SEPTEMBER 2012

On-Post
Quarterly Groundwater Monitoring Report

Prepared For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

January 2013

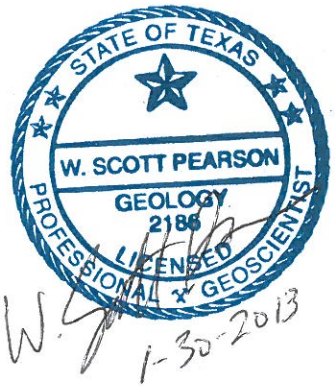
GEOSCIENTIST CERTIFICATION

September 2012 On-post Quarterly Groundwater Monitoring Report

For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

I, W. Scott Pearson, P.G., hereby certify that the September 2012 On-post Quarterly Groundwater Monitoring Report for the Camp Stanley Storage Activity installation in Boerne, Texas accurately represents the site conditions of the subject area. This certification is limited only to geoscientific products contained in the subject report and is made on the basis of written and oral information provided by the CSSA Environmental Office, laboratory data provided by APPL Laboratories, and field data obtained during groundwater monitoring conducted at the site in September 2012, and is true and accurate to the best of my knowledge and belief.



W. Scott Pearson

W. Scott Pearson, P.G.
State of Texas
Geology License No. 2186

January 30, 2013
Date

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

- Ten of fourteen wells scheduled for sampling in September 2012 were sampled. Three wells were not sampled due to water levels being depressed below the sample pump depths. The CS-1 pump house is being remodeled and the well was not available for water level gauging or sampling. One well, CS-MW9-BS, was added to the schedule.
- Average groundwater elevations in September 2012 decreased 35.02 feet from the elevations measured in June 2012. Since May 1, 2012, the San Antonio area (Edwards Aquifer) has been in Stage 2 water restrictions. Locally around the CSSA area, the Trinity Glen Rose Groundwater Conservation District remains under stage 2 severe drought water restrictions, which went into effect June 1, 2011. The average depth to water in the Lower Glen Rose (LGR) screened wells was 300.21 feet below top of casing (BTOC) or 953.71 feet above mean sea level (msl).
- The MCL was exceeded in monitoring wells CS-MW1-LGR and CS-MW36-LGR for tetrachlorethene (PCE) and trichloroethene (TCE) in September 2012.
- Well CS-9 had lead and mercury detections above the action level (AL) and maximum contaminant level (MCL), respectively.
- Thirty-nine of the forty-six Westbay zones were sampled in September 2012; 7 zones were not sampled because they were dry. Fourteen zones had PCE and/or TCE detections above the MCL. An additional 12 zones had VOC detections above the RL.

SEPTEMBER 2012
GROUNDWATER MONITORING REPORT
CAMP STANLEY STORAGE ACTIVITY, TEXAS

1.0 INTRODUCTION

This report presents results from the on-post quarterly sampling performed at Camp Stanley Storage Activity (CSSA) in September 2012. Laboratory analytical results are presented along with potentiometric contour figures. The purpose of this report is to present a summary of the September 2012 sampling results. Results from all four 2012 quarterly monitoring events (March, June, September, and December) will be described in detail in an Annual Report. The Annual Report will also provide an interpretation of all analytical results and an evaluation of any temporal or spatial trends observed in the groundwater contaminant plume during investigations. Groundwater monitoring was performed September 4 through 14, 2012.

Current objectives of the groundwater monitoring program are to determine groundwater flow direction and elevations, determine groundwater contaminant concentrations for characterization purposes, and identify meteorological and seasonal variations in physical and chemical properties. **Appendix A** identifies the data quality objectives (DQO) for CSSA's groundwater monitoring program, along with an evaluation of whether each DQO was attained. The objectives listed in **Appendix A** also reference appropriate sections of the **3008(h) Administrative Order on Consent** (Order).

The CSSA groundwater monitoring program follows the provisions of the groundwater monitoring program DQOs as well as the recommendations of the **Three-Tiered Long Term Monitoring Network Optimization Evaluation (Parsons, 2010)** which provided recommendations for sampling based on a long-term monitoring optimization (LTMO) study performed for the CSSA groundwater monitoring program. LTMO study sampling frequencies were implemented on-post in December 2005, as approved by the Texas Commission on Environmental Quality (TCEQ) and the United States Environmental Protection Agency (USEPA). The LTMO evaluation was updated in 2010 using groundwater data from monitoring conducted between 2005 and 2009. It has been approved by the TCEQ and USEPA and was implemented on- and off-post in June 2011.

2.0 POST-WIDE FLOW DIRECTION AND GRADIENT

Fifty-four water level measurements were recorded on September 10, 2012 from on-post monitoring wells completed in the Lower Glen Rose (LGR), Bexar Shale (BS), and Cow Creek (CC) formations. The groundwater potentiometric surface maps illustrating groundwater elevations from the LGR, BS, and CC zones in September 2012 are shown in **Figures 2-1, 2-2, and 2-3**.

The September 2012 potentiometric surface map for LGR-screened wells **(Figure 2-1)** exhibited a wide range of groundwater elevations, from a minimum of 886.34 feet above mean sea level (msl) at CS-MW11A-LGR to a maximum of 1008.25 feet above msl at CS-MWG-LGR. Groundwater elevations are generally higher in the northern and central portions of CSSA, and decrease to the southwest and southeast. Average groundwater elevations in September 2012 decreased 35.02 feet from the elevations measured in June 2012. From June 20 to September 17, 2012, the southern weather station at AOC-65 (WS AOC-65) recorded 9.95 inches of rainfall during 18 rainfall events in this timeframe. The rainfall was sporadic with four events having greater than one inch of rainfall; three of these four events occurred between September 13-16, 2012. A new weather station is being installed in place of the northern weather station at SWMU B-3. It began collecting usable data October 17, 2012; this data will be included in future reports. The aquifer continued to decline after a significant rebound in early 2012. San Antonio fell back into stage 2 water restrictions on May 1, 2012 and the Trinity Glen Rose Groundwater Conservation District remains in stage 2 severe drought water restrictions, effective since June 1, 2011.

Well CS-MW4-LGR, located in the central portion of CSSA, typically has one of the highest groundwater elevations of LGR-screened wells. Under average and above-average aquifer elevations, the groundwater level is 20 to 30 feet higher than the nearest comparable wells (CS-MW2-LGR and CS-MW5-LGR), creating a pronounced groundwater mound in the central portion of the facility. In September 2012 this mounding effect was muted, as the elevation in CS-MW4-LGR was only 1 and 4 feet higher than CS-MW2-LGR and CS-MW5-LGR, respectively. Long-term monitoring has ascertained that when groundwater in the vicinity of CS-MW4-LGR rises above about 970 feet msl, the mounding effect is evident. As measured in September 2012, the water elevation at CS-MW4-LGR was 969.00 feet msl, and the typical mounding effect was not present.

It should be noted that well pumping on and around CSSA affects the potentiometric surface. On-post wells CS-MW16-LGR, CS-MW16-CC, B3-EXW01, and B3-EXW02 were pumped periodically to the SWMU B-3 Bioreactor between June and September 2012. CSSA drinking water wells CS-1, CS-10, and CS-12 are cycled on and off to maintain the drinking water system currently in place at CSSA. Influence from the pumping of wells CS-12, CS-MW16-LGR, B3-EXW01, and B3-EXW02 is evident in **Figure 2-1,** and CS-MW16-CC in **Figure 2-3**. Off-post water supply wells along Ralph Fair Road may also exert a subtle influence to gradients along the western and southern boundaries of the post.

Historical groundwater monitoring at CSSA has demonstrated that the aquifer gradient typically slopes in a south-southeast direction (**Figure 2-1**). The potentiometric surface in both the BS and CC members of the aquifer generally trend in a southerly direction (**Figures 2-2 and 2-3**). However, variable aquifer levels and well pumping scenarios all can affect the localized

and regional gradients. In particular, pumping action at wells CS-1, CS-10, CS-MW16-LGR/CC, B3-EXW01, B3-EXW02, CS-I, and even off-post wells (Fair Oaks Ranch) can significantly alter the LGR groundwater gradient. The regional gradient calculation, an overall groundwater gradient averaged across CSSA, is measured from CS-MWH-LGR to CS-MW21-LGR. For September 2012, the overall LGR groundwater gradient is to the south-southeast at 0.00455 ft/ft.

Groundwater elevations have been measured and recorded since 1992. Previous droughts resulted in water levels decreasing substantially in 1996, 1999, 2000, 2006, 2008, and 2009. In late 2009 recovery from the effects of the 2008/2009 drought began. In September 2010, water levels began to drop at a significant rate and continued to fall through September 2011. Water levels in September 2011 were below those measured during the 2006 drought, and correspond closely to historical drought levels reported during 2009. The aquifer began to recover at the end of 2011 as rainfall increased. Continued rainfall in early 2012 allowed the aquifer to recover dramatically. However, rainfall amounts began dropping again in April 2012, with only 0.06 inches falling the entire month. Although 9.95 inches of rain fell between June and September 2012, the aquifer continued to decrease. The severely stressed vegetation and depleted rivers and lakes appear to have absorbed most of the rainfall before it was able to enter the aquifer.

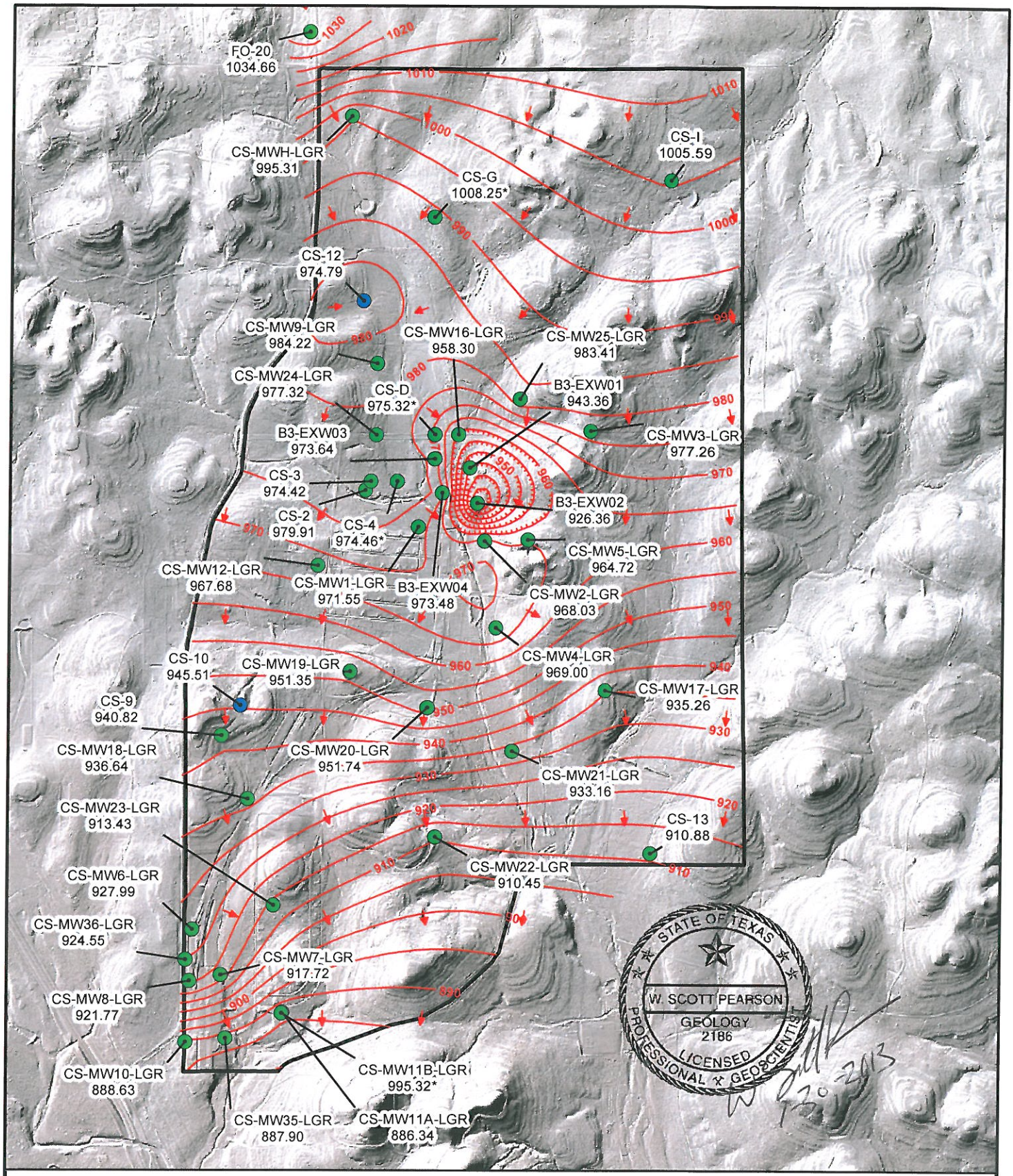


Figure 2-1

September 2012 Potentiometric Surface Map, LGR Wells

Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\Groundwater\Maps\csm_figs\Sept12_potentiometric_lgr.mxd - 11/13/2012 @ 4:39:17 PM

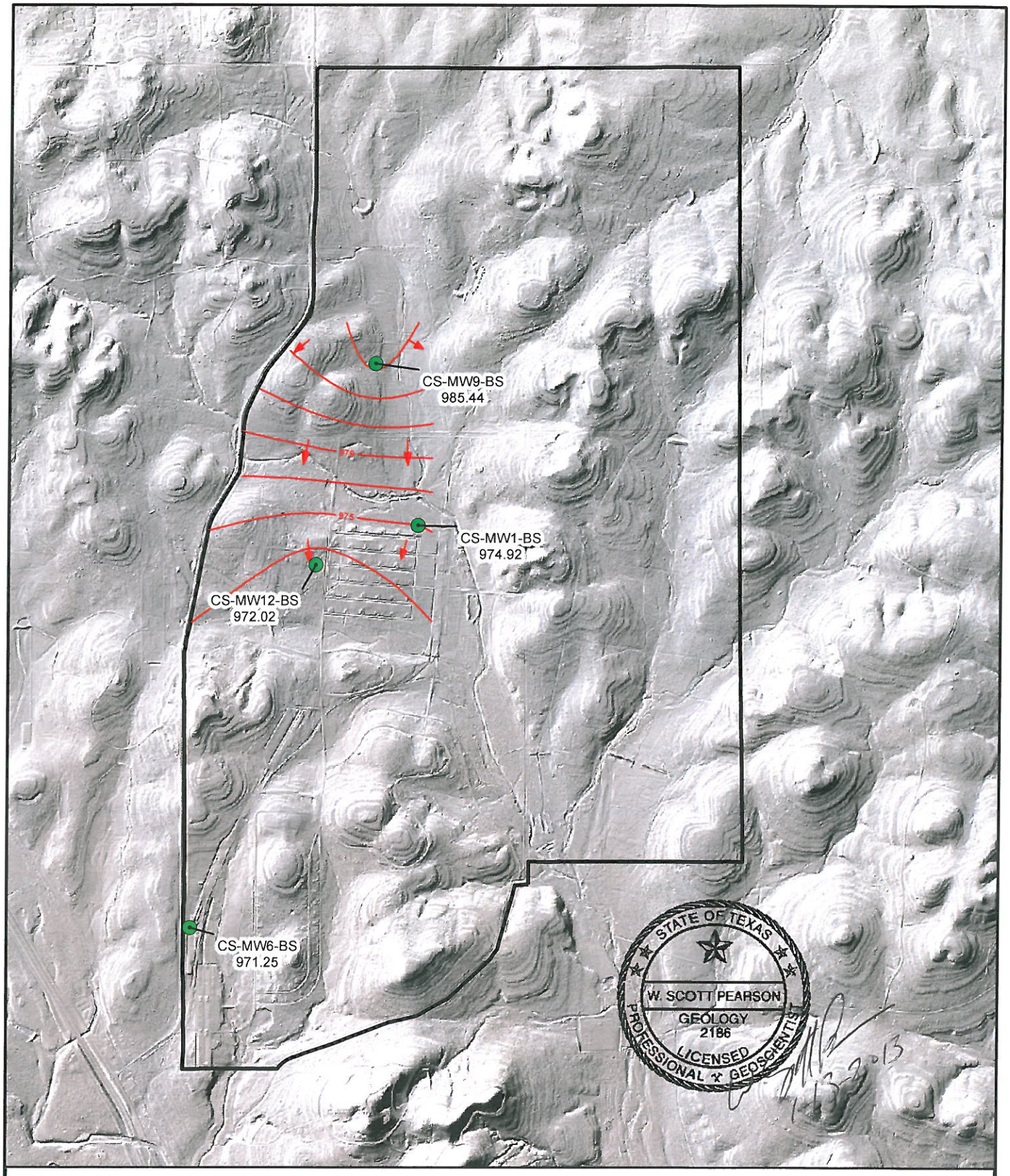


Figure 2-2

September 2012 Potentiometric Surface Map, BS Wells

Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\Groundwater\Maps\csm_figs\Sept12_potentiometric_bs.mxd - 11/13/2012 @ 4:47:36 PM

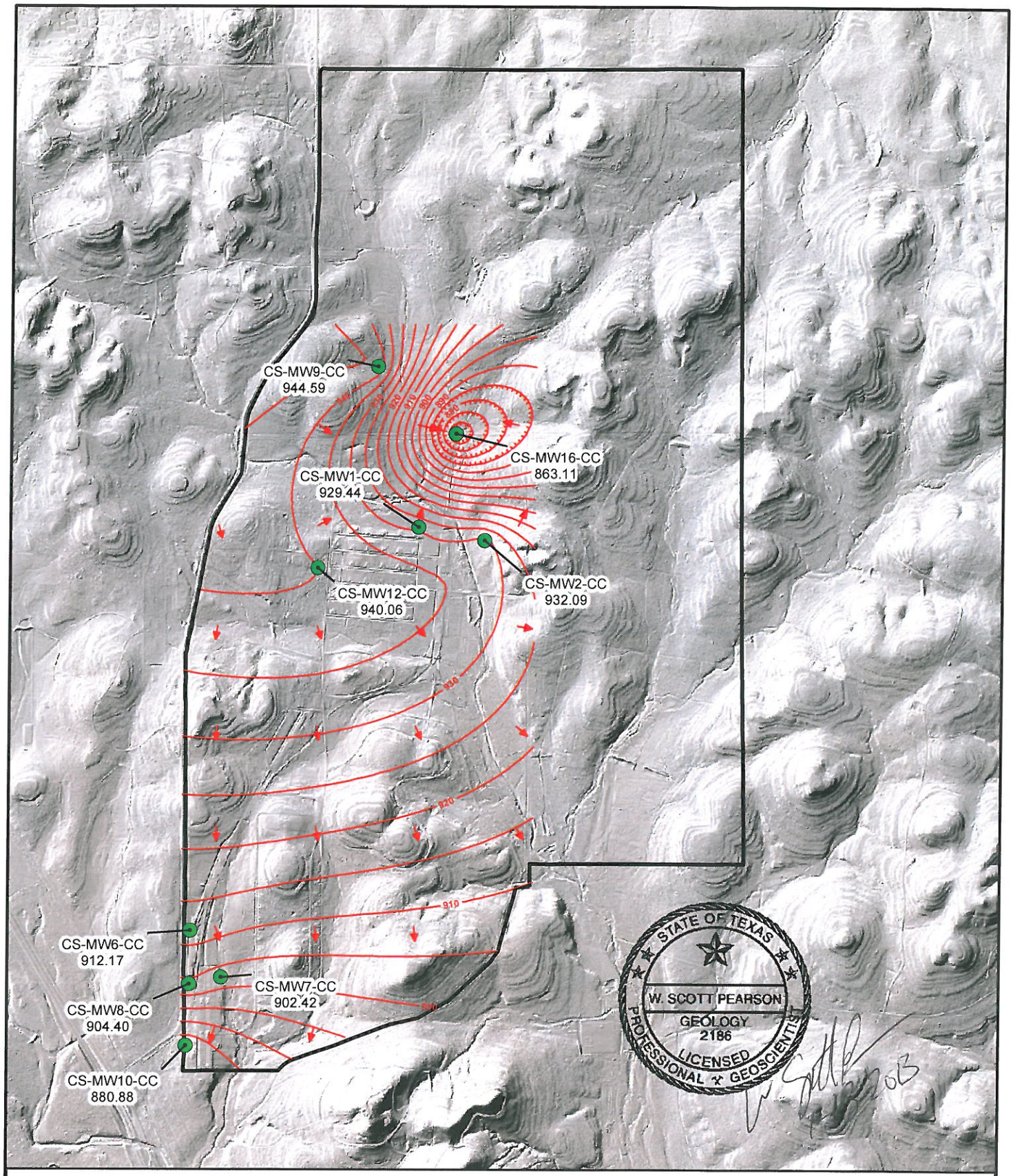


Figure 2-3

September 2012 Potentiometric Surface Map, CC Wells

Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\Groundwater\Maps\csm_figs\Sept12_potentiometric_cc.mxd - 11/13/2012 @ 4:51:26 PM

3.0 SEPTEMBER ANALYTICAL RESULTS

3.1 Monitoring Wells

Under the provisions of the groundwater monitoring DQOs and the 2010 LTMO evaluation, the schedule for sampling on-post in September 2012 included 14 wells. Three wells (CS-MW10-LGR, CS-4, CS-D) were not sampled due to low water levels. Well CS-1 was not sampled because the well house was being renovated by construction activities. Well CS-MW9-BS was added to the sampling schedule to verify if extra development of the well had an effect on previous lead detections. **Tables 3-1** and **3-2** provide a sampling overview for September 2012 and the schedule under the LTMO recommendations. All monitoring wells were sampled using dedicated low-flow gas-operated bladder pumps. Wells CS-9, CS-10, and CS-12, were sampled using dedicated submersible pumps. **Figure 3-1** shows well sampling locations.

Wells sampled by low-flow pumps were purged until the field parameters of pH, temperature, and conductivity stabilized. The on-post monitoring wells were sampled in September 2012 for the short list of volatile organic compounds (VOC) and metals (chromium, cadmium, lead, and mercury). Drinking water wells CS-10 and CS-12 were analyzed for the short list VOCs and metals (arsenic, barium, chromium, copper, zinc, cadmium, mercury, and lead). Samples were analyzed by APPL Laboratories in Clovis, California. All detected concentrations of VOCs and metals are presented in **Table 3-3** and **Table 3-4**. Full analytical results are presented in **Appendix B** and **Appendix C**.

PCE was detected above the MCL in two on-post wells sampled this quarter, CS-MW1-LGR and CS-MW36-LGR. Well CS-9 showed metals were detected above the MCL and AL for mercury and lead, respectively.

Results from on-post monitoring wells are considered definitive data and are subject to data validation and verification under provisions of the CSSA Quality Assurance Project Plan (QAPP). Parsons data packages numbered 748350-#65, -#69, and -#70, containing the analytical results from this sampling event were received by Parsons September 24 through October 5, 2012. Data validation was conducted and the data validation reports are presented in **Appendix D**.

3.2 Westbay-equipped Wells

Under the provisions of the groundwater monitoring LTMO recommendations, all 46 zones from Westbay wells CS-WB01, CS-WB02, CS-WB03, and CS-WB04 were scheduled for sampling in September 2012. These wells were also profiled to capture water level readings. These Westbay wells are located in the vicinity of AOC-65, and are part of the basewide quarterly groundwater monitoring program. The UGR/LGR zones are sampled on a 9-month schedule, and the BS/CC zones are sampled on an 18-month schedule, as recommended in the LTMO.

There are four other Westbay wells (CS-WB05, CS-WB06, CS-WB07, and CS-WB08) that are located at the SWMU B-3 remediation site. Those wells are sampled on a separate schedule in association with the SWMU B-3 bioreactor monitoring. Results for those wells are presented in the SWMU B-3 Performance Status Reports.

Table 3-1
Overview of the On-Post Monitoring Program

Count	Well ID	*Analytes*	*Last Sample Date*	*Dec-11*	*Mar-12 (snapshot)*	*Jun-12*	*Sep-12*	*Sampling Frequency **
1	CS-MW1-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	NS	S	Semi-annual + 9 month snapshot
	CS-MW1-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-MW1-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
2	CS-MW2-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	NS	S	Semi-annual + 9 month snapshot
	CS-MW2-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NS	NS	NS	NS	Every 18 months
	CS-MW3-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW4-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW5-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW6-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW6-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-MW6-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NS	NS	NS	NS	Every 18 months
	CS-MW7-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW7-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NS	NS	NS	NS	Every 18 months
3	CS-MW8-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	NS	S	Semi-annual + 9 month snapshot
	CS-MW8-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-MW9-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-MW9-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW9-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
4	CS-MW10-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	NS	S	Semi-annual + 9 month snapshot
	CS-MW10-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NS	NS	NS	NS	Every 18 months
5	CS-MW11A-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	NS	S	Semi-annual + 9 month snapshot
	CS-MW11B-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NS	NSWL	NS	NS	Every 9 months
	CS-MW12-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW12-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-MW12-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NS	NS	NS	NS	Every 18 months
	CS-MW16-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW16-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CW-MW17-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW18-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW19-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
6	CS-1	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-12	S	S	S	S	Quarterly
	CS-2	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-3	sampled as needed, no pump	Dec-99	NS	NS			NS
7	CS-4	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NSWL	S	NS	S	Semi-annual + 9 month snapshot
8	CS-9	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	S	S	Quarterly
9	CS-10	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-12	S	S	S	S	Quarterly
	CS-11	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-09	NS	NS			NS
10	CS-12	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-12	S	S	S	S	Quarterly
11	CS-D	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NSWL	S	NS	S	Semi-annual + 9 month snapshot
	CS-MWG-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-MWH-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-I	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	NS	NS	NS	NS	Every 18 months
	CS-MW20-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW21-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW22-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
	CS-MW23-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
12	CS-MW24-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	NS	S	Semi-annual + 9 month snapshot
	CS-MW25-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	S	NS	NS	Every 9 months
13	CS-MW35-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	S	S	
14	CS-MW36-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	S	S	S	S	

* New LTMO sampling frequency implemented June 2011
S = Sample
NS = No Sample
NSWL = No Sample due to low water level

Table 3-2
Westbay Sampling Frequency

Westbay Interval	Last Sample Date	Jun-11 (snapshot)	Sep-11	Dec-11	Mar-12 (snapshot)	Jun-12	Sep-12	LTMO Sampling Frequency (as of June '11)
CS-WB01-UGR-01	Dec-04	NS	NS	Dry	NS	NS	S	Every 9 months
CS-WB01-LGR-01	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-02	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-03	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-04	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-05	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-06	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-07	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-08	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB01-LGR-09	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB02-UGR-01	Dec-04	NS	NS	Dry	NS	NS	S	Every 9 months
CS-WB02-LGR-01	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB02-LGR-02	Mar-10	NS	NS	Dry	NS	NS	S	Every 9 months
CS-WB02-LGR-03	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB02-LGR-04	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB02-LGR-05	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB02-LGR-06	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB02-LGR-07	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB02-LGR-08	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB02-LGR-09	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB03-UGR-01	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB03-LGR-01	Sep-10	NS	NS	Dry	NS	NS	S	Every 9 months
CS-WB03-LGR-02	Oct-07		NS	Dry	NS	NS	S	Every 9 months
CS-WB03-LGR-03	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB03-LGR-04	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB03-LGR-05	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB03-LGR-06	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB03-LGR-07	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB03-LGR-08	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB03-LGR-09	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB04-UGR-01	Mar-04	NS	NS	Dry	NS	NS	S	Every 9 months
CS-WB04-LGR-01	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-LGR-02	Mar-10	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-LGR-03	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-LGR-04	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-LGR-06	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB04-LGR-07	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB04-LGR-08	Dec-11	NS	NS	S	NS	NS	S	Every 9 months
CS-WB04-LGR-09	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB04-LGR-10	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB04-LGR-11	Mar-12	S	NS	S	S	NS	S	Every 9 months + snapshot
CS-WB04-BS-01	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-BS-02	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-CC-01	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-CC-02	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months
CS-WB04-CC-03	Mar-11	NS	NS	NS	NS	NS	S	Every 18 months

Profiling performed quarterly, in conjunction with post wide water levels.

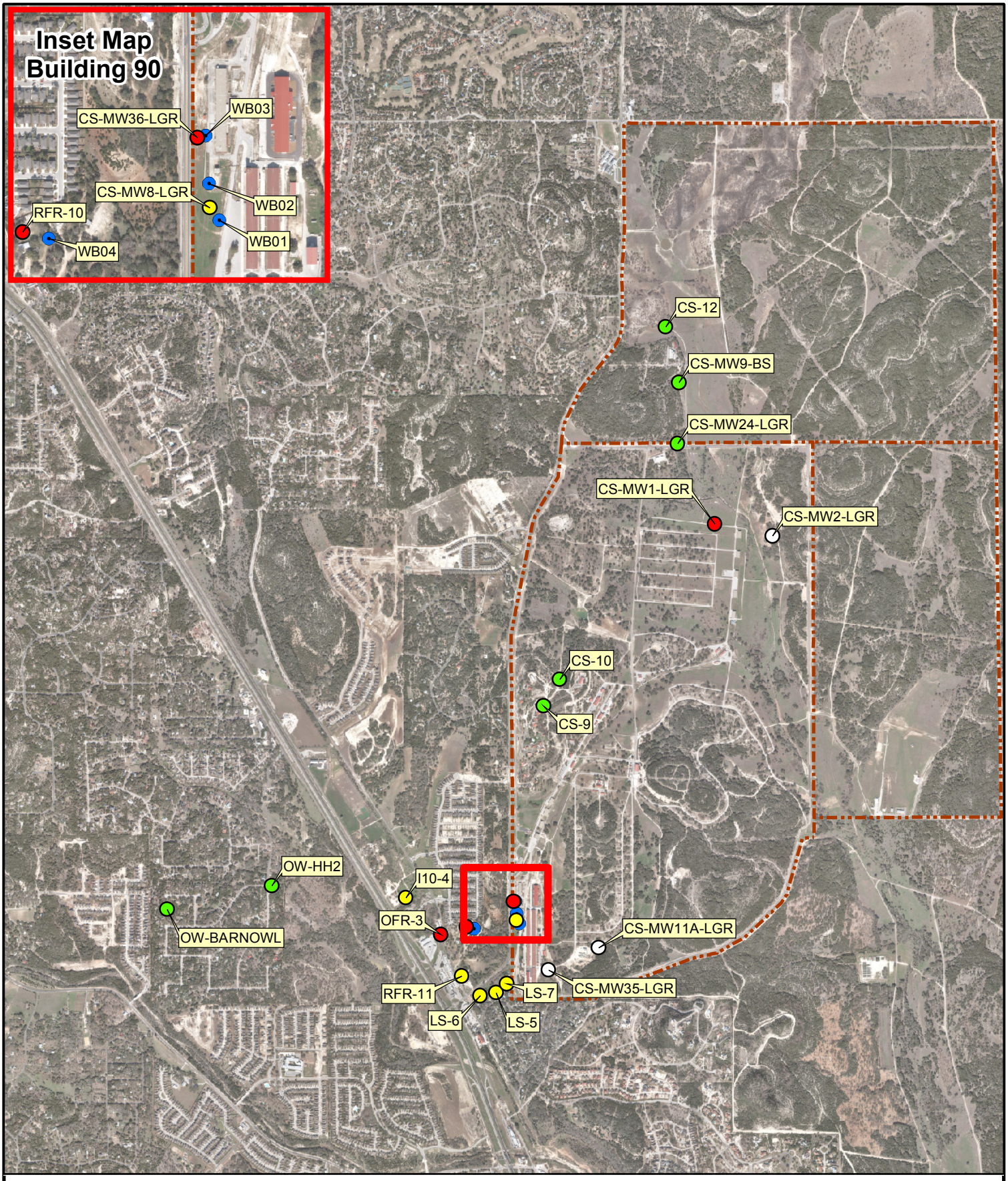


Figure 3-1

On-Post and Off-Post Well Sampling Locations for September 2012
Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\Groundwater\Maps\Sept12_Sampled_Wells.mxd - 11/13/2012 @ 12:51:08 PM

Table 3-3
September 2012 On-post Quarterly Groundwater Results, Detected Analytes

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury	Comments
CS-MW1-LGR	9/11/2012	NA	NA	--	**0.01**	NA	--	NA	--	Highest chromium detection was in 3/2009 at 0.102 mg/L
CS-MW2-LGR	9/11/2012	NA	NA	--	--	NA	--	NA	**0.0002F**	Last and only other mercury detection was in 6/2003, below the RL
CS-MW8-LGR	9/11/2012	NA	NA	--	**0.006F**	NA	--	NA	**0.0002F**	Sporadic chromium detections since 2005, last mercury detection was in 2001
CS-MW9-BS	9/11/2012	NA	NA	--	**0.004F**	NA	--	NA	**0.0002F**	Lead has been above the AL since 2007, the well was purged in 6/2012 to clean out silt building up on the bottom of the well
CS-MW11A-LGR	9/11/2012	NA	NA	--	**0.005F**	NA	--	NA	**0.0002F**	Sporadic chromium detections since 2009, last mercury detection was in 2005
CS-MW24-LGR	9/11/2012	NA	NA	--	**0.002F**	NA	--	NA	**0.0002F**	
CS-MW35-LGR	9/12/2012	NA	NA	--	--	NA	--	NA	--	Last chromium detection in 12/2011.
CS-MW35-LGR FD	9/12/2012	NA	NA	--	**0.002F**	NA	--	NA	--	
CS-MW36-LGR	8/30/2012	NA	NA	--	--	NA	--	NA	--	Lead detected below the RL last quarter 6/2012
CS-9	9/12/2012	NA	NA	--	**0.004F**	NA	**0.028**	NA	**0.0041**	Lead and mercury sporadically above the AL/MCL since 6/2006
CSSA Drinking Water Well System										
CS-10	9/12/2012	--	**0.0407**	--	**0.012**	--	--	**0.065**	--	Barium consistently detected in this well, chromium last detected 9/2011
CS-12	9/12/2012	--	**0.0312**	--	**0.003F**	--	--	**0.121**	--	Barium and zinc detected consistently above the RL.
CS-12 FD	9/12/2012	--	**0.033**	--	**0.004F**	**0.004F**	--	**0.13**	--	
Comparison Criteria										
Method Detection Limit (MDL)		**0.00022**	**0.0003**	**0.0005**	**0.001**	**0.003**	**0.0019**	**0.008**	**0.0001**	
Reporting Limit (RL)		**0.03**	**0.005**	**0.007**	**0.01**	**0.01**	**0.025**	**0.05**	**0.001**	
Max. Contaminant Level (MCL)		**0.01**	**2**	**0.005**	**0.1**	**AL=1.3**	**AL=0.015**	**SS=5.0**	**0.002**	

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Comments
CS-MW1-LGR	9/11/2012	--	**16.93**	**0.20F**	**13.01**	**28.05**	--	PCE and TCE consistently above the MCL.
CS-MW2-LGR	9/11/2012	--	**0.53F**	--	--	--	--	Additional purging of well was performed in 6/2012 to address high pH (pH=10.3 in 3/12), pH = 7.9 at time of sampling.
CS-MW8-LGR	9/11/2012	--	--	--	**1.83**	--	--	No significant change in analytical results after ISCO injection in 8/2012.
CS-MW9-BS	9/11/2012	--	--	--	--	--	--	No PCE or TCE ever detected in this well.
CS-MW11A-LGR	9/11/2012	--	--	--	**1.22F**	--	--	Consistent PCE detections; TCE only detected once in 2009, below the RL.
CS-MW24-LGR	9/11/2012	--	--	--	--	--	--	No PCE or TCE ever detected in this well, well first sampling in 2007.
CS-MW35-LGR	9/12/2012	--	--	--	**1.17F**	--	--	PCE consistently detected just above and below the RL. TCE never detected in this well.
CS-MW35-LGR FD	9/12/2012	--	--	--	**1.19F**	--	--	
CS-MW36-LGR	8/30/2012	--	**1.72**	--	**20.94**	**55.22**	--	Significant increase in PCE & TCE levels, likely due to ISCO injection in 8/2012.
CS-9	9/12/2012	--	--	--	--	--	--	PCE/TCE last detected in this well in 2004.
CSSA Drinking Water Well System								
CS-10	9/12/2012	--	--	--	--	--	--	PCE/TCE last detected in this well in 2010.
CS-12	9/12/2012	--	--	--	--	--	--	No VOC's ever detected in this well.
CS-12 FD	9/12/2012	--	--	--	--	--	--	
Comparison Criteria								
Method Detection Limit (MDL)		**0.12**	**0.07**	**0.08**	**0.06**	**0.05**	**0.08**	
Reporting Limit (RL)		**1.2**	**1.2**	**0.6**	**1.4**	**1**	**1.1**	
Max. Contaminant Level (MCL)		**7**	**70**	**100**	**5**	**5**	**2**	

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

Precipitation per Quarter:	Mar-12	Jun-12	Sep-12
Weather Station South (WS AOC-65):	8.58	5.83	9.95

All samples were analyzed by APPL, Inc.
VOC data reported in ug/L & metals data reported in mg/L.

Abbreviations/Notes:

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene
AL	Action Level
SS	Secondary Standard
NA	Not Analyzed for this parameter

Data Qualifiers

--The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
F-The analyte was positively identified but the associated numerical value is below the RL.

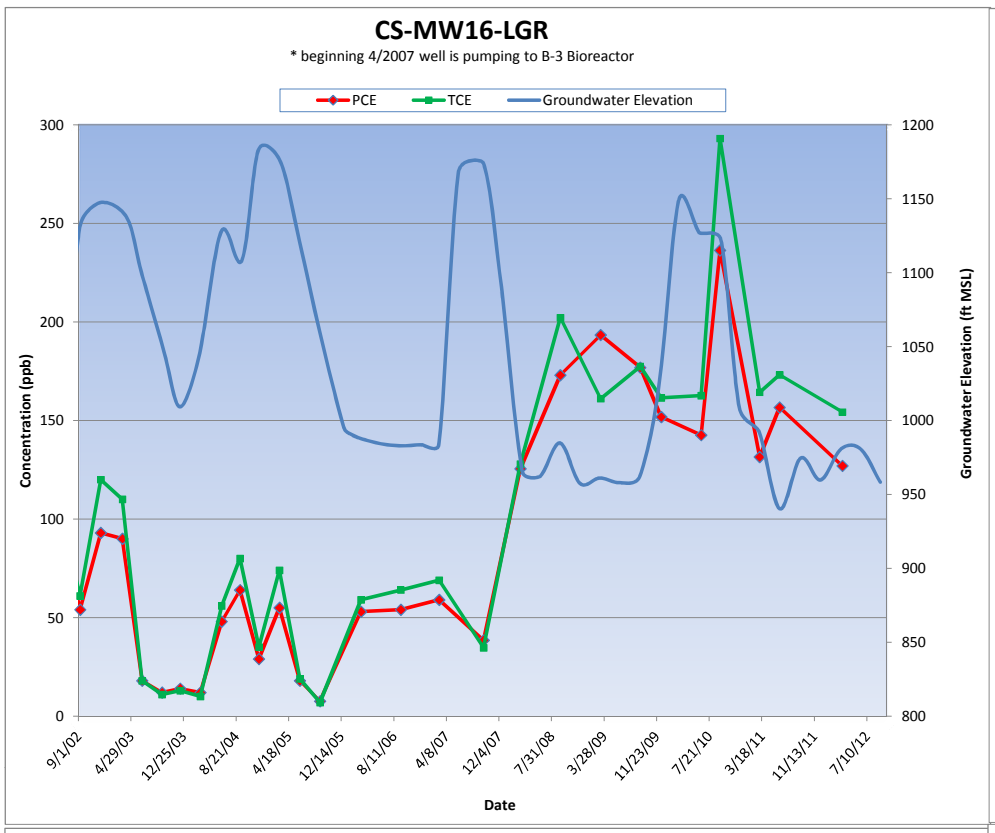
Table 3-4
September 2012 Westbay Results, Detected Analytes

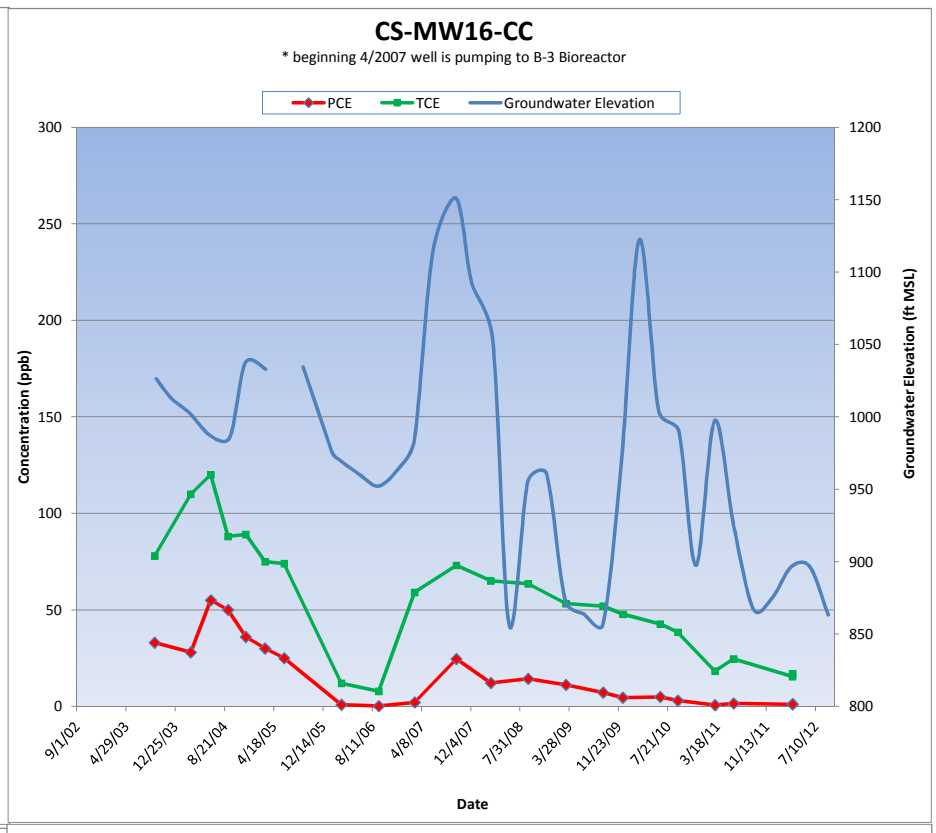
Well ID	Date Sampled	1,1-DCE (1,1-dichloroethene)	cis-1,2-DCE (cis-1,2-dichloroethene)	TCE (trichloroethene)	PCE (tetrachloroethene)	trans-1,2-DCE (trans-1,2-dichloroethene)	Vinyl Chloride
CS-WB01-LGR-01	9/4/2012	--	--	0.18F	3.47	--	--
CS-WB01-LGR-02	9/4/2012	--	--	4.04	14.34	--	--
CS-WB01-LGR-03	9/4/2012	--	--	8.53	2.32	--	--
CS-WB01-LGR-04	9/4/2012	--	--	0.14F	--	--	--
CS-WB01-LGR-05	9/4/2012	--	--	0.20F	0.12F	--	--
CS-WB01-LGR-06	9/4/2012	--	0.31F	1.86	0.20F	--	--
CS-WB01-LGR-07	9/4/2012	--	0.20F	12.49	14.67	--	--
CS-WB01-LGR-08	9/4/2012	--	0.95F	6.85	3.15	--	--
CS-WB01-LGR-09	9/4/2012	--	0.39F	19.23	14.79	--	--
CS-WB02-LGR-01	9/4/2012	--	--	1.18	0.55F	--	--
CS-WB02-LGR-03	9/4/2012	--	--	2.75	4.99	--	--
CS-WB02-LGR-04	9/4/2012	--	--	9.48	3.12	--	--
CS-WB02-LGR-05	9/4/2012	--	--	3.73	1.05F	--	--
CS-WB02-LGR-06	9/4/2012	--	--	4.01	1.53	--	--
CS-WB02-LGR-07	9/4/2012	--	0.55F	0.47F	--	--	--
CS-WB02-LGR-08	9/4/2012	--	2.41	0.89F	0.68F	0.66	--
CS-WB02-LGR-09	9/4/2012	--	0.31F	12.02	13.55	--	--
CS-WB03-UGR-01	9/5/2012	--	1.51	98.96	8081.86*	--	--
CS-WB03-LGR-03	9/5/2012	--	0.26F	9.27	18.09	--	--
CS-WB03-LGR-04	9/5/2012	--	--	8.39	15.15	--	--
CS-WB03-LGR-05	9/5/2012	--	--	5.51	14.63	--	--
CS-WB03-LGR-06	9/5/2012	--	0.71F	0.56F	3.29	--	--
CS-WB03-LGR-07	9/5/2012	--	6.54	2.51	1.04F	--	--
CS-WB03-LGR-08	9/5/2012	--	6.06	2.13	1.11F	--	--
CS-WB03-LGR-09	9/5/2012	--	11.52	3.75	3.47	--	--
CS-WB04-LGR-01	9/6/2012	--	--	--	0.57F	--	--
CS-WB04-LGR-03	9/6/2012	--	--	--	0.25F	--	--
CS-WB04-LGR-04	9/6/2012	--	0.10F	0.22F	0.41F	--	--
CS-WB04-LGR-06	9/6/2012	--	2.59	8.63	26.13	0.20F	--
CS-WB04-LGR-07	9/6/2012	--	2.25	8.06	23.42	0.20F	--
CS-WB04-LGR-08	9/6/2012	--	--	0.69F	0.38F	--	--
CS-WB04-LGR-09	9/6/2012	--	--	5.68	7.35	--	--
CS-WB04-LGR-10	9/6/2012	--	--	0.54F	1.20F	--	--
CS-WB04-LGR-11	9/6/2012	--	--	--	0.27F	--	--
CS-WB04-BS-01	9/6/2012	--	--	--	0.19F	--	--
CS-WB04-BS-02	9/6/2012	--	0.10F	--	0.33F	--	--
CS-WB04-CC-01	9/6/2012	--	0.60F	--	0.26F	--	--
CS-WB04-CC-02	9/6/2012	--	--	--	0.47F	--	--
CS-WB04-CC-03	9/6/2012	--	--	--	2.71	--	--
Comparison Criteria							
Method Detection Limit	MDL	0.12	0.07	0.05	0.06	0.08	0.08
Reporting Limit	RL	1.2	1.2	1	1.4	0.6	1.1
Max. Contaminant Level	MCL	7	70	5	5	100	2

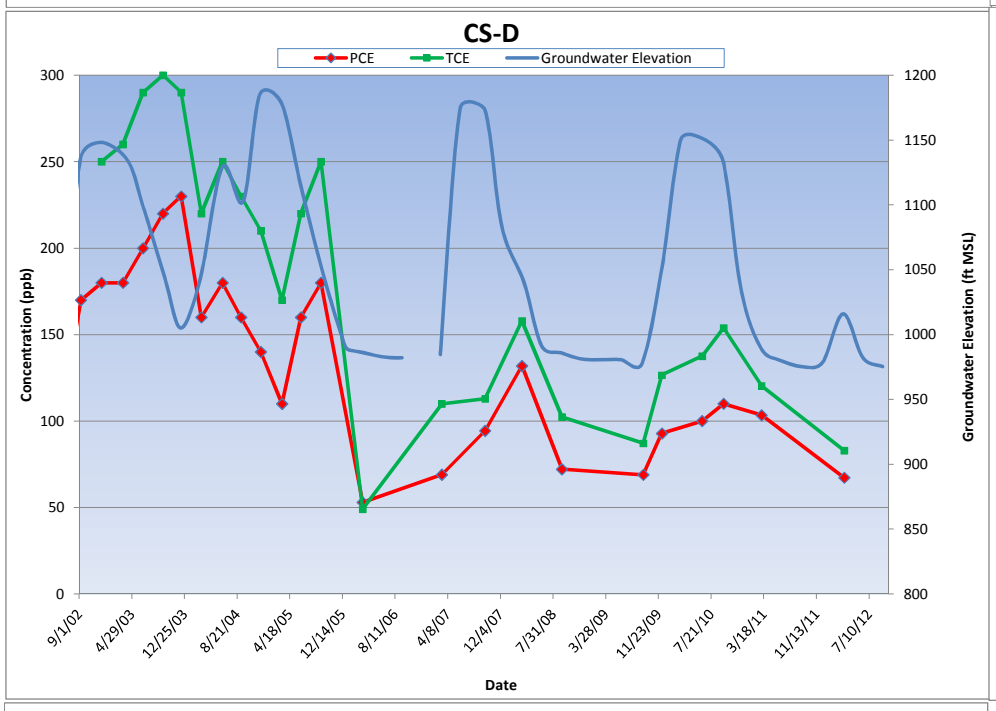
Data Qualifiers
'--' indicates the result was non-detect.
F-The analyte was positively identified but the associated numerical value is below the RL.
* dilution of 200 run for this sample analyte.
All values are reported in µg/L.

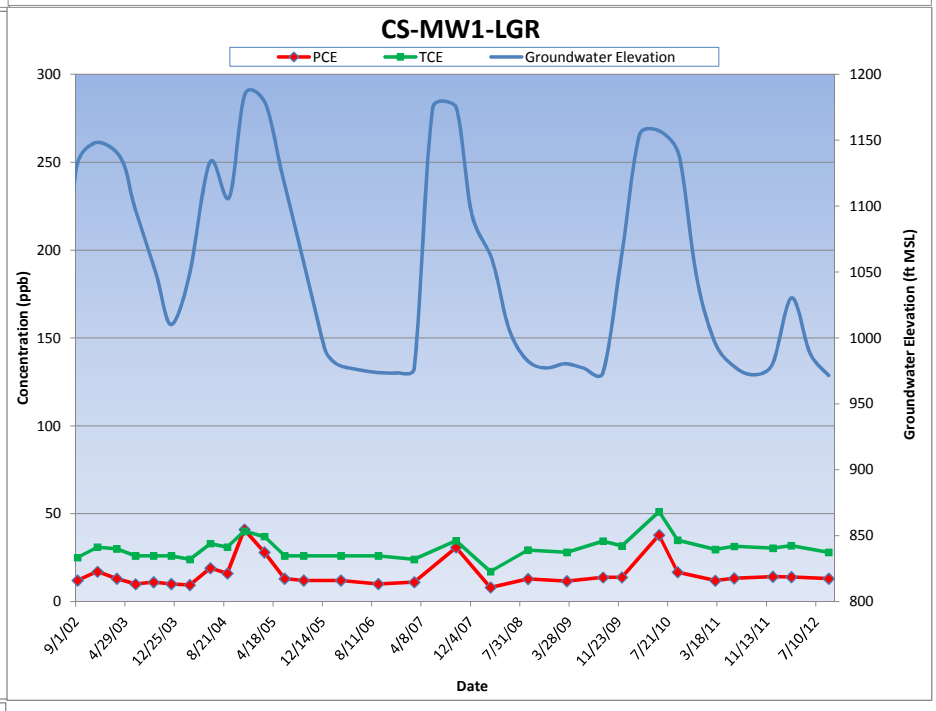
BOLD ≥ MDL
BOLD ≥ RL
BOLD ≥ MCL

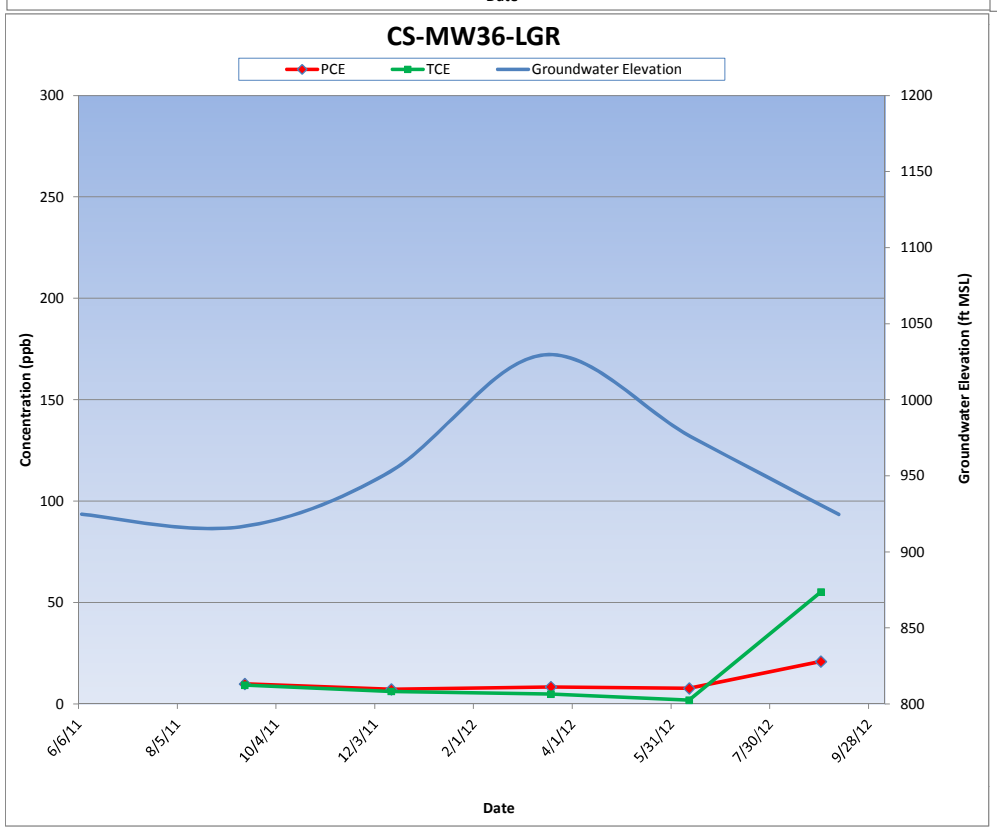
Figure 3-2
Cumulative VOC Concentrations vs Groundwater Elevations











NOTE: No Samples collected in September 2012 from wells CS-MW16-LGR, CS-MW16-CC, and CS-D.

4.0 SEPTEMBER 2012 SUMMARY

- Fourteen wells were scheduled for sampling in September 2012; three wells were not sampled due to low water levels below the pump, and CS-1 was not sampled because of the well house renovation activities. One well (CS-MW9-BS) was added to the sampling schedule to verify if extra development of the well had an effect on previous lead detections.
- From June 20 to September 17, 2012, CSSA's AOC-65 weather station recorded 9.95 inches of rain. The new B-3 weather station is now operational and began recording data October 17, 2012. The rainfall was sporadic with four events with greater than one inch of rainfall. Three of the four events occurred between September 13-16, 2012.
- Water levels decreased an average of 35.02 feet per well since last quarter. Water levels continue to decline again after a significant rebound in early 2012. The average water level in September 2012 (excluding pumping wells) was 295.97 feet below top of casing.
- VOCs were detected above the MCL in wells CS-MW1-LGR and CS-MW36-LGR. The VOC levels in CS-MW36-LGR increased significantly since last quarter (see **Figure 3-2)**. At CS-MW36-LGR, PCE increased from 7.71 micrograms per liter (µg/L) to 20.94 µg/L; and TCE increased 1.85 µg/L to 55.22 µg/L. The increase is suspected to be related to the ISCO injection at AOC-65 in August 2012.
- Additional purging/well development was performed in June and July 2012 on wells CS-MW2-LGR and CS-MW9-BS. Well CS-MW2-LGR has had high pH problems since the well was upgraded in 2002. When the sample was collected in September 2012 the pH was 7.9, significantly lower than the past few quarters when it was around 10. It was discovered in previous quarters that well CS-MW9-BS had silt accumulating in the bottom of the well, along with lead detections above the AL. In March 2012, after performing bladder pump maintenance, the pump would not drop back into the well completely. After purging the well and re-installing the pump it was sampled again in September 2012. No lead was detected in this well in September 2012.
- Lead and mercury were detected above the AL and MCL in well CS-9. No other wells had detections above the AL, SS, or MCL in September 2012.
- All 46 zones in Westbay Wells (WB01-WB04) in the vicinity of AOC-65 were scheduled for sampling in September 2012. These wells were also profiled to collect water level data in the area. The 8 LTMO selected zones are scheduled to be sampled in December 2012.
- Thirty-nine of the forty-six Westbay zones were sampled in September 2012; 7 zones were not sampled because they were dry. Fourteen zones had PCE and/or TCE detections above the MCL. An additional 12 zones had VOC detections above the RL.

APPENDIX A

EVALUATION OF DATA QUALITY OBJECTIVES ATTAINMENT

Appendix A Evaluation of Data Quality Objectives Attainment

Activity	Objectives	Action	Objective Attained?	Recommendations
Field Sampling	Conduct field sampling in accordance with procedures defined in the project work plan, SAP, QAPP, HSP, and LTMO recommendations.	All sampling was conducted in accordance with the procedures described in the project plans.	Yes.	NA
Characterization of Environmental Setting (Hydrogeology)	Prepare water-level contour and/or potentiometric maps for each formation of the Middle Trinity Aquifer (3.5.3).	Potentiometric surface maps were prepared based on water levels measured in each of CSSA's wells screened in three formations on September 10, 2012.	To the extent possible with data available. Due to the limited data available and the fact that wells are completed across multiple water-bearing units, potentiometric maps should only be used for regional water flow direction, not local. Ongoing pumping in the CSSA area likely affects the natural groundwater flow direction.	As additional wells are installed screened in distinct formations, future evaluations will eliminate reliance on wells screened across multiple formations.
	Describe the flow system, including the vertical and horizontal components of flow (2.1.9).	Potentiometric maps were created using September 10, 2012 water level data, and horizontal flow direction was tentatively identified. Insufficient data are currently available to determine vertical component of flow.	As described above, due to the lack of aquifer-specific water level information, potentiometric surface maps should only be used as an estimate of regional flow direction.	Same as above.
	Define formation(s) in the Middle Trinity Aquifer are impacted by the VOC contaminants (2.1.3).	Quarterly groundwater monitoring provides information on Middle Trinity Aquifer impacts. Monitoring wells equipped with Westbay® - multi-port samplers are sampled every 9 or 18 months and 8 selected zones are sampled during the 'snapshot' event.	Yes.	Continue sampling.

Activity	Objectives	Action	Objective Attained?	Recommendations
	Identify any temporal changes in hydraulic gradients due to seasonal influences (2.1.5).	Downloaded data from continuous-reading transducers in wells: CS-MW4-LGR, CS-MW21-LGR, and CS-MW24-LGR. Additional continuous reading transducers were added to the program through the SCADA project. The following wells can be uploaded to see real time water level data: CS-MW1-LGR, CS-MW1-BS, CS-MW1-CC, CS-MW16-LGR, CS-MW16-CC, CS-1, CS-12, and CS-10. Data was also downloaded from the AOC-65 weather station. Water levels will be graphed at these wells against precipitation data through December 2012 and included in the annual groundwater report.	Yes.	Continue collection of transducer data and possibly install transducers in other cluster wells.
Contamination Characterization (Ground Water Contamination)	Characterize the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility (3.1.2).	Samples for laboratory analysis were collected from 11 of 46 CSSA wells. Of the 14 wells scheduled to be sampled in September 2012 four were not sampled due to low water levels and well house construction. Well CS-MW9-BS was also added to the sampling schedule.	The horizontal and vertical extent of groundwater contamination is continuously monitored.	Continue groundwater monitoring and construct additional wells as necessary.
	Determine the horizontal and vertical concentration profiles of all constituents of concern (COC) in the groundwater that are measured by USEPA-approved procedures (3.1.2). COCs are those chemicals that have been detected in groundwater in the past and their daughter (breakdown) products.	Groundwater samples were collected from wells: CS-MW1-LGR, CS-MW2-LGR, CS-MW8-LGR, CS-MW9-BS, CS-MW11A-LGR, CS-9, CS-MW24-LGR, CS-MW35-LGR, and CS-MW36-LGR. Samples were analyzed for the short list of VOCs using USEPA method SW8260B, and metals (cadmium, lead, mercury, chromium). The drinking water wells (CS-10 and CS-12) were sampled for the short list of VOCs and additional metals (arsenic, barium, copper, and zinc). Analyses were conducted in accordance with the AFCEE QAPP and approved variances. All RLs were below MCLs, as listed below:	Yes.	Continue sampling.

Activity	Objectives	Action	Objective Attained?	Recommendations
		ANALYTE / **RL (µg /L)** / **MCL(µg/L)** 1,1-DCE 1.2 7 *cis*-1,2-DCE 1.2 70 *trans*-1,2-DCE 0.6 100 PCE 1.4 5 TCE 1.0 5 Vinyl chloride 1.1 2		
		ANALYTE / **RL (µg/L)** / **MCL/AL (µg /L)** Barium 5 2,000 Chromium 10 100 Copper 10 1,300 Zinc 50 5,000 Arsenic 30 10 Cadmium 7 5 Lead 25 15 Mercury 1 2		
Contamination Characterization (Ground Water Contamination) (Continued)	Meet AFCEE QAPP quality assurance requirements.	Samples were analyzed in accordance with the CSSA QAPP and approved variances. Parsons chemists verified all data.	Yes.	NA
		All data flagged with a "U," "J," "M," and "F" are usable for characterizing contamination. All "R" flagged data are considered unusable.	Yes.	NA

Activity	Objectives	Action	Objective Attained?	Recommendations
		Previously, a method detection limit (MDL) study for arsenic, cadmium, and lead was not performed within a year of the analyses, as required by the AFCEE QAPP.	The laboratory performed new MDL studies in February 2001 for these metals and the new MDL values were found to be almost identical to the previous MDLs and all met the associated AFCEE QAPP requirements. MDLs for these three metals are well below MCLs. In addition, the laboratory performed daily calibrations and RL verifications for these metals, both of which demonstrate the laboratory's ability to detect and quantitate these metals at RL levels. These daily analyses also indicate that concentrations above the laboratory RL for these compounds were not affected by the expired MDL study.	Use results for groundwater characterization purposes.
Remediation	Determine goals and create cost-effective and technologically appropriate methods for remediation (2.2.1).	Continued data collection will provide analytical results for accomplishing this objective.	Ongoing.	Continue sampling and evaluation, including quarterly groundwater monitoring teleconferences to address remediation.
	Determine placement of new wells for monitoring (2.3.1, 3.6)	Sampling frequency and sample locations to be monitored (including any new wells) will be based on trend data from monitoring event(s) (3.1.5).	Ongoing.	Continue quarterly groundwater teleconferences to discuss sampling frequency and placement of new monitor wells.
Project schedule/ Reporting	Produce a quarterly monitoring project schedule as a road map for sampling, analysis, validation, verification, reviews, and reports.	Prepare schedules and sampling guidelines prior to each quarterly sampling event.	Yes.	Continue sampling schedule preparation each quarter.

APPENDIX B

QUARTERLY ON-POST GROUNDWATER MONITORING ANALYTICAL RESULTS SEPTEMBER 2012

Appendix B
September 2012 Quarterly On-Post Groundwater Monitoring Analytical Results

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
CS-MW1-LGR	9/11/2012	NA	NA	0.0005U	**0.01**	NA	0.0019U	NA	0.0001U
CS-MW2-LGR	9/11/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	**0.0002F**
CS-MW8-LGR	9/11/2012	NA	NA	0.0005U	**0.006F**	NA	0.0019U	NA	**0.0002F**
CS-MW9-BS	9/11/2012	NA	NA	0.0005U	**0.004F**	NA	0.0019U	NA	**0.0002F**
CS-MW11A-LGR	9/11/2012	NA	NA	0.0005U	**0.005F**	NA	0.0019U	NA	**0.0002F**
CS-MW24-LGR	9/11/2012	NA	NA	0.0005U	**0.002F**	NA	0.0019U	NA	**0.0002F**
CS-MW35-LGR	9/12/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW35-LGR FD	9/12/2012	NA	NA	0.0005U	**0.002F**	NA	0.0019U	NA	0.0001U
CS-MW36-LGR	8/30/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-9	9/12/2012	NA	NA	0.0005U	**0.004F**	NA	**0.028**	NA	**0.0041**
CSSA Drinking Water Well System									
CS-10	9/12/2012	0.0002U	**0.0407**	0.0005U	**0.012**	0.003U	0.0019U	**0.065**	0.0001U
CS-12	9/12/2012	0.0002U	**0.0312**	0.0005U	**0.003F**	0.003U	0.0019U	**0.121**	0.0001U
CS-12 FD	9/12/2012	0.0002U	**0.033**	0.0005U	**0.004F**	**0.004F**	0.0019U	**0.13**	0.0001U

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-MW1-LGR	9/11/2012	0.12U	**16.93**	**0.20F**	**13.01**	**28.05**	0.08U
CS-MW2-LGR	9/11/2012	0.12U	**0.53F**	0.08U	0.06U	0.05U	0.08U
CS-MW8-LGR	9/11/2012	0.12U	0.07U	0.08U	**1.83**	0.05U	0.08U
CS-MW9-BS	9/11/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW11A-LGR	9/11/2012	0.12U	0.07U	0.08U	**1.22F**	0.05U	0.08U
CS-MW24-LGR	9/11/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW35-LGR	9/12/2012	0.12U	0.07U	0.08U	**1.17F**	0.05U	0.08U
CS-MW35-LGR FD	9/12/2012	0.12U	0.07U	0.08U	**1.19F**	0.05U	0.08U
CS-MW36-LGR	8/30/2012	0.12U	**1.72**	0.08U	**20.94**	**55.22**	0.08U
CS-9	9/12/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CSSA Drinking Water Well System							
CS-10	9/12/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12	9/12/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12 FD	9/12/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

All samples were analyzed by APPL, Inc.
VOC data reported in ug/L & metals data reported in mg/L.

Abbreviations/Notes:

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene
AL	Action Level
SS	Secondary Standard
NA	Not Analyzed for this parameter

Data Qualifiers:

U-The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
F-The analyte was positively identified but the associated numerical value is below the RL.

APPENDIX C

SEPTEMBER 2012 WESTBAY ANALYTICAL RESULTS

Appendix C
September 2012 Westbay Analytical Results

Well ID	Date Sampled	1,1-DCE (1,1-dichloroethene)	cis-1,2-DCE (cis-1,2-dichloroethene)	TCE (trichloroethene)	PCE (tetrachloroethene)	trans-1,2-DCE (trans-1,2-dichloroethene)	Vinyl Chloride
CS-WB01-LGR-01	9/4/2012	<0.12	<0.07	**0.18F**	**3.47**	<0.08	<0.08
CS-WB01-LGR-02	9/4/2012	<0.12	<0.07	**4.04**	**14.34**	<0.08	<0.08
CS-WB01-LGR-03	9/4/2012	<0.12	<0.07	**8.53**	**2.32**	<0.08	<0.08
CS-WB01-LGR-04	9/4/2012	<0.12	<0.07	**0.14F**	<0.06	<0.08	<0.08
CS-WB01-LGR-05	9/4/2012	<0.12	<0.07	**0.20F**	**0.12F**	<0.08	<0.08
CS-WB01-LGR-06	9/4/2012	<0.12	**0.31F**	**1.86**	**0.20F**	<0.08	<0.08
CS-WB01-LGR-07	9/4/2012	<0.12	**0.20F**	**12.49**	**14.67**	<0.08	<0.08
CS-WB01-LGR-08	9/4/2012	<0.12	**0.95F**	**6.85**	**3.15**	<0.08	<0.08
CS-WB01-LGR-09	9/4/2012	<0.12	**0.39F**	**19.23**	**14.79**	<0.08	<0.08
CS-WB02-LGR-01	9/4/2012	<0.12	<0.07	**1.18**	**0.55F**	<0.08	<0.08
CS-WB02-LGR-03	9/4/2012	<0.12	<0.07	**2.75**	**4.99**	<0.08	<0.08
CS-WB02-LGR-04	9/4/2012	<0.12	<0.07	**9.48**	**3.12**	<0.08	<0.08
CS-WB02-LGR-05	9/4/2012	<0.12	<0.07	**3.73**	**1.05F**	<0.08	<0.08
CS-WB02-LGR-06	9/4/2012	<0.12	<0.07	**4.01**	**1.53**	<0.08	<0.08
CS-WB02-LGR-07	9/4/2012	<0.12	**0.55F**	**0.47F**	<0.06	<0.08	<0.08
CS-WB02-LGR-08	9/4/2012	<0.12	**2.41**	**0.89F**	**0.68F**	**0.66**	<0.08
CS-WB02-LGR-09	9/4/2012	<0.12	**0.31F**	**12.02**	**13.55**	<0.08	<0.08
CS-WB03-UGR-01	9/5/2012	<0.12	**1.51**	**98.96**	**8081.86***	<0.08	<0.08
CS-WB03-LGR-03	9/5/2012	<0.12	**0.26F**	**9.27**	**18.09**	<0.08	<0.08
CS-WB03-LGR-04	9/5/2012	<0.12	<0.07	**8.39**	**15.15**	<0.08	<0.08
CS-WB03-LGR-05	9/5/2012	<0.12	<0.07	**5.51**	**14.63**	<0.08	<0.08
CS-WB03-LGR-06	9/5/2012	<0.12	**0.71F**	**0.56F**	**3.29**	<0.08	<0.08
CS-WB03-LGR-07	9/5/2012	<0.12	**6.54**	**2.51**	**1.04F**	<0.08	<0.08
CS-WB03-LGR-08	9/5/2012	<0.12	**6.06**	**2.13**	**1.11F**	<0.08	<0.08
CS-WB03-LGR-09	9/5/2012	<0.12	**11.52**	**3.75**	**3.47**	<0.08	<0.08
CS-WB04-LGR-01	9/6/2012	<0.12	<0.07	<0.05	**0.57F**	<0.08	<0.08
CS-WB04-LGR-03	9/6/2012	<0.12	<0.07	<0.05	**0.25F**	<0.08	<0.08
CS-WB04-LGR-04	9/6/2012	<0.12	**0.10F**	**0.22F**	**0.41F**	<0.08	<0.08
CS-WB04-LGR-06	9/6/2012	<0.12	**2.59**	**8.63**	**26.13**	**0.20F**	<0.08
CS-WB04-LGR-07	9/6/2012	<0.12	**2.25**	**8.06**	**23.42**	**0.20F**	<0.08
CS-WB04-LGR-08	9/6/2012	<0.12	<0.07	**0.69F**	**0.38F**	<0.08	<0.08
CS-WB04-LGR-09	9/6/2012	<0.12	<0.07	**5.68**	**7.35**	<0.08	<0.08
CS-WB04-LGR-10	9/6/2012	<0.12	<0.07	**0.54F**	**1.20F**	<0.08	<0.08
CS-WB04-LGR-11	9/6/2012	<0.12	<0.07	<0.05	**0.27F**	<0.08	<0.08
CS-WB04-BS-01	9/6/2012	<0.12	<0.07	<0.05	**0.19F**	<0.08	<0.08
CS-WB04-BS-02	9/6/2012	<0.12	**0.10F**	<0.05	**0.33F**	<0.08	<0.08
CS-WB04-CC-01	9/6/2012	<0.12	**0.60F**	<0.05	**0.26F**	<0.08	<0.08
CS-WB04-CC-02	9/6/2012	<0.12	<0.07	<0.05	**0.47F**	<0.08	<0.08
CS-WB04-CC-03	9/6/2012	<0.12	<0.07	<0.05	**2.71**	<0.08	<0.08

Data Qualifiers
F-The analyte was positively identified but the associated numerical value is below the RL.
* The analyte was run at a dilution of 200.
All values are reported in µg/L.

BOLD ≥ MDL
BOLD ≥ RL
BOLD ≥ MCL

APPENDIX D

DATA VALIDATION REPORT

(Laboratory data packages are submitted to CSSA electronically.)

SDG 68612
SDG 68687
SDG 68741

DATA VERIFICATION SUMMARY REPORT

for on-post and off-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers one on-post, fourteen off-post quarterly groundwater samples and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on August 30, 2012. The samples in the following Sample Delivery Group (SDG) were analyzed for a reduced list of volatile organic compounds (VOCs) and metals (for on-post well only):

68612

The field QC sample associated with this SDG was one trip blank (TB) and one field duplicate (FD) for off-post well. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.0ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of seventeen (17) samples, including one (1) on-post groundwater samples, fourteen (14) off-post well groundwater samples, one (1) FD of LS-6, and one (1) TB. The samples were collected on August 30, 2012 and were analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in two batches (#170744 and 170767) under one set of initial calibration (ICALs). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control sample (LCS) and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the relative percent difference (RPD) of the parent and FD sample results.

LS-6

Analyte	Parent, µg/L	FD, µg/L	RPD	Criteria, RPD
TCE	1.83	2.04	11	≤20

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- Both LCSs were prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were two method blanks and one TB associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of one (1) on-post groundwater samples which was collected on August 30, 2012 and was analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. This on-post well sample was analyzed following the procedures outlined in the CSSA QAPP and was prepared and analyzed within the holding time required by the method.

The sample for ICP-AES metals was digested in batch #170837. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analysis.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

This on-post well sample was analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the sample in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of one (1) on-post groundwater sample collected on August 30, 2012 and was analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. This on-post well sample was analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury sample was prepared in batch #171082. The analysis was performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analysis.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

This sample was analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the sample in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers six on-post quarterly groundwater samples and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on September 11, 2012. The samples in the following Sample Delivery Group (SDG) were analyzed for a reduced list of volatile organic compounds (VOCs) and metals (cadmium, chromium and lead):

68687

The field QC samples associated with this SDG was one trip blank (TB) and one field duplicate (FD) for on-post well. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.5ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of six (6) on-post well samples, one (1) set of MS/MSD, and one (1) TB. The samples were collected on September 11, 2012 and were analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one batch (#171071) under one set of initial calibration (ICALs). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control sample (LCS) and the surrogate spikes. Sample CS-MW24-LGR was designated as the parent sample for the MS and MSD analyses on the chain-of-custody.

All LCS, MS, MSD, and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the relative percent difference (RPD) of the MS and MSD results.

All %RPDs were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.

- The LCS was prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were one method blank and one TB associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of six (6) on-post groundwater samples which were collected on September 11, 2012 and was analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #171129. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD analyses. MS and MSD were performed with sample CS-MW24-LGR.

All LCS, MS, and MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of MS and MSD results.

All %RPDs were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of six (6) on-post groundwater samples and one set of MS/MSD collected on September 11, 2012 and was analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #171129. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD. MS/MSD were performed with sample CS-MW24-LGR.

The LCS, MS, and MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of the MS and MSD results.

The %RPD was compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers four on-post quarterly groundwater samples and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on September 12, 2012. The samples in the following Sample Delivery Group (SDG) were analyzed for a reduced list of volatile organic compounds (VOCs) and selected metals:

68741

The field QC samples associated with this SDG was one trip blank (TB) and two field duplicates (FDs). No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 3.5ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of four (4) on-post well samples, two FDs, and one (1) TB. The samples were collected on September 12, 2012 and were analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one batch (#171071) under one set of initial calibration (ICALs). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control sample (LCS) and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the relative percent difference (RPD) of the two pairs of parent and FD samples. Samples CS-MW35-LGR and CS-12 were collected in duplicate.

None of the target VOCs were detected at or above the reporting limits (RLs), therefore, the %RPD calculations were not applicable.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.

- The LCS was prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were one method blank and one TB associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of four (4) on-post groundwater samples which were collected on September 12, 2012 and was analyzed for cadmium, chromium, and lead. In addition, sample CS-10 and CS-12 were analyzed for arsenic, barium, copper, and zinc.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #171130. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS analyses. All LCS recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of parent and FD sample results.

For the pair of CS-MW35-LGR, none of the three target metals were detected at or above the RLs.

For the pair of CS-12 and CS-12FD, the following metals were reported with concentration greater then RLs:

Metals	Parent, mg/L	FD, mg/L	%RPD	Criteria, %RPD
Barium	0.0312	0.0330	5.6	≤20
Zinc	0.121	0.130	7.2	

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of four (4) on-post groundwater samples and two FDs collected on September 12, 2012 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #171424. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery was within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of the parent and FD sample results.

Mercury was not detected in both pairs of parent and FD samples.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.