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Field Summary Report

Mortandad and Sandia Watershed (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) Quarterly Sampling Event 3, 2013 Interim Facility-Wide Groundwater Monitoring Plan

Other Field Activities from April 29-May 26, 2013

Prepared by TerranearPMC, LLC
Los Alamos, NM

36483

EXECUTIVE SUMMARY

This report summarizes field activities completed by TerranearPMC, LLC in support of groundwater monitoring at Los Alamos National Laboratory from April 29-May26, 2013, pursuant to the Interim Facility-Wide Groundwater Monitoring Plan for the 2013 Monitoring Year, October 2012- September 2013 (LANL 2012, 225493).

The Mortandad and Sandia Watershed third quarter sampling activities were scheduled for May 6-May 26, 2013 and were completed on May 22, 2013. The Chromium Investigation Monitoring Group semi-annual and quarterly requirements were met during this event. The MDA C Monitoring Group semi-annual requirements were met during this event. The Mortandad and Sandia Watershed General Surveillance Monitoring Group quarterly requirements were met during this event. Locations planned included 5 intermediate wells and 23 regional wells, for a total of 28 sites planned. Full sample suites were collected at 4 intermediate wells and 23 regional wells. One intermediate well was dry and was not sampled.

Modifications were made to the sampling requirements outlined in the Interim Plan at 1 site, per request from the LANL Groundwater Project Manager. Additional samples were collected at R-43 S2. Additionally, CDBO-6, MCO-3, MCO-4B, MCO-6, and MCO-7 were scheduled for discharge permit sampling.

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Acronyms and Abbreviations:

CV	casing volume
DOE	Department of Energy (U.S.)
EP	Environmental Programs Directorate
FSR	Field Summary Report
ft msl	feet above mean sea level
ft BGS	feet below ground surface
ft BTOC	feet below top of outer casing
ft BTIC	feet below top of inner casing
ft BTOM	feet below top of manhole
gpm	gallons per minute
GTL	Groundwater Technical Lead
LANL	Los Alamos National Laboratory
LSD	land surface datum
MY	Monitoring Year
NMED	New Mexico Environment Department
NTU	nephelometric turbidity unit
PCB	polychlorinated biphenyl
Q1	Quarter 1 Sampling Event
Q2	Quarter 2 Sampling Event
Q3	Quarter 3 Sampling Event
Q4	Quarter 4 Sampling Event
Q5	Quarter 5 Sampling Event
QA	quality assurance
QC	quality control
RAD	radionuclide
SCL	sample collection logs
SMO	LANL Sample Management Office
SOP	standard operating procedure
SOP-20032	Standard Operating Procedure for Ground Water Sampling
STR	LANL subcontract technical representative
SVOC	semi-volatile organic compound
TA	technical area
VOC	volatile organic compound

1.0 INTRODUCTION

This field summary report (FSR) details the field activities conducted by TerranearPMC, LLC in support of groundwater monitoring at Los Alamos National Laboratory (LANL) pursuant to the Interim Facility-Wide Groundwater Monitoring Plan for the 2013 Monitoring Year, October 2012- September 2013 (also referred to as the Interim Plan) (LANL 2012, 225493). Sampling under the Interim Plan is implemented by watershed or monitoring group on a quarterly, semiannual, or annual basis. The date range discussed in each FSR is bracketed by the end date of the previous watershed and the end date of the current watershed or start date of the following watershed. The date range for this reporting period is April 29-May 26, 2013.

1.1 Background

Historical and background information for the Chromium Investigation Monitoring Group is provided in section 3.0 of the Interim Plan (LANL 2012, 225493). Historical and background information for the MDA C Monitoring Group is provided in section 4.0 of the Interim Plan. Historical and background information for the General Surveillance Monitoring Group is provided in section 8.0 of the Interim Plan.

1.2 Objectives

The principal objective of the Mortandad and Sandia Watershed Quarter 3 (Q3) sampling campaign is to fulfill requirements specified in the Interim Plan (LANL 2012, 225493) and secondarily to support supplemental field activities, as needed. Sampling of the Mortandad and Sandia Watershed is conducted within a 21-day period, pursuant to the Interim Plan.

2.0 SCOPE OF WORK

All MY2013 Q3 field activities conducted in the Mortandad and Sandia Watershed are presented in this FSR. Sampling activities were scheduled for May 6-26, 2013 and were completed on May 22, 2013 (day 17). Details regarding watershed sampling field results, including any deviations from Interim Plan requirements, are provided in section 4.1.

Occasionally, it is necessary to modify the sampling requirements outlined in the Interim Plan for a specific site or complete supplemental field activities. These requests are made by the LANL Groundwater Technical Lead (GTL) or LANL Groundwater Project Manager. Modifications and supplemental activities are outlined in section 4.2.

Appendix A presents a table of samples taken during the field event; Appendix B summarizes monitoring locations and well completion information for wells within the watershed; Appendix C presents time-series field parameter data collected during well purging; Appendix D summarizes the final field parameters from the last four sampling events; and watershed sampling locations are shown in figures 2.0-1, 2.0-2, and 2.0-3.

3.0 FIELD IMPLEMENTATION

All field activities are conducted in accordance with procedures and methods listed in the Interim Plan.

3.1 Methods and Procedures

In the weeks prior to any field activities, samples are planned and sample collection logs (SCLs) are prepared pursuant to the analytical suites and sampling frequencies detailed in the Interim Plan. Special requests and modifications are discussed with sample team representatives, the GTL, and the LANL Subcontract Technical Representative (STR). Modifications are incorporated into the sampling schedule as needed.

Instruments used to measure field parameters are calibrated on a daily basis, prior to use. All wells are purged and monitored for water quality field parameters before sampling (see section 3.2 for details), with the exception of wells sampled using the Westbay MP System. Monitored field parameters include water level, discharge rate, temperature, pH, specific conductance, oxidation reduction potential, turbidity, and dissolved oxygen. Data are recorded on the Groundwater Sampling Log and logged electronically using the field instruments. Spring and baseflow samples are collected upon arrival at the sites and field parameters are measured at the time of sampling. Samples are prepared, bottled, and preserved according to instructions provided on SCLs. Samples are then relinquished to the LANL Sample Management Office (SMO) for shipment to analytical laboratories. Complete details of sampling protocols are available in the Standard Operating Procedure for Ground Water Sampling (SOP-20032, R1).

3.2 Sampling Criteria

SOP-20032 outlines specific criteria that must be met prior to sampling an alluvial, intermediate, or regional well (with the exception of wells sampled using the Westbay MP System) for both Interim Plan sampling activities and supplemental sampling activities. Per SOP-20032, exceptions may be made to sampling criteria either by a written work plan provided by the GTL prior to sampling or verbal communication with the GTL or STR as issues arise during the sampling event. Compliance with sampling criteria is outlined in table 4.1-1 and details about deviations are in section 4.1.2.

Sampling conducted after February 12, 2013 is pursuant to SOP-20032: Revision 1, which states two main criteria for sampling:

1. A minimum of 1 casing volume (CV) must have been removed from alluvial wells and a minimum of 3 CVs plus drop pipe must have been removed from intermediate and regional wells prior to sampling.

2. Field indicator parameters must have stabilized within their allowable ranges for at least three consecutive measurements taken a minimum of three or five minutes apart prior to sampling. Data manually recorded on the Groundwater Sampling Log are used to determine stability.

Additionally, if 3 CVs have been purged from alluvial wells or 6 CVs have been purged from intermediate or regional wells, proceed with sampling even if field indicator parameters did not stabilize. The STR should be notified if intermediate or regional wells were sampled without stable indicator parameters.

4.0 RESULTS

A complete list of analytical suites sampled by location is presented in Appendix A. Analytical results for samples should be accessible through the Intellus New Mexico database within 60 days of sample collection. Time-series data for the field parameters for alluvial, intermediate, and regional monitoring wells are presented in Appendix C. A summary of the final field parameters from the last four sampling events is provided in Appendix D.

4.1 Interim Plan Activities

A total of 28 sites were planned during the Mortandad and Sandia Watershed MY2013 Q3 sampling campaign conducted from May 6-22, 2013. This includes 5 intermediate wells and 23 regional wells. Full sample suites were collected at 4 intermediate wells and 23 regional wells. One intermediate well was dry and was not sampled. The Samples Taken Table provides further detail (Appendix A).

4.1.1 Well Sampling Observations

Notable observations of well behavior, including deviations from sampling criteria outlined in SOP-20032 R.1, are summarized in table 4.1-1. This section addresses wells visited for routine, interim plan sampling and extra wells visited per request from the LANL Groundwater Project Manager. Wells sampled using the Westbay MP System are not discussed in the section as they are not subject to sampling criteria outlined in SOP-20032 R.1.

4.1.2 Deviations from Sampling Requirements

One deviation was made from sampling requirements for the Mortandad and Sandia Watershed MY2013 Q3 sampling campaign. See table 4.1-2 for details.

4.2 Modifications to the Interim Plan and Supplemental Activities

Modifications were made to the sampling requirements outlined in the Interim Plan at 1 site, per request from the LANL Groundwater Project Manager. Additionally, 5 wells were scheduled for discharge permit sampling.

A 12 CV purge was conducted at R-43 S2. The Interim Plan sample was collected per the SOP. Time-series samples for indicator suites were collected at 4, 8, and 12 CVs.

Five wells were scheduled for discharge permit sampling. CDBO-6, MCO-4B, MCO-6, and MCO-7 were dry and no samples were collected. MCO-3 was sampled on 5/13/2013.

5.0 SUMMARY

The Mortandad and Sandia Watershed (Chromium Investigation, MDA C, and General Surveillance Monitoring Group) Watershed, as implemented under the Interim Plan, was completed on May 22, 2013 (day 17). Locations planned included 5 intermediate wells and 23 regional wells, for a total of 28 sites planned. Full sample suites were collected at 4 intermediate wells and 23 regional wells. One intermediate well was dry and was not sampled.

Modifications were made to the sampling requirements outlined in the Interim Plan at 1 site, per request from the LANL Groundwater Project Manager. Additional samples were collected at R-43 S2. Additionally, CDBO-6, MCO-3, MCO-4B, MCO-6, and MCO-7 were scheduled for discharge permit sampling.

6.0 REFERENCES

LANL (Los Alamos National Laboratory) August 2012. "Interim Facility-Wide Groundwater Monitoring Plan for the 2013 Monitoring Year, October 2012 – September 2013," Los Alamos National Laboratory document LA-UR-12-21331, Los Alamos, New Mexico. (LANL 2012, 225493)

Table 4.1-1
Well Sampling Observations

Location	Minimum purge volume met?	Parameters stable for three consecutive 3 or 5 minute readings?	SOP requirements met prior to sampling?	Casing Volumes purged before sampling	Comments
Alluvial Wells					
MCO-3	Yes	Yes	Yes	1	None
Regional and Intermediate Wells					
MCOI-4	NA	NA	NA	NA	Dry
MCOI-5	No	Yes	Yes	1.96	Sampled per work plan provided by GTL which directed that the well be purged at a rate of 0.1-0.2 gallons per minute (gpm) to minimize drawdown into the screen and that samples be collected after 1 CV was purged and parameter stabilized. A purge rate of 0.33 gpm was the lowest rate achievable with the installed Bennett pump. The initial water level was lower than during previous sampling events and drew down quickly during the purge. Parameters stabilized at 1.96 CVs and samples were collected.
MCOI-6	Yes	Yes	Yes	3.0	None
R-13	Yes	Yes	Yes	3.0	None
R-15	Yes	Yes	Yes	3.6	An extra 0.6 CVs were purged to allow dissolved oxygen to stabilize.
R-28	Yes	Yes	Yes	3.0	None
R-42	Yes	Yes	Yes	3.0	Green tint noted in purge water.
R-44 S1	Yes	Yes	Yes	3.0	None
R-44 S2	Yes	Yes	Yes	3.0	None
R-45 S1	Yes	Yes	Yes	3.0	None
R-45 S2	Yes	Yes	Yes	3.0	None
R-50 S1	Yes	Yes	Yes	3.25	None
R-50 S2	Yes	Yes	Yes	3.3	An extra 0.3 CVs were purged to allow dissolved oxygen to stabilize.
R-61 S1	Yes	Yes	Yes	3.0	None
R-61 S2	Yes	Yes	Yes	3.0	None
R-62	Yes	Yes	Yes	3.0	None
SCI-1	No	Yes	Yes	1.9	Sampled per the work plan provided by the GTL which directed that the well be sampled after 1CV was purged and parameters stabilized. Parameters stabilized at 1.9 CVs and samples were collected.

Table 4.1-1, continued
Well Sampling Observations

Location	Minimum purge volume met?	Parameters stable for three consecutive 3 or 5 minute readings?	SOP requirements met prior to sampling?	Casing Volumes purged before sampling	Comments
Regional and Intermediate Wells					
SCI-2	Yes	Yes	Yes	3.8	An additional 0.8 CVs were purged to allow dissolved oxygen to stabilize.
R-11	Yes	Yes	Yes	3.0	None
R-35a	Yes	Yes	Yes	3.0	None
R-35b	Yes	Yes	Yes	3.1	None
R-36	Yes	Yes	Yes	3.4	None
R-43 S1	Yes	Yes	Yes	3.0	None
R-43 S2	Yes	Yes	Yes	3.0	None
R-14	Yes	Yes	Yes	3.0	None
R-46	Yes	Yes	Yes	3.0	None
R-60	Yes	Yes	Yes	3.0	None
R-34	Yes	Yes	Yes	3.0	None

Table 4.1-2
Sampling Requirements Deviations

Location	Deviation	Cause	Comment
MCOI-4	No field or analytical data will be available for this location	This site was found to be dry during the pre-sweep, no site visit was made per direction from the STR	

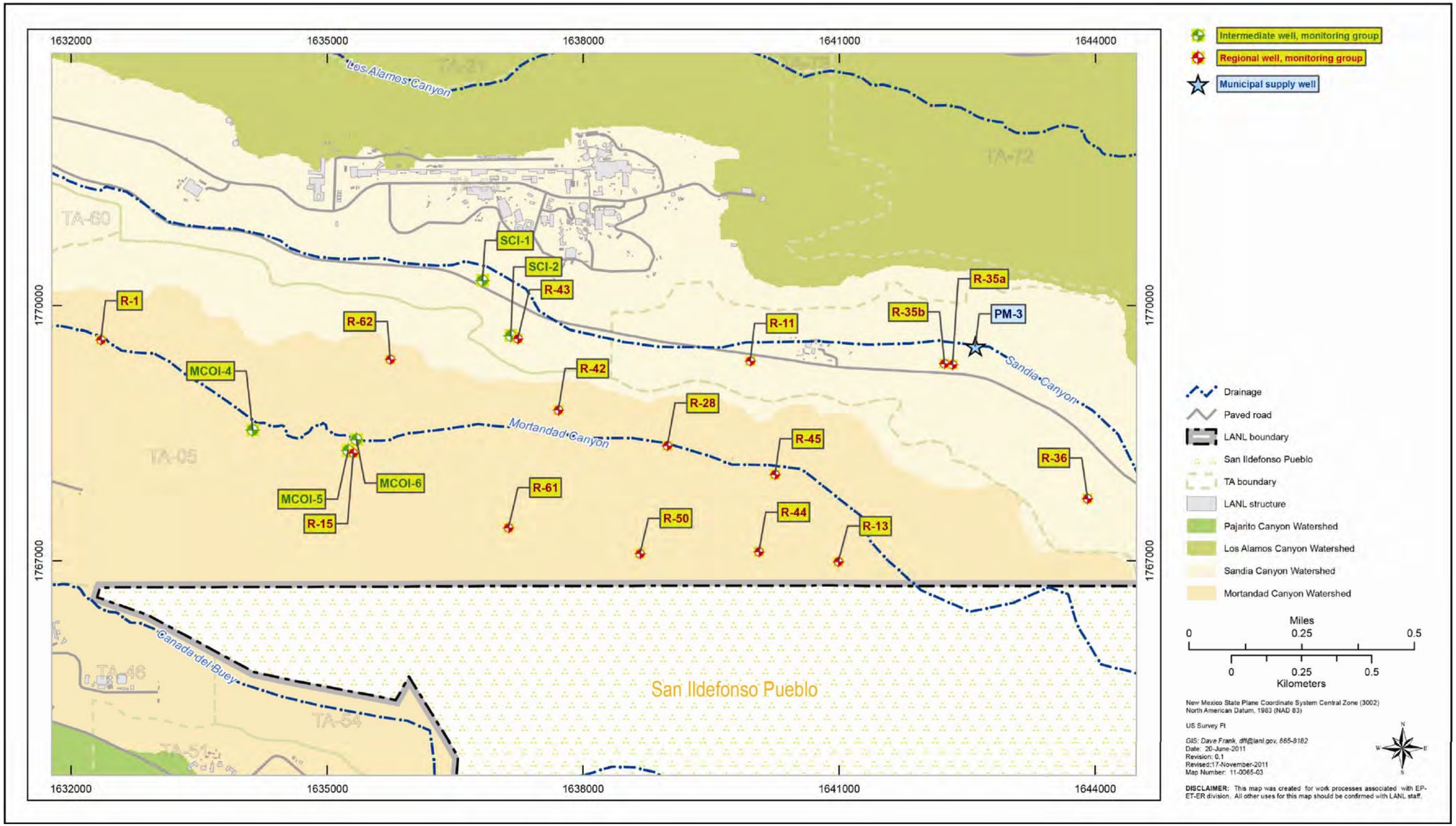

Figure 2.0-1. Sampling locations in the Chromium Investigation Monitoring Group

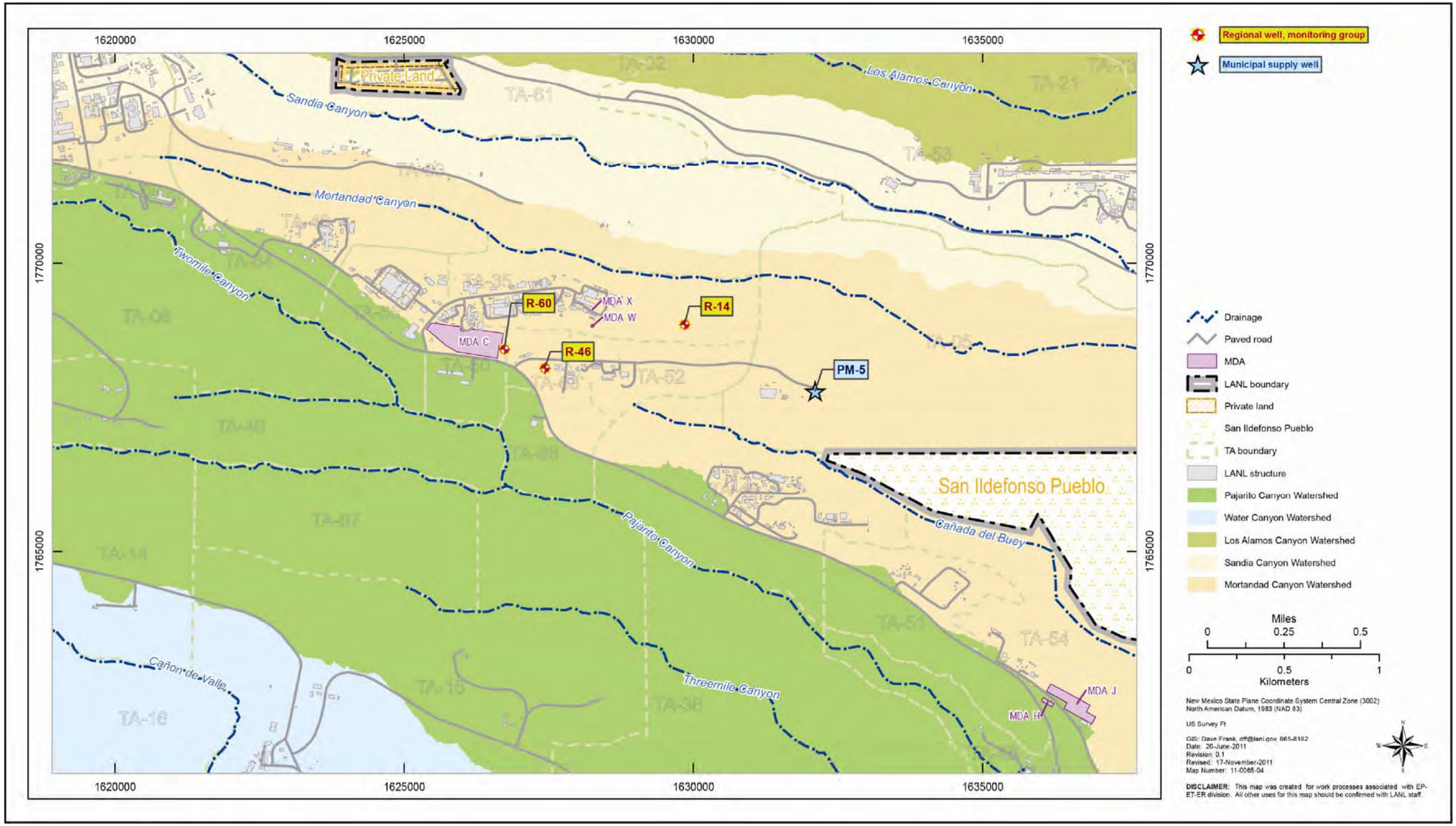

Figure 2.0-2. Sampling locations in the MDA C Monitoring Group

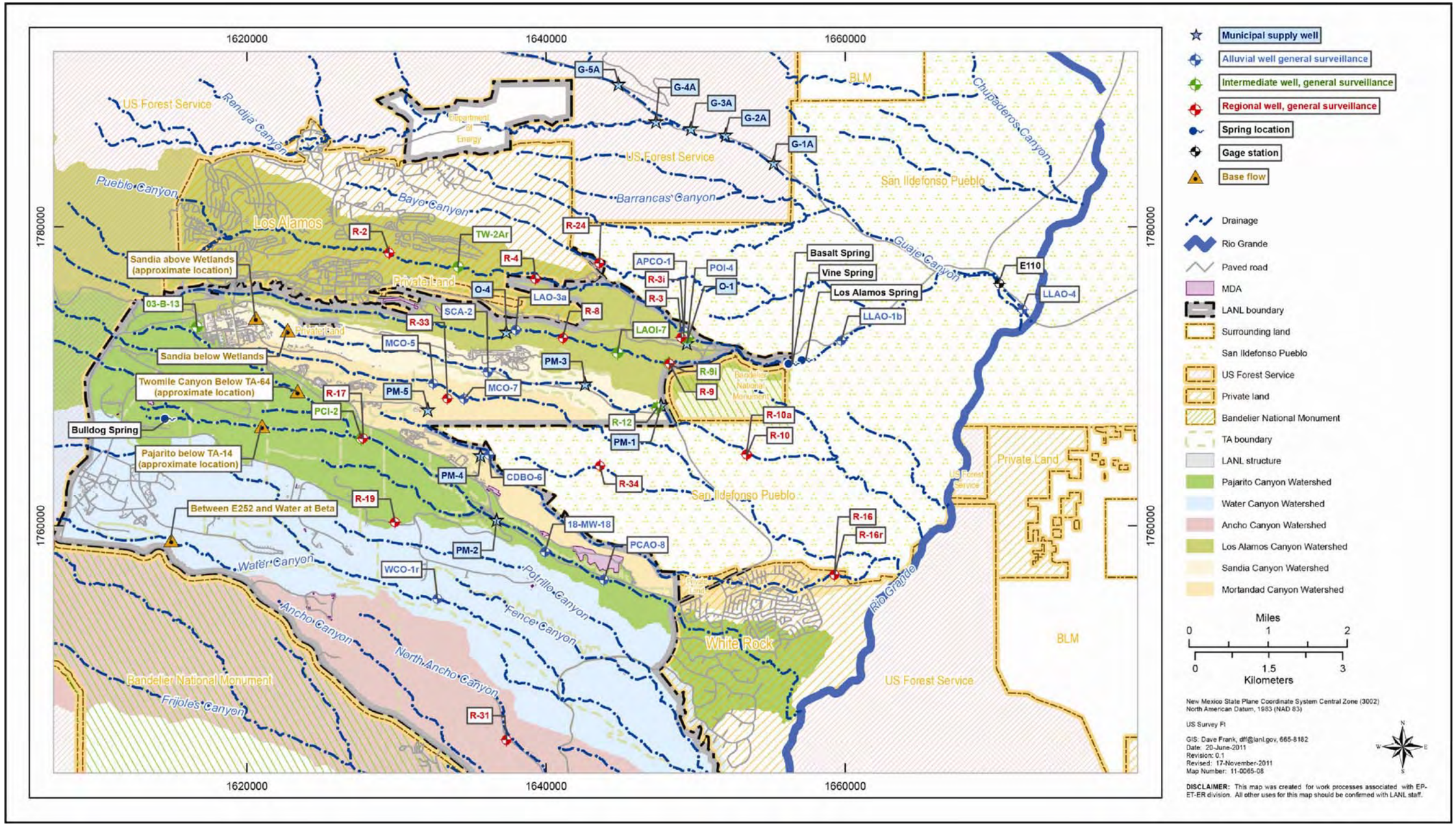

Figure 2.0-3. Sampling locations in the General Surveillance Monitoring Group

Appendix A

Samples Taken Table

Appendix A
Samples Taken Table
Event IDs: 4194, 4195, 4200, 4205, 4218
Event Name: Mortandad/Sandia (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) MY2013 Q3 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	MCOI-4	CAMO-13-30571	WSP-8260B-VOA	INV	UF	Not Collected; dry	None
				CAMO-13-30571	WSP-8270C-SVOA	INV	UF	Not Collected; dry	
				CAMO-13-30571	WSP-TKN+TOC	INV	UF	Not Collected; dry	
				CAMO-13-30565	WSP-8260B-VOA	FTB	UF	Not Collected; dry	
				CAMO-13-30587	WSP-CL04	INV	F	Not Collected; dry	
				CAMO-13-30587	WSP-GENINORG	INV	F	Not Collected; dry	
				CAMO-13-30587	WSP-Met+B+SN+SR+U	INV	F	Not Collected; dry	
				CAMO-13-30587	WSP-NH3+NO3/NO2+PO4	INV	F	Not Collected; dry	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	MCOI-5	CAMO-13-30572	WSP-8260B-VOA	INV	UF	5/7/2013	None
				CAMO-13-30572	WSP-8270C-SVOA	INV	UF	5/7/2013	
				CAMO-13-30572	WSP-TKN+TOC	INV	UF	5/7/2013	
				CAMO-13-30566	WSP-8260B-VOA	FTB	UF	5/7/2013	
				CAMO-13-30561	WSP-8260B-VOA	FD	UF	5/7/2013	
				CAMO-13-30561	WSP-8270C-SVOA	FD	UF	5/7/2013	
				CAMO-13-30561	WSP-TKN+TOC	FD	UF	5/7/2013	
				CAMO-13-30559	WSP-8260B-VOA	FB	UF	5/7/2013	
				CAMO-13-30559	WSP-8270C-SVOA	FB	UF	5/7/2013	
				CAMO-13-30588	WSP-CL04	INV	F	5/7/2013	
				CAMO-13-30588	WSP-GENINORG	INV	F	5/7/2013	
				CAMO-13-30588	WSP-Met+B+SN+SR+U	INV	F	5/7/2013	
				CAMO-13-30588	WSP-NH3+NO3/NO2+PO4	INV	F	5/7/2013	
				CAMO-13-30563	WSP-CL04	FD	F	5/7/2013	
				CAMO-13-30563	WSP-GENINORG	FD	F	5/7/2013	
				CAMO-13-30563	WSP-Met+B+SN+SR+U	FD	F	5/7/2013	
				CAMO-13-30563	WSP-NH3+NO3/NO2+PO4	FD	F	5/7/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	MCOI-6	CAMO-13-30573	WSP-8260B-VOA	INV	UF	5/8/2013	Sampled within 50' of running diesel generator
				CAMO-13-30573	WSP-8270C-SVOA	INV	UF	5/8/2013	
				CAMO-13-30573	WSP-TKN+TOC	INV	UF	5/8/2013	
				CAMO-13-30567	WSP-8260B-VOA	FTB	UF	5/8/2013	
				CAMO-13-30589	WSP-CL04	INV	F	5/8/2013	
				CAMO-13-30589	WSP-GENINORG	INV	F	5/8/2013	
				CAMO-13-30589	WSP-Met+B+SN+SR+U	INV	F	5/8/2013	
				CAMO-13-30589	WSP-NH3+NO3/NO2+PO4	INV	F	5/8/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-13	CAMO-13-30574	WSP-TKN+TOC	INV	UF	5/6/2013	Sampled within 40' of running diesel generator
				CAMO-13-30590	WSP-GENINORG	INV	F	5/6/2013	
				CAMO-13-30590	WSP-Met+B+SN+SR+U	INV	F	5/6/2013	
				CAMO-13-30590	WSP-NH3+NO3/NO2+PO4	INV	F	5/6/2013	

Appendix A
Samples Taken Table
Event IDs: 4194, 4195, 4200, 4205, 4218
Event Name: Mortandad/Sandia (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) MY2013 Q3 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-15	CAMO-13-30575	WSP-TKN+TOC	INV	UF	5/6/2013	Sampled within 50' of running diesel generator
				CAMO-13-30591	WSP-CL04	INV	F	5/6/2013	
				CAMO-13-30591	WSP-GENINORG	INV	F	5/6/2013	
				CAMO-13-30591	WSP-Met+B+SN+SR+U	INV	F	5/6/2013	
				CAMO-13-30591	WSP-NH3+NO3/NO2+PO4	INV	F	5/6/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-28	CAMO-13-30576	WSP-TKN+TOC	INV	UF	5/6/2013	Sampled within 50' of running diesel generator
				CAMO-13-30558	WSP-8260B-VOA	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-8270C-SVOA	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-CL04	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-GENINORG	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-GrossA/B	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-LL-H-3	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-Met+B+SN+SR+U	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-NH3+NO3/NO2+PO4	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-RAD	PEB	UF	5/6/2013	
				CAMO-13-30558	WSP-TKN+TOC	PEB	UF	5/6/2013	
				CAMO-13-30592	WSP-CL04	INV	F	5/6/2013	
				CAMO-13-30592	WSP-GENINORG	INV	F	5/6/2013	
				CAMO-13-30592	WSP-Met+B+SN+SR+U	INV	F	5/6/2013	
				CAMO-13-30592	WSP-NH3+NO3/NO2+PO4	INV	F	5/6/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-42	CAMO-13-30577	WSP-TKN+TOC	INV	UF	5/6/2013	Sampled within 40' of running diesel generator
				CAMO-13-30593	WSP-CL04	INV	F	5/6/2013	
				CAMO-13-30593	WSP-GENINORG	INV	F	5/6/2013	
				CAMO-13-30593	WSP-Met+B+SN+SR+U	INV	F	5/6/2013	
				CAMO-13-30593	WSP-NH3+NO3/NO2+PO4	INV	F	5/6/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-44 S1	CAMO-13-30578	WSP-TKN+TOC	INV	UF	5/6/2013	Sampled within 50' of running diesel generator
				CAMO-13-30594	WSP-GENINORG	INV	F	5/9/2013	
				CAMO-13-30594	WSP-Met+B+SN+SR+U	INV	F	5/9/2013	
				CAMO-13-30594	WSP-NH3+NO3/NO2+PO4	INV	F	5/9/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-44 S2	CAMO-13-30579	WSP-TKN+TOC	INV	UF	5/9/2013	Sampled within 50' of running diesel generator
				CAMO-13-30595	WSP-GENINORG	INV	F	5/9/2013	
				CAMO-13-30595	WSP-Met+B+SN+SR+U	INV	F	5/9/2013	
				CAMO-13-30595	WSP-NH3+NO3/NO2+PO4	INV	F	5/9/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-45 S1	CAMO-13-30580	WSP-TKN+TOC	INV	UF	5/9/2013	Sampled within 40' of running diesel generator
				CAMO-13-30596	WSP-GENINORG	INV	F	5/9/2013	
				CAMO-13-30596	WSP-Met+B+SN+SR+U	INV	F	5/9/2013	
				CAMO-13-30596	WSP-NH3+NO3/NO2+PO4	INV	F	5/9/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-45 S2	CAMO-13-30581	WSP-TKN+TOC	INV	UF	5/9/2013	Sampled within 40' of running diesel generator
				CAMO-13-30597	WSP-GENINORG	INV	F	5/9/2013	
				CAMO-13-30597	WSP-Met+B+SN+SR+U	INV	F	5/9/2013	
				CAMO-13-30597	WSP-NH3+NO3/NO2+PO4	INV	F	5/9/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-50 S1	CAMO-13-30582	WSP-LL-H-3	INV	UF	5/10/2013	Sampled within 75' of running diesel generator
				CAMO-13-30582	WSP-TKN+TOC	INV	UF	5/10/2013	
				CAMO-13-30598	WSP-CL04	INV	F	5/10/2013	
				CAMO-13-30598	WSP-GENINORG	INV	F	5/10/2013	
				CAMO-13-30598	WSP-Met+B+SN+SR+U	INV	F	5/10/2013	
				CAMO-13-30598	WSP-NH3+NO3/NO2+PO4	INV	F	5/10/2013	
				CAMO-13-30583	WSP-LL-H-3	INV	UF	5/13/2013	

Appendix A
Samples Taken Table
Event IDs: 4194, 4195, 4200, 4205, 4218
Event Name: Mortandad/Sandia (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) MY2013 Q3 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected	Comments
Chromium Monitoring - Mortandad Canyon	**WG (Groundwater)**	**WGR (Regional Groundwater)**	**R-50 S2**	CAMO-13-30583	WSP-TKN+TOC	INV	UF	5/13/2013	Sampled within 50' of running diesel generator
				CAMO-13-30599	WSP-CL04	INV	F	5/13/2013	
				CAMO-13-30599	WSP-GENINORG	INV	F	5/13/2013	
				CAMO-13-30599	WSP-Met+B+SN+SR+U	INV	F	5/13/2013	
				CAMO-13-30599	WSP-NH3+NO3/NO2+PO4	INV	F	5/13/2013	
Chromium Monitoring - Mortandad Canyon	**WG (Groundwater)**	**WGR (Regional Groundwater)**	**R-61 S1**	CAMO-13-30584	WSP-8260B-VOA	INV	UF	5/16/2013	Sampled within 50' of running diesel generator
				CAMO-13-30584	WSP-8270C-SVOA	INV	UF	5/16/2013	
				CAMO-13-30584	WSP-GrossA/B	INV	UF	5/16/2013	
				CAMO-13-30584	WSP-LL-H-3	INV	UF	5/16/2013	
				CAMO-13-30584	WSP-RAD	INV	UF	5/16/2013	
				CAMO-13-30584	WSP-TKN+TOC	INV	UF	5/16/2013	
				CAMO-13-30568	WSP-8260B-VOA	FTB	UF	5/16/2013	
				CAMO-13-30600	WSP-CL04	INV	F	5/16/2013	
				CAMO-13-30600	WSP-GENINORG	INV	F	5/16/2013	
				CAMO-13-30600	WSP-Met+B+SN+SR+U	INV	F	5/16/2013	
				CAMO-13-30600	WSP-NH3+NO3/NO2+PO4	INV	F	5/16/2013	
Chromium Monitoring - Mortandad Canyon	**WG (Groundwater)**	**WGR (Regional Groundwater)**	**R-61 S2**	CAMO-13-30585	WSP-8260B-VOA	INV	UF	5/22/2013	Sampled within 50' of running diesel generator
				CAMO-13-30585	WSP-8270C-SVOA	INV	UF	5/22/2013	
				CAMO-13-30585	WSP-GrossA/B	INV	UF	5/22/2013	
				CAMO-13-30585	WSP-LL-H-3	INV	UF	5/22/2013	
				CAMO-13-30585	WSP-RAD	INV	UF	5/22/2013	
				CAMO-13-30585	WSP-TKN+TOC	INV	UF	5/22/2013	
				CAMO-13-30569	WSP-8260B-VOA	FTB	UF	5/22/2013	
				CAMO-13-30601	WSP-CL04	INV	F	5/22/2013	
				CAMO-13-30601	WSP-GENINORG	INV	F	5/22/2013	
				CAMO-13-30601	WSP-Met+B+SN+SR+U	INV	F	5/22/2013	
				CAMO-13-30601	WSP-NH3+NO3/NO2+PO4	INV	F	5/22/2013	

Appendix A
Samples Taken Table
Event IDs: 4194, 4195, 4200, 4205, 4218
Event Name: Mortandad/Sandia (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) MY2013 Q3 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-62	CAMO-13-30586	WSP-8260B-VOA	INV	UF	5/8/2013	Sampled within 40' of running diesel generator
				CAMO-13-30586	WSP-8270C-SVOA	INV	UF	5/8/2013	
				CAMO-13-30586	WSP-GrossA/B	INV	UF	5/8/2013	
				CAMO-13-30586	WSP-LL-H-3	INV	UF	5/8/2013	
				CAMO-13-30586	WSP-RAD	INV	UF	5/8/2013	
				CAMO-13-30586	WSP-TKN+TOC	INV	UF	5/8/2013	
				CAMO-13-30570	WSP-8260B-VOA	FTB	UF	5/8/2013	
				CAMO-13-30562	WSP-8260B-VOA	FD	UF	5/8/2013	
				CAMO-13-30562	WSP-8270C-SVOA	FD	UF	5/8/2013	
				CAMO-13-30562	WSP-GrossA/B	FD	UF	5/8/2013	
				CAMO-13-30562	WSP-LL-H-3	FD	UF	5/8/2013	
				CAMO-13-30562	WSP-RAD	FD	UF	5/8/2013	
				CAMO-13-30562	WSP-TKN+TOC	FD	UF	5/8/2013	
				CAMO-13-30560	WSP-8260B-VOA	FB	UF	5/8/2013	
				CAMO-13-30560	WSP-8270C-SVOA	FB	UF	5/8/2013	
				CAMO-13-30602	WSP-CL04	INV	F	5/8/2013	
				CAMO-13-30602	WSP-GENINORG	INV	F	5/8/2013	
				CAMO-13-30602	WSP-Met+B+SN+SR+U	INV	F	5/8/2013	
				CAMO-13-30602	WSP-NH3+NO3/NO2+PO4	INV	F	5/8/2013	
				CAMO-13-30564	WSP-CL04	FD	F	5/8/2013	
				CAMO-13-30564	WSP-GENINORG	FD	F	5/8/2013	
				CAMO-13-30564	WSP-Met+B+SN+SR+U	FD	F	5/8/2013	
				CAMO-13-30564	WSP-NH3+NO3/NO2+PO4	FD	F	5/8/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	SCI-1	CASA-13-30548	WSP-TKN+TOC	INV	UF	5/17/2013	None
				CASA-13-30556	WSP-CL04	INV	F	5/17/2013	
				CASA-13-30556	WSP-GENINORG	INV	F	5/17/2013	
				CASA-13-30556	WSP-Met+B+SN+SR+U	INV	F	5/17/2013	
				CASA-13-30556	WSP-NH3+NO3/NO2+PO4	INV	F	5/17/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	SCI-2	CASA-13-30549	WSP-TKN+TOC	INV	UF	5/21/2013	None
				CASA-13-30557	WSP-CL04	INV	F	5/21/2013	
				CASA-13-30557	WSP-GENINORG	INV	F	5/21/2013	
				CASA-13-30557	WSP-Met+B+SN+SR+U	INV	F	5/21/2013	
				CASA-13-30557	WSP-NH3+NO3/NO2+PO4	INV	F	5/21/2013	

Appendix A
Samples Taken Table
Event IDs: 4194, 4195, 4200, 4205, 4218
Event Name: Mortandad/Sandia (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) MY2013 Q3 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected	Comments
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-11	CASA-13-30542	WSP-TKN+TOC	INV	UF	5/13/2013	Sampled within 40' of running diesel generator
				CASA-13-30540	WSP-TKN+TOC	FD	UF	5/13/2013	
				CASA-13-30550	WSP-CL04	INV	F	5/13/2013	
				CASA-13-30550	WSP-GENINORG	INV	F	5/13/2013	
				CASA-13-30550	WSP-Met+B+SN+SR+U	INV	F	5/13/2013	
				CASA-13-30550	WSP-NH3+NO3/NO2+PO4	INV	F	5/13/2013	
				CASA-13-30541	WSP-CL04	FD	F	5/13/2013	
				CASA-13-30541	WSP-GENINORG	FD	F	5/13/2013	
				CASA-13-30541	WSP-Met+B+SN+SR+U	FD	F	5/13/2013	
				CASA-13-30541	WSP-NH3+NO3/NO2+PO4	FD	F	5/13/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-35a	CASA-13-30543	WSP-TKN+TOC	INV	UF	5/16/2013	
				CASA-13-30551	WSP-GENINORG	INV	F	5/16/2013	Diesel generator running while sampling
				CASA-13-30551	WSP-Met+B+SN+SR+U	INV	F	5/16/2013	
				CASA-13-30551	WSP-NH3+NO3/NO2+PO4	INV	F	5/16/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-35b	CASA-13-30544	WSP-TKN+TOC	INV	UF	5/10/2013	Diesel generator running while sampling
				CASA-13-30552	WSP-GENINORG	INV	F	5/10/2013	
				CASA-13-30552	WSP-Met+B+SN+SR+U	INV	F	5/10/2013	
				CASA-13-30552	WSP-NH3+NO3/NO2+PO4	INV	F	5/10/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-36	CASA-13-30545	WSP-TKN+TOC	INV	UF	5/17/2013	Diesel generator running while sampling
				CASA-13-30553	WSP-GENINORG	INV	F	5/17/2013	
				CASA-13-30553	WSP-Met+B+SN+SR+U	INV	F	5/17/2013	
				CASA-13-30553	WSP-NH3+NO3/NO2+PO4	INV	F	5/17/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-43 S1	CASA-13-30546	WSP-TKN+TOC	INV	UF	5/15/2013	Sampled within 40' of running diesel generator
				CASA-13-30554	WSP-CL04	INV	F	5/15/2013	
				CASA-13-30554	WSP-GENINORG	INV	F	5/15/2013	
				CASA-13-30554	WSP-Met+B+SN+SR+U	INV	F	5/15/2013	
				CASA-13-30554	WSP-NH3+NO3/NO2+PO4	INV	F	5/15/2013	

Appendix A
Samples Taken Table
Event IDs: 4194, 4195, 4200, 4205, 4218
Event Name: Mortandad/Sandia (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) MY2013 Q3 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected	Comments
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-43 S2	CASA-13-30547	WSP-TKN+TOC	INV	UF	5/14/2013	Sampled within 40' of running diesel generator
				CASA-13-30555	WSP-CL04	INV	F	5/14/2013	
				CASA-13-30555	WSP-GENINORG	INV	F	5/14/2013	
				CASA-13-30555	WSP-Met+B+SN+SR+U	INV	F	5/14/2013	
				CASA-13-30555	WSP-NH3+NO3/NO2+PO4	INV	F	5/14/2013	
				CASA-13-32003	WSP-EES6-ALK	INV	UF	5/14/2013	Collected at 4 CV
				CASA-13-32003	WSP-EES6-TOC	INV	UF	5/14/2013	
				CASA-13-32003	WSP-EES6-ANIONS	INV	F	5/14/2013	
				CASA-13-32003	WSP-EES6-MET	INV	F	5/14/2013	
				CASA-13-32004	WSP-EES6-ALK	INV	UF	5/14/2013	Collected at 8 CV
				CASA-13-32004	WSP-EES6-TOC	INV	UF	5/14/2013	
				CASA-13-32004	WSP-EES6-ANIONS	INV	F	5/14/2013	
				CASA-13-32004	WSP-EES6-MET	INV	F	5/14/2013	
				CASA-13-32005	WSP-EES6-ALK	INV	UF	5/14/2013	Collected at 12 CV
				CASA-13-32005	WSP-EES6-TOC	INV	UF	5/14/2013	
				CASA-13-32005	WSP-EES6-ANIONS	INV	F	5/14/2013	
				CASA-13-32005	WSP-EES6-MET	INV	F	5/14/2013	
General Surveillance Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-34	CAMO-13-30614	WSP-TKN+TOC	INV	UF	5/15/2013	Sampled within 50' of running diesel generator
				CAMO-13-30618	WSP-GENINORG	INV	F	5/15/2013	
				CAMO-13-30618	WSP-Met+B+SN+SR+U	INV	F	5/15/2013	
				CAMO-13-30618	WSP-NH3+NO3/NO2+PO4	INV	F	5/15/2013	
MDA C Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-14 S1	CAMO-13-30613	WSP-8260B-VOA	INV	UF	5/14/2013	Sampled within 50' of running diesel generator
				CAMO-13-30613	WSP-8270C-SVOA	INV	UF	5/14/2013	
				CAMO-13-30613	WSP-LL-H-3	INV	UF	5/14/2013	
				CAMO-13-30610	WSP-8260B-VOA	FTB	UF	5/14/2013	
MDA C Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-46	CAMO-13-30615	WSP-8260B-VOA	INV	UF	5/21/2013	Sampled within 40' of running diesel generator
				CAMO-13-30615	WSP-8270C-SVOA	INV	UF	5/21/2013	
				CAMO-13-30615	WSP-LL-H-3	INV	UF	5/21/2013	
				CAMO-13-30615	WSP-TKN+TOC	INV	UF	5/21/2013	
				CAMO-13-30611	WSP-8260B-VOA	FTB	UF	5/21/2013	
				CAMO-13-30609	WSP-8260B-VOA	FB	UF	5/21/2013	
				CAMO-13-30609	WSP-8270C-SVOA	FB	UF	5/21/2013	
				CAMO-13-30619	WSP-GENINORG	INV	F	5/21/2013	
				CAMO-13-30619	WSP-Met+B+SN+SR+U	INV	F	5/21/2013	
				CAMO-13-30619	WSP-NH3+NO3/NO2+PO4	INV	F	5/21/2013	

Appendix A
Samples Taken Table
Event IDs: 4194, 4195, 4200, 4205, 4218
Event Name: Mortandad/Sandia (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) MY2013 Q3 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected	Comments
MDA C Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-60	CAMO-13-30616	WSP-8260B-VOA	INV	UF	5/7/2013	Sampled within 40' of running diesel generator
				CAMO-13-30616	WSP-8270C-SVOA	INV	UF	5/7/2013	
				CAMO-13-30616	WSP-LL-H-3	INV	UF	5/7/2013	
				CAMO-13-30616	WSP-TKN+TOC	INV	UF	5/7/2013	
				CAMO-13-30612	WSP-8260B-VOA	FTB	UF	5/7/2013	
				CAMO-13-30620	WSP-GENINORG	INV	F	5/7/2013	
				CAMO-13-30620	WSP-Met+B+SN+SR+U	INV	F	5/7/2013	
				CAMO-13-30620	WSP-NH3+NO3/NO2+PO4	INV	F	5/7/2013	
Discharge Permit Sampling	WG (Groundwater)	WGA (Alluvial Groundwater)	CDBO-6	CAMO-13-31064	WSP-8082-PCB	INV	UF	Not Collected; dry	None
				CAMO-13-31064	WSP-8260B-VOA	INV	UF	Not Collected; dry	
				CAMO-13-31064	WSP-8270C-SVOA	INV	UF	Not Collected; dry	
				CAMO-13-31064	WSP-Met+B+SN+SR+U	INV	UF	Not Collected; dry	
				CAMO-13-31063	WSP-8260B-VOA	FTB	UF	Not Collected; dry	
				CAMO-13-31069	Ra226+228	INV	F	Not Collected; dry	
				CAMO-13-31069	WSP-CL04	INV	F	Not Collected; dry	
				CAMO-13-31069	WSP-CN(T)	INV	F	Not Collected; dry	
				CAMO-13-31069	WSP-GENINORG	INV	F	Not Collected; dry	
				CAMO-13-31069	WSP-GrossA/B	INV	F	Not Collected; dry	
				CAMO-13-31069	WSP-Met+B+SN+SR+U	INV	F	Not Collected; dry	
				CAMO-13-31069	WSP-NH3+NO3/NO2+PO4	INV	F	Not Collected; dry	
				CAMO-13-31069	WSP-TKN+TOC	INV	F	Not Collected; dry	
Discharge Permit Sampling	WG (Groundwater)	WGA (Alluvial Groundwater)	MCO-3	CAMO-13-31070	WSP-CL04	INV	F	5/13/2013	None
				CAMO-13-31070	WSP-GENINORG	INV	F	5/13/2013	
				CAMO-13-31070	WSP-NH3+NO3/NO2+PO4	INV	F	5/13/2013	
				CAMO-13-31070	WSP-TKN+TOC	INV	F	5/13/2013	
Discharge Permit Sampling	WG (Groundwater)	WGA (Alluvial Groundwater)	MCO-4B	CAMO-13-31071	WSP-CL04	INV	F	Not Collected; dry	None
				CAMO-13-31071	WSP-GENINORG	INV	F	Not Collected; dry	
				CAMO-13-31071	WSP-NH3+NO3/NO2+PO4	INV	F	Not Collected; dry	
				CAMO-13-31071	WSP-TKN+TOC	INV	F	Not Collected; dry	
Discharge Permit Sampling	WG (Groundwater)	WGA (Alluvial Groundwater)	MCO-6	CAMO-13-31072	WSP-CL04	INV	F	Not Collected; dry	None
				CAMO-13-31072	WSP-GENINORG	INV	F	Not Collected; dry	
				CAMO-13-31072	WSP-NH3+NO3/NO2+PO4	INV	F	Not Collected; dry	
				CAMO-13-31072	WSP-TKN+TOC	INV	F	Not Collected; dry	
Discharge Permit Sampling	WG (Groundwater)	WGA (Alluvial Groundwater)	MCO-7	CAMO-13-31073	WSP-CL04	INV	F	Not Collected; dry	None
				CAMO-13-31073	WSP-GENINORG	INV	F	Not Collected; dry	
				CAMO-13-31073	WSP-NH3+NO3/NO2+PO4	INV	F	Not Collected; dry	
				CAMO-13-31073	WSP-TKN+TOC	INV	F	Not Collected; dry	

*EQB = equipment rinsate blank, FD = field duplicate, FB = field blank, FTB = field trip blank, INV = investigative sample, PEB = performance evaluation blank
** F = filtered, UF = unfiltered

Appendix B

Well Completion and Pump Information

Appendix B
Well Completion and Pump Information
Mortandad and Sandia Watersheds MY2013 Q3 and other FIeld Activities from April 29, 2013- May 26, 2013

Watershed	Location Name	Land Surface Datum (ft msl)	Completion Depth (ft bgs)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Length (ft)	Inner Diameter (in)	Pump Type
Mortandad	CDBO-6	6817.20	49.0	34.0	44.0	10	2	Bladder
Mortandad	MCO-3	7052.6	12	2	12	10	3	Bladder
Mortandad	MCO-4B	6886.75	33.9	8.9	28.9	20	2	Bladder
Mortandad	MCO-6	6849.48	47	27	47	20	4	Bladder
Mortandad	MCO-7	6827.31	69	39	69	30	3	Bladder
Mortandad	MCOI-4	6837.2	525.7	498.9	522	23.1	4.5	Bennet
Mortandad	MCOI-5	6819.7	702.7	689.04	699	9.96	4.5	Bennet
Mortandad	MCOI-6	6811.1	713.2	686	708.3	22.3	4.5	Gear Driven Submersible
Mortandad	R-13	6673.05	1029.4	958.33	1018.72	60.39	4.5	Gear Driven Submersible
Mortandad	R-14	7062.08	1315.6	1200.6	1233.2	32.6	4.5	Gear Driven Submersible
Mortandad	R-15	6820	1030.6	958.6	1020.3	61.7	4.5	Gear Driven Submersible
Mortandad	R-28	6728.61	980.3	934.3	958.1	23.8	4.47	Gear Driven Submersible
Mortandad	R-34	6629.99	920.7	883.7	906.6	22.9	4.5	Gear Driven Submersible
Mortandad	R-42	6759.02	973.5	931.8	952.9	21.1	5	Gear Driven Submersible
Mortandad	R-44 S1	6714.91	1016	895	905	10	5	Gear Driven Submersible
Mortandad	R-44 S2	6714.91	1016	985.3	995.2	9.9	5	Gear Driven Submersible
Mortandad	R-45 S1	6704.02	1016	880	890	10	5	Gear Driven Submersible
Mortandad	R-45 S2	6704.02	1016	974.9	994.9	20	5	Gear Driven Submersible
Mortandad	R-46	7213.33	1383.8	1340	1360.7	20.7	5	Gear Driven Submersible
Mortandad	R-50 S1	6904.11	1217.5	1077	1087	10	5	Gear Driven Submersible
Mortandad	R-50 S2	6904.11	1217.5	1185.0	1205.6	20.6	5	Gear Driven Submersible
Mortandad	R-60	7228.17	1360.9	1330.0	1350.9	20.9	5	Gear Driven Submersible
Mortandad	R-61 S1	6940.12	1162.3	1125.0	1135.0	10	5	Gear Driven Submersible
Mortandad	R-61 S2	6940.12	1251.6	1220.4	1241	20.6	5	Gear Driven Submersible
Mortandad	R-62	6984.88	1251.6	1158.4	1179.1	20.7	5	Gear Driven Submersible
Sandia	R-11	6673.72	901.7	855	877.9	22.9	4.46	Gear Driven Submersible
Sandia	R-35a	6623.06	1086.2	1013.1	1062.2	49.1	4.375	Gear Driven Submersible
Sandia	R-35b	6625.21	872.2	825.4	848.5	23.1	4.375	Gear Driven Submersible

Watershed	Location Name	Land Surface Datum (ft msl)	Completion Depth (ft bgs)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Length (ft)	Inner Diameter (in)	Pump Type
Sandia	R-36	6591.37	803.7	766.9	789.9	23	4.375	Gear Driven Submersible
Sandia	R-43 S1	6732.65	990.4	903.9	924.6	20.7	5	Gear Driven Submersible
Sandia	R-43 S2	6732.65	990.4	969.1	979.1	10	5	Gear Driven Submersible
Sandia	SCI-1	6738.27	377.9	358.4	377.9	19.5	3.8	Bennet
Sandia	SCI-2	6735.7	570	548	568	20	2	Bennet

Appendix C
Time-Series Purge Data

NOTES:

* Unless otherwise noted, The following parameters have been logged on the YSI meters and digitally imported into Appendix

* The following parameters are manually entered from data recorded on the Groundwater Sampling Log and reviewed by field

* Parameters are recorded on the YSI meters in 5 minute intervals. Manually entered data is recorded in 5, 10, 15, 30, or 60

ABBREVIATIONS:

* CV = casing volume
* °C = degrees Celsius
* DO = Dissolved Oxygen
* DST = Daylight Savings Time
* ft BGS = feet below ground surface
* ft BTIC = feet below top of inner casing
* ft BTOC = feet below top of casing
* ft BTOM = feet below top of manhole
* ft MSL = feet above mean sea level
* Gal = gallons
* gpm = gallons per minute
* in = inches
* mg/L = milligrams per liter
* MST = Mountain Standard Time
* mV = millivolts
* NA = parameters are not applicable
* NC = parameters were not collected, see notes for details
* ND = YSI initializing, no valid data available
* NTU = nephelometric turbidity units
* ORP = Oxidation Reduction Potential
* pH = pH in standard units
* SC = Specific Conductance
* TIC= top of inner casing
* TOC = top of outer casing
* µS/cm = microSiemens per centimeter

Well Name: MCO-3
Well Inside Diameter (in): 3
Well Depth (ft BGS): 12
Casing/Tubing Type: PVC
Date: 5/13/2013
Initial Water Level (ft BTOC): 10.02
Brass Cap (ft MSL): 7052.60

1 Casing Volume (Gal): 1.6
3 Casing Volume (Gal): 4.8
Drop Pipe (Gal): NA
3 CVs plus DP (Gal): 4.8
Total Purge Water (Gal): 1.6
Measuring point height (ft BTOC): 2.40

Pump On: 9:29
Water at Surface: 9:29
Begin Sampling: 10:16
End Sampling: 10:36
Pump Off: 10:36
Final Water Level (ft BTOC): 10:13
Total Waste Water (Gal): 1.7

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft BTOC)	Discharge Rate (gpm)	Notes
9:36:31	NC	NC	NC	NC	NC	NC	10.10	0.04	clear, odorless
9:41:31	6.84	7.29	849	8.23	1.8	226.0	10.13	0.04	clear, odorless
9:46:31	6.89	7.33	847	8.12	1.7	226.0	10.13	0.04	clear, odorless
9:51:31	6.91	7.76	849	8.26	1.9	230.0	10.13	0.04	clear, odorless
9:56:31	6.87	7.28	854	8.18	1.7	230.0	10.13	0.04	clear, odorless
10:01:31	6.86	7.20	853	8.18	1.7	230.0	10.13	0.04	clear, odorless
10:06:31	6.89	7.30	852	8.18	1.6	229.0	10.13	0.04	clear, odorless
10:11:31	6.93	7.61	850	8.18	1.5	226.0	10.13	0.04	clear, odorless

Additional Notes

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: MCOI-5
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 702.7
Casing/Tubing Type: SS
Date: 5/7/2013
Initial Water Level (ft MSL): 6133.15
Measuring Point (ft MSL): 6819.1

1 Casing Volume (Gal): 13.8
3 Casing Volume (Gal): 41.4
Drop Pipe (Gal): 4.1
3 CVs plus DP (Gal): 45.5
Total Purge Water (Gal): 27.0

Pump On: 10:06
Water at Surface: 10:07
Begin Sampling: 11:20
End Sampling: 11:37
Pump Off: 11:37
Final Water Level (ft MSL): 6125.69
Total Waste Water (Gal): 32.5

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:19:01	ND	ND	ND	ND	ND	ND	6130.55	0.33	clear, odorless
10:24:01	8.29	13.56	197	6.53	1.20	243	6129.84	0.45	clear, odorless
10:29:01	8.52	13.80	196	6.64	0.51	241	6129.15	0.45	clear, odorless
10:34:01	8.53	13.84	197	6.63	0.41	241	6129.14	0.45	clear, odorless
10:39:01	8.55	13.82	198	6.46	0.25	240	6129.16	0.45	clear, odorless
10:44:01	8.54	13.83	200	6.23	0.13	240	6129.07	0.45	clear, odorless
10:49:01	8.55	13.87	201	6.11	0.02	239	6128.66	0.45	clear, odorless
10:54:01	8.51	13.73	202	5.96	0.13	239	6128.13	0.45	clear, odorless
10:59:01	8.50	13.70	204	5.75	0.25	239	6127.66	0.45	clear, odorless
11:04:01	8.47	13.78	207	5.44	0.18	238	6127.32	0.45	clear, odorless
11:09:01	8.47	13.81	208	5.19	0.88	236	6127.02	0.45	clear, odorless
11:14:01	8.43	13.73	208	5.19	0.76	237	6126.73	0.45	clear, odorless
11:19:01	8.49	13.72	208	5.33	0.99	234	6126.48	0.45	clear, odorless

Additional Notes
Used HACH Turbidimeter #1 due to negative YSI Turb values

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: MCOI-6
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 713.2
Casing/Tubing Type: SS
Date: 5/8/2013
Initial Water Level (ft MSL): 6152.40
Measuring Point (ft MSL): 6811.10

1 Casing Volume (Gal): 45
3 Casing Volume (Gal): 135.0
Drop Pipe (Gal): 27.0
3 CVs plus DP (Gal): 162.0
Total Purge Water (Gal): 136

Pump On: 9:30
Water at Surface: 9:34
Begin Sampling: 11:13
End Sampling: 11:28
Pump Off: 11:28
Final Water Level (ft MSL): 6133.47
Total Waste Water (Gal): 175

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:51:01	ND	ND	ND	ND	ND	ND	6134.64	1.66	water cloudy, odorless
9:56:01	7.09	13.17	595	4.20	15.6	134	-	-	-
10:01:01	7.21	13.81	595	5.91	4.7	145	6133.22	1.66	clear, odorless
10:06:01	7.25	14.67	596	6.42	4.3	151	-	-	-
10:11:01	7.28	15.21	596	6.81	4.1	154	6132.58	1.66	clear, odorless
10:16:01	7.30	15.49	597	6.95	4.1	155	-	-	-
10:21:01	7.29	15.38	598	7.07	3.4	157	6132.27	1.66	clear, odorless
10:26:01	7.30	15.39	598	7.17	2.5	157	-	-	-
10:31:01	7.31	15.72	597	7.27	2.0	157	6132.11	1.66	clear, odorless
10:36:01	7.31	15.86	598	7.32	1.6	158	-	-	-
10:41:01	7.30	15.73	598	7.40	1.5	158	6132.06	1.66	clear, odorless
10:46:01	7.29	15.78	597	7.43	1.2	157	-	-	-
10:51:01	7.29	15.71	597	7.44	1.1	157	6132.05	1.66	clear, odorless
10:56:01	7.28	15.62	597	7.48	1.0	157	-	-	-
11:01:01	7.30	15.85	597	7.49	1.0	156	6132.06	1.66	clear, odorless
11:06:01	7.29	15.92	597	7.49	1.0	156	6132.07	1.66	clear, odorless
11:11:01	7.22	16.01	595	7.49	3.8	160	6132.15	1.66	

Additional Notes

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: SCI-1
Well Inside Diameter (in): 3.75
Well Depth (ft BGS): 378.5
Casing/Tubing Type: PVC
Date: 5/17/2013
Initial Water Level (ft MSL): 6369.69
Measuring Point (ft MSL): 6738.27

1 Casing Volume (Gal): 6.5
3 Casing Volume (Gal): 19.4
Drop Pipe (Gal): 2.2
3 CVs plus DP (Gal): 21.6
Total Purge Water (Gal): 12.6

Pump On: 9:47
Water at Surface: 9:47
Begin Sampling: 10:13
End Sampling: 10:22
Pump Off: 10:22
Final Water Level (ft MSL): 6365.95
Total Waste Water (Gal): 21.6

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:52:00	ND	ND	ND	ND	ND	ND	6367.81	0.6	clear, odorless
9:57:00	7.10	10.45	714	8.80	13.8	27	6366.73	0.6	clear, odorless
10:02:00	7.04	10.75	716	8.80	7.5	50	6365.91	0.6	clear, odorless
10:07:00	7.06	11.05	718	8.70	2.3	61	6365.95	0.6	clear, odorless
10:12:00	7.09	11.39	719	8.69	0.8	67	6365.95	0.6	clear, odorless

Additional Notes

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: SCI-2
Well Inside Diameter (in): 2
Well Depth (ft BGS): 570
Casing/Tubing Type: SS
Date: 5/21/2013
Initial Water Level (ft MSL): 6208.50
Measuring Point (ft MSL): 6735.85

1 Casing Volume (Gal): 7
3 Casing Volume (Gal): 21
Drop Pipe (Gal): 3.2
3 CVs plus DP (Gal): 24.2
Total Purge Water (Gal): 26.4

Pump On: 10:24
Water at Surface: 10:24
Begin Sampling: 11:35
End Sampling: 11:53
Pump Off: 11:53
Final Water Level (ft MSL): 6204.76
Total Waste Water (Gal): 30.8

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:34:00	ND	ND	ND	ND	ND	ND	6205.37	0.44	clear, green tint, odorless
10:39:00	7.27	14.10	608	6.71	0.5	216	-	-	-
10:44:00	7.28	14.24	609	7.60	1.2	219	6204.98	0.44	clear, green tint, odorless
10:49:00	7.32	14.28	613	8.31	2.4	221	-	-	-
10:54:00	7.36	14.30	614	8.77	1.7	222	6205.08	0.44	clear, green tint, odorless
10:59:00	7.38	14.33	611	9.13	1.6	222	-	-	-
11:04:00	7.40	14.34	609	8.91	1.9	222	6204.67	0.44	clear, green tint, odorless
11:09:00	7.41	14.35	604	8.70	7.2	222	-	-	-
11:14:00	7.42	14.32	605	8.82	19.7	222	6204.60	0.44	clear, green tint, odorless
11:19:00	7.42	14.39	595	9.04	46.1	222	6204.99	0.44	clear, green tint, odorless
11:24:00	7.45	14.56	617	9.26	0.7	220	6204.61	0.44	clear, green tint, odorless
11:29:00	7.44	14.39	622	9.19	0.8	221	6204.71	0.44	clear, green tint, odorless
11:34:00	7.41	14.48	621	9.24	1.1	222	6204.96	0.44	clear, green tint, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-11
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 901.7
Casing/Tubing Type: SS
Date: 5/13/2013
Initial Water Level (ft MSL): 5834.89
Measuring Point (ft MSL): 6673.72

1 Casing Volume (Gal): 51.9
3 Casing Volume (Gal): 155.7
Drop Pipe (Gal): 34.4
3 CVs plus DP (Gal): 190.1
Total Purge Water (Gal): 156

Pump On: 11:47
Water at Surface: 11:47
Begin Sampling: 12:49
End Sampling: 12:57
Pump Off: 12:57
Final Water Level (ft MSL): 5834.81
Total Waste Water (Gal): 200

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:58:13	ND	ND	ND	ND	ND	ND	5834.74	3.09	clear, odorless
12:03:13	7.74	18.37	233	6.96	1.9	196	-	-	-
12:08:13	7.91	19.88	227	7.26	1.0	193	5834.77	3.09	clear, odorless
12:13:13	8.04	21.01	227	7.29	0.9	189	-	-	-
12:18:13	8.06	21.76	229	7.54	0.6	192	5834.78	3.09	clear, odorless
12:23:13	8.06	22.18	232	7.55	0.9	192	-	-	-
12:28:13	8.03	22.36	233	7.48	0.5	191	5834.80	3.09	clear, odorless
12:33:13	8.00	22.48	235	7.44	0.5	193	-	-	-
12:38:13	7.98	22.56	235	7.41	0.5	192	5834.80	3.09	clear, odorless
12:43:13	7.95	22.52	236	7.41	0.5	192	5834.79	3.09	clear, odorless
12:48:13	7.96	22.55	237	7.45	0.4	191	5834.79	3.09	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-13
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1029.4
Casing/Tubing Type: SS
Date: 5/6/2013
Initial Water Level (ft MSL): 5833.29
Measuring Point (ft MSL): 6673.05

1 Casing Volume (Gal): 156.6
3 Casing Volume (Gal): 469.8
Drop Pipe (Gal): 34.4
3 CVs plus DP (Gal): 504.2
Total Purge Water (Gal): 470

Pump On: 10:00
Water at Surface: 10:06
Begin Sampling: 11:30
End Sampling: 11:36
Pump Off: 11:36
Final Water Level (ft MSL): 5832.69
Total Waste Water (Gal): 550

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:12:02	ND	ND	ND	ND	ND	ND	5832.71	5.66	clear, odorless
10:17:02	8.01	19.38	140	6.32	-	296.0	-	-	-
10:22:02	8.06	19.70	140	6.20	-	291.0	-	-	-
10:27:02	8.05	20.21	143	6.26	0.49	288.0	5832.71	5.66	clear, odorless
10:32:02	8.06	20.61	143	6.34	-	284.0	-	-	-
10:37:02	8.02	21.09	143	6.57	-	287.0	-	-	-
10:42:02	7.95	21.04	143	6.51	0.29	288.0	5832.54	6.25	169.8 gal purged
10:47:02	7.92	21.06	143	6.54	-	286.0	-	-	-
10:52:02	7.92	21.15	143	6.55	-	284.0	-	-	-
10:57:02	7.92	21.32	143	6.54	0.26	282.0	5832.53	6.25	clear, odorless
11:02:02	7.89	21.33	143	6.56	-	281.0	-	-	-
11:07:02	7.96	21.36	143	6.59	-	276.0	-	-	-
11:12:02	7.92	21.32	143	6.61	0.33	276.0	5832.68	7.14	clear, odorless
11:17:02	7.94	20.99	143	6.55	0.35	274.0	5832.60	7.14	clear, odorless
11:22:02	7.93	21.11	143	6.56	0.27	273.0	5832.68	7.14	clear, odorless
11:27:02	7.95	21.08	143	6.58	0.26	271.0	5832.65	7.14	clear, odorless

Additional Notes:
Used HACH Turbidimeter #2 because of negative YSI turb values

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-14
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1315.6
Casing/Tubing Type: SS
Date: 5/14/2013
Initial Water Level (ft MSL): 5877.76
Measuring Point (ft MSL): 7062.08

1 Casing Volume (Gal): 49.9
3 Casing Volume (Gal): 149.7
Drop Pipe (Gal): 48.6
3 CVs plus DP (Gal): 198.3
Total Purge Water (Gal): 153

Pump On: 10:10
Water at Surface: 10:10
Begin Sampling: 10:39
End Sampling: 10:48
Pump Off: 10:48
Final Water Level (ft MSL): 5870.65
Total Waste Water (Gal): 260

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate	Notes
10:17:00	ND	ND	ND	ND	ND	ND	5870.61	6.97	clear, odorless
10:20:00	7.87	16.97	128	4.65	3.90	243	5870.61	6.97	clear, odorless
10:23:00	7.90	18.12	128	4.90	1.82	240	5870.60	6.97	clear, odorless
10:26:00	8.00	19.32	128	5.19	1.51	236	5870.60	6.97	clear, odorless
10:29:00	8.08	20.36	128	5.35	0.88	234	5870.61	6.97	clear, odorless
10:32:00	8.12	21.18	129	5.44	0.76	233	5870.62	6.97	clear, odorless
10:35:00	8.13	21.79	129	5.48	0.64	232	5870.63	6.97	clear, odorless
10:38:00	8.13	22.27	129	5.45	0.65	231	5870.64	6.97	clear, odorless

Additional Notes:
HACH Turbidimeter #2 used because of negative YSI Turb values

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-15
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1030.6
Casing/Tubing Type: SS
Date: 5/6/2013
Initial Water Level (ft MSL): 5848.01
Measuring Point (ft MSL): 6820.00

1 Casing Volume (Gal): 60.1
3 Casing Volume (Gal): 180.3
Drop Pipe (Gal): 39.9
3 CVs plus DP (Gal): 220.2
Total Purge Water (Gal): 216.0

Pump On: 11:59
Water at Surface: 11:59
Begin Sampling: 12:24
End Sampling: 12:28
Pump Off: 12:28
Final Water Level (ft MSL): 5842.62
Total Waste Water (Gal): 300

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
12:03:00	ND	ND	ND	ND	ND	ND	5843.65	10.3	clear, odorless
12:06:00	7.80	12.23	151	5.95	0.5	240	5843.24	10.3	clear, odorless
12:09:00	7.93	13.68	153	6.14	0.4	237	5842.98	10.3	clear, odorless
12:12:00	7.97	14.87	154	6.12	1.7	235	5842.87	10.3	clear, odorless
12:15:00	8.01	16.65	153	6.72	1.6	234	5842.78	10.3	clear, odorless
12:18:00	8.12	17.96	154	6.95	1.4	231	5842.71	10.3	clear, odorless
12:21:00	8.17	18.80	156	6.99	1.3	230	5842.69	10.3	clear, odorless
12:24:00	8.20	19.28	156	7.01	1.2	229	5842.68	10.3	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-28
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 980.3
Casing/Tubing Type: SS
Date: 5/6/2013
Initial Water Level (ft MSL): 5835.74
Measuring Point (ft MSL): 6728.60

1 Casing Volume (Gal): 89.2
3 Casing Volume (Gal): 267.6
Drop Pipe (Gal): 36.6
3 CVs plus DP (Gal): 304.2
Total Purge Water (Gal): 269

Pump On: 9:37
Water at Surface: 9:40
Begin Sampling: 10:59
End Sampling: 11:17
Pump Off: 11:17
Final Water Level (ft MSL): 5835.59
Total Waste Water (Gal): 350

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:50:00	ND	ND	ND	ND	ND	ND	5835.58	3.9	clear, odorless
9:55:00	7.67	17.95	415	5.48	10.7	261	-	-	-
10:00:00	7.78	19.04	416	5.97	3.0	257	5835.56	3.9	clear, odorless
10:05:00	7.78	19.52	417	6.19	1.4	256	-	-	-
10:10:00	7.80	19.82	417	6.40	0.7	254	5835.55	3.9	clear, odorless
10:15:00	7.80	19.97	417	6.45	0.5	253	-	-	-
10:20:00	7.80	20.03	417	6.48	0.3	252	5835.58	3.9	117 gal purged
10:25:00	7.77	19.96	416	6.51	0.3	251	-	-	-
10:30:00	7.75	20.17	416	6.52	0.3	250	5835.58	3.9	clear, odorless
10:35:00	7.70	20.14	416	6.52	0.2	250	-	-	-
10:40:00	7.67	20.12	416	6.56	0.2	250	5835.55	3.9	clear, odorless
10:45:00	7.67	20.19	416	6.41	0.2	249	5835.56	3.9	clear, odorless
10:50:00	7.65	20.16	416	6.57	0.2	249	5835.56	3.9	clear, odorless
10:55:00	7.65	20.22	416	6.51	0.1	247	5835.56	3.9	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-35a
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1086.2
Casing/Tubing Type: SS
Date: 5/16/2013
Initial Water Level (ft MSL): 5825.22
Measuring Point (ft MSL): 6623.06

1 Casing Volume (Gal): 238.2
3 Casing Volume (Gal): 714.7
Drop Pipe (Gal): 32.7
3 CVs plus DP (Gal): 747.4
Total Purge Water (Gal): 718.2

Pump On: 9:56
Water at Surface: 9:57
Begin Sampling: 13:16
End Sampling: 13:20
Pump Off: 13:21
Final Water Level (ft MSL): 5818.3
Total Waste Water (Gal): 757

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:07:00	ND	ND	ND	ND	ND	ND	5817.58	3.8	clear, odorless
10:12:00	7.81	16.85	238	3.69	3.2	153	-	-	-
10:17:00	7.99	22.15	237	4.70	4.1	146	-	-	-
10:22:00	8.03	23.09	239	5.17	2.1	138	-	-	-
10:27:00	8.05	23.47	240	5.17	1.6	130	-	-	-
10:32:00	8.06	23.57	240	5.13	0.6	125	-	-	-
10:37:00	8.06	23.70	241	5.12	0.9	121	5817.83	3.8	clear, odorless
10:42:00	8.06	23.81	241	5.17	1.6	117	-	-	-
10:47:00	8.07	23.85	241	5.18	2.1	113	-	-	-
10:52:00	8.06	23.95	241	5.17	2.3	110	-	-	-
10:57:00	8.06	23.98	241	5.15	2.5	107	-	-	-
11:02:00	8.06	24.03	241	5.19	2.3	105	-	-	-
11:07:00	8.06	24.08	241	5.13	2.9	103	5817.98	3.8	clear, odorless
11:12:00	8.06	24.12	241	5.10	6.1	101	-	-	-
11:17:00	8.05	24.10	241	5.16	5.1	100	-	-	-
11:22:00	8.06	24.22	241	5.23	6.4	98	-	-	-
11:27:00	8.05	24.21	241	5.12	7.3	97	-	-	-
11:32:00	8.06	24.28	241	5.11	8.6	95	-	-	-
11:37:00	8.06	24.31	241	5.12	8.0	94	5818.02	3.8	clear, odorless
11:42:00	8.06	24.36	241	5.15	8.3	93	-	-	
11:47:00	8.06	24.35	241	5.10	7.8	92	-	-	-
11:52:00	8.05	24.39	241	5.09	7.5	91	-	-	-
11:57:00	8.05	24.39	241	5.09	5.4	90	-	-	-
12:02:00	8.05	24.47	241	5.05	4.5	90	-	-	-
12:07:00	8.05	24.44	241	5.05	3.2	89	5818.08	3.8	clear, odorless
12:12:00	8.05	24.50	242	5.05	2.5	88	-	-	

Well Name: R-35a continued

Time (MST)	pH	Temperature (ºC)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
12:17:00	8.06	24.58	241	5.06	1.6	87	-	-	-
12:22:00	8.05	24.58	242	5.04	1.0	87	-	-	-
12:27:00	8.05	24.61	242	5.05	0.8	86	-	-	-
12:32:00	8.05	24.56	242	5.04	0.3	86	-	-	-
12:37:00	8.05	24.65	242	5.08	0.0	85	5818.18	3.8	clear, odorless
12:42:00	8.05	24.60	242	5.07	-	85	-	-	-
12:47:00	8.05	24.67	242	5.07	-	84	-	-	-
12:52:00	8.05	24.71	242	5.07	-	84	-	-	-
12:57:00	8.05	24.67	242	5.07	-	83	-	-	-
13:02:00	8.05	24.65	242	5.05	*2.45	83	5818.31	3.8	clear, odorless
13:05:00	8.05	24.66	242	5.04	*2.02	82.8	5818.25	3.8	clear, odorless
13:10:00	8.05	24.72	242	5.04	*2.18	82	5818.22	3.8	clear, odorless
13:15:00	8.05	24.66	242	5.03	*1.97	81.4	5818.31	3.8	clear, odorless

Additional Notes:

* HACH Turbidimeter used for last four readings because of negative turbidity values on YSI#40

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-35b
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 872.2
Casing/Tubing Type: SS
Date: 5/10/2013
Initial Water Level (ft MSL): 5834.14
Measuring Point (ft MSL): 6625.21

1 Casing Volume (Gal): 67
3 Casing Volume (Gal): 201
Drop Pipe (Gal): 32.4
3 CVs plus DP (Gal): 233.4
Total Purge Water (Gal): 205

Pump On: 9:30
Water at Surface: 9:31
Begin Sampling: 10:47
End Sampling: 10:53
Pump Off: 10:53
Final Water Level (ft MSL): 5834.01
Total Waste Water (Gal): 239.1

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:41:01	ND	ND	ND	ND	ND	ND	5833.84	3.1	clear, odorless
9:46:01	8.08	19.28	169	6.55	2.00	250	5833.87	3.1	clear, odorless
9:51:01	8.16	20.43	170	6.76	0.31	245	5833.89	3.1	clear, odorless
9:56:01	8.12	20.63	170	6.65	0.33	242	5833.90	3.1	clear, odorless
10:01:01	7.52	20.75	170	6.69	0.23	273	5833.90	3.1	clear, odorless
10:06:01	8.10	20.90	171	6.65	0.22	237	5833.92	3.1	clear, odorless
10:11:01	8.03	21.04	171	6.66	0.33	236	5833.91	3.1	clear, odorless
10:16:01	7.83	21.12	172	6.53	0.76	238	5833.92	3.1	clear, odorless
10:21:01	7.63	21.24	172	6.18	1.10	239	5833.92	3.1	clear, odorless
10:26:01	7.55	21.16	172	6.07	0.78	240	5833.92	3.1	clear, odorless
10:31:01	7.52	21.23	172	6.01	0.53	239	5833.93	3.1	clear, odorless
10:36:01	7.49	21.19	172	5.97	0.49	239	5833.93	3.1	clear, odorless
10:41:01	7.48	21.23	172	5.88	0.39	239	5833.93	3.1	clear, odorless
10:46:01	7.47	21.23	172	5.85	0.44	239	5833.93	3.1	clear, odorless

Additional Notes:
HACH Turbidimeter used because of negative turbidity on YSI #30

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-36
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 803.7
Tubing Type: SS
Date: 5/17/2013
Initial Water Level (ft MSL): 5838.65
Measuring Point (ft MSL): 6591.37

1 Casing Volume (Gal): 42
3 Casing Volume (Gal): 126
Drop Pipe (Gal): 30.9
3 CVs plus DP (Gal): 156.9
Total Purge Water (Gal): 142.8

Pump On: 10:58
Water at Surface: 10:58
Begin Sampling: 11:50
End Sampling: 11:55
Pump Off: 11:55
Final Water Level (ft MSL): 5838.41
Total Waste Water (Gal): 176.8

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate	Notes
11:08:01	ND	ND	ND	ND	2.14	ND	5838.29	3.4	clear, odorless
11:13:01	8.25	19.72	191	6.65	1.50	92	5838.32	3.4	clear, odorless
11:18:01	8.19	20.82	190	6.75	3.32	98	5838.33	3.4	clear, odorless
11:23:01	7.51	21.03	192	6.13	4.02	121	5838.33	3.4	clear, odorless
11:28:01	7.36	21.14	191	5.97	1.81	120	5838.33	3.4	clear, odorless
11:33:01	7.31	21.18	191	5.89	1.51	116	5838.34	3.4	clear, odorless
11:38:01	7.29	21.22	192	5.85	1.54	112	5838.35	3.4	clear, odorless
11:43:01	7.28	21.33	192	5.82	1.21	109	5838.36	3.4	clear, odorless
11:48:01	7.27	21.40	192	5.77	1.08	106	5838.35	3.4	clear, odorless

Additional Notes
HACH Tubidimeter #4 used due to negative turb values on YSI#40

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-42
Well Inside Diameter (in): 5
Well Depth (ft BGS): 973.5
Tubing Type: SS
Date: 5/6/2013
Initial Water Level (ft MSL): 5837.54
Measuring Point (ft MSL): 6759.02

1 Casing Volume (Gal): 53.1
3 Casing Volume (Gal): 159.3
Drop Pipe (Gal): 37.8
3 CVs plus DP (Gal): 197.1
Total Purge Water (Gal): 160

Pump On: 12:25
Water at Surface: 12:25
Begin Sampling: 13:47
End Sampling: 14:01
Pump Off: 14:01
Final Water Level (ft MSL): 5836.42
Total Waste Water (Gal): 210

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate	Notes
12:41:05	ND	ND	ND	ND	ND	ND	5836.01	2.4	green tint, odorless
12:46:05	7.46	16.51	495	6.34	4.50	285	-	-	-
12:51:05	7.65	17.25	497	6.63	3.00	282	5836.07	2.4	green tint, odorless
12:56:05	7.74	18.01	499	6.78	1.40	278	-	-	-
13:01:05	7.78	18.66	500	6.88	0.60	276	5836.08	2.4	green tint, odorless
13:06:05	7.73	18.90	501	6.93	0.70	276	-	-	-
13:11:05	7.67	19.05	502	6.92	0.90	276	5836.07	2.4	green tint, odorless
13:16:05	7.55	19.17	502	6.87	0.80	276	-	-	-
13:21:05	7.50	19.31	502	6.86	0.50	276	5836.06	2.4	green tint, odorless
13:26:05	7.45	19.32	502	6.83	0.20	276	-	-	-
13:31:05	7.42	19.30	502	6.84	0.00	276	5836.07	2.4	green tint, odorless
13:36:05	7.40	19.27	502	6.83	1.00	275	5836.07	2.4	green tint, odorless
13:41:05	7.37	19.50	501	6.83	1.01	275	5836.07	2.4	green tint, odorless
13:46:05	7.37	19.48	502	6.84	1.05	275	5836.07	2.4	green tint, odorless

Additional Notes
Last three turbidity values measured on HACH Turbidimeter #2 because of negative turb values

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-43 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 960.7
Casing/Tubing Type: SS
Date: 5/15/2013
Initial Water Level (ft MSL): 5837.16
Measuring Point (ft MSL): 6732.65

1 Casing Volume (Gal): 66.5
3 Casing Volume (Gal): 199.5
Drop Pipe (Gal): 36.7
3 CVs plus DP (Gal): 236.2
Total Purge Water (Gal): 200

Pump On: 8:52
Water at Surface: 8:52
Begin Sampling: 11:56
End Sampling: 12:01
Pump Off: 12:12
Final Water Level (ft MSL): 5836.03
Total Waste Water (Gal): 245

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:20:13	ND	ND	ND	ND	0.32	ND	5835.99	1.31	clear, odorless
9:25:13	8.60	17.63	189	4.85	-	233	-	-	-
9:30:13	8.59	17.92	190	4.86	-	233	-	-	-
9:35:13	8.51	17.19	187	4.56	-	235	-	-	-
9:40:13	8.08	17.18	180	5.76	-	242	-	-	-
9:45:13	8.18	17.76	178	6.51	-	233	-	-	-
9:50:13	8.23	18.45	177	6.71	0.23	230	5836.01	1.31	clear, odorless
9:55:13	8.26	18.96	178	6.81	-	229	-	-	-
10:00:13	8.28	19.31	178	6.86	-	229	-	-	-
10:05:13	8.29	19.46	179	6.88	-	229	-	-	-
10:10:13	8.30	19.59	179	6.90	-	228	-	-	-
10:15:13	8.29	19.68	180	6.90	-	228	-	-	-
10:20:13	8.29	19.86	180	6.89	0.19	228	5836.01	1.31	clear, odorless
10:25:13	8.29	19.95	180	7.03	-	228	-	-	-
10:30:13	8.28	20.03	181	6.93	-	228	-	-	-
10:35:13	8.27	20.14	181	6.89	-	228	-	-	-
10:40:13	8.27	20.22	181	6.91	-	227	-	-	-
10:45:13	8.27	20.30	181	6.88	-	226	-	-	-
10:50:13	8.26	20.29	181	6.90	0.19	227	5836.01	1.31	clear, odorless
10:55:13	8.24	20.35	181	7.04	-	227	-	-	
11:00:13	8.24	20.30	181	7.02	-	227	-	-	-
11:05:13	8.21	20.18	182	7.01	-	228	-	-	-
11:10:13	8.2	20.26	182	6.95	-	228	-	-	-
11:15:13	8.24	20.53	182	6.95	-	225	-	-	-
11:20:13	8.2	20.49	182	6.90	0.20	227	5836.02	1.31	clear, odorless
11:25:13	8.19	20.44	182	6.84	-	225	-	-	

Well Name: R-43 S1 continued

Time (MST)	pH	Temperature (ºC)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (FT MSL)	Discharge Rate (GPM)	Notes
11:30:13	8.18	20.28	182	6.85	-	226	-	-	-
11:35:13	8.19	20.27	183	6.88	-	225	-	-	-
11:40:13	8.18	20.25	183	7.01	0.31	224	5836.02	1.31	clear, odorless
11:45:13	8.18	20.28	183	6.89	0.23	225	5836.01	1.31	clear, odorless
11:50:13	8.19	20.23	183	6.85	0.27	223	5836.02	1.31	clear, odorless
11:55:13	8.17	20.16	183	6.81	1.88	224	5836.02	1.31	clear, odorless

Additional Notes

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-34
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 920.7
Casing/Tubing Type: SS
Date: 5/15/2013
Initial Water Level (ft MSL): 5831.78
Measuring Point (ft MSL): 6629.99

1 Casing Volume (Gal): 101.2
3 Casing Volume (Gal): 303.6
Drop Pipe (Gal): 32.7
3 CVs plus DP (Gal): 336.3
Total Purge Water (Gal): 304.5

Pump On: 8:43
Water at Surface: 8:44
Begin Sampling: 10:49
End Sampling: 10:59
Pump Off: 10:59
Final Water Level (ft MSL): 5829.8
Total Waste Water (GAL): 340

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
8:57:00	ND	ND	ND	ND	ND	ND	5828.01	2.72	clear, odorless, effervescent
9:02:00	8.10	17.55	149	6.36	4.3	165	-	-	-
9:07:00	8.18	18.87	146	5.99	2.9	157	-	-	-
9:12:00	8.25	19.49	148	5.07	8.7	149	5828.90	2.72	clear, odorless, effervescent
9:17:00	8.27	19.95	146	5.88	7.8	143	-	-	-
9:22:00	8.32	20.31	147	5.17	7.6	136	-	-	-
9:27:00	8.33	20.52	151	4.85	13.3	131	5828.92	2.72	clear, odorless, effervescent
9:32:00	8.33	20.73	149	5.81	4.3	127	-	-	-
9:37:00	8.33	20.85	148	5.82	3.5	123	-	-	-
9:42:00	8.33	20.98	146	5.73	2.80	120	5828.91	2.72	clear, odorless, effervescent
9:47:00	8.33	21.05	149	5.23	2.9	116	-	-	-
9:52:00	8.32	21.20	147	5.97	1.8	114	-	-	-
9:57:00	8.31	21.30	146	5.75	1.7	111	5828.93	2.72	clear, odorless, effervescent
10:02:00	8.31	21.40	144	5.80	1.6	108	-	-	-
10:07:00	8.30	21.48	152	5.86	3	106	-	-	-
10:12:00	8.31	21.50	151	5.93	1.3	103	5828.94	2.72	clear, odorless, effervescent
10:17:00	8.30	21.64	150	6.19	1.2	101	-	-	-
10:22:00	8.30	21.73	149	6.21	1.1	99	-	-	-
10:27:00	8.30	21.81	147	6.34	1.1	98	5828.94	2.72	clear, odorless, effervescent
10:32:00	8.30	21.85	153	5.74	1.20	96	5828.93	2.72	
10:37:00	8.30	21.88	152	6.16	1.1	95	5828.94	2.72	clear, odorless, effervescent
10:42:00	8.29	21.89	153	6.14	2.3	93	5828.94	2.72	clear, odorless, effervescent
10:47:00	8.30	21.72	152	6.26	0.9	92	5828.98	2.72	clear, odorless, effervescent

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-43 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 990.1
Casing/Tubing Type: SS
Date: 5/14/2013
Initial Water Level (ft MSL): 5835.94
Measuring Point (ft MSL): 6732.65

1 Casing Volume (Gal): 25.5
3 Casing Volume (Gal): 76.5
Drop Pipe (Gal): 39.6
3 CVs plus DP (Gal): 116.1
Total Purge Water (Gal): 77

Pump On: 8:39
Water at Surface: 8:40
Begin Sampling: 10:16, 10:37, 12:01, 13:25
End Sampling: 10:22, 10:44, 12:05, 13:31
Pump Off: 13:35
Final Water Level (ft MSL): 5835.11
Total Waste Water (Gal): 350

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:18:03	NC	NC	NC	NC	NC	NC	NC	1.22	clear, odorless
9:23:03	9.12	16.20	185	0.88	0.10	179	5835.02	1.22	clear, odorless
9:28:03	9.05	16.81	184	1.38	0.10	177	-	-	-
9:33:03	8.98	17.56	185	1.81	0.00	175	5835.02	1.22	clear, odorless
9:38:03	8.92	18.20	189	2.28	0.00	174	-	-	-
9:43:03	8.85	18.68	192	2.61	*0.38	173	5835.03	1.22	clear, odorless
9:48:03	8.81	18.94	193	2.76	-	172	-	-	-
9:53:03	8.77	19.13	193	2.86	*0.19	172	5835.03	1.22	clear, odorless
9:58:03	8.75	19.25	193	2.94	-	171	-	-	-
10:03:03	8.73	19.35	193	2.95	*0.18	170	5835.03	1.22	clear, odorless
10:08:03	8.71	19.37	193	3.03	*0.23	170	5835.03	1.22	clear, odorless
10:13:03	8.70	19.51	192	3.11	*0.17	169	5835.03	1.22	clear, odorless
10:18:03	8.68	19.57	192	3.12	-	169	-	-	-
10:23:03	8.65	19.57	191	3.15	-	170	-	-	-
10:28:03	8.65	19.62	192	3.31	-	169	-	-	-
10:33:03	8.64	19.69	191	3.33	*0.23	168	5835.04	1.22	clear, odorless
10:38:03	8.63	19.73	191	3.38	-	168	-	-	-
10:43:03	8.62	19.68	191	3.39	-	168	-	-	-
10:48:03	8.60	19.73	191	3.51	-	168	-	-	-
10:53:03	8.60	19.79	191	3.53	-	167	-	-	
10:58:03	8.60	19.89	191	3.64	-	166	-	-	-
11:03:03	8.59	19.94	191	3.66	*0.29	166	5835.03	1.22	clear, odorless
11:08:03	8.58	19.92	191	3.75	-	166	-	-	-
11:13:03	8.58	20.05	191	3.80	-	165	-	-	-
11:18:03	8.57	20.01	191	3.83	-	165	-	-	-
11:23:03	8.56	20.05	191	3.92	-	165	-	-	
11:28:03	8.56	20.05	191	3.91	-	165	-	-	-

Well Name: R-43 S2 continued

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:33:03	8.56	20.03	191	3.99	*0.18	164	5835.05	1.22	clear, odorless
11:38:03	8.55	20.12	191	4.06	-	164	-	-	-
11:43:03	8.54	20.11	191	4.17	-	164	-	-	-
11:48:03	8.55	20.17	191	4.13	-	163	-	-	-
11:53:03	8.54	20.15	191	4.17	-	164	-	-	-
11:58:03	8.54	20.19	191	4.27	*0.20	163	5835.08	1.22	clear, odorless
12:03:03	8.54	20.19	191	4.24	-	163	-	-	-
12:08:03	8.53	20.13	192	4.31	-	163	-	-	-
12:13:03	8.54	20.14	192	4.33	-	162	-	-	-
12:18:03	8.53	20.14	192	4.41	-	163	-	-	-
12:23:03	8.54	20.13	192	4.40	-	162	-	-	-
12:28:03	8.53	20.15	192	4.43	-	162	-	-	-
12:33:03	8.52	20.18	192	4.49	*0.24	162	5835.08	1.22	clear, odorless
12:38:03	8.52	20.19	192	4.52	-	162	-	-	-
12:43:03	8.53	20.24	192	4.57	-	161	-	-	-
12:48:03	8.51	20.21	192	4.58	-	161	-	-	-
12:53:03	8.51	20.21	192	4.64	-	161	-	-	-
12:58:03	8.51	20.23	192	4.64	*0.23	161	5835.09	1.22	clear, odorless
13:03:03	8.51	20.19	193	4.73	-	161	-	-	-
13:08:03	8.50	20.22	193	4.74	-	160	-	-	-
13:13:03	8.50	20.18	193	4.74	-	160	-	-	-
13:18:03	8.50	20.18	193	4.81	-	160	-	-	-
13:23:03	8.50	20.22	193	4.79	*0.19	160	5835.11	1.22	clear, odorless

Additional Notes:

Purged 12CVs and sampled at 4, 8, and 12CVs for Indicator suites and at 3CVs for IFGMP samples

*HACH Turbidimeter #1 used because of negative Turb on YSI #30

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-44 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 936.3
Casing/Tubing Type: SS
Date: 5/9/2013
Initial Water Level (ft MSL): 5834.38
Measuring Point (ft MSL): 6714.90

1 Casing Volume (Gal): 56.9
3 Casing Volume (Gal): 170.7
Drop Pipe (Gal): 36.1
3 CVs plus DP (Gal): 206.8
Total Purge Water (Gal): 171.6

Pump On: 9:19
Water at Surface: 9:20
Begin Sampling: 11:24
End Sampling: 11:30
Pump Off: 11:30
Final Water Level (ft MSL): 5834.08
Total Waste Water (Gal): 231

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:32:00	ND	ND	ND	ND	ND	ND	5834.07	3.3	clear, no odor
9:37:00	7.41	17.04	141	4.05	0.60	169	-	-	-
9:42:00	7.61	18.18	136	5.48	0.50	162	5834.08	3.3	clear, no odor
9:47:00	7.70	18.96	135	6.27	0.30	166	-	-	-
9:52:00	7.74	19.40	134	6.63	0.30	171	5834.08	3.3	clear, no odor
9:57:00	7.74	19.65	135	6.68	0.20	175	-	-	-
10:02:01	7.74	19.80	135	6.74	0.20	177	5834.08	3.3	clear, no odor
10:07:01	7.74	20.02	135	6.82	0.20	180	-	-	-
10:12:01	7.74	20.19	135	6.83	0.20	181	5834.08	3.3	clear, no odor
10:17:01	7.74	20.34	135	6.88	0.20	181	5834.08	3.3	clear, no odor
10:22:01	7.73	20.39	135	6.89	0.20	182	5834.09	3.3	clear, no odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-44 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1016
Casing/Tubing Type: SS
Date: 5/9/2013
Initial Water Level (ft MSL): 5833.24
Measuring Point (ft MSL): 6714.91

1 Casing Volume (Gal): 76.4
3 Casing Volume (Gal): 229.2
Drop Pipe (Gal): 38.6
3 CVs plus DP (Gal): 267.8
Total Purge Water (Gal): 231

Pump On: 11:50
Water at Surface: 11:51
Begin Sampling: 13:13
End Sampling: 13:23
Pump Off: 13:23
Final Water Level (ft MSL): 5833.26
Total Waste Water (Gal): 303.6

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:03:00	ND	ND	ND	ND	ND	ND	5833.24	3.3	clear, no odor
11:08:00	7.62	19.25	144	6.5	0.60	68.0	-	-	-
11:13:00	7.73	19.32	146	6.9	0.30	94.0	-	-	-
11:18:00	7.77	19.35	146	7.1	0.20	109.0	5833.23	3.3	clear, no odor
11:23:00	7.75	19.29	146	7.1	0.20	119.0	-	-	-
11:28:00	7.76	19.33	145	7.1	0.20	124.0	-	-	-
11:33:00	7.80	19.61	145	7.1	0.10	126.0	5833.24	3.3	clear, no odor
11:38:00	7.80	19.74	145	7.2	0.10	128.0	-	-	-
11:43:00	7.80	20.00	145	7.2	0.10	131.0	-	-	-
11:48:00	7.82	20.22	145	7.2	0.10	132.0	5833.24	3.3	clear, no odor
11:53:00	7.81	20.41	144	7.2	0.10	134.0	-	-	-
11:58:00	7.81	20.53	144	7.2	0.10	135.0	-	-	-
12:03:00	7.81	20.61	144	7.2	0.10	137.0	5833.25	3.3	clear, no odor
12:08:00	7.80	20.70	144	7.2	0.10	139.0	5833.24	3.3	clear, no odor
12:13:00	7.81	20.78	144	7.2	0.10	139.0	5833.24	3.3	clear, no odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-45 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 921.3
Casing/Tubing Type: SS
Date: 5/9/2013
Initial Water Level (ft MSL): 5834.07
Measuring Point (ft MSL): 6704.02

1 Casing Volume (Gal): 52.4
3 Casing Volume (Gal): 157.2
Drop Pipe (Gal): 35.7
3 CVs plus DP (Gal): 192.9
Total Purge Water (Gal): 157.2

Pump On: 10:43
Water at Surface: 10:43
Begin Sampling: 11:41
End Sampling: 11:48
Pump Off: 11:48
Final Water Level (ft MSL): 5833.63
Total Waste Water (Gal): 175

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:53:28	7.86	19.68	170	6.64	0.68	317	5833.61	3.57	clear, odorless
10:58:28	7.67	19.64	172	4.45	-	296	-	-	-
11:03:28	7.66	19.64	178	6.32	0.49	297	5833.61	3.57	clear, odorless
11:08:28	7.68	19.80	179	6.81	-	298	-	-	-
11:13:28	7.68	19.73	179	6.96	0.28	299	5833.59	3.59	clear, odorless
11:18:28	7.68	19.63	179	7.02	-	300	-	-	-
11:23:28	7.65	19.26	179	7.03	0.30	302	5833.59	3.59	clear, odorless
11:28:28	7.64	18.77	179	7.07	0.31	304	5833.59	3.59	clear, odorless
11:33:28	7.64	19.02	179	7.16	0.40	304	5833.59	3.59	clear, odorless
11:38:28	7.67	19.50	179	7.15	0.39	304	5833.61	3.59	clear, odorless

Additional Notes:
All Turbity values are from HACH Turbidimeter #2 because YSI had negative readings

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-45 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1016
Casing/Tubing Type: SS
Date: 5/9/2013
Initial Water Level (ft MSL): 5833.97
Measuring Point (ft MSL): 6704.02

1 Casing Volume (Gal): 91.8
3 Casing Volume (Gal): 275.4
Drop Pipe (Gal): 38.0
3 CVs plus DP (Gal): 313.4
Total Purge Water (Gal): 276

Pump On: 8:50
Water at Surface: 8:50
Begin Sampling: 10:18
End Sampling: 10:21
Pump Off: 10:27
Final Water Level (ft MSL): 5833.03
Total Waste Water (Gal): 340

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:01:06	ND	ND	ND	ND	0.62	ND	5833.27	3.57	clear, odorless
9:06:06	7.55	16.49	173	5.04	-	310	-	-	-
9:11:06	7.89	18.12	171	6.15	0.34	309	5833.11	3.57	clear, odorless
9:16:06	7.93	19.45	169	6.41	-	309	-	-	-
9:21:06	7.97	20.20	169	6.41	0.41	309	5833.09	3.57	clear, odorless
9:26:06	8.00	20.53	168	6.43	-	309	-	-	-
9:31:06	7.99	20.52	169	6.44	0.28	311	5833.04	3.57	clear, odorless
9:36:06	7.97	20.61	169	6.41	-	312	-	-	-
9:41:06	7.96	20.67	169	6.43	0.29	313	5833.03	3.57	clear, odorless
9:46:06	7.94	20.65	170	6.41	-	314	-	-	-
9:51:06	7.93	20.58	169	6.43	0.45	315	5833.03	3.57	clear, odorless
9:56:06	7.93	20.59	170	6.43	-	315	-	-	-
10:01:06	7.94	20.73	170	6.43	0.33	314	5833.03	3.57	clear, odorless
10:06:06	7.95	20.77	170	6.44	0.33	313	5833.02	3.57	clear, odorless
10:11:06	7.95	20.81	170	6.45	0.31	313	5833.01	3.57	clear, odorless
10:16:06	7.94	20.98	170	6.43	0.34	314	5833.01	3.57	clear, odorless

Additional Notes
All Turb values are from HACH Turbidimeter #2 because of negative Turbidity on YSI

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-50 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1118.11
Casing/Tubing Type: SS
Date: 5/10/2013
Initial Water Level (ft MSL): 5835.68
Measuring Point (ft MSL): 6904.11

1 Casing Volume (Gal): 50.7
3 Casing Volume (Gal): 152.1
Drop Pipe (Gal): 43.8
3 CVs plus DP (Gal): 195.9
Total Purge Water (Gal): 165

Pump On: 9:41
Water at Surface: 9:41
Begin Sampling: 11:05
End Sampling: 11:33
Pump Off: 11:33
Final Water Level (ft MSL): 5831.74
Total Waste Water (Gal): 280

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:59:33	ND	ND	ND	ND	ND	ND	5831.38	2.5	slight effervescent, clear, odorless
10:04:33	7.33	16.60	183	1.61	1.7	255	-	-	-
10:09:33	7.39	17.35	191	3.15	1.3	242	-	-	-
10:14:33	7.61	18.24	199	4.23	1.1	246	5831.35	2.5	slight effervescent, clear, odorless
10:19:33	7.72	19.23	201	4.83	0.9	245	-	-	-
10:24:33	7.74	19.96	199	4.98	0.8	245	-	-	-
10:29:33	7.74	20.34	198	5.05	0.7	244	5831.35	2.5	slight effervescent, clear, odorless
10:34:33	7.74	20.58	197	5.15	0.8	245	-	-	-
10:39:33	7.72	20.52	196	5.21	0.8	246	-	-	-
10:44:33	7.70	20.63	195	5.31	0.8	247	5831.36	2.5	slight effervescent, clear, odorless
10:49:33	7.69	20.68	194	5.37	0.8	248	-	-	-
10:54:33	7.68	20.77	193	5.46	0.8	248	5831.35	2.5	slight effervescent, clear, odorless
10:59:33	7.67	20.58	192	5.53	0.8	249	5831.35	2.5	slight effervescent, clear, odorless
11:04:33	7.66	20.80	191	5.57	0.8	249	5831.34	2.5	slight effervescent, clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by : William Shaw

Well Name: R-50 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1217.5
Casing/Tubing Type: SS
Date: 5/13/2013
Initial Water Level (ft MSL): 5835.30
Measuring Point (ft MSL): 6904.11

1 Casing Volume (Gal): 96.49
3 Casing Volume (Gal): 289.47
Drop Pipe (Gal): 46.04
3 CVs plus DP (Gal): 335.5
Total Purge Water (Gal): 319

Pump On: 8:56
Water at Surface: 8:56
Begin Sampling: 13:10
End Sampling: 13:20
Pump Off: 13:20
Final Water Level (ft MSL): 5834.56
Total Waste Water (Gal): 370

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:29:01	ND	ND	ND	ND	ND	ND	5834.56	1.45	water clear, odorless
9:34:01	7.73	16.79	182	5.76	1.10	138	-	-	-
9:39:01	7.68	16.92	180	5.46	1.20	140	-	-	-
9:44:01	7.67	17.29	178	5.28	2.70	137	-	-	-
9:49:01	7.73	17.66	156	4.77	4.10	134	5834.58	1.45	water clear, odorless
9:54:01	7.90	18.07	144	6.13	2.10	131	-	-	-
9:59:01	7.96	18.50	136	6.67	2.30	130	-	-	-
10:04:01	7.98	19.26	132	6.86	2.60	128	-	-	-
10:09:01	7.98	19.89	131	6.97	1.90	127	5834.57	1.45	water clear, effervescent, odorless
10:14:01	8.03	20.35	132	6.95	1.20	126	-	-	-
10:19:01	8.03	20.68	131	6.98	1.00	126	-	-	-
10:24:01	8.04	20.94	131	6.96	1.00	126	-	-	-
10:29:01	8.04	21.08	131	6.93	1.00	125	5834.59	1.45	water clear, effervescent, odorless
10:34:01	8.04	21.18	130	6.89	0.90	125	-	-	-
10:39:01	8.05	21.27	130	6.93	1.00	124	-	-	-
10:44:01	8.05	21.39	130	6.92	1.00	123	-	-	-
10:49:01	8.06	21.46	129	6.94	1.00	123	5834.59	1.45	water clear, effervescent, odorless
10:54:01	8.06	21.52	128	6.80	1.00	122	-	-	-
10:59:01	8.07	21.56	128	6.77	1.00	122	-	-	-
11:04:01	8.07	21.65	129	6.76	1.00	121	-	-	-
11:09:01	8.07	21.73	128	6.77	1.00	121	5834.59	1.45	
11:14:01	8.06	21.77	128	6.79	1.00	121	-	-	-
11:19:01	8.07	21.92	128	6.79	1.00	121	-	-	-
11:24:01	8.07	21.96	127	6.78	1.00	121	-	-	-
11:29:01	8.07	22.06	128	6.83	1.00	120	5834.59	1.45	water clear, effervescent, odorless

Well Name: R-50 S2 continued

Time (MST)	pH	Temperature (ºC)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	
11:34:01	8.07	22.14	127	6.82	1.00	120	-	-	-
11:39:01	8.07	22.19	126	6.79	1.00	120	-	-	-
11:44:01	8.07	22.19	126	6.77	1.10	120	-	-	-
11:49:01	8.07	22.33	125	6.73	1.10	120	5834.60	1.45	water clear, effervescent, odorless
11:54:01	8.07	22.43	125	6.77	1.10	119	-	-	-
11:59:01	8.07	22.55	133	6.88	1.00	119	-	-	-
12:04:01	8.07	22.55	132	6.80	1.40	119	-	-	-
12:09:01	8.07	22.68	132	6.81	1.00	119	5834.61	1.45	water clear, effervescent, odorless
12:14:01	8.07	22.67	131	6.82	1.00	119	-	-	-
12:19:01	8.07	22.73	130	6.85	1.10	119	-	-	-
12:24:01	8.07	22.87	130	6.79	1.00	118	-	-	-
12:29:01	8.07	23.03	130	6.79	1.10	118	5834.61	1.45	water clear, effervescent, odorless
12:34:01	8.07	23.20	129	6.75	1.10	118	-	-	-
12:39:01	8.07	23.31	129	6.64	1.10	118	-	-	-
12:44:01	8.07	22.85	133	6.76	1.00	118	5834.62	1.45	water clear, effervescent, odorless
12:49:01	8.07	22.76	133	6.76	0.90	117	5834.61	1.45	water clear, effervescent, odorless
12:54:01	8.07	22.75	133	7.20	0.90	117	5834.63	1.45	water clear, effervescent, odorless
12:59:01	8.07	22.84	132	7.22	1.00	117	5834.62	1.45	water clear, effervescent, odorless
13:04:01	8.07	22.73	132	7.42	0.90	117	5834.62	1.45	water clear, effervescent, odorless
13:09:01	8.07	22.84	131	7.28	1.00	117	5834.62	1.45	water clear, effervescent, odorless

Entered by: Andrew Stocker
Reviewed by : William Shaw

Well Name: R-46
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1385.01
Casing/Tubing Type: SS
Date: 5/21/2013
Initial Water Level (ft MSL): 5883.49
Measuring Point (ft MSL): 7213.3

1 Casing Volume (Gal): 53.4
3 Casing Volume (Gal): 160.2
Drop Pipe (Gal): 54.5
3 CVs plus DP (Gal): 214.7
Total Purge Water (Gal): 165

Pump On: 9:21
Water at Surface: 9:21
Begin Sampling: 10:09
End Sampling: 10:15
Pump Off: 10:20
Final Water Level (ft MSL): 5882.11
Total Waste Water (Gal): 228

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:33:01	ND	ND	ND	ND	ND	ND	5881.94	4.69	clear, odorless
9:38:01	7.56	17.13	121	5.02	0.80	202	5882.09	4.69	clear, odorless
9:43:01	7.79	18.63	121	5.93	*0.59	203	5882.12	4.69	clear, odorless
9:48:01	7.88	19.51	122	6.29	*0.96	205	5882.14	4.69	clear, odorless
9:53:01	7.91	20.10	122	6.36	*0.32	205	5882.13	4.69	clear, odorless
9:58:01	7.93	20.38	122	6.43	*0.52	205	5882.14	4.69	clear, odorless
10:03:01	7.87	20.57	123	6.42	*0.77	207	5882.13	4.69	clear, odorless
10:08:01	7.78	20.65	124	6.46	*1.08	209	5882.14	4.69	clear, odorless

Additional Notes:
*HACH Turbidimeter #2 used because of negative YSI turbs

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-60
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1360.9
Casing/Tubing Type: SS
Date: 5/7/2013
Initial Water Level (ft MSL): 5907.34
Measuring Point (ft MSL): 7228.2

1 Casing Volume (Gal): 40.9
3 Casing Volume (Gal): 122.7
Drop Pipe (Gal): 54.2
3 CVs plus DP (Gal): 176.9
Total Purge Water (Gal): 123

Pump On: 9:37
Water at Surface: 9:37
Begin Sampling: 11:58
End Sampling: 12:03
Pump Off: 12:03
Final Water Level (ft MSL): 5898.38
Total Waste Water (Gal): 177

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:11:03	ND	ND	ND	ND	ND	ND	5900.79	1.25	clear, slight effervescence
10:16:03	7.69	17.08	129	3.57	7.20	238	-	-	-
10:21:03	7.53	17.81	128	3.22	8.50	183	-	-	-
10:26:03	7.79	18.17	129	4.16	3.20	175	5900.50	1.25	effervescent, clear, odorless
10:31:03	7.96	18.57	129	4.95	-	182	-	-	-
10:36:03	8.06	18.97	129	5.21	-	186	-	-	-
10:41:03	8.14	19.32	129	5.45	*1.60	187	5900.33	1.25	effervescent, clear, odorless
10:46:03	8.18	19.57	129	5.73	-	188	-	-	-
10:51:03	8.18	19.86	129	5.76	-	189	-	-	-
10:56:03	8.16	20.22	128	5.85	*2.38	190	5900.15	1.25	effervescent, clear, odorless
11:01:03	8.16	20.69	128	5.76	-	190	-	-	-
11:06:03	8.15	21.44	128	5.88	-	190	-	-	-
11:11:03	8.16	22.38	128	5.80	*2.54	189	5899.92	1.25	effervescent, clear, odorless
11:16:03	8.14	22.98	128	5.84	-	189	-	-	-
11:21:03	8.12	23.46	128	5.77	-	190	-	-	-
11:26:03	8.09	23.60	128	5.78	*2.35	191	5899.77	1.25	effervescent, clear, odorless
11:31:03	8.07	23.66	128	5.83	-	192	-	-	-
11:36:03	8.05	23.69	128	5.83	-	193	-	-	-
11:41:03	8.04	23.70	128	5.83	*1.78	193	5899.73	1.25	effervescent, clear, odorless
11:46:03	8.02	23.70	127	5.85	*1.95	194	5899.71	1.25	
11:51:03	8.02	24.02	127	5.87	*1.63	193	5899.69	1.25	effervescent, clear, odorless
11:56:03	8.03	24.30	127	5.78	*1.09	192	5899.67	1.25	effervescent, clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-61 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1162.3
Casing/Tubing Type: SS
Date: 5/16/2013
Initial Water Level (ft MSL): 5837.46
Measuring Point (ft MSL): 6940.1

1 Casing Volume (Gal): 60.8
3 Casing Volume (Gal): 182.4
Drop Pipe (Gal): 45.2
3 CVs plus DP (Gal): 227.6
Total Purge Water (Gal): 183.5

Pump On: 10:03
Water at Surface: 10:04
Begin Sampling: 11:52
End Sampling: 12:01
Pump Off: 12:01
Final Water Level (ft MSL): 5833.89
Total Waste Water (Gal): 235

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:25:59	ND	ND	ND	ND	ND	ND	5833.74	2.14	slightly effervescent, clear, odorless
10:30:59	6.73	17.00	140	0.53	3.70	227	-	-	-
10:35:59	6.71	17.43	151	4.03	4.80	229	5833.69	2.14	effervescent, clear, odorless
10:40:59	6.74	17.92	151	5.68	4.90	235	-	-	-
10:45:59	6.78	18.89	150	5.60	5.20	235	5833.68	2.14	effervescent, clear, odorless
10:50:59	6.79	19.70	150	5.61	5.50	238	-	-	-
10:55:59	6.78	20.17	150	5.77	5.40	241	5833.67	2.14	effervescent, clear, odorless
11:00:59	6.77	20.40	149	5.44	5.10	243	-	-	-
11:05:59	6.73	20.59	154	5.54	5.00	247	5833.68	2.14	effervescent, clear, odorless
11:10:59	6.74	20.71	154	5.31	4.60	247	-	-	-
11:15:59	6.74	20.77	154	5.58	4.30	249	5833.67	2.14	effervescent, clear, odorless
11:20:59	6.71	20.78	156	5.57	4.10	250	-	-	-
11:25:59	6.73	20.77	155	5.31	4.00	249	5833.65	2.14	effervescent, clear, odorless
11:30:59	6.73	20.80	154	5.42	3.80	249	-	-	-
11:35:59	6.73	20.84	152	5.45	3.60	250	5833.68	2.14	effervescent, clear, odorless
11:40:59	6.70	20.82	156	5.98	5.80	252	5833.66	2.14	effervescent, clear, odorless
11:45:59	6.71	20.83	155	5.97	3.00	251	5833.67	2.14	effervescent, clear, odorless
11:50:59	6.71	20.88	155	5.97	3.00	252	5833.67	2.14	effervescent, clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: William Shaw

Well Name: R-61 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1162.3
Casing/Tubing Type: SS
Date: 5/22/2013
Initial Water Level (ft MSL): 5837.67
Measuring Point (ft MSL): 6740.12

1 Casing Volume (Gal): 86.3
3 Casing Volume (Gal): 258.9
Drop Pipe (Gal): 47.8
3 CVs plus DP (Gal): 306.7
Total Purge Water (Gal): 260

Pump On: 9:10
Water at Surface: 9:11
Begin Sampling: 12:01
End Sampling: 12:09
Pump Off: 12:09
Final Water Level (ft MSL): 5835.23
Total Waste Water (Gal): 310

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:35:00	ND	ND	ND	ND	ND	ND	5835.21	2.0	effervescent, clear, odorless
9:40:00	6.67	17.25	158	0.70	8.1	198	-	-	-
9:45:00	6.69	17.69	153	0.30	12.8	194	-	-	-
9:50:00	6.70	18.23	150	0.29	20.0	191	-	-	-
9:55:00	6.70	19.09	149	0.44	25.2	188	5835.20	2.0	effervescent, cloudy, odorless
10:00:00	6.68	19.78	153	0.60	30.1	185	-	-	-
10:05:00	6.67	20.16	153	0.81	33.2	181	-	-	-
10:10:00	6.67	20.40	152	1.05	31.5	179	-	-	-
10:15:00	6.65	20.55	151	1.28	29.1	177	5835.17	2.0	effervescent, cloudy, odorless
10:20:00	6.65	20.63	151	1.49	25.5	177	-	-	-
10:25:00	6.63	20.69	150	1.70	22.6	176	-	-	-
10:30:00	6.61	20.80	150	1.70	22.5	176	-	-	-
10:35:00	6.62	20.90	150	1.82	23.3	176	5837.60	2.0	effervescent, cloudy, odorless
10:40:00	6.57	20.08	152	2.58	17.9	177	-	-	-
10:45:00	6.51	19.99	152	2.02	16.8	178	-	-	-
10:50:00	6.53	20.07	152	2.35	15.7	175	-	-	-
10:55:00	6.54	20.24	152	2.49	14.9	172	5835.19	2.0	effervescent, cloudy, odorless
11:00:00	6.56	20.38	151	2.63	14.2	168	-	-	-
11:05:00	6.57	20.52	150	2.75	13.5	162	-	-	-
11:10:00	6.53	20.52	152	2.68	12.1	151	-	-	-
11:15:00	6.54	20.53	151	2.74	11.7	138	5835.20	2.0	
11:20:00	6.56	20.64	150	2.86	11.8	123	-	-	-
11:25:00	6.57	20.88	149	2.88	12.2	117	-	-	-

Well Name: R-61 S2 Continued

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	
11:30:00	6.59	21.51	153	2.82	12.2	116	-	-	-
11:35:00	6.55	20.48	153	2.86	12.1	110	5836.04	2.0	effervescent, cloudy, odorless
11:40:00	6.52	20.43	151	2.96	12.20	106	5835.29	2.0	effervescent, cloudy, odorless
11:45:00	6.55	20.68	150	3.14	12.10	103	5835.22	2.0	effervescent, cloudy, odorless
11:50:00	6.57	20.73	150	3.05	12.00	99	5835.25	2.0	effervescent, cloudy, odorless
11:55:00	6.56	20.87	148	2.90	11.80	93	5835.21	2.0	effervescent, cloudy, odorless
12:00:00	6.56	21.04	152	2.96	12.30	95	5835.19	2.0	effervescent, cloudy, odorless

Additional Notes:

Pump issues: pump breaker was tripping off while purging a few times, at one point it was a few times in a row, but ended up staying on and purging and sampling was completed

Entered by: Andrew Stocker
Reviewed by William Shaw

Well Name: R-62
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1189.7
Casing/Tubing Type: SS
Date: 5/8/2013
Initial Water Level (ft MSL): 5840.58
Measuring Point (ft MSL): 6984.9

1 Casing Volume (Gal): 44.2
3 Casing Volume (Gal): 132.5
Drop Pipe (Gal): 46.9
3 CVs plus DP (Gal): 179.4
Total Purge Water (Gal): 136

Pump On: 9:43
Water at Surface: 9:43
Begin Sampling: 11:40
End Sampling: 11:53
Pump Off: 12:02
Final Water Level (ft MSL): 5831.12
Total Waste Water (Gal): 201

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:13:01	ND	ND	ND	ND	ND	ND	5831.38	1.6	clear, odorless, effervescent
10:18:01	9.33	14.84	169	0.88	13.80	186	-	-	-
10:23:01	9.37	15.11	165	1.09	4.80	187	-	-	-
10:28:01	9.25	15.50	168	2.20	3.40	188	5831.29	1.6	clear, odorless, effervescent
10:33:01	9.18	16.06	171	2.86	4.10	187	-	-	-
10:38:01	9.12	16.73	173	3.32	3.60	186	-	-	-
10:43:01	9.06	17.71	173	3.62	5.30	186	5831.20	1.6	clear, odorless, effervescent
10:48:01	9.00	18.38	173	3.86	6.50	186	-	-	-
10:53:01	8.94	18.77	172	4.07	6.20	186	-	-	-
10:58:01	8.87	18.75	171	4.22	6.00	187	5831.13	1.6	clear, odorless, effervescent
11:03:01	8.82	19.03	170	4.42	6.40	187	-	-	-
11:08:01	8.77	19.23	169	4.54	6.40	187	-	-	-
11:13:01	8.72	19.47	169	4.66	3.90	188	5831.07	1.6	clear, odorless, effervescent
11:18:01	8.68	19.64	185	4.74	1.80	188	-	-	-
11:23:01	8.65	19.75	184	4.83	0.90	189	-	-	-
11:28:01	8.59	19.68	182	4.97	4.50	190	5831.05	1.6	clear, odorless, effervescent
11:33:01	8.56	19.49	180	5.04	5.00	191	5831.02	1.6	clear, odorless, effervescent
11:38:01	8.52	19.66	178	5.03	4.50	192	5831	1.6	clear, odorless, effervescent

Additional Notes:

Entered by: Andrew Stocker
Reviewed by William Shaw

Appendix D

Field Parameter Summary Table

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
MCO-3	12.0	2011	1	11/8/2011	N/A	2.50	7.50	7.5	2.5	1.00	7.17	5.86	300.00	4.68	17.80	190.00		turbid, cloudy, odorless	clear, odorless
MCO-3	12.0	2011	3	5/21/2012	N/A	2.30	6.90	6.9	6.0	2.61	7.37	9.08	454.00	7.02	38.40	262.00		clear, odorless	clear, odorless
MCO-3	12.0	2013	1	11/7/2012	N/A	1.90	5.80	5.8	2.0	1.05	7.22	6.98	347.00	5.04	79.00	259.00	0.07	murky, odorless	murky, odorless
MCO-3	12.0	2013	3	5/13/2013	N/A	1.60	4.8	4.8	1.6	1.00	6.93	7.61	850	8.18	1.5	226.0	0.04	clear, odorless	clear, odorless
MCOI-4	525.70	2011	1	7/7/2010	5.31	3.82	11.46	16.77	4.75	1.24	7.25	15.85	272.00	7.75	1.03	124.10		Parameters taken before drop pipe cleared	Well purged dry on 7/6/10, returned 7/7/10 to sample
MCOI-4	525.70	2011	2	11/18/2010	2.93	2.50	7.50	10.43	3.00	1.20	7.16	11.36	303.00	9.35	N/A	449.90		Prarameters collected while clearing drop pipe	Well is dry
MCOI-4	525.70	2011	3	2/16/2011	2.92	3.82	11.46	14.38	1.30	0.34	N/A	N/A	N/A	N/A	N/A	N/A		Insufficient water purged to fill YSI flow through cell	Insufficient water, no parameters were collected
MCOI-4	525.70	2013	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry, no samples collected	
MCOI-5	702.70	2010	5	8/10/2011	6.96	16.98	50.94	57.90	17.00	1.00	8.42	13.80	199.00	7.01	0.34	236.00		Clear, odorless	Clear, odorless
MCOI-5	702.70	2011	3	6/4/2012	4.10	15.32	45.96	50.06	15.50	1.01	8.49	14.41	182.00	7.49	0.66	234.10		clear, no odor	clear, no odor
MCOI-5	702.70	2013	1	10/30/2012	4.10	14.70	44.10	48.20	15.20	1.03	8.63	13.10	196.00	6.83	0.33	199.00	0.4	clear, no odor	clear, no odor
MCOI-5	702.70	2013	3	5/7/2013	4.1	13.8	41.40	45.50	27.0	1.96	8.49	13.72	208	5.33	0.99	234	0.45	clear, odorless	clear, odorless
MCOI-6	686.00	2011	4	8/17/2012	27	45.4	136.20	163.20	137	3.02	8.32	15.98	593	7.10	0.53	105		Clear & no odor	Clear & no odor
MCOI-6	686.00	2013	1	11/2/2012	27	45.3	135.90	162.90	175	3.86	7.18	15.45	623	7.02	0.43	111	1.5	clear, no odor	clear, no odor
MCOI-6	686.00	2013	2	2/5/2013	27	45.6	136.80	163.80	173.6	3.81	7.16	14.81	565	7.14	0.45	127	1.4	particulates, no odor	no particulates, no odor
MCOI-6	686.00	2013	3	5/8/2013	27.0	45	135.00	162.00	136	3.02	7.22	16.01	595	7.49	3.8	160	1.66	water cloudy, odorless	clear, odorless
R-11	855.00	2011	4	8/17/2012	34.38	52.1	156.30	190.68	159	3.05	7.98	21.38	234	7.54	0.17	227		clear, odorless	clear, odorless
R-11	855.00	2013	1	11/5/2012	34.39	51.95	155.85	190.24	156	3.00	8.04	21.39	226	7.14	0.39	100	3.0	clear, no odor	clear, no odor
R-11	855.00	2013	2	2/4/2013	34.38	52.14	156.42	190.80	174	3.34	7.95	21.15	227	7.48	0.28	95	2.9	clear, no odor	clear, no odor
R-11	855.00	2013	3	5/13/2013	34.4	51.9	155.70	190.10	156	3.01	7.96	22.55	237	7.45	0.4	191	3.09	clear, odorless	clear, odorless
R-13	1029.40	2011	1	11/22/2011	34.4	158.00	474.00	508.40	474.00	3.00	8.29	20.78	141.00	6.29	0.42	194.90		clear, odorless	clear, odorless
R-13	1029.40	2011	3	6/5/2012	34.4	156.80	470.40	504.80	473.00	3.02	8.23	21.85	143.00	6.34	0.24	250.70		clear, odorless	clear, odorless
R-13	1029.40	2013	1	10/31/2012	34.4	156.60	469.80	504.20	470.00	3.00	8.21	21.41	146.00	6.37	0.29	217.00	6.9	clear, no odor	clear, no odor
R-13	1029.40	2013	3	5/6/2013	34.4	156.6	469.80	504.20	470	3.00	7.95	21.08	143	6.58	0.26	271.0	7.14	clear, odorless	clear, odorless
R-14	1315.60	2011	1	11/8/2011	48.5	51.02	153.06	201.56	179.40	3.52	8.43	23.17	130.00	5.17	0.51	167.10		clear, no odor	clear, no odor
R-14	1315.60	2011	3	5/29/2012	48.53	50.51	151.53	200.06	174.20	3.45	8.31	23.63	131.00	5.51	0.50	167.10		clear, no odor	clear, no odor
R-14	1315.60	2013	1	11/5/2012	48.55	49.90	149.70	198.25	170.00	3.41	8.26	22.09	134.00	5.64	0.51	185.00	6.8	clear, odorless, slightly effervescent\	clear, odorless
R-14	1315.60	2013	3	5/14/2013	48.6	49.9	149.70	198.30	153	3.07	8.13	22.27	129	5.45	0.65	231	6.97	clear, odorless	clear, odorless
R-15	1030.60	2011	1	11/10/2011	39.8	60.30	180.90	220.70	196.00	3.25	8.24	18.75	157.00	7.16	2.33	225.40		clear, odorless	clear, odorless
R-15	1030.60	2011	3	5/29/2012	39.8	61.10	183.30	223.10	184.00	3.01	8.02	20.25	152.00	7.18	2.78	189.70		rust and white particles, no odor	clear, no odor
R-15	1030.60	2013	1	10/31/2012	39.8	60.20	180.60	220.40	187.00	3.11	8.23	16.44	150.00	7.05	2.31	120.00	8.5	rust particles, odorless, clear	rust particles, odorless, clear
R-15	1030.60	2013	3	5/6/2013	39.9	60.1	180.30	220.20	216.0	3.59	8.20	19.28	156	7.01	1.2	229	10.3	clear, odorless	clear, odorless
R-28	934.30	2011	4	8/8/2012	36.6	89.25	267.75	304.35	270	3.03	7.56	21.17	421	6.71	0.65	221		clear,no odor,no effervescence	clear,no odor,no effervescence
R-28	934.30	2013	1	10/31/2012	36.61	89.1	267.30	303.91	267	3.00	7.63	20.50	435	6.55	0.45	184	3.8	clear, no odor	clear, no odor
R-28	934.30	2013	2	2/1/2013	36.61	89.16	267.48	304.09	269.8	3.03	7.68	19.18	411	6.57	0.46	54	3.8	clear, no odor	clear, no odor
R-28	934.30	2013	3	5/9/2013	36.6	89.2	267.60	304.20	269	3.02	7.65	20.22	416	6.51	0.1	247	3.9	clear, odorless	clear, odorless
R-34	883.70	2011	4	8/23/2012	32.71	101.61	307.00	339.71	305.2	3.00	8.36	22.45	152	5.54	1.55	212		very effervescent, clear, no odor	slight effervescence,clear,no odor
R-34	883.70	2013	1	11/14/2012	32.73	101.09	303.27	336.00	305.2	3.02	8.36	20.95	150	5.63	1.27	163	2.8	Clear, no odor, effervescent	Clear, no odor, effervescent
R-34	883.70	2013	2	2/13/2013	32.72	101.2	303.70	336.40	348	3.44	8.35	19.91	156	7.19	2.82	52	2.9	effervescent, no odor	effervescent, no odor
R-34	883.70	2013	3	5/15/2013	32.7	101.2	303.60	336.30	304.5	3.01	8.30	21.72	152	6.26	0.9	92	2.72	clear, odorless, effervescent	clear, odorless, effervescent

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
R-35a	1086.20	2011	1	11/17/2011	32.73	237.74	713.24	745.97	746.00	3.14	8.02	23.44	243.00	4.71	0.95	169.20		clear, odorless	clear, odorless
R-35a	1086.20	2011	3	6/5/2012	33.02	231.91	695.73	728.75	703.00	3.03	7.97	24.36	242.00	4.93	1.90	312.50		cloudy, yellow tint	clear, no odor
R-35a	1086.20	2013	1	11/13/2012	32.60	239.60	718.80	751.40	720.00	3.01	8.08	22.66	241.00	4.90	1.08	170.00	3.6	fine particles, odorless, clear	clear, odorless
R-35a	1086.20	2013	3	5/16/2013	32.7	238.2	714.60	747.30	718.20	3.02	8.05	24.66	242	5.03	1.97	81.4	3.8	clear, odorless	clear, odorless
R-35b	872.20	2011	1	11/9/2011	32.40	67.10	201.40	233.80	202.00	3.01	7.62	20.54	176.00	6.27	0.56	191.70		no odor, clear, effervescent	no odor, clear, effervescent
R-35b	872.20	2011	3	6/6/2012	32.40	67.40	202.20	234.60	206.00	3.06	7.50	22.09	174.00	6.06	0.41	232.70		clear, odorless	Clear, odorless, slight effervescence
R-35b	872.20	2013	1	11/14/2012	32.40	67.10	201.30	233.70	201.00	3.00	7.66	21.07	170.00	6.14	0.51	189.00	3.66	clear, odorless	clear, odorless
R-35b	872.20	2013	3	5/10/2013	32.4	67	201.00	233.40	205	3.06	7.47	21.23	172	5.85	0.44	239	3.1	clear, odorless	clear, odorless
R-36	766.90	2011	1	11/16/2011	30.9	43.10	129.30	160.20	130.00	3.02	7.37	20.44	194.00	6.22	1.00	165.00		Clear; odorless	Clear; odorless
R-36	766.90	2011	2	3/8/2012	30.87	42.01	126.03	156.90	128.70	3.06	7.32	19.29	192.00	6.15	0.80	167.20		Clear, odorless	Clear, odorless
R-36	766.90	2013	1	11/14/2012	30.87	41.98	125.94	156.81	128.70	3.07	7.33	19.84	195.00	5.98	0.89	209.00	3.3	clear, no odor, no effervescence	clear, no odor, no effervescence
R-36	766.90	2013	3	5/17/2013	30.9	42	126.00	156.90	142.80	3.40	7.27	21.40	192	5.77	1.08	106	3.4	clear, odorless	clear, odorless
R-42	931.80	2011	4	8/8/2012	37.78	53	160.10	197.88	160	3.02	7.37	21.17	488	6.82	0.66	227		clear,no odor,no effervescence	clear,no odor,no effervescence
R-42	931.80	2013	1	10/31/2012	37.8	52.8	158.40	196.20	158.4	3.00	7.48	19.48	481	6.99	1.79	114	2.2	odorless, green tint	odorless, green tint
R-42	931.80	2013	2	2/1/2013	37.8	52.8	158.40	196.20	159	3.01	7.75	19.72	495	7.20	0.58	208	2.6	odorless, green tint	odorless, green tint
R-42	931.80	2013	3	5/6/2013	37.8	53.1	159.30	197.10	160	3.01	7.37	19.48	502	6.84	1.05	275	2.4	green tint, odorless	green tint, odorless
R-43 S1	903.90	2011	4	8/14/2012	36.73	66.26	198.78	235.51	200.20	3.02	8.08	20.37	181	6.91	0.35	245		no: color,odor,effervescence	no: color,odor,effervescence
R-43 S1	903.90	2013	1	11/7/2012	36.74	65.9	197.70	234.44	199.00	3.02	8.23	20.20	176	6.88	0.51	83	1.3	no: color,odor,effervescence	no: color,odor,effervescence
R-43 S1	903.90	2013	2	2/6/2013	36.7	66.3	198.90	235.60	200.00	3.02	8.22	18.91	180	7.07	0.39	166	1.3	odorless, clear	odorless, clear
R-43 S1	903.90	2013	3	5/15/2013	36.7	66.5	199.50	236.20	200.00	3.01	8.17	20.16	183	6.81	1.88	224	1.31	clear, odorless	clear, odorless
R-43 S2	969.10	2011	4	8/13/2012	39.6	25.5	76.50	116.10	77	3.02	8.71	19.96	191	2.95	0.19	162		clear odorless	clear odorless
R-43 S2	969.10	2013	1	11/7/2012	39.6	25.5	76.50	116.10	77	3.02	8.78	20.17	183	3.07	0.38	61	1.35	no: color,odor,effervescence	no: color,odor,effervescence
R-43 S2	969.10	2013	2	2/7/2013	39.6	25.5	76.50	116.10	78	3.06	8.78	18.87	183	3.27	0.23	59	1.27	clear, odorless, no effervescence	clear, odorless, no effervescense
R-43 S2	969.10	2013	3	5/14/2013	39.6	25.5	76.50	116.10	77	3.02	8.50	20.22	193	4.79	0.19	160	1.22	clear, odorless	clear, odorless
R-44 S1	936.30	2011	1	11/17/2011	36	57.29	171.87	207.87	184.00	3.21	7.75	16.57	137.00	5.23	0.42	226.60		clear, no odor	clear, no odor
R-44 S1	936.30	2011	3	5/24/2012	36.1	57.70	173.10	209.20	178.00	3.08	7.75	21.67	132.00	5.64	0.57	271.00		clear, odorless	clear, odorless
R-44 S1	936.30	2013	1	11/12/2012	36.12	56.47	169.41	205.53	170.00	3.01	7.78	18.66	134.00	6.70	0.43	101.00	3.4	clear, tiny particles, no effervescence	clear, particle-free, no effervescence
R-44 S1	936.30	2013	3	5/9/2013	36.1	56.9	170.70	206.80	171.60	3.02	7.73	20.39	135	6.89	0.20	182	3.3	clear, no odor	clear, no odor
R-44 S2	1016.00	2011	1	11/17/2011	38.6	76.40	229.20	267.80	230.00	3.01	7.86	20.72	151.00	7.20	0.29	240.20		clear, odorless	clear, odorless
R-44 S2	1016.00	2011	3	5/24/2012	38.6	76.40	229.20	267.80	231.00	3.02	7.86	21.23	148.00	6.95	1.10	275.90		clear, unknown odor (sharp)	clear, slight unknown odor
R-44 S2	1016.00	2013	1	11/12/2012	38.6	76.40	229.20	267.80	231.20	3.03	7.87	19.02	143.00	7.10	0.17	119.00	3.4	clear, no odor, no effervescence	clear, no odor, no effervescence
R-44 S2	1016.00	2013	3	5/9/2013	38.6	76.4	229.20	267.80	231.00	3.02	7.81	20.78	144	7.2	0.10	139.0	3.3	clear, no odor	clear, no odor
R-45 S1	921.30	2011	1	11/16/2011	35.6	52.80	158.40	194.00	160.00	3.03	7.88	20.39	177.00	7.25	0.39	129.20		clear, odorless	clear, odorless
R-45 S1	921.30	2011	3	5/22/2012	35.7	52.80	158.40	194.10	160.00	3.03	7.73	21.38	176.00	7.18	0.38	186.50		clear, odorless	clear, odorless
R-45 S1	921.30	2013	1	11/6/2012	36	52.00	156.00	192.00	157.50	3.03	7.84	20.72	173.00	7.22	0.37	97.00	3.5	clear, odorless	clear, odorless
R-45 S1	921.30	2013	3	5/9/2013	35.7	52.4	157.20	192.90	157.2	3.00	7.67	19.50	179	7.15	0.39	304	3.59	clear, odorless	clear, odorless
R-45 S2	1016.00	2011	1	11/16/2011	38	91.80	275.40	313.40	276.50	3.01	8.19	20.67	170.00	6.52	0.29	123.40		clear, odorless	clear, odorless
R-45 S2	1016.00	2011	3	5/22/2012	38	91.80	275.40	313.40	279.00	3.04	8.01	22.51	170.00	6.24	0.33	220.60		clear, odorless	clear, odorless
R-45 S2	1016.00	2013	1	11/6/2012	38	91.80	275.40	313.40	278.80	3.04	8.10	20.82	164.00	6.69	0.40	87.00	3.4	clear, odorless	clear, odorless
R-45 S2	1016.00	2013	3	5/9/2013	38.0	91.8	275.40	313.40	276.00	3.01	7.94	20.98	170	6.43	0.34	314	3.57	clear, odorless	clear, odorless
R-46	1385.01	2011	1	11/8/2011	54.5	54.90	164.70	219.20	165.00	3.01	8.02	21.41	122.00	6.49	1.23	130.40		clear, odorless	clear, odorless
R-46	1385.01	2011	3	5/21/2012	54.51	53.84	161.52	216.03	165.60	3.08	7.87	21.93	120.00	6.43	1.03	142.80		clear, no odor	clear, no odor
R-46	1385.01	2013	1	11/16/2012	54.5	53.30	159.90	214.40	160.00	3.00	8.01	18.60	121.00	6.50	0.50	176.00	4.76	clear, odorless	clear, odorless

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
R-46	1385.01	2013	3	5/21/2013	54.5	53.4	160.20	214.70	165	3.09	7.78	20.65	124	6.46	1.08	209	4.69	clear, odorless	clear, odorless
R-50 S1	1077.00	2011	4	8/15/2012	43.8	51	155.00	198.80	155	3.04	8.03	20.70	175	5.27	0.82	156		slightly effervescent, no odor	slightly effervescent
R-50 S1	1077.00	2013	1	11/9/2012	43.74	50.96	152.88	196.62	155	3.04	8.04	18.03	185	5.58	0.63	81	2.5	Clear, no odor, effervescent	less effervescent, no odor, clear
R-50 S1	1077.00	2013	2	2/4/2013	43.8	50.9	152.70	196.50	155	3.05	7.91	19.01	185	5.49	0.40	155	2.5	effervescent, clear, odorless	Effervescent, clear, odorless
R-50 S1	1077.00	2013	3	5/10/2013	43.8	50.7	152.10	195.90	165	3.25	7.66	20.80	191	5.57	0.8	249	2.5	slight effervescent, clear, odorless	slight effervescent, clear, odorless
R-50 S2	1185.00	2011	4	8/16/2012	46.0	96.5	289.50	335.50	290	3.01	8.05	21.64	127	6.93	0.43	202		Very slight effervescece	Very slight effervescent
R-50 S2	1185.00	2013	1	11/9/2012	46.0	96.49	289.47	335.51	306	3.17	8.13	18.57	139	7.04	1.24	77	1.7	clear/no odor, little effervescence	clear/no odor, little effervescence
R-50 S2	1185.00	2013	2	1/31/2013	46.0	96.49	289.47	335.51	290	3.01	8.10	19.45	135	7.27	1.83	-14	1.5	effervescent, no odor	slightly effervescent
R-50 S2	1185.00	2013	3	5/13/2013	46.0	96.49	289.47	335.51	319	3.31	8.07	22.84	131	7.28	1.00	117	1.45	water clear, odorless	water clear, effervescent, odorless
R-60	1360.9	2011	1	11/22/2011	54.1	42.3	126.90	181.00	127.6	3.02	8.45	22.65	124	5.23	1.82	96		effervescent, clear, odor	Effervescent, clear, odorless
R-60	1360.9	2011	3	5/31/2012	54.1	42.1	126.20	180.30	127	3.02	8.35	24.39	131	5.51	2.77	203		very effervescent, no odor	very effervescent, no odor
R-60	1360.9	2013	1	11/1/2012	54.15	41.07	123.21	177.36	124	3.02	8.31	23.73	116	5.88	1.49	132	1.0	effervescent, no odor	effervescent, no odor
R-60	1360.9	2013	3	5/7/2013	54.2	40.9	122.70	176.90	123	3.01	8.03	24.30	127	5.78	1.09	192	1.25	clear, slight effervescence	effervescent, clear, odorless
R-61 S1	1162.30	2011	3	5/9/2012	45.20	61.60	123.20	168.40	125.00	2.03	7.00	21.28	157.00	1.51	1.29	-23.50		effervescent, odor, clear	effervescent, odor, clear
R-61 S1	1162.30	2013	1	11/15/2012	45.20	60.70	182.10	227.30	182.00	3.00	6.53	19.40	180.00	4.77	4.55	202.00	2.0	slightly effervescent, clear, no odor	effervescent, clear, no odor
R-61 S1	1162.30	2013	2	2/11/2013	45.20	61.00	183.00	228.20	190.00	3.11	6.65	17.57	170.00	5.49	4.81	15.00	2.0	clear, odor	appendix C for 12 CVs EES samples
R-61 S1	1162.30	2013	3	5/16/2013	45.2	60.8	182.40	227.60	183.5	3.02	6.71	20.88	155	5.97	3.00	252	2.14	slightly effervescent, clear, odorless	effervescent, clear, odorless
R-61 S2	1251.60	2011	3	5/9/2012	47.80	86.30	172.60	220.40	174.00	2.02	6.81	20.96	175.00	0.42	0.84	-59.40		odor, clear	effervescent, odor, clear
R-61 S2	1251.60	2013	1	11/15/2012	47.80	86.30	258.90	306.70	259.00	3.00	6.46	19.28	199.00	3.34	6.19	-49.00	2.1	clear, odorless, slightly effervescent\	clear, sulfur odor, effervescent
R-61 S2	1251.60	2013	2	2/12/2013	47.80	84.60	253.80	301.60	258.00	3.05	6.47	18.96	204.00	1.86	4.63	-82.00	2.0	clear, organic odor	for 12 CVs EES samples
R-61 S2	1251.60	2013	3	5/22/2013	47.80	86.30	258.90	306.70	260.00	3.01	6.56	21.04	152	2.96	12.30	95	2.0	effervescent, clear, odorless	effervescent, cloudy, odorless
R-62	1189.7	2011	2	3/26/2012	46.90	47.49	142.50	189.40	143.00	3.01	8.63	19.59	188.00	6.21	6.15	120.00		sampling suite.	Very effervescent, few particles
R-62	1189.7	2011	4	8/8/2012	46.9	46.7	143.50	190.40	420	8.99	8.30	21.81	166	5.88	0.65	73		effervescent	effervescent
R-62	1189.7	2013	1	11/8/2012	46.9	46.7	140.10	187.00	560	11.99	8.77	19.22	188	5.41	0.55	58	1.2	effervescent, clear, odorless	effervescent, clear, odor
R-62	1189.7	2013	2	2/5/2013	46.9	46.7	140.10	187.00	148	3.17	8.71	19.14	184	5.37	0.31	179	1.3	Clear, odorless, effervescent	Clear, odorless, effervescent
R-62	1189.7	2013	3	5/8/2013	46.9	44.2	132.60	179.50	136	3.08	8.52	19.66	178	5.03	4.50	192	1.6	clear, odorless, effervescent	clear, odorless, effervescent
SCI-1	378.50	2011	1	11/16/2011	3.70	7.20	22.00	25.70	7.50	1.04	7.13	9.71	712.00	8.96	9.88	229.80		yellow hue, clear	yellow hue, clear
SCI-1	378.50	2011	3	5/21/2012	3.80	6.50	19.50	23.30	7.70	1.18	6.95	10.95	713.00	8.84	4.15	216.40		clear, odorless	clear, odorless
SCI-1	378.50	2013	1	11/2/2012	2.20	7.20	21.60	23.80	11.80	1.64	7.09	10.27	694.00	8.95	3.47	165.00	0.65	clear, odorless	odorless, clearing
SCI-1	378.50	2013	3	5/17/2013	2.2	6.5	19.50	21.70	12.60	1.94	7.09	11.39	719	8.69	0.8	67	0.6	clear, odorless	clear, odorless
SCI-2	548.00	2011	4	8/13/2012	3.2	6.9	20.70	23.90	21	3.04	8.15	16.08	579	8.23	4.22	170		clear, odorless	clear, odorless
SCI-2	548.00	2013	1	11/5/2012	3.17	6.89	20.67	23.84	25	3.63	7.46	14.35	590	9.78	3.15	149	0.46	clear, slight odor	slight effervescence
SCI-2	548.00	2013	2	1/31/2013	3.18	6.5	19.50	22.68	47.3	7.28	7.50	13.93	602	9.70	1.54	2	0.43	clear, odorless	Clear, no odor, effervescent
SCI-2	548.00	2013	3	5/21/2013	3.2	7	21.00	24.20	26.4	3.77	7.41	14.48	621	9.24	1.1	222	0.44	clear, green tint, odorless	clear, green tint, odorless

Field Summary Report- Supplementary Documentation

Mortandad and Sandia Watershed Quarterly Sampling Event 3, 2013 Interim Facility-Wide Groundwater Monitoring Plan

Other Field Activities from April 29-May 26, 2013

Prepared by TerranearPMC, LLC
Los Alamos, NM

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Appendix E

Field Documentation

Mortandad and Sandia Watershed MY2013 Q3 and other Field Activities from April 29-May 26, 2013

Daily Status Report for Task Order 11 Sampling

Mortandad/Sandia Q3 (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) Including all Other Field Activities from May 5th through May 26th, 2012

Monitoring Group	Watershed	Media*	Location Name	QC Assignments **	Location Information	Sampled?	Sample or Cancellation Date	Cancellation Code*** (if applicable)	Samplers	Comments
Chromium Monitoring - Mortandad Canyon	Mortandad	WGI	MCOI-4	FTB	DRY			DRY		DRY
			MCOI-5	FD/FB/FTB		Yes	5/7/2013	NA	DF, MG, MS	NMED Split, FB, FD
			MCOI-6	FTB		Yes	5/8/2013	NA	DF, MG, MS	NMED Split
		WGR	R-13			Yes	5/6/2013	NA	AS, MS	NMED Split
			R-15			Yes	5/6/2013	NA	DW, WS	NMED Split
			R-28	PEB		Yes	5/6/2013	NA	DW, WS	NMED Split, PEB
			R-42			Yes	5/6/2013	NA	AS, MS	NMED Split
			R-44 S1			Yes	5/9/2013	NA	DW, WS	NMED Split
			R-44 S2			Yes	5/9/2013	NA	DW, WS	NMED Split
			R-45 S1			Yes	5/9/2013	NA	AS, DF, MS	NMED Split
			R-45 S2			Yes	5/9/2013	NA	AS, DF, MS	NMED Split
			R-50 S1			Yes	5/10/2013	NA	AS, DW	NMED Split
			R-50 S2			Yes	5/13/2013	NA	DF, MS	NMED Split, Sampled at 3.3 CVs because DO wasn't stable
			R-61 S1	FTB		Yes	5/16/2013	NA	AS, DF	MS
			R-61 S2	FTB		Yes	5/22/2013	NA	AS, DF, WS, MS	Pump tripped off a few times but a sample was collected at 3CVs + DP
			R-62	FD/FB/FTB		Yes	5/8/2013	NA	AS, WS	NMED Split, FD, FB
Chromium Monitoring - Sandia Canyon	Sandia	WGI	SCI-1			Yes	5/17/2013	NA	AS, WS, MS	NMED Split
			SCI-2			Yes	5/21/2013	NA	WS, MS	NMED Split
		WGR	R-11	FD		Yes	5/13/2013	NA	AS, WS, MG	NMED Split, FD
			R-35a			Yes	5/16/2013	NA	WS, MS	NMED Split
			R-35b			Yes	5/10/2013	NA	WS, MS	NMED Split
			R-36			Yes	5/17/2013	NA	AS, WS, MS	NMED Split
			R-43 S1			Yes	5/15/2013	NA	AS, WS	NMED Split
			R-43 S2		Collect IFGMP sample per SOP. Per work plan, purge 12 CVs and collect time-series samples at 4, 8, and 12 CVs for GGRL analysis.	Yes	5/14/2013	NA	AS, MS	NMED Splits at 3, 4, 8, and 12CVs
MDA C Monitoring	Mortandad	WGR	R-14	FTB		Yes	5/14/2013	NA	DF, WS	NMED Split, MS
			R-46	FB/FTB		Yes	5/21/2013	NA	AS, DF	NMED Split, MS
			R-60	FTB		Yes	5/7/2013	NA	AS, WS	NMED Split, MS
General Surveillance	Mortandad	WGR	R-34			Yes	5/15/2013	NA	DF, MS	NMED Split

Other Field Activities	Watershed	Media*	Location Name	QC Assignments **	Location Information	Sampled?	Sample or Cancellation Date	Cancellation Code*** (if applicable)	Samplers	Comments
Discharge Permit Sampling (DCO 9)	Mortandad	WGA	CDBO-6	FTB	DRY	No		DRY		DRY
			MCO-3			Yes	5/13/2013	NA	AS, WS, MG	None
			MCO-4B		DRY	No		DRY		DRY
			MCO-6		DRY	No		DRY		DRY
			MCO-7		DRY	No		DRY		DRY

*WS = baseflow, WGS = spring, WGA = alluvial groundwater, WGI = intermediate groundwater, WGR = regional groundwater.
**EQB = equipment rinsate blank, FB = field blank, FD = field duplicate, FTB = field trip blank, MS = matrix spike, PEB = performance evaluation blank.
***Shaded locations are not planned for the current sampling campaign (CANCS = no samples required during current sampling event; CANMY = sampling requirements are complete for the current monitoring year; CPL = cancelled by project lead; CRP = cancelled, removed from plan; INST = not installed; MECH = Mechanical Problem; OSTMP = out of service - temporary; OSPRM = out of service - permanent; AI = area inaccessible)

Status	Weather	Contact Information		Abbreviations
Date: 5/22/2013	**Forecast:** 70s-80s, clear	**Project Management Issues:** Kevin Reid: 663-7108, 412-3996	**Westbay team lead:**	NS = No Sample Collected FCN = Field Change Notice AS = Abbreviated Sample Suite Collected
Prepared by: Andrew Stocker	**Fire Danger:** Very High	**Alluvial leads:** Andrew Stocker: 500-6935	**Waste Managements:** Kevin Reid	WB = Westbay Sampling System IS = Indicator Suite
Sampling Event: Mortandad/Sandia Q3	**Wind:** Moderate	**Regional/intermediate wells team leads:** David Fellenz: 412-5409, William Shaw:970-988-8913	**Sample plan implementation:** P.Baucom 412-3998 or 663-7114	FAS = Full Analytical Suite GDP = Groundwater Discharge Permit
Status: Day 17	**Precipitation:** None	David Woody: 412-7956 Megan Green: 663-7153		MS = Matrix Spike NMED = New Mexico Environmental Department

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30571

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			**FIELD MATRIX:**	WG	
TIME COLLECTED (HH:MM):			**MEDIA:**	UA	
PRS ID:			**SAMPLE TECH CODE:**	UA	
LOCATION ID:	MCOI-4		**FIELD PREP:**	UF	
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REQ	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30587

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	MCOI-4		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-GENINORG	1 LITER POLY	1	ICE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30565

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	MCOI-4		FIELD PREP:	UF	
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30572

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1220	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	MCOI-5	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.33 mg/L Oxidation-Reduction Potential 234.1 MV pH 8.49 SU

Specific Conductance 208 uS/cm Temperature 13.72 deg C Turbidity 0.99 NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 5/7/13 1335	**RECEIVED BY** (Printed Name) M. Martin (Signature)	Date/Time 5/7/13 1335
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30588

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1220	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	MCOI-5	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 5/7/13 1335	RECEIVED BY (Printed Name) M. Martin (Signature)	Date/Time 5/7/13 1335
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30561

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1220	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	MCOI-5	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FD	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	1	ICE	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellenz (Signature)	5/7/13 1335	(Printed Name) M. Martin (Signature)	5/7/13 1335
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30563

WORK ORDER:

		AS PLANNED	AS COLLECTED			AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			05/07/2013	FIELD MATRIX:	WG		OK
TIME COLLECTED (HH:MM):			1220	MEDIA:	UA		↓
PRS ID:			OK	SAMPLE TECH CODE:	UA		RSP
LOCATION ID:	MCOI-5		↓	FIELD PREP:	F		OK
LOCATION TYPE:			↓	FIELD QC TYPE:	FD		↓
PORT:	SINGLE COMPLETION		↓	SAMPLE USAGE:	QC		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 5/7/13 1335	RECEIVED BY (Printed Name) M. Martin (Signature)	Date/Time 5/7/13 1335
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30566

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1220	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	MCOI-5	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	3	HCL	Y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellows	5/7/13 1335	(Printed Name) M. Montoya	5/7/13 1335
(Signature)		(Signature)	
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30559

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1220	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	MCOI-5	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FB	↓
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 1	ICE	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY (Printed Name) David Fellows (Signature)	Date/Time 5/7/13 1335	**RECEIVED BY** (Printed Name) M. Martinez (Signature)	Date/Time 5/7/13 1335
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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MCOI-5

5/7/13

Note: All times are in MST

0600 A. Stocker conducts health and safety tailgate at TA-64

0640 M. Shendo calibrates YSI # 30 at TA 59, see calibration log book EP2011-0074 page 52 for details

0930 Crew (D. Fellenz, M. Green, M. Shendo) on site at MCOI-5

Weather: 60's, breezy, sunny

2 Minute Safety: Pressure system, trips, splashes

Objective: Purge and sample MCOI-5 per applicable documents on page 3 and work plan for Mortandad/Sandia Q3 MY2013 Rev. 4 which allows sampling after 1 CV with stable parameters

0950 Connect to transducer (level troll) with Rugged Reader # 4, begin logging V (File: MCOI-5 5-7-13)

Note: This is a single completion well with a dedicated RSP pump

Note: The following data is from historicals and well completion info

LSD = 6819.1' msl V = 6133.15' msl

TD = 702.7' bgs DTW = LSD − V = 685.95' bgs

DP = (0.006 gal/ft) DTW = 4.1 gal WC = TD − DTW = 16.75'

1 CV = (0.826 gal/ft) WC = 13.8 gal

Note: Initial tank pressure = 1600 psi

1006 Pump on at 100 psi

1007 Water to surface, Q = ~~0.26 gpm~~ 0.33 gpm DF 5/7/13 (manual using graduated cup)

Note: Crew will leave flow rate, any lower and pump turns off

Note: YSI turbidity reads negative, Hach #1 used to record values

1054 M. Dale (NMED) on site

1059 1 CV purged, however DO is dropping rapidly, crew will continue to purge

1109 T. McFarland called to inform of situation, crew will continue purging and call T. McFarland if V becomes close to the bottom of screen

1120 Begin sampling (1.96 CV)

1130 M. Dale off site

1137 Sampling complete, pump off; Final tank pressure 350 psi

Note: M. Shendo preserves all samples; D. Fellenz QA's

Summary: Crew successfully samples MCOI-5 (Objective met!)

Note: See pages ~~60-61~~ 59 & 60 DF 5/7/13 of this log book for parameters, final V, final parameters, waste info, compliance checklist

1201 Disconnect from transducer, stop logging V

5/7/13
1206 C
1235 R
E

David Fellenz
We
Dal

MCOI - 5 Continued

59

5/7/13
1206 Crew off site
1235 Relinquish samples to SMO c/o M. Montoya
Event ID: 4195
Sample ID's: CAMO-13-30572, 30588, 30561, 30563, 30559, 30566

David Fellenz 5/7/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: MCOI - 5
Date: 5/7/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 21.1 DF 5/7/13 ~~3 CVs:~~ 1 CV 13.8	4.1	27	1.96	(Y) N	Per workplan, only 1 CV needed to be purged, however DO was not stable until 1.96 CVs

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (≤10 NTU) or ± 10%	Comments:
1109	8.47	208	5.19	0.88	NA
1114	8.43	208	5.19	0.76	
1119	8.49	208	5.33	0.99	
Calculations:	Upper: 8.49 Lower: 8.43 Difference: 0.06	Median: 208 Upper: 214 Lower: 202	Upper: 5.33 Lower: 5.19 Difference: 0.14	Median: NA Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

David Fellenz 5/7/13

60
5/7/13

MCOI-5 Continued

David Fellows 5/7/13

Groundwater Sampling Log

Project: IFWS/MP MY2013	LSD: 6819.1	ft. msl	Well Diameter: 4.5	inches	Date: 5/7/13		
Watershed: Mortandad	Water Level: 6133.15	ft. msl	Top of Screen: 6130.10	ft. msl	Notes:		
Well: MCOI-5	*TD: 702.7' bgs		Bottom of Screen: 6120.10	ft. msl			
Sampling Device: RSP	*DTW: 685.95		Water Column: 16.75	ft.			
Measuring Point: LSD	Drop Pipe: 4.1	gal.	1CV: 13.8	gal.	Packer Pressure		
* Completion Depth: TD			3CV: NA	gal.	Before: NA	psi	
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials				Actuation: NA	psi	
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)					Opening: NA	psi	
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)					After: NA	psi	

TIME MST DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1006	Pump on								
1007	water to surface								
1019	6.76	12.65	199	5.47	3.47	261.6	6130.55	0.33	clear, odorless
1024	8.29	13.56	197	6.53	1.20	242.9	6129.84	0.45	
1029	8.52	13.80	196	6.64	0.51	240.6	6129.15		
1034	8.53	13.84	197	6.62	0.41	240.7	6129.14		
1039	8.55	13.82	198	6.45	0.25	240.5	6129.16		
1044	8.54	13.83	200	6.23	0.13	240.1	6129.07		
1049	8.55	13.85	201	6.11	0.02	238.7	6128.66		
1054	8.51	13.72	203	5.96	0.13	239.1	6128.13		
1059	8.50	13.70	205	5.75	0.25	238.3	6127.66		
1104	8.47	13.80	207	5.44	0.18	237.2	6127.32		
1109	8.47	13.81	208	5.19	0.88	235.8	6127.02		
1114	8.43	13.74	208	5.19	0.76	236.4	6126.73		
1119	8.49	13.72	208	5.33	0.99	234.1	6126.48		27 gal. purged
1120	Begin sampling; 1137 Sampling complete, Pump off								

WASTE

Contact: 1/2	gal.	Drum#: 10171448	
Purge Water: 27	gal.	Drum#'s: 10171724	120 gal.
Total Waste Water: 32.5	gal.		

Final Water Level: 6125.69' msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

David Fellows 5/7/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30573

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/08/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1213	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	MCOI-6		FIELD PREP:	UF	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE	Y	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	↓

SAMPLE COMMENTS: Sampled within 50' of Running generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.51 mg/L Oxidation-Reduction Potential 164.7 MV pH 7.22 SU

Specific Conductance 596 uS/cm Temperature 15.96 deg C Turbidity 3.9 NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Maurice Shendo	05/08/13 1323	M. Martin	5/8/13 1325
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30589

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/08/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1213	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	MCOI-6	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	yes	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Shendo (Signature)	05/08/13 1323	(Printed Name) M. Martin (Signature)	5/8/13 1323
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30567

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/08/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1213	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	MCOI-6	↓	FIELD PREP:	UF	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Yes	NA

MS 5/8/13

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Shendo (Signature)	05/08/13 1323	(Printed Name) M. Martin (Signature)	5/8/13 1323
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

MCOI-6

5/8/13
Note: All times are in MST
0600: A Stalker conducts Safety tailgate @ 64.
~~0700~~ 0640: M. Green conducts calibrations for the YSI #30 @ TA-59, see log book: EP2011-0074 Page 53.
0840 on site: crew (D. Fellenz, M. Green, & M. Shendo)
Weather: Partly cloudy, High 40's to Low 50's.
2 min Safety: Electrical systems, changing weather conditions
objectives: Purge & Sample MCOI-6 per applicable Doc's. on Page 3.
0900: connected to transducer (level troll) with Rugged Reader, #4 began logging V (File: MCOI-6 5/8/13)
Note: This is a single completion well with a dedicated GSP pump.
Note: The following Data is from Historicals.
V: 6152.40' msl LSD = 6811.1 msl
TD: 713.22' bgs DTW = LSD − V = 658.7' bgs
DP := DTW (0.041 gal/ft) = 27.0 gal
WC = TD − DTW = 54.52 ft
1CV = WC (0.826 gal/ft) = 45.0 gal
3CV = 1CV × 3 = 135.0 gal
0900 generator on
0930 pump on
0934 water to surface; Q = 1.66 gpm (manual using carboy)
0951 DP clear ~~14~~ 28 gals (28 gal). begin logging parameters (File: MCOI-6)
1049 P. Longmire, & K. Granzow from state on site.
1113 start Sampling
1128 Sampling complete; pump off
1128 P. Longmire & K. Granzow off site.
1130 D. Fellenz preserves all samples; M. Green QA's
Summary: Crew successfully samples MCOI-6.
Note: See pages 62 & 63 of this log book for parameters, final V, final parameters, waste Info, compliance checklist.
1153 Disconnect transducer, stop Recording & logging
1158 Crew off site.
1223 Relinquished Samples to M. Montoya @ SMO.
Event ID: 4195
Sample ID's: CAMO-13-30589, 13-30573, 13-30567
5/8/13

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5/8/13 MCOI-6 continued

Maurice Shende 5/8/13

Maurice

SOP-20032 Rev. 1 Compliance Checklist

Well Name: MCOI-6
Date: 05/08/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 27.0 3 CVs: 135.0	28	136	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1101	7.30	597	7.49	1.0	NA
1106	7.~~22~~ 29	597	7.49	1.0	
1111	7.22	596	7.51	3.9	
Calculations:	Upper: 7.30 Lower: 7.22 Difference: 0.08	Median: 597 Upper: 615 Lower: 579	Upper: 7.51 Lower: 7.49 Difference: 0.02	Median: < 10 Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

Maurice Shende 5/8/13

MCOI-6 continued

63

Maurice Shende 5/8/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6811.1 ft. msl	Well Diameter: 4.5 inches	Date: 05/08/13
Watershed: Mortandad	Water Level: 6152.40 ft. msl	Top of Screen: 6125.1 msl ft.	Notes: * DO % was Recorded
Well: MCOI-6	*TD: 713.22	Bottom of Screen: 6102.8 msl ft.	
Sampling Device: GSP	*DTW: ~~LSD~~ 658.7 bgs	Water Column: 54.52 ft.	
Measuring Point: LSD	Drop Pipe: 27.0 gal.	1CV: 45.0 gal.	Packer Pressure
* Completion Depth: 713.10 msl		3CV: 135.0 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
			Opening: NA psi
DTW = (LSD - Water Level)..... Water Column = (TD - DTW). ...Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: NA psi

TIME MST DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. MSL	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0930	Pump ON								
0934	Water To Surface								
0951	6.92	12.90	601	1.06	104.3	178.6	6134.64	1.66	water cloudy odorless
1001	7.21	13.84	595	68.3*	4.4	145.5	6133.22	1.66	clear odorless
1011	7.29	15.22	596	68.0*	4.1	154.1	6132.58	1.66	clear odorless
1021	7.29	15.38	597	70.8*	3.4	156.8	6132.27	1.66	clear odorless
1031	7.31	15.73	597	73.4*	2.0	156.8	6132.11	1.66	clear odorless
1041	7.30	15.72	598	74.6*	1.5	157.6	6132.06	1.66	clear odorless
1051	7.29	15.71	597	75.0*	1.1	156.7	6132.05	1.66	Clear odorless
1101	7.30	15.83	597	7.49	1.0	155.6	6132.06	1.66	clear odorless
1106	7.29	15.92	597	7.49	1.0	156.0	6132.07	1.66	clear odorless
1111	7.22	15.96	596	7.51	3.9	164.7	6132.15	1.66	Clear odorless
1113	Start Sampling								
1128	Sampling complete								
						MS	5/8/13		
					MS	5/8/13			

3/

WASTE			
Contact:	gal.	Drum#: ~~10171723~~ MS 05/08/13 10171448	Final Water Level: 6133.47
Purge Water: 136	gal.	Drum#'s:	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: 175	gal.	10171723	

5/8/13

Maurice Shende 5/8/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30590

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1230	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-13	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 6.58 mg/L Oxidation-Reduction Potential 271.4 MV pH 7.96 SU

Specific Conductance 143 uS/cm Temperature 21.08 deg C Turbidity 0.26 NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	5/6/13 1545	M. Martinez	5/6/13 1545
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30574

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1230	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	BSP
LOCATION ID:	R-13	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	5/6/13 1545	M. Martin	5/6/13 1545
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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5/6/2013 R-13

0600 MST H&S daily gate performed by A. Stocker @ TA-64 + Kickoff meeting for Mortandad/Sandia

0706 TSI #20 calibrated by A. Stocker @ TA-59, see calibration log EP2011-0073

0930 crew onsite
crew: A. Stocker + M. Stenda
weather: overcast, 50s
Objective: Purge + sample R-13 per SOPs and referenced formats on pg. 3 using a GSP single completion
2-min-safety: snakes, drips

0940 connect to level troll transducer
I: 5833.29' msl LSD: 6673.05 TD: 1029.4' bgs
DTW = 839.76' bgs WC = 189.64'

1 DP	DP = (0.041 gal/ft × DTW) = 34.4 gal
3 IC	ICV = (0.826 gal/ft × WC) = 156.6 gal
	3CV = = 469.8 gal

~~0955~~ Pump on
5/6/13 1000
1000 water to surface
1008 Pump rate = 5.66 gpm
1012 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for stability
note: used HACH turbidimeter #2 because of negative turbidity
1042 manual rate now: 6.25 gpm
1115 rate = 7.14 gpm
1127 M. Dale onsite for NMED split
1130 Begin sampling, parameters stable, min purge met
1136 Sampling complete, pump off
1138 M. Dale offsite, Objectives Complete to purge + sample R-13 per SOPs, pack up site, samples preserved by M. Stenda, A. Stocker QA
1150 crew offsite to R-42
1445 submitted samples to SMO: Event ID: 4195 : Sample ID: CAMO-13-30590, -30574

AS 5/6/13

AS 5/6/13

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6673.05 ft. msl	Well Diameter: 4.5 inches	Date: 5/6/13
Watershed: Mortandad	Water Level: 5833.29 ft. msl	Top of Screen: 5714.75 ft. msl	Notes:
Well: R-13	*TD: 1029.4' bgs	Bottom of Screen: 5654.35 ft. msl	NONE
Sampling Device: GSP	*DTW: 839.76' bgs	Water Column: 189.64 ft.	
Measuring Point: LSD	Drop Pipe: 34.4 gal.	1CV: 156.6 gal.	Packer Pressure
* Completion Depth: TD		3CV: 469.8 gal.	Before: ~~[illegible]~~ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 5/6/13 psi
DTW = (LSD - Water Level)..... Water Column = (TD - DTW)..... Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: ____ psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: ____ psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1000 Pump; 1006 = water to surface									
1012	7.37	17.74	136	5.60	0.0	308.3	5832.71	5.66	clear, odorless
1027	8.06	20.19	143	6.26	* 0.49	286.0	5832.71	5.66	↓
1042	7.94	21.05	143	6.51	0.29	287.6	5832.54	6.25	169.8 gal purged
1057	7.92	21.31	143	6.55	0.26	282.8	5832.53	6.25	clear, odorless
1112	7.92	21.32	143	6.61	0.33	276.3	5832.68	~~7.14~~ AS 5/6/13	
1117	7.94	21.04	143	6.55	0.35	273.7	5832.60	7.14	
1122 ~~1127~~ AS 5/6/13	7.93	21.11	143	6.56	0.27	273.2	5832.68	7.14	
1127	7.96	21.08	143	6.58	0.26	271.4	5832.65	7.14	↓
1130	Begin sampling, min purge met, parameters stable								
1136	Pump off, sampling complete								

AS 5/6/13

WASTE

Contact:	½ gal.	Drum#:	Municipal
Purge Water:	470 gal.	Drum#'s:	10171720
Total Waste Water:	550 gal.		

* used flush turbid water

Final Water Level: 5832.69 msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

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DS 5/6/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-13

Date: 5/6/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 34.4 3 CVs: 469.8	34.4	470	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
	Stable for three consecutive readings?				
1117	7.94	143	6.55	0.35	NA
1122	7.93	143	6.56	0.27	
1127	7.96	~~21.08~~ 143 DS 5/6/13	6.58	0.26	
Calculations:	Upper: 7.96 Lower: 7.93 Difference: 0.03	Median: 143 Upper: NA Lower:	Upper: 6.58 Lower: 6.55 Difference: 0.03	Median: <10 Upper: <10 Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All parameters stable + SOPs met

DS 5/6/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30575

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1324	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-15	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sampled within 50' of running diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.00 mg/L Oxidation-Reduction Potential 229.2 MV pH 8.20 SU

Specific Conductance 156 uS/cm Temperature 19.32 deg C Turbidity 1.2 NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
W. Shaw	5/6/13 1505		5/6/13 1505
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30591

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1324	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-15	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature) William Shaw	Date/Time 5/6/13 1505	**RECEIVED BY** (Printed Name) (Signature) M. Martin	Date/Time 5/6/13 1505
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

R-15

5/6/13

Note: All times are in MST

Note: See page 52 of this log book for morning activities, crew, weather, safety

1130 Crew on site at R-15

1134 W. Shaw performs calibration check (YSI #30), passes calibration check

1148 Connect to transducer (level troll) with Rugged Reader #4, begin logging IV (File: R-15 5-6-13)

Note: See calibration log book EP2011-00754 DF 5/6/13 page 52 for calibration check details

Note: This is a single completion well with a dedicated GSP pump

Note: The following data is from historicals and well completion diagram

LSD = 6820.0' msl IV = 5848.01' msl

TD = 1030.9' bgs DTW = LSD - IV = 971.99' bgs

DP = (0.041 gal/ft) DTW = 39.9 gal WC = TD - DTW = 58.91

1 CV = (1.02 gal/ft) WC = 60.1 gal

3 CV = 3 (1 CV) = 180.3 gal

Total to sample = 3V + DP = 220.2 gal

1150 M. Dale (NMED) on site

1159 Generator on

1159 Pump on

1159 Water to surface; Q = 10.3 gpm (manual using carboy)

1203 DP clear (41 gal), begin logging parameters

1224 Begin sampling

1228 Sampling complete, pump off; Generator off

Note: W. Shaw preserves all samples; D. Fellenz QA's

Summary: Crew successfully samples R-15 (Objective met!)

1235 M. Dale off site

Note: See pages 56-57 of this log book for parameters, final IV, final parameters, waste info, compliance checklist

1255 Disconnect from transducer, stop logging IV

1259 Crew off site

1405: Relinquish samples to SMO c/o: M. Montoya
Event ID: 4195
Sample ID's: CAMO-13-30575, 30591

David Fellenz 5/6/13

5/6/13

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5/6/13

R- 15 Continued

David Fellenz 5/6/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6820.0 ft. msl	Well Diameter: 5 inches	Date: 5/6/13
Watershed: Mortandad	Water Level: 5848.01 ft. msl	Top of Screw: 5861.4 ft.msl	Notes: 3 min. parameters
Well: R-15	*TD: 1030.9' bgs	Bottom of Screen: 5799.7 ft.msl	
Sampling Device: GSP	*DTW: 971.99' bgs	Water Column: 58.91 ft.	
Measuring Point: LSD	Drop Pipe: 39.9 gal.	1CV: 60.1 gal.	Packer Pressure
* Completion Depth: TD		3CV: 180.3 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
DTW = (LSD - Water Level)... Water Column = (TD - DTW)... Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1159	Pump on, water to surface								
1203	7.32	12.11	149	6.18	0.4	240.0	5843.65	10.3	clear, odorless
1206	7.80	12.28	152	5.97	0.5	240.4	5843.24		
1209	7.90	13.70	152	6.00	0.4	237.0	5842.98		
1212	7.97	14.99	154	6.12	1.7	234.9	5842.87		
1215	8.01	16.64	153	6.72	1.6	233.4	5842.78		
1218	8.12	18.06	154	6.94	1.4	230.6	5842.71		
1221	8.17	18.86	156	6.99	1.3	229.6	5842.69		185 gal. purged
1224	8.20	19.32	156	7.00	1.2	229.2	5842.68		216 gal. purged
1224	Begin sampling								
1228	Sampling complete, pump off								

David Fellenz 5/6/13

WASTE

Contact: 1/2 gal.	Drum#: Municipal	Final Water Level: 5842.62' msl	
Purge Water: 216 gal.	Drum#'s: 10171725	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 300 gal.			

David Fellenz 5/6/13

5/6/13

David Fellenz

Well N
Date:
Disc
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Flow
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proj
interv
(HH:
121
12:
12:
Calcula
Y
SOI
Requirer
Met
Y

5/6/13

R-15 Continued

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David Fellenz 5/6/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-15
Date: 5/6/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter / Manual	Drop Pipe: 39.9 / 3 CVs: 180.3	41	216	3.6	Y N	Extra purged to allow DO to stabilize

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1218	8.12	154	6.94	1.4	3 minute parameters due to quick purge time
1221	8.17	156	6.99	1.3	
1224	8.20	156	7.00	1.2	
Calculations:	Upper: 8.20 / Lower: 8.12 / Difference: 0.08	Median: 156 / Upper: 161 / Lower: 151	Upper: 7.00 / Lower: 6.94 / Difference: 0.06	Median: NA / Upper: NA / Lower: NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	NA

David Fellenz 5/6/13

5/6/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30576

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1159	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-28	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sampled within 50' of running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 6.51 mg/L Oxidation-Reduction Potential 247.3 MV pH 7.65 SU

Specific Conductance 416 uS/cm Temperature 20.22 deg C Turbidity 0.1 NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature) William Shaw	Date/Time 5/6/13 1505	RECEIVED BY (Printed Name) (Signature) M. Martin	Date/Time 5/6/13 1505
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30592

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1159	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-28	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature) W. William Shaw	Date/Time 5/6/13 1505	RECEIVED BY (Printed Name) (Signature) M. Martz	Date/Time 5/6/13 1505
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30558

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/6/2013	FIELD MATRIX:	WG	gK
TIME COLLECTED (HH:MM):		1436	MEDIA:	UA	
PRS ID:		gK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-28		FIELD PREP:	UF	dk
LOCATION TYPE:			FIELD QC TYPE:	PEB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8270C-SVOA	1 LITER AMBER GLASS	1	ICE 5/15/13		
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-GENINORG	1 LITER POLY	1	ICE		
	WSP-GrossA/B	1 LITER POLY	1	NONE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

Analyses continued on next page

DI from TA-59 Basement Lab 18.2 MΩ-cm

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30558

WORK ORDER:

N/A

5/6/2013

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY William Shaw **(Printed Name)** **(Signature)**	**Date/Time** 5/6/13 1505	**RECEIVED BY** M. Martin **(Printed Name)** **(Signature)**	**Date/Time** 5/6/13 1505
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

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R-28

5/6/13

5/6/13

Note: All times are in MST

0600 A. Stocker conducts health and safety tailgate at TA-64

0700 D. Fellenz calibrates YSI #30 at ~~TA-64~~ TA-59, see calibration log book EP2011-0074 page 52 for details

0910 Crew (D. Fellenz, W. Shaw) on site at R-28

Weather: 50's, windy, cloudy, chance of rain

2 Minute Safety: Electrical system, trips, slips

Objective: Purge and sample R-28 per applicable documents on page 3

0925 Connect to transducer (level troll) with Rugged Reader #4, begin logging V (File: R-28 5-6-13)

Note: This is a single completion well with a dedicated GSP pump.

Note: The following data is from historicals and well completion diagram

LSD = 6728.61' msl V = 5835.74' msl

TD = 980.3' bgs DTW = LSD − V = 892.87' bgs

DP = (0.041 gal/ft) DTW = 36.6 gal WC = TD − DTW = 87.43'

1CV = (1.02 gal/ft) WC = 89.2 gal

3CV = 3(1CV) = 267.6 gal

Total to sample = 3CV + DP = 304.2 gal

0937 Generator on

0937 Pump on

0940 Water to surface; Q = 3.9 gpm (manual using carboy)

0950 DP clear (39 gal.), begin logging parameters (File: R-28)

1050 M. Dale (NMED) on site

1059 Begin sampling

1117 Sampling complete, pump off; Generator off

Note: W. Shaw preserves all samples; D. Fellenz QA's

1120 M. Dale off site

Summary: Crew successfully samples R-28 (Objective met!)

Note: See pages 53-54 of this log book for parameters, final V, final parameters, waste info, compliance checklist

1125 Disconnect from transducer stop logging V

1127 Crew off site

1336 Crew collects PEB at TA-59; W. Shaw preserves; D. Fellenz QA's

1405 Relinquish samples to SMO c/o: M. Montoya

Event ID: 4195

Sample ID's: CAMO-13-30576, 30592, 30558

DF 5/6/13

David Fellenz

Prob
Wat
Well
Samp
Meas
Cor
ft.
DTW
TI
MST
Sta

5/6/13

R-28 continued

David Fellenz 5/6/13

Groundwater Sampling Log

Project: IPWGMP MY2013	LSD: 6728.61 ft. msl	Well Diameter: 5 inches	Date: 5/6/13
Watershed: Mortandad	Water Level: 5835.74 ft. msl	Top of Screen: 5794.31 ft msl	Notes:
Well: R-28	*TD: 980.3' bgs	Bottom of Screen: 5770.51 ft.	NA
Sampling Device: GSP	*DTW: 892.87' bgs	Water Column: 87.43 ft.	
Measuring Point: LSD	Drop Pipe: 36.6 gal.	1CV: 89.2 gal.	Packer Pressure
* Completion Depth: TD		3CV: 267.6 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
			Opening: NA psi
			After: NA psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST/DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0937	Pump on								
0940	Water to surface								
0950	7.30	16.40	415	3.68	45.7	263.1	5835.58	3.9	clear, odorless
1000	7.78	19.03	416	5.97	3.0	257.1	5835.56		
1010	7.80	19.82	417	6.40	0.7	~~6.40~~ 253.8 DF 5/6/13	5835.55		
1020	7.80	20.03	417	6.48	0.3	251.8	5835.58		117 gal. purged
1030	7.75	20.18	416	6.52	0.3	250.1	5835.58		clear, odorless
1040	7.67	20.11	416	6.56	0.2	249.7	5835.55		
1045	7.67	20.19	416	6.41	0.2	248.8	5835.56		
1050	7.65	20.15	416	6.57	0.2	248.3	5835.56		
1055	7.65	20.22	416	6.51	0.1	247.3	5835.56		
1059	Begin sampling								269 gal. purged
1117	Sampling complete, pump off								

David Fellenz 5/6/13

WASTE

Contact: 3/4 gal.	Drum#: Municipal	Final Water Level: 5835.59' msl	
Purge Water: 269 gal.	Drum#'s: 1017/728	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 350 gal.			

David Fellenz 5/6/13

54
5/6/13

R-28 continued

David Fellenz 5/6/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-28
Date: 5/6/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 36.6 3 CVs: 267.6	39.0	269.0	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU) or ± 10%,	Comments:
1045	7.67	416	6.41	0.2	NA
1050	7.65	416	6.57	0.2	
1055	7.65	416	6.51	0.1	
Calculations:	Upper: 7.67 Lower 7.65 Difference: 0.02	Median: 416 Upper 426 Lower 403	Upper: 6.57 Lower 6.41 Difference: 0.16	Median: NA Upper: NA Lower NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

David Fellenz 5/6/13

5/6/13
Note: A
Note: S
1130 C
1134 W
1148 C
Note: S
Note: T
Note: T
L
T
I
1
3
T
1150 M
1159 (
1159 F
1159 L
1203 I
1224
1228 :
Note:
Summary:
1235
Note:
1255
1259 (
1405:
Do

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30593

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1447	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	BSP
LOCATION ID:	R-42	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 6.83 mg/L. Oxidation-Reduction Potential 274.6 MV pH 7.36 SU

Specific Conductance 502 uS/cm Temperature 19.48 deg C Turbidity 1.05 NTU

COLLECTED BY (PRINT) M. Stenda

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Aubrey Stoke	5/6/13 1545	M. Martin	5/6/13 1545
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30577

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/06/2013	FIELD MATRIX:	WG	SW
TIME COLLECTED (HH:MM):		1447	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-42		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: Diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 6.83 mg/L Oxidation-Reduction Potential 274.6 MV pH 7.36 SU

Specific Conductance 502 uS/cm Temperature 19.48 deg C Turbidity 1.05 NTU

COLLECTED BY (PRINT) M. Stenslo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andy Stocker	5/6/13 1545	M. Martin	5/6/13 1545
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

5/6/13 R-42

1200 crew onsite from R-13, see pg. 50 for morning activities
MST
1202 YSI #20 passes calibration check
1203 connect to level troll transducer
crew: A. Stocker, M. Stenko
weather: 50s, overcast
2 min - safety: snakes, electrical
Objectives: purge + sample R-42 per SOPs and referenced documents on pg. 3 using a GSP
TOC: 5837.54' msl CSD: 6759.02' msl TD: 973.5'
DTW = 921.48' bgs WC = 52.02'

1st DP = (0.041 gal/ft × DTW) = 37.8 gal
5 SCV = (1.020 gal/ft × WC) = 53.1 gal
3 CV = = 159.3 gal

1225 Pump on, water to surface
1229 manual rate = 2.4 gpm
1241 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for stability
1333 K. Granzow + S. Yanicak onsite for NMED split
1347 Begin sampling, parameters stable, min purge met
1401 Pump off, sampling complete, Objectives complete to purge + sample R-42 per SOPs, samples preserved by M. Stenko, A. Stocker QA
1425 crew offsite
1445 submit samples to SMO,: Event ID: 4195; Sample ID: CAMO-13-30593, -30577

AS 5/6/13

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AS 5/6/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6759.02 ft. msl	Well Diameter: 5 inches	Date: 5/6/13
Watershed: Mortandad	Water Level: 5837.54 ft. msl	Top of Screen: 5827.22 ft msl	Notes:
Well: R-42	*TD: 973.5' bgs	Bottom of Screen: 5806.12 ft msl	NONE
Sampling Device: GSP	*DTW: 921.48' bgs	Water Column: 52.02 ft.	
Measuring Point: LSD	Drop Pipe: 378 gal.	1CV: 53.1 gal.	Packer Pressure
* Completion Depth: TD		3CV: 159.3 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
			Opening: AS 5/6/13 psi
			After: ____ psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME (MST / DST)	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1225	Pump on, water to the surface								AS 5/6/13
1241	7.42	15.97	493	6.31	6.0	287.2	5836.01	2.4	~~slight~~ green tint ~~tint~~, odorless
1251	7.72	17.81	500	6.73	1.7	278.7	5836.07	2.4	
1301	7.77	18.77	501	6.91	0.6	276.3	5836.08	2.4	
1311	7.63	19.12	502	6.85	0.9	275.7	5836.07	2.4	
1321	7.48	19.33	501	6.86	0.4	276.3	5836.06	2.4	
1331	7.42	19.29	502	6.80	0.0	275.7	5836.07	2.4	
1336	7.40	19.28	502	6.82	~~0.0~~ *1.00 *2.10	276.0	5836.07	2.4	
1341	7.35	19.49	501	6.82	*1.01	275.6	5836.07	2.4	
1346	7.36	19.48	502	6.83	*1.05	274.6	5836.07	2.4	
1347	Begin sampling, parameters stable, min purge met								
	Pump off, sampling complete								
					AS 5/6/13				

AS 5/6/13

WASTE

Contact:	1/2 gal.	Drum#:	Municipal
Purge Water:	160 gal.	Drum#'s:	10171585
Total Waste Water:	210 gal.		

Final Water Level: 5836.42' msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

* = used HACH #2 for Turbidity

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JS 5/6/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-42

Date: 5/6/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 37.8 3 CVs: 159.3	~~38.5~~ 38.4 JS 5/6/13	160	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1336	7.40	502	6.82	1.00	NONE
1341	7.35	501	6.82	1.07	
1346	7.36	502	6.83	1.05	
Calculations:	Upper: 7.40 Lower: 7.35 Difference: 0.05	Median: 502 Upper: 5/6/13 ~~502~~ 517 Lower: JS 5/6/13 ~~501~~ 487	Upper: 6.83 Lower: 6.82 Difference: 0.01	Median: <10 Upper: <10 Lower:	
JS N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

JS 5/6/13

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30578

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1124	MEDIA:	UA	OK
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S1		FIELD PREP:	UF	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	PIA		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Samples taken within 50 feet of a running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 6.89 mg/L Oxidation-Reduction Potential 182.2 MV pH 7.73 SU

Specific Conductance 135 uS/cm Temperature 20.39 deg C Turbidity 0.2 NTU

COLLECTED BY (PRINT) Shaw, W

RELINQUISHED BY (Printed Name) D Woody (Signature) David Woody	Date/Time 05/09/13 1405	RECEIVED BY (Printed Name) (Signature)	Date/Time 05/09/13 1405
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30594

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1124	MEDIA:	UA	OK
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S1		FIELD PREP:	F	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W Shaw

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) D Woody (Signature) David Woody	05/09/13 1405	(Printed Name) (Signature)	05/09/13 1405
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

64 R-44 S1

05/09/13

DST 0700 Health and Safety Meeting at TA-64, Stocker

0735 Calibrate YSI 30 at TA-59, Woody (EP-2011-0074 page 53)

0945 On site

weather: Sun, wind, 50's °F

safety: electrical and pressure systems

crew: Shaw/Woody

objective: Sample R-44 S1 per Baski documents (page 3 logbook

LSD = 6714.91 'msl Ⅴ = 5834.38 'msl

TD = TOP = 936.3 'bgs DTW = LSD − Ⅴ = 880.53 'bgs

DP = DTW (.041 gal/ft) = 36.1 gal

WC = TOP − DTW = 55.77'

1CV = WC (1.02 gal/ft) = 56.9 gal

3CV = 1CV (3) = 170.7 gal

MST 0919 Pump on

0920 Water to surface

Q, manual = 3.3 gpm

For Q of 3.3 gpm and DP of 37 gal, 12 min to clear DP (MST 0932)

1032 Parameters begin

For Q of 3.3 gpm and 3CV of 171 gal, 52 min to purge 3CV (1124)

YSI 30 "R-4451 05-09-13"

Rugged Reader 2 "R-44 S1 05-09-13" and "R-4452a 05-09-13"

DP = 39.6 gal

Purge = 171.6 gal

(2 YSI files)

1115 Dale NMED on site, leaves bottles for sampling (Dale offsite)

1124 Sampling begins

1130 Sampling ends / pump off (total waste water: DP + purge + 6 min (3.3 gpm) =

1131 APV Closes

ending packer pressure, 207

1132 McFarland (STR), Cruz (LANL) on site

1135 McFarland / Cruz offsite

For Groundwater Sampling Log: page 65 } this logbook

Compliance Checklist: page 66

SUMMARY Objective met

~~Crew samples~~ for NMED samples

DW 05/09/13

1140 Offsite

1405 SMO: Relinquish CAMO-13-30578, 30594 with Montoya

05/09/13 R-44 S1 65

David Woody 05/09/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-44 S1

Date: 05/09/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 36.1 3 CVs: 170.7	DW 05/09/13 ~~36.1~~ 39.6	171.6	3.02	(Y) N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1112	7.74	135	6.76	0.2	None
1117	7.74	135	6.89	0.2	
1122	7.73	135	6.89	0.2	
Calculations:	Upper: 7.74 Lower: 7.73 Difference: 0.01	Median: NA Upper: Lower:	Upper: 6.89 Lower: 6.76 Difference: 0.13	Median: NA Upper: Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	None

5/10/13 David Woody

66
05/09/13

R-44 S1

05/09/13 David Woody

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6714.91 ft. msl	Well Diameter: ID 5 inches	Date: 05/09/13
Watershed: NORT	Water Level: 5834.38 ft. msl	Top of Screen: 5819.9 ft. msl	Notes: None
Well: R-44 S1	*TD: TOP = 936.3 'bgs	Bottom of Screen: 5809.9 ft. msl	
Sampling Device: GSP	*DTW: 880.53 'bgs	Water Column: 55.77 ft.	
Measuring Point: LSD	Drop Pipe: 36.1 gal.	1CV: 56.9 gal.	Packer Pressure
* Completion Depth: TD/TOP	NA	3CV: 170.7 gal.	Before: 207 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 380 psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			Opening: 210 psi
			After: 207 psi

TIME MST/DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1032	7.40	16.23	143	4.33	0.8	235.2	5834.07	3.3	clear, no odor
1042	7.61	18.10	135	5.52	0.4	161.4	5834.08		
1052	7.74	19.41	134	6.63	0.3	171.4	5834.08		
1102	7.74	19.90	135	6.78	0.3	178.0	5834.08	3.3	
1112	7.74	20.23	135	6.76	0.2	181.1	5834.08		
1117	7.74	20.33	135	6.89	0.2	181.3	5834.08		
1122	7.73	20.39	135	6.89	0.2	182.2	5834.09		

D. Woody 05/09/13

WASTE				
Contact:	1/2 gal.	Drum#:	MUNICIPAL	Final Water Level: 5834.08 'msl
*Purge Water:	171.6 gal.	Drum#'s:	10171730 305 gal tank	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	231 gal.			

05/09/13
1140
115
115
120
13
13
DW 05/0
13
141

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30579

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX: WG		OK
TIME COLLECTED (HH:MM):		1313	MEDIA: UA		OK
PRS ID:		OK	SAMPLE TECH CODE: UA		GSP
LOCATION ID: R-44 S2			FIELD PREP: UF		
LOCATION TYPE: MON			FIELD QC TYPE: REG		
PORT: P2A			SAMPLE USAGE: INV		

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Samples taken within 50 feet of a running diesel generator

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen 7.18 mg/L Oxidation-Reduction Potential 139.0 MV pH 7.81 SU

Specific Conductance 144 uS/cm Temperature 20.78 deg C Turbidity 0.1 NTU

COLLECTED BY (PRINT) D Woody

RELINQUISHED BY (Printed Name) D Woody (Signature) David Woody	Date/Time 05/09/13 1405	RECEIVED BY (Printed Name) M. Martin (Signature)	Date/Time 05/09/13 1405
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30595

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1313	MEDIA:	UA	OK
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S2		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W Shaw

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) D Woody (Signature) David Woody	05/09/13 1405	(Printed Name) A. Montoya (Signature)	05/09/13 1405
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

R-44 S2

05/09/13

For morning preparations, see page 64 this log book

1140 On site

crew : Shaw/Woody

weather: Sun/clouds, 50's °F, wind

safety : electrical + pressure systems

objective: Sample R-44 S2 per Baski documents (page 3 this logbook)

LSD = 6714.91 'msl $\underline{V}$ = 5833.24 'msl

TD = 1016.0 'bgs DTW = BOP = 941.1 'bgs

DP = BOP(.041 $\frac{gal}{ft}$) = 38.6 gal

WC = TD − BOP = 74.9 '

1CV = WC(1.02 $\frac{gal}{ft}$) = 76.4 gal

3CV = 1CV(3) = 229.2 gal

1150 Pump on

1151 Water to surface

Q, manual = 3.3 gpm

For Q of 3.3 gpm and DP of 39 gal, DP clear in 12 min (1203)

1203 Parameters begin

DP = 39.6 gal

For Q of 3.3 gpm and 3CV of 230 gal, 3CV clear in 70 min (1313)

YSI 30 "R-44S2 05/09/13"

Rugged Reader 2 "R-44 S2 05/09/13"

1313 Sampling begins

Dale NMED on site

Purge = 231 gal

1323 Sampling ends/pump off (Dale offsite)

total waste water DP + Purge + 10min(3.3 gpm) = ~~237.6~~ gal
DW 05/09/13
303.6 gal

For Groundwater Sampling Log page 68 } this logbook
DW 05/09/13 Compliance Checklist page 69

~~SUMMMMARY~~ SUMMARY = Sampling objective met
NMED samples

1345 Offsite

1405 SMO: Relinquish CAMO-13-30595, 30579 (Montoya)

Shawn Woody
05/09/~~13~~ 13 DW 05/09/13

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05/09/13

R-44 S2

Daniel Woody
05/09/13

05/09/

DW 05/09/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6714.91 ft. msl	Well Diameter: ID 5 inches	Date: 05/09/13
Watershed: MORT	Water Level: ~~5824.38~~ ft. msl	Top of Screen: 5729.6 ft. msl	Notes: 3 DW 05 09 13
Well: R-44 S2	*TD: 1016.0 'bgs	Bottom of Screen: 5719.7 ft. msl	5834.24 initial V
Sampling Device: GSP	*DTW: BOP = 941.1 'bgs	Water Column: 74.9 ft.	
Measuring Point: LSD	Drop Pipe: 38.6 gal.	1CV: 76.4 gal.	Packer Pressure
* Completion Depth: TD	NA	3CV: 229.2 gal.	Before: 207 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 380 psi
			Opening: 210 psi
			After: 207 psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

5833 is V

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%		4.24		
1203	7.66	19.14	139	6.04	0.9	163.8	5833.~~38~~	3.3	clear no odor
1218	7.77	19.35	146	7.06	0.2	109.5	5834.23		
1233	7.80	19.61	145	7.13	0.1	125.3	5834.24		
1248	7.81	20.20	145	7.14	0.1	131.3	5834.24	3.3	
1303	7.81	20.62	144	7.17	0.1	136.4	5833.25		
1308	7.80	20.69	144	7.17	0.1	138.6	5833.24		
1313	7.81	20.78	144	7.18	0.1	139.0	5833.24		

D Woody
05/09/13

Daniel Woody
05/09/13

WASTE

Contact: 1/2 gal / MUNICIPAL gal.	Drum#: 5833.26 'msl	Final Water Level:	
*Purge Water: 231 gal.	Drum#'s: 10171729	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 303.6 gal.	550 tank		

05/09/13

R-44 S2

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David Woody
David Woody
05/09/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-44 S2

Date: 05/09/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 38.6 3 CVs: 229.2	39.6	231	3.02	Y N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1303	7.81	144	7.17	0.1	None
1308	7.80	144	7.17	0.1	
1313	7.81	144	7.18	0.1	
Calculations:	Upper: 7.81 Lower: 7.80 Difference: 0.01	Median: NA Upper: Lower:	Upper: 7.18 Lower: 7.17 Difference: 0.01	Median: NA Upper: Lower:	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

David Woody
David Woody
05/09/13

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30580

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1241	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-45 S1		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 7.14 mg/L Oxidation-Reduction Potential 303.7 MV pH 7.66 SU

Specific Conductance 179 uS/cm Temperature 19.49 deg C Turbidity 0.39 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
D. Fellenz	5/9/13 1340	S. Sherwood	5/9/13 1340
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30596

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1241	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSI
LOCATION ID:	R-45 S1		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:
NA

LOCATION COMMENTS: Diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 7.14 mg/L Oxidation-Reduction Potential 303.7 MV pH 7.66 SU

Specific Conductance 179 uS/cm Temperature 19.49 deg C Turbidity 0.39 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) Andrew Stokes (Signature)	Date/Time 5/9/13 1340	RECEIVED BY (Printed Name) Sherwood (Signature) Sheri Sherwood	Date/Time 5/9/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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5/9/13 R-45 S1

1034 Switch to R-45S1 from S2, see pg. 63 for morning details
TOC = 5834.07' msl LSD: 6704.02' msl TD: Jap dpacker = 921.3' bgs
DTW = 869.95' bgs WC = 51.35'

1150 DP = (0.041 gal/ft × DTW) = 35.7 gal
5:50 ICV = (1.020 gal/ft × WC) = 52.4 gal
3CV = = 157.2

crew: A. Stocke, D. Fellenz, M. Sterdo
weather: 80s, precip, mm wind
2 min safety: electrical, pressure
Objectives: Purge + sample R-45 S1 per SOPs and reference documents on pg. 3 using Bailer: GSP
1040 APV opened @ 460 psi.
1043 Pump on, water flow from
1046 Manual rate of 3.57 gpm
1053 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for stability, use HACH Turbidimeter #2 for Turb b/c of negative values on YSI
1134 M. Dale on site
1141 Begin sampling parameters table, 3CVs purged
1148 Purge, sampling complete
1150 M. Dale off site, samples preserved by D. Fellenz, M. Sterdo
1152 apv vented, Objectives Complete to purge + sample R-45S1
KS 1220 ~~1240~~ crew off site
5/9/13
1240 submit samples to SMO: Event ID: 4195, Sample ID: CAMO-13-30596, -30580

KS 5/9/13

AS 5/9/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6704.02 ft. msl	Well Diameter: 5 inches	Date: 5/9/13
Watershed: Mortandad	Water Level: 5834.07 ft. msl	Top of Screen: 5824.0 ft. msl	Notes:
Well: R-45 S1	*TD: = drop + pump = 921.36 bgs	Bottom of Screen: 5814.0 ft. msl	NONE
Sampling Device: Bladder GSP	*DTW: 869.75 bgs	Water Column: 51.35 ft.	
Measuring Point: ISD	Drop Pipe: 357 gal.	1CV: 52.4 gal.	Packer Pressure
* Completion Depth: TD		3CV: 157.2 gal.	Before: 220 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 460 psi
			Opening: 230 psi
			After: 220 psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1043	Pump on, water to surface								
1053	7.93	19.50	169	6.53	*0.68	293.0	5833.61	3.57	clear, colorless
1103	7.66	19.68	178	6.29	*0.49	297.4	5833.61	3.57	
1113	7.67	19.71	179	6.97	*0.28	300.0	5833.59	3.57	
1123	7.65	19.23	179	7.04	*0.36	302.3	5833.59	3.57	
1128	7.63	18.78	179	7.07	*0.31	304.3	5833.59	3.57	
1133	7.64	19.12	178	7.14	*0.40	304.4	5833.59	3.57	
1138	7.66	19.49	179	7.14	*0.39	303.7	5833.61	3.57	
1141	Begin sampling, 300s purge, per notes sheet								
1148	Sampling complete, pump off								

AS 5/9/13

WASTE

Contact:	1/2 gal.	Drum#:	Municipal
Purge Water:	157.2 gal.	Drum#'s:	10171722
Total Waste Water:	178 gal.		

Final Water Level: 5833.63' msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

AS 5/9/13

* HACH Turbidimeter #2

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AS 5/9/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-45 S1

Date: 5/9/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 35.7 3 CVs: 157.2	35.7	157.2	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1128	7.63	179	7.07	0.31	NONE
1133	7.64	178	7.14	0.40	
1138	7.66	179	7.14	0.39	
Calculations:	Upper: 7.66 Lower: 7.63 Difference: 0.03	Median: 179 Upper: 174.4 Lower: 173.6	Upper: 7.14 Lower: 7.07 Difference: 0.07	Median: <10 Upper: <10 Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOP requirements met

AS 5/9/13

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30581

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1118	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-45 S2	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:
NA

LOCATION COMMENTS:
Diesel generator 40' away

FIELD PARAMETERS:

Dissolved Oxygen 6.43 mg/L Oxidation-Reduction Potential 314.4 MV pH 7.94 SU

Specific Conductance 170 uS/cm Temperature 20.99 deg C Turbidity 0.34 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stocker	5/9/13 1340	D. Sherwood	5/9/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30597

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/09/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1118	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSG
LOCATION ID:	R-45 S2		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:
NA

LOCATION COMMENTS: Diesel generator ent. ft 40' away

FIELD PARAMETERS:

Dissolved Oxygen 6.43 mg/L Oxidation-Reduction Potential 319.4 MV pH 7.94 SU

Specific Conductance 170 uS/cm Temperature 20.99 deg C Turbidity 0.34 NTU

COLLECTED BY (PRINT) D. Fellerz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
[illegible]	5/9/13 1340	S. Sherwood [illegible]	5/9/13 1340
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

5/9/13 R-45 S2

0600 H+S tailgate performed by A. Stocker @ TA-64

0630 YSI #20 calibrated by M. Stenlo @ TA-59, see Calibration Log EP2011-0073

0810 crew onsite

Crew: A. Stocker, M. Stenlo, D. Fellenz

Weather: 50s-60s, mostly sunny, possible wind

Zero-safety: PPE, pressure systems

Objective: purge + sample R-45 S2 per SOPs and referenced documents on pg. 3 using a Bank: GSP

0820 connect to level probe of both screens.

TOC for upper screen: 5834.06' msl TOC for Lower screen = 5833.97' msl

LSP = 6704.02' msl TD = 1016.0' bgs DTW = bottom of packer = 926.0' bgs

AS 5/9/13 ~~WC = 5778~~, WC = 90

1st DP = (0.041 gal/ft × DTW) = 38.0 gal

5th 1CV = (1.020 gal/ft × WC) = 91.8 gal

3CV = 275.4 gal

0830 open APV @ 490 psi

0850 Pump on, water to surface

0854 manual rate of 3.57 gpm

0901 Begin logging parameters on Groundwater Sampling Log, see SOP Compliance checklist for stability, DP cleared, use HACH Turbidimeter #2 for Turb because of negative Turb readings on YSI

1006 T. McFarland + B. Cruz onsite

1018 Begin Sampling, parameters stable, min purge met

1021 Sampling complete, M. Dale onsite for NMED split

1027 Pump off, samples preserved by M. Stenlo, D. Fellenz QA

1028 T. McFarland, B. Cruz, M. Dale offsite

1030 deflate APV, prepare R-45 S1, see pg. 66, Objectives complete for purge + sample R-45 S2 AS 5/9/13

1240 submit samples for SMO: Event ID: 4195, ~~Event~~ Sample ID: CAMO-13-30581 AS 5/9/13, -30597

AS 5/9/13

64 BS 5/9/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6704.02 ft. msl	Well Diameter: 5 inches	Date: 5/9/13
Watershed: Mortandad	Water Level: 5833.97 ft. msl	Top of Screen: 5729.1 ft. msl	Notes:
Well: R-45S2	*TD: 1016.0'6,5	Bottom of Screen: 5709.1 ft. msl	NONE
Sampling Device: Bailer: GSB	*DTW: = Bottom of Packer = 926.0'6,5	Water Column: 90 ft.	
Measuring Point: LSD	Drop Pipe: 38.0 gal.	1CV: 91.8 gal.	Packer Pressure
* Completion Depth: TD		3CV: 275.4 gal.	Before: 220 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 490 psi
			Opening: 230 psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: 220 psi

TIME (MST) / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0850	Pump on, water to surface								
0901	7.40	14.05	177	6.34	*0.62	317.0	5833.27	3.57	clear, odorless
0911	7.89	18.09	171	6.17	*0.34	309.2	5833.11	3.57	
0921	7.97	20.19	169	6.41	*0.41	309.2	5833.09	3.57	
0931	7.99	20.53	169	6.43	*0.28	311.7	5833.04	3.57	
0941	7.96	20.67	169	6.43	*0.29	312.7	5833.03	3.57	
0951	7.93	20.54	170	6.40	*0.45	314.4	5833.03	3.57	
1001	7.94	20.74	170	6.43	*0.33	314.2	5833.03	3.57	
1006	7.95	20.77	170	6.43	*0.33	313.3	5833.02	3.57	
1011	7.95	20.81	170	6.39	*0.31	312.9	5833.01	3.57	
1016	7.94	20.99	170	6.43	*0.34	314.4	5833.01	3.57	
1018	Begin sampling, parameters stable, min purge met								
1021	Sampling complete								
1027	Pump off								
					BS 5/9/13				

WASTE

Contact:	1/2 gal.	Drum#:	Municipal
Purge Water:	276 gal.	Drum#'s:	10171721
Total Waste Water:	340 gal.		

Final Water Level: 5833.03 msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

* Used HACH Turbidimeter #2 Because of negative turbidity

BS 5/9/13

BS 5/9/13 65

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-45 S2

Date: 5/9/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 38.0 3 CVs: 275.4	39.27	276	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1006	7.95	170	6.43	0.33	NONE
1011	7.95	170	6.39	0.31	
1016	7.94	170	6.43	0.34	
Calculations:	Upper: 7.95 Lower: 7.94 Difference: 0.01	Median: 170 Upper: NA Lower:	Upper: 6.43 Lower: 6.39 Difference: 0.04	Median: NA Upper: NA Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

BS 5/9/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30582

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/10/2013	FIELD MATRIX: WG		OK
TIME COLLECTED (HH:MM):		1205	MEDIA: UA		OK
PRS ID:		OK	SAMPLE TECH CODE: UA		GSP
LOCATION ID: R-50 S1			FIELD PREP: UF		OK
LOCATION TYPE: MON			FIELD QC TYPE: REG		
PORT: P1A			SAMPLE USAGE: INV		

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-H-3	1 LITER POLY	1	NONE	Y	NA
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Samples taken within 75 feet of a running diesel generator

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen 5.48 mg/L Oxidation-Reduction Potential 248.8 MV pH 7.66 SU

Specific Conductance 192 uS/cm Temperature 20.81 deg C Turbidity 0.7 NTU

COLLECTED BY (PRINT) A Stocker

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) D Woody (Signature) David Woody	05/10/13 1310	(Printed Name) K. Grace (Signature)	05/10/13 1310
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30598

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/10/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1205	MEDIA:	UA	OK
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-50 S1		FIELD PREP:	F	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
	WSP-GENINORG	1 LITER POLY	1	ICE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Samples taken within 75 feet of a running diesel generator.

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen 5.48 mg/L Oxidation-Reduction Potential 248.8 MV pH 7.66 SU

Specific Conductance 192 uS/cm Temperature 20.81 deg C Turbidity 0.7 NTU

COLLECTED BY (PRINT) A Stacker

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) D Woody (Signature) David Woody	05/10/13 1310	(Printed Name) K. Greene (Signature)	05/10/13 1310
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

R-50 : S1

05/10/13

DST 0700 Health and Safety Meeting at TA-64, Stocker

0745 Calibrate YSI 20 at TA-59, Stocker (EP2011-0073 page 44)

1000 On site

crew : Stocker/Woody

safety : electrical, pressure systems

weather : Sun, 60's °F, wind

objective : Sample R-50 S1 per Baski documents/page 3 this logbook

LSD = 6904.11 'msl V = 5835.68 msl

TD = TOP = 1118.1 'bgs DTW = LSD − V = 1068.43

DP = DTW (.041 gal/ft) = 43.8 gal

WC = TOP − DTW = 49.7'

1CV = WC (1.02 gal/ft) = 50.7 gal

3CV = 1CV (3) = 152.1 gal

MST 0941 Pump on

0941 Water to surface

Q, manual = 2.5 gpm

For Q of 2.5 gpm and DP of 43.8 gal, 18 min to clear DP (1059 DST)

DST 1059 Parameters begin (actual start time 1059:30)

DP = 45 gal

For Q of 2.5 gpm and 3CV of 153 gal, 62 min to purge 3CV (1201)

YSI 20 "R-50S1 05-10-13"
Rugged Reader 2 "R-50 S1 05-10-13"
3 "R-50 S2 05-10-13"

1205 Sampling begins
Purge = 165 gal

1223 Longmire NMED on site, samples

1233 Sampling ends/Pump off

total waste water = DP + purge + 28min(2.5gpm) =

Longmire NMED offsite

For Groundwater Sampling Log: page 71 } this logbook
Compliance Checklist : page 72

SUMMARY : Successful sampling
NMED samples
NOTE! Parameter times are 30 seconds later than times stated on sampling log. Example = 1059 = 1059:30s

1250 Offsite

1310 SMO: Relinquish CAMO-13-30582
CAMO-13-30598
with K Green

R-50 S1

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05/10/13

David Wood 05/10/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6904.11 ft. msl	Well Diameter: ID 5 inches	Date: 05/10/13
Watershed: MORT	Water Level: 5835.68 ft. msl	Top of Screen: 5827.1 ft. msl	Notes: Add 30 seconds to all parameter times
Well: R-50 S1	*TD: TOP 1118.1 bgs	Bottom of Screen: 5817.1 ft. msl	
Sampling Device: GSP	*DTW: 1068.43 bgs	Water Column: 49.7 ft.	
Measuring Point: LSD	Drop Pipe: 43.8 gal.	1CV: 50.7 gal.	Packer Pressure
* Completion Depth: TD = TOP	NA	3CV: 152.1 gal.	Before: 230 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 460 psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			Opening: 235 psi
			After: _____ psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				slight effervescence
1059	7.33	15.83	183	3.71	1.0	261.4	5831.38	2.5	clear odorless
1114	7.62	18.28	199	4.26	1.1	245.8	5831.35	↓	↓
1129	7.74	20.34	198	5.04	0.7	244.9	5831.35	↓	↓
1144	7.70	20.65	195	5.34	0.8	247.1	5831.36	2.5	↓
DW 05/10/13 ~~1149~~				DW	05/10/13				slight effervescence
1154	7.68	20.77	193	5.41	0.8	247.9	5831.35	2.5	clear odorless
1159	7.66	20.73	192	5.57	0.8	249.1	5831.35	↓	↓
DW 05/10/13 1208	7.66	20.81	192	5.48	0.7	248.8	5831.34	↓	↓
4									

DW 05/10/13

WASTE

Contact: 1/2 gal.	Drum#: MUNICIPAL	Final Water Level: 5831.74	
*Purge Water: 165 gal.	Drum#'s: 10171726	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 280 gal.	305 tank		

05/10/13 David Wood

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05/10/13

R-50 S1

David Woody
05/10/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-50 S1
Date: 05/10/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 43.8 3 CVs: 152.1	45	165	3.25	(Y) N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1154	7.68	193	5.41	0.8	None
1159	7.66	192	5.57	0.8	
1204	7.66	192	5.48	0.7	
Calculations:	Upper: 7.68 Lower: 7.66 Difference: 0.02	Median: 192 Upper: 198 Lower: 186	Upper: 5.57 Lower: 5.41 Difference: 0.16	Median: NA Upper: Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	None

David Woody
05/10/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30583

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/13/2013	FIELD MATRIX:	WG	o/c
TIME COLLECTED (HH:MM):		1410	MEDIA:	UA	↓
PRS ID:		o/c	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-50 S2	↓	FIELD PREP:	UF	o/c
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-H-3	1 LITER POLY	1	NONE	Y	NA
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sampled R-50 S2 with generator Running 50' Away.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.29 mg/L Oxidation-Reduction Potential 117.0 MV pH 8.07 SU

Specific Conductance 131 uS/cm Temperature 22.85 deg C Turbidity 1.0 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Shendo (Signature) [signature]	05/13/13 1520	(Printed Name) R. Sherwood (Signature) Sheri Sherwood	5/13/13 1520
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30599

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1410	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-50 S2	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	y	NA
NA	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
NA	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
NA	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Sherodo (Signature) [signature]	5/13/13 1520	(Printed Name) S. Sherwood (Signature) [signature]	5/13/13 1520
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

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R-50 S2

05/13/13

DST 0700 A. Stocker leads safety tailgate Meeting @ TA-64.
0745 D. Fellenz calibrated ysi # 340 @ TA-59 see log Book: EP2011-0075 Page 49. ~~calibrated for specific conductivity per work plan.~~
0915 Crew on site. (D. Fellenz & M. Shendo) objective: purge well & Sample R-50 S2 per SOP's on page 3, using dedicated Pump GSP & generator.
0924 Connect to transducer with Rugged Reader #3, begin logging
$\underline{V}$ = 5835.30' msl LSD = 6904.11' msl
connect to transducer to Screen 1. with Rugged Reader #2.
$\underline{V}$ = 5835.65' msl
TD = 1217.5' bgs DTW = BOP = 1122.9' bgs
DP = BOP (0.041 gal/ft) = 46.04 gal
wc = TD − BOP = 94.6
1CV = wc (1.02 gal/ft) = 96.49 gal
3CV = 1cv X 3 = 289.47 gal
initial packer pressure: 230 psi
APV open @ 440 psi to 235 psi
0945 2 non Safety meetings. weather: clear Skies Temp 50° to Mid 70's
Safety points: Snakes, pinch points, Electrical safety
sun block.
0955 generator on. generator sitting 50' Away to East.
0956 pump on.
0957 water to surface. Q = 1.45 gpm
1029 DP clears 46.4 gal
1145 T. Mcfarland + 1 on site.
1200 T. Mcfarland + 1 off site.
1346 P. O'longmire & K. Grandzow NMED onsite.
1410 Sampling starts
1420 Sampling complete
1422 NMED off site.
1430 close APV, Final packer Pressure 230 psi
summary: Crew successfully samples R-50 S2
Note: See pages 33-35 of this log Book for parameters, final $\underline{V}$, final parameters, Waste Info, & Compliance check list.
1450 Disconnect from Transducer, stop logging $\underline{V}$

R-50 S2 continued

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EVENT ID: 4195
Sample ID: CAMO-13-30583, 13-30599

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6904.11 ft. msl	Well Diameter: 5 inches	Date: 5/13/13
Watershed: Mortandad	Water Level: 5835.30 ft. msl	Top of Screen: 5719.1 msl ~~5698.5~~ ft. msl	Notes: Page 1 of 2
Well: R-50 S2	*TD: 1217.5' bgs	Bottom of Screen: 5698.5 ft. msl	
Sampling Device: GSP	*DTW: 1122.9' bgs	Water Column: 94.6 ft.	
Measuring Point: LSD	Drop Pipe: 46.04 gal.	1CV: 96.49 gal.	Packer Pressure
* Completion Depth: TD		3CV: 289.47 gal.	Before: 230 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 440 psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: 235 psi
1CV = (Water Column x Well Diameter Multiplier) .... 3 CV = (1CV x 3)			After: _____ psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0956	Pump ON								
1029	7.63	18.57	183	5.49	1.1	136.0	5834.56	1.45	water clear odorless
1049	7.77	17.86	156	5.81	2.0	132.7	5834.58	1.45	water clear odorless
1109	7.98	19.91	131	6.96	1.9	127.1	5834.57	1.45	water clear effervescent odorless
1129	8.04	21.09	131	6.92	1.0	125.0	5834.59	1.45	" ~~87 gal~~ msl 133.4 gal
1149	8.06	21.46	129	6.94	1.0	122.7	5834.59	1.45	water clear effervescent odorless
1210	8.07	21.68	128	6.95	1.0	121.2	5834.59	1.45	"
1229	8.07	22.67	128	6.81	1.0	120.3	5834.59	1.45	water clear effervescent odorless 220.4 gal
1249	8.07	22.30	125	7.08	1.0	119.5	5834.60	1.45	water clear effervescent odorless
1309	8.09	22.72	131	7.29	1.0	118.8	5834.61	1.45	"
1329	8.07	23.03	130	6.78	1.0	118.2	5834.61	1.45	" 307.4 gal
1344	8.07	22.84	134	6.74	1.0	117.6	5834.62	1.45	water clear effervescent odorless
1349	8.07	22.84	133	6.75	0.9	117.4	5834.61	1.45	"
msl 1354	8.07	22.77	133	7.18	0.9	117.3	5834.63	1.45	"
1359	8.07	22.85	132	7.25	1.0	117.1	5834.62	1.45	"
1404	8.07	22.73	132	7.42	0.9	117.0	5834.62	1.45	"

WASTE

Contact:	gal.	Drum#: See Page Two	Final Water Level: See Page Two
Purge Water:	gal.	Drum#'s:	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	gal.		

Manuel Lucero 5/13/13

Page E-71 of 214

34 R-50 S2 Continued

Maurice Sandoval 5/13/13 MS

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: ft. msl	Well Diameter: inches	Date: 5/13/13		
Watershed:	Water Level: ft. msl	Top of Screen: ft.	Notes:		
Well:	*TD: See PAGE ONE	Bottom of Screen: ft.	PAGE 2 of 2		
Sampling Device:	*DTW:	Water Column: ft.			
Measuring Point:	Drop Pipe: gal.	1CV: gal.	Packer Pressure		
* Completion Depth:		3CV: gal.	Before: PAGE ONE psi		
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actual: psi		
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: psi		
1CV = (Water Column x Well Diameter Multiplier) . 3 CV = (1CV x 3)			After: psi		

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. MSL	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1409	8.07	22.85	1.31	7.29	1.0	117.0	5834.62	1.45	Clear Hydrocarbon odorless
1410	Begin Sampling								
1420	Complete Sampling								
1420	Pump off								
1421	Generator off								

5/13/13 MS

WASTE				
Contact: 1/2 gal.	Drum#: Municipal		Final Water Level: 5834.56	
Purge Water: 319 gal.	Drum#'s: 10171727 550 gal tank		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 370 gal.				

Maurice Sandoval 5/13/13 MS

Maurice

R-50 S2 Continued

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Maurice Shendo 5/13/13 MS

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-50 S2
Date: 05/13/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 4604 gal 3 CVs: 289.47 gal	4640	319	3.3	(Y) N	Purged Extra Due to DO not stabilizing.

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU or ± 10%)	Comments:
1359	8.07	132	7.25	1.0	NA
1404	8.07	132	7.42	0.9	
1409	8.07	131	7.29	1.0	
Calculations:	Upper: 8.07 Lower: 8.07 Difference: 0	Median: 132 Upper: 1346 MS 5/13/13 Lower: 1328 MS 5/13/13	Upper: 7.42 Lower: 7.25 Difference: 0.17	Median: NA Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

Maurice Shendo 5/13/13 MS

LO 5/13/13 MS

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30584

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/16/2013	FIELD MATRIX: WG		OK
TIME COLLECTED (HH:MM):		1252	MEDIA: UA		↓
PRS ID:		OK	SAMPLE TECH CODE: UA		GSP
LOCATION ID: R-61 S1		↓	FIELD PREP: UF		OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: PIA			SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE	↓	↓
	WSP-GrossA/B	1 LITER POLY	1	NONE		
	WSP-LL-II-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled within 50' of running diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.97 mg/L Oxidation-Reduction Potential 251.4 MV pH 6.71 SU

Specific Conductance 155 uS/cm Temperature 20.89 deg C Turbidity 3.0 NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellenz (Signature)	5/16/13 1355	(Printed Name) A. Martinez (Signature)	5/16/13 1355
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30600

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/16/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1252	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	PIA	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 5/16/13 1355	**RECEIVED BY** (Printed Name) M. Montoya (Signature)	Date/Time 5/16/13 1355
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30568

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/16/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1252	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-61 S1	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	P1A	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2/1	HCL DF 5/16/13	Y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 5/16/13 1355	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/16/13 1355
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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R-61 S1

5/16/13

Note: All times are in MST

0600 A. Stocker conducts health and safety tailgate at TA-64

0645 A. Stocker calibrates PSI# 30, see calibration log EP2011-0074 page 54 for details

0930 Crew (D. Fellenz, A. Stocker) on site at R-61

Weather: 70's, Sunny, light breeze

2 Minute safety: Electrical, pressure systems, trips, sun exposure

Objective: Purge and sample R-61 S1 per applicable documents on page 3

0943 Connect to transducer (level troll) with Rugged Reader# 2, begin logging IV (File: R-61S1 5-16-13)

Note: This is a dual screened Baski with a dedicated GSP pump

Note: The following data is from historicals and well completion diagram

LSD = 6940.12' msl — IV = 5837.46' msl

TD = TOP = 1162.3' bgs — DTW = LSD - IV = 1102.66' bgs

DP = (0.041 gal/ft) DTW = 45.2 gal — WC = TD - DTW = 59.64

1CV = (1.02 gal/ft) WC = 60.8 gal

3CV = 3(~~16~~ 1CV) = 182.4 gal DF 5/16/13

0954 Open APV, packer starts at 200 psi, opens to 205 psi with 360 psi

1003 Generator on

1003 Pump on

1004 Water to surface; Q = 2.14 gpm (manual using carboy)

1026 DP clear (47 gal), begin logging parameters (File: R-61S1)

1116 T. McFarland, D. Dixon on site

1138 T. McFarland, D. Dixon off site

1152 Begin sampling

1201 Sampling complete, pump off; Generator off

Note: A. Stocker preserves all samples; D. Fellenz QA's

1210 Close APV, packer ends at 200 psi

Summary: Crew successfully samples R-61 S1 (Objective met!)

Note: See pages 43-44 of this log book for parameters, final IV, final parameters, waste info, compliance checklist

1230 Disconnect from transducer, stop logging IV

1234 Crew off site

Relinquish samples to SMO c/o: M. Montoya

Event ID: 4195

Sample ID's: CAMO-13-30584, 30568, 30600

DF 5/16/13

5/16/13

David Fellenz

5/16/13 R-61 S1 continued 43

David Fellenz 5/16/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6940.12 ft. msl	Well Diameter: 5 inches	Date: 5/16/13
Watershed: Mortandad	Water Level: 5837.46 ft. msl	Top of Screen: 5815.12 ft.msl	Notes:
Well: R-61 S1	*TD: TOP = 1162.3' bgs	Bottom of Screen: 5805.12 ft.msl	NA
Sampling Device: GSP	*DTW: 1102.66' bgs	Water Column: 59.64 ft.	
Measuring Point: LSD	Drop Pipe: 45.2 gal.	1CV: 60.8 gal.	Packer Pressure
* Completion Depth: TD		3CV: 182.4 gal.	Before: 200 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 360 psi
DTW = (LSD - Water Level)..... Water Column = (TD - DTW)..... Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: 205 psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: 200 psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1003	Pump on,	1004	Water to surface						
1026	6.62	16.45	135	0.13	3.2	245.7	5833.74	2.14	slightly effervescent clear, odorless
1036	6.71	17.43	151	4.02	4.8	229.1	5833.69		effervescent clear, odorless
1046	6.78	18.95	150	DE 5/16/13 65.60	5.3	235.3	5833.68		
1056	6.78	20.19	150	5.77	5.4	240.7	5833.67		
1106	6.74	20.60	155	5.54	5.0	245.4	5833.68		
1116	6.74	20.77	154	5.57	4.3	248.1	5833.67		
1126	6.73	20.77	155	5.31	3.9	248.5	5833.65		128 gal. purged effervescent clear, odorless
1136	6.73	20.84	152	5.45	3.6	249.5	5833.68		
1141	6.70	20.82	156	5.98	3.3	251.2	5833.66		
1146	6.71	20.83	155	5.97	3.0	251.6	5833.67		
1151	6.71	20.89	155	5.97	3.0	251.4	5833.67		
1152	Begin sampling								183.5 gal purged
1201	Sampling complete, pump off								
	David Fellenz 5/16/13								

David Fellenz 5/16/13

WASTE

Contact: 1/2 gal.	Drum#: Municipal	Final Water Level: 5833.89' msl	
Purge Water: 183.5 gal.	Drum#'s: 10171619 550 gal	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 235 gal.			

David Fellenz 5/16/13

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5/16/13

R-61 S1 Continued

David Fellenz 5/16/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-61 S1
Date: 5/16/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 45.2 3 CVs: 182.4	47	183.5	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU) or ± 10%,	Comments:
1141	6.70	156	5.98	3.3	NA
1146	6.71	155	5.97	3.0	
1151	6.71	155	5.97	3.0	
Calculations:	Upper: 6.71 Lower: 6.70 Difference: 0.01	Median: 155 Upper: 160 Lower: 150	Upper: 5.98 Median: NA Lower: 5.97 Difference: 0.01	Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

David Fellenz 5/16/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30585

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/22/2013	FIELD MATRIX: WG		OK
TIME COLLECTED (HH:MM):		1301	MEDIA: UA		↓
PRS ID:		OK	SAMPLE TECH CODE: UA		GSP
LOCATION ID: R-61 S2		↓	FIELD PREP: UF		OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: P2A			SAMPLE USAGE: INV		

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~1~~ 2 WSS 5/22/13	ICE	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	NONE	↓	↓
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: Sampled within 50' of running diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 2.96 mg/L Oxidation-Reduction Potential 93.6 MV pH 6.56 SU

Specific Conductance 152 uS/cm Temperature 21.05 deg C Turbidity 12.3 NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	5/22/13 1345	S. Sherwood	5/22/13 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30601

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/22/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1301	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S2	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) W. Kevin Shaw (Signature)	5/22/13 1345	(Printed Name) S. Sherwood (Signature)	5/22/13 1345
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30569

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/22/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1301	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-61 S2	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	P2A		SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL 0958/22/13	Y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
W. Shaw	5/22/13 1345	S. Sherwood	5/22/13 1345
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

R-61 S2

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5/22/13

Note: All times are in MST

0606 A. Stocker conducts health and safety tailgate at TA-64

0640 A. Stocker calibrates YSI # 20 at TA-59, see calibration log book EP2011-0073 page 45 for details

0840 Crew (D. Fellenz, M. Shendo, W. Shaw, A. Stocker) on site at R-61

Weather: 70's, Sunny, light breeze

2 Min. Safety: Electrical and pressure systems, tripping, splashes

Objective: Purge and sample R-61 S2 per applicable documents on p. 3

0850 Connect to transducer (level troll) with Rugged Reader #4, begin logging IV (File: R-61 S2 5-22-13)

0853 Open APV, packer starts at 200 psi, opens to 205 psi with 340 psi

Note: The well is a dual screened Buski with a dedicated GSP pump

Note: The following data is from historicals and well completion data

LSD = 6740.12' msl — IV = 5837.67' msl

TD = 125~~1~~.6' bgs (DF 5/22/13) — DTW = BOP = 1167.00' bgs

DP = (0.041 gal/ft) DTW = 47.8 gal — WC = TD − DTW = 84.6'

1CV = (1.02 gal/ft) WC = 86.3 gal

3CV = 3(1CV) = 258.9 gal

0855 Generator on

0910 Pump on

0911 Water to surface; Q = 2.0 gpm (manual using carboy)

0935 DP clear (48 gal), begin logging parameters (File: R-61 S2)

1035 Pump trips off, crew restarts pump, working fine

1130 Pump trips off again, crew restarts, trips off again, restarted, crew calls T. McFarland to alert her to situation, will continued to monitor situation (DF 5/22/13)

1140 G. Helland, G. Vigil on site

1143 G. Helland, G. Vigil off site

1157 S. Maze on site

1201 Begin sampling

1209 Sampling complete, pump off; Generator off

1210 S. Maze off site

Note: M. Shendo preserves all samples; W. Shaw QA's

1218 Close APV, packer ends at 200 psi

1219 Disconnect from transducer, stop logging IV

Note: See pages 47-48 of this log book for parameters, final IV, final parameters, waste info, compliance checklist

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R-61 S2 continued

5/22/13

Summary: Crew successfully samples R-61 S2, however, there were issues with pump tripping off that were reported to T. McFarland

1228 Crew off site

1245 Relinquish samples to SMO c/o: S. Sherwood
Event ID: 4195
Sample ID's: CAMO-13-30585, 30601, 30569

David Fellenz 5/22/13

5/22/13

David Fellenz

R-61 S2 continued

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5/22/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6740.12 ft. msl	Well Diameter: 5 inches	Date: 5/22/13
Watershed: Mortandad	Water Level: 5837.67 ft. msl	Top of Screen: 5819.7 ft. msl	Notes:
Well: R-61 S2	*TD: 1251.6' bgs	Bottom of Screen: 5649.1 ft. msl	NA
Sampling Device: GSP	*DTW: BOP = 1167.00' bgs	Water Column: 84.6 5499.1 ft.	
Measuring Point: LSD	Drop Pipe: 47.8 gal.	1CV: 86.3 gal.	Packer Pressure
* Completion Depth: TD		3CV: 258.9 gal.	Before: 200 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 340 psi
			Opening: 205 psi
			After: 200 psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier).....3 CV = (1CV x 3)

David Fellenz 5/22/13

TIME MST/DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0910	Pump on; 0911 Water to surface								
0935	6.61	16.60	156	1.75	6.2	200.6	5835.21	2.0	effervescent, clear, odorless
0955	6.70	19.12	150	0.44	25.3	187.2	5835.20		effervescent cloudy, odorless
1015	6.65	20.55	151	1.28	29.1	177.4	5835.17		↓
1035	6.62	20.91	150	1.82	23.3	176.3	5837.60		120 gal. purged
1055	6.54	20.24	152	2.48	14.9	172.7	5835.19		effervescent cloudy, odorless
1115	6.54	20.53	151	2.74	11.7	138.4	5835.20		↓
1135	6.55	20.45	153	2.68	12.1	114.5	5836.04		225 gal. purged
1140	6.50	20.44	151	2.96	12.3	105.8	5835.24		Extra water will be purged due to pump issues
1145	6.55	20.69	150	3.14	12.1	104.6	5835.22		effervescent cloudy, odorless
1150	6.57	20.73	150	3.04	12.0	99.8	5835.25		↓
1155	6.56	20.88	148	2.89	11.8	94.6	5835.21		↓
1200	6.56	21.05	152	2.96	12.3	93.6	5835.19		260 gal. purged
1201	Begin sampling								
1209	Sampling Complete, pump off								
	DF 5/22/13								

DF 5/22/13

WASTE			Final Water Level: 5835.23' msl
Contact: ~~Municipal~~ 1/2 gal.	Drum#: Municipal		
Purge Water: 260 gal.	Drum#'s: 10171738		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: ~~305~~ 310 gal.			

DF 5/22/13

David Fellenz 5/22/13

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5/22/13

R-61 S2 continued

David Fellenz 5/22/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-61 S2
Date: 5/22/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 47.8 3 CVs: 258.9	48	260	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1150	6.57	150	3.04	12.0	NA
1155	6.56	148	2.89	11.8	
1200	6.56	152	2.96	12.3	
Calculations:	Upper: 6.57 Lower: 6.56 Difference: 0.01	Median: 148 Upper: 152 Lower: 144	Upper: 3.04 Lower: 2.89 Difference: 0.15	Median: 11.8 Upper: 13.0 Lower: 10.6	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

David Fellenz 5/22/13

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30586

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/8/2013	FIELD MATRIX:	WG	gk
TIME COLLECTED (HH:MM):		1240	MEDIA:	UA	✓
PRS ID:		OK	SAMPLE TECH CODE:	UA	G-SP
LOCATION ID:	R-62	✓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	✓	FIELD QC TYPE:	REG	✓
PORT:	SINGLE COMPLETION	✓	SAMPLE USAGE:	INV	✓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	N/A
✓	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE 5/8/13	✓	✓
✓	WSP-GrossA/B	1 LITER POLY	1	NONE	✓	✓
✓	WSP-LL-H-3	1 LITER POLY	1	NONE	✓	✓
✓	WSP-RAD	1 GAL POLY	1	HNO3	✓	✓
✓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	✓	✓

SAMPLE COMMENTS: Diesel generator running ~ 40' away while sampling

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen 5.03 mg/L Oxidation-Reduction Potential 197.2 MV pH 8.52 SU

Specific Conductance 178 uS/cm Temperature 19.67 deg C Turbidity 4.5 NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) William Shaw (Signature)	Date/Time 5/8/13 1340	RECEIVED BY (Printed Name) A. Montoya (Signature)	Date/Time 5/8/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30602

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/8/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1240	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
	WSP-GENINORG	1 LITER POLY	1	ICE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.03 mg/L Oxidation-Reduction Potential 192.2 MV pH 8.52 SU

Specific Conductance 178 uS/cm Temperature 19.67 deg C Turbidity 4.5 NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
William Shaw	5/6/2013 1340	A. Montoya	5/8/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30562

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/8/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1240	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62		FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FD	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8270C-SVOA	1 LITER AMBER GLASS	1	ICE 5/8/13		
	WSP-GrossA/B	1 LITER POLY	1	NONE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A Stockon

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) William Sheu (Signature)	5/8/13 1240	(Printed Name) M. Martz (Signature)	5/8/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30564

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/8/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1240	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62		FIELD PREP:	F	ok
LOCATION TYPE:			FIELD QC TYPE:	FD	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-CL04	250 ML POLY	1	ICE	Y	N/A
	WSP-GENINORG	1 LITER POLY	1	ICE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
William Shew	5/8/13 1340	A. Montoya	5/8/13 1340
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30570

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/8/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1240	MEDIA:	UA	
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-62		FIELD PREP:	UF	OK
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL 5/8/13	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) W. Mamshen (Signature)	Date/Time 5/8/13 1340	**RECEIVED BY** (Printed Name) M. Martin (Signature)	Date/Time 5/8/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4195

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30560

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/8/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1240	MEDIA:	UA	
PRS ID:		DC	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-62		FIELD PREP:	UF	OK
LOCATION TYPE:			FIELD QC TYPE:	FB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	N/A
	WSP-8270C-SVOA	1 LITER AMBER GLASS (1)	1	ICE 5/8/13		

SAMPLE COMMENTS:

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
L. Hernandez	5/8/13 1340		5/8/13 1340
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

R-62

5/8/13

0700 HTS tailgate conducted at TA-64 by A Stocker
0738 Meter #20 calibrated at TA-59 by A Stocker
See log # EP2011-0073
1010 onsite
2 minute safety: slips, trips, falls, electrical, wind
Field crew: W. Shaw, A. Stocker
Weather: partly cloudy H 60's chance of T'storms
Objective: Purge and Sample R-62 with a diesel generator and GSP in accordance with procedures on p.3
1024 connect to transducer level troll start logging on rugged reader #3
∇ = 5840.58' msl,
LSD = 6984.93' msl TD = 1189.7' bgs
DTW = ~~TD − ∇~~ = 6984.93' − 5840.58' = 1144.4' bgs
WC = TD − DTW = 1187.7' − 1144.4' = 43.3'
DP = DTW (0.041 gal/ft) = 114.4.4 (0.041 gal/ft) = 46.9 gal
1CV = WC (1.020 gal/ft) = 43.3' (1.020 gal/ft) = 44.2 gal
3CV = 1CV(3) = 132.5 gal
Total purge until sampling begins = 180 gal
1043 pump on / water to surface
A. Stocker measures flow rate > 5 gpm will readjust and remeasures $\frac{5 gal}{192 sec} \times \frac{60 sec}{} = 1.6$ gpm
1113 Drop pipe clears begin logging parameters on YSI #20
1238 Parameters stable per compliance checklist for R-62 MY 2013 Q3
1240 Sampling begins
1253 Sampling ends
1302 pump off; waited for NMED received a phone call that they would not make it to sample their
Vr key is not hubbed correctly
A Stocker preserves samples
Objectives complete R-62 purged and sampled with a GSP and Diesel Generator in accordance with procedures on p3
1320 offsite
Event ID # 4195
Sample IDs CAMD-13-30586, 30584, 30570, 30602, 30560, 30562

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5/8/13
1340

R-62 cont

Relinquish samples at SMO c/o

William Chow 5/8/13

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6984.93 ft. msl	Well Diameter: 5 inches	Date: 5/8/13
Watershed: Mortandad	Water Level: 5840.58 ft. msl	Top of Screen: 5876.53 ft. msl	Notes:
Well: R-62	*TD: 1189.7 bgs	Bottom of Screen: 5805.83 ft. msl	NA
Sampling Device: GSP	*DTW: 1144.4 bgs	Water Column: 43.3 ft.	
Measuring Point: LSD	Drop Pipe: 46.9 gal.	1CV: 44.2 gal.	Packer Pressure
* Completion Depth: TD		3CV: 132.5 gal.	Before: N/A psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: psi
			Opening: psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1043	pump on/water to surface							1.6	
1113	8.81	14.37	180	3.06	41.0	188.3	5831.38		Clear; odorless e-fflorescent
1128	9.25	15.52	168	2.21	~~188.3~~ 3.4	188.3	5831.29		
1143	9.06	17.71	173	3.62	5.1	186.0	5831.20		
1158	8.88	18.75	171	4.22	6.3	186.7	5831.13		
1213	8.71	19.55	168	4.79	3.7	187.8	5831.07		
1228	8.57	19.69	182	4.97	4.2	190.3	5831.05		
1233	8.56	19.50	180	5.05	5.1	191.8	5831.02		
1238	8.52	19.67	178	5.03	4.5	192.2	5831.00		
1240	Sampling begins								
1253	Sampling ends								
1302	pump off								
			William Shaw 5/8/2013						

WASTE

Contact:	1/2 gal.	Drum#:	Municipal
Purge Water:	136 gal.	Drum#'s:	1017171 7
Total Waste Water:	201 gal.		

Final Water Level: 5831.12 msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water).

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5/8/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-62
Date: 5/8/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 46.9 3 CVs: 132.5	48	136	3	(Y) N	N/A

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU or ± 10%,	Comments:
1228	8.57	182	4.97	4.2	N/A
1233	8.56	180	5.05	5.1	
1238	8.52	178	5.03	4.5	
Calculations:	Upper: 8.57 Lower: 8.52 Difference: .05	Median: 180 Upper: 182 Lower: 178	Upper: 5.05 Lower: 4.97 Difference: .08	Median: 4.5 Upper: 5.1 Lower: 4.2	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	N/A

5/8/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30556

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/17/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1113	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	SCI-1	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-CL04	250 ML POLY	1	ICE	Y	N/A
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: N/A

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen N/A mg/L Oxidation-Reduction Potential N/A MV pH N/A SU

Specific Conductance N/A uS/cm Temperature N/A deg C Turbidity N/A NTU

COLLECTED BY (PRINT) A Stocker

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) William Shaw (Signature)	5/17/13 1315	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	5/17/13 1315
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30548

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/17/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1113	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	SCI-1		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	N/A

SAMPLE COMMENTS: well located in 40' from Truck route

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen 8.69 mg/L Oxidation-Reduction Potential 67.4 MV pH 7.09 SU

Specific Conductance 719 uS/cm Temperature 11.40 deg C Turbidity 0.7 NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Wilhelm Shaw (Signature)	5/17/13 1315	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	5/17/13 1315
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 04/30/2013

SCI - 1

5/17/13
0700 HTS tailgate conducted at TA-54 by A Stocker per SOPs
0905 Meter #40 Calibrated by M Shendo at TA-59 see log #EP 2011-6075
1000 onsite
5 minute safety: Snakes, slips, trips, fall's Bennett pressure systems
Field crew: W. Shaw, A Stocker, M Shendo
Weather: windy partly cloudy 76°
Objectives: purge and sample SCI-1 with N_2 and a RSP in accordance with procedures on p 3
Connect to water level transducer level troll; start logging in
1036 rugged reader #4
$\bar{V}$ = 6369.69' msl
LSD = 6738.27' msl TD = 378.5' bgs
DTW = LSD − $\bar{V}$ = 6738.27 − 6369.69 = 368.58' bgs
WC = TD − DTW = 378.5 − 368.58 = 9.92'
DP = (0.006 gal/ft) DTW = (0.006 gal/ft) 368.58' = 2.2 gal
1CV = (0.653 gal/ft) WC = (0.653 gal/ft) 9.92' = 6.5 gal
3CV = 1CV(3) = 19.4 gal
Total purge before sampling begins = 21.6 gal
Initial tank pressure 2280 psi
1047 pump on at 120 psi / water to surface
1052 DP clear parameters begin logging on YSI #40
A Stocker measures flow rate $\frac{4\text{ gal}}{392} \times 60\text{ sec} = 0.6$ gpm
1103 M Dale onsite
1CV + DP cleared parameters not stable (Turb) will continue to purge
1112 Parameters stable per compliance checklist for SCI-1 MY2013 Mortandad Sandia Q3
1113 Sampling begins
1122 Sampling ends / pump off
ending Tank pressure 1600
1124 M. Dale offsite
M. Shendo preserves samples; A Stocker QC's
objectives complete SCI-1 sampled and purged with a RSP and N_2 in accordance with procedures on p 3; W. Shaw plunges wells
1127 offsite
relinquish samples at SMO c/o
Eurofins #4194 Sample ID #'s CASA-13-30556, 30548

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5/17/2013

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6739.27 ft. msl	Well Diameter: 4 inches	Date: 5/17/13
Watershed: Sancia	Water Level: 6369.69 ft. msl	Top of Screen: 6379.87 ft. msl	Notes:
Well: SCI-1	*TD: 378.58 bgs	Bottom of Screen: 6359.87 ft. msl	NA
Sampling Device: RSP	*DTW: 368.58 bgs	Water Column: 9.92 ft.	
Measuring Point: LSD	Drop Pipe: 2.2 gal.	1CV: 6.5 gal.	Packer Pressure
* Completion Depth: TD		3CV: 19.4 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1047	pump on / water to surface								
1052	7.19	10.15	704	8.93	11.2	-20.5	6367.81	0.6	clear; odorless
1057	7.10	10.44	714	8.80	13.6	28.4	6366.73		
1102	7.04	10.75	716	8.78	7.4	51.0	6365.91		
1107	7.06	11.06	718	8.70	2.2	61.4	6365.95		
1112	7.09	11.40	719	8.69	0.7	67.4	6365.95		
1113	Sampling begins								
1122	Sampling ends pump off								

William Shaw 5/17/13

WASTE

Contact:	1/2 gal.	Drum#: Municipal	Final Water Level: 6365.95 msl	
Purge Water:	12.6 gal.	Drum#'s: 10171737	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water:	21.6 gal.			

William Shaw 5/17/2013

5/17/2013

SOP-20032 Rev. 1 Compliance Checklist

Well Name: SCI-1

Date: 5/17/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 2.2 3 CVs: 19.4	9	12.6	1.9	(Y) N	N/A

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10) NTU or ± 10%,	Comments:
1102	7.04	7.16	8.78	7.4	N/A
1107	7.06	718	8.70	2.2	
1112	7.09	719	8.69	0.7	
Calculations:	Upper: 7.09 Lower: 7.04 Difference: .05 ~~7.06~~	Median: 718 Upper: 719 Lower: 716	Upper: 8.78 Lower: 8.69 Difference: .09	Median: 2.2 Upper: 7.4 Lower: 0.7	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	Well sampled per work plan for Mortandad Sandia MY2013 Q3

5/17/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30549

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/21/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1235	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	SCI-2		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	X	NA

SAMPLE COMMENTS: N/A

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen 9.22 mg/L Oxidation-Reduction Potential 221.7 MV pH 7.42 SU

Specific Conductance 622 uS/cm Temperature 14.47 deg C Turbidity 1.2 NTU

COLLECTED BY (PRINT) M. Shonde

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) William Shonde (Signature)	5/21/13 1325	(Printed Name) K. Greene (Signature)	5/21/13 1:25
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30557

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/21/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1235	MEDIA:	UA	
PRS ID:		OK	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	SCI-2		FIELD PREP:	F	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-CL04	250 ML POLY	1	ICE	Y	N/A
	WSP-GENINORG	1 LITER POLY	1	ICE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: N/A

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M Shonto

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) William Shon (Signature)	5/21/13 1325	(Printed Name) K. Green (Signature)	5/21/13 1:25
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

SCI-2

5/21/13
0700 HTS tailgate conducted at TA-64 by A Shacker per SOP's
Meter # 30 calibrated by M Shendo see log # EP241-0074
1000 onsite
2 minute safety: slips, trips, falls, Bennett pressure systems
Field crew: W. Shaw, M. Shendo
Weather: Sunny 70's
Objectives: purge and samples SCI-2 with N_2 and a Bennett pump in accordance with procedures 05/21/13 on p. 3
1015 Connect to transducer level troll start logging on Rugged reader #1
TOC 6208.50 msl
LSD: 6735.85' msl TD: 570.0' bgs
DTW = (LSD - TOC) = 6735.85' - 6208.50' = 527.35' bgs
WC = (TD - DTW) = 570.0' - 527.35' = 42.65'
DP = DTW (0.006 gal/ft) = 527.35' (0.006 gal/ft) = 3.2 gal
1CV = WC (0.163 gal/ft) = 42.65' (0.163 gal/ft) = 7 gal
3CV = 1CV (3) = 21 gal
Total purge until sampling begins = 24.2 gal
Initial tank pressure 1300 psi
1058 J Romero, A Vigil onsite
1124 pump on / water to surface
M. Shendo measures flow rate 5 gal / 684 sec x 60 sec = 0.44 gpm
1134 DP cleared, begin logging on YSI # 330 log 5/21/13
1137 M. Dale onsite
1148 J Romero, A Vigil offsite
1222 3 CV's plus DP cleared DO not stable will continue to purge
1234 Parameters stable per compliance checklist for SCI-2 MY2013 Mortandad Sandia Q3
1235 Sampling begins
1253 Sampling ends / pump off
Objectives complete SCI-2 purged and sampled with N_2 and an RSP in accordance with procedures on p 3
Ending tank pressure 1090 psi
M Shendo preserves samples W. Shaw QC's
1255 W. Shaw plunges line; M Dale offsite
1310 offsite

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5/21/13
DST 1325

SCI - 2

. Relinquish Samples at SMO c/o K Greene
Event ID # 4194
Sample ID # CASA-13-30549, 30557

William Stone
5/21/2013

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6735.85 ft. msl	Well Diameter: 2 inches	Date: 5/21/13
Watershed: Sandia	Water Level: 6208.50 ft. msl	Top of Screen: 6187.85 ft. msl	Notes: N/A
Well: SCI-2	*TD: 570.0	Bottom of Screen: 6167.85 ft. msl	
Sampling Device: RSP	*DTW: 527.35 bgs	Water Column: 42.65 ft.	
Measuring Point: LSD	Drop Pipe: 3.2 gal.	1CV: 7 gal.	Packer Pressure
* Completion Depth: TD		3CV: 21 gal.	Before: N/A psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: N/A psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: N/A psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: N/A psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1124	pump on								
1134	7.00	12.95	611	4.59	1.1	224.8	6205.37	0.44	clear, green tint odorless
1144	7.28	14.24	609	7.61	1.3	219.0	6204.98		
1154	7.38	14.34	612	9.08	1.5	222.2	6205.08		
1204	7.40	14.35	609	9.09	1.0	222.1	6204.67		
1214	7.42	14.37	605	8.82	19.8	221.6	6204.60		
1219	7.43	14.38	599	9.04	1.0	222.6	6204.99		
1224	7.46	14.57	617	9.26	0.7	219.5	6204.61		
1229	7.44	14.39	621	9.15	0.8	220.7	6204.71		
1234	7.42	14.47	622	9.22	1.2	221.7	6204.96		
1235	Sampling begins								
1253	Sampling ends/pump off								

William Shaw 5/21/2013

WASTE			
Contact:	1/2 gal.	Drum#: Municipal	Final Water Level: 6204.76 msl
Purge Water:	26.4 gal.	Drum#'s: 10171636	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	30.8 gal.		

William Shaw 5/21/2013

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SOP-20032 Rev. 1 Compliance Checklist

Well Name: SCI-2
Date: 5/21/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 3.2 3 CVs: 21	4.4	26.4	3.8	(Y) N	N/A

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU or ± 10%,	Comments:
1224	7.46	617	9.26	0.7	Dissolved oxygen was not stable at 3 CV's purged until it was
1229	7.44	621	9.15	0.8	
1234	7.42	622	9.22	1.2	
Calculations:	Upper: 7.46 Lower: 7.42 Difference: .04	Median: 621 Upper: 622 Lower: 617	Upper: 9.26 Lower: 9.15 Difference: .09	Median: 0.8 Upper: 1.2 Lower: 0.7	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	N/A

Los Alamos National Laboratory

Page 1 of 1

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30542

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1349	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-11		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

diesel generator running ≈10'

FIELD PARAMETERS:

Dissolved Oxygen 7.45 mg/L Oxidation-Reduction Potential 190.7 MV pH 7.96 SU

Specific Conductance 237 uS/cm Temperature 22.54 deg C Turbidity 0.4 NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	5/13/13 1430	S. Sherwood Sherri Sherwood	5/13/13 1430
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30550

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1349	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-11		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
	WSP-GENINORG	1 LITER POLY	1	ICE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:
NA

LOCATION COMMENTS:
NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Stan

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Robert Stefan	5/13/13 1430	S. Sherwood	5/13/13 1430
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30540

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1349	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSI
LOCATION ID:	R-11	↓	FIELD PREP:	UF	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FD	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Straw

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Adrian Griffith (Signature)	5/13/13 1430	(Printed Name) D. Sherwood (Signature) Sherwood	5/13/13 1430
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30541

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1349	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-11	↓	FIELD PREP:	F	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FD	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Stan

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	5/13/13 1430	S. Sherwood	5/13/13 1430
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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5/13/13 R-11

1115 crew onsite, see pg 73 for morning activities
crew: A. Stricker, W. Shaw, M. Green
weather: 70s, clear
2 min-safety: Careful next to road
Objective: Purge & sample R-11 per SOPs and referenced documents on pg-3 using a GSP
1135 connect to level troll, ~~XSI #30~~ passes calibration check, see FP2011-0074
WL: 5834.89' msl LSD: 6673.72' msl TD: 901.76' bgs
DTW: 838.83' bgs LSC: 6287'
1140 PP: (0.041 gal/ft × DTW) = 34.4 gal
ICV: (0.0826 gal/ft × LW) = 51.9 gal
3CV: = 155.7 gal
1147 Pump on, water to surface
1151 manual rate = 3.09 gpm
AS 5/13/13 1158 1202 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Completed checklist for stability
1248 M. Dale onsite
1249 3CVs, purged, parameters stable, Begin sampling
1257 Sampling complete, pump off, M. Green preserves, W. Shaw QA
1302 M. Dale offsite
1315 crew offsite
1330 submit samples to SMO: Event ID: 4205, Sample ID: CSMO-13-30542, -30550, -30540, -30541 AS 5/13/13

AS 5/13/13

JS 5/13/13

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6673.72	ft. msl	Well Diameter: 4.5	inches	Date: 5/13/13		
Watershed: Sandia	Water Level: 5834.89	ft. msl	Top of Screen: 5818.72	ft msl	Notes:		
Well: R-11	*TD: 901.7 bgs		Bottom of Screen: 5795.82	ft msl	NONE		
Sampling Device: GSP	*DTW: 838.83 bgs		Water Column: 62.87	ft.			
Measuring Point: LSD	Drop Pipe: 34.4	gal.	1CV: 51.9	gal.	Packer Pressure		
* Completion Depth: TD			3CV: 155.7	gal.	Before: ~~105~~	psi	
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials				Actuation: 5/13/13	psi	
					Opening:	psi	
					After:	psi	

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME (MST) / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1147	Pumping water to surface								
1158	7.27	17.14	234	6.53	6.6	215.2	5834.74	3.09	clear, colorless
1208	7.89	19.89	227	7.25	1.0	192.4	5834.77	3.09	
1218	8.06	21.76	229	7.52	0.6	191.6	5834.78	3.09	
JS 5/13/13 1228	8.03	22.36	233	7.48	0.5	190.5	5834.80	3.09	
1238	7.99	22.53	236	7.42	0.5	191.8	5834.80	3.09	
1248	7.95	22.52	236	7.40	0.5	192.0	5834.79	3.09	
1248	7.96	22.54	237	7.45	0.4	190.7	5834.79	3.09	
1249	begin sampling, parameters stable, 3 cvs purged								
1257	Sampling complete, pump off								
						JS 5/13/13			
								JS 5/13/13	~~5834.81'~~ msl

JS 5/13/13

WASTE

Contact:	1/2 gal.	Drum#:	Municipal
Purge Water:	156 gal.	Drum#'s:	10171734
Total Waste Water:	200 gal.		

Final Water Level: 5834.81' msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

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JS 5/13/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-11

Date: 5/13/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 34.4 3 CVs: 155.7	34.4	156	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1238	7.99	236	7.42	0.5	Stable
1243	7.95	236	7.40	0.5	
1248	7.96	237	7.45	0.4	
Calculations:	Upper: 7.99 Lower: 7.95 Difference: 0.04	Median: 236 Upper: 243 Lower: 229	Upper: 7.45 Lower: 7.40 Difference: 0.05	Median: <10 Upper: <10 Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

JS 5/13/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30551

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/16/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1416	MEDIA:	UA	
PRS ID:		OK	SAMPLE TECH CODE:	UA	ws 5/16/13 ~~DC~~ GSP
LOCATION ID:	R-35a		FIELD PREP:	F	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-GENINORG	1 LITER POLY	1	ICE	Y	N/A
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Diesel Generator running while sampling

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen 5.03 mg/L Oxidation-Reduction Potential 81.4 MV pH 8.05 SU

Specific Conductance 242 uS/cm Temperature 24.66 deg C Turbidity 1.97 NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
William Stan	1505 5/16/13	M. Montoya	5/16/13 1505
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30543

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/16/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1416	MEDIA:	UA	
PRS ID:		OK	SAMPLE TECH CODE:	UA	ESP
LOCATION ID:	R-35a		FIELD PREP:	UF	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	N/A

SAMPLE COMMENTS: N/A

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen 5.03 mg/L Oxidation-Reduction Potential 81.4 MV pH 8.05 SU

Specific Conductance 242 uS/cm Temperature 24.66 deg C Turbidity 1.97 NTU

COLLECTED BY (PRINT) M Shando

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
V. Williamson	1505 5/16/13	M. Martinez	5/16/13 1505
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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R-35a

5/16/13
(DST) 0700 HTS tailgate meeting conducted at TA-64 by D Fetherz
Meter #40 calibrated at TA-59 by M Shendo see
log # CP 2014-0075
1000 onsite
2 minute safety: Snake under waste drum (red racer)
Slips, trips, falls, electrical systems, Sunblock
Field crew: W. Shear, M. Shendo
Weather: Sunny clear 70's
Objective: Purge and Sample R-35a with a diesel
Generator and GSP in accordance with procedures
on p 3.
1045 Connect to transducer level troll begin recording on rugged reader #4
$\cancel{T}$ = 5825.22' msl
LSD: 6623.06' msl TD = 1086.2' bgs
DTW: (LSD − $\cancel{T}$) = 6623.06 − 5825.22' = 797.84
WC: (TD − DTW) = 1086.2' − 797.84' = 288.4
DP = DTW (0.041 gal/ft) = 797.84 (0.041 gal/ft) = 32.7 gal
1CV = WC (0.826 gal/ft) = 288.4 ~~0.826~~ WS 5/16/13 (0.826 gal/ft) = 238.2 gal
3CV = 1C(3) = 714.7 gal
Total purge until sampling begins = ~~753~~ WS 5/16/13 748 gal
1056 pump ok
1057 water to surface
M Shendo calculates flow rate $\frac{5 gal}{79} \times 60 sec = 3.8 gpm$
1107 DP chemed parameters begin logging on YSI #40
1252 A. Vigil, J. Romero onsite
1330 T. McFarland, D Dixon onsite; A Vigil, J. Romero offsite
1343 T McFarland D Dixon offsite
1354 K Grayson #1 onsite
1416 Sampling begins
1420 Sampling ends
1428 M Shendo preserves samples; W. Shear QC's
Objectives complete R-35a Purged and Sampled with a
GSP and diesel Generator in accordance with procedure on p 3
1447 offsite
Returned samples at SMO
Event ID #4194, Sample IDs #CASA-B-30543, 30551

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6623.06 ft. msl	Well Diameter: 4.5 inches	Date: 5/16/13		
Watershed: Mortandad/Sandia	Water Level: 5825.22 ft. msl	Top of Screen: 5604.96 ft. msl	Notes: N/A		
Well: R-35a	*TD: 1086.2 bgs	Bottom of Screen: 5560.86 ft. msl			
Sampling Device: GSP	*DTW: 797.84	Water Column: 288.4 ft.			
Measuring Point: LSD	Drop Pipe: 32.7 gal.	1CV: 238.2 gal.	Packer Pressure		
* Completion Depth: TD		3CV: 714.7 gal.	Before: NA psi		
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: N/A psi		
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi		
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: NA psi		

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1056	pump on								
1057	water to surface							3.8	
1107	7.78	16.27	237	3.64	21.0	153.3	5817.58		clear; odorless
1137	8.06	23.71	241	5.13	1.2	118.8	5817.83		
1207	8.06	24.13	241	5.11	3.3	109.7	5817.98		
1237	8.06	24.37	241	5.03	8.4	92.8	5818.02		
1307	8.05	24.47	242	5.04	2.8	88.5	5818.08		
1337	8.05	24.60	242	5.07	0.0	84.6	5818.18		
1400	8.05	24.68	242	5.04	7.45	82.6	5818.31		
1405	8.05	24.66	242	5.04	2.02	82.8	5818.25		
1410	8.05	24.72	242	5.04	2.18	82.0	5818.22		
1415	8.05	24.66	242	5.03	1.97	81.4	5818.31		
1416	Sampling begins								
1420	Sampling ends								
1421	Pump off								

5/16/13 William Shaw

WASTE				
Contact:	1/2 gal.	Drum#: Municipal	Final Water Level: 5818.30' msl	
Purge Water:	718.2 gal.	Drum#'s: 10 1017 1736	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water:	757 gal.			

5/16/13

W. Thomas

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5/16/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-35a
Date: 5/16/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 32.7 3 CVs: 714.7	38	WS 5/16/13 ~~718~~ 718.2	3	(Y) N	N/A

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1405	8.05	242	5.04	2.02	N/A
1410	8.05	242	5.04	2.18	
1415	8.05	242	5.03	1.97	
Calculations:	Upper: 8.05 Lower: 8.05 Difference: 0	Median: 242 Upper: 242 Lower: 242	Upper: 5.04 Lower: 5.03 Difference: .01	Median: 2.02 Upper: 2.18 Lower: 1.97	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	N/A

WilliamShaw 5/16/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30544

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/10/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1147	MEDIA:	UA	
PRS ID:		JK	SAMPLE TECH CODE:	UA	JS 5/10/13 JC GSP
LOCATION ID:	R-35b		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Diesel Generator running while sampling

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.85 mg/L Oxidation-Reduction Potential 238.7 MV pH 7.48 SU

Specific Conductance 172 uS/cm Temperature 21.33 deg C Turbidity 0.44 NTU

COLLECTED BY (PRINT)

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) W. Illgenshaw (Signature)	5/10/13 1225	(Printed Name) K. Green (Signature)	5/10/13 12:35
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30552

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/10/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1147	MEDIA:	UA	
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-35b		FIELD PREP:	F	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-GENINORG	1 LITER POLY	1	ICE	Y	N/A
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: N/A

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen N/A mg/L Oxidation-Reduction Potential N/A MV pH N/A SU

Specific Conductance N/A uS/cm Temperature N/A deg C Turbidity N/A NTU

COLLECTED BY (PRINT) M. Shando

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) William Shaw (Signature)	5/10/13 1235	(Printed Name) K. Greene (Signature)	5/10/13 1235
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

R-35b

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5/10/13
0700 HTS tailgate conducted at TA-64 by A. Stocker per SOP's
0740 M. Shendo calibrates meter # 30 at TA-59 see log # EP2011-0074
1000 onsite
2 minute safety; slips trips falls, electrical systems T-storms
Field crew: W. Shaw, M. Shendo
Weather: partly cloudy chance of T. storms
Objectives: Purge and sample R-35b with a diesel generator and GSP in accordance with procedures on p3
1011 Connect to transducer (level troll) begin logging on rugged reader #
1012 TOC = 5834.14 'msl
LSD = 6625.21 'msl TD = 872.2' bgs
DTW = (LSD - TOC) = 6625.21' - 5834.14' = 791.1' bgs
WC = (TD - DTW) = 872.2 - 791.1 = 81.1'
DP = (0.0415 gal/ft)(DTW) = 0.0415 gal/ft (791.1') = 32.4 gal
1CV = (0.826 gal/ft) WC = (0.826 gal/ft) 81.1' = 67 gal
3CV = 1CV(3) = ~~202~~ 201 gal
Total purge until sampling begins = 233 gal
1030 pump on
1031 water to surface
1035 M Shendo measures flowrate 5 gal / 98 sec x 60 sec = 3.1 gpm
~~1041 gpm~~
1041 Drop pipe cleared parameters begin logging on YSI # 30
1130 K. Granzow, P. Longmeyer onsite
1147 Parameters stable per compliance checklist for R-35b MY2013 Q3
1147 Sampling begins
1153 Sampling ends / pump off
1155 K. Granzow, P. Longmeyer offsite
Objectives complete R-35b purged and sampled with a GSP and diesel generator in accordance with procedures on p3
1205 M. Shendo preserves samples; W. Shaw QC's
1230 offsite
1235 Submit samples at the SMO c/o K Greene
Event ID# 4194
Sample ID# CASA-17-30544, 30552
William Shaw 5/10/13

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5/10/2013

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6625.4' ft. msl	Well Diameter: 4.5 inches	Date: 5/10/13
Watershed: Mortandad	Water Level: 5834.14 ft. msl	Top of Screen: 5799.81 ft msl	Notes:
Well: R-56	*TD: 872.2 bgs	Bottom of Screen: 5776.71 ft msl	
Sampling Device: GSP	*DTW: 791.1 bgs	Water Column: 81.1 ft.	
Measuring Point: LSD	Drop Pipe: 32.4 gal.	1CV: 67 gal.	Packer Pressure
* Completion Depth: TD		3CV: 201 gal.	Before: N/A psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: psi
DTW = (LSD - Water Level).. .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			Opening: psi
			After: psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1030	pump on								
1031	water to surface							3.1	clear; odorless
1041	7.41	16.07	171	6.04	2.6	261.0	5833.84		
1046	8.08	19.29	169	6.54	2.0	249.0	5833.87		
1051	8.16	20.47	170	6.62	0.31	243.8	5833.89		
1056	8.10	20.63	170	6.69	0.33	240.5	5833.90		
1101	8.11	20.73	171	6.70	0.23	238.9	5833.90		
1106	8.10	20.91	171	6.66	0.22	236.6	5833.92		
1111	8.02	21.04	171	6.67	0.33	236.3	5833.91		
1116	7.82	21.12	172	6.63	0.76	238.4	5833.92		
1121	7.63	21.24	172	6.17	1.10	238.7	5833.92		
1126	7.54	21.15	172	6.07	0.78	238.5	5833.92		
1131	7.52	21.24	172	6.01	0.53	238.8	5833.93		
1136	7.48	21.13	172	5.93	0.44	238.4	5833.93		
1141	7.49	21.19	172	5.90	0.34	238.1	5833.93		
1146	7.48	21.23	172	5.85	0.44	238.2	5833.93		

1147 Sampling begin WASTE 1153 Sampling ends / pump off

Contact: 1/2 gal.	Drum#: Municipal	Final Water Level: 5834.01 msl
Purge Water: 205 gal.	Drum#'s: 10171735	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: 239.1 gal.		

5/10/2013

5/10/2013

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-35b
Date: 5/10/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 32.4 3 CVs: 201	34.1	205	3.1	(Y) N	N/A

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1136	7.48	172	5.93	0.49	N/A
1141	7.49	172	5.90	0.39	
1146	7.48	172	5.85	0.44	
Calculations:	Upper: 7.49 Lower: 7.48 Difference: .01	Median: 172 Upper: 177 Lower: 167	Upper: 5.93 Lower: 5.85 Difference: .08	Median: 0.44 Upper: 0.49 Lower: 0.39	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	N/A

5/10/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30545

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/17/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1250	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-36		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Deisel Generator running while sampling

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.76 mg/L Oxidation-Reduction Potential 105.8 MV pH 7.27 SU

Specific Conductance 192 uS/cm Temperature 21.40 deg C Turbidity 1.08 NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) William Ohr (Signature)	5/17/2013 1315	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	5/17/13 1315
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 04/30/2013

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30553

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		5/17/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1250	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-36	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-GENINORG	1 LITER POLY	1	ICE	Y	N/A
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: N/A

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen N/A mg/L Oxidation-Reduction Potential N/A MV pH N/A SU

Specific Conductance N/A uS/cm Temperature N/A deg C Turbidity N/A NTU

COLLECTED BY (PRINT) A Stocker

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Williamsham (Signature)	5/17/13 1315	(Printed Name) B. Sherwood (Signature) Sheri Sherwood	5/17/13 1315
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 04/30/2013

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5/17/13

R-36

1133 onsite
2 minute safety: snakes, slips, trips, falls, electrical system
Field crew: W. Shaw, A. Stocker, M. Sherdo
Weather: Windy partly cloudy 70's
See p 75. for H&S tailgate and Calibration Information
Objectives: purge and sample R-36 with a RGSP and diesel Generator in accordance with procedures on p3 5/17/13
connect to transducer (level troll) start logging on rugged reader #4
TOC = 5838.65 msl
1146 YSI #40 passes calibration check see log EP2011-0075
LSD = 6591.37' msl TD = 803.7' bgs
DTW = LSD − TOC = 6591.37' − 5838.65' = 752.7' bgs
WC = TD − DTW = 803.7 − 752.7' = 51'
DP = (.041 gal/ft) DTW = (.041 gal/ft) 752.7' = 30.9 gal
1CV = (.826 gal/ft) WC = (0.826 gal/ft) 51' = 42 gal
3CV = 1CV(3) = 126 gal
Total purge until sampling begins = 157 gal
1158 pump on / water to surface
A. Stocker measures flow rate 5 gal / 8 sec x 60 sec = 9.4 gpm
1208 DP cleared parameters begin logging on 5/17/13 YSI #40
Turbidimeter #4 YSI reading negative turbidity
M. Dale onsite
1240
1248 parameters stable per compliance checklist for R-36 Q3 Mortandad, Sandia MY2013
1250 Sampling begins
1255 Sampling ends / pump off
1300 M. Dale offsite
Objectives complete R-36 purged and sampled with a Diesel Generator and GSP in accordance with procedures on p3
M. Sherdo preserves samples; A. Stocker QC's
1305 offsite
Relinquish Samples at SMO c/o S Sherwood
Event ID# 4 of 4
Sample ID#s CASA-11-30545, 30553
W. Tiger Shaw
5/17/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6591.37 ft. msl	Well Diameter: 4.5 inches	Date: 5/17/13
Watershed: Sandia	Water Level: 5838.65 ft. msl	Top of Screen: 5824.47 ft. msl	Notes:
Well: R-36	*TD: 803.7' bgs	Bottom of Screen: 5801.41 ft. msl	N/A
Sampling Device: GSP	*DTW: 752.7	Water Column: 51 ft.	
Measuring Point: LSD	Drop Pipe: 70.9 gal.	1CV: 42 gal.	Packer Pressure
* Completion Depth: TD		3CV: 126 gal.	Before: N/A psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: N/A psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			Opening: N/A psi
			After: N/A psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1158	pump on / water to surface							3.4	
1208	7.31	18.14	192	4.45	2.14	111.2	5838.29		clear odorless
1213	8.25	19.72	191	6.68	1.50	92.0	5838.32		
1218	8.20	20.82	190	6.74	3.32	99.5	5838.33		
1223	7.51	21.03	192	6.13	4.02	120.9	5838.33		
1228	7.26	21.14	191	5.98	1.81	114.3	5838.33		
1233	7.31	21.18	191	5.88	1.51	115.5	5838.34		
1238	7.30	21.22	~~111.7~~ µS/cm	5.85	1.54	111.4	5838.35		
1243	7.28	21.33	~~108.7~~ µS/cm	5.82	1.21	108.2	5838.36		
1248	7.27	21.40	192	5.76	1.08	105.8	5838.35		
1250	Sampling begins								
1255	Sampling ends / pump off								

William Shaw 5/17/13

WASTE

Contact:	1/2 gal.	Drum#:	Municipal	Final Water Level: 5838.41 msl
Purge Water:	142.8 gal.	Drum#'s:	10171740	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	176.8 gal.			

William Shaw 5/17/2013

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-36
Date: 5/17/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 30.9 3 CVs: 126	~~30.9~~ 34	142.8	2.4	(Y) N	N/A

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1238	7.30	192	5.85	1.54	N/A
1243	7.28	192	5.82	1.21	
1248	7.27	192	5.76	1.08	
Calculations:	Upper: 7.30 Lower: 7.27 Difference: .03	Median: 192 Upper: 192 Lower: 192	Upper: 5.85 Lower: 5.76 Difference: .09	Median: 1.21 Upper: 1.54 Lower: 1.08	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	N/A

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30546

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1256	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S1	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P1A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Stein

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Foster	5/15/13 1355	M. Montoya	5/15/13 1355
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30554

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1256	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S1	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P1A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 6.81 mg/L Oxidation-Reduction Potential 223.4 MV pH 8.17 SU

Specific Conductance 183 uS/cm Temperature 20.16 deg C Turbidity 1.88 NTU

COLLECTED BY (PRINT) W Straw

RELINQUISHED BY (Printed Name) (Signature) Andrew Stokes	Date/Time 5/15/13 1355	RECEIVED BY (Printed Name) (Signature) A. Montoya	Date/Time 5/15/13 1355
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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5/15/13 R-43 S1

0600 HES tailgate performed by A. Stocker @ TA-64
0650 YSI #30 calibrated by W. Shaw @ TA-59, EP2011-0074 pg. 54
0830 crew onsite
Crew: A. Stocker, W. Shaw
Weather: 70s-80s, clear, possible wind or T-storms
Objectives: purge + sample R-43 S1 per SOPs and referenced documents on pg. 3 using a GSP
2-man-safety; snakes, sun protection
0835 connect to level troll transducer
TOC: 5837.16 msl LSD: 6732.65' msl TD = 960.7' bgs (top of packer)
DTW = 895.49' bgs WC = 65.21'

1150 DP = (0.041 gal/ft × DTW) = 36.7 gal
5150 IW = (1.020 gal/ft × WC) = 66.5 gal
3CV = (1.020 gal/ft × 3 IW) = 199.5 gal

0848 open APV @ 480 psi
0852 Pump on, water to surface
0858 manual rate = 1.31 gpm
0920 DP cleared, begin logging parameters on Groundwater Sampling Log, use HACH Turbidimeter #1, because YSI reading negative turbidity
1150 NMED arrival - S. Yanicak + P. Longmire
1156 Begin sampling, 3CVs purged, parameters stable
1201 Sampling complete, NMED continues
1212 Pump off
1215 S. Yanicak + P. Longmire offsite, W. Shaw preserved samples, A. Stocker QA
Objectives complete to purge + sample R-43 S1 per SOPs
1235 crew offsite
1255 submit samples to SMO: Event SP: 4194, Sample SPs: CA SA-13-30554, -30546

AS 5/15/13

JS 5/15/13

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6732.65 ft. msl	Well Diameter: 5 inches	Date: 5/15/13
Watershed: Sandia	Water Level: 5837.16 ft. msl	Top of Screen: 5828.8 ft.msl	Notes:
Well: R-43S1	*TD: = top of fish bar = 960.7	Bottom of Screen: 5808.1 ft.msl	NONE
Sampling Device: GSP bailer	*DTW: 895.49'bgs	Water Column: 65.21 ft.	
Measuring Point: LSD	Drop Pipe: 36.7 gal.	1CV: 66.5 gal.	Packer Pressure
* Completion Depth: TD		3CV: 199.5 gal.	Before: 215 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 480 psi
			Opening: 220 psi
			After: 215 psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST/DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0852	Pump on, water to surface								
0920	8.61	17.39	189	4.93	*0.32	230.5	5835.99	1.31	clear, colorless
0950	8.23	18.45	178	6.71	*0.23	229.8	5836.01	1.31	
1020	8.29	19.89	180	6.85	*0.19	227.2	5836.01	1.31	
1050	8.26	20.29	181	6.90	*0.19	227.2	5836.01	1.31	
1120	8.20	20.49	182	6.90	*0.20	226.5	5836.02	1.31	
JS 5/15/13 ~~1152~~ 1140	8.18	20.25	183	7.01	*0.31	224.1	5836.02	1.31	
~~1140~~ 1145	8.19	20.28	183	6.79	*0.23	224.8	5836.01	1.31	
~~1144~~ 1150	8.19	20.24	183	6.85	*0.27	223.2	5836.02	1.31	
1155	8.17	20.16	183	6.81	*~~0~~ 1.88 JS 5/15/13	223.4	5836.02	1.31	
1156	Begin sampling, 3CVs purged, parameters stable								
1201	Sampling complete								
1212	Pump off								
				JS 5/15/13					

WASTE

Contact:	7/2 gal.	Drum#:	Municipal
Purge Water:	200 gal.	Drum#'s:	10171733
Total Waste Water:	245 gal.		

Final Water Level: 5836.03 msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

* HACH Turbidimeter #1

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JB 5/15/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-43

Date: 5/15/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 36.7 3 CVs: 199.5	36.7	200	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1145	8.19	183	6.79	0.23	NONE
1150	8.19	183	6.85	0.27	
1155	8.17	183	6.81	1.88	
Calculations:	Upper: 8.19 Lower: 8.17 Difference: 0.02	Median: 183 Upper: NA Lower:	Upper: 6.85 Lower: 6.79 Difference: 0.06	Median: 210 Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

JB 5/15/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30547

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1116	MEDIA:	UA	✓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S2	✓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	✓	FIELD QC TYPE:	REG	✓
PORT:	P2A	✓	SAMPLE USAGE:	INV	✓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:
NA

LOCATION COMMENTS: diesel generator 40' away

FIELD PARAMETERS:

Dissolved Oxygen 3.11 mg/L Oxidation-Reduction Potential 168.7 MV pH 8.70 SU

Specific Conductance 192 uS/cm Temperature 19.51 deg C Turbidity 0.97 NTU

COLLECTED BY (PRINT) M. Stevens

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Fisher	5/14/13 1515	M. Martin	5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4194

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3 Watershed Sampling_SANDIA

SAMPLE ID: CASA-13-30555

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1116	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S2	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Stenzel

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stocke	5/14/13 1515	M. Montoya	5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4218

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3_R-43 S2 Time Series

SAMPLE ID: CASA-13-32003

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1137	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-43 S2	↓	**FIELD PREP:**	UF	ok
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	P2A	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS: Collect at 4CV

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 3.33 mg/L Oxidation-Reduction Potential 168.0 MV pH 8.65 SU

Specific Conductance 191 uS/cm Temperature 19.71 deg C Turbidity 0.23 NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature) Sidney Stokes	**Date/Time** 5/14/13 1515	**RECEIVED BY (Printed Name) (Signature)** M. Martin	**Date/Time** 5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4218

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3_R-43 S2 Time Series

SAMPLE ID: CASA-13-32006

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1137	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S2	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	250 ML POLY	1	ICE	5/14/13 Y	NA
↓	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE	↓	add SiO2; analyze by EPA 200.7/200.8

SAMPLE COMMENTS: Collect at 4CV

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Stenlo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stanton	5/14/13 1515	M. Montoya	5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4218

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3_R-43 S2 Time Series

SAMPLE ID: CASA-13-32004

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1301	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	BSP
LOCATION ID:	R-43 S2		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE		

SAMPLE COMMENTS: Collect at 8CV

LOCATION COMMENTS: diesel generator 40' away

FIELD PARAMETERS:

Dissolved Oxygen 4.27 mg/L Oxidation-Reduction Potential 162.0 MV pH 8.54 SU

Specific Conductance 191 uS/cm Temperature 20.19 deg C Turbidity 0.20 NTU

COLLECTED BY (PRINT) M. Stendo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stockton	5/14/13 1515	M. Montoya	5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4218

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3_R-43 S2 Time Series

SAMPLE ID: CASA-13-32007

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1301	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSS
LOCATION ID:	R-43 S2		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	250 ML POLY	1	ICE	Y	NA
	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE		add SiO2; analyze by EPA 200.7/200.8

SAMPLE COMMENTS: Collect at SCV

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stoker	5/14/13 1515		5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4218

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3_R-43 S2 Time Series

SAMPLE ID: CASA-13-32005

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1425	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSI
LOCATION ID:	R-43 S2		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE		

SAMPLE COMMENTS: Collect at 12CV

LOCATION COMMENTS: diesel generator running 40'

FIELD PARAMETERS:

Dissolved Oxygen ~~1.24~~ 4.79 mg/L (5/14/13) Oxidation-Reduction Potential 159.2 MV pH 8.50 SU

Specific Conductance 193 uS/cm Temperature 20.22 deg C Turbidity 8.19 NTU

COLLECTED BY (PRINT) M. Stenke

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stenke	5/14/13 1515	M. Martin	5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4218

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2013 Q3_R-43 S2 Time Series

SAMPLE ID: CASA-13-32008

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	↓
TIME COLLECTED (HH:MM):		1428	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S2	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	250 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE	↓	add SiO2; analyze by EPA 200.7/200.8

SAMPLE COMMENTS: Collect at 12 CV

LOCATION COMMENTS: diesel generator 40' away

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Stenlo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	5/14/13 1515		5/14/13 1515
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

5/14/13 R-43 S2 (12 CV purge)

0600 MST H+S briefing performed by A. Stocker @ TA-64

0630 751°30 calibrated by A. Stocker @ TA-59, see calibration log, EP2011-0074 pg.54

0800 crew onsite
Crew: A. Stocker, M. Stando
Weather: 60s-80°, clear, possible T-storms later
Tailgate Safety: pressure systems, sun protection
Objectives: purge + sample R-43 S2 per SOPs, referenced documents on pg.3, and work plan to purge 12CVs and sample time series @ 4, 8, + 12 CVs, using a Geoprobe GSP

0807 connect to level well transducer
TOC = 5835.94 msl, LSD: 6732.65' msl, TD = 990.4' bgs
DTW = BOP: 965.46' bgs, WC: 25.0'

1st 20 DP = (0.041 gal/ft × DTW) = 39.6 gal
5th SP ICV = (1.020 gal/ft × WC) = 25.5 gal
3CV = 76.5 gal
4CVs = 102.0 gal
8CVs = 204.0 gal
12CVs = 306.0 gal

0836 APV opened @ ~~490 psi~~ 490 psi, but trouble seeing for sure because pressure gauge on unit up ~3 psi, will turn on pump to see if open

0839 Pump on

0840 water to surface

0846 Manual rate = 1.22 gpm

0913 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for stability

0943 Begin using HACH Turbidimeter #1 because MSI was reading on + off negative values ~~[illegible]~~ -0.1

1015 M. Date + P. Longmire onsite for MFD split

1016 M. Date + P. Longmire offsite, Begin sampling, 3CVs purged, parameters stable

1022 Sampling complete

1037 4CVs purged, begin sampling for indicator suite

1044 Sampling complete

1201 Begin sampling for 8CVs indicator suite

1221 B. Cruz onsite

80

5/14/13 R-43 S2 12CV purged

1233 B. Cruz offsite
1323 M. Dale + P. Longmore (NMED) onsite
1328 12CVs purged, begin sampling
1331 sampling complete
1335 Pump off NMED finished
1339 NMED offsite
sampling preserved by M. Stevens, A. Stoker QA
Objectives complete to purge and sample R-43 S2
@ 3CVs, 4, 8, and 12 CVs

AS 1400
5/14/13 1415 Crew offsite
1415 submit samples to SMO, 1: Event ID: 4218 (Time series); Sample ID: CASA-13-32003, -32006, -32004, -32007, -32005, -32008
3CVs JFGMP Event ID: 4194 Sample ID: CASA-13-30555, -30547

AS 5/14/13

BS|MN3 81

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6732.65 ft. msl	Well Diameter: 5 inches	Date: 5/14/13
Watershed: Sandia	Water Level: 5835.94 ft. msl	Top of Screen: 5763.6 ft. msl	Notes: pg. 1 of 2
Well: R-43 S2	*TD: 990.46 bgs	Bottom of Screen: 5753.6 ft. msl	
Sampling Device: bailer; GSP	*DTW: 80P - 96 5.46 bgs	Water Column: 25.0 ft.	
Measuring Point: LSD	Drop Pipe: 396 gal.	1CV: 25.5 gal.	Packer Pressure
* Completion Depth: TD		3CV: 76.5 gal.	Before: 215 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 290 psi
			Opening: 218 psi
			After: 215 psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME (MST) / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. wl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0839	Pump on								
0840	Water to surface								
0913 ~~0918~~	NC	NC	NC	NC	NC	NC	NC	1.22	clear, odorless
0923	9.13	16.25	185	0.89	0.1	178.7	5835.02	1.22	
0933	8.98	17.58	185	1.81	0.0	174.3	5835.02	1.22	
0943	8.86	18.68	192	2.62	*0.38	172.6	5835.03	1.22	
0953	8.77	19.13	193	2.86	*0.19	171.1	5835.03	1.22	
1003	8.72	19.35	193	2.95	*0.18	170.1	5835.03	1.22	
1008	8.71	19.37	193	3.03	*0.23	169.5	5835.03	1.22	
1013	8.70	19.51	192	3.11	*0.17	168.7	5835.03	1.22	
1016	Begin sampling, parameters stable, 3CVs purged								
1022	Sampling complete								
1033	8.65	19.71	191	3.33	*0.23	168.0	5835.04	1.22	clear, odorless
1037	Begin sampling								
1044	Sampling complete								
1103 ~~1053~~	8.59	19.94	191	3.67	*0.29	165.2	5835.03	1.22	clear, odorless

WASTE

Contact:	gal.	Drum#: Municipal	Final Water Level: NA
Purge Water: 3CV (77.0 gal) 12CVs (306)	gal.	Drum#'s: 10171732	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: 350	gal.		

* used HACH turbidimeter #1

5/14/13

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: ft. msl	Well Diameter: inches	Date: 5/14/13
Watershed: Sandia	Water Level: ft. msl	Top of Screen: ft.	Notes:
Well: R-4352 RCW page	*TD:	Bottom of Screen: ft.	pg. 2 of 2
Sampling Device: bailer GSP	*DTW: see pg 1	Water Column: ft.	
Measuring Point: LSP	Drop Pipe: gal.	1CV: gal.	Packer Pressure
* Completion Depth: TD	JS 5/13/13	3CV: gal.	Before: psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: JS psi
			Opening: 5/14/13 psi
			After: psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST/DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft.	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1133	8.56	20.03	191	3.99	*0.18	163.8	5835.05	1.22	clear, odorless
1158	8.54	20.19	191	4.27	*0.20	162.0	5835.08	1.22	↓
1201	Begin sampling for 8CVs								
1205	Sampling complete								
1233	8.53	20.17	192	4.49	*0.24	161.2	5835.08	1.22	clear, odorless
1258	8.51	20.22	192	4.64	*0.23	160.5	5835.09	1.22	↓
1323	8.50	20.22	193	4.79	*0.19	159.2	5835.11	1.22	↓
1325	Begin sampling for 12CVs								
1331	Sampling Complete								
1335	Pump off								

JS 5/14/13

WASTE

Contact: NA gal.	Drum#: Municipal	Final Water Level: 5835.11 wl	
Purge Water: 12CV: 300gal ~~NA~~ JS 5/14/13 gal.	Drum#'s: 1071732	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 350 gal.			

* HACH Turbidimeter #1

AS 5/14/13

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SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-43 S2

Date: 5/14/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 39.6 3 CVs: 76.5	39.6	AS 5/14/13 ~~76.~~ 77.0	3	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1003	8.72	193	2.95	0.18	Stable
1008	8.71	193	3.03	0.23	
1013	8.70	192	3.11	0.17	
Calculations:	Upper: 8.72 Lower: 8.70 Difference: 0.02	Median: 193 Upper: 199 Lower: 187	Upper: 3.11 Lower: 2.95 Difference: 0.16	Median: <10 Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met for 3CVs sample, continue purging for 12CVs

AS 5/14/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30613

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):		1139	**MEDIA:**	UA	↓
PRS ID:		OK	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-14 S1	↓	**FIELD PREP:**	UF	OK
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE 5/14/13	↓	↓
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

SAMPLE COMMENTS: Sampled within 50' of running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.45 mg/L Oxidation-Reduction Potential 230.9 MV pH 8.13 SU

Specific Conductance 129 uS/cm Temperature 22.29 deg C Turbidity 0.65 NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) W Liam Shaw (Signature)	Date/Time 5/14/13 1235	**RECEIVED BY** (Printed Name) S. Sherwood (Signature) Sherri Sherwood	Date/Time 5/14/13 1235
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30610

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/14/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1139	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-14 S1	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	1 ~~2~~	HCL US 5/14/13	Y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) William Shaw (Signature)	Date/Time 5/14/13 1235	RECEIVED BY (Printed Name) S. Sherwood (Signature) Denise Sherwood	Date/Time 5/14/13 1235
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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5/14/13

R-14

5/14/13

Note: All times in MST
0600 A. Stocker conducts health and safety tailgate at TA-64
0630 W. Shaw calibrates YSI #20 at TA-59, see calibration log EP2011-0073 for details
Note: Crew thought R-34 was to be sampled, waited until 0830 for escort. Escort did not arrive, crew called S. Maze, informed R-34 escort scheduled for tomorrow (5/15/13). Crew 're-groups' and will sample R-14

David Fell

0940 Crew (D. Fellenz, W. Shaw) on site at R-14
Weather: 70's, Sunny, windless
2 Minute safety: Electrical system, sun exposure, snakes
Objective: Purge and sample R-14 per applicable documents on p. 3
0952 Connect to transducer with Rugged Reader #2, begin logging ∇ (File: R-14 5-14-13), level troll transducer in well
Note: This is a single completion well with a dedicated GSP pump
Note: The following data is from historicals and well completion info
LSD = 7062.08' msl ∇ = 5877.76' msl
TD = 1244.7' bgs DTW = LSD − ∇ = 1184.32' bgs
DP = (0.041 gal/ft) DTW = 48.6 gal WC = TD − DTW = 60.38'
1CV = (0.826 gal/ft) WC = 49.9 gal
3CV = 3(1CV) = 149.7 gal
1009 Generator on
1010 Pump on
1010 Water to surface, Q = 6.97 gpm (manual using carboy)
1017 DP clear (48.8 gal), begin logging parameters R-1451
Note: YSI is reading negative turbidity, Hach #2 used
1038 NMED (M. Dale, P. Longmire) on site
1039 Begin sampling
1048 Sampling complete, pump on; Generator off
1050 NMED off site
Summary: Crew successfully samples R-14 (Objective met!)
Note: See pages 37-38 of this log book for parameters, final ∇, final parameters, waste info, compliance checklist
1100 Disconnect from transducer, stop logging ∇
1105 Crew off site
1135 Relinquish samples to SMO c/o: S. Sherwood
Event ID: 4200, Sample ID's: CAMO-13-30613, 30610

5/14/13

R-14 continued

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David Fellenz 5/14/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 7062.08 ft. msl	Well Diameter: 4.5 inches	Date: 5/14/13
Watershed: Mortandad	Water Level: 5877.76 ft. msl	Top of Screen: 5861.48 ft. msl	Notes: 3 minute parameters
Well: R-14	*TD: 1244.7' bgs	Bottom of Screen: 5828.88 ft. msl	
Sampling Device: GSP	*DTW: 1184.32' bgs	Water Column: 60.38 ft.	
Measuring Point: LSD	Drop Pipe: 48.6 gal.	1CV: 49.9 gal.	Packer Pressure
* Completion Depth: TD		3CV: 149.7 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier) . 3 CV = (1CV x 3)			After: NA psi

TIME MST/DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1010	Pump on, water to surface								
1017	7.85	16.19	127	5.89	3.90	245.6	5870.61	6.97	clear, odorless
1020	7.85	17.04	128	4.67	1.82	243.2	5870.61		
1023	7.91	18.26	128	4.92	1.51	239.4	5870.60		
1026	8.00	19.39	128	5.20	0.88	235.7	5870.60		
1029	8.08	20.49	128	5.36	0.76	233.7	5870.61		
1032	8.12	21.21	128	5.43	0.64	233.0	5870.62		
1035	8.13	21.80	129	5.48	0.65	232.1	5870.63		
1038	8.13	22.29	129	5.45	0.65	230.9	5870.64		
1039	Begin sampling								153gal. purged
1048	Sampling complete, pump off								

David Fellenz 5/14/13

WASTE

Contact: 1/2 gal.	Drum#: Municipal	Final Water Level: 5870.65' msl	
Purge Water: 153 gal.	Drum#'s: 1017/739	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 260 gal.			

David Fellenz 5/14/13

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5/14/13

R-14 continued

David Fellenz 5/14/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-14
Date: 5/14/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 48.6 3 CVs: 149.7	48.8	153.0	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1032	8.12	128	5.43	0.64	NA
1035	8.13	129	5.48	0.65	
1038	8.13	129	5.45	0.65	
Calculations:	Upper: 8.13 Lower: 8.12 Difference: 0.01	Median: 129 Upper: 133 Lower: 125	Upper: 5.48 Lower: 5.43 Difference: 0.05	Median: NA Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

David Fellenz 5/14/13

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30615

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/21/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1108	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-46		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator 40' down wind

FIELD PARAMETERS:

Dissolved Oxygen 6.46 mg/L Oxidation-Reduction Potential 208.5 MV pH 7.78 SU

Specific Conductance 124 uS/cm Temperature 20.65 deg C Turbidity 1.08 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature) Andrew Stoker	Date/Time 5/21/13 1200	RECEIVED BY (Printed Name) (Signature) M. Montoya	Date/Time 5/21/13 1200
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30619

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/21/2013	FIELD MATRIX:	WG	↓
TIME COLLECTED (HH:MM):		1108	MEDIA:	UA	↓
PRS ID:		↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-46	↓	FIELD PREP:	F	↓
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' downwind

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stricker	5/21/13 1200	M. Montoya	5/21/13 1200
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30609

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/21/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1108	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	PC
LOCATION ID:	R-46	↓	FIELD PREP:	UF	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE 5/21/13	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stocker	5/21/13 1200	M. Montoya	5/21/13 1200
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30611

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/21/2013	FIELD MATRIX:	WG	gb
TIME COLLECTED (HH:MM):		1108	MEDIA:	UA	↓
PRS ID:		↓	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-46	↓	FIELD PREP:	UF	↓
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL AS 5/21/13	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS: NA AS 5/21/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stocker	5/21/13 1200	J. Morgan	5/21/13 1200
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 04/30/2013

R-46

5/21/13
0600 MST H+S tailgate performed by A. Stocker @ TA-64
0640 YSI #20 calibrated by D. Fellenz at TA-59, see calibration log EP 2011-0073 pg. 45
0855 crew onsite
0900 connect to level troll transducer
crew: A. Stocker, D. Fellenz
weather: 60s-70s, clear, slight breeze
Tailgate safety: sun protection, wind, careful driving on coarse gravel/cobbles
Objectives: Purge + sample R-46 per SOPs and referenced documents on pg. 3 using a GSP
TOC: 5883.49' msl LSD: 7213.33' msl TD: 1382.2' bgs
DTW: 1329.84' bgs WC: 52.36

1" SD DP: (0.041 gal/ft × DTW) = 54.5 gal
5" SD IW: (1.020 gal/ft × WC) = 53.4 gal
3 CV = = 160.2 gal

0921 Pump on, water to surface
0923 Manual rate = 4.69 gpm
0933 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for Stability
0943 used HACH Turbidimeter #2 for remaining parameters b/c YSI is negative
1008 Begin sampling, 3 CVs purged, parameters stable, T. McFarland onsite
1010 T. McFarland offsite
1013 M. Dale w/ NMED onsite
1020 Pump off, D. Fellenz preserves, A. Stocker QA
Objectives Complete to purge + sample R-46 per SOPs etc
1026 M. Dale offsite
1044 crew offsite
100 Submit samples to SWO: Event ID: 4200, Sample ID: CAMO-13-30615, -30619, -30609, -30611

5/21/13

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 7213.33 ft. msl	Well Diameter: 5 inches	Date: 5/21/13
Watershed: Mortandad	Water Level: 5883.49 ft. msl	Top of Screw: 5873.33 ft. msl	Notes:
Well: R-46	*TD: 1382.21 bgs	Bottom of Screw: 5852.63 ft. msl	NONE
Sampling Device: GSP	*DTW: 1329.84 bgs	Water Column: 52.36 ft.	
Measuring Point: LSD	Drop Pipe: 54.5 gal.	1CV: 53.4 gal.	Packer Pressure
* Completion Depth: TD		3CV: 160.2 gal.	Before: psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 5/21/13 psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: psi

TIME (MST / DST)	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0921	Pump on, water to surface								
0933	6.99	15.74	121	2.04	3.3	203.3	5881.94	4.69	clear, odorless
0938	7.56	17.22	121	5.03	0.8	202.3	5882.09	4.69	
0943	7.79	18.66	121	5.94	*0.59	203.5	5882.12	4.69	
0948	7.88	19.52	122	6.29	*0.96	204.1	5882.14	4.69	
0953	7.91	20.11	122	6.36	*0.32	205.7	5882.13	4.69	
0958	7.93	20.38	122	6.42	*0.52	205.0	5882.14	4.69	
AS 5/21/13 1003	7.87	20.56	123	6.44	*0.77	207.0	5882.13	4.69	
1008	7.78	20.65	124	6.46	*0.08 AS 5/21/13	208.5	5882.14	4.69	
1009	AS 5/21/13 After 30's purge, parameters stable; Begin Sampling								
1015	Sampling complete								
1020	Pump off								
					AS 5/21/13				

WASTE

Contact:	AS 1/2 gal.	Drum#:	Municipal
Purge Water:	165 gal ~~60.2~~ gal.	Drum#'s:	10171741
Total Waste Water:	228 gal.		

Final Water Level: 5882.11 msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

* Used HACH Turbidimeter #2

AS 5/21/13

AS 5/21/13 89

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-46
Date: 5/21/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 54.5 3 CVs: 160.2	56.28	165 gal ~~160.2~~ AS 5/21/13	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
0958	7.93	122	6.42	0.52	STABLE
1003	7.87	123	6.44	0.77	
1008	7.78	124	6.46	1.08	
Calculations:	Upper: 7.93 Lower: 7.78 Difference: 0.15	Median: 123 Upper: 126.7 Lower: 119.3	Upper: 6.46 Lower: 6.42 Difference: 0.04	Median: <10 Upper: <10 Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

AS 5/21/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30616

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1258	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	BSP
LOCATION ID:	R-60	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE	↓	↓
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' from sampling

FIELD PARAMETERS:

Dissolved Oxygen 5.78 mg/L Oxidation-Reduction Potential 192.8 MV pH 8.01 SU

Specific Conductance 127 uS/cm Temperature 24.32 deg C Turbidity 1.09 NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	5/7/13 1340	A. Montoya	5/7/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30620

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1258	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSF
LOCATION ID:	R-60		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: Sampled 40' from diesel generator

FIELD PARAMETERS:

Dissolved Oxygen 5.78 mg/L Oxidation-Reduction Potential 192.8 MV pH 8.09 SU

Specific Conductance 127 uS/cm Temperature 24.32 deg C Turbidity 1.09 NTU

COLLECTED BY (PRINT) W. Staw

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stocker	5/7/13 1340	U. Montoya	5/7/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30612

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/07/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1258	MEDIA:	UA	↓
PRS ID:		oh	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-60	↓	FIELD PREP:	UF	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

AS 5/7/13 diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) W. Stacy

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stacy	5/7/13 1340	M. Martin	5/7/13 1340
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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5/7/2013 R-60

0600 MST HES tailgate performed @ TA-54 by A. Stocker
0640 YSI #20 calibrated by W. Shaw @ TA-59, see calibration Log
EP2011-0073
0905 crew onsite @ R-60
crew: A. Stocker, W. Shaw
Tailgate-safety: snakes, sun protection
Weather: 50-60s, mostly sunny
Objective: purge + sample R-60 per SOPs and referenced documents on pg. 3 using GSP
0921 connect to level sensor transducer
TOC: 5907.34' msl LSD = 7228.17' msl TD = 1360.9' bgs
DTW: 1320.83' bgs Core = 40.07'

1x DP = (0.041 gal/ft x DTW)	= 54.2 gal
5x KW = (1.020 gal/ft x WC)	= 40.9 gal
3KW = (KW x 3)	= 122.7 gal

0937 pump on, will work to work plan that says pump @ 1.1 gpm
0945 manual rate dialed down to 1.25 gpm, when 5/7/13 pump popped open it was closer to 6 gpm +
1011 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for Stability
1041 Began using HACH Turbidimeter #2 because of negative turbidity
1151 M. Dale onsite
1158 Begin sampling, min purge met, parameters stable
1203 Pump off, sampling complete, M. Dale offsite
W. Shaw preserves, A. Stocker QA
Objectives Complete to purge + sample R-60 per SOPs
1220 crew offsite
1240 submit samples to SNO: Event ID: 4200, Sample ID: CA110-13-30620, -30616, -30612

AS 5/7/2013

AS 5/7/13

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Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 7228.17 ft. msl	Well Diameter: 5 inches	Date: 5/7/13
Watershed: Mortandad	Water Level: 5907.34' ft. msl	Top of Screen: 5895.0 ft. msl	Notes:
Well: R-60	*TD: 1360.9' bgs	Bottom of Screen: 5874.1 ft. msl	NONE
Sampling Device: GSP	*DTW: 1320.83' bgs	Water Column: 40.07 ft.	
Measuring Point: LSD	Drop Pipe: 54.2 gal.	1CV: 40.9 gal.	Packer Pressure
* Completion Depth: TD		3CV: 122.7 gal.	Before: ___ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 5/7/13 psi
			After: ___ psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME (MST/DST)	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0937	Pump on, water to surface								
1011	7.72	16.67	128	3.58	0.1	241.9	5900.79	1.25	Clear slight effervescence
1026	7.78	18.21	129	4.16	2.7	176.8	5900.50	1.25	AS quite effervescent strong sulfur odor lead
1041	8.14	19.32	129	5.46	*1.60	187.5	5900.33	1.25	
1056	8.16	20.23	128	5.84	*2.38	190.8	5900.15	1.25	
1111	8.15	22.75	128	5.78	*2.54	188.7	5899.92	1.25	
1126	8.06	23.71	128	5.81	*2.35	192.4	5899.77	1.25	
1141	8.03	23.70	128	5.82	*1.78	193.3	5899.73	1.25	
1146	8.02	23.82	127	5.81	*1.95	193.5	5899.71	1.25	
1151	8.02	24.02	127	5.87	*1.63	193.7	5899.69	1.25	
1156	8.01	24.32	127	5.78	*1.09	192.8	5899.67	1.25	
1158	Begin sampling, parameters stable, 3CVs purged								
1203	Pump off, sampling complete								
					AS 5/7/13				

WASTE

Contact:	½ gal.	Drum#:	Municipal
Purge Water:	123 gal.	Drum#'s:	10171731
Total Waste Water:	177 gal.		

Final Water Level: 5898.38' msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

AS 5/7/13

* 1.60 NTU — used HACH Turbidimeter #2 AS 5/7/13

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AS 5/7/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-60

Date: 5/7/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 54.2 3 CVs: 122.7	54.2	123	3	Y N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1146	8.02	~~23.82~~ 127	5.81	1.95	NA
1151	8.02	~~24.02~~ 127 AS 5/7/13	5.87	1.63	
1156	8.01	~~24.32~~ 127	5.78	1.09	
Calculations:	Upper: 8.02 Lower: 8.01 Difference: ~~0.001~~ 0.01 AS 5/7/13	Median: 127 Upper: NA Lower: NA	Upper: 5.87 Lower: 5.78 Difference: 0.09	Median: <10 Upper: <10 Lower:	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	All SOPs met

AS 5/7/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30614

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/15/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1149	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-34	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sampled within 50' of running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 6.26 mg/L Oxidation-Reduction Potential 91.8 MV pH 8.30 SU

Specific Conductance 152 uS/cm Temperature 21.71 deg C Turbidity 0.9 NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellenz (Signature)	5/15/13 1300	(Printed Name) M. Montoya (Signature)	5/15/13 1300
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

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Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4200

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2013 Q3 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-13-30618

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/15/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1149	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-34	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 5/15/13 1300	RECEIVED BY (Printed Name) M. Montoya (Signature)	Date/Time 5/15/13 1300
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

R-34

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5/15/13

Note: All times are in MST

0600 A. Stocker conducts health and safety tailgate at TA-64

0645 D. Fellenz calibrates YSI #40 at TA-59, see calibration log book EP2011-0075 page 49 for details

0800 Crew (D. Fellenz, M. Shendo + A. King (escort)) on site at R-34

Weather: 70's, Sunny, breezy

2 Min Safety: Electrical system, snakes, sun exposure, tripping

Objective: Purge and sample R-34 per applicable documents on page 3

0827 Connect to transducer (level troll) with Rugged Reader #2, begin logging IV (File: R-34 5-15-13)

Note: This is a single completion well with a dedicated GSP pump

Note: The following is from historicals and well completion diagrams

LSD = 6629.99' msl | IV = 5831.78' msl

TD = 920.7' bgs | DTW = LSD − IV = 798.21' bgs

DP = (0.041 gal/ft) DTW = 32.7 gal | WC = TD − DTW = 122.49'

1CV = (0.826 gal/ft) WC = 101.2 gal

3CV = 3(1CV) = 303.6 gal

0843 Generator on

0843 Pump on

0844 Water to surface; Q = 2.6 gpm (manual using carboy)

0857 DP clear (34 gal), begin logging parameters (File: R-34)

0857 Q = 2.72 gpm (manual using carboy)

1049 Begin sampling, crew samples for NMED

1059 Sampling complete, pump off; Generator off

Note: M. Shendo preserves all samples; D. Fellenz QA's

Summary: Crew successfully samples R-34 (Objective met!)

Note: See pages 40-41 of this log book for parameters, final IV, final parameters, waste info, compliance checklist

1120 Disconnect from transducer, stop logging IV

1125 Crew off site

1200 Relinquish samples to SMO c/o M. Montoya

Event ID: 4200

Sample ID's: CAMO-13-30614, 30618

David Fellenz 5/15/13

5/14/13

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5/15/13

R-34 continued

David Fellenz 5/15/13

Groundwater Sampling Log

Project: FWGMP MY2013	LSD: 6629.99 ft. msl	Well Diameter: 4.5 inches	Date: 5/15/13
Watershed: Mortandad	Water Level: 5831.78 ft. msl	Top of Screen: 5746.28 ft. msl	Notes: NA
Well: R-34	*TD: 920.7' bgs	Bottom of Screen: 5723.28 ft. msl	
Sampling Device: GSP	*DTW: 798.21' bgs	Water Column: 122.49 ft.	
Measuring Point: LSD	Drop Pipe: 32.7 gal.	1CV: 101.2 gal.	Packer Pressure
* Completion Depth: TD		3CV: 303.6 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier) . 3 CV = (1CV x 3)			After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0843	Pump on; 0844 Water to surface								
0857	7.99	16.95	158	5.75	3.4	172.1	5828.01	2.72	clear, odorless, effervescent
0912	8.25	19.49	148	5.06	8.5	148.6	5828.90		
0927	8.33	20.54	151	4.84	13.3	131.1	5828.92		
0942	8.33	21.00	146	5.72	2.8	119.5	5828.91		
0957	8.31	21.30	146	5.73	1.7	110.9	5828.93		163 gal. purged
1012	8.31	21.50	151	5.93	1.4	103.1	5828.94		clear, odorless, effervescent
1027	8.30	21.82	147	6.34	1.1	97.4	5828.94		
1032	8.30	21.85	153	5.74	1.2	95.7	5828.93		
1037	8.30	21.89	151	6.16	1.1	94.2	5828.94		
1042	8.29	21.88	153	6.14	2.3	93.1	5828.94		
1047	8.30	21.71	152	6.26	0.9	91.8	5828.98		
1049	Begin sampling								304.5 gal purged
1059	Sampling complete, pump off								
	David Fellenz 5/15/13								

WASTE

Contact: 1/2 gal.	Drum#: Municipal	Final Water Level: 5829.80' msl	5/15/13
Purge Water: 304.5 gal.	Drum#'s: 10111742	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 340 gal.	550 gal.		

5/15/13

5/15/13

R-34 continued

David Fellenz 5/15/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-34
Date: 5/15/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 32.7 3 CVs: 303.6	34	304.5	3.0	Y N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU) or ± 10%,	Comments:
1037	8.30	151	6.16	1.1	NA
1042	8.29	153	6.14	2.3	
1047	8.30	152	6.26	0.9	
Calculations:	Upper: 8.30 Lower 8.29 Difference: 0.01	Median: 152 Upper 157 Lower 147	Upper: 6.26 Lower 6.14 Difference: 0.12	Median: NA Upper NA Lower NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	NA

5/15/13

David Fellenz 5/15/13

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4205

EVENT NAME: Mortandad/Sandia MY2013 Q3 Discharge Permit Sampling

SAMPLE ID: CAMO-13-31064

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8082-PCB	1 LITER AMBER GLASS	3	ICE		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		Hg analysis only

SAMPLE COMMENTS: Dry not collected AS 5/13/13

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4205 **EVENT NAME:** Mortandad/Sandia MY2013 Q3 Discharge Permit Sampling

SAMPLE ID: CAMO-13-31069 **WORK ORDER:** NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	Ra226+228	1 GAL POLY	1	HNO3		
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GENINORG	1 LITER POLY	1	ICE		TDS, Cl, SO4, and F analysis only
	WSP-GrossA/B	1 LITER POLY	1	NONE		
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		no phosphate analysis
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		TKN analysis only

SAMPLE COMMENTS: Dry BS 5/13/13 Not collected

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4205 **EVENT NAME:** Mortandad/Sandia MY2013 Q3 Discharge Permit Sampling

SAMPLE ID: CAMO-13-31063 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	UF	
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		

SAMPLE COMMENTS:

JS 5/13/13
not collected
DRY

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

Page 1 of 1

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4205

EVENT NAME: Mortandad/Sandia MY2013 Q3 Discharge Permit Sampling

SAMPLE ID: CAMO-13-31070

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		05/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1116	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	BP
LOCATION ID:	MCO-3	↓	FIELD PREP:	F	ok
LOCATION TYPE:	OBS	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	TDS + F analysis only
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	no phosphate analysis
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	TKN analysis only

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen 8.18 mg/L Oxidation-Reduction Potential 226.4 MV pH 6.93 SU

Specific Conductance 850 uS/cm Temperature 7.61 deg C Turbidity 1.5 NTU

COLLECTED BY (PRINT) W. Shaw

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Andrew Stocker (Signature)	5/13/13 1430	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	5/13/13 1430
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 04/30/2013

5/13/13 MCO-3

0600 H+S delegate performed by A. Stacker @ TA-64

0650 XSI #30 calibrated by M. Green @ TA-59, calibration at IP2011-0074

0915 crew: on site, hike to well

crew: A. Stacker, M. Green, W. Shaw

Zero-safety: careful hiking, snakes

weather: 60s-70s, clear

Objective: Purge + sample MCO-3 per SOPs + referenced comments on pg. 3 using a dedicated bladder pump + CO_2 + QED MP15 backpack controller

0918 DTW = 10.08' TOC

1921 DTW = 10.08' TOC, mTD = 10.77' TOC, cTD = 14.40' TOC, WC = 4.32

3 SVR (15 × 0.367 gal/ft × WC) = 1.6 gal
3 SVR = 4.8 gal

0929 pump on, water to surface, @ 25 psi

0936 BEGIN logging parameters on groundwater sampling log, see SOP compliance checklist for stabilizing

1011 Pump paused, ICV purged, parameters stable, prepare to sample

1016 Begin sampling, pump on

1036 Sampling complete, pump off

samples preserved by W. Shaw, A. Stacker QA

1042 hike back to truck, Objectives complete to purge + sample MCO-3 per SOPs

1055 crew offsite

1330 submit samples to SMO, Event ID: 4205, Sample ID: CAMO-13-31070

AS 5/13/13

74

AS 5/13/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 7052.6 ft. msl	Well Diameter: 3 inches	Date: 5/13/13
Watershed: Mortandad	Water Level: NA ft. msl	Top of Screen: 4.4 ft btoc	Notes: NONE
Well: MCO-3	*TD: top of pump: 10.76 btoc	Bottom of Screen: 14.4 ft btoc	
Sampling Device: Bladder pump *SEE	*DTW: 10.02' btoc	Water Column: 4.32 ft.	
Measuring Point: + 2.40'	Drop Pipe: NA gal.	1CV: 1.6 gal.	Packer Pressure
* Completion Depth: 14.40 btoc		3CV: 4.8 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 5/13/13 psi
			After: ____ psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. btoc	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0929	Pump on, water to surface								
0936	6.73	7.86	843	8.27	1.6	226.9	10.10	0.04	Clear, odorless
0941	6.84	7.28	849	8.23	1.8	226.1	10.13	0.04	
0946	6.89	7.20	849	8.16	1.8	226.2	10.13	0.04	
0951	6.92	7.67	851	8.25	1.8	228.9	10.13	0.04	
0956	6.87	7.27	854	8.19	1.7	229.7	10.13	0.04	
1001	6.86	7.20 AS 5/13/13	853	8.18	1.6	230.4	10.13	0.04	
1006	6.89	7.30	852	8.18	1.6	229.0	10.13	0.04	
1011	6.93	7.61	850	8.18	1.5	226.4	10.13	0.04	
1011	Pump paused, 1CV purged, parameters stable, prepare to sample								
1016	Begin Sampling, pump on								
1034	Pump off, sampling complete								
					AS 5/13/13				

WASTE

Contact:	1/2 gal.	Drum#:	10171448 @Sigma	Final Water Level: 10.13 btoc	
Purge Water:	1.6 gal.	Drum#'s:	10171723 @Sigma	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water:	1.7 gal.				

AS 5/13/13

AP 5/13/13 75

SOP-20032 Rev. 1 Compliance Checklist

Well Name: MCO-3
Date: 5/13/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: NA 3 CVs: 4.8	NA	1.6	1	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1001	6.86	853	8.18	1.6	Parameters Stable
1006	6.89	852	8.18	1.6	
1011	6.93	850	8.18	1.5	
Calculations:	Upper: 6.93 Lower: 6.86 Difference: 0.07	Median: 852 Upper: 877.6 Lower: 826.4	Upper: NA Lower: Difference: 0.0 ~~NA~~ 5/13/13	Median: NA Upper: Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met for alluvial wells

AP 5/13/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4205 **EVENT NAME:** Mortandad/Sandia MY2013 Q3 Discharge Permit Sampling

SAMPLE ID: CAMO-13-31071 **WORK ORDER:** NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	MCO-4B		FIELD PREP:	F	
LOCATION TYPE:	OBS		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-GENINORG	1 LITER POLY	1	ICE		TDS + F analysis only
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		no phosphate analysis
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		TKN analysis only

SAMPLE COMMENTS: DRY AS 5/13/13 not collected

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4205

EVENT NAME: Mortandad/Sandia MY2013 Q3 Discharge Permit Sampling

SAMPLE ID: CAMO-13-31072

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	MCO-6		FIELD PREP:	F	
LOCATION TYPE:	OBS		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-GENINORG	1 LITER POLY	1	ICE		TDS + F analysis only
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		no phosphate analysis
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		TKN analysis only

SAMPLE COMMENTS: DRY AS 5/13/13 not collected

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Los Alamos National Laboratory

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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4205

EVENT NAME: Mortandad/Sandia MY2013 Q3 Discharge Permit Sampling

SAMPLE ID: CAMO-13-31073

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			**FIELD MATRIX:**	WG	
TIME COLLECTED (HH:MM):			**MEDIA:**	UA	
PRS ID:			**SAMPLE TECH CODE:**	UA	
LOCATION ID:	MCO-7		**FIELD PREP:**	F	
LOCATION TYPE:	OBS		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-GENINORG	1 LITER POLY	1	ICE		TDS + F analysis only
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		no phosphate analysis
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		TKN analysis only

SAMPLE COMMENTS: Dry not sampled 5/13/13 AS

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/30/2013

Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 7:20 5/1/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew 5/1/13	crew 5/1/13	crew 5/1/13	crew J. Romero
sites JL	sites JL	sites JL	A. Vigil
			sites mobbins Mortandad
			Sandia

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
NO cell phone when driving
Pinch points

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
JL 5/1/13

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status very high
☑ Weather warm 70° high
☑ Hazard Trees
☑ Biological/Environmental Hazards
☐ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☐ Mechanical/Winches/Tools N/A
☐ Electrical N/A
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☐ Sample Collection N/A
☐ Generators N/A
☐ Pressure Systems/Nitrogen Tank Transport N/A
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Jonathan Romero	Jonathan Romero	176877
	ANDREW VIGIL	Alw Vigil	096552

* This form is intended to encourage identification of potential hazards encountered during sampling activities in accordance with Attachment F10-1 of Exhibit F for the Sampling MTOA. It is NOT intended to serve as a comprehensive list of all hazards. Further safety information can be found in applicable ISDs, SOPs, IWDs, etc.

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Watershed/ Monitoring Group/or Dates Included:

Date:

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 7:30 5/2/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew J. Rome
			A. Vigil
sites	sites	sites	sites Land App walk down
JR - 5-2-13	JR 5-2-13	JR - 5-2-13	Pajarito
			mobbing mortandad/Sandia

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
High windy - watch for Trees
Sunscreen

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☒ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
JR - 5-2-13

☒ Emergency/Communications
☒ 2-Hour Check-in Access Control
☒ Point-of-Contact T. McAvland
☒ Fire Danger Status High
☒ Weather windy 50's
☒ Hazard Trees
☒ Biological/Environmental Hazards
☒ Spills/Splashes

☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Personal Protective Equipment (PPE)
☐ Mechanical/Winches/Tools NA
☐ Electrical NA
☒ Vehicle Safety Inspection
☒ Vehicle Operations
☒ Towing

☐ Sample Collection NA
☐ Generators NA
☐ Pressure Systems/Nitrogen Tank Transport NA
☒ TA-64
☒ Ladder Safety
☒ Fire Extinguishers
☒ Special Considerations (Controls)
☒ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Jonathan Romero	Jonathan Romero	176877
	ANDREW VIGIL	Andrew Vigil	096552

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Watershed/ Monitoring Group/or Dates Included:

Date:

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 5/3/2013

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A.VIGIL
			Z. DURAN
sites	sites 5/3/13 A.V.	sites	sites MORTANDAD, SANDIA
			MOBE FOR WATERSHED

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:

ITS FRIDAY SO STAY FOCUSED

FIRE EXINGUISHER UP TO DATE

ITS HOT AND DRY

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
5/3/13 A.V.

☒ Emergency/Communications
☒ 2-Hour Check-in Access Control
☒ Point-of-Contact T. Mc FARLAND
☒ Fire Danger Status HIGH
☒ Weather HIGH OF 63°
☒ Hazard Trees
☒ Biological/Environmental Hazards
☒ Spills/Splashes

☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Personal Protective Equipment (PPE)
☒ Mechanical/Winches/Tools
☐ Electrical N/A
☒ Vehicle Safety Inspection
☒ Vehicle Operations
☒ Towing

☐ Sample Collection N/A
☐ Generators N/A
☐ Pressure Systems/Nitrogen Tank Transport N/A
☒ TA-64
☒ Ladder Safety
☒ Fire Extinguishers
☒ Special Considerations (Controls)
☒ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	ANDREW VIGIL	[signature]	096552
	Zoe Anna Duran	[signature]	151856
	David Fellenz	[signature]	272463

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Watershed/ Monitoring Group/or Dates Included:

Date:

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/6/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew D. Fellenz, W. Starr	crew A. Stoker, ~~D. Woody~~ 5/6/13, M. Shendo	crew	crew A. Vigil, J. Romero
sites R-15 / R-28	sites R-13, R-42	sites 5/6/13	sites Mobilize

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:

- snakes
- walk around generator + truck before transport
- dirt road driving - drive according to road conditions

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status Moderate
☑ Weather 50s - possible T-storm
☑ Hazard Trees
☑ Biological/Environmental Hazards
☑ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☑ Mechanical/Winches/Tools
☑ Electrical
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☑ Sample Collection
☑ Generators
☑ Pressure Systems/Nitrogen Tank Transport
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stoker		238905
	ANDREW VIGIL		096552
	Jonathan Romero		176877
	Maurice Shendo		169197
	William Shaw		254056

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/6/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Kevin Reid	Kevin Reid	111646
David Woody	David Woody	23536d
DAVID FELLENZ	[illegible]	272463
Tracy McFarland	Tracy McF	113022
Beryl Cruz	[illegible]	099183

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/7/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stocker, W. Shaw	crew D. Fellenz	crew	crew A. Vigil
M. Green 5/7/13	M. Shendo, M. Green		J. Romero
sites R-60	sites MCO-5	sites 5/7/13	sites mobe

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Sunscreen
- Pressure systems
- spiders in the we

WATERSHED:
- ☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
- ☑ WM ☐ WL ☑ S Mortandad/ Sandia
- ☐ WM ☐ WL ☐ S Water/ Cañon de Valle
- ☐ WM ☐ WL ☐ S Ancho
- ☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
- ☐ WM ☐ WL ☐ S White Rock

Other Activities: NONE

- ☑ Emergency/Communications
- ☑ 2-Hour Check-in Access Control
- ☑ Point-of-Contact T. McFarland
- ☑ Fire Danger Status Moderate
- ☑ Weather 50s, partly cloudy
- ☑ Hazard Trees
- ☑ Biological/Environmental Hazards
- ☑ Spills/Splashes

- ☑ Slips/Trips/Falls/Lifting
- ☑ Pinch Points/Crushing
- ☑ Personal Protective Equipment (PPE)
- ☑ Mechanical/Winches/Tools
- ☑ Electrical
- ☑ Vehicle Safety Inspection
- ☑ Vehicle Operations
- ☑ Towing

- ☑ Sample Collection
- ☑ Generators
- ☑ Pressure Systems/Nitrogen Tank Transport
- ☑ TA-64
- ☑ Ladder Safety
- ☑ Fire Extinguishers
- ☑ Special Considerations (Controls)
- ☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocker	Stocker	238905
	ANDREW VIGIL	Vigil	096552
	Jonathan Romero	Romero	176877
	Maurice Shendo	[illegible]	167197
	William Shaw	[illegible]	234056

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/7/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Tracy McFarland	Tracy McF	113022
David Fellenz	D Fell	272463
Megan Given	[illegible]	210423

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Watershed/ Monitoring Group/or Dates Included: Mort / Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/8/2013 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew: W Stow, A Stake	crew: D. Fellenz, M. Stenlo, M. Green	crew:	crew: A. Vigil, J Romero
sites: R-62	sites: MCO1-6	sites: AS 5/8/13	sites: mobe, land app, r

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Sun protection
- Fire safety awareness
- Be aware of the Bollards

WATERSHED:
- ☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
- ☑ WM ☐ WL ☑ S Mortandad/ Sandia
- ☐ WM ☐ WL ☐ S Water/ Cañon de Valle
- ☐ WM ☐ WL ☐ S Ancho
- ☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
- ☐ WM ☐ WL ☐ S White Rock

Other Activities: NONE

- ☑ Emergency/Communications
- ☑ 2-Hour Check-in Access Control
- ☑ Point-of-Contact T. McFarland
- ☑ Fire Danger Status Moderate
- ☑ Weather 50s-60s, mostly sunny, possible T-Storm
- ☑ Hazard Trees
- ☑ Biological/Environmental Hazards
- ☑ Spills/Splashes
- ☑ Slips/Trips/Falls/Lifting
- ☑ Pinch Points/Crushing
- ☑ Personal Protective Equipment (PPE)
- ☑ Mechanical/Winches/Tools
- ☑ Electrical
- ☑ Vehicle Safety Inspection
- ☑ Vehicle Operations
- ☑ Towing
- ☑ Sample Collection
- ☑ Generators
- ☑ Pressure Systems/Nitrogen Tank Transport
- ☑ TA-64
- ☑ Ladder Safety
- ☑ Fire Extinguishers
- ☑ Special Considerations (Controls)
- ☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stake	[signature]	238905
	David Fellenz	[signature]	272463
	Megan Green	[signature]	240127
	William Stow	[signature]	234056
	Tracy McFarland	[signature]	113022

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/8/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Kevin Reed	Kevin Reed	111646
Jonathan Romero	Jonathan Romero	176827
ANDREW VIGIL	Andrew Vigil	096552
Maurice Shendo	Maurice Shendo	169197

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/9/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew D. Woody, W. Shaw	crew A. Stocker, D. Felleuz, M. Stenko	crew	crew A.V.S. / JS 5/9/13, Z. Dwan
sites R-44 S1+S2	sites R-45 S1+S2	sites JS 5/9/13	sites Carl Apps

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Wear appropriate PPE
- sunscreen

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status moderate
☑ Weather 50s-60s, mostly sunny, wind
☑ Hazard Trees
☑ Biological/Environmental Hazards
☑ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☑ Mechanical/Winches/Tools
☑ Electrical
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☑ Sample Collection
☑ Generators
☑ Pressure Systems/Nitrogen Tank Transport
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☑ Additional Safety Topics

Meeting Conducted By: Name (*print*)	Signature	Z Number
Alex Stocker	[signature]	238905
David Felleuz	[signature]	272463
D Woody	David Woody	235360
William Shaw	[signature]	234056
ANDREW VIGIL	[signature]	096552

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/9/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Beryl Cruz	Beryl Cruz	099183
Tracy McFarland	Tracy McFarland	113022
Maurice Shendo	[illegible]	169197
Zoe Anna Duran	Zoe Anna Duran	151856

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/10/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew W. Shaw, M. Stenbo	crew A. Stocker, D. Woody	crew	crew D. Fellenz, S. Romero
sites R-35b	sites R-50S1	sites 5/10/13	sites Land apps

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
• Lightning 30/30 rule

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact R. Bohn
☑ Fire Danger Status Moderate
☑ Weather 50s-60s, overcast, solid chance rain
☑ Hazard Trees
☑ Biological/Environmental Hazards
☑ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☑ Mechanical/Winches/Tools
☑ Electrical
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☑ Sample Collection
☑ Generators
☑ Pressure Systems/Nitrogen Tank Transport
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☐ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocker	[signature]	238905
	David Fellenz	[signature]	272463
	D Woody	David Woody	235360
	Kevin Read	[signature]	111646
	William Shaw	[signature]	224056

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Watershed/ Monitoring Group/or Dates Included:

Date:

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Jonathan Romero	Jonathan Romero	176877
Maurice Shendo	Maurice Shendo	169197

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/13/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew D. Fellenz, M Shendo	crew A. Stoke, W Shaw	crew	crew A. Vigil, S. Romero
~~M Green~~ AS 5/13/13	M Green		
sites R-50 S2	sites ~~R-30~~ MCO-3	sites AS 5/13/13	sites LandApp, Mobe
	AS 5/13/13		

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- careful driving mindfulness

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact TM McFarland
☑ Fire Danger Status Moderate
☑ Weather ~~52-60~~, mostly Sunny, 70s AS 5/13/13
☑ Hazard Trees AS 5/13/13
☑ Biological/Environmental Hazards
☑ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☑ Mechanical/Winches/Tools
☑ Electrical
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☑ Sample Collection
☑ Generators
☑ Pressure Systems/Nitrogen Tank Transport
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stoke	[signature]	238905
	Megan Green	[signature]	240127
	David Fellenz	[signature]	272463
	Maurice Shendo	[signature]	169197
	ANDREW VIGIL	[signature]	096552

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/13/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Jonathan Romero	[illegible]	176677
William Shen	[illegible]	234056
Tracy McFarland	[illegible]	113022

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 5/14/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew W. Shaw, D. Fellenz	crew A. Stocker, M. Shendo	crew	crew A. Vigil, J. Romero
sites AS 5/14/13 ~~R-34~~ / R-14	sites R-43 S2 12 CVS	sites AS 5/14/13	sites Land apps, repack

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- snakes
- sunscreen

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact T.M. Ferland
☑ Fire Danger Status Moderate
☑ Weather 70s-80s, possible T-storms
☑ Hazard Trees
☑ Biological/Environmental Hazards
☑ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☑ Mechanical/Winches/Tools
☑ Electrical
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☑ Sample Collection
☑ Generators
☑ Pressure Systems/Nitrogen Tank Transport
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☑ Additional Safety Topics

Meeting Conducted By: Name (*print*)	Signature	Z Number
Andrew Stocker	[signature]	238905
David Fellenz	[signature]	272463
Kevin Read	[signature]	111646
Maurice Shendo	[signature]	169197
William Shaw	[signature]	234056

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/14/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Jonathan Romero	Jonathan Romero	176877
ANDREW VIGIL	Andrew Vigil	096552
Tracy McFarland	Tracy McFarland	113022

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/15/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew R-45 5/15/13	crew D. Fellenz, M. Stenko	crew	crew J. Vigil, J. Romero
A. Stocker, W. Shaw			
sites R-45 R-43 S1	sites R-34	sites 5/15/13	sites Land application
5/15/13			

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- sun protection
- snakes

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status ~~Moderate~~ High
☑ Weather 70s - 80s, sunny, possible T-storm
☑ Hazard Trees
☑ Biological/Environmental Hazards
☑ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☑ Mechanical/Winches/Tools
☑ Electrical
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☑ Sample Collection
☑ Generators
☑ Pressure Systems/Nitrogen Tank Transport
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocker	[signature]	238905
	Tracy McFarland	Tracy McF	113022
	David Fellenz	[signature]	272463
	Jonathan Romero	[signature]	176877
	ANDREW VIGIL	[signature]	096552

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/15/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Maurice Shendo	[illegible]	169197
William Shaw	[illegible]	234056

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 8; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/16/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stocker, D. Fellenz	crew W. Stow, M. Stenclo	crew	crew A. Vigil, J. Romero
sites R-61 S1	sites R-35a	sites 5/16/13	sites Land app

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Sun protection
- Snakes

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities: NONE

☑ Emergency/Communications
☑ 2-Hour Check-in Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status High
☑ Weather 70s-80s, sunny, possible T-storm
☑ Hazard Trees
☑ Biological/Environmental Hazards
☑ Spills/Splashes

☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Personal Protective Equipment (PPE)
☑ Mechanical/Winches/Tools
☑ Electrical
☑ Vehicle Safety Inspection
☑ Vehicle Operations
☑ Towing

☑ Sample Collection
☑ Generators
☑ Pressure Systems/Nitrogen Tank Transport
☑ TA-64
☑ Ladder Safety
☑ Fire Extinguishers
☑ Special Considerations (Controls)
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocker	[signature]	238905
	Tracy McFarland	[signature]	113022
	Jonathan Romero	[signature]	176877
	Maurice Stenclo	[signature]	169197
	Andrew Vigil	[signature]	096552

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/16/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Beryl Cruz	Beryl Cruz	054152
David Fellpuz	D Fellpuz	272463
William Shaw	[illegible]	234058

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/17/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew A. Stocker, W. Shaw, M. Stevens	crew	crew A. Vigil, D. Fellenz
sites 5/17/13	sites SC1-1 + R-36	sites 5/17/13	sites landfills

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- sun protection
- wind
- hydration
- snakes

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status HIGH
☑ Weather 70s-80s, Sunny, possible T-storms
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocker		238905
	William Shaw		234056
	ANDREW VIGIL		096552
	David Fellenz		272463
	Tracy McFarland		113022

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/17/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
Maurice Shendo	[illegible]	169197

Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 5/20/2013 11:00 AM

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Vigil, J. Romero
	5/20/2013 A.V.		
sites	sites	sites	sites Land Application
			GIC. Pick up

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
PPE - Gloves, Shoes, Hard Hat
Pinch points

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
5/20/2013 A.V

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status very High
☒ Weather 50° 60
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☐ Pressure Systems/Nitrogen Tank Transport N/A
☐ Sample Collection N/A
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Andrew Vigil	Andrew Vigil	096552
Jonathan Romero	Jonathan Romero	176877

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Watershed/ Monitoring Group/or Dates Included:
Date:

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number

Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/21/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew W. Shaw, M. Shendo	crew A. Stocker + D. Fellenz	crew	crew A. Virgil, J. Romero
sites SCI-2	sites R-46	sites AR 5/21/13	sites land application

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- sunscreen + sun protection
-

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency Communications/Access Control
☑ Point-of-Contact T McFarland
☑ Fire Danger Status HIGH
☑ Weather 70s-80s, poss. T-Storms
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics_____

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocker	Andrew Stocker	238905
	David Fellenz	D. Fellenz	272463
	William Shaw		234056
	Maurice Shendo		169147
	Jonathan Romero	Jonathan Romero	176877

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Watershed/ Monitoring Group/or Dates Included:

Date: 5/21/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
ANDREW JIGIC	[illegible]	096552
Tracy McFarland	[illegible]	113022

Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 5/22/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew A. Stocker, D. Fellenz, W. Shaw, M. Stendo	crew	crew A. Vigil, J. Romero
sites 5/22/13	sites A-6152	sites 5/22/13	sites Level Apps.

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- sun protection
- snakes
- road conditions

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☑ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status HIGH
☑ Weather 70s, possible T-storms
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter 5/22/13
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocker		238905
	William Shaw		234056
	David Fellenz		272463
	Tracy McFarland		113022
	Jonathan Romero		176977

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Watershed/ Monitoring Group/or Dates Included:
Date: 5/22/13

Daily Tailgate Safety Form (Continued)

Name (*print*)	Signature	Z Number
ANDREW JIGIL	[illegible]	096552
Maurice Shendo	[illegible]	169197
Kevin Reed	[illegible]	111646

Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 5/23/2013

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. VIGIL
	5/23/2013 A.V.		J. Romero
sites	sites	sites	sites LAND APP
			WALKDOWNS

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:

DRIVE SAFE.
OBEY SPEED limets
WARE SEATBELTS

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
5/23/2013 A.V.

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. MCFARLAND
☒ Fire Danger Status VERY HIGH
☒ Weather HOT 70°
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☐ Generators, Electrical N/A

☐ Pressure Systems/Nitrogen Tank Transport N/A
☐ Sample Collection N/A
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics_____

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	ANDREW VIGIL	Andrew Vigil	096552
	Jonathan Romero	Jonathan Romero	176877

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Watershed/ Monitoring Group/or Dates Included:
Date:

Daily Tailgate Safety Form (Continued)		
Name (*print*)	**Signature**	**Z Number**

Appendix G

Communications

FW: Pre-Sweep Results Chromium Group & Discharge Permit
McFarland, Tracy L
to:
Reid, Kevin D, Baucom, Pattie C
04/29/2013 03:21 PM
Cc:
"Paris, Steven M", "Goering, Tim J"
Hide Details
From: "McFarland, Tracy L" <tlmcf@lanl.gov>

To: "Reid, Kevin D" <kreid@terranearpmc.com>, "Baucom, Pattie C" <pbaucom@terranearpmc.com>

Cc: "Paris, Steven M" <smparis@lanl.gov>, "Goering, Tim J" <goering@lanl.gov>

Kevin and Pattie,

I'll let you know what LANL decides about sampling MCO-3. Please note that CDBO-6, MCO-4B, MCO-6, MCO-7, and MCOI-4 are dry.

Thanks,
Tracy

From: Montoya, Consuelo S
Sent: Monday, April 29, 2013 3:11 PM
To: McFarland, Tracy L; Allen, Shannon P
Cc: Pearson, Steven G; Goering, Tim J; Paris, Steven M; Beers, Bob; Alexander, Mike; Schulze, Emily S; Hollowell, Brittany L
Subject: Pre-Sweep Results Chromium Group & Discharge Permit

Tracy,

Water level measurements and data downloads were performed at potentially dry wells scheduled for Q3 Chromium Monitoring Group / Discharge Permit -- Mortandad and Canada del Buey.
Here are the results.

Friday 4.26.13
CDBO-6 -- "DRY" Water in sump only. (total water depth = 3.83 ft. sump depth = 5 ft.)
MCO-3 -- Water depth = **0.9** ft. Sump = 0 ft. -- May be possible to sample.
MCO-4B -- DRY
MCO-6 -- DRY
MCO-7 – DRY

Monday 4.29.13
MCOI-4 – Water depth above sump = 0.3 ft. Insufficient water to sample. DTW = 525.1 ft.*. Top of sump = 525.4 ft.*
*from TOC

Data files and field notes posted to RT folder on server.
Please let me know if you have any questions.

Thanks,
Consuelo

Sampling Work Plan for Mortandad Sandia Q3
Goering, Tim J
to:
Reid, Kevin D
04/16/2013 02:43 PM
Cc:
"Paris, Steven M", "McFarland, Tracy L", "Megan Green (MGreen@terranearpmc.com)", "Baucom, Pattie C"
Hide Details
From: "Goering, Tim J" <goering@lanl.gov>

To: "Reid, Kevin D" <kreid@terranearpmc.com>

Cc: "Paris, Steven M" <smparis@lanl.gov>, "McFarland, Tracy L" <tlmcf@lanl.gov>, "Megan Green (MGreen@terranearpmc.com)" <MGreen@terranearpmc.com>, "Baucom, Pattie C" <pbaucom@terranearpmc.com>

1 Attachment

Sampling Work Plan for Mortandad Sandia Q3 MY2013_r2b.docx

Kevin,

Attached is our draft Sampling Work Plan for Mortandad Sandia Q3. We can review this during our meeting this afternoon.
Thank you.

Tim Goering

04/25/13, Rev 4

Sampling Work Plan for
Mortandad/Sandia Q3 MY2013

R-43 S2: Conduct 12 CV purge. Collect the IFGMP sample per the SOP. Collect time-series samples for the indicator suite at 4, 8, and 12 CVs for analysis at GGRL.

R-50 S1 and S2: Purge R-50 S2 at a rate of approximately 1.5gpm to prevent pump problems.

R-60: Purge at approximately 1.1 gpm to prevent drawdown into the screen. Sampling system pumps at a rate of 1.6 GPM, unrestricted.

R-61 S1 and S2: Field Services will first conduct 2 weeks of extended purging on R-61 S1 and S2. Sampling should be scheduled towards the end of the watershed sampling campaign to ensure that a minimum of 3 days have elapsed following the Field Services redevelopment activities. Sample both screens per the SOP.

R-62: Pump at 2 to 2.5 gpm or the maximum possible flow rate that maintains the water level above the top of the screen.

SCI-1: Sample after 1 CV plus DP have been purged and parameters have stabilized. If the well purges dry before 1CV plus DP have been purged, allow for recharge and sample on the same day in the order of the prioritized suite. Priority suite for Sandia Watershed Chromium Investigation Group locations is metals, general inorganics, VOCs, and SVOCs.

MCOI-4: Sampling system has been permanently removed from MCOI-4 due to persistent low water levels. Bail well dry, allow 24 hours to recover, and sample with bailer. If possible, water levels should be monitored during recovery. Priority suite for MCOI-4 is metals, perchlorate, general inorganics, and tritium.

MCOI-5: Purge at a rate around 0.1- 0.2 GPM (as slow as the pump will allow) to minimize the drawdown into the screen. Even at this low pumping rate, the water level will likely draw down into the screen, which is acceptable at this location. Sample after DP and 1CV have been purged and parameters are stable.

Appendix I

Groundwater Waste Summary

Mortandad.Sandia Q3 2013 —Waste Summary

Location Name	Sample Date	Contact Waste	Purge Water	Decon Water
CDBO-6	.	.	.	.
MCO-3	5/13/2013	0.5	1.7	.
MCO-4B	.	.	.	.
MCO-6	.	.	.	.
MCO-7	.	.	.	.
MCOI-4	.	.	.	.
MCOI-5	5/7/2013	0.5	32.5	.
MCOI-6	5/8/2013	0.5	175	.
R-11	5/13/2013	0.5	200	.
R-13	5/6/2013	0.5	550	.
R-14	5/14/2013	0.5	270	.
R-15	5/6/2013	0.5	300	.
R-28	5/6/2013	0.75	350	.
R-34	5/15/2013	0.5	340	.
R-35a	5/16/2013	0.5	757	.
R-35b	5/10/2013	0.5	239.1	.
R-36	5/17/2013	0.5	176.8	.
R-42	5/6/2013	0.5	210	.
R-43 S1	5/15/2013	0.5	245	.
R-43 S2	5/14/2013	1	350	.
R-44 S1	5/9/2013	0.5	231	.
R-44 S2	5/9/2013	0.5	303.6	.
R-45 S1	5/9/2013	0.5	175	.
R-45 S2	5/9/2013	0.5	340	.
R-46	5/21/2013	0.5	228	.
R-50 S1	5/10/2013	0.5	280	.
R-50 S2	5/13/2013	0.5	370	.
R-60	5/7/2013	0.5	177	.
R-61 S1	5/16/2013	0.5	240	.
R-61 S2	5/22/2013	0.5	310	.
R-62	5/8/2013	0.5	201	.
SCI-1	5/17/2013	0.5	21.6	.
SCI-2	5/21/2013	0.5	30.8	.
Totals		**14.25**	**7103.4**	**0**

*All volumes are given in gallons