MARCH 2012

On-Post
Quarterly Groundwater Monitoring Report

Prepared For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

July 2012

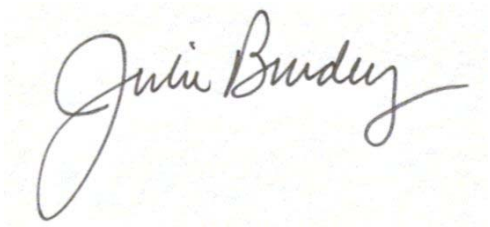
GEOSCIENTIST CERTIFICATION

March 2012 On-post Quarterly Groundwater Monitoring Report

For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

I, Julie Burdey, P.G., hereby certify that the March 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 March 2012, and is true and accurate to the best of my knowledge and belief.



Julie Burdey, P.G.
State of Texas
Geology License No. 1913

6/13/2012

Date

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EXECUTIVE SUMMARY

- Thirty-three of the 34 wells scheduled for sampling in March 2012 were sampled. Well CS-MW11B-LGR was not sampled because it was dry.
- Average groundwater elevations in March 2012 increased 55.51 feet from the elevations measured in December 2011. In San Antonio, water restrictions were lifted March 6, 2012; however 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 224.88 feet below top of casing (BTOC) or 1025.49 feet above mean sea level (msl).
- The action level (AL) for lead (0.015 mg/L) was slightly exceeded in well CS-MW9-BS (0.0168 mg/L).
- The MCL was exceeded in monitoring wells CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, CS-MW36-LGR, and CS-D for tetrachlorethene (PCE) and/or trichloroethene (TCE) in March 2012.
- Wells CS-D and CS-MW16-LGR had detections of *cis*-1,2-dichloroethene (DCE) above the MCL in March 2012.
- Eight zones in Westbay Wells (WB01-WB04) in the vicinity of AOC-65 were sampled in March 2012. These wells were also profiled to collect water level data in the area. Six of the 8 zones had PCE and/or TCE above the MCL.

MARCH 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 March 2012. Laboratory analytical results are presented along with potentiometric contour figures. The purpose of this report is to present a summary of the March 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 March 5 through 23, 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 March 14, 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 March 2012 are shown in **Figures 2-1, 2-2, and 2-3**.

The March 2012 potentiometric surface map for LGR-screened wells **(Figure 2-1)** exhibited a wide range of groundwater elevations, from a minimum of 998.49 feet above mean sea level (msl) at CS-MW22-LGR to a maximum of 1115.25 feet above msl at CS-MW4-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 March 2012 increased 55.51 feet from the elevations measured in December 2011. From January 1 to March 21, 2012, weather station north (WS-N) did not record a complete set of data due to voltage problem. Weather station south (WS-S) recorded 8.58 inches of rainfall during 26 rainfall events in this timeframe. The rainfall was sporadic with 3 events (January 25, March 9 & 19) with greater than one inch of rainfall. The average measured water level increased drastically the last quarter of 2011 due to 11.71 inches of rainfall. The aquifer continued to rebound in 2012 lifting water restrictions in San Antonio. However, continuing effects of the 2011 drought has kept the Trinity Glen Rose Groundwater Conservation District 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 March 2012 this mounding effect was pronounced, as the elevation in CS-MW4-LGR was 88 and 96 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 March 2012, the water elevation at CS-MW4-LGR was 1115.25 feet msl, and typical mounding effect was present. It is postulated that perched groundwater associated with the Salado Creek drainage is hydraulically connected to the main aquifer body in this location.

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 December 2011 and March 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 CS-12 pumping well 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 March 2012, the overall LGR groundwater gradient is to the south-southeast at 0.00066 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 has allowed the aquifer to recover dramatically.

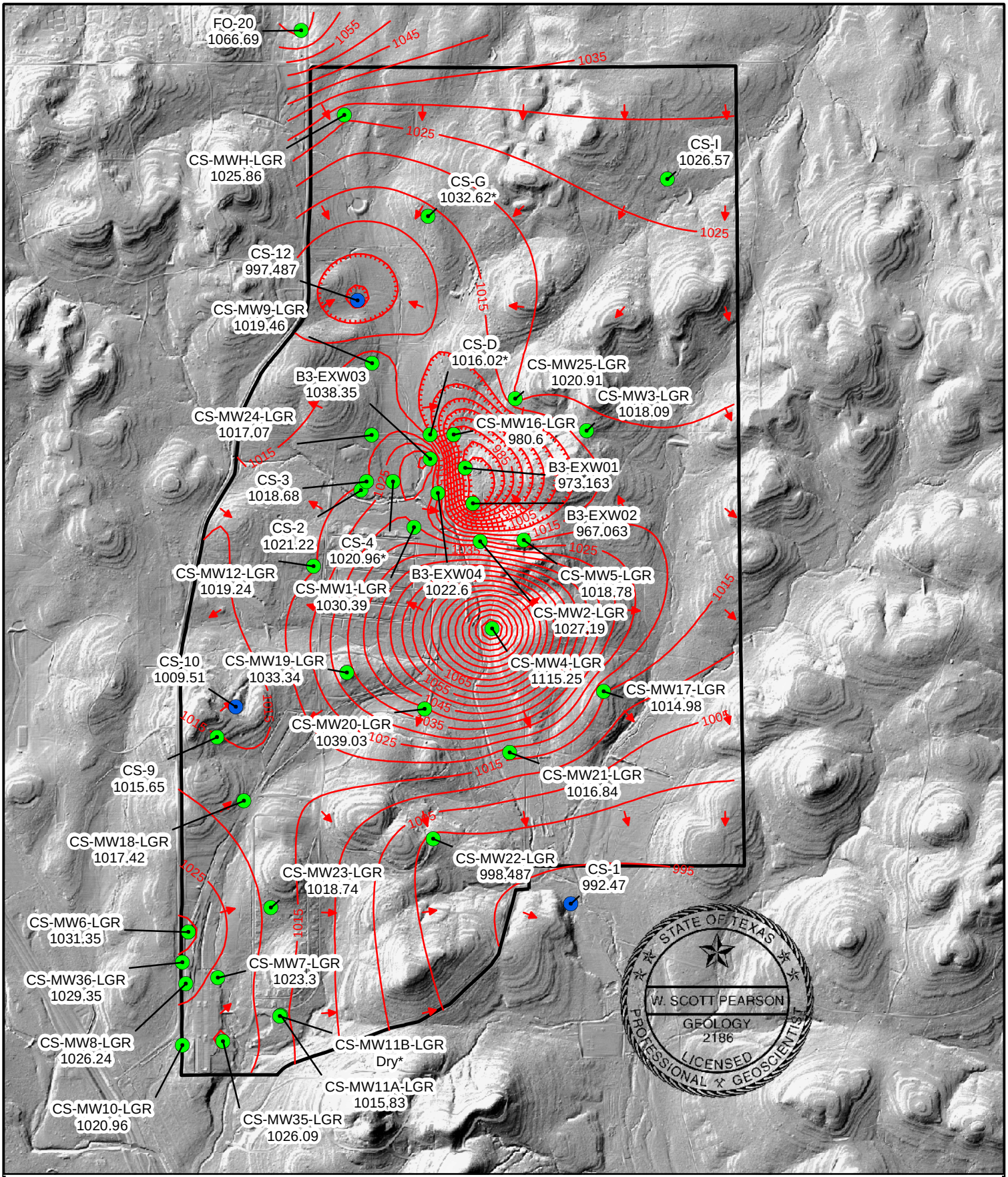

Figure 2-1

March 2012 Potentiometric Surface Map, LGR Wells

Camp Stanley Storage Activity

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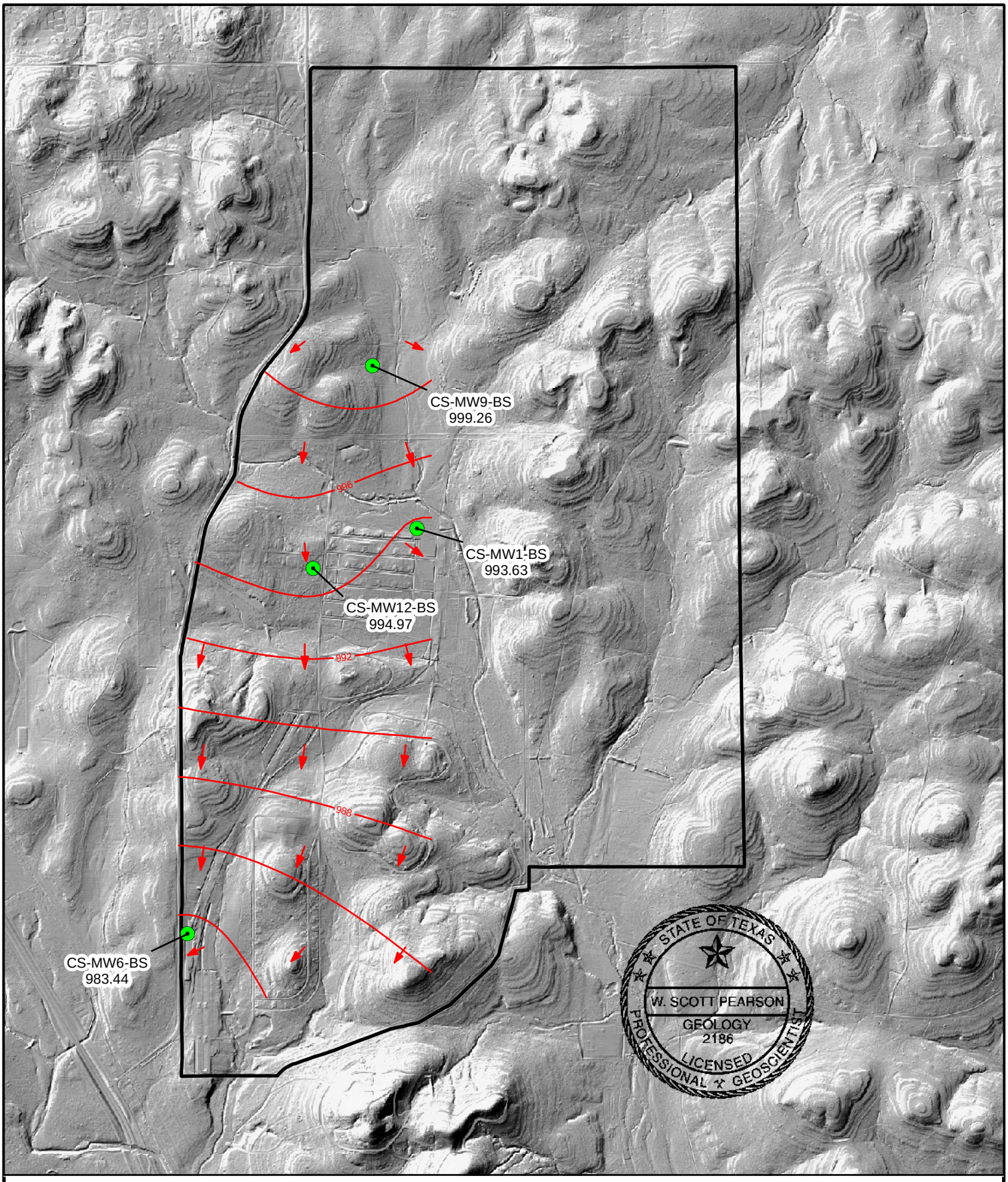

Figure 2-2

March 2012 Potentiometric Surface Map, BS Wells

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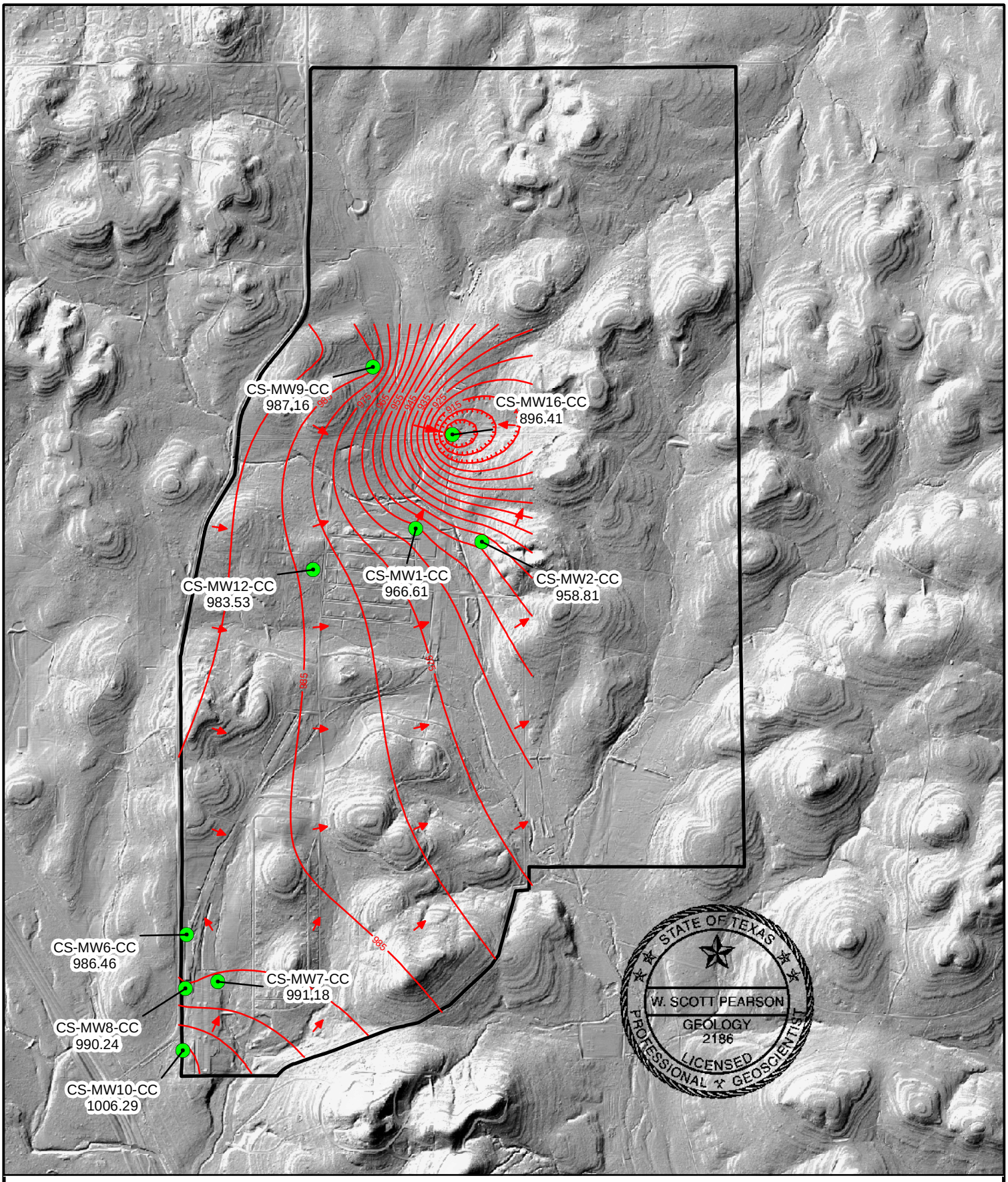

Figure 2-3

March 2012 Potentiometric Surface Map, CC Wells

Camp Stanley Storage Activity

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3.0 MARCH 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 March 2012 included 34 wells, and 33 of the 34 samples were successfully collected. One well was not sampled (CS-MW11B-LGR) because it was dry. Eight Westbay Well zones were scheduled for sampling this quarter and all samples were collected. **Table 3-1** provides a sampling overview for March 2012 and the schedule under the LTMO recommendations. All monitoring wells were sampled using dedicated low-flow gas-operated bladder pumps. Wells CS-1, 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 March 2012 for the short list of volatile organic compounds (VOC) and metals (chromium, cadmium, lead, and mercury). Wells CS-1, CS-9, 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 3-2**. Full analytical results are presented in **Appendix B**.

PCE and TCE were detected above the MCL in 5 on-post wells sampled this quarter, CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, CS-MW36-LGR, and CS-D. Well CS-MW9-BS had a lead concentration of 0.0168 mg/L, above the AL of 0.015 mg/L.

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-#42, #43, #44, #45, #46, #47 and -#49, containing the analytical results from this sampling event were received by Parsons April 3-13, 2012. Data validation was conducted and the data validation reports are presented in **Appendix C**.

3.2 Westbay-equipped Wells

Under the provisions of the groundwater monitoring LTMO recommendations, 8 Westbay Well zones were scheduled for sampling in March 2012. These wells were also profiled to capture water level readings. Westbay wells (CS-WB01, CS-WB02, CS-WB03, and CS-WB04) are located in the vicinity of AOC-65 and are sampled on a 9-month schedule as recommended in the LTMO evaluation and will be sampled again during the September 2012 event.

Westbay wells CS-WB05, CS-WB06, CS-WB07, and CS-WB08 are not sampled as part of the groundwater monitoring program but are sampled as part of the SWMU B-3 bioreactor monitoring. Results for those wells are presented in the SWMU B-3 Performance Status Reports.

3.3 Isoconcentration Mapping (PCE, TCE, *cis*-1,2-DCE)

March 2012 was a 'snapshot' event which included sampling of all off-post wells and 34 on-post wells. Therefore isoconcentration maps were prepared to illustrate the contamination extents of plume 1 at SWMU B-3 and plume 2 at AOC-65. In March 2012, the extent of COCs above the RL for each PCE, TCE, *cis*-1,2-DCE are depicted in **Figures 3-2, 3-3,** and **3-4**.

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

Count	Well ID	*Analytes*	*Last Sample Date*	*June-11 (snapshot)*	*Sep-11*	*Dec-11*	*Mar-12 (snapshot)*	*Sampling Frequency **
1	CS-MW1-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11	S	NS	S	S	Semi-annual
	CS-MW1-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
	CS-MW1-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
2	CS-MW2-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11	S	NS	S	S	Semi-annual
	CS-MW2-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	NS	Every 18 months
3	CS-MW3-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
4	CS-MW4-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-11	NSWL	NS	NS	S	Every 9 months
5	CS-MW5-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
6	CS-MW6-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-11	NSWL	NS	NS	S	Every 9 months
	CS-MW6-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
	CS-MW6-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	NS	Every 18 months
7	CS-MW7-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
	CS-MW7-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	NS	Every 18 months
8	CS-MW8-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11	S	NS	S	S	Semi-annual
	CS-MW8-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
	CS-MW9-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
9	CS-MW9-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
10	CS-MW9-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	S	Every 9 months
11	CS-MW10-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11	NSWL	NS	S	S	Semi-annual
	CS-MW10-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	NS	Every 18 months
12	CS-MW11A-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11	S	NS	S	S	Semi-annual
13	CS-MW11B-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	S	Every 9 months
14	CS-MW12-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
	CS-MW12-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
	CS-MW12-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	NS	Every 18 months
15	CS-MW16-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
16	CS-MW16-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
17	CW-MW17-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-10	NSWL	NS	NS	S	Every 9 months
18	CS-MW18-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-11	NSWL	NS	NS	S	Every 9 months
19	CS-MW19-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
20	CS-1	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Dec-11	S	S	S	S	Quarterly
21	CS-2	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
	CS-3	sampled as needed, no pump	Dec-99	NS	NS	NS	NS	NS
22	CS-4	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-11	NSWL	NS	NSWL	S	Semi-annual
23	CS-9	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11	S	S	S	S	Quarterly
24	CS-10	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Dec-11	S	S	S	S	Quarterly
	CS-11	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-09	NS	NS	NS	NS	NS
25	CS-12	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn,**Fe,Al**)	Dec-11	S	S	S	S	Quarterly
26	CS-D	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-11	NSWL	NS	NSWL	S	Semi-annual
	CS-MWG-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
	CS-MWH-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
	CS-I	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	NS	Every 18 months
27	CS-MW20-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
28	CS-MW21-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
29	CS-MW22-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
30	CS-MW23-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
31	CS-MW24-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11	S	NS	S	S	Semi-annual
32	CS-MW25-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-11	S	NS	NS	S	Every 9 months
33	CS-MW35-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11		S	S	S	4 consecutive events
34	CS-MW36-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-11		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)	LTMO Sampling Frequency (as of June '11)
CS-WB01-UGR-01	Dec-04	NS	NS	Dry	NS	Every 9 months
CS-WB01-LGR-01	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-02	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-03	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-04	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-05	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-06	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-07	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-08	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-09	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB02-UGR-01	Dec-04	NS	NS	Dry	NS	Every 9 months
CS-WB02-LGR-01	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-02	Mar-10	NS	NS	Dry	NS	Every 9 months
CS-WB02-LGR-03	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-04	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-05	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-06	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-07	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-08	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-09	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB03-UGR-01	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-01	Sep-10	NS	NS	Dry	NS	Every 9 months
CS-WB03-LGR-02	Oct-07	NS	NS	Dry	NS	Every 9 months
CS-WB03-LGR-03	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-04	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-05	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-06	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-07	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-08	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-09	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB04-UGR-01	Mar-04	NS	NS	Dry	NS	Every 9 months
CS-WB04-LGR-01	Mar-11	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-02	Mar-10	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-03	Mar-11	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-04	Mar-11	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-06	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-07	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-08	Dec-11	NS	NS	S	NS	Every 9 months
CS-WB04-LGR-09	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-10	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-11	Dec-11	S	NS	S	S	Every 9 months + snapshot
CS-WB04-BS-01	Mar-11	NS	NS	NS	NS	Every 18 months
CS-WB04-BS-02	Mar-11	NS	NS	NS	NS	Every 18 months
CS-WB04-CC-01	Mar-11	NS	NS	NS	NS	Every 18 months
CS-WB04-CC-02	Mar-11	NS	NS	NS	NS	Every 18 months
CS-WB04-CC-03	Mar-11	NS	NS	NS	NS	Every 18 months

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

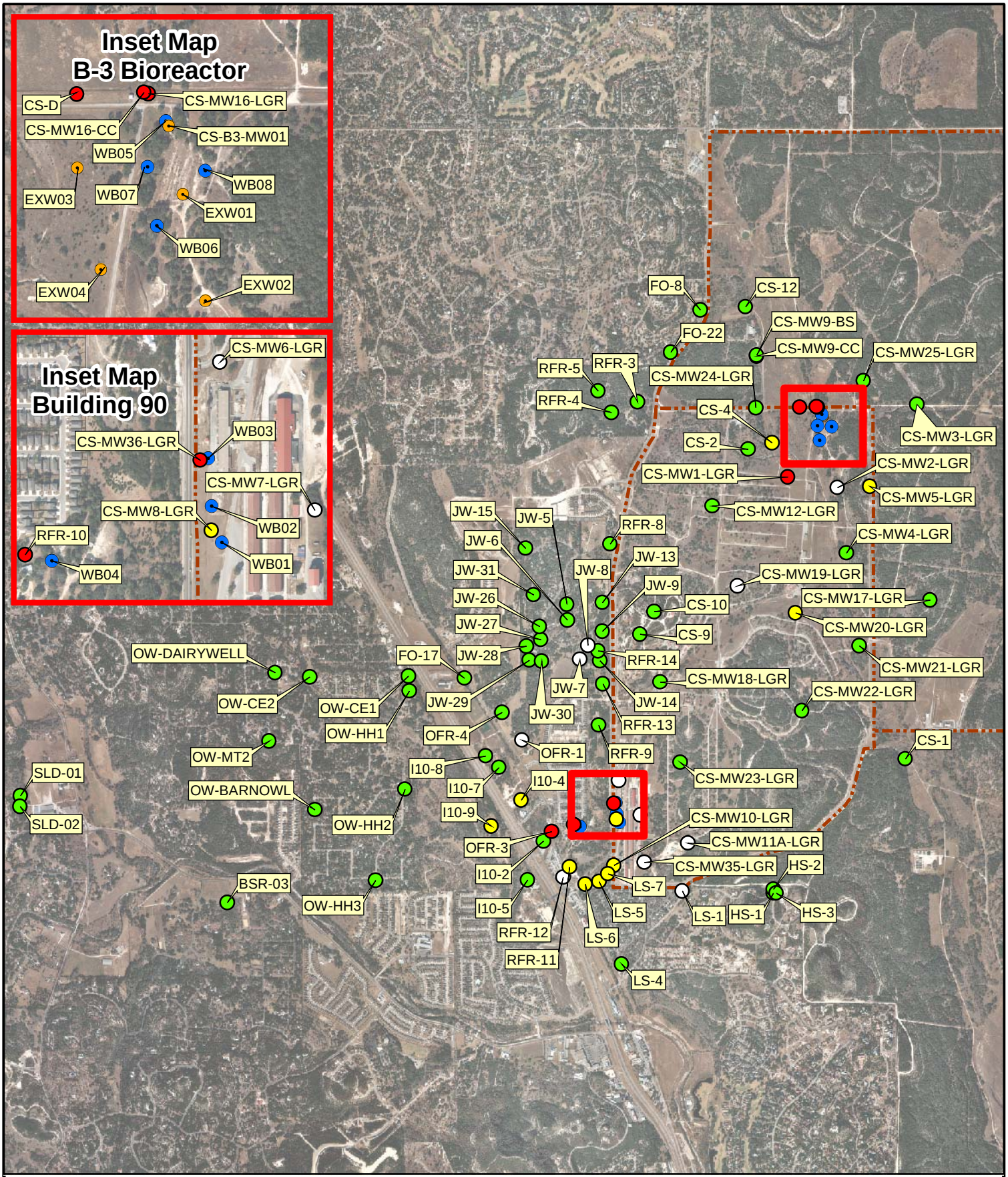

Figure 3-1

On-Post and Off-Post Well Sampling Locations for March 2012

Camp Stanley Storage Activity

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Table 3-3
March 2012 On-Post Quarterly Groundwater Results, Detected Analytes

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury	Comments
CS-MW1-LGR	3/13/2012	NA	NA	--	**0.003F**	NA	--	NA	--	
CS-MW2-LGR	3/21/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW3-LGR	3/15/2012	NA	NA	--	**0.003F**	NA	--	NA	--	
CS-MW4-LGR	3/15/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW5-LGR	3/13/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW6-LGR	3/20/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW7-LGR	3/20/2012	NA	NA	--	--	NA	--	NA	**0.0002F**	Mercury last detected in June 2005, below the RL.
CS-MW8-LGR	3/20/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW9-CC	3/16/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW9-BS	3/16/2012	NA	NA	--	**0.003F**	NA	**0.0168F**	NA	--	Lead has generally been above the AL since September 2007, possibly due to observed increasing turbidity.
CS-MW10-LGR	3/20/2012	NA	NA	--	--	NA	--	NA	**0.0002F**	First mercury detection since the well was first sampled in 2001.
CS-MW11A-LGR	3/20/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW12-LGR	3/21/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW16-LGR	3/20/2012	NA	NA	--	--	NA	--	NA	--	Lead above the AL in 2002 and 2011.
CS-MW16-CC	3/20/2012	NA	NA	--	--	NA	--	NA	--	No metals detections since 2008.
CS-MW16-CC FD	3/20/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW17-LGR	3/15/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW18-LGR	3/21/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW19-LGR	3/19/2012	NA	NA	--	--	NA	--	NA	**0.0002F**	First mercury detection since the well was first sampled in 2002.
CS-MW19-LGR FD	3/19/2012	NA	NA	--	--	NA	--	NA	**0.0002F**	
CS-MW20-LGR	3/19/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW21-LGR	3/21/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW22-LGR	3/21/2012	NA	NA	--	--	NA	**0.0029F**	NA	--	Sporadic lead detections, last above the AL in 2008.
CS-MW23-LGR	3/21/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW24-LGR	3/16/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW25-LGR	3/15/2012	NA	NA	--	--	NA	--	NA	**0.0002F**	Last mercury detection was in 2008.
CS-MW35-LGR	3/20/2012	NA	NA	--	--	NA	--	NA	--	
CS-MW36-LGR	3/19/2012	NA	NA	--	--	NA	--	NA	--	
CS-D	3/19/2012	NA	NA	--	--	NA	--	NA	--	
CS-2	3/19/2012	NA	NA	--	--	NA	--	NA	--	
CS-4	3/19/2012	NA	NA	--	--	NA	--	NA	--	
CS-9	3/22/2012	NA	NA	--	--	NA	**0.0091F**	NA	**0.0012**	Historic lead and mercury above the AL/MCL.
CSSA Drinking Water Well System										
CS-1	3/22/2012	--	**0.0358**	--	--	**0.004F**	--	**0.23**	--	
CS-10	3/22/2012	--	**0.0408**	--	--	--	--	**0.062**	--	
CS-10 FD	3/22/2012	--	**0.0423**	--	--	--	--	**0.066**	--	Lead last detected in Sept. 2011, below the AL.
CS-12	3/22/2012	--	**0.0323**	--	--	**0.010**	--	**0.20**	--	
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**	

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

Table 3-3
March 2012 On-Post Quarterly Groundwater Results, Detected Analytes

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Comments
CS-MW1-LGR	3/13/2012	--	**19.8**	--	**13.93**	**31.76**	--	PCE/TCE consistently above the MCL.
CS-MW2-LGR	3/21/2012	--	**0.97F**	--	--	--	--	
CS-MW3-LGR	3/15/2012	--	--	--	--	--	--	
CS-MW4-LGR	3/15/2012	--	--	--	--	--	--	Last VOC detection in Dec. 2009.
CS-MW5-LGR	3/13/2012	--	**2.91**	--	**1.84**	**2.56**	--	Consistent PCE/TCE detections above the RL.
CS-MW6-LGR	3/20/2012	--	--	--	**0.25F**	--	--	First PCE detection since the well was first installed in 2001, below the RL.
CS-MW7-LGR	3/20/2012	--	--	--	**0.69F**	--	--	
CS-MW8-LGR	3/20/2012	--	--	--	**2.38**	--	--	Consistent PCE detections below the RL until 2007 then above the RL.
CS-MW9-CC	3/16/2012	--	--	--	--	--	--	No historic VOC detections.
CS-MW9-BS	3/16/2012	--	--	--	--	--	--	
CS-MW10-LGR	3/20/2012	--	--	--	**2.1**	**0.54F**	--	Consistent PCE/TCE detections above the RL.
CS-MW11A-LGR	3/20/2012	--	--	--	**1.05F**	--	--	PCE consistently detected below the RL.
CS-MW12-LGR	3/21/2012	--	--	--	--	--	--	No historic VOC detections.
CS-MW16-LGR	3/20/2012	--	**132**	**2.88**	**126.98**	**154.26**	--	Wells constantly pumping to the B-3 bioreactor.
CS-MW16-CC	3/20/2012	**0.18F**	**18.55**	**6.08**	**1.10F**	**15.42**	--	
CS-MW16-CC FD	3/20/2012	**0.19F**	**19.89**	**6.64**	**1.14F**	**17.04**	--	
CS-MW17-LGR	3/15/2012	--	--	--	--	--	--	First sampling event without a PCE detection since well was first installed in 2002.
CS-MW18-LGR	3/21/2012	--	--	--	--	--	--	Last and only PCE detection in 2004.
CS-MW19-LGR	3/19/2012	--	--	--	**0.61F**	--	--	Consistent PCE detections below the RL.
CS-MW19-LGR FD	3/19/2012	--	--	--	**0.64F**	--	--	
CS-MW20-LGR	3/19/2012	--	--	--	**1.79**	--	--	Consistent PCE detections above the RL but below the MCL.
CS-MW21-LGR	3/21/2012	--	--	--	--	--	--	One historic TCE detection, below the RL, in Dec. 2009 for both wells.
CS-MW22-LGR	3/21/2012	--	--	--	--	--	--	
CS-MW23-LGR	3/21/2012	--	--	--	--	--	--	No historic VOC detections.
CS-MW24-LGR	3/16/2012	--	--	--	--	--	--	
CS-MW25-LGR	3/15/2012	--	--	--	--	--	--	
CS-MW35-LGR	3/20/2012	--	--	--	**1.26F**	--	--	Third quarterly sampling event for these wells. Results consistent with last 2 quarters.
CS-MW36-LGR	3/19/2012	--	--	--	**8.43**	**4.94**	--	
CS-D	3/19/2012	--	**70.06**	--	**67.27**	**83**	--	PCE, TCE, and *cis*-1,2-DCE consistently above the MCL.
CS-2	3/19/2012	--	--	--	--	--	--	Last PCE/TCE detection was in Dec. 2009, below the RL.
CS-4	3/19/2012	--	**2.44**	--	**2.59**	**3.42**	--	
CS-9	3/22/2012	--	--	--	--	--	--	Last VOC detection in 2004.
CSSA Drinking Water Well System								
CS-1	3/22/2012	--	--	--	--	--	--	More frequent TCE detections, below the RL, than PCE in the last 7 years.
CS-10	3/22/2012	--	--	--	--	--	--	One TCE detection (March 2010) in the last 8 years.
CS-10 FD	3/22/2012	--	--	--	--	--	--	
CS-12	3/22/2012	--	--	--	--	--	--	No historic VOC detections.
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 (inches):	Mar-12
Weather Station South (WS-N):	NA*
Weather Station North (WS-S):	8.58

* complete set of data not recorded due to voltage problems

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
March 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-09	3/12/2012	--	**0.37F**	**18.92**	**14.03**	--	--
CS-WB02-LGR-09	3/12/2012	--	**0.31F**	**13.79**	**16.15**	--	--
CS-WB03-LGR-09	3/13/2012	--	**21.04**	**4.99**	**9.11**	--	--
CS-WB04-LGR-06	3/13/2012	--	**3.25**	**11.19**	**35.08**	--	--
CS-WB04-LGR-07	3/13/2012	--	**3.18**	**11**	**32.3**	--	--
CS-WB04-LGR-09	3/13/2012	--	--	**7.77**	**10.34**	--	--
CS-WB04-LGR-10	3/13/2012	--	--	**0.66F**	**1.15F**	--	--
CS-WB04-LGR-11	3/13/2012	--	--	**0.21F**	**0.42F**	--	--
Comparison Criteria							
Method Detection Limit	**MDL**	**0.3**	**0.16**	**0.16**	**0.15**	**0.19**	**0.23**
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.

All values are reported in µg/L.

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

Wells with PCE detection above RL
Wells with PCE detection below RL
ND

*Bioreactor Wells Sampled April 2012

PCE Concentrations (µg/L)
1.4 (RL)
5.00 (MCL)
10.00
100.00

Parcels
CSSA Boundary
Salado Creek
Faults
CSSA Roads

Salado Creek
I-10
Old Fredericksburg Rd.
Ralph Fair Rd.

CS-D 67.27
CS-MW16-LGR 126.98
CS-WB07-LGR-04* 259.41
CS-WB05-LGR-04A* 25.80
CS-4 2.59
CS-WB08-LGR-04* 14.82
B3-EXW01* 137.76
CS-WB06-LGR-04* 104.92
B3-EXW02* 83.79
Plume 1
CS-MW1-LGR 13.93
CS-MW5-LGR 1.84
CS-MW19-LGR 0.64F
CS-MW20-LGR 1.79
JW-8 0.32F
JW-7 0.33F
OFR-1 0.28F
CS-MW6-LGR 0.25F
CS-MW36-LGR 8.43
CS-WB03 4.99
CS-WB02 13.79
I10-4 4.47
CS-MW8-LGR 2.38
CS-MW7-LGR 0.69F
RFR-10 17.6
Plume 2
CS-MW11A-LGR 1.05F
CS-WB01 18.92
CS-MW35-LGR 1.26F
OFR-3 5.19
CS-WB04 7.77
LS-1 0.70F
RFR-11 0.47F
LS-7 2.45
CS-MW10-LGR 2.1
LS-6 0.81F
LS-5 0.81F

N
W E
S

0 1,500 3,000 4,500 6,000 Feet

Figure 3-2

PCE Concentrations for LGR Wells, March 2012

PARSONS

J:\CSSA\GIS\Groundwater\Maps\March12_PCE_LGR_GWConc.mxd

Wells with TCE detection above RL
Wells with TCE detection below RL
ND

*Bioreactor Wells Sampled April 2012

TCE Concentrations (µg/L)
1.00 (RL)
5.00 (MCL)
10.00
100.00

Parcels
CSSA Boundary
Salado Creek
Faults
CSSA Roads

Salado Creek
I-10
Old Fredericksburg Rd
Ralph Fair Rd

CS-MW16-LGR 154.26
CS-D 83
CS-WB07-LGR-04* 293.95
CS-WB05-LGR-04A* 74.65
CS-4 3.42
CS-WB08 -LGR-04* 21.32
B3-EXW01* 140.72
CS-WB06-LGR-04* 70.10
B3-EXW02* 102.89
CS-MW1-LGR 31.76
CS-MW5-LGR 2.56
Plume 1

CS-WB04 10.34
CS-MW36-LGR 4.94
RFR-10 10.19
I10-4 1.9
CS-WB03 9.11
I10-9 1.04
CS-WB02 16.15
CS-WB01 14.03
OFR-3 3.32
Plume 2
RFR-12 0.35F
CS-MW10-LGR 0.54F
RFR-11 1.74
LS-6 1.85
LS-5 2.46
LS-7 0.36F

N
W E
S

0 1,500 3,000 4,500 6,000 Feet

Figure 3-3

TCE Concentrations for LGR Wells, March 2012

PARSONS

J:\CSSA\GIS\Groundwater\Maps\March12_TCE_LGR_GWConc.mxd

Wells with cis-1,2-DCE detection above RL

Wells with cis-1,2-DCE detection below RL

ND

*Bioreactor Wells Sampled April 2012

cis-1,2-DCE Concentrations (µg/L)

1.2 (RL)

10.00

70.00 (MCL)

100.00

Parcels

CSSA Boundary

Salado Creek

Faults

CSSA Roads

CS-D
70.06

CS-MW16-LGR
132

CS-WB07-LGR-04*
442.65

CS-WB05-LGR-04A*
407.18

CS-4
2.44

CS-WB08-LGR-04*
74.98

B3-EXW01*
189.26

CS-WB06-LGR-04*
208.67

B3-EXW02*
111.39

Plume 1

CS-MW5-LGR
2.91

CS-MW1-LGR
19.8

CS-MW2-LGR
0.97F

CS-WB03
21.04

CS-WB02
0.31F

RFR-10
0.40F

Plume 2

OFR-3
0.17F

CS-WB01
0.37F

Salado Creek

I-10

Old Fredericksburg Rd.

Ralph Fair Rd.

N

W E

S

0 1,500 3,000 4,500 6,000 Feet

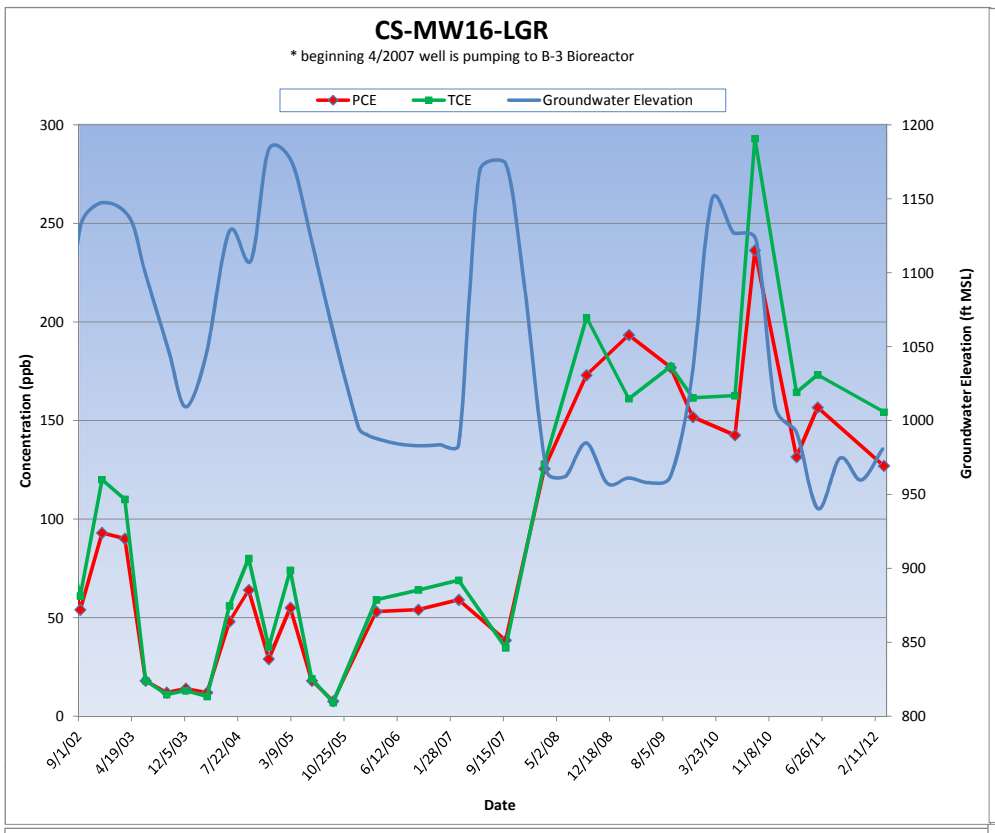
Figure 3-4

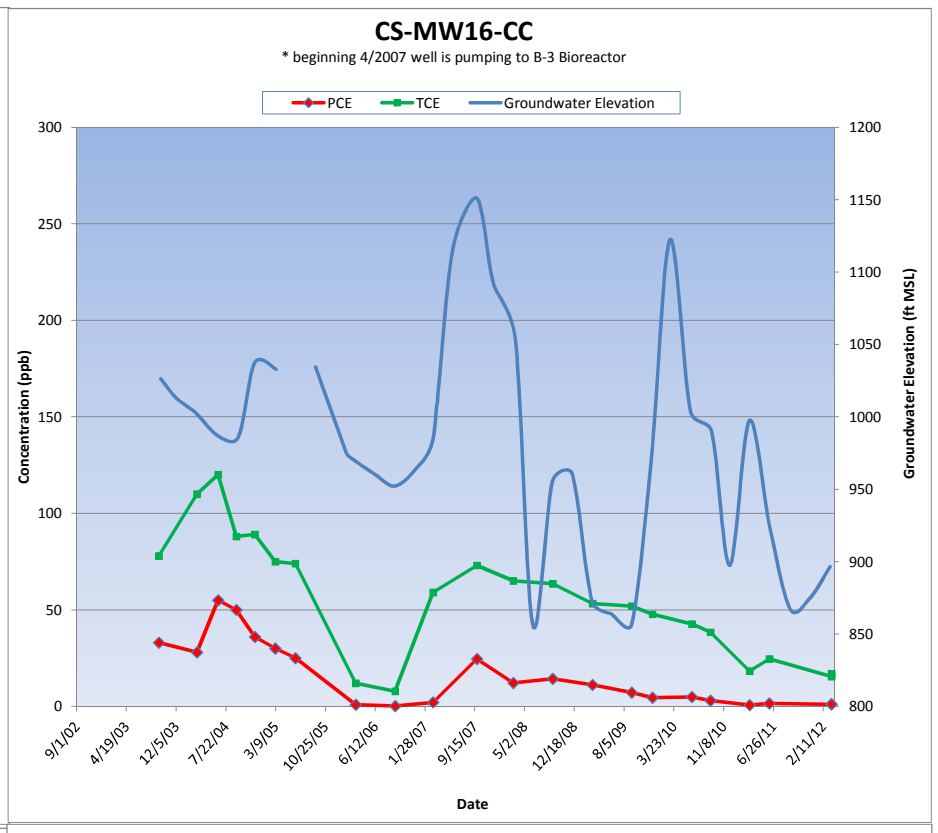
cis-1,2-DCE Concentrations for LGR Wells, March 2012

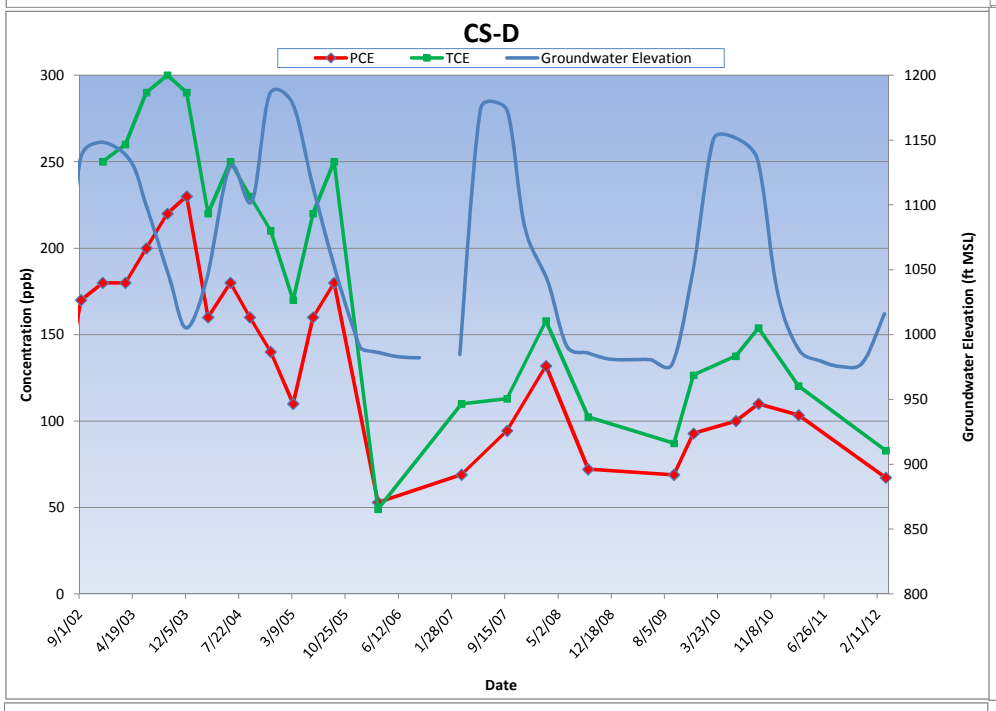
PARSONS

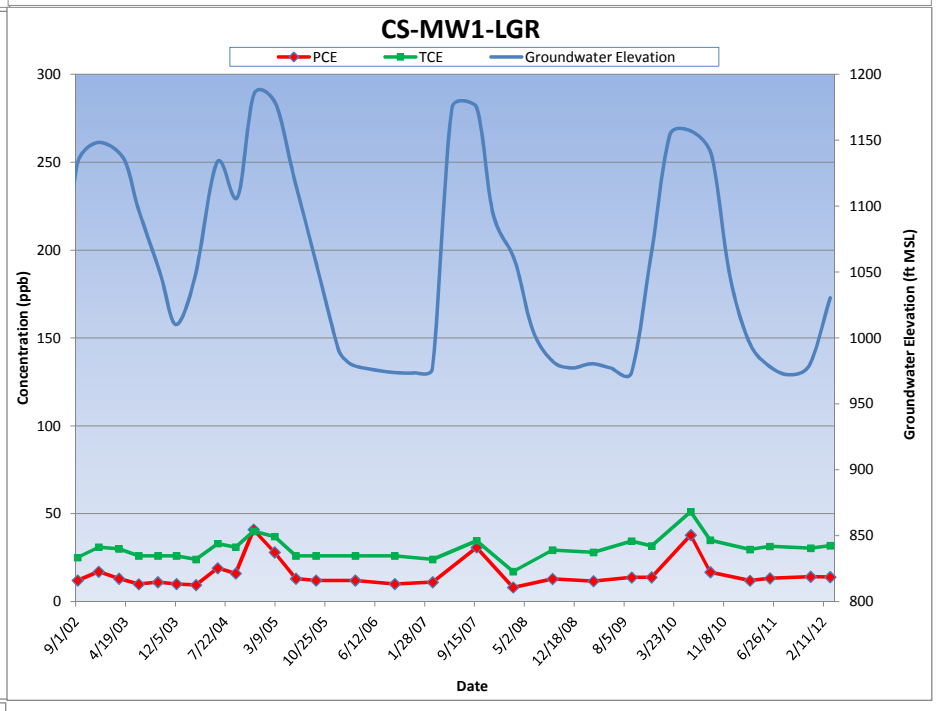
J:\CSSA\GIS\Groundwater\Maps\March12_DCE_LGR_GWConc.mxd

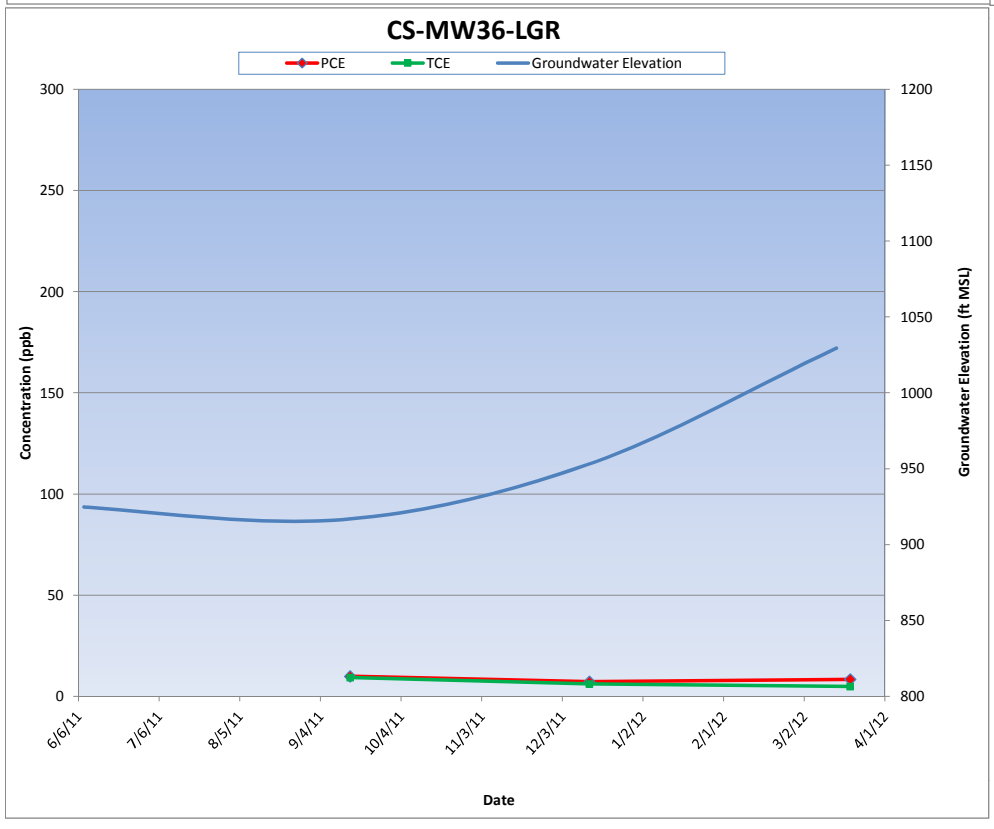
Figure 3-5
Cumulative VOC Concentrations vs Groundwater Elevations











4.0 MARCH 2012 SUMMARY

- Thirty-four wells were scheduled for sampling in March 2012, and 33 were sampled. One well CS-MW11B-LGR was not sampled because the well was dry.
- From January 1 to March 21, 2012, CSSA's south weather station recorded 8.58 inches of rain. The north weather station did not record a complete set of data due to voltage problems.
- Water levels increased an average of 55.51 feet per well since last quarter. Water levels have begun to rebound since the drought in 2011. The average water level in March 2012 (excluding pumping wells) was 230.37 feet below top of casing.
- Monitoring wells CS-MW35-LGR and CS-MW36-LGR were sampled for the third consecutive quarter. CS-MW36-LGR has PCE and TCE detections above the MCL and CS-MW35-LGR has PCE detections at and just below the RL.
- VOCs were detected above the MCL in five of the 33 wells sampled in March 2012. Wells CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, CS-MW36-LGR, and CS-D were above the MCL for PCE and/or TCE, see **Figure 3-5**.
- Wells CS-D and CS-MW16-LGR had detections of *cis*-1,2-DCE above the MCL in March 2012.
- Lead was slightly above the AL in well CS-MW9-BS. Lead has generally been above the AL since September 2007, but increasing turbidity has been observed in the well and is likely related to the elevated lead levels. The well was re-purged in June 2012 and will be sampled again in December 2012 in accordance with the LTMO.
- Eight zones in Westbay Wells (WB01-WB04) in the vicinity of AOC-65 were sampled in March 2012. These wells were also profiled to collect water level data in the area. Six of the 8 zones had PCE/TCE above the MCL. The Westbay Wells are scheduled to be sampled again in September 2012.
- Isoconcentration figures were added to this report to depict the extents of PCE, TCE, and *cis*-1,2-DCE in plume 1 (SWMU B-3) and plume 2 (AOC-65), **Figures 3-2, 3-3, and 3-4**.

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 March 14, 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 March 14, 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 northern and southern continuous-reading weather stations WS-N and WS-S. 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 33 of 46 CSSA wells. Of the 34 wells scheduled to be sampled in March 2012, one well (CS-MW11B-LGR) was not sampled because it was dry.	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-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-1, CS-9, 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," 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 MARCH 2012

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

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
CS-MW1-LGR	3/13/2012	NA	NA	0.0005U	**0.003F**	NA	0.0019U	NA	0.0001U
CS-MW2-LGR	3/21/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW3-LGR	3/15/2012	NA	NA	0.0005U	**0.003F**	NA	0.0019U	NA	0.0001U
CS-MW4-LGR	3/15/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW5-LGR	3/13/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW6-LGR	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW7-LGR	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	**0.0002F**
CS-MW8-LGR	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW9-CC	3/16/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW9-BS	3/16/2012	NA	NA	0.0005U	**0.003F**	NA	**0.0168F**	NA	0.0001U
CS-MW10-LGR	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	**0.0002F**
CS-MW11A-LGR	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW12-LGR	3/21/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW16-LGR	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW16-CC	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW16-CC FD	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW17-LGR	3/15/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW18-LGR	3/21/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW19-LGR	3/19/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	**0.0002F**
CS-MW19-LGR FD	3/19/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	**0.0002F**
CS-MW20-LGR	3/19/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW21-LGR	3/21/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW22-LGR	3/21/2012	NA	NA	0.0005U	0.001U	NA	**0.0029F**	NA	0.0001U
CS-MW23-LGR	3/21/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW24-LGR	3/16/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW25-LGR	3/15/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	**0.0002F**
CS-MW35-LGR	3/20/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW36-LGR	3/19/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-D	3/19/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-2	3/19/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-4	3/19/2012	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-9	3/22/2012	NA	NA	0.0005U	0.001U	NA	**0.0091F**	NA	**0.0012**
CSSA Drinking Water Well System									
CS-1	3/22/2012	0.0002U	**0.0358**	0.0005U	0.001U	**0.004F**	0.0019U	**0.23**	0.0001U
CS-10	3/22/2012	0.0002U	**0.0408**	0.0005U	0.001U	0.003U	0.0019U	**0.062**	0.0001U
CS-10 FD	3/22/2012	0.0002U	**0.0423**	0.0005U	0.001U	0.003U	0.0019U	**0.066**	0.0001U
CS-12	3/22/2012	0.0002U	**0.0323**	0.0005U	0.001U	**0.010**	0.0019U	**0.20**	0.0001U

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-MW1-LGR	3/13/2012	0.12U	**19.8**	0.08U	**13.93**	**31.76**	0.08U
CS-MW2-LGR	3/21/2012	0.12U	**0.97F**	0.08U	0.06U	0.05U	0.08U
CS-MW3-LGR	3/15/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW4-LGR	3/15/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW5-LGR	3/13/2012	0.12U	**2.91**	0.08U	**1.84**	**2.56**	0.08U
CS-MW6-LGR	3/20/2012	0.12U	0.07U	0.08U	**0.25F**	0.05U	0.08U
CS-MW7-LGR	3/20/2012	0.12U	0.07U	0.08U	**0.69F**	0.05U	0.08U
CS-MW8-LGR	3/20/2012	0.12U	0.07U	0.08U	**2.38**	0.05U	0.08U
CS-MW9-CC	3/16/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW9-BS	3/16/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW10-LGR	3/20/2012	0.12U	0.07U	0.08U	**2.1**	**0.54F**	0.08U
CS-MW11A-LGR	3/20/2012	0.12U	0.07U	0.08U	**1.05F**	0.05U	0.08U
CS-MW12-LGR	3/21/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW16-LGR	3/20/2012	0.12U	**132**	**2.88**	**126.98**	**154.26**	0.08U
CS-MW16-CC	3/20/2012	**0.18F**	**18.55**	**6.08**	**1.10F**	**15.42**	0.08U

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

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-MW16-CC FD	3/20/2012	**0.19F**	**19.89**	**6.64**	**1.14F**	**17.04**	0.08U
CS-MW17-LGR	3/15/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW18-LGR	3/21/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW19-LGR	3/19/2012	0.12U	0.07U	0.08U	**0.61F**	0.05U	0.08U
CS-MW19-LGR FD	3/19/2012	0.12U	0.07U	0.08U	**0.64F**	0.05U	0.08U
CS-MW20-LGR	3/19/2012	0.12U	0.07U	0.08U	**1.79**	0.05U	0.08U
CS-MW21-LGR	3/21/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW22-LGR	3/21/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW23-LGR	3/21/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW24-LGR	3/16/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW25-LGR	3/15/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW35-LGR	3/20/2012	0.12U	0.07U	0.08U	**1.26F**	0.05U	0.08U
CS-MW36-LGR	3/19/2012	0.12U	0.07U	0.08U	**8.43**	**4.94**	0.08U
CS-D	3/19/2012	0.12U	**70.06**	0.08U	**67.27**	**83**	0.08U
CS-2	3/19/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-4	3/19/2012	0.12U	**2.44**	0.08U	**2.59**	**3.42**	0.08U
CS-9	3/22/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CSSA Drinking Water Well System							
CS-1	3/22/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-10	3/22/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-10 FD	3/22/2012	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12	3/22/2012	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

WESTBAY ANALYTICAL RESULTS MARCH 2012

Appendix C
March 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-09	3/12/2012	<0.12	**0.37F**	**18.92**	**14.03**	<0.08	<0.08
CS-WB02-LGR-09	3/12/2012	<0.12	**0.31F**	**13.79**	**16.15**	<0.08	<0.08
CS-WB03-LGR-09	3/13/2012	<0.12	**21.04**	**4.99**	**9.11**	<0.08	<0.08
CS-WB04-LGR-06	3/13/2012	<0.12	**3.25**	**11.19**	**35.08**	<0.08	<0.08
CS-WB04-LGR-07	3/13/2012	<0.12	**3.18**	**11**	**32.3**	<0.08	<0.08
CS-WB04-LGR-09	3/13/2012	<0.12	<0.07	**7.77**	**10.34**	<0.08	<0.08
CS-WB04-LGR-10	3/13/2012	<0.12	<0.07	**0.66F**	**1.15F**	<0.08	<0.08
CS-WB04-LGR-11	3/13/2012	<0.12	<0.07	**0.21F**	**0.42F**	<0.08	<0.08

Data Qualifiers

F-The analyte was positively identified but the associated numerical value is below the RL.

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 67206
SDG 67232
SDG 67265
SDG 67291
SDG 67305
SDG 67323

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 quarterly groundwater samples and the associated field quality control (QC) sample collected from on-post Camp Stanley Storage Activity (CSSA) on March 13, 2012. The samples in the following Sample Delivery Group (SDG) were analyzed for a reduced list of volatile organic compounds (VOCs) and metals:

67206

The field QC sample associated with this SDG was one trip blank (TB). 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 1.5ºC, which was slightly below 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 three (3) samples, including two (2) on-post groundwater samples and one (1) TB. The samples were collected on March 13, 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 (#164868) 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 could not be evaluated due to the lack of duplicate analyses involved in this SDG.

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 two (2) on-post groundwater samples which were collected on March 13, 2012 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. Both 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 one batch (#164868). Both samples were analyzed in one batch under a single ICAL. 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 analyses involved in this SDG.

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 in this SDG 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 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 two (2) on-post groundwater samples which were collected on March 13, 2012 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in one batch (#164925). Both samples were analyzed in a one batch under a single ICAL. All 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 could not be evaluated based due to the lack of duplicate analyses involved in this SDG.

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.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were 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 results for the samples in this SDG were 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 quarterly groundwater samples and the associated field quality control (QC) sample collected from on-post Camp Stanley Storage Activity (CSSA) on March 15, 2012. The samples in the following Sample Delivery Group (SDG) were analyzed for a reduced list of volatile organic compounds (VOCs) and metals:

67232

The field QC sample associated with this SDG was one trip blank (TB). 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 3.0ºC, 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 five (5) samples, including four (4) on-post groundwater samples and one (1) TB. The samples were collected on March 15, 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 (#165328) 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 could not be evaluated due to the lack of duplicate analyses involved in this SDG.

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 March 15, 2012 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. 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.

The samples for ICP-AES metals were digested in one batch (#165154). The samples were analyzed in one batch under a single ICAL. 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 analyses involved in this SDG.

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 in this SDG 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 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 which were collected on March 15, 2012 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in one batch (#165035). The samples were analyzed in a one batch under a single ICAL. All 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 could not be evaluated based due to the lack of duplicate analyses involved in this SDG.

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.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were 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 results for the samples in this SDG were 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 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 nine on-post and one off-post quarterly groundwater samples and the associated field quality control (QC) samples collected from Camp Stanley Storage Activity (CSSA) on March 16 and 19, 2012. The samples in the following Sample Delivery Group (SDG) were analyzed for a reduced list of volatile organic compounds (VOCs) and metals:

67265

The field QC samples associated with this SDG were one pair of matrix spike/matrix spike duplicate (MS/MSD), one field duplicate (FD) and one trip blank (TB). 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 fourteen (14) samples, including ten (9) on-post groundwater samples, one (1) on-post groundwater sample, one (1) FD, one pair of MS/MSD, and one (1) TB. The samples were collected on March 16 and 19, 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 three batches (#165692, #165693, and #165694) under two sets 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 three laboratory control samples (LCSs), MS/MSD, and the surrogate spikes. Sample CS-2 was marked as the parent sample for MS/MSD analyses.

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

Precision

Precision was evaluated based on the relative percent difference (RPD) of parent/FD and MS/MSD results. Sample CS-MW19-LGR was collected in duplicate.

All RPDs of MS/MSD were compliant.

None of the target VOCs were detected in the parent and FD samples at or above the reporting limit, 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.
- All three 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 three 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 twelve (12) groundwater samples including one FD and one pair of MS/MSD which were collected on March 16 & 19, 2012 and analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. 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.

The samples for ICP-AES metals were digested in one batch (#165251). The samples were analyzed in one batch under a single ICAL. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD. Sample CS-2 was marked as the parent sample for MS/MSD analyses.

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

Precision

Precision was evaluated based on the RPD of MS/MSD and parent/FD sample results. Sample CS-MRS19-LGR was collected in duplicate.

All RPDs of MS/MSD were compliant.

None of the target metals were detected at or above the reporting limit, 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 preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples in this SDG 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 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 ICP-AES portion of this SDG consisted of twelve (12) groundwater samples including one FD and one pair of MS/MSD which were collected on March 16 & 19, 2012 and analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in one batch (#165206). The samples were analyzed in a one batch under a single ICAL. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD samples.

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

Precision

Precision was evaluated based on the RPD of parent/FD and MS/MSD results.

The RPD of MS/MSD results were compliant.

Mercury was not detected at or above the reporting limit in the parent and FD samples, therefore, the RPD calculation was 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 laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were 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 results for the samples in this SDG were 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 quarterly groundwater samples and the associated field quality control (QC) sample collected from on-post Camp Stanley Storage Activity (CSSA) on March 21, 2012. The samples in the following Sample Delivery Group (SDG) were analyzed for a reduced list of volatile organic compounds (VOCs) and metals:

67305

The field QC sample associated with this SDG was one trip blank (TB). 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 1.5ºC, which was slightly below the 2-6ºC range recommended by the CSSA QAPP. This exceedance should not affect data quality.

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 seven (7) samples, including six (6) on-post groundwater samples and one (1) TB. The samples were collected on March 21, 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 (#165692 and #165693) 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 could not be evaluated due to the lack of duplicate analyses involved in this SDG.

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 March 21, 2012 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. 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.

The samples for ICP-AES metals were digested in one batch (#165515). The samples were analyzed in one batch under a single ICAL. 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 analyses involved in this SDG.

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 in this SDG 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 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 which were collected on March 21, 2012 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in one batch (#165501). The samples were analyzed in a one batch under a single ICAL. All 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 could not be evaluated based due to the lack of duplicate analyses involved in this SDG.

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.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were 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 results for the samples in this SDG were 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 groundwater samples and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on March 22, 2012. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals:

67323

The field QC samples associated with this SDG included one field duplicate (FD) sample, one matrix spike/matrix spike duplicate (MS/MSD) pair, and one trip blank (TB). 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 package 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 eight (8) samples, including four (4) on-post groundwater samples, one FD sample, one MS/MSD pair, and one TB. The samples were collected on March 22, 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 analytical batch #165325 under a single initial calibration (ICAL). 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), the MS/MSD samples, and the surrogate spikes. Sample CS-12 was designated as the parent sample for MS/MSD analysis on the COC.

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

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD concentrations. Precision was further evaluated by comparing the field duplicate analyte results. An extra set of vials was collected from well CS-10. The extra set of vials from this well was submitted as a FD.

All MS/MSD RPDs were within acceptance criteria for both MS/MSD pair.

All target VOCs were non-detect in the sample from CS-10 and the associated field duplicate.

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. No target VOC was detected at or above the associated MDL in the blanks.

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 seven (7) groundwater samples including four (4) on-post well samples, one FD and one pair of MS/MSD. All samples were collected on March 22, 2012, well CS-9 was analyzed for cadmium, chromium, and lead. All other samples were analyzed for arsenic, barium, cadmium, chromium, copper, lead and zinc.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. 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.

The samples for ICP-AES metals were digested in one batch (#165576). The samples were analyzed in one batch under a single ICAL. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD results.

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

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD concentrations. Precision was further evaluated by comparing the field duplicate analyte results. An extra bottle was collected from well CS-10 as a FD.

All RPDs of MS/MSD were compliant.

Only barium and zinc were detected above the reporting limits in the parent and FD samples.

CS-10

Metals	Parent, mg/L	FD, mg/L	RPD	Criteria, RPD
Barium	0.0408	0.0423	3.6	≤20
Zinc	0.062	0.066	6.2	

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 in this SDG 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 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 seven (7) groundwater samples including four (4) on-post well samples, one (1) FD, and one (1) pair of MS/MSD which were collected on March 22, 2012 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in one batch (#165504). The samples were analyzed in a one batch under a single ICAL. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD.

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

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD concentrations. Precision was further evaluated by comparing the field duplicate analyte results. An extra bottle was collected from well CS-10 as a FD.

All RPDs of MS/MSD were compliant.

Mercury was not detected in CS-10 and its FD.

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.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were 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 results for the samples in this SDG were 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 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 eight on-post, two off-post quarterly groundwater samples and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on March 20, 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 wells only):

67291

The field QC sample 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 twelve (12) samples, including eight (8) on-post groundwater samples, two (2) off-post well groundwater samples, one (1) FD of CS-MW16-CC, and one (1) TB. The samples were collected on March 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 one batch (#165336) 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.

CS-MW16-CC

Analyte	Parent, µg/L	FD, µg/L	RPD	Criteria, RPD
cis-1,2-DCE	18.55	19.89	7.0	
TCE	15.42	17.04	10	≤20
trans-1,2-DCE	6.08	6.64	8.8	

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 eight (8) on-post groundwater samples and one FD which were collected on March 20, 2012 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. 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.

The samples for ICP-AES metals were digested in one batch (#165252). The samples were analyzed in one batch under a single ICAL. 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 was evaluated based on the RPD of the parent and FD sample results.

None of the target metals were detected at or above the reporting limits for sample CS-MW16-CC and its FD, 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 preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples in this SDG 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 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 eight (8) on-post groundwater samples and one FD which were collected on March 20, 2012 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in one batch (#165207). The samples were analyzed in a one batch under a single ICAL. All 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 at or above the reporting limit for sample CS-MW16-CC and its FD, therefore, the RPD calculation was 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 laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were 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 results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.