JUNE 2014

On-Post
Quarterly Groundwater Monitoring Report

Prepared For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

August 2014

EXECUTIVE SUMMARY

- Forty-four wells and 8 Westbay zones were scheduled for sampling in June 2014. From this, six wells were unable to be sampled due to the water level falling below the sampling pump.
- At CSSA, the Middle Trinity aquifer average groundwater elevations in June 2014 increased 22.53 feet from the elevations measured in March 2014. The average depth to water in the wells was 271.40 feet below top of casing (BTOC) or 971.07 feet above mean sea level (MSL). As such, the Trinity-Glen Rose Groundwater Conservation District (TGRGCD) and CSSA remain under stage 2 severe drought water restrictions, which went into effect June 1, 2011. For the adjacent Edwards aquifer, the San Antonio Water System (SAWS) has been in Stage 2 water restrictions since May 1, 2012. And the Edwards Aquifer Authority (EAA) declared Stage 3 restrictions for the San Antonio "Pool" of the Edwards Aquifer on April 10, 2014.
- The maximum contaminant level (MCL) was exceeded in monitoring wells CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, and CS-MW36-LGR for tetrachloroethene (PCE) and/or trichloroethene (TCE) in June 2014. The MCL for *cis*-1,2-dichloroethene (*cis*-1,2-DCE) was also exceeded in well CS-MW16-LGR.
- No wells sampled had metal detections above their corresponding MCL, action level (AL), or secondary standard (SS) in June 2014.
- Eight Westbay zones were sampled in June 2014. Of the 8 samples collected, 5 zones reported PCE and TCE above the MCL.

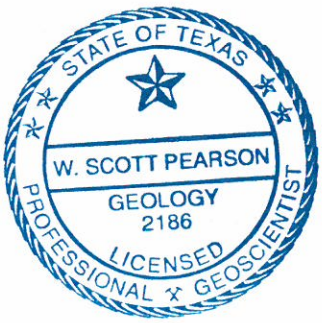
GEOSCIENTIST CERTIFICATION

JUNE 2014 ON-POST QUARTERLY GROUNDWATER MONITORING REPORT

FOR

DEPARTMENT OF THE ARMY
CAMP STANLEY STORAGE ACTIVITY
BOERNE, TEXAS

I, W. Scott Pearson, P.G., hereby certify that the June 2014 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 June 2014, and is true and accurate to the best of my knowledge and belief.



W. Scott Pearson

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

8-26-2014

Date

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ACRONYMS AND ABBREVIATIONS

µg/L	microgram per liter
1,1-DCE	1,1-dichloroethene
§3008(h) Order	RCRA 3008(h) Administrative Order on Consent
AL	Action Level
AOC	Area of Concern
APPL	Agriculture and Priority Pollutants Laboratories, Inc.
BS	Bexar Shale
BTOC	below top of casing
CC	Cow Creek
cis-1,2-DCE	*cis*-1,2-Dichloroethene
COC	contaminants of concern
CSSA	Camp Stanley Storage Activity
DQO	Data Quality Objectives
EAA	Edwards Aquifer Authority
FO	Fair Oaks
HSP	Health and Safety Plan
ISCO	In-Situ Chemical Oxidation
LGR	Lower Glen Rose
LTMO	Long Term Monitoring Optimization
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MSL	mean sea level
NA	Not Available
PCE	Tetrachloroethene
P.G.	Professional Geologist
QAPP	Quality Assurance Program Plan
RL	Reporting Limit
SAP	Sampling and Analysis Plan
SAWS	San Antonio Water System
SS	Secondary Standard
SWMU	Solid Waste Management Units
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
TGRGCD	Trinity-Glen Rose Groundwater Conservation District
trans-1,2-DCE	*trans*-1,2-Dichloroethene
UGR	Upper Glen Rose
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WS	Weather Station

JUNE 2014
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 June 2014. Laboratory analytical results are presented along with potentiometric contour maps. Results from all four 2014 quarterly monitoring events (March, June, September, and December) will be described in detail in an 2014 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. For this specific quarter, groundwater monitoring was performed June 11-23, 2014.

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 (DQOs) 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-five water level measurements were recorded on June 9, 2014 from on-post monitoring wells completed in the Lower Glen Rose (LGR), Bexar Shale (BS), and Cow Creek (CC) formational members of the Middle Trinity Aquifer (**Tables 2.1 and 2.2**). The groundwater potentiometric surface maps illustrating groundwater elevations from the LGR, BS, and CC zones in June 2014 are shown in **Figures 2.1, 2.2, and 2.3**, respectively.

The June 2014 potentiometric surface map for LGR-screened wells **(Figure 2.1)** exhibited a wide range of groundwater elevations, from a minimum of 900.27 feet above mean sea level (MSL) at CS-1 to a maximum of 1050.16 feet above MSL at FO-20. Groundwater elevations are generally higher in the northern and central portions of CSSA, and decrease to the southwest and southeast. As measured in all non-pumping wells, the average groundwater elevation in June 2014 increased 22.53 feet from the elevations measured in March 2014. From March 22 to June 26, 2014, the southern weather station at AOC-65 (WS AOC-65) recorded 8.03 inches of rainfall during 25 rainfall events in this timeframe. The rainfall was sporadic with a majority of the rain falling in early May, 5.83 inches. Two events had greater than one inch of rain, with the largest one day rain event of 2.52 on May 26th. The northern or B-3 weather station recorded 8.73 inches of precipitation for the same time period. San Antonio fell back into stage 2 water restrictions on May 1, 2012 and the TGRGCD remains in Stage 2 severe drought water restrictions, effective since June 1, 2011.

Well CS-MW4-LGR, located in the central portion of CSSA, typically has one of the highest groundwater elevations of LGR-screened wells. Under average and above-average aquifer elevations, the groundwater level is 20 to 30 feet higher than the nearest comparable wells (CS-MW2-LGR and CS-MW5-LGR), creating a pronounced groundwater mound in the central portion of the facility. In June 2014 this mounding effect was observable, as the elevation in CS-MW4-LGR was 47 and 52 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 June 2014, the water elevation at CS-MW4-LGR was 1032.23 feet MSL, and the typical mounding effect was apparent.

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, B3-EXW02, B3-EXW03, B3-EXW04, and B3-EXW05 are cyclically pumped as part of the Bioreactor remediation system at Solid Waste Management Unit (SWMU) B-3. This continuous pumping action creates a notable “cone of depression” in the central portion of the post. These remediation wells provide groundwater to the Bioreactor system, and are automatically operated based upon water level within each well. CSSA drinking water wells CS-1, CS-10, and CS-12 are also cycled on and off to maintain the drinking water system currently in place at CSSA. Influence from the pumping of wells B3-EXW01, B3-EXW02, and B3-EXW05 is evident in **Figure 2.1**. 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.

Table 2.1
Measured Groundwater Elevation
June 2014

Well ID:	TOC elevation (ft MSL)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft MSL)	Formations Screened			Date
				LGR	BS	CC	
CS-1	1169.27	269.00	900.27	X			6/9/2014
CS-2	**1237.59**	**256.74**	**980.85**	X	?		6/9/2014
CS-3	1240.17	257.05	983.12	X			6/9/2014
CS-4	1229.28	248.28	981.00	X			6/9/2014
CS-9	**1325.31**	**372.15**	**953.16**	**ALL**			6/9/2014
CS-10	**1331.51**	**369.60**	**961.91**	**ALL**			6/9/2014
CS-12	**1274.09**	**280.90**	**993.19**	**ALL**			6/9/2014
CS-13	**1193.26**	**244.87**	**948.39**	**ALL**			6/9/2014
CS-D	1236.03	253.80	982.23	X			6/9/2014
CS-MWG-LGR	1328.14	313.33	1014.81	X			6/9/2014
CS-MWH-LGR	1319.19	303.27	1015.92	X			6/9/2014
CS-I	1315.20	300.62	1014.58	X			6/9/2014
CS-MW1-LGR	1220.73	235.70	985.03	X			6/9/2014
CS-MW1-BS	1221.09	243.16	977.93		X		6/9/2014
CS-MW1-CC	1221.39	245.50	975.89			X	6/9/2014
CS-MW2-LGR	1237.08	252.24	984.84	X			6/9/2014
CS-MW2-CC	1240.11	274.70	965.41			X	6/9/2014
CS-MW3-LGR	1334.14	351.72	982.42	X			6/9/2014
CS-MW4-LGR	1209.71	177.48	1032.23	X			6/9/2014
CS-MW5-LGR	1340.24	360.41	979.83	X			6/9/2014
CS-MW6-LGR	1232.25	270.56	961.69	X			6/9/2014
CS-MW6-BS	1232.67	261.99	970.68		X		6/9/2014
CS-MW6-CC	1233.21	271.74	961.47			X	6/9/2014
CS-MW7-LGR	1202.27	251.25	951.02	X			6/9/2014
CS-MW7-CC	1201.84	250.95	950.89			X	6/9/2014
CS-MW8-LGR	1208.35	246.20	962.15	X			6/9/2014
CS-MW8-CC	1206.13	252.87	953.26			X	6/9/2014
CS-MW9-LGR	1257.27	267.86	989.41	X			6/9/2014
CS-MW9-BS	1256.73	255.06	1001.67		X		6/9/2014
CS-MW9-CC	1255.95	272.20	983.75			X	6/9/2014
CS-MW10-LGR	1189.53	257.72	931.81	X			6/9/2014
CS-MW10-CC	1190.04	274.75	915.29			X	6/9/2014
CS-MW11A-LGR	1204.03	266.79	937.24	X			6/9/2014
CS-MW11B-LGR	1203.52	dry		X			6/9/2014
CS-MW12-LGR	1259.07	279.43	979.64	X			6/9/2014
CS-MW12-BS	1258.37	272.23	986.14		X		6/9/2014
CS-MW12-CC	1257.31	276.76	980.55			X	6/9/2014
CS-MW16-LGR	1244.60	261.84	982.76	X			6/9/2014
CS-MW16-CC	1244.51	267.80	976.71			X	6/9/2014
B3-EXW01*	1245.26	319.26	926.00	X			6/9/2014
B3-EXW02*	1249.66	299.54	950.12	X			6/9/2014
B3-EXW03	1235.11	257.39	977.72	X			6/9/2014
B3-EXW04	1228.46	243.65	984.81	X			6/9/2014
B3-EXW05	1279.46	344.90	934.56	X			6/9/2014
CS-MW17-LGR	1257.01	302.13	954.88	X			6/9/2014
CS-MW18-LGR	1283.61	334.69	948.92	X			6/9/2014
CS-MW19-LGR	1255.53	278.47	977.06	X			6/9/2014
CS-MW20-LGR	1209.42	222.62	986.80	X			6/9/2014
CS-MW21-LGR	1184.53	238.70	945.83	X			6/9/2014
CS-MW22-LGR	1280.49	345.87	934.62	X			6/9/2014
CS-MW23-LGR	1258.20	316.12	942.08	X			6/9/2014
CS-MW24-LGR	1253.90	271.12	982.78	X			6/9/2014
CS-MW25-LGR	1293.01	307.72	985.29	X			6/9/2014
CS-MW35-LGR	1186.97	253.05	933.92	X			6/9/2014
CS-MW36-LGR	1218.74	255.27	963.47	X			6/9/2014
FO-20	**NA**	**NA**	**1050.16**		**ALL**		6/9/2014
Number of wells screened in each formation.				**38**	**4**	**9**	
Average groundwater elevation in each formation given in feet (non pumping wells).				**972.10**	**984.11**	**960.81**	

Notes:

Bold wells: CS-2, CS-9, CS-10, CS-12, CS-13, and FO-20 are open boreholes across more than one formational unit.

? = Exact screening information unknown for this well.

Shaded wells are routinely pumped for either domestic, livestock, or environmental remediation purposes, and therefore are not used in calculating statistics.

CS-1, CS-9, CS-10, CS-12, and CS-13 are current, inactive, or future drinking water wells.

CS-MW16-LGR, CS-MW16-CC, B3-EXW01 through B3-EXW05 pumps are cycling continuously to feed the B-3 Bioreactor.

* = submersible pump running at time of water level measurement.

Formational average groundwater elevation is calculated from non-pumping wells screened in only one formation.

All measurements given in feet.

NA = Data not available

Table 2.2
Change in Groundwater Elevation from Previous Quarter
June 2014

Well ID	March 2014 Elevations	June 2014 Elevations	GW elevation change (Sept. minus June)	Formations Screened		
				LGR	BS	CC
CS-1	875.57	900.27	24.70	X		
CS-2	**980.03**	**980.85**	**0.82**	X	?	
CS-3	975.49	983.12	7.63	X		
CS-4	974.44	981.00	6.56	X		
CS-9	**940.41**	**953.16**	**12.75**	**ALL**		
CS-10	**944.31**	**961.91**	**17.60**	**ALL**		
CS-12	**987.36**	**993.19**	**5.83**	**ALL**		
CS-13	**905.44**	**948.39**	**42.95**	**ALL**		
CS-D	973.91	982.23	8.32	X		
CS-MWG-LGR	1014.11	1014.81	0.70	X		
CS-MWH-LGR	1017.69	1015.92	-1.77	X		
CS-I	1009.72	1014.58	4.86	X		
CS-MW1-LGR	970.98	985.03	14.05	X		
CS-MW1-BS	974.84	977.93	3.09		X	
CS-MW1-CC	946.03	975.89	29.86			X
CS-MW2-LGR	968.05	984.84	16.79	X		
CS-MW2-CC	940.76	965.41	24.65			X
CS-MW3-LGR	977.17	982.42	5.25	X		
CS-MW4-LGR	968.09	1032.23	64.14	X		
CS-MW5-LGR	964.62	979.83	15.21	X		
CS-MW6-LGR	927.34	961.69	34.35	X		
CS-MW6-BS	948.14	970.68	22.54		X	
CS-MW6-CC	910.54	961.47	50.93			X
CS-MW7-LGR	916.10	951.02	34.92	X		
CS-MW7-CC	900.32	950.89	50.57			X
CS-MW8-LGR	919.51	962.15	42.64	X		
CS-MW8-CC	902.24	953.26	51.02			X
CS-MW9-LGR	987.44	989.41	1.97	X		
CS-MW9-BS	986.91	1001.67	14.76		X	
CS-MW9-CC	971.98	983.75	11.77			X
CS-MW10-LGR	884.74	931.81	47.07	X		
CS-MW10-CC	878.88	915.29	36.41			X
CS-MW11A-LGR	882.65	937.24	54.59	X		
CS-MW11B-LGR	Dry	Dry	Dry	X		
CS-MW12-LGR	969.54	979.64	10.10	X		
CS-MW12-BS	971.86	986.14	14.28		X	
CS-MW12-CC	960.98	980.55	19.57			X
CS-MW16-LGR	959.00	982.76	23.76	X		
CS-MW16-CC	869.71	976.71	107.00			X
B3-EXW01*	970.48	926.00	-44.48	X		
B3-EXW02*	941.66	950.12	8.46	X		
B3-EXW03	941.31	977.72	36.41	X		
B3-EXW04	961.46	984.81	23.35	X		
B3-EXW05	973.06	934.56	-38.50	X		
CS-MW17-LGR	935.33	954.88	19.55	X		
CS-MW18-LGR	937.46	948.92	11.46	X		
CS-MW19-LGR	950.55	977.06	26.51	X		
CS-MW20-LGR	950.65	986.80	36.15	X		
CS-MW21-LGR	933.05	945.83	12.78	X		
CS-MW22-LGR	906.54	934.62	28.08	X		
CS-MW23-LGR	912.56	942.08	29.52	X		
CS-MW24-LGR	978.83	982.78	3.95	X		
CS-MW25-LGR	983.49	985.29	1.80	X		
CS-MW35-LGR	885.25	933.92	48.67	X		
CS-MW36-LGR	922.37	963.47	41.10	X		
FO-20	**1056.13**	**1050.16**	**-5.97**		**ALL**	
Average groundwater elevation change (all wells minus pumping wells)			**22.53**			
Average groundwater elevation change in each formation (non pumping wells)				**21.48**	**13.67**	**34.35**

Notes:

Bold wells: CS-2, CS-9, CS-10, CS-12, CS-13, and FO-20 are open boreholes across more than one formational unit.

? = Exact screening information unknown for this well.

Shaded wells are routinely pumped for either domestic, livestock, or environmental remediation purposes, and therefore are not used in calculating statistics.

CS-1, CS-9, CS-10, CS-12, and CS-13 are current, inactive, or future drinking water wells.

CS-MW16-LGR, CS-MW16-CC, B3-EXW01 through B3-EXW05 pumps are cycling continuously to feed the B-3 Bioreactor.

* = submersible pump running at time of water level measurement.

Formational average groundwater elevation change is calculated from non-pumping wells screened in only one formation.

All measurements given in feet.

NA = Data not available

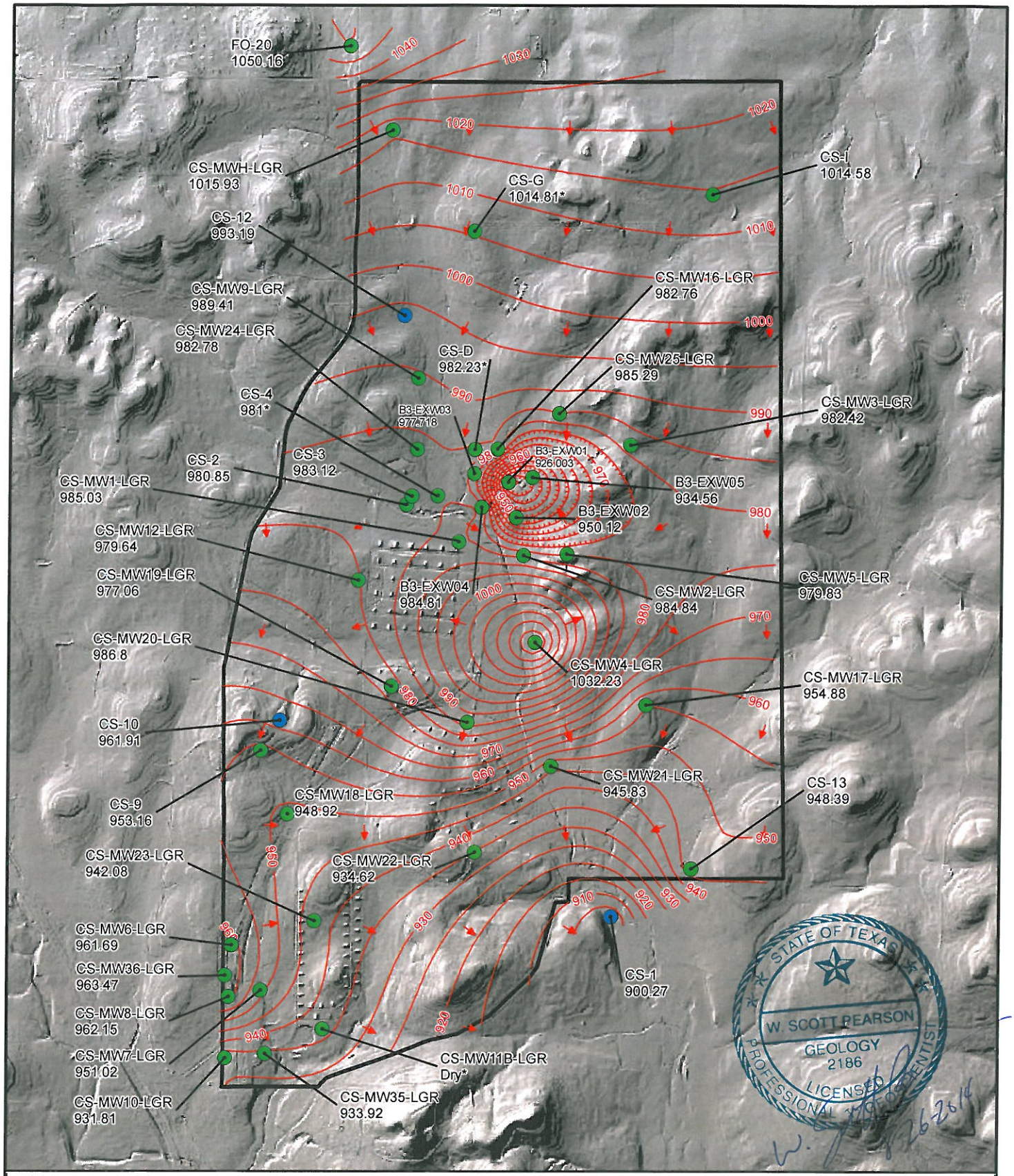

Figure 2.1

June 2014 Potentiometric Surface Map, LGR Wells

Camp Stanley Storage Activity

PARSONS

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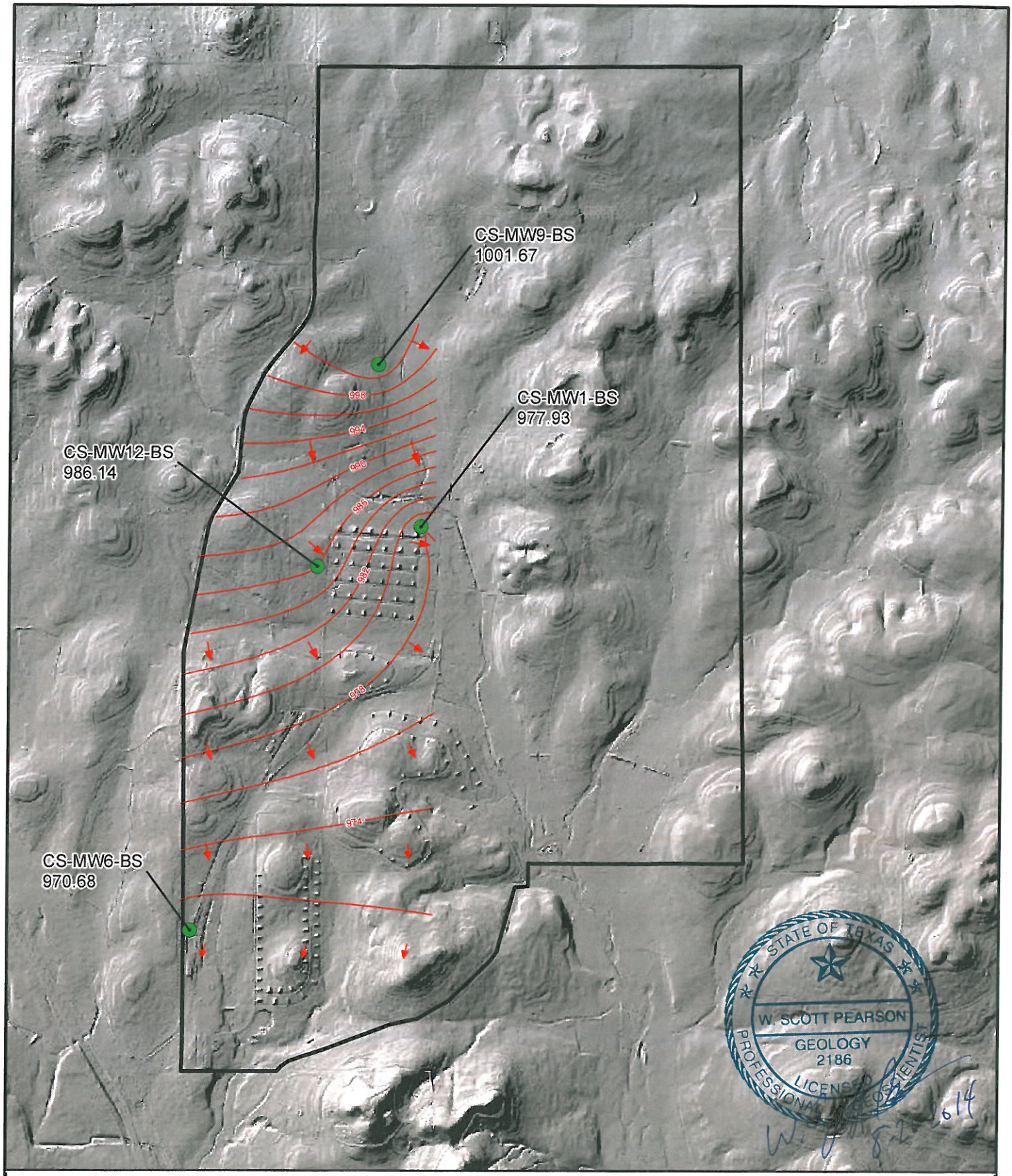

Figure 2.2

June 2014 Potentiometric Surface Map, BS Wells

Camp Stanley Storage Activity

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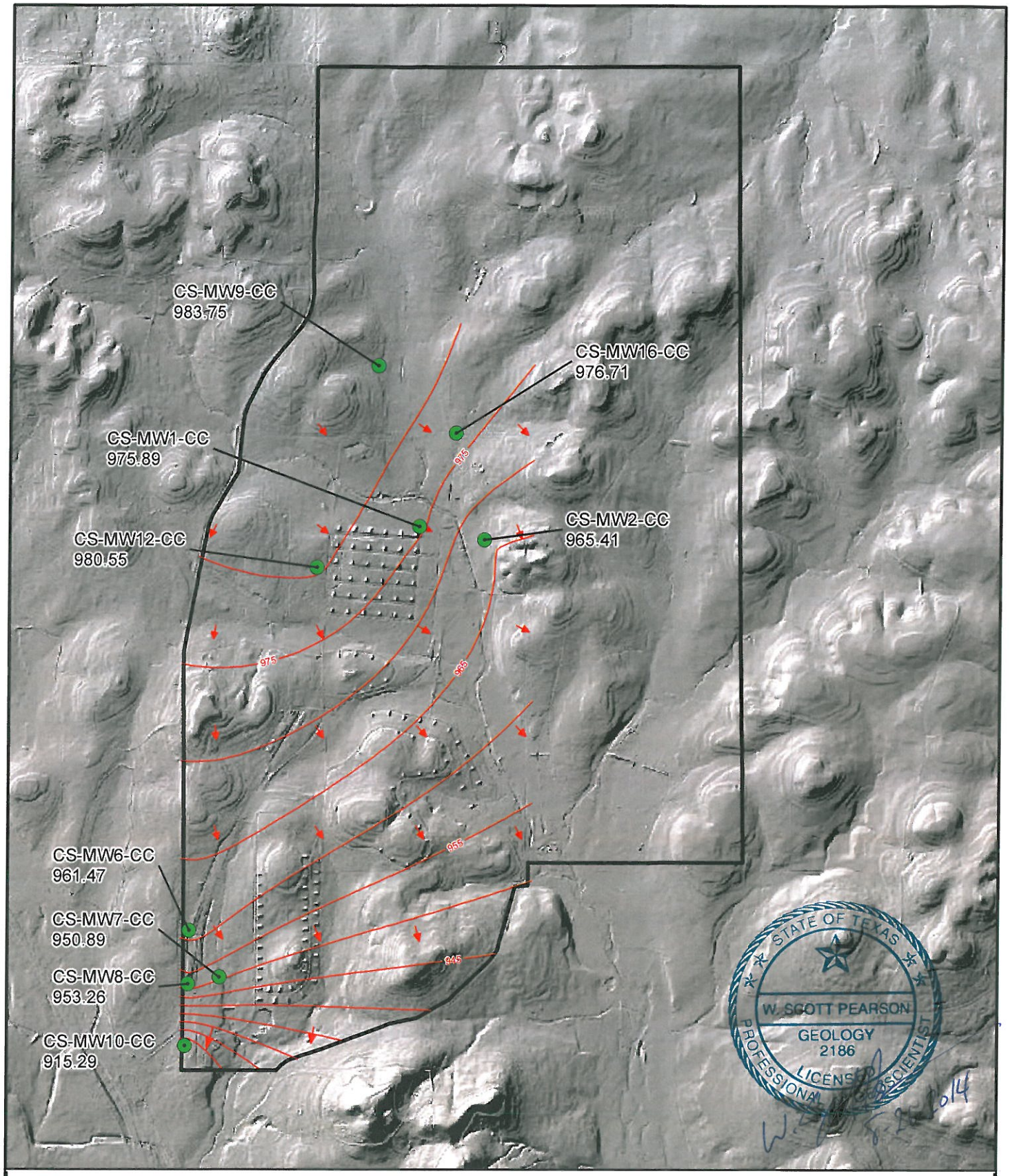

Figure 2.3

June 2014 Potentiometric Surface Map, CC Wells

Camp Stanley Storage Activity

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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 an easterly or 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 through B3-EXW05, 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 June 2014, the overall LGR groundwater gradient is to the south-southeast at 0.0051 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, 2009, 2011 through 2013, and continuing into 2014. Eight inches of rain between April and June 2014 resulted in approximately 25 feet of aquifer level gain in MW-LGR series wells exclusively screened across the basal portion of the LGR, with a basewide average level of 971 feet MSL. This is above the average "marker" elevation (944 feet MSL) at which the aquifer level no longer declines within the basal production interval of the LGR, but yield continues to decrease. However, the aquifer level as measured in the LGR-screened wells is 58 feet below the 11.5-year average of 1,027 ft MSL. The LGR has not been above the long-term "average" water elevation since December 2010.

3.0 JUNE 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 June 2014 included 44 wells and 8 Westbay zones. The samples included three production wells (CS-1, CS-10, and CS-12), one future production well (CS-13), and 40 on-post monitoring wells (see **Table 3.1)**. Six wells were not sampled in June 2014. Wells CS-MW4-LGR, CS-MW10-CC, CS-MW11B-LGR, CS-MW18-LGR, CS-4, and CS-D were not sampled due to the water level falling below the sampling pump. Additional samples were collected as part of the AOC-65 in-situ chemical oxidation (ISCO) Treatability Study; these results will be reported in a separate treatability study report. **Tables 3.1** and **3.2** provide a sampling overview for June 2014 and the schedule under the LTMO recommendations. The above-listed monitoring wells were sampled using dedicated low-flow gas-operated bladder pumps. Wells CS-1, CS-10, CS-12, CS-13, CS-MW16-LGR, CS-MW16-CC, CS-MWH-LGR, and CS-I 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 June 2014 for the short list of volatile organic compounds (VOC) and metals (chromium, cadmium, lead, and mercury). Active and future drinking water wells CS-1, CS-10, CS-12, and CS-13 were analyzed for the short list VOCs and metals (arsenic, barium, chromium, copper, zinc, cadmium, mercury, and lead).

Samples were analyzed by Agriculture & Priority Pollutant Laboratory (APPL) in Clovis, California. All detected concentrations of VOCs and metals are presented in **Table 3.3** and **Table 3.4**. Full analytical results are presented in **Appendix B** and **Appendix C**.

Tetrachloroethene (PCE) and/or Trichloroethene (TCE) were detected above the Maximum Contaminant Level (MCL) in four on-post wells sampled this quarter, CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, and CS-MW36-LGR. *Cis*-1,2-dichloroethene (DCE) was also above the MCL in well CS-MW16-LGR. A comparison of VOC concentrations versus water level for select wells is presented in **Figure 3.2**. The overall trend for wells sampled in June 2014 (CS-MW1-LGR and CS-MW36-LGR) was a slight decrease in VOC concentrations with a moderate increase in elevation. In June 2014, no metals were detected above the MCL/AL/SS for wells sampled.

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 749138-#44, -#46, -#50 and -#51, containing the analytical results from this sampling event, were received by Parsons July 7 through 18, 2014. Data validation was conducted and the data validation reports are presented in **Appendix D**.

Table 3.1
Overview of the On-Post Monitoring Program

Count	Well ID	*Analytes*	*Last Sample Date*	*Sep-13 (snapshot)*	*Dec-13*	*Mar-14*	*Jun-14 (snapshot)*	*Sampling Frequency **
1	CS-MW1-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-14	S	NS	S	S	Semi-annual + 9 month snapshot
	CS-MW1-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	sampled on an as needed basis
2	CS-MW1-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	NS	NS	S	Every 18 months
3	CS-MW2-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-14	S	NS	S	S	Semi-annual + 9 month snapshot
4	CS-MW2-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	NS	NS	S	Every 18 months
5	CS-MW3-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
6	CS-MW4-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NSWL	NS	NS	S	Every 9 months
7	CS-MW5-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
8/ISCO	CS-MW6-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
	CS-MW6-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	sampled on an as needed basis
9	CS-MW6-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
10/ISCO	CS-MW7-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
11	CS-MW7-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
12/ISCO	CS-MW8-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-14	S	NS	S	S	Semi-annual + 9 month snapshot
13	CS-MW8-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
14	CS-MW9-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
	CS-MW9-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	sampled on an as needed basis
15	CS-MW9-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
16	CS-MW10-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NSWL	NS	NSWL	S	Semi-annual + 9 month snapshot
17	CS-MW10-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
18	CS-MW11A-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-14	S	NS	S	S	Semi-annual + 9 month snapshot
19	CS-MW11B-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NSWL	NS	NS	S	Every 9 months
20	CS-MW12-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
	CS-MW12-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	sampled on an as needed basis
21	CS-MW12-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
22	CS-MW16-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
23	CS-MW16-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
24	CW-MW17-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NSWL	NS	NS	S	Every 9 months
25	CS-MW18-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NSWL	NS	NS	S	Every 9 months
26	CS-MW19-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
27	CS-1	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-14	S	S	S	S	Quarterly
28	CS-2	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
29	CS-4	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NSWL	NS	NSWL	S	Semi-annual + 9 month snapshot
	CS-9	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS (pump outage)	NS (pump outage)	NS	Quarterly
30	CS-10	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-14	S	S	S	S	Quarterly
31	CS-12	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-14	S	S	S	S	Quarterly
32	CS-13	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Jun-13	NS	NS	NS	S	Quarterly
33	CS-D	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NSWL	NS	NSWL	S	Semi-annual + 9 month snapshot
34	CS-MWG-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
35	CS-MWH-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
36	CS-I	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	S	Every 18 months
37	CS-MW20-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
38	CS-MW21-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
39	CS-MW22-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
40	CS-MW23-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
41	CS-MW24-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-14	S	NS	S	S	Semi-annual + 9 month snapshot
42	CS-MW25-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Sep-13	S	NS	NS	S	Every 9 months
43	CS-MW35-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-14	S	NS	S	S	Semi-annual + 9 month snapshot
44/ISCO	CS-MW36-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-14	S	S	S	S	Quarterly

* 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-13	Sep-13 (snapshot)	Dec-13	Mar-14	Jun-14 (snapshot)	LTMO Sampling Frequency (as of June '11)
CS-WB01-UGR-01	Dec-04	NSWL	NS	NS	NSWL	ISCO only	Every 9 months
CS-WB01-LGR-01	Mar-14	S	NS	NS	S/ISCO	ISCO only	Every 9 months
CS-WB01-LGR-02	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-03	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-04	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-05	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-06	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-07	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-08	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB01-LGR-09	Mar-14	S	S	NS	S/ISCO	S/ISCO	Every 9 months + snapshot
CS-WB02-UGR-01	Dec-04	NSWL	NS	NS	NSWL	ISCO only	Every 9 months
CS-WB02-LGR-01	Jun-13	S	NS	NS	NSWL	ISCO only	Every 9 months
CS-WB02-LGR-02	Mar-10	NSWL	NS	NS	NSWL	NS	Every 9 months
CS-WB02-LGR-03	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-04	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-05	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-06	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-07	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-08	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB02-LGR-09	Mar-14	S	S	NS	S/ISCO	S/ISCO	Every 9 months + snapshot
CS-WB03-UGR-01	Mar-14	S	NS	NS	S/ISCO	ISCO only	Every 9 months
CS-WB03-LGR-01	Mar-14	NSWL	NS	NS	S/ISCO	ISCO only	Every 9 months
CS-WB03-LGR-02	Oct-07	NSWL	NS	NS	NSWL	NS	Every 9 months
CS-WB03-LGR-03	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-04	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-05	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-06	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-07	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-08	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB03-LGR-09	Mar-14	S	S	NS	S/ISCO	S/ISCO	Every 9 months + snapshot
CS-WB04-UGR-01	Mar-04	NSWL	NS	NS	NSWL	ISCO only	Every 9 months
CS-WB04-LGR-01	Mar-14	NS	NS	NS	S/ISCO	ISCO only	Every 18 months
CS-WB04-LGR-02	Mar-10	NS	NS	NS	NSWL	NS	Every 18 months
CS-WB04-LGR-03	Mar-14	NS	NS	NS	S	NS	Every 18 months
CS-WB04-LGR-04	Mar-14	NS	NS	NS	S	NS	Every 18 months
CS-WB04-LGR-06	Mar-14	S	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-07	Mar-14	S	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-08	Mar-14	S	NS	NS	S	NS	Every 9 months
CS-WB04-LGR-09	Mar-14	S	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-10	Mar-14	S	S	NS	S	S	Every 9 months + snapshot
CS-WB04-LGR-11	Mar-14	S	S	NS	S/ISCO	S/ISCO	Every 9 months + snapshot
CS-WB04-BS-01	Mar-14	NS	NS	NS	S	NS	Every 18 months
CS-WB04-BS-02	Mar-14	NS	NS	NS	S	NS	Every 18 months
CS-WB04-CC-01	Mar-14	NS	NS	NS	S	NS	Every 18 months
CS-WB04-CC-02	Mar-14	NS	NS	NS	S	NS	Every 18 months
CS-WB04-CC-03	Mar-14	NS	NS	NS	S	NS	Every 18 months

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

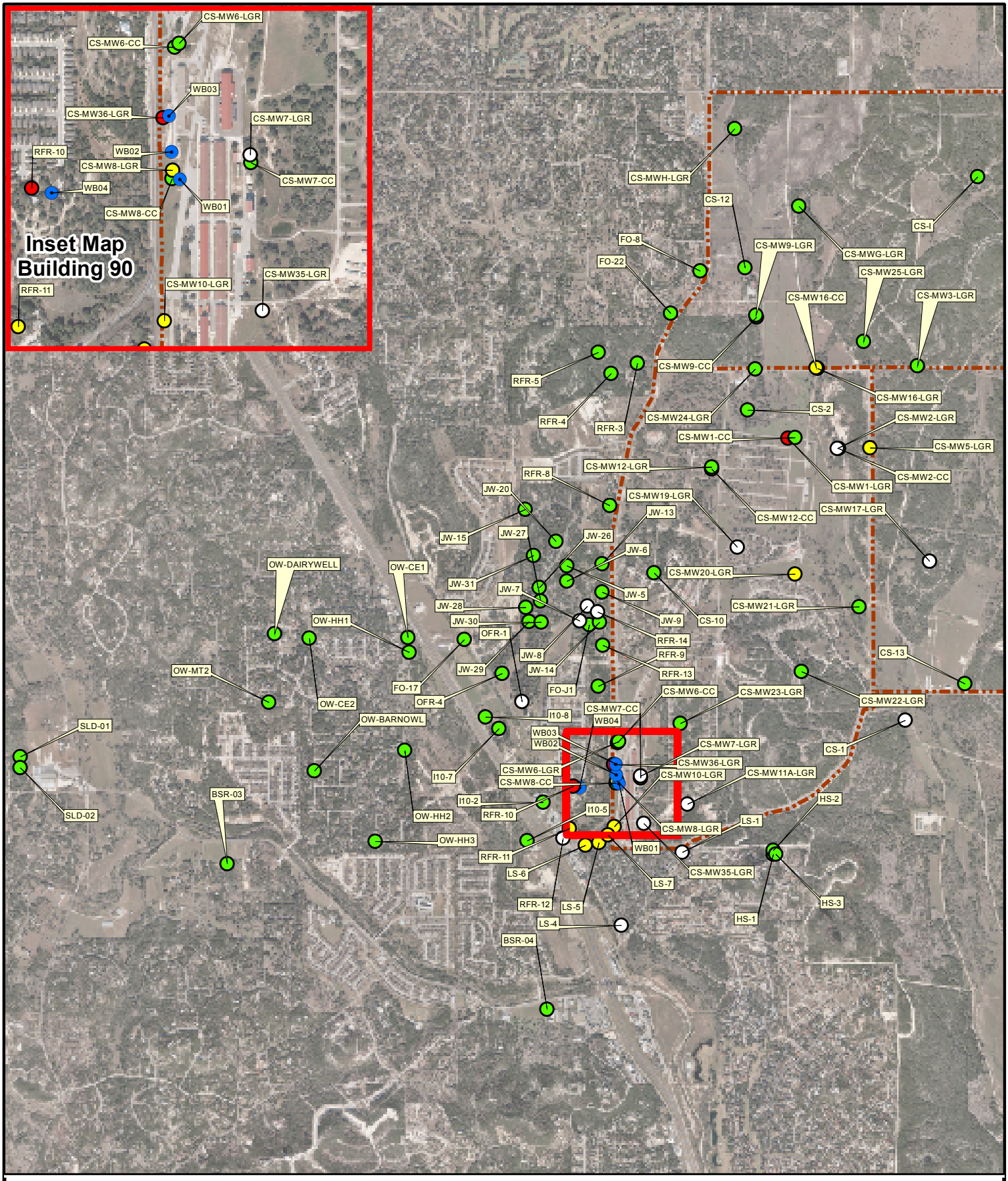


Figure 3.1

On-Post and Off-Post Well Sampling Locations for June 2014

Camp Stanley Storage Activity

PARSONS

Table 3.3
June 2014 On-Post Quarterly Groundwater Results, Detected Analytes

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
CS-2	6/16/2014	NA	NA	--	--	NA	--	NA	
CS-MW1-LGR	6/12/2014	NA	NA	--	**0.0019F**	NA	--	NA	--
CS-MW1-LGR FD	6/12/2014	NA	NA	--	**0.0019F**	NA	--	NA	--
CS-MW1-CC	6/12/2014	NA	NA	--	**0.0015F**	NA	--	NA	--
CS-MW2-LGR	6/16/2014	NA	NA	--	**0.0012F**	NA	--	NA	--
CS-MW2-CC	6/16/2014	NA	NA	--	**0.0015F**	NA	--	NA	--
CS-MW3-LGR	6/11/2014	NA	NA	--	**0.0038F**	NA	--	NA	--
CS-MW5-LGR	6/16/2014	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-MW6-LGR	6/17/2014	NA	NA	--	**0.0015F**	NA	--	NA	--
CS-MW6-CC	6/19/2014	NA	NA	--	**0.0019F**	NA	--	NA	--
CS-MW6-CC FD	6/19/2014	NA	NA	--	**0.0036F**	NA	--	NA	--
CS-MW7-LGR	6/20/2014	NA	NA	--	**0.0014F**	NA	--	NA	--
CS-MW7-CC	6/19/2014	NA	NA	--	**0.003F**	NA	--	NA	--
CS-MW8-LGR	6/17/2014	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-MW8-CC	6/19/2014	NA	NA	--	**0.0017F**	NA	--	NA	--
CS-MW9-LGR	6/11/2014	NA	NA	--	**0.0060F**	NA	--	NA	--
CS-MW9-CC	6/11/2014	NA	NA	--	**0.0014F**	NA	--	NA	--
CS-MW10-LGR	6/19/2014	NA	NA	--	**0.0053F**	NA	--	NA	--
CS-MW10-LGR FD	6/19/2014	NA	NA	--	**0.0048F**	NA	--	NA	--
CS-MW11A-LGR	6/19/2014	NA	NA	--	**0.0039F**	NA	--	NA	--
CS-MW12-LGR	6/12/2014	NA	NA	--	**0.0029F**	NA	--	NA	--
CS-MW12-CC	6/12/2014	NA	NA	--	**0.0017F**	NA	--	NA	--
CS-MW16-LGR	6/18/2014	NA	NA	--	**0.0032F**	NA	--	NA	--
CS-MW16-CC	6/18/2014	NA	NA	--	--	NA	--	NA	--
CS-MW17-LGR	6/11/2014	NA	NA	--	**0.0097F**	NA	--	NA	--
CS-MW19-LGR	6/16/2014	NA	NA	--	**0.0015F**	NA	--	NA	--
CS-MW20-LGR	6/18/2014	NA	NA	--	**0.0038F**	NA	--	NA	--
CS-MW21-LGR	6/18/2014	NA	NA	--	**0.0016F**	NA	--	NA	--
CS-MW22-LGR	6/18/2014	NA	NA	--	**0.0021F**	NA	--	NA	--
CS-MW23-LGR	6/18/2014	NA	NA	--	**0.0034F**	NA	--	NA	--
CS-MW24-LGR	6/16/2014	NA	NA	--	--	NA	--	NA	--
CS-MW25-LGR	6/11/2014	NA	NA	--	**0.0026F**	NA	--	NA	--
CS-MW35-LGR	6/18/2014	NA	NA	--	**0.0017F**	NA	--	NA	--
CS-MW36-LGR	6/17/2014	NA	NA	--	--	NA	--	NA	--
CS-MWG-LGR	6/11/2014	NA	NA	--	**0.0018F**	NA	--	NA	--
CS-MWH-LGR	6/11/2014	NA	NA	--	**0.0017F**	NA	--	NA	--
CS-I	6/11/2014	NA	NA	--	--	NA	--	NA	--
CSSA Drinking Water Well System									
CS-1	6/23/2014	**0.00027F**	**0.0325**	--	**0.0018F**	**0.016**	--	**0.523**	--
CS-10	6/23/2014	--	**0.0399**	--	**0.0013F**	--	--	**0.040F**	--
CS-12	6/23/2014	--	**0.0314**	--	--	**0.006F**	--	**0.121**	--
CS-12 FD	6/23/2014	--	**0.0293**	--	**0.0019F**	**0.006F**	--	**0.109**	--
CS-13	6/23/2014	**0.00497F**	**0.0322**	--	**0.0039F**	**0.004F**	--	**0.495**	--
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

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 3.3
June 2014 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
CS-2	6/16/2014	--	--	--	--	--	--
CS-MW1-LGR	6/12/2014	--	**23.45**	**0.24F**	**17.34**	**32.51**	--
CS-MW1-LGR FD	6/12/2014	--	**22.22**	**0.29F**	**17.3**	**31.85**	--
CS-MW1-CC	6/12/2014	--	--	--	--	--	--
CS-MW2-LGR	6/16/2014	--	**0.51F**	--	--	--	--
CS-MW2-CC	6/16/2014	--	--	--	--	--	--
CS-MW3-LGR	6/11/2014	--	--	--	--	--	--
CS-MW5-LGR	6/16/2014	--	**1.79**	--	**0.77F**	**1.5**	--
CS-MW6-LGR	6/17/2014	--	--	--	--	--	--
CS-MW6-CC	6/19/2014	--	--	--	--	--	--
CS-MW6-CC FD	6/19/2014	--	--	--	--	--	--
CS-MW7-LGR	6/20/2014	--	--	--	**0.83F**	--	--
CS-MW7-CC	6/19/2014	--	--	--	--	--	--
CS-MW8-LGR	6/17/2014	--	--	--	**3.26**	--	--
CS-MW8-CC	6/19/2014	--	--	--	--	--	--
CS-MW9-LGR	6/11/2014	--	--	--	--	--	--
CS-MW9-CC	6/11/2014	--	--	--	--	--	--
CS-MW10-LGR	6/19/2014	--	--	--	**1.67J**	**0.44F**	--
CS-MW10-LGR FD	6/19/2014	--	--	--	**2.16J**	**0.46F**	--
CS-MW11A-LGR	6/19/2014	--	--	--	**0.92F**	--	--
CS-MW12-LGR	6/12/2014	--	--	--	--	--	--
CS-MW12-CC	6/12/2014	--	--	--	--	--	--
CS-MW16-LGR	6/18/2014	--	**76.51**	--	**70.97**	**86.11**	--
CS-MW16-CC	6/18/2014	--	**15.98**	**6.8**	--	**6.11**	--
CS-MW17-LGR	6/11/2014				**0.27F**		
CS-MW19-LGR	6/16/2014	--	--	--	**0.68F**	--	--
CS-MW20-LGR	6/18/2014	--	--	--	**1.52**	--	--
CS-MW21-LGR	6/18/2014	--	--	--	--	--	--
CS-MW22-LGR	6/18/2014	--	--	--	--	--	--
CS-MW23-LGR	6/18/2014	--	--	--	--	--	--
CS-MW24-LGR	6/16/2014	--	--	--	--	--	--
CS-MW25-LGR	6/11/2014	--	--	--	--	--	--
CS-MW35-LGR	6/18/2014	--	--	--	**0.51F**	--	--
CS-MW36-LGR	6/17/2014	--	--	--	**9.56**	**7.83**	--
CS-MWG-LGR	6/11/2014	--	--	--	--	--	--
CS-MWH-LGR	6/11/2014	--	--	--	--	--	--
CS-I	6/11/2014	--	--	--	--	--	--
CSSA Drinking Water Well System							
CS-1	6/23/2014	--	--	--	--	**0.37F**	--
CS-10	6/23/2014	--	--	--	--	--	--
CS-12	6/23/2014	--	--	--	--	--	--
CS-12 FD	6/23/2014	--	--	--	--	--	--
CS-13	6/23/2014	--	--	--	--	--	--
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-14**	**Jun-14**
AOC-65 weather station:	1.1	8.03
B-3 weather station:	0.96	8.73

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

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.
J-The analyte was positively identified; the quantitation is an estimation.

Table 3.4
June 2014 Westbay Analytical Results, Detected Analytes

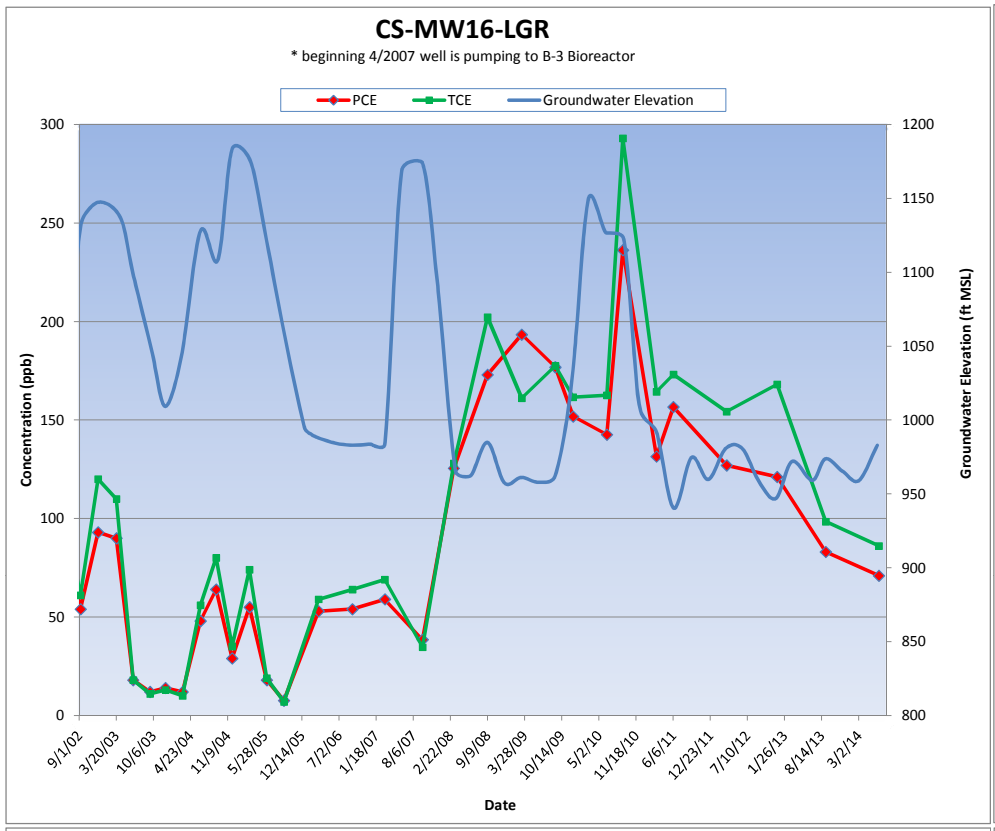
Well ID	Date Sampled	1,1-DCE	cis-1,2-DCE	TCE	PCE	trans-1,2-DCE	Vinyl Chloride
CS-WB01-LGR-09	6/25/2014	--	**0.35F**	**14.32**	**12.41**	--	--
CS-WB02-LGR-09	6/24/2014	--	**0.28F**	**11.37**	**430.41***	--	--
CS-WB03-LGR-09	6/24/2014	--	**4.03**	**2.52**	**1.77**	--	--
CS-WB04-LGR-06	6/25/2014	--	**2.58**	**7.83**	**32.19**	**0.23F**	--
CS-WB04-LGR-07	6/25/2014	--	**2.63**	**8.68**	**32.86**	**0.22F**	--
CS-WB04-LGR-09	6/25/2014	--	--	**7.06**	**10.64**	--	--
CS-WB04-LGR-10	6/25/2014	--	--	**0.87F**	**2.38**	--	--
CS-WB04-LGR-11	6/25/2014	--	--	--	**1.18F**	--	--
Comparison Criteria							
Method Detection Limit	**MDL**	**0.12**	**0.07**	**0.05**	**0.06**	**0.08**	**0.08**
Reporting Limit	**RL**	**1.2**	**1.2**	**1**	**1.4**	**0.6**	**1.1**
Max. Contaminant Level	**MCL**	**7**	**70**	**5**	**5**	**100**	**2**

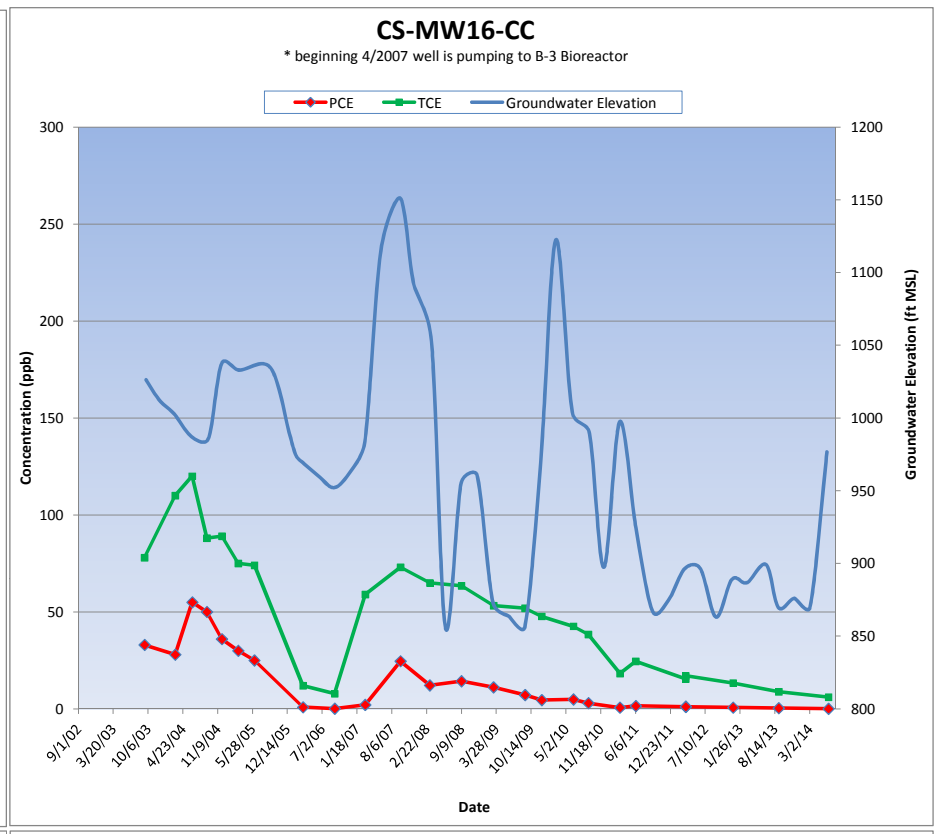
Data Qualifiers:

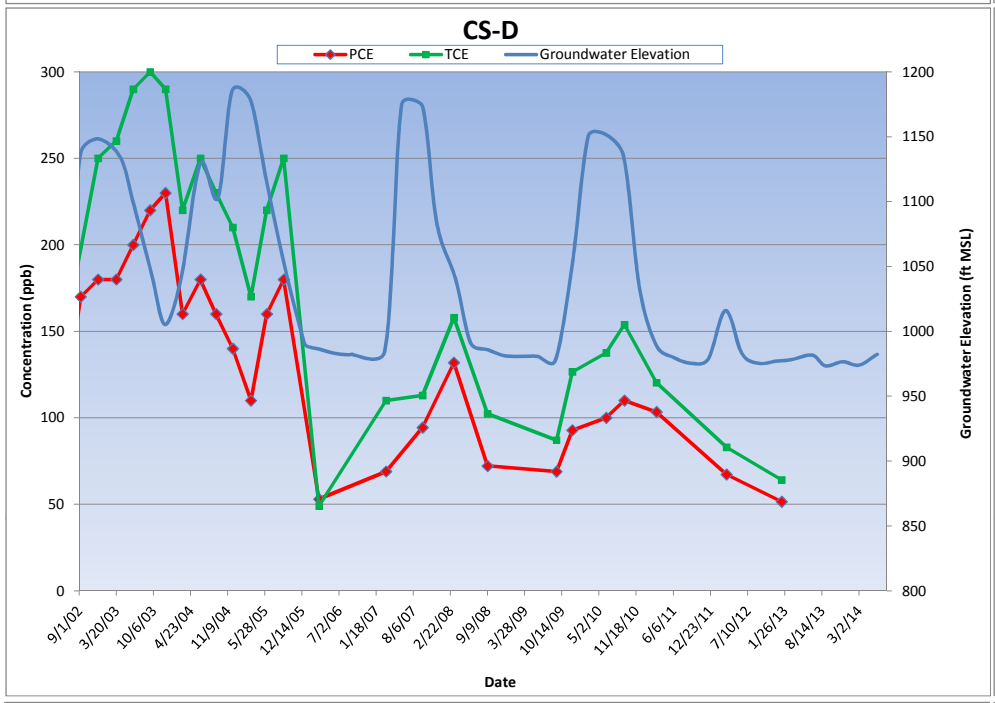
TCE Trichloroethene
PCE Tetrachloroethene
DCE Dichloroethene
-- indicates the result was non-detect.
F-The analyte was positively identified but the associated numerical value is below the RL.
* dilution of 10 run for this sample.
All values are reported in µg/L.

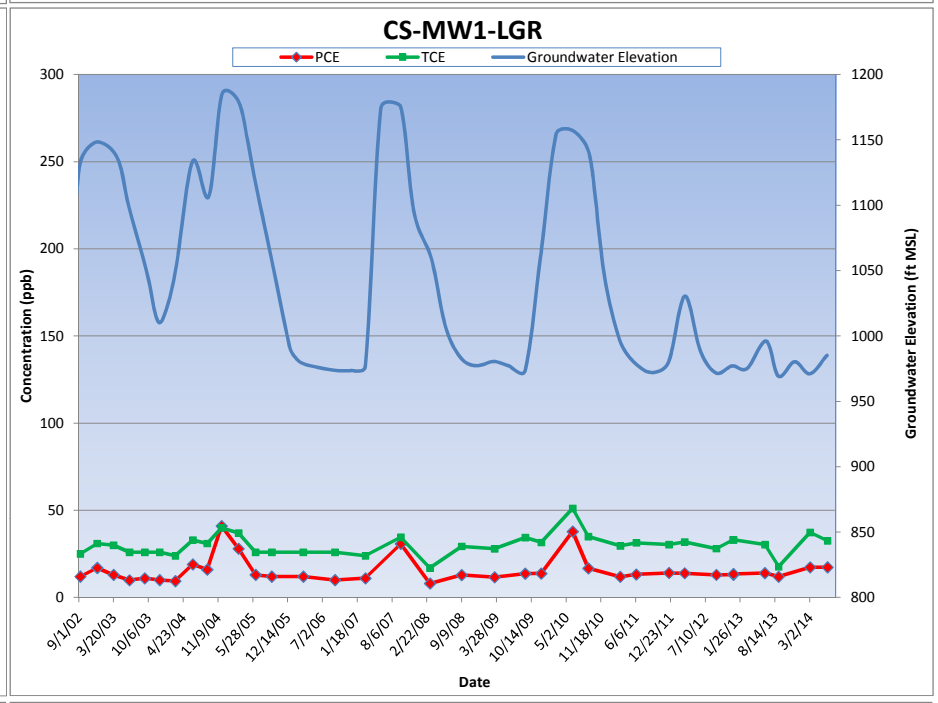
BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

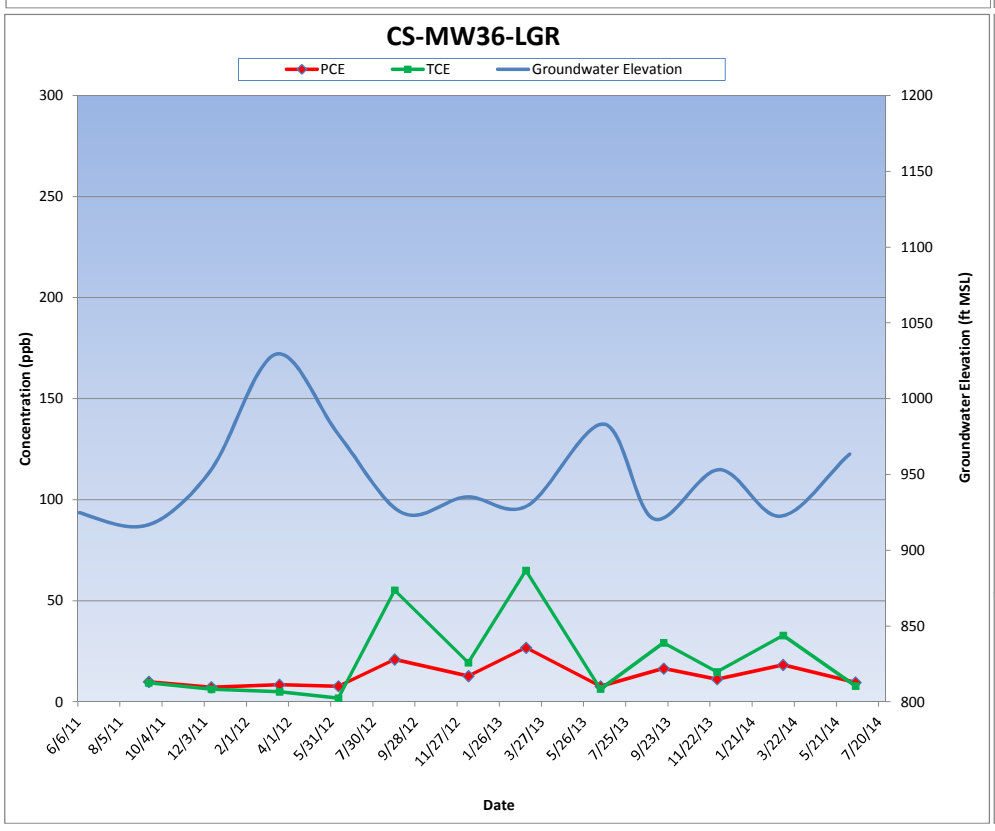
Figure 3.2
On-Post Cumulative Analytical vs. Groundwater Elevation

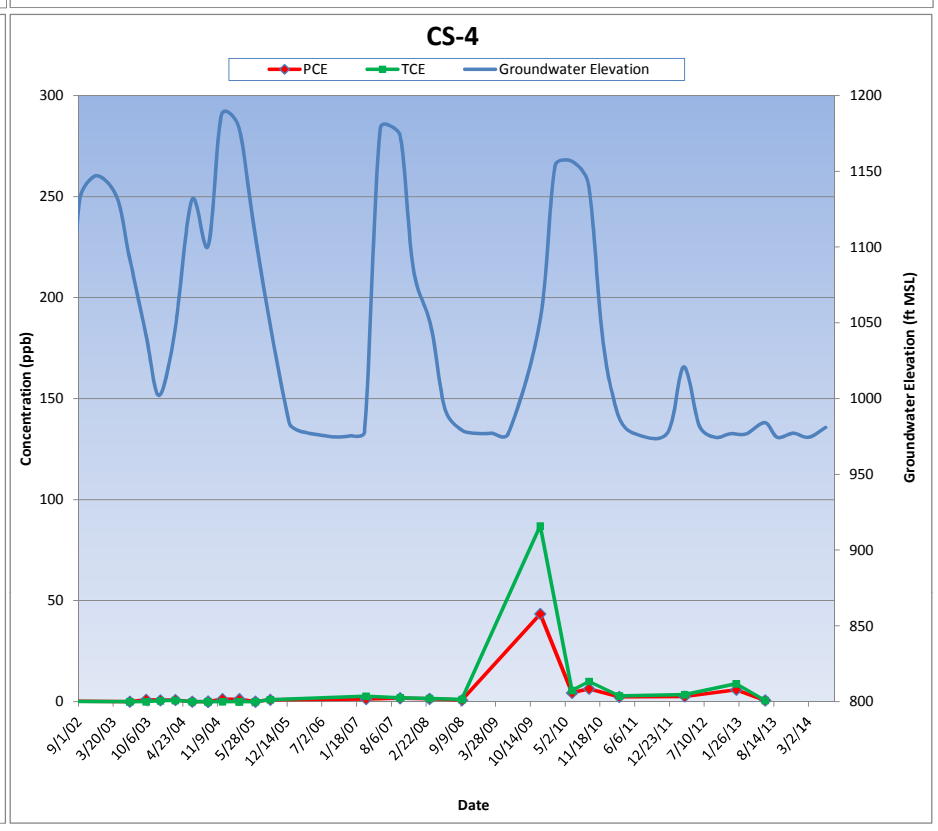












NOTE: Sampling dates are indicated by the squares on the trend line.

3.2 Westbay-equipped Wells

Under the provisions of the groundwater monitoring LTMO recommendations, 8 zones in the AOC-65 Westbay wells (CS-WB01, CS-WB02, CS-WB03, and CS-WB04) were scheduled for sampling in June 2014. These wells were also profiled to capture water level readings. These Westbay wells are located in the vicinity of AOC-65, and are part of the basewide quarterly groundwater monitoring program. The Upper Glen Rose (UGR)/LGR zones are sampled on a 9-month schedule, and the BS/CC zones are sampled on an 18-month schedule, as recommended in the LTMO. The sampling of these wells began in September 2003.

Of the 8 zones scheduled for sampling in June 2014 contained sufficient groundwater to obtain samples (**Table 3.4**). Five zones had detections of PCE and TCE above the MCL. Zone CS-WB02-LGR-09 reported a significant increase in the PCE concentration since the last sampling event. In fact, it is the highest reported concentration of PCE in this zone historically. Zones CS-WB04-LGR-(07, 09, 10, and 11) all reported increases in PCE since they were last sampled in March 2014. Zones CS-WB04-LGR-07 and -10 also reported their highest historical detections of PCE.

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

4.0 JUNE 2014 SUMMARY

- Forty-four wells were scheduled for sampling in June 2014. Six wells (CS-MW4-LGR, CS-MW10-CC, CS-MW11B-LGR, CS-MW18-LGR, CS-4, and CS-D) were not sampled due to water levels falling below the pump.
- From March 22 to June 26, 2014, CSSA's AOC-65 weather station recorded 8.03 inches of rain. The rainfall was sporadic with a majority of the rain falling in May, 5.83 inches. Two events had greater than one inch of rain, with the largest one day rain event of 2.52 on May 26th. The SWMU B-3 weather station measured 8.73 inches of precipitation for the same time period. This is a significant increase in quarterly rainfall from last quarter which only measured 1.1 inches at AOC-65 and 0.96 inches at B-3.
- Water levels increased an average of 22.53 feet per non-pumping wells since last quarter. The average water level in June 2014 (excluding pumping wells) was 271.40 feet below top of casing (971.07 feet MSL).
- VOCs were detected above the MCL in wells CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, and CS-MW36-LGR. The VOC levels in CS-MW16-LGR, CS-MW16-CC, CS-MW1-LGR, and CS-MW36-LGR decreased slightly from the previous sampling event **(see Figure 3.2)**.
- There were no metals detected above the MCL/AL/SS in wells sampled in June 2014.
- At AOC-65, although CS-MW8-LGR did not exceed the MCL, the PCE concentration increased from 1.75 µg/L to 3.26 µg/L. This is the highest recorded PCE detection in this well to date.
- Five of the 8 AOC-65 Westbay zones sampled contained PCE and TCE above the MCL. Zone CS-WB02-LGR-09 reported its highest historic detection to date for PCE. CS-WB04 zones -07, -09, -10, and -11 all had slight increases in PCE. Zones -07 and -10 had their highest recorded PCE detection historically.
- At AOC-65, the increases seen at CS-MW8-LGR and the Westbay multi-port wells may be due to a combination of increased precipitation during the quarter and ongoing ISCO treatability study activities conducted at an upgradient infiltration gallery. Treatability study activities have included the application of chemical oxidants within the gallery to destroy contaminants. Once applied, the oxidant solution follows similar subsurface flow paths as contaminants and precipitation, destroying and releasing contaminants encountered (including PCE) from the host rock until the solution reactivity has been consumed. Contaminants mobilized from the host rock during this process are more readily transported downgradient following significant rain events when the flow paths are saturated.

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 June 9, 2014.	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 June 9, 2014 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-MW18-LGR, and CS-MW24-LGR. Additional continuous reading transducers were added to the program through the SCADA project. The following wells can be uploaded to see real time water level data: CS-MW1-LGR, CS-MW1-BS, CS-MW1-CC, CS-MW16-LGR, CS-MW16-CC, CS-1, CS-12, and CS-10. Data was also downloaded from the AOC-65 & B-3 weather stations. Water levels will be graphed at these wells against precipitation data through December 2014 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 38 of 49 CSSA wells. Wells CS-MW4-LGR, CS-MW10-CC, CS-MW11B-LGR, CS-MW18-LGR, CS-4, and CS-D were not sampled due to the water level falling below the pump. Well CS-9 was not sampled due to pump failure. The 4 BS wells are no longer sampled as part of the groundwater program.	The horizontal and vertical extent of groundwater contamination is continuously monitored.	Continue groundwater monitoring and construct additional wells as necessary.

Activity	Objectives	Action	Objective Attained?	Recommendations
	Determine the horizontal and vertical concentration profiles of all constituents of concern (COC) in the groundwater that are measured by USEPA-approved procedures (3.1.2). COCs are those chemicals that have been detected in groundwater in the past and their daughter (breakdown) products.	Groundwater samples were collected from wells: CS-MW1-LGR, CS-MW1-CC, CS-MW2-LGR, CS-MW2-CC, CS-MW3-LGR, CS-MW5-LGR, CS-MW6-LGR, CS-MW6-CC, CS-MW7-LGR, CS-MW7-CC, CS-MW8-LGR, CS-MW8-CC, CS-MW9-LGR, CS-MW9-CC, CS-MW10-LGR, CS-MW11A-LGR, CS-MW12-LGR, CS-MW12-CC, CS-MW16-LGR, CS-MW16-CC, CS-MW17-LGR, CS-MW19-LGR, CS-MW20-LGR, CS-MW21-LGR, CS-MW22-LGR, CS-MW23-LGR, CS-MW24-LGR, CS-MW25-LGR, CS-MW35-LGR, CS-MW36-LGR, CS-2, CS-MWG-LGR, CS-MWH-LGR, and CS-I. Samples were analyzed for the short list of VOCs using USEPA method SW8260B, and metals (cadmium, lead, mercury, and chromium). The drinking water wells (CS-1, CS-10, CS-12 and CS-13) were sampled for the short list of VOCs and additional metals (arsenic, barium, copper, and zinc). Analyses were conducted in accordance with the CSSA QAPP and approved variances. All reporting limits (RL) were below MCLs, as listed below:	Yes.	Continue sampling.
		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		

Activity	Objectives	Action	Objective Attained?	Recommendations
		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 CSSA QAPP quality assurance requirements.	Samples were analyzed in accordance with the CSSA QAPP and approved variances. Parsons chemists verified all data.	Yes.	NA
		All data flagged with a "U," "J," "M," and "F" are usable for characterizing contamination. All "R" flagged data are considered unusable.	Yes.	NA
		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.

Activity	Objectives	Action	Objective Attained?	Recommendations
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 JUNE 2014

Appendix B
June 2014 Quarterly On-Post Groundwater Monitoring Analytical Results

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
CS-2	6/16/2014	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW1-LGR	6/12/2014	NA	NA	0.0005U	**0.0019F**	NA	0.0019U	NA	0.0001U
CS-MW1-LGR FD	6/12/2014	NA	NA	0.0005U	**0.0019F**	NA	0.0019U	NA	0.0001U
CS-MW1-CC	6/12/2014	NA	NA	0.0005U	**0.0015F**	NA	0.0019U	NA	0.0001U
CS-MW2-LGR	6/16/2014	NA	NA	0.0005U	**0.0012F**	NA	0.0019U	NA	0.0001U
CS-MW2-CC	6/16/2014	NA	NA	0.0005U	**0.0015F**	NA	0.0019U	NA	0.0001U
CS-MW3-LGR	6/11/2014	NA	NA	0.0005U	**0.0038F**	NA	0.0019U	NA	0.0001U
CS-MW5-LGR	6/16/2014	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-MW6-LGR	6/17/2014	NA	NA	0.0005U	**0.0015F**	NA	0.0019U	NA	0.0001U
CS-MW6-CC	6/19/2014	NA	NA	0.0005U	**0.0019F**	NA	0.0019U	NA	0.0001U
CS-MW6-CC FD	6/19/2014	NA	NA	0.0005U	**0.0036F**	NA	0.0019U	NA	0.0001U
CS-MW7-LGR	6/20/2014	NA	NA	0.0005U	**0.0014F**	NA	0.0019U	NA	0.0001U
CS-MW7-CC	6/19/2014	NA	NA	0.0005U	**0.003F**	NA	0.0019U	NA	0.0001U
CS-MW8-LGR	6/17/2014	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-MW8-CC	6/19/2014	NA	NA	0.0005U	**0.0017F**	NA	0.0019U	NA	0.0001U
CS-MW9-LGR	6/11/2014	NA	NA	0.0005U	**0.0060F**	NA	0.0019U	NA	0.0001U
CS-MW9-CC	6/11/2014	NA	NA	0.0005U	**0.0014F**	NA	0.0019U	NA	0.0001U
CS-MW10-LGR	6/19/2014	NA	NA	0.0005U	**0.0053F**	NA	0.0019U	NA	0.0001U
CS-MW10-LGR FD	6/19/2014	NA	NA	0.0005U	**0.0048F**	NA	0.0019U	NA	0.0001U
CS-MW11A-LGR	6/19/2014	NA	NA	0.0005U	**0.0039F**	NA	0.0019U	NA	0.0001U
CS-MW12-LGR	6/12/2014	NA	NA	0.0005U	**0.0029F**	NA	0.0019U	NA	0.0001U
CS-MW12-CC	6/12/2014	NA	NA	0.0005U	**0.0017F**	NA	0.0019U	NA	0.0001U
CS-MW16-LGR	6/18/2014	NA	NA	0.0005U	**0.0032F**	NA	0.0019U	NA	0.0001U
CS-MW16-CC	6/18/2014	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW17-LGR	6/11/2014	NA	NA	0.0005U	**0.0097F**	NA	0.0019U	NA	0.0001U
CS-MW19-LGR	6/16/2014	NA	NA	0.0005U	**0.0015F**	NA	0.0019U	NA	0.0001U
CS-MW20-LGR	6/18/2014	NA	NA	0.0005U	**0.0038F**	NA	0.0019U	NA	0.0001U
CS-MW21-LGR	6/18/2014	NA	NA	0.0005U	**0.0016F**	NA	0.0019U	NA	0.0001U
CS-MW22-LGR	6/18/2014	NA	NA	0.0005U	**0.0021F**	NA	0.0019U	NA	0.0001U
CS-MW23-LGR	6/18/2014	NA	NA	0.0005U	**0.0034F**	NA	0.0019U	NA	0.0001U
CS-MW24-LGR	6/16/2014	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MW25-LGR	6/11/2014	NA	NA	0.0005U	**0.0026F**	NA	0.0019U	NA	0.0001U
CS-MW35-LGR	6/18/2014	NA	NA	0.0005U	**0.0017F**	NA	0.0019U	NA	0.0001U
CS-MW36-LGR	6/17/2014	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CS-MWG-LGR	6/11/2014	NA	NA	0.0005U	**0.0018F**	NA	0.0019U	NA	0.0001U
CS-MWH-LGR	6/11/2014	NA	NA	0.0005U	**0.0017F**	NA	0.0019U	NA	0.0001U
CS-I	6/11/2014	NA	NA	0.0005U	0.001U	NA	0.0019U	NA	0.0001U
CSSA Drinking Water Well System									
CS-1	6/23/2014	**0.00027F**	**0.0325**	0.0005U	**0.0018F**	**0.016**	0.0019U	**0.523**	0.0001U
CS-10	6/23/2014	0.00022U	**0.0399**	0.0005U	**0.0013F**	0.003U	0.0019U	**0.040F**	0.0001U
CS-12	6/23/2014	0.00022U	**0.0314**	0.0005U	0.001U	**0.006F**	0.0019U	**0.121**	0.0001U
CS-12 FD	6/23/2014	0.00022U	**0.0293**	0.0005U	**0.0019F**	**0.006F**	0.0019U	**0.109**	0.0001U
CS-13	6/23/2014	**0.00497F**	**0.0322**	0.0005U	**0.0039F**	**0.004F**	0.0019U	**0.495**	0.0001U

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
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 B
June 2014 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-2	6/16/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW1-LGR	6/12/2014	0.12U	**23.45**	**0.24F**	**17.34**	**32.51**	0.08U
CS-MW1-LGR FD	6/12/2014	0.12U	**22.22**	**0.29F**	**17.3**	**31.85**	0.08U
CS-MW1-CC	6/12/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW2-LGR	6/16/2014	0.12U	**0.51F**	0.08U	0.06U	0.05U	0.08U
CS-MW2-CC	6/16/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW3-LGR	6/11/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW5-LGR	6/16/2014	0.12U	**1.79**	0.08U	**0.77F**	**1.5**	0.08U
CS-MW6-LGR	6/17/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW6-CC	6/19/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW6-CC FD	6/19/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW7-LGR	6/20/2014	0.12U	0.07U	0.08U	**0.83F**	0.05U	0.08U
CS-MW7-CC	6/19/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW8-LGR	6/17/2014	0.12U	0.07U	0.08U	**3.26**	0.05U	0.08U
CS-MW8-CC	6/19/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW9-LGR	6/11/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW9-CC	6/11/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW10-LGR	6/19/2014	0.12U	0.07U	0.08U	**1.67**	**0.44F**	0.08U
CS-MW10-LGR FD	6/19/2014	0.12U	0.07U	0.08U	**2.16**	**0.46F**	0.08U
CS-MW11A-LGR	6/19/2014	0.12U	0.07U	0.08U	**0.92F**	0.05U	0.08U
CS-MW12-LGR	6/12/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW12-CC	6/12/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW16-LGR	6/18/2014	0.12U	**76.51**	0.08U	**70.97**	**86.11**	0.08U
CS-MW16-CC	6/18/2014	0.12U	**15.98**	**6.8**	0.06U	**6.11**	0.08U
CS-MW17-LGR	6/11/2014	0.12U	0.07U	0.08U	**0.27F**	0.05U	0.08U
CS-MW19-LGR	6/16/2014	0.12U	0.07U	0.08U	**0.68F**	0.05U	0.08U
CS-MW20-LGR	6/18/2014	0.12U	0.07U	0.08U	**1.52**	0.05U	0.08U
CS-MW21-LGR	6/18/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW22-LGR	6/18/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW23-LGR	6/18/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW24-LGR	6/16/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW25-LGR	6/11/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW35-LGR	6/18/2014	0.12U	0.07U	0.08U	**0.51F**	0.05U	0.08U
CS-MW36-LGR	6/17/2014	0.12U	0.07U	0.08U	**9.56**	**7.83**	0.08U
CS-MWG-LGR	6/11/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MWH-LGR	6/11/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-I	6/11/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CSSA Drinking Water Well System							
CS-1	6/23/2014	0.12U	0.07U	0.08U	0.06U	**0.37F**	0.08U
CS-10	6/23/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12	6/23/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12 FD	6/23/2014	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-13	6/23/2014	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

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

JUNE 2014 WESTBAY ANALYTICAL RESULTS

Appendix C
June 2014 Westbay Analytical Results

Well ID	Date Sampled	1,1-DCE	cis-1,2-DCE	TCE	PCE	trans-1,2-DCE	Vinyl Chloride
CS-WB01-LGR-09	6/25/2014	<0.12	**0.35F**	**14.32**	**12.41**	<0.08	<0.08
CS-WB02-LGR-09	6/24/2014	<0.12	**0.28F**	**11.37**	**430.41***	<0.08	<0.08
CS-WB03-LGR-09	6/24/2014	<0.12	**4.03**	**2.52**	**1.77**	<0.08	<0.08
CS-WB04-LGR-06	6/25/2014	<0.12	**2.58**	**7.83**	**32.19**	**0.23F**	<0.08
CS-WB04-LGR-07	6/25/2014	<0.12	**2.63**	**8.68**	**32.86**	**0.22F**	<0.08
CS-WB04-LGR-09	6/25/2014	<0.12	<0.07	**7.06**	**10.64**	<0.08	<0.08
CS-WB04-LGR-10	6/25/2014	<0.12	<0.07	**0.87F**	**2.38**	<0.08	<0.08
CS-WB04-LGR-11	6/25/2014	<0.12	<0.07	<0.05	**1.18F**	<0.08	<0.08

Data Qualifiers

TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene

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

* The analyte was run at a dilution of 10.

All values are reported in µg/L.

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

APPENDIX D

DATA VALIDATION REPORT

SDG 73557
SDG 73601
SDG 73620
SDG 73647

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 June 11 and 12, 2014. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including cadmium, chromium, and lead.

73557

The field QC sample associated with this SDG was a trip blank (TB) and one field duplicate (FD). TB was analyzed for VOC only. 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 fourteen (14) samples, including twelve (12) on-site groundwater samples, one (1) FD, and one (1) TB. All samples were collected on March 11 and 12, 2014 and 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 (#187568) under one set of 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 spike (LCS) sample 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. Sample CS-MW1-LGR was collected in duplicate. All results greater than the reporting limits (RLs) are listed in the table below:

CS-MW1-LGR

Compounds	Parent, µg/L	FD, µg/L	%RPD	Criteria, %RPD
cis-1,2-DCE	23.45	22.22	5.4	
TCE	32.51	31.85	2.1	≤20
PCE	17.34	17.30	0.2	

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 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 for both sets of curves.
- 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. Both 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 samples consisted of thirteen (13) on-post groundwater samples including one FD which were collected on June 11 and 12, 2014 and were analyzed for cadmium, chromium, and lead.

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

The samples for ICP-AES metals were digested in batch #187729. 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 parent and FD sample results. Sample CS-MW1-LGR was collected in duplicate.

None of the target metals was detected above the RLs; therefore, the %RPD calculations were not applicable.

Representativeness

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

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

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

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

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

Completeness

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

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

MERCURY

General

The mercury part of this SDG consisted of thirteen (13) on-post groundwater samples including one FD which were collected on March 11 and 12, 2014.

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

The mercury samples were prepared in batch #187694. The analyses were performed undiluted.

Accuracy

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

The LCS recovery was within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of parent and FD sample result. Sample CS-MW1-LGR was collected in duplicate. Mercury was not detected in parent and FD samples.

Representativeness

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

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

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

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

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

Completeness

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

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

DATA VERIFICATION SUMMARY REPORT

for on- 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 groundwater samples and the associated field quality control (QC) sample collected from on-post and off-post Camp Stanley Storage Activity (CSSA) on June 16 and 17, 2014. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including cadmium, chromium, lead, and mercury. Off-post sample only analyzed for VOCs.

73601

The field QC sample associated with this SDG was a trip blank (TB). TB was analyzed for VOC only. 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 0.5ºC, which was below the 2-6ºC range recommended by the CSSA QAPP. Lab sample receiving staff did not notice any freeze in any of the sample containers.

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 eleven (11) samples, including nine (9) on-site groundwater samples, one (1) off-site groundwater sample, and one (1) TB. All samples were collected on June 16 and 17, 2014 and 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 (#187536) under one set of 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 spike (LCS) sample 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.

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 for both sets of curves.
- 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. Both 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 nine (9) on-post groundwater samples which were collected on June 16 and 17, 2014 and analyzed for cadmium, chromium, and lead.

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

The samples for ICP-AES metals were digested in batch #187948. 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 lack of duplicate analyses.

Representativeness

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

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

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

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

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

Completeness

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

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

MERCURY

General

The ICP-AES portion of this SDG consisted of nine (9) on-post groundwater samples collected on June 16 and 17, 2014 and analyzed for mercury.

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

The mercury samples were prepared in batch #188019. The analyses were performed undiluted.

Accuracy

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

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated due to lack of duplicate analyses.

Representativeness

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

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

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

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

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

Completeness

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

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

DATA VERIFICATION SUMMARY REPORT

for on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers one groundwater sample and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on June 18 and 19, 2014. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including arsenic, barium, cadmium, chromium, copper, lead, and zinc.

73620

The field QC samples associated with this SDG were a trip blank (TB) and two field duplicates (FDs). TB was analyzed for VOC only. 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 sample; 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 fifteen (15) samples, including two (2) FDs and one (1) TB. All samples were collected on June 18 and 19, 2014 and 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 analytical batch, #187704 under one set of 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 spike (LCS) sample and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the two sets of parent and FD sample results. Samples CS-MW6-CC and CS-MW10-LGR were collected in duplicate.

None of the target VOCs were detected in the parent and FD of sample CS-MW6-CC.

For the parent and FD of CS-MW10-LGR samples have tetrachloroethene detected above the reporting limit, the %RPD is 26% which exceeds the 20% criteria. “J” flags were applied to both parent and FD samples.

Representativeness

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

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blank 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 for both sets of curves.
- 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 fourteen (14) on-post groundwater samples which were collected on June 18 and 19, 2014 and were analyzed for cadmium, chromium, and lead.

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

The samples for ICP-AES metals were digested in batch #188015. 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 two pairs of parent and FD samples.

None of the three target metals were detected at or greater than the reporting limit in the parent and FD of samples CS-MW6-CC and CS-MW10-LGR.

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.

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

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

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

Completeness

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

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

MERCURY

General

The ICP-AES portion of this SDG consisted of fourteen (14) on-post groundwater samples which were collected on June 18 and 19, 2014 and were analyzed for mercury.

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

The mercury samples were prepared in batch #188088. The analyses were performed undiluted.

Accuracy

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

The LCS recovery was within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of the two pairs of parent and FD samples.

Mercury was not detected at or above the reporting limit in both sets of parent and FD samples.

Representativeness

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

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

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

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

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

Completeness

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

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

DATA VERIFICATION SUMMARY REPORT

for on- 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 groundwater samples and the associated field quality control (QC) samples collected from on-post and off-post Camp Stanley Storage Activity (CSSA) on June 20 and 23, 2014. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including arsenic, barium, cadmium, chromium, copper, lead, and mercury. Not all samples were analyzed for the complete list of metals. Off-post sample only analyzed for VOCs.

73647

The field QC samples associated with this SDG were a field duplicate (FD) a set of matrix spike/matrix spike duplicate (MS/MSD), and a trip blank (TB). TB was analyzed for VOC only. 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 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 nine (9) samples, including six (6) on-site groundwater samples, two (2) off-site groundwater samples, and one (1) TB. All samples were collected on June 20 and 23, 2014 and 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 (#184854) under one set of 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 spike (LCS) sample and the surrogate spikes. Samples CS-MW7-LGR and CS-1 were designated as the parent samples for the matrix spike/matrix spike duplicate (MS/MSD) analyses.

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

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the MS/MSD results and parent/FD sample results. Sample CS-12 was collected in duplicate.

All %RPDs of the MS/MSD were compliant.

None of the target VOCs were detected at or above the reporting limit (RL) in the parent and FD samples.

Representativeness

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

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining 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 for both sets of curves.
- 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. Both 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 six (6) on-post groundwater samples which were collected on June 20 and 23, 2014. Five samples were analyzed for cadmium, chromium, and lead. The remaining samples were analyzed for arsenic, barium, cadmium, chromium, copper, and lead.

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

The samples for ICP-AES metals were digested in batches #188015 and #188073. All analyses were performed undiluted.

Accuracy

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

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

Precision

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

All %RPD of the two sets of MS/MSD were compliant.

Only barium and zinc were detected above the RL. %RPD of both metals were compliant.

Representativeness

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

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

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

- All initial calibration criteria were met.
- All second source verification criteria were met. The two ICVs were 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.

Two method blanks 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 six (6) on-post groundwater samples collected on June 20 and 23, 2014 and analyzed for mercury.

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

The mercury samples were prepared in two batches #188088 and #188089. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the two LCSs and two sets of MS/MSD.

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

Precision

Precision was evaluated based on the %RPD of the two sets of MS/MSD and one pair of parent/FD sample results.

The %RPD of both sets of MS/MSD were compliant.

Mercury was not detected in the parent and FD samples at or above the RL.

Representativeness

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

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

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

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

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

Completeness

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

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