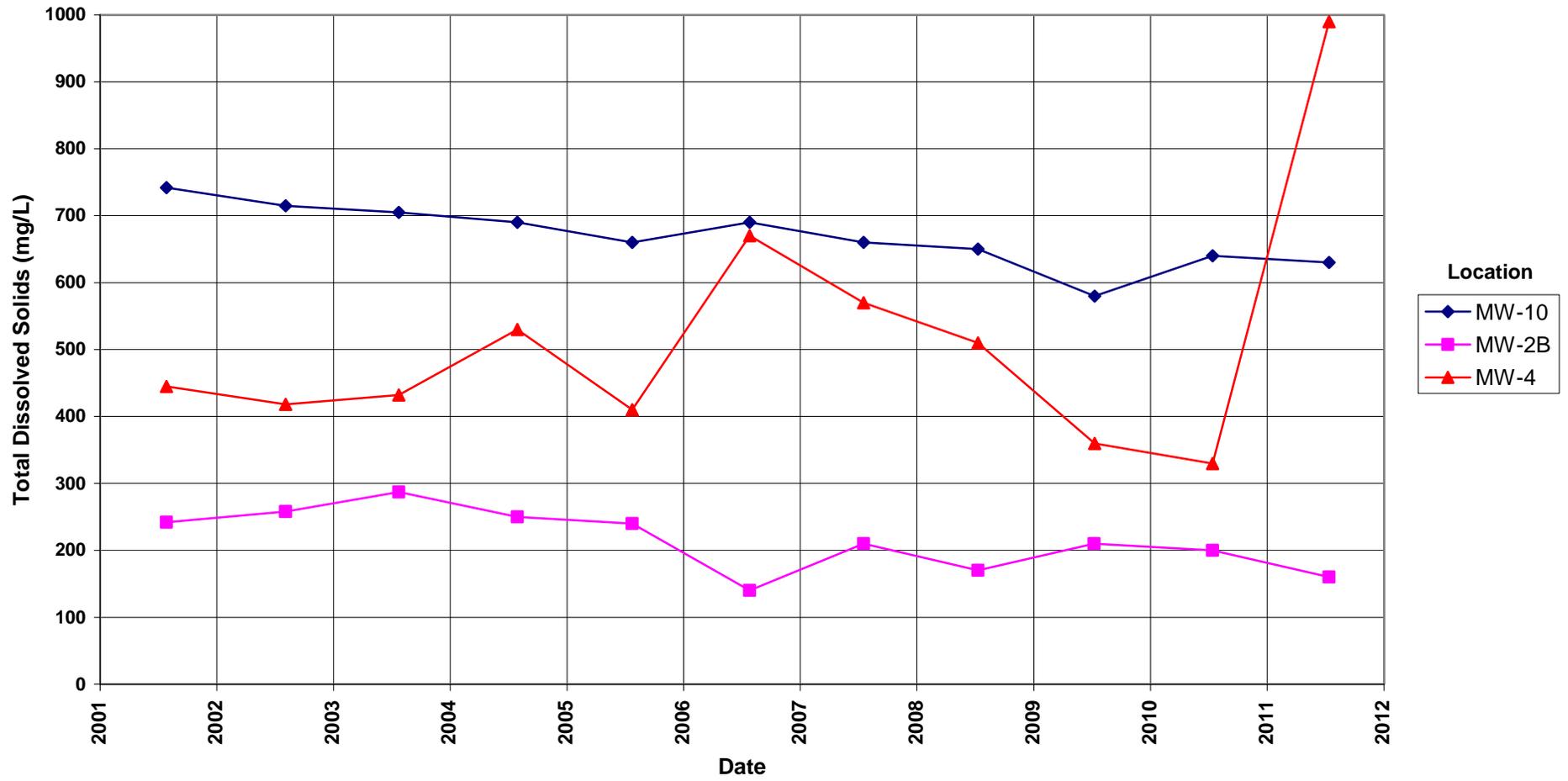
Sherwood Disposal Site Specific Conductance



Sherwood Disposal Site Sulfate Concentration



Sherwood Disposal Site Total Dissolved Solids Concentration



Attachment 3
Sampling and Analysis Work Order

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June 1, 2011

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

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
July 2011 Environmental Sampling Sherwood, Washington

REFERENCE: Task Order LM00-501-03-221-402, Sherwood, WA, Disposal Site

Dear Mr. Bush:

The purpose of this letter is to inform you of the upcoming sampling event at Sherwood, WA. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Sherwood Disposal Site. Water quality data will be collected at this site as part of the routine environmental sampling currently scheduled to begin the week of July 11, 2011.

The following list shows the locations scheduled to be sampled during this event.

Monitoring Wells

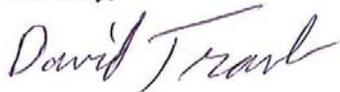
MW-2B MW-4 MW-10

Water levels will be obtained from piezometers P1, P2, P3, and P4.

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) 248-6557 if you have any questions.

Sincerely,



David Traub
Site lead

DT/lcg/lb

Richard Bush
Control Number 11-0700
Page 2

Enclosures (3)

cc: (electronic)
Steve Donovan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
David Traub, Stoller
EDD Delivery
rc-grand.junction
File: SHE 410.02(A)

Sampling Frequencies for Locations at Sherwood, WA

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
MW-2B			X			
MW-4			X			
MW-10			X			
P1					X	Water level only
P2					X	Water level only
P3					X	Water level only
P4					X	Water level only

Sampling conducted in July

Constituent Sampling Breakdown

Site	Sherwood		Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Analyte	Groundwater	Surface Water			
Approx. No. Samples/yr	3	0			
<i>Field Measurements</i>					
Alkalinity					
Dissolved Oxygen					
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
<i>Laboratory Measurements</i>					
Aluminum					
Ammonia as N (NH3-N)					
Calcium					
Chloride	X		0.5	SW-846 9056	MIS-A-039
Chromium					
Gross Alpha					
Gross Beta					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Nickel-63					
Nitrate + Nitrite as N (NO3+NO2)-N					
Potassium					
Radium-226					
Radium-228					
Selenium					
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					
Vanadium					
Zinc					
Total No. of Analytes	3	0			

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

Attachment 4

Trip Report

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Memorandum

DATE: July 15, 2011
 TO: David Traub
 FROM: Gretchen Baer
 SUBJECT: Trip Report

Site: Sherwood, WA

Date of Sampling Event: July 13, 2011

Team Members: Gretchen Baer and Joe Trevino

Number of Locations Sampled: Three monitoring wells were sampled for total dissolved solids, chloride, and sulfate. Water levels at the four piezometers on top of the tailings dam were also collected.

Locations Not Sampled/Reason: N/A

Location Specific Information:

Location IDs	Comments
MW-4	Cat II based on water level drawdown.
MW-10	Cat I this event but close to Cat II based on water level drawdown.
MW-2B	Cat II based on water level drawdown.
All	The measured ORPs were negative. The pre-trip and post-trip tap water checks indicate that the ORP probe was functioning properly.

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
2100	MW-4	Duplicate	Groundwater

Report Identification Number (RIN) Assigned: 11073924

Sample Shipment: Samples were shipped overnight by FedEx to ALS Laboratory Group from Copy Junction, 13015 W 14th Ave., Airway Heights, WA, on July 13, 2011.

Water Level Measurements: Water levels were collected in all three sampled wells and in four piezometers on the tailings dam. All collection times are in MDT.

Well Inspection Summary: Well inspections were conducted at all sampled wells. All wells were in good condition. Piezometer lid hinges are rusted and hard to open. A hammer or similar tool is necessary to open the lids. WD-40 was applied to the hinges, which made the lids easier to open.

Field Variance: None. Samples were collected according to the *Sampling and Analysis Plan for U. S. Department of Energy Office of Legacy Management Sites*.

Equipment: The wells were sampled using bladder pumps and the appropriate dedicated equipment. Compressed air (in tanks) was used to actuate the bladder pumps; this method is recommended because the pump depths at MW-4 and MW-10 are at the limit of an air compressor's capacity. All equipment functioned properly, with the exception of the GPS unit that had site border information to be used for the signpost placement. The location of the signpost installation was estimated from the sampling map.

Regulatory: N/A

Institutional Controls

Fences, Gates, Locks:

- The gate on Elijah Road (aka Sherwood Mine Road), used to access wells MW-4 and MW-10, was unlocked and open. It appeared that the chain may have been broken. The gate was left as-is by the samplers.
- Power lines south of Elijah Road at the gate are down and are touching the ground. The site lead was informed on 7/15/11 by voicemail.

Signs:

- A perimeter sign (possibly sign "P2") was found north of the southeast corner of the site. It is damaged but still legible and standing upright beside the road.
- A signpost was installed east of sign "P1." As requested by D. Traub, the perimeter sign was not installed on the post. It was left on the ground near the post.



Trespassing/Site Disturbances: N/A

Site Issues: Cell phone service (Verizon) was available at the site. Buffalo and horses were seen on the cell and east of the cell.

Disposal Cell/Drainage Structure Integrity: Appeared to be acceptable.

Vegetation/Noxious Weed Concerns: There is a significant amount of vegetation growing on the rip rap-covered tailings dam face. Many small pine trees are growing around well MW-4. Some small pine trees were removed to enable truck access to that well.

Maintenance Requirements: None observed.

Safety Issues: None.

Access Issues: The road leading to well MW-2B is eroded by water runoff, but is still in fair condition.

Corrective Action Required/Taken:

(GB/lb)

cc: (electronic)

Richard Bush, DOE

Gretchen Baer, Stoller

Steve Donovan, Stoller

EDD Delivery

File: SHE 410.02(A)

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