

SUPERFUND

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# MODESTO GROUNDWATER SUPERFUND SITE

Modesto, California

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## Quarterly Operations and Monitoring Report Groundwater Treatment and Soil Vapor Extraction Remediation Systems

### First Quarter 2013

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Contract No. W91238-07-D-0006  
Task Order 0004

MAY 2013



May 30, 2013

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**SUBJECT: Contract No. W91238-07-D-0006, Task Order 0004, Modesto Groundwater  
Superfund Site, Modesto, California  
Quarterly Operations and Monitoring Report, First Quarter 2013**

Dear Mr. Mackenzie:

Enclosed is the Quarterly Operations and Monitoring Report, First Quarter 2013. Text and appendices are provided on a compact disk included at the end of the report.

If you have any questions or comments, please call me at (530) 893-9675.

Sincerely,

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**QUARTERLY OPERATIONS AND MONITORING REPORT  
GROUNDWATER TREATMENT AND SOIL VAPOR  
EXTRACTION REMEDIATION SYSTEMS  
FIRST QUARTER 2013**

**MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

**May 2013**

**Contract W91238-07-D-0006  
Delivery Order No. 0004**

Prepared for:  
U.S. Army Corps of Engineers  
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**MODESTO GROUNDWATER SUPERFUND SITE  
QUARTERLY OPERATIONS AND MONITORING REPORT  
GROUNDWATER TREATMENT AND SOIL VAPOR  
EXTRACTION REMEDIATION SYSTEMS  
FIRST QUARTER 2013**

This report was prepared by URS Group, Inc. (URS) staff under our supervision. Interpretations, conclusions, and recommendations in the report are based on background information, design basis, and other data furnished to URS by the United States Environmental Protection Agency, United States Army Corps of Engineers, and/or third parties. URS has relied on this information as furnished and is neither responsible for nor has confirmed the accuracy of this information. Our experience and professional judgment governed the data interpretation, conclusions, and recommendations presented in the report.



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### LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BOD	biochemical oxygen demand
City	City of Modesto
CPT	cone penetrometer test
DQO	data quality objective
DTSC	California Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
FB	field blank
FD	field duplicate
GAC	granular-activated carbon
gpm	gallons per minute
GWTS	groundwater treatment system
IX	ion exchange
LCS	laboratory control sample
LDC	Laboratory Data Consultants
LGAC	liquid-phase granular-activated carbon
MB	method blank
MCL	maximum contaminant level
MDL	method detection limit
msl	mean sea level
MS/MSD	matrix spike/matrix spike duplicate
MWH	MHW Americas, Inc.
NS	normal sample
O&M	operation and maintenance
PARCC	precision, accuracy, representativeness, completeness, and comparability
PCE	tetrachloroethene
P&ID	process and instrumentation diagram
ppbv	parts per billion by volume
PQL	practical quantitation limit
QA	quality assurance
QC	quality control
RPD	relative percent difference
SAP	sampling and analysis plan
scfm	standard cubic feet per minute
SM	standard method
SOP	standard operating procedure

**LIST OF ACRONYMS AND ABBREVIATIONS (Continued)**

SVE	soil vapor extraction
TB	trip blank
TDS	total dissolved solid
TSS	total suspended solid
URS	URS Group, Inc.
VGAC	vapor-phase granular-activated carbon
VOC	volatile organic compound
µg/L	micrograms per liter
1Q13	first quarter 2013

## 1.0 INTRODUCTION

This *First Quarter 2013 (1Q13) Quarterly Operation and Monitoring (O&M) Report* for the Modesto Groundwater Superfund Site covers the reporting period of January 1 through March 31, 2013, and describes the monitoring and sampling program, summarizes the performance of the systems, and provides results of routine system operations. The remainder of this section provides an overview of the site history and report organization.

### 1.1 Site History

The City of Modesto (City) is in Stanislaus County, California, and is approximately 80 miles southeast of Sacramento (Figure 1-1). The Modesto Groundwater Superfund Site is in a commercial area on McHenry Avenue, south of Orangeburg Avenue, behind Halford's Cleaners (941 McHenry Avenue).

In 1984, through routine sampling of water supply wells, the City discovered contamination in Municipal Well 11 (Figure 1-2) at the corner of Magnolia and Mensinger avenues. Laboratory analysis of the Municipal Well 11 sample collected in 1984 indicated tetrachloroethene (PCE) in excess of the federal and state maximum contaminant level (MCL) of 5 micrograms per liter ( $\mu\text{g/L}$ ). PCE is an industrial solvent commonly used in dry cleaning and was found to have originated at Halford's Cleaners, approximately 1,000 feet away from Municipal Well 11.

Municipal Well 11 was taken out of service by the City in 1984 and reactivated in April 1987 when levels of PCE and other chlorinated solvents were not detected at concentrations above MCLs. In February 1989, Municipal Well 11 was again taken out of service after PCE concentrations exceeded the MCL a second time. The well remained out of service until May 1991 when the City installed a wellhead granular-activated carbon (GAC) treatment system. The GAC system reduced the PCE concentration to below the MCL before the water entered the public supply system. Municipal Well 11 was returned to service in June 1991 and operated until October 1995, when the City indefinitely deactivated the well because naturally occurring uranium was detected above the MCL of 20 picoCuries per liter.

The Modesto Groundwater Superfund Site was placed on the United States Environmental Protection Agency's (EPA's) National Priorities List on March 31, 1989. In December 1989, the EPA's Emergency Response Section collected soil and soil vapor samples in the vicinity of Halford's Cleaners. Fifteen monitoring wells were installed and were sampled from 1992 to 1998. Based on the data obtained, the EPA selected the technology for treatment and removal of the contamination. A soil vapor extraction (SVE) system and a groundwater treatment system (GWTS) were installed on May 16, 2000, and June 12, 2000, respectively, to remediate the source area and contain the groundwater contamination plume.

Results from a site investigation conducted in 2007 and from a soil vapor rebound test conducted from late November 2006 through January 2007 identified significant vapor mass at the northwestern corner of the Halford's Cleaners building and possibly extending underneath the building (see *Soil Vapor Extraction System Optimization and Enhancement Methods, Modesto Groundwater Superfund Site* [MWH Americas, Inc. (MWH), 2008] for summary results). Initial sub-slab vapor sampling in buildings at and near the source area in February 2008 confirmed that high concentrations of PCE in vapor (up to 20,000 parts per billion by volume [ppbv]) were present under the concrete slab foundation of the Halford's Cleaners building (MWH, 2010a). An SVE optimization plan was implemented in November 2008 by installing and extracting vapor from three SVE wells (SVE-02, SVE-03, and SVE-04). The new wells were installed within what is considered to be a source area. SVE-01 was taken off-line and is monitored in the quarterly sampling program.

The groundwater monitoring well network was expanded in 2008 and in 2011. In 2008, 16 additional groundwater monitoring wells were installed to evaluate the lateral and vertical extents of the groundwater plume. Section 2.3 of the *Quarterly Operations and Monitoring Report, Fourth Quarter 2008* (MWH, 2009) describes a dense non-aqueous-phase liquid investigation (none was discovered). Nine additional wells were installed in 2011 to help delineate the lateral and vertical extent of the PCE concentrations in groundwater that exceed the MCL. The letter report *Groundwater Monitoring Well Installations, Modesto Groundwater Superfund Site* (URS Group, Inc. [URS], 2010a) describes these installations and includes well construction and boring logs.

To address the PCE concentrations in groundwater that were migrating farther downgradient, a cone penetrometer test (CPT) investigation was conducted in 2011 to identify an optimal location for an additional interim extraction well (URS, 2012a). An additional CPT investigation was conducted in June 2012 to further define and delineate concentrations detected in the 2011 investigation (URS, 2012b). The area investigated was segments of Griswold Avenue, Hintze Avenue, and private properties adjacent to Griswold Avenue. PCE results from the HydroPunch sample locations indicated that a plume exceeding 1,000 µg/L was present in the A zone beneath Griswold Avenue from approximately Geer Court to 250 feet east of McHenry Avenue. A new extraction well (EW-02) was installed in the area of high PCE concentrations in groundwater, approximately 300 feet south of Halford's Cleaners and approximately 50 feet north of Griswold Avenue, and brought online in September 2012.

Beginning in July 2012, the responsibility of operating and maintaining the groundwater treatment system for the site was transferred from the EPA to the California Department of Toxic Substances Control (DTSC).

### 1.1.1 Other Nearby PCE Plumes

Two other PCE groundwater plumes, herein referred to as the Elwood's and McHenry Village plumes, have been identified within 1 mile of the Halford's Cleaners site. The Elwood's plume (located south of the site) is the more significant because of its close proximity to the Halford's plume and the potential for commingling of the groundwater plumes. The source area of the Elwood's plume is approximately 2,100 feet (0.4 mile) south of Halford's Cleaners near the intersection of Morris and McHenry avenues. PCE has been detected at concentrations as high as 11,000 µg/L in samples from nine shallow monitoring wells at this location. The wells were originally installed to monitor a fuels release from a nearby 7-11 convenience store, which has subsequently closed with regard to fuels release cleanup. Elwood's Dry Cleaners was identified as a responsible party for PCE contamination discovered in groundwater samples from the fuels site. PCE was detected at one well at 8,100 µg/L in September 2005 and at 1,500 µg/L in March 2011 (Tetra Tech, 2011). In 2011, three wells were installed between the Halford's plume (Modesto Groundwater Superfund Site) and the Elwood's plume. The two A zone wells indicate that the Halford's plume is defined to the south in the A zone; however, concentrations at the B zone well exceeded the PCE MCL, indicating that there may be commingling of the Halford's and Elwood's plumes in the B zone.

The McHenry Village PCE plume is approximately 4,650 feet (0.9 mile) north of Halford's Cleaners, at the intersection of McHenry and Briggsmore avenues. PCE from the McHenry Village site has impacted nearby Municipal Well 21. PCE is being actively remediated at this site and has been monitored in groundwater since approximately 1998 in several monitoring wells, including more recently in seven deeper wells screened in the equivalent to the B zone hydrostratigraphic interval. The most recent groundwater monitoring data from September 2008 show that PCE is present at concentrations as high as 64 µg/L in the deepest monitoring wells screened approximately 120 feet below ground surface (bgs). Thus, the vertical extent of the McHenry Village plume is not defined. Water levels from shallow monitoring wells at other cleanup sites in the region confirm the overall southeastern flow direction

observed in the A and B zones at Halford's Cleaners. As such, it appears unlikely that PCE from the McHenry Village plume is affecting areas of the aquifer impacted by the Halford's release a mile south (MWH, 2010b).

## 1.2 Report Organization

This report is organized as follows:

**Section 1.0** provides a brief history of the Modesto Groundwater Superfund Site.

**Section 2.0** describes the remedial systems.

**Section 3.0** describes the sampling programs.

**Section 4.0** provides performance evaluations for the GWTS and SVE system, including a groundwater capture zone analysis.

**Section 5.0** summarizes results and provides recommendations for the GWTS and SVE system O&M programs.

**Section 6.0** provides an analytical data quality review.

**Section 7.0** lists reference information for documents cited in this report.

Tables and figures are provided at the end of the report. The report is supported with the following appendices, which are provided on a compact disc at the end of the report:

**Appendix A** provides process and instrumentation diagrams (P&IDs) for the GWTS and SVE system.

**Appendix B** provides laboratory analytical data tables.

**Appendix C** provides a laboratory data validation report.

**Appendix D** provides system uptime and shutdown tables.

**Appendix E** provides O&M process logs.

**Appendix F** provides operational history, including a brief discussion of the routine and non-routine O&M performed on the GWTS and SVE system.

**Appendix G** provides historical data, as follows:

- G-1 Well Construction Details
- G-2 Groundwater Monitoring Well Table Elevations
- G-3 Searchable Historical and Current Analytical Data
- G-4 Historical PCE Concentration Trends in Groundwater Monitoring Wells
- G-5 PCE Mass Removed by the Groundwater Treatment System
- G-6 PCE Mass Removed by the Soil Vapor Extraction System

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## 2.0 DESCRIPTION OF REMEDIAL SYSTEM

The Modesto Groundwater Superfund Site GWTS and SVE system are behind Halford's Cleaners and between an auto repair shop and Season's Lodge (Figure 2-1). The SVE and GWTS process equipment is contained within two metal storage containers in a fenced and locked compound.

### 2.1 GWTS

The GWTS includes two operable extraction wells (EW-01R and EW-02), an equalization tank, particulate filters, an air stripper, two liquid-phase GAC (LGAC) vessels, one vapor-phase GAC (VGAC) vessel, and two ion exchange (IX) units, as well as piping and control systems. Appendix A includes GWTS P&ID diagrams.

Extracted groundwater is pumped from the equalization tank through the air stripper for primary treatment of PCE. The treated water is then pumped from the air stripper sump through the LGAC vessels to remove remaining PCE concentrations. The VGAC vessel treats the air stream from the air stripper. The IX units are installed in series after the LGAC vessels and treat a slip stream (portion) of the total system flow to remove low levels of naturally occurring uranium from the groundwater before discharge to the City's sewer collection system. The design flow rate of the system is 50 gallons per minute (gpm).

The components of the GWTS, except the VGAC vessel, are contained in an 8.5- by 8.5- by 20-foot metal storage container. The VGAC vessel is next to the container within the fenced compound. A secondary containment unit is underneath the storage container. Any water draining into the secondary containment is manually pumped to the equalization tank to be treated before it is discharged to the sewer. Additional information about the GWTS is available in the *Groundwater Treatment System Operation and Maintenance Manual, Modesto Groundwater Superfund Site* (O&M Manual) (URS, 2013a), which details the operating equipment (manufacturers, models, standard settings, inspection frequency, troubleshooting, etc.).

The groundwater monitoring network consists of 40 wells throughout the site in residential and business communities (Figure 2-2). Table G-1 (Appendix G) includes well construction details.

### 2.2 SVE System

The SVE system includes three online extraction wells (SVE-02, SVE-03, and SVE-04), a blower, a condensate collection drum, air filters, silencers, one 2,000-pound VGAC vessel, conveyance piping, control systems, and an air conditioning unit. Appendix A includes SVE system P&ID diagrams.

The three extraction wells in operation (SVE-02, SVE-03, and SVE-04) are approximately 3 to 5 feet from the northwestern corner of Halford's Cleaners in the alley north of the building, within what is considered to be the source area. Nine monitoring points surrounding the SVE wells (including three offline SVE wells) are sampled quarterly. Figure 2-3 shows the locations of the SVE wells, the vapor monitoring wells, and the conveyance piping configuration.

To allow for continuous, 24-hour operation, the SVE system operating parameters are controlled by the on-site programmable logic controller. Its design flow rate is 180 standard cubic feet per minute (scfm). Extracted soil vapor passes through an air-water separator; liquid that accumulates in the condensate collection drum is pumped to the equalization tank in the GWTS for treatment before discharge to the sewer.

The aboveground system components (except the VGAC vessel) are contained within an 8- by 8.5- by 12.75-foot metal storage container. The VGAC vessel is next to the container within the fenced compound. Additional information about the SVE system is available in the *Soil Vapor Extraction System Operation & Maintenance Manual, Modesto Groundwater Superfund Site* (URS, 2013b), which details the operating equipment in the SVE trailer (manufacturers, models, standard settings, inspection frequency, troubleshooting, etc.).

### **3.0 SAMPLING AND MONITORING PROGRAM**

Sampling and monitoring at the Modesto Groundwater Superfund Site is performed in accordance with the *Sampling and Analysis Plan, Modesto Groundwater Superfund Site* (SAP) (URS, 2010b). Table B-2 (Appendix B) includes sample locations and associated analytical test methods, phase (water, vapor, etc.), frequency, and date of sampling activity.

The quarterly sampling program consists of two types of sampling: site sampling (groundwater and soil vapor) and system sampling (SVE system). The GWTS sampling program is conducted by the State of California.

#### **3.1 Site Sampling and Monitoring**

Site sampling to monitor groundwater includes collecting groundwater samples from the network of 40 groundwater monitoring wells and 1 groundwater extraction well for analysis by EPA Method E524.2. Site sampling to monitor the vadose zone includes collecting vapor samples from the three operating SVE wells and nine vapor monitoring locations for analysis by EPA Method TO15. Subsections 3.1.1 and 3.1.2 describe sampling of groundwater and vapor wells, respectively, during 1Q13.

##### **3.1.1 Groundwater Sampling and Monitoring**

URS measured depths to groundwater on March 25, 2013, and collected groundwater samples from March 25 through 28, 2013. Depth-to-water measurements and groundwater samples were collected from 40 groundwater monitoring wells during the quarter to evaluate changes in the depth to water, the influence of groundwater extraction on the PCE plume and estimate the extent of contamination, horizontal flow directions, and groundwater capture (groundwater that flows into the extraction well). Figure 3-1, which shows a times series plot of groundwater elevations at six wells around the site, indicates that the groundwater elevation at the site has risen since 2010. Groundwater elevations are also used to evaluate potential vertical groundwater flow directions and to develop groundwater elevation contour maps. Depth to groundwater was measured from the top of casing using an electronic water level meter.

Groundwater samples were collected starting with the least contaminated groundwater monitoring well and continuing in order to the most contaminated groundwater monitoring well; the order of sampling is established using previous quarterly analytical results. Groundwater samples were collected using passive diffusion bags. Samples from the operating extraction well (EW-02) were collected from sample port number 1 (SP-01) at the GWTS influent and analyzed for volatile organic compounds (VOCs) using EPA Method E524.2.

The SAP describes sampling procedures. Water purged from the groundwater monitoring wells was transferred through a bag filter into the GWTS equalization tank.

##### **3.1.2 Soil Vapor Sampling and Monitoring**

Soil vapor samples were collected from SVE and vapor monitoring wells on March 27, 2013, using 400-milliliter Summa canisters. Samples were analyzed using EPA Method TO15. Soil vapor sampling was conducted in accordance with the sampling procedures in the SAP. Appendix B presents analytical results from the 1Q13 sampling event.

## **3.2 System Sampling and Monitoring**

Sampling and monitoring of the GWTS and SVE system at the Modesto Groundwater Superfund Site were performed in accordance with the City of Modesto Conditional and Revocable Groundwater Discharge Permit Number GW 98-3 (City of Modesto, 2010) and the SAP (URS, 2010b). Generally, two categories of samples are collected from the remedial systems: compliance monitoring and performance monitoring. Compliance monitoring samples are collected to satisfy regulatory requirements; performance monitoring samples are collected to assess the contaminant removal processes of the remedial systems.

### **3.2.1 Groundwater System Sampling and Monitoring**

Compliance monitoring samples for the GWTS are collected monthly and quarterly from the system influent and effluent as the system is operating. System effluent samples are analyzed monthly for VOCs (Method 524.2), total dissolved solids (TDS) (Method 2540C), total suspended solids (TSS) (Method 2540D), biochemical oxygen demand (BOD) (Method 5210B), quarterly for total uranium (Method D5174), and annually for bioassay. Performance samples are collected monthly to monitor and assess the performance and efficiency of the air stripper, LGAC, and IX media. The GWTS VOC performance monitoring samples (analyzed by Method E524.2) are collected from the carbon influent, carbon mid-bed, and carbon effluent. The GWTS uranium performance monitoring samples are collected from the post carbon/pre-IX, IX mid-bed, and IX effluent using Method D5174. Figures 1-1 and 1-2 in Appendix A illustrate the sampling port locations for the GWTS. Appendix B presents analytical data tables for the 1Q13 sampling event.

### **3.2.2 Soil Vapor System Sampling and Monitoring**

Only system performance samples are collected at the SVE system. These samples are collected at the pre-GAC and stack sample ports to monitor VGAC usage. Samples are collected monthly for analysis by EPA Method TO15. Appendix B presents analytical results from monthly sampling during 1Q13. Figure 1-3 in Appendix A illustrates the sampling port locations for the SVE system.

## 4.0 PERFORMANCE EVALUATION

Sections 4.1 and 4.2 discuss site and system performance evaluations, respectively, based on current and historical analytical results. The site performance evaluation estimates the extent of contamination. System sampling helps evaluate the remedial progress of the GWTS and SVE system.

Section 6.0 provides a summary of the quality assurance (QA) and quality control (QC) results for the samples collected during 1Q13. Appendix B provides a complete set of validated analytical data for groundwater and soil vapor samples collected during the 1Q13 reporting period. Appendix C includes the laboratory data validation reports for this reporting period's analytical data.

### 4.1 Site Performance

Subsections 4.1.1 and 4.1.2 provide 1Q13 results of the groundwater and soil vapor well sampling events, respectively. Figure 4-1 shows a stratigraphic conceptual model. Subsection 4.1.3 presents an analysis of vertical gradients, and Subsection 4.1.4 provides a capture zone analysis.

#### 4.1.1 Groundwater Monitoring and Sampling Results

Based on water levels measured on March 25, 2013, groundwater elevations ranged from 47.52 feet mean sea level (msl) at MW-16A to 50.62 feet msl at MW-11A in the A zone.

Groundwater elevations ranged from 47.49 feet msl at MW-25B to 49.09 feet msl at MW-09B in the B zone; and 46.97 feet msl at MW-16C to 48.92 feet msl at MW-04C in the C zone. Comparing 1Q13 and 4Q12 water levels, water elevations decreased an average of 0.69 feet in A zone wells across the site; water elevations decreased an average of 0.82 feet in B zone wells across the site; and water elevations in C zone wells increased an average of approximately 1 foot across the site. Appendix G presents historical and current water level measurements and analytical data.

Figures 4-2, 4-3, and 4-4 show potentiometric surface data, groundwater flow directions, and PCE concentration data for the A, B, and C zones, respectively. Potentiometric contours indicate that groundwater in the A and B zones flows southeast across the site, except in the vicinity of EW-02 where groundwater flows toward the depression created by the well. EW-02 operated at an average of approximately 47 gpm during 1Q13. This well has been online since September 13, 2012. The average hydraulic gradient parallel to the direction of regional groundwater flow in the A zone was approximately 0.0012, or approximately 6.3 feet per mile. The average horizontal gradient in the B zone was approximately 0.0015, or 7.9 feet per mile. Groundwater in the C zone was flowing south-southeast (Figure 4-4) with a horizontal gradient of approximately 0.0014, or 7.4 feet per mile.

The primary gradient in the A zone across most of the site is southeast, which is consistent with previous quarters. The B and C zone gradients have been variable. The gradient in the B zone has been southeast every quarter except the third quarters of the year from 4Q10 through 1Q13. The gradient was east-southeast during 3Q10, 3Q11, and 3Q12. The more easterly flows during the third quarters may have been the result of increased pumping at municipal wells during the dryer months of the year.

The 1Q13 horizontal gradient in the C zone was south-southeast. In general, the gradient direction in the C zone has been observed to be more westerly during the third quarters (either southwest or south-southwest) and more easterly during the fourth and first quarters (southeast or south-southeast). Flow in the C zone has been variable during the second quarters: to the west in 2Q09, to the south-southwest in the northern portion of the site and southeast in the southern portion of the site in 2Q10, and to the south-southeast in 2Q11 and 2Q12. As discussed in previous groundwater reports for the site, the gradients in

this deeper zone are strongly influenced by regional supply well pumping that increases during the spring and summer months (MWH, 2010a). Pumping histories from January 2000 through August 2009 for City supply wells surrounding the site are compiled in Appendix B of the *Groundwater Remediation Optimization Methods, Modesto Groundwater Superfund Sites* (MWH, 2010b).

To evaluate the potential hydraulic influence on the extents of PCE plumes from operation of City of Modesto Municipal Water Supply Wells No. 6 and No. 7, URS installed transducers in six A zone, five B zone, and three C zone monitoring wells from June 28 through December 7, 2011. Evaluation of the data collected using the transducers indicated that municipal well pumping has a greater effect on C zone water levels than on A or B zone levels, and pumping at these municipal wells increases the prevailing downward gradient between the A zone and B zone and between the B zone and the C zone. Increases in the downward gradient can result in downward migration of PCE beneath portions of the site.

The southern portion of the plume is most likely to be influenced by municipal well pumping because Municipal Wells 6 and 7 are southeast and southwest, respectively, of the southern boundary of the plume. Municipal Well 7 may be impacted by PCE contamination before Municipal Well 6 because Municipal Well 7 operates at approximately twice the pumping rate of Municipal Well 6, and the B zone plume appears to be closer to Municipal Well 7 (Figure 4-7). Additional details on this evaluation are provided in the *Interpretation of Local Groundwater Level Changes and Influences from City of Modesto Municipal Water Supply Wells Nos. 6 and 7 Technical Memorandum* (URS, 2012c). Further evidence that municipal well pumping is influencing migration of the plume is that PCE concentrations exceeding the MCL were reported in the C zone in 1Q13 for the first time since 4Q08, which is likely due to the plume being drawn to the well by the hydraulic influence of Municipal Well 6. Subsection 4.1.1.1 provides details of the PCE reported in the C zone.

#### 4.1.1.1 PCE

In 1Q13, PCE was detected at concentrations exceeding the MCL of 5 µg/L at EW-02 and 20 monitoring wells. The distribution of PCE concentrations greater than 5 µg/L in groundwater is illustrated with isoconcentration contour lines (lines of equal concentration) on Figures 4-2, 4-3, and 4-4 for the A, B, and C zones, respectively. The distribution of PCE concentrations is also illustrated on generalized geologic cross-sections that dissect the site along northwest to southeast (Figure 4-5) and west to east (Figure 4-6) lines. Table B-3 (Appendix B) includes current quarterly groundwater monitoring well analytical results. Figures G-4(a) through G-4(an) (Appendix G-4) show PCE time series plots for each monitoring well for the period from February 1992 through 1Q13.

Figures 4-5 and 4-6 also include data from CPT investigations performed in May 2011 (URS, 2012a) to identify the optimal location for an A zone extraction well and June 2012 (URS, 2012d) to further define and delineate concentrations detected in the May 2011 investigation.

#### A Zone

As depicted on Figure 4-2, the PCE MCL plume is approximately 1,850 feet long parallel to the primary gradient direction and 1,750 feet wide in the east-west, cross-gradient direction. The long axis of the A zone plume with concentrations greater than 50 µg/L parallel the primary groundwater gradient direction.

PCE concentrations at MW-13A (22 µg/L), MW-14A (23 µg/L), and MW-23A (25 µg/L) exceeded the MCL in 1Q13. These wells are located near the estimated western boundary of the plume; therefore, the plume is undefined in this direction. PCE concentrations at MW-23A have ranged from 25 to 41 µg/L and exceeded the MCL every quarter since this well began being sampled in 4Q11 (Figure G-4[ah]). However, PCE concentrations at MW-13A and MW-14A have fluctuated seasonally (Figures G-4[q] and

G-4[r]) from just above to below the PCE MCL, resulting in changes in the shape of the A zone plume several times annually. Concentrations at these three wells indicate that the PCE plume is undefined to the northwest and southwest of MW-23A.

Potential influences to PCE concentration fluctuations at MW-13A and MW-14A and the consistent concentrations exceeding the MCL at MW-23A may be pumping of municipal supply wells to the west or northwest, perhaps from Municipal Well 8, 14, or 17 (Figure 1-2). PCE was detected historically in Municipal Wells 14 and 8, located 2,375 feet (0.45 mile) west and 5,320 feet (1.0 mile) west-southwest, respectively, of Halford's Cleaners. Municipal Wells 8 and 14 have been offline since 2007 and 2006, respectively (MWH, 2010b); however, the plume may have been drawn toward Municipal Wells 8 or 14 before they were shutdown. Municipal Well 17 is more than 3,500 feet northwest of the monitoring wells. It has remained in consistent operation and could have hydraulic influence on the plume because it has a 4-foot-long screened interval approximately 25 feet lower than the screened zones of MW-13A, MW-14A, and MW-23A (and is open hole from 204 to 232 feet bgs); however, data are insufficient to determine whether the hydraulic influence of pumping at Municipal Well 17 is affecting the PCE plume and the distance between it and the monitoring wells makes it unlikely that the effect is significant. Municipal Wells 6 and 7, alternatively, are closer to the plume than Municipal Wells 14 and 17 and are still operating. The *Interpretation of Local Groundwater Level Changes and Influences from City of Modesto Municipal Water Supply Wells Nos. 6 and 7 Technical Memorandum* (URS, 2012c) reports that water levels at some A zone monitoring wells had slight responses when Municipal Wells 6 and 7 were operating. Municipal Well 6 is screened in the A and B zones and, though Municipal Well 7 is screened below the A zone (in the B zone), pumping at Municipal Wells 6 and 7 may be affecting the A zone plume.

Another possible contributor to the PCE concentrations detected at MW-23A may be the sewer line located beneath Griswold Avenue just north of MW-23A. Discharges from Halford's Cleaners to the sewer line have been identified as a source of contamination to the subsurface. Sewer lines south of the former Elks Club and west of Halford's Cleaners were sampled during August 1985 (MWH, 2010b). A PCE concentration of 1,040 parts per million was reported in a sewer sediment sample collected at the manhole where the north-south sewer line intersects with an east-west sewer line beneath Griswold Avenue. It is possible that PCE flowed down-sewer to that intersection and leaked from the sewer along Griswold Avenue resulting in the high concentrations exceeding 1,000 µg/L in HydroPunch samples collected along the east-west sewer line with an axis that is nearly perpendicular to the southeast hydraulic gradient of the A zone. Westerly flow and releases along the Griswold Avenue sewer line may account for the PCE concentrations between 5 and 50 reported at the wells in the west portion of the A zone plume such as MW-23A (Figure 4-2).

The PCE concentration at MW-04A decreased from 130 µg/L in 4Q12 to 98 µg/L in 1Q13. From 2001 through 2011, concentrations at MW-04A exceeded 500 µg/L; however, in 2012 PCE began decreasing. The PCE concentration at MW-04A decreased from 2,200 µg/L in 4Q11 to 130 µg/L in 1Q12 and has been at that concentration or less every quarter since except once in 3Q12 when the concentration increased to 1,200 µg/L (Figure G-4[d]). The concentration changes may represent the normal fluctuations associated with a decreasing overall trend in PCE concentration in this portion of the site.

The PCE concentration at EW-02 in March 2013 was 560 µg/L, which is more than 5 times the concentration of 98 µg/L at EW-01R in August 2012 indicating that much greater mass per unit volume of groundwater is being extracted since EW-02 was brought online in September 2012. Concentrations at MW-03A, 35 feet east of EW-01R, have increased since EW-01R was shut down in 3Q12 from 44 µg/L in 3Q12 to 100 µg/L in 4Q12 to 260 µg/L 1Q13.

## B Zone

Figure 4-3 depicts the B zone PCE plume and potentiometric surface contours. In 1Q13, PCE was detected above the MCL at 8 of the B zone wells. The PCE concentration at MW-09B was 10 µg/L in 1Q13, which exceeds the MCL. The area at the northern boundary of the B zone plume surrounding this well is undefined. The PCE concentration at MW-04B decreased to less than the MCL at 2.4 µg/L; therefore, the plume surrounding MW-09B may be separate from the main B zone plume.

The main plume is approximately 2,300 feet long parallel to the primary gradient direction (northwest/southeast) and 1,500 feet wide. The PCE plume in the B zone is undefined in the western, northern, and southeastern directions (Figure 4-3).

Data from the B zone wells installed in 2011 indicate that the axis of the plume trends northwest to southeast. The highest concentration of PCE in the B zone (88 µg/L) was reported at MW-25B, which is approximately 1,600 feet south of the source area. The PCE concentration at MW-16B has decreased from 24 µg/L in 3Q12 (which was the highest reported at that well since its installation in 2008) to less than the MCL (4.9 µg/L) in 1Q13. The concentration increase at MW-16B in 3Q12 was likely due to migration of the plume to the east as a result of increased pumping at Municipal Well 6, which occurs during the summer months. The PCE concentration of 88 µg/L at MW-25B in the southern portion of the B zone plume emphasizes that the plume remains undefined in the south and southeastern directions, and is potentially commingled with the Elwood's plume in the B zone.

The B zone plume shape likely has been hydraulically influenced by pumping at municipal wells. The *Interpretation of Local Groundwater Level Changes and Influences from City of Modesto Municipal Water Supply Wells Nos. 6 and 7 Technical Memorandum* (URS, 2012c) indicates that water levels at most B zone monitoring wells had slight responses when Municipal Wells 6 and 7 were operating. The maximum observed water level changes were -0.24 and -0.19 feet at MW-09B and MW-17B, respectively, when pumping at Municipal Well 6 was evaluated and -0.19 and -0.32 feet at MW-16B and MW-19B, respectively, when pumping at Municipal Well 7 was evaluated. Municipal Well 6 is screened in the A and B zones and Municipal Well 7 is screened in B zone; therefore, pumping at Municipal Wells 6 and 7 may be hydraulically influencing the B zone plume.

## C Zone

Figure 4-4 shows groundwater elevation contours and PCE concentration data for the C zone. PCE exceeded the MCL in 1Q13 for the first time since 4Q08. Concentrations increased at MW-16C from 0.4 µg/L in 4Q12 to 7.8 µg/L in 1Q13 (Figure 4-4). Prior to 3Q12, when the PCE concentration increased to 4.9 µg/L, concentrations at MW-16C had been less than 1 µg/L since 1Q09 (Figure G-4[v]). The increased concentration at this well has likely been influenced by vertical plume migration under the hydraulic influence of pumping at Municipal Well 6.

### 4.1.1.2 Other VOCs

No VOCs other than PCE exceeded MCLs in 1Q13. Other VOCs have been reported at site wells in previous quarters. However, Halford's Cleaners is unlikely to be the source of these VOCs in groundwater, unless they are PCE degradation products, because they have not been detected at MW-01A, MW-05A, or MW-08A—the wells nearest to Halford's Cleaners. For that reason, no further speculation about the sources of VOCs other than PCE is provided, as this report is an evaluation of the contamination from Halford's Cleaners.

### 4.1.2 Soil Vapor Sampling Results

Samples were collected from the three operating SVE wells on March 27, 2013. Analytical results listed in Table B-3 (Appendix B) are summarized below and included on Figure 4-7:

- SVE-02 (screened interval 7 to 12 bgs): PCE concentration decreased from 180 ppbv in 4Q12 to 8.2 ppbv in 1Q13.
- SVE-03 (screened interval 13 to 23 bgs): PCE concentration decreased from 130 ppbv in 4Q12 to 1.7 ppbv in 1Q13.
- SVE-04 (screened interval 28 to 38 bgs): PCE concentration decreased from 23 ppbv in 4Q12 to 16 ppbv in 1Q13.

Comparison of 1Q13 to 4Q12 soil vapor monitoring well PCE sample results shows a decrease at nine wells, an increase at one well, and the samples from two wells continued to have a concentration less than the detection limit. During the last 4 quarters, of 36 samples collected, only five had PCE concentrations equal to or exceeding 100 ppbv: two results reported in OSVE-10 (160 ppbv and 370 ppbv), and one result each in DP-01A (110 ppbv), DP-01B (140 ppbv), and DP-06A (100 ppbv).

The highest concentration detected in a soil vapor monitoring well was 26 ppbv at both DP-01A (29 feet bgs screened well) and DP-01B (39 feet bgs screened well) west of Halfords' Cleaners (Figure 4-7). PCE concentrations detected at soil vapor monitoring wells screened deeper than 16 feet bgs ranged from not detected to 26 ppbv.

### 4.1.3 Analysis of Vertical Groundwater Gradients

Vertical gradients were calculated using 1Q13 data at one well pair with screens in the A zone, eight well pairs with screens in the A or B zones, and five well pairs with screens in the B or C zones (Table 4-1). For comparison, Table 4-1 also lists vertical gradients calculated for last quarter and last year.

There was potential for an upward gradient within the A zone between MW-21A and MW-22A. Four of the eight A zone–B zone well pairs and two of the five B zone–C zone well pairs indicated a potential for an upward gradient. Four A zone–B zone well pairs and three B zone–C zone well pairs indicated a potential for a downward gradient. Figure 4-5 uses arrows to show directions of vertical gradients for some of these well pairs.

Well pairs MW-16A and MW-16B and MW-16B and MW-16C both indicate potentials for downward gradients from both the A to the B and the B to the C. These downward gradients are likely influenced by the hydraulic influence of pumping at Municipal Well 6, which, in turn, contributes to the increase in PCE concentrations at the B and C zone wells discussed in Subsection 4.1.1.1.

### 4.1.4 Extraction Well EW-02 Capture Zone Analysis

Figures 4-5 and 4-8 show estimates of groundwater plume capture from extraction well EW-02. Two lines of evidence (groundwater elevation contours developed based on 1Q13 data and particle tracks developed with the site's groundwater model) were used to estimate the extent of capture presented on Figure 4-5 and projected onto Figure 4-8. Comparing the empirical capture zone resulting from pumping at EW-01R and shown on Figure 4-8 of the 3Q12 Quarterly Report (URS, 2012d) to capture resulting from pumping at EW-02 (Figure 4-8), the areal extent of capture has increased from approximately 25 per cent to

approximately 35 per cent of the A zone plume. However, the downgradient portion of the A zone plume and the plumes in the B and C zones are not captured.

Groundwater elevations calculated from water levels measured at A, B, and C zone wells during 1Q13 were contoured using the Natural Neighbor function in ArcGIS 10 and adjusted using professional hydrogeologic judgment. A curved line consisting of the estimated stagnation points is the empirical capture zone illustrated on Figure 4-8. The original groundwater flow model (MWH, 2009) was updated to represent 1Q11 conditions used to select the location for EW-02 (URS, 2012a). The extent of capture in the A zone estimated with the model's simulation of EW-02 pumping at 50 gpm is illustrated on Figure 4-8 as the sweep of groundwater flow lines toward the well based on reverse particle tracking (i.e., particles released at the well and modeled backwards to determine their starting points). The actual average operating flow rate at this well in 1Q13 was 47 gpm. The average operating flow rate is calculated by dividing the volume pumped from the well during the quarter by the operating time.

The horizontal interpreted extents of capture for EW-02, based on the two lines of evidence, are in good agreement, even at an actual flow rate of 47 gpm, which is 6 percent less than the flow of 50 gpm on which particle tracking is based. The downgradient extent of capture is interpreted to extend to approximately 60 feet upgradient of MW-10A (Figure 4-8).

Figure 4-5 shows an estimate of the vertical extent of capture by EW-02. The downgradient extent of capture depicted in profile view is based on the empirical and modeled lines of evidence. The vertical capture zone extent below the screen of EW-02 is an estimate based on water level data, modeling, and vertical gradients. Vertical gradients calculated using 1Q13 groundwater elevation data from wells near EW-02 (MW-04A, MW-04B well pair and MW-10A, MW-10B well pair [Figure 4-5]) were upward from the A to the B zone. There was also an upward gradient between MW-4B and MW-4C and MW-10B and MW-10C. Therefore, the estimated capture zone has been drawn below the bottom of the screened interval of EW-02 (Figure 4-5).

## **4.2 System Performance**

System compliance and performance samples were collected to evaluate the effectiveness of the remedial systems. Water, vapor, and media samples were collected according to requirements in the SAP (URS, 2010b) and the City of Modesto Conditional and Revocable Groundwater Discharge Permit (Permit Number GW98 3) (City of Modesto, 2010). Treatment system effluent samples collected during the reporting period for vapor emissions and sewer discharge were below maximum allowable discharge limits.

### **4.2.1 GWTS Results**

During 1Q13, the GWTS operated for approximately 1,912 hours (out of 2,160 hours possible during the quarter), an uptime of approximately 88.5 percent. Tables D-1 through D-3 (Appendix D) present the GWTS shutdown summaries for January, February, and March, respectively.

The GWTS treated a total of approximately 5.35 million gallons of water and removed approximately 25 pounds of PCE during this reporting period. To date (since August 2001), the system has treated approximately 209 million gallons of water and has removed approximately 575 pounds of PCE. Figure 4-9 is a graph illustrating the cumulative PCE mass removed by the GWTS since it was started.

During the 1Q13 reporting period, the GWTS pumped and treated groundwater from EW-02. The influent PCE concentrations were 580, 520, and 560  $\mu\text{g/L}$  during January, February, and March, respectively.

Samples were also analyzed for uranium. Table B-4 (Appendix B) provides a summary of treatment system analytical results for 1Q13. Table 4-2 summarizes PCE results for 1Q13.

#### **4.2.2 SVE System Results**

During 1Q13, the SVE system operated for 2,057 hours (out of 2,160 hours possible during the quarter), an uptime of approximately 95 percent. Tables D-4, D-5, and D-6 (Appendix D) present the SVE shutdown summaries for January, February, and March, respectively.

The SVE system operated at an average flow rate of 127 scfm and removed approximately 1.2 pounds of VOCs during this quarter. To date (since June 2011), the total cumulative VOC mass removed through March 7, 2013, is approximately 3,469 pounds. Figure 4-10 is a graph illustrating the cumulative PCE mass removed by the SVE system since it was started.

The influent PCE concentrations ranged from 120 to 150 ppbv during 1Q13. Monthly SVE system samples collected in SUMMA canisters were sent to the EPA Region 9 laboratory in Richmond, California, for VOC analysis. Table B-3 (Appendix B) provides a summary of SVE treatment system analytical results; Table 4-3 provides PCE results for this reporting period.

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## 5.0 RECOMMENDATIONS

This section provides a summary of observations and recommendations for the GWTS and SVE system.

### 5.1 GWTS – Summary Observations and Recommendations

The PCE MCL plume is only partially captured in the A zone (Figures 4-5 and 4-8), though the extent of capture has improved since EW-02 was brought online in September 2012. Based on 1Q13 data, the known extent of the plume is approximately 1,850 feet long parallel to the primary gradient direction and 1,750 feet wide in the east-west, cross-gradient direction. (Figure 4-2) and approximately 2,300 feet long parallel to the primary gradient direction (northwest/southeast) and 1,500 feet wide in the B zone (Figure 4-3). In addition, for the first time since 4Q08, there is a plume in the C zone at MW-16C (Figure 4-4). The A, B, and C zone plumes are shown overlain on Figure 5-1.

Data collected in 1Q13 and in previous quarters indicate that the PCE plume is defined in the A zone except to the northwest and west. Concentrations at MW-13A and MW-14A, at approximately the southwestern and northwestern extents of the A zone plume, have historically fluctuated above and below the MCL from quarter to quarter (Figures G-4[q] and G-4[r] [Appendix G]). Concentrations at both these wells and at MW-23A, located within the western extent of the plume exceeded the MCL in 1Q13. The undefined extent of the western portion of the plume is a data gap in the conceptual site model. Two additional wells screened in the A zone are recommended: one west and one southwest of MW-23A to address the data gap. These recommended wells would also address the areas to the west of MW-13A and MW-14A, which exceed the MCL usually at least once annually.

The PCE plume exceeding the MCL in the B zone is undefined to the west, north, and southeast. Concentrations at MW-25B (south portion of the plume) and MW28B and MW-29B (west portion of the plume) all have exceeded the PCE MCL since their installation in September 2011, and the PCE concentration at MW-09B (in the northern portion of the plume) fluctuates quarterly from just above to just below the MCL (10 µg/L in 1Q13). Results from these wells suggest that the extent of the B zone plume, which is influenced by supply well pumping, is not defined. Therefore, five additional monitoring wells are recommended: two wells to the southeast, one well to the northwest, and one well to the west to define the extent of concentrations exceeding the MCL in these directions. A fifth well should be installed to the southwest to serve as a guard well to Municipal Well 7.

PCE exceeded the MCL in 1Q13 in the C zone at MW-16C for the first time since 4Q08. The downward gradients from the A zone to the B zone and from the B zone to the C zone and the increase in concentrations at MW-16C have likely been influenced by pumping at Municipal Well 6. One monitoring well screened in the C zone (and nested with a B zone well) is recommended between MW-16C and Municipal Well 6 to define the downgradient extent of concentrations exceeding the MCL and to serve as a guard well for Municipal Well 6 (Figure 5-1). In addition, the flow rates at Municipal Wells 6 and 7 should be decreased to reduce potential for affecting PCE plume migration, and PCE concentrations should continue to be monitored at Municipal Wells 6 and 7 (URS, 2012c).

The wells recommended for installation and shown on Figure 5-1 are scheduled to be installed in June and July 2013. The work plan for the well installations is currently being prepared (URS, pending). Monitoring wells will be sampled in 2Q13 during the week of May 28, 2013.

The installation of EW-02 in 2012 is a continuation of the remediation efforts needed for the site. In addition to the operation of this well, the additional monitoring wells recommended in this section are needed to define the boundaries of the A, B, and C zone PCE contamination in groundwater, after which

additional groundwater extraction wells may be needed to prevent migration of the plume toward water supply wells. These alternatives are being evaluated in the draft feasibility study (URS, pending).

If PCE concentrations continue to increase at MW-03A, EW-01R may be brought online and groundwater extracted from both EW-01R and EW-02; however, the total volume of groundwater after treatment cannot exceed 50 gpm.

## **5.2 SVE – Summary Observations and Recommendations**

The SVE treatment system's 1Q13 average influent sample concentrations were lower than the 4Q12 average. Monthly samples entering the treatment system had PCE concentrations of 150, 130, and 120 ppbv in January, February, and March, respectively. Concentrations at all three operating extraction wells were lower in 1Q13 than in 4Q12. The total PCE mass removed decreased from 3.2 pounds in 4Q12 to 1.2 pounds in 1Q13.

The SVE system was installed to address soil gas concentrations at the source of the site contamination. The objective of SVE is to eliminate the source for groundwater contamination by removing contaminant mass in the vadose zone. By removing contaminant mass in the upper vadose zone (above 15 feet bgs), a secondary objective is met by reducing or eliminating human health risk due to shallow soil gas and vapor intrusion.

Soil vapor concentrations and mass removal rates curves for the SVE system have become asymptotic (Figure 4-10) indicating the system has become inefficient. Good engineering practice dictates that shutdown of extraction wells is warranted, assuming that the shutdown would not have overriding negative effects. The system has been operated principally to reduce the risk to building occupants that could be posed by PCE vapor intrusion from the vadose zone. When well shutdown and rebound monitoring are implemented, monitoring of indoor air concentrations should be incorporated into the rebound monitoring process to assure indoor air risk does not reach unacceptable levels.

## 6.0 QUALITY CONTROL SUMMARY REPORT

### 6.1 Introduction

This section summarizes QA and QC results for the samples collected and data generated during the period of January through March 2013 (1Q13) at the Modesto Groundwater Superfund Site, Modesto, California. Sampling activity protocols are provided in the SAP (URS, 2010b). Based on the data review, all data collected during this period are of known and acceptable quality in relation to the data quality objectives (DQOs) of this project. All data are considered usable as qualified for the intended purposes.

Between January 9 and March 28, 2013, field samples, field duplicates (FDs), and field QC samples were collected for groundwater and air samples. Water samples were collected from the GWTS and existing monitoring wells. Air samples were collected from the GWTS and SVE system. Table B-1 (Appendix B) lists contaminants of concern at the Modesto Groundwater Superfund Site. Analyses performed include the following:

Site and system sampling and monitoring analyses:

#### **ALS Laboratory (Formerly Columbia Analytical Services)**

- TDS by Standard Method (SM) 2540C: 3 normal samples (NS), 1 FD
- TSS by SM2540D: 3 NS, 1 FD
- BOD by SM5210B: 3 NS, 1 FD
- VOCs in water by EPA Method 524.2: 14 NS, 1 FD, and 3 trip blanks (TBs)

#### **Eurofins Laboratory (Formerly Air Toxics, LTD.)**

- VOCs in air by EPA Method TO15: 6 NS

#### **EPA Region 9 Laboratory**

- VOCs in air by EPA Method TO15: 18 NS and 3 FDs
- VOCs in water by EPA Method 524.2: 40 NS, 4FDs, 2 TBs, 1 field blanks (FBs) and 6 matrix spike/matrix spike duplicate (MS/MSDs)

#### **GEL Laboratories, LLC**

- Total uranium by American Society for Testing and Materials D5174: 10 NS, and 3 MS/laboratory duplicates

Table B-2 (Long-Term Monitoring and SVE) and Table B-3 (GWTS) (Appendix B) summarize these sample results.

Analytical chemistry services are provided by the ALS Laboratory in Kelso, Washington; Eurofins Laboratory in Folsom, California; EPA Region 9 laboratory in Richmond, California; and GEL Laboratories, LLC, in South Carolina All laboratories are certified by the California Department of Health

Services through the Environmental Laboratory Accreditation Program to perform hazardous waste analyses.

All EPA Region 9 analytical results were validated by Laboratory Data Consultants (LDC) using the criteria established in the SAP, analytical methods, and EPA Region 9 laboratory standard operating procedures (SOPs), as well as the National Functional Guidelines for Superfund Organic Methods Data Review (EPA, 2008). The sample results validated by LDC were validated electronically. The URS project chemist reviewed all remaining data using criteria established in analytical methods and the laboratories SOPs. Appendix C provides data validation reports and qualified data tables. Several data validation flags were used in the validation process. The definitions of these qualifier flags are:

- U Indicates the compound or analyte was analyzed for but not detected at or above the reported quantitation limit.
- UJ Indicates the compound or analyte was analyzed for but not detected at or above the stated limit. The sample detection limit is an estimated value.
- J Indicates the analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
- R QC indicates that the result is not usable. The presence or absence of the compound or analyte cannot be verified or the reported result is compromised as to be unusable.

## 6.2 DQOs

DQOs are qualitative and quantitative statements that specify the quality of the data required to meet the goals of site investigations and support decisions made in remedial response activities. Data quality was assessed in terms of its precision, accuracy, representativeness, completeness, and comparability (PARCC). These criteria are briefly defined in the following sections. The results of the field and laboratory QC checks are evaluated against the DQOs, and the quality of the data is assessed according to PARCC parameters. QC sample results that fall outside of these criteria serve to signal the production of unacceptable or biased data that could result in the implementation of corrective action or the qualification of data.

### 6.2.1 Precision

Precision is a measurement of mutual agreement among individual measurements of the same property, usually under prescribed conditions. Data evaluated to assess precision consist of results from the analysis of FD pairs and MS/MSD samples. The precision measurement is established using the relative percent difference (RPD) between the duplicate sample results, and is expressed as:

$$RPD = \frac{|X_1 - X_2|}{[(X_1 + X_2) / 2]} \times 100$$

where:

$X_1$  and  $X_2$  represent the individual concentrations of the target analyte in the two replicate analyses.

### 6.2.2 Accuracy

Accuracy is defined as the proximity of the mean of a set of results to the true value. Accuracy is assessed through the evaluation of initial and continuing calibration data, as well as laboratory control sample (LCS) recoveries, surrogate standard recoveries, and MS recoveries, which are expressed as a percent recovery according to the following equation:

$$\text{percent recovery} = \frac{(\text{spiked sample conc.} - \text{sample conc.})}{\text{known conc. of spike}} \times 100$$

### 6.2.3 Representativeness

Representativeness is defined as the degree to which sample data accurately and precisely represent the characteristics of the site, parameter variations at a sampling point, or environmental conditions. Representativeness, in terms of sample integrity for this investigation, was qualitatively evaluated based on the analysis of TBs, FBs, and method blank (MB) samples. In addition, sample collection and handling methods and the cooler receipt forms were reviewed to confirm that samples were received under proper storage conditions.

### 6.2.4 Completeness

Two types of completeness have been evaluated for this project. Analytical completeness is the number of unqualified results related to the total number of results reported, expressed as a percentage. The analytical completeness goal is 90 percent. Technical completeness is the number of valid results related to the total number of results reported, expressed as a percentage. The technical completeness goal for this project is 95 percent.

### 6.2.5 Comparability

Data comparability is achieved by using standard analytical methods and reporting limits, and by using standard units of measurements, as specified in the methods. Comparability is a qualitative parameter.

## 6.3 Quality Control Results

The following sections summarize the data review process and results in terms of PARCC criteria, as defined in Subsection 2.2.5 of the SAP. Appendix C provides qualified data based on this review process.

### 6.3.1 Precision and Accuracy

Precision and accuracy were evaluated based on the results of QC samples collected by the field team and QC samples that originated in the laboratory. The calculated RPD for MS/MSDs and FD pairs provided information on the precision of sampling and analytical procedures. MS/MSD analyses were associated with all samples for this sampling event. All data were reviewed for accuracy based on the surrogate spike, MS/MSD, and LCS percent recoveries. In addition, initial and continuing calibration data were reviewed for analytical accuracy. The criteria used for the evaluation are provided in the quality assurance project plan in the SAP (URS, 2010b). Data validation findings are provided in Appendix C. Tables B-3 and B-4 (Appendix B) provide FD results.

### **6.3.2 Representativeness**

Representativeness was evaluated through the analysis of FB, TB, and MB samples. Additionally, sample collection and handling methods and the cooler receipt forms were reviewed. All sample bottles were received in good condition and the chain-of-custody documents agreed with the sample labels.

TBs are required to accompany each cooler of aqueous samples sent to the laboratory for analysis of VOCs. One TB accompanied each cooler for each of the sampling dates. Tables B-2 and B-3 (Appendix B) list TB detections.

FBs are used to determine if potential sample contamination has occurred during the sample collection process. FBs are analyzed using the same analytical procedures as the associated samples. Table B-2 (Appendix B) provides FB detections.

MBs are processed through the same analytical procedures as the associated samples. MBs are analyzed with each batch of samples to provide information on contamination originating in the analytical process. MB detections are indicated in the data validation report provided in Appendix C.

### **6.3.3 Completeness**

Completeness of data was evaluated by assuring that all analytical requests were met, samples were received in proper condition, and all analyses were performed within the appropriate holding times. Overall analytical completeness (91 percent) exceeded the project goal of 90 percent. Overall technical completeness for this data set (100 percent) exceeded the project goal of 95 percent. Refer to Appendix C for a breakdown of completeness by method.

### **6.3.4 Comparability**

Comparability was evaluated for this sampling event by analyzing all samples according to the specified EPA analytical methods, which use standard units of measurement. Necessary sample dilutions, due to the presence of elevated target compound concentrations, did not affect data usability and comparability. Results for some analytes are reported below the practical quantitation limit (PQL) but above the method detection limit (MDL). The "J" flag has been applied to results reported between the MDL and the PQL.

## **6.4 Summary of Data Reliability**

Based on this evaluation, all data collected during this period are of known and acceptable quality in relation to the DQOs of this project. All data are considered usable as qualified for the intended purposes.

## 7.0 REFERENCES

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- URS, 2012b. *Final Letter Report, Additional CPT/HydroPunch Investigation, Modesto Groundwater Superfund Site*. October 26.
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- URS, 2012d. *Quarterly Operations and Monitoring Report Groundwater Treatment and Soil Vapor Extraction Remediation Systems Third Quarter 2012 Report*. November.
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- URS, pending. *Letter Work Plan, Groundwater Monitoring Well Installations, Modesto Groundwater Superfund Site*.

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## **TABLES**

**Table 4-1 Vertical Gradients, First Quarter 2013**

Well No.	Groundwater				
	Monitoring Zone	Elevation (feet msl)	1Q13 Vertical Gradient	4Q12 Vertical Gradient	1Q12 Vertical Gradient
MW-21A	A	47.44	0.002	0.0003	-0.009
MW-22A	A	47.36			
MW-04A	A	47.7	0.0161	0.0138	0.0042
MW-04B	B	48.76			
MW-08A	A	49.16	-0.0008	-0.0037	0.0034
MW-09B	B	49.1			
MW-10A	A	48.21	0.0038	0.0018	0.0019
MW-10B	B	48.53			
MW-16A	A	47.52	-0.0004	0	-0.0004
MW-16B	B	47.5			
MW-17A	A	47.72	0.0017	0.0006	0.0019
MW-17B	B	47.81			
MW-19A	A	48.09	-0.0097	-0.0108	-0.0089
MW-19B1	B	47.64			
MW-20A	A	47.77	-0.0008	-0.0024	0.0013
MW-20B	B	47.71			
MW-21A	A	47.44	0.0009	0.0007	0.0069
MW-25B	B	47.49			
MW-04B	B	48.76	0.0019	0.0048	0.0077
MW-04C	C	48.92			
MW-10B	B	48.53	0.0001	-0.0039	0.0054
MW-10C	C	48.54			
MW-16B	B	47.5	-0.0055	-0.004	-0.0006
MW-16C	C	46.97			
MW-17B	B	47.81	-0.0033	-0.0043	0.0018
MW-17C	C	47.5			
MW-20B	B	47.71	-0.0003	-0.0096	0.0048
MW-20C	C	47.69			

msl = mean sea level

positive gradient = upward

negative gradient = downward

**Table 4-2. GWTS Sample Results: First Quarter 2013**

Sample Port	Location	Sample Date	Sample Code	pH	PCE (µg/L)
SP-01	GWTS Influent	1/16/2013	N	7.00	580
		2/6/2013	N	6.97	520
		3/7/2013	N	6.91	560
SP-03	Carbon Influent	1/16/2013	N	7.84	3.2
		1/16/2013	FD		3.2
		2/6/2013	N	7.73	4.5
		3/7/2913	N	7.71	12
SP-04	Carbon Mid Bed	1/16/2013	N	7.83	<0.5
		2/6/2013	N	7.71	<0.5
		3/7/2013	N	7.70	<0.5
SP-05	Post Carbon Pre-Ion Exchange	1/16/2013	N	7.84	<0.5
SP-07	GWTS Effluent	1/9/2013	N	NC	0.47 J
		1/16/2013	N	7.82	<0.5
		2/6/2013	N	7.92	<0.5
		3/7/2013	N	7.54	<0.5

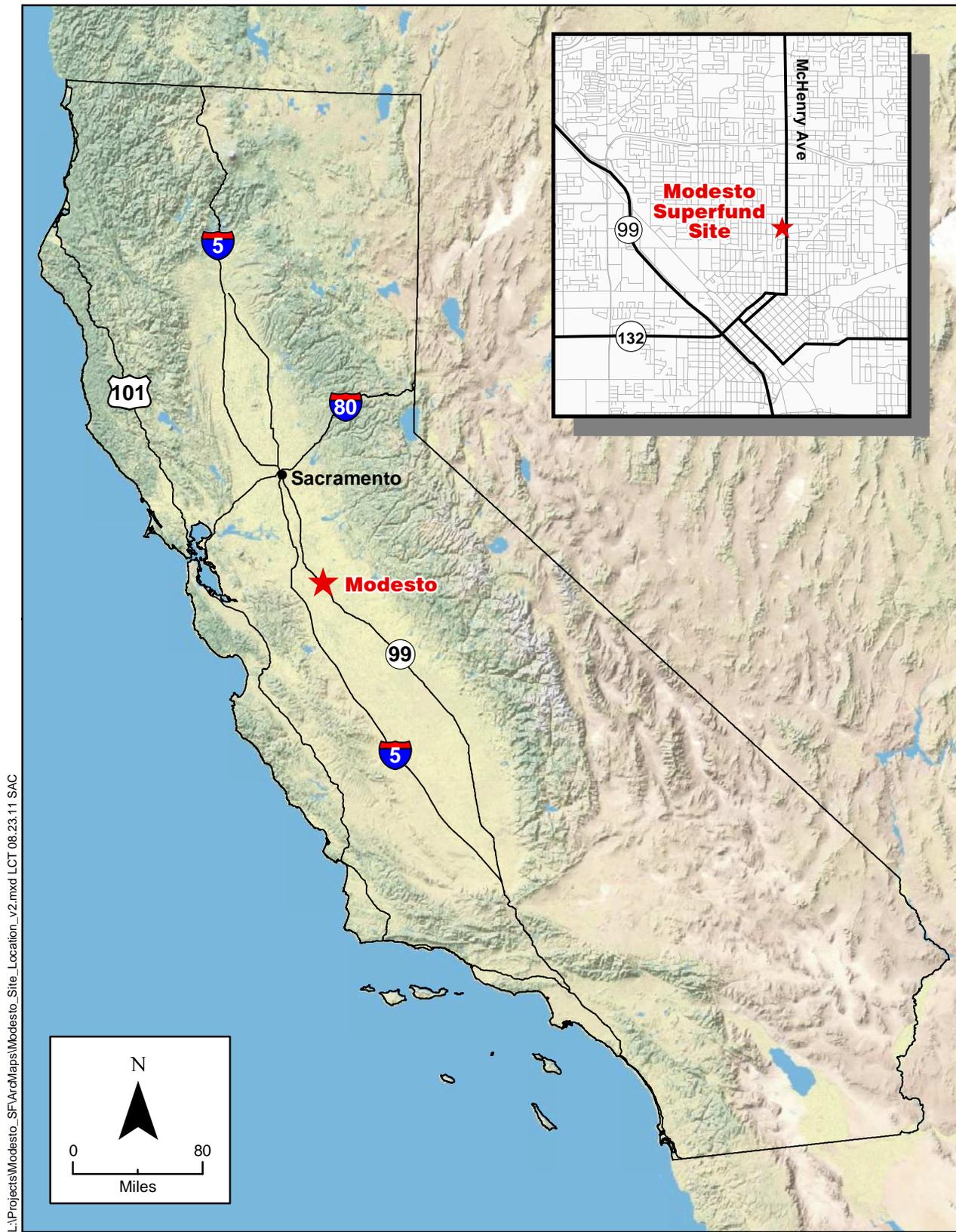
FD = field duplicate  
 GWTS = groundwater treatment system  
 J = estimated value  
 N = normal sample  
 NC = not collected  
 PCE = tetrachloroethene  
 µg/L = micrograms per liter

**Table 4-3. SVE System Sample Results: First Quarter 2013**

Sample Port	Location	Sample Date	Sample Code	PCE (ppbv)
SP-11	SVE Pre-GAC	1/9/2013	N	150
		2/6/2013	N	130
		3/7/2013	N	110
		3/7/3013	FD	120
SP-12	SVE Stack	1/9/2013	N	<2.4
		2/6/2013	N	4.2
		3/7/2013	N	7.1

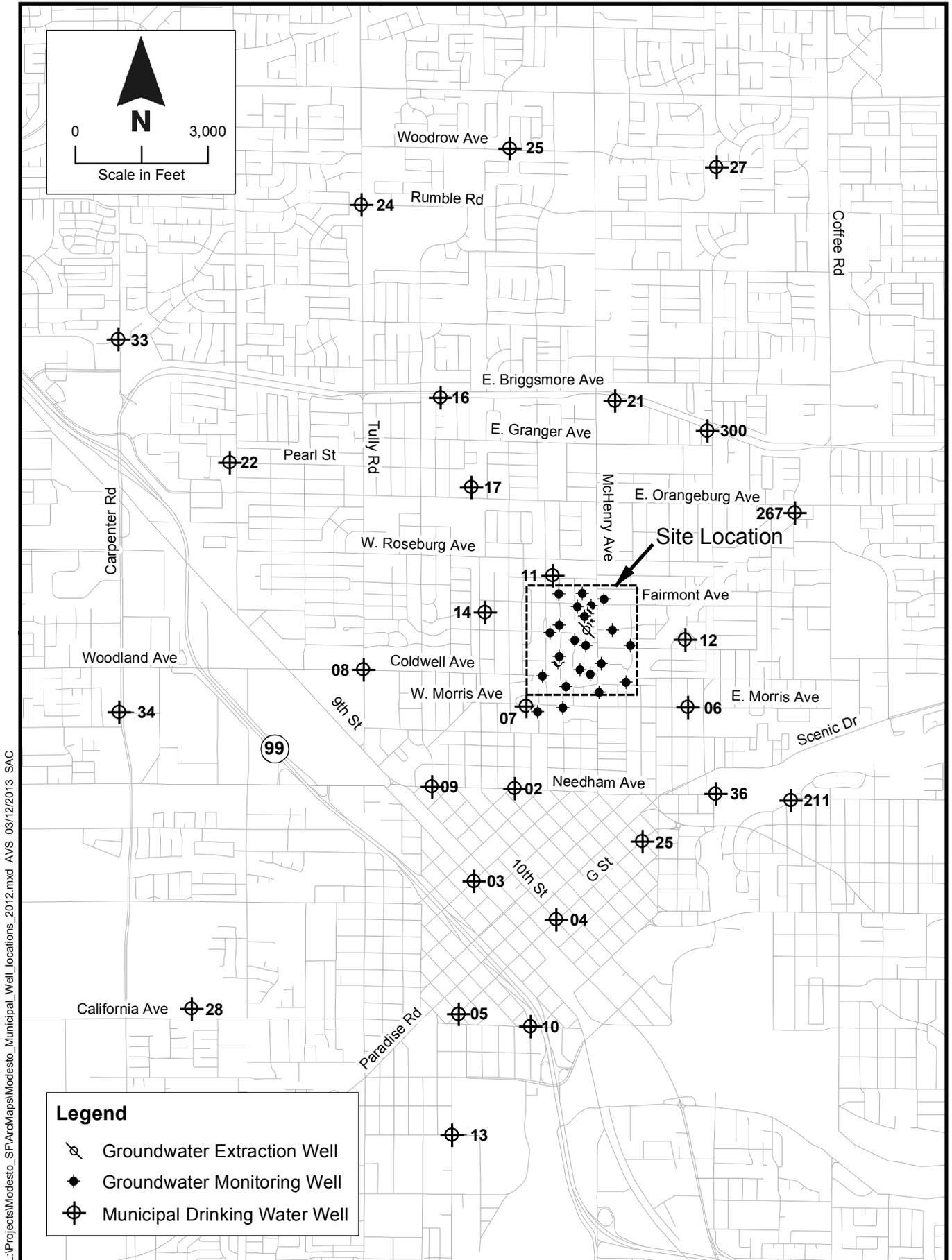
FD = field duplicate  
 GAC = granular-activated carbon  
 J = estimated concentration  
 N = normal sample  
 PCE = tetrachloroethene  
 ppbv = parts per billion by volume  
 SVE = soil vapor extraction  
 < = less than

## **FIGURES**



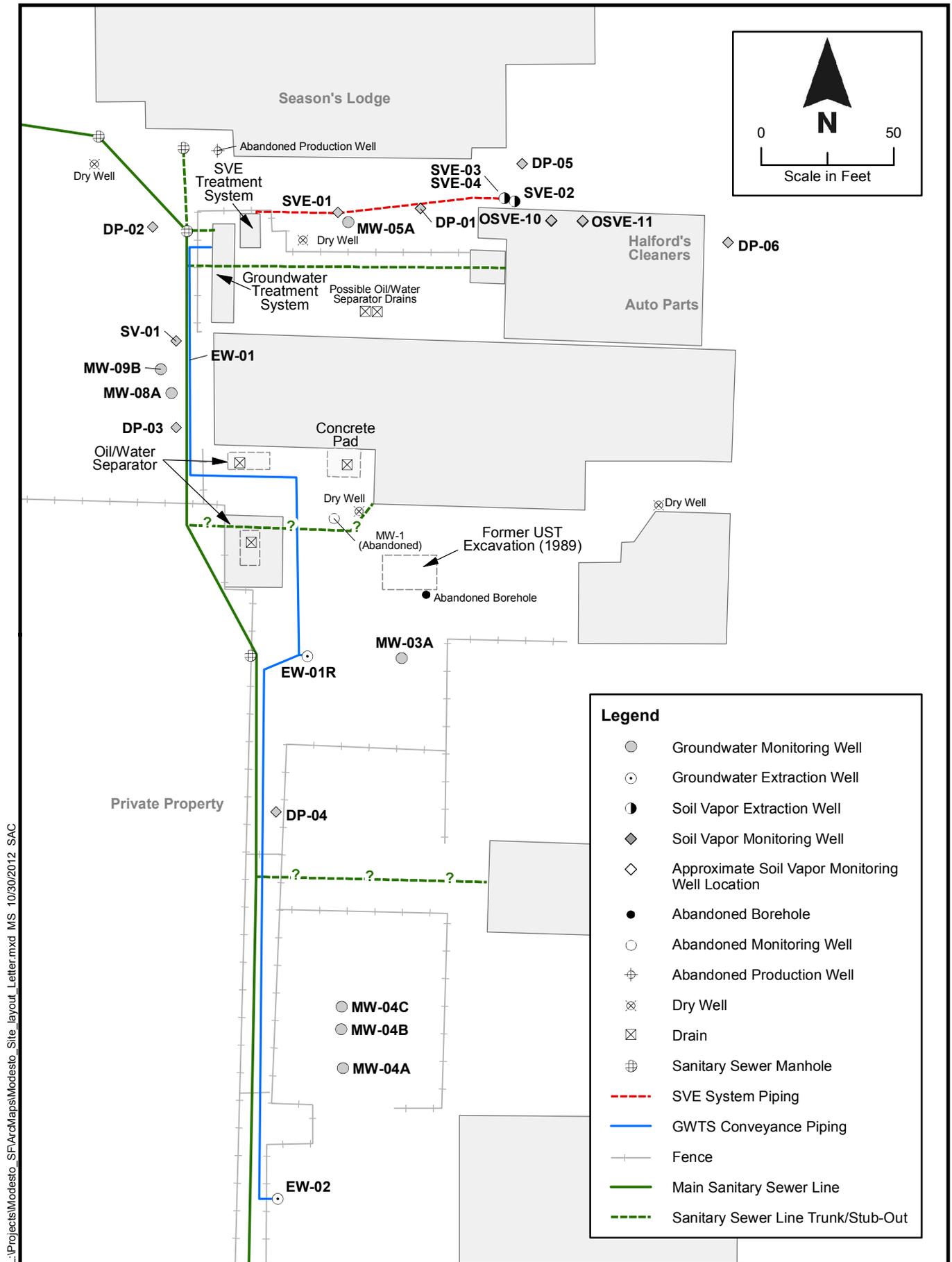
L:\Projects\Modesto\_SF\ArcMaps\Modesto\_Site\_Location\_v2.mxd LCT 08.23.11 SAC

**Figure 1-1. Site Location, Modesto Groundwater Superfund Site, Modesto, California**

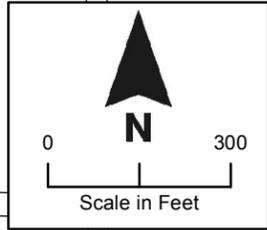


L:\Projects\Modesto\_SF\ArcMaps\Modesto\_Municipal\_Well\_locations\_2012.mxd AVS 03/12/2013 SAC

**Figure 1-2 Municipal Well Locations,  
Modesto Groundwater Superfund Site**



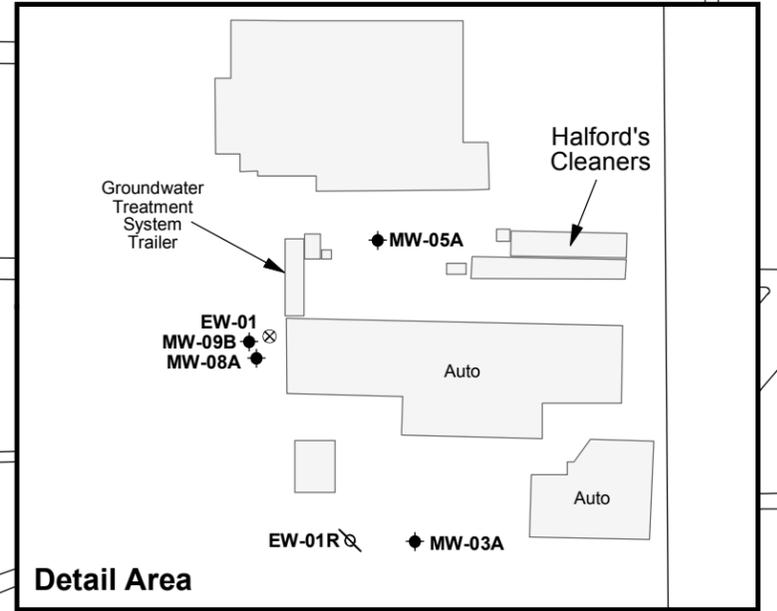
**Figure 2-1. Site Layout  
Modesto Groundwater Superfund Site**



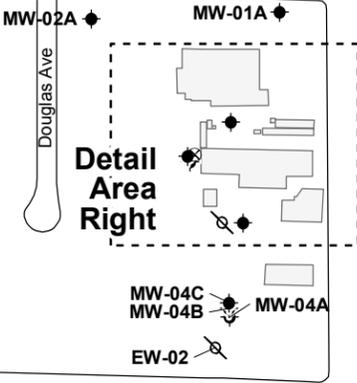
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**Legend**

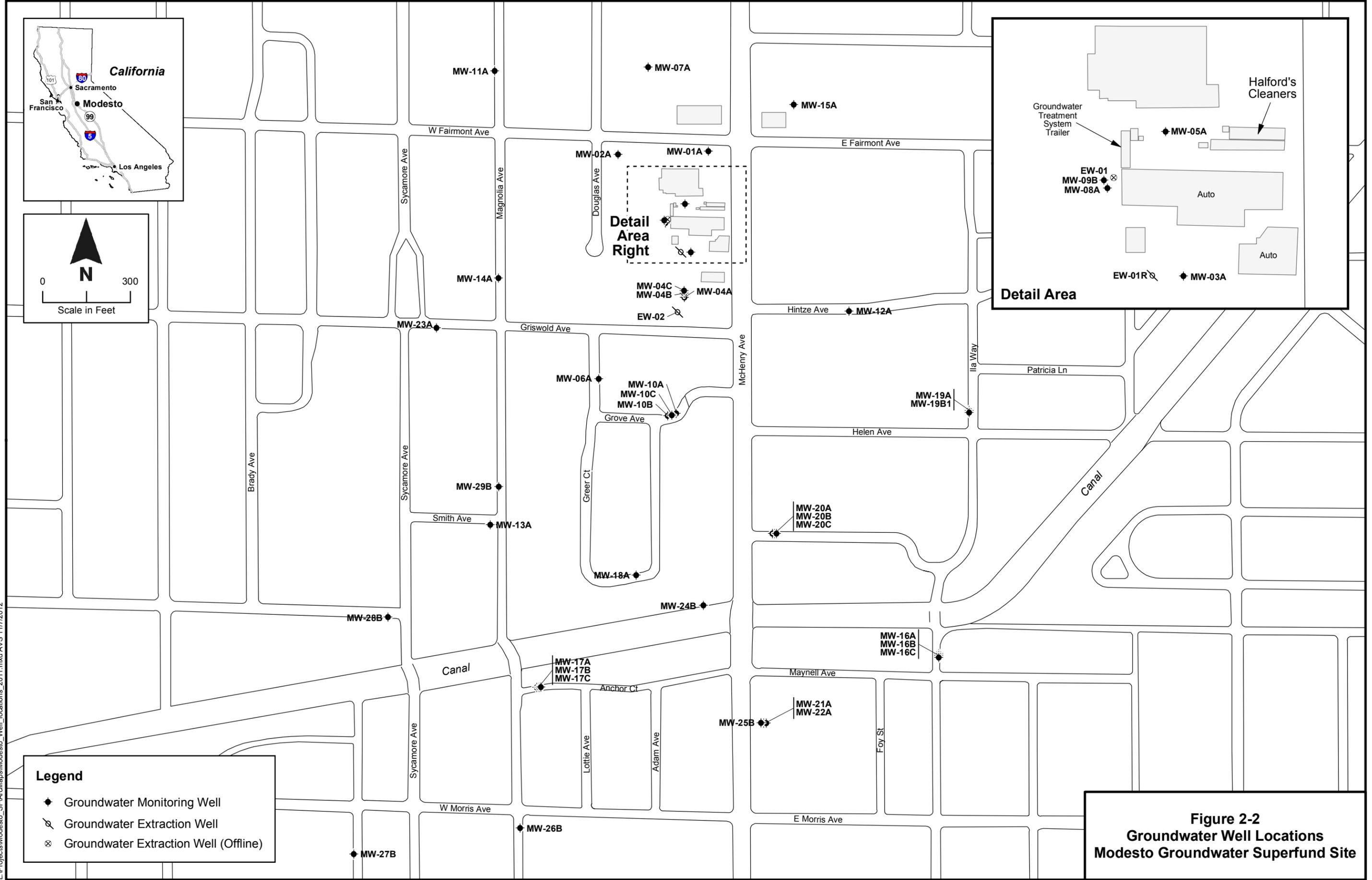
- ◆ Groundwater Monitoring Well
- ⊗ Groundwater Extraction Well
- ⊗ Groundwater Extraction Well (Offline)

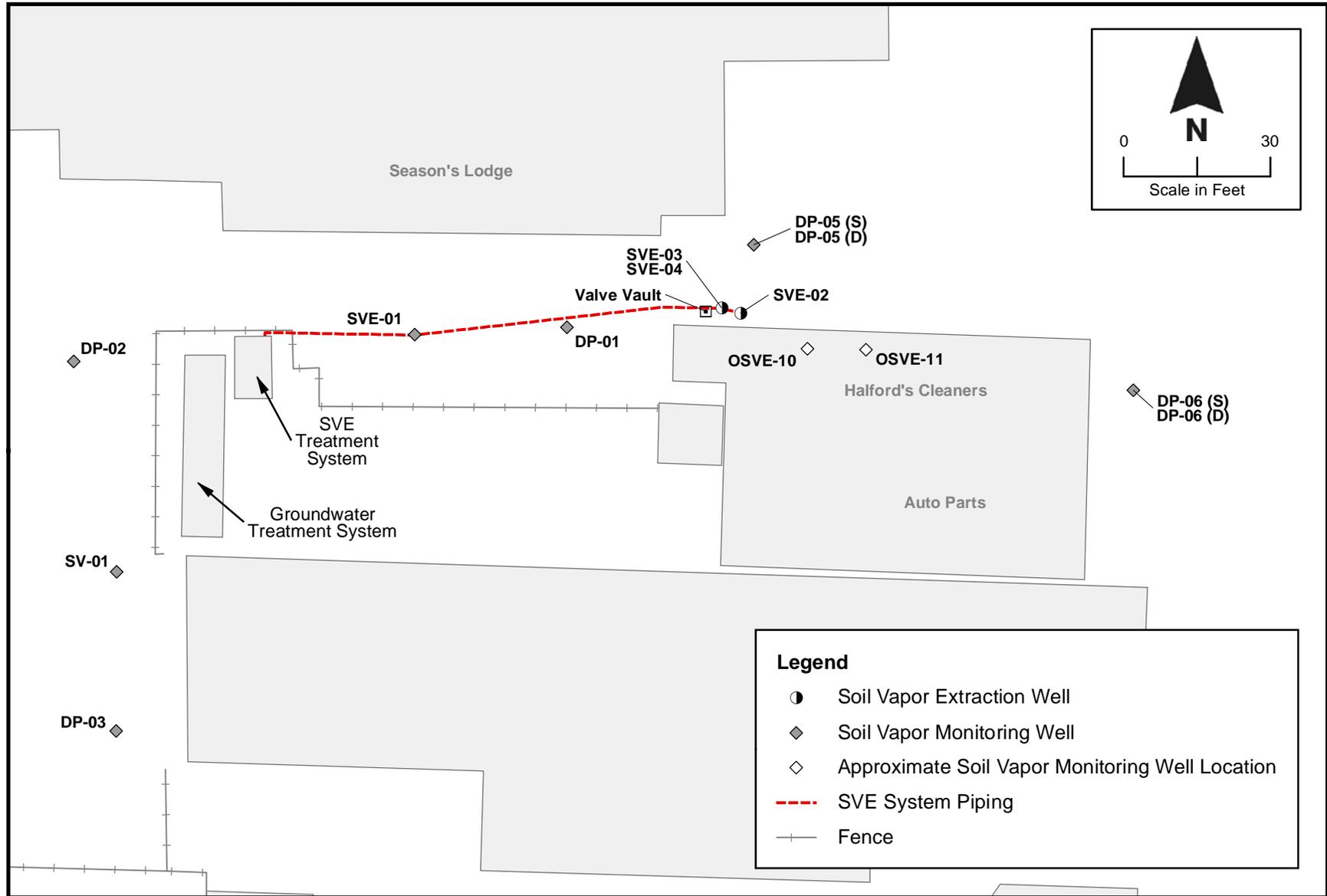


**Detail Area Right**



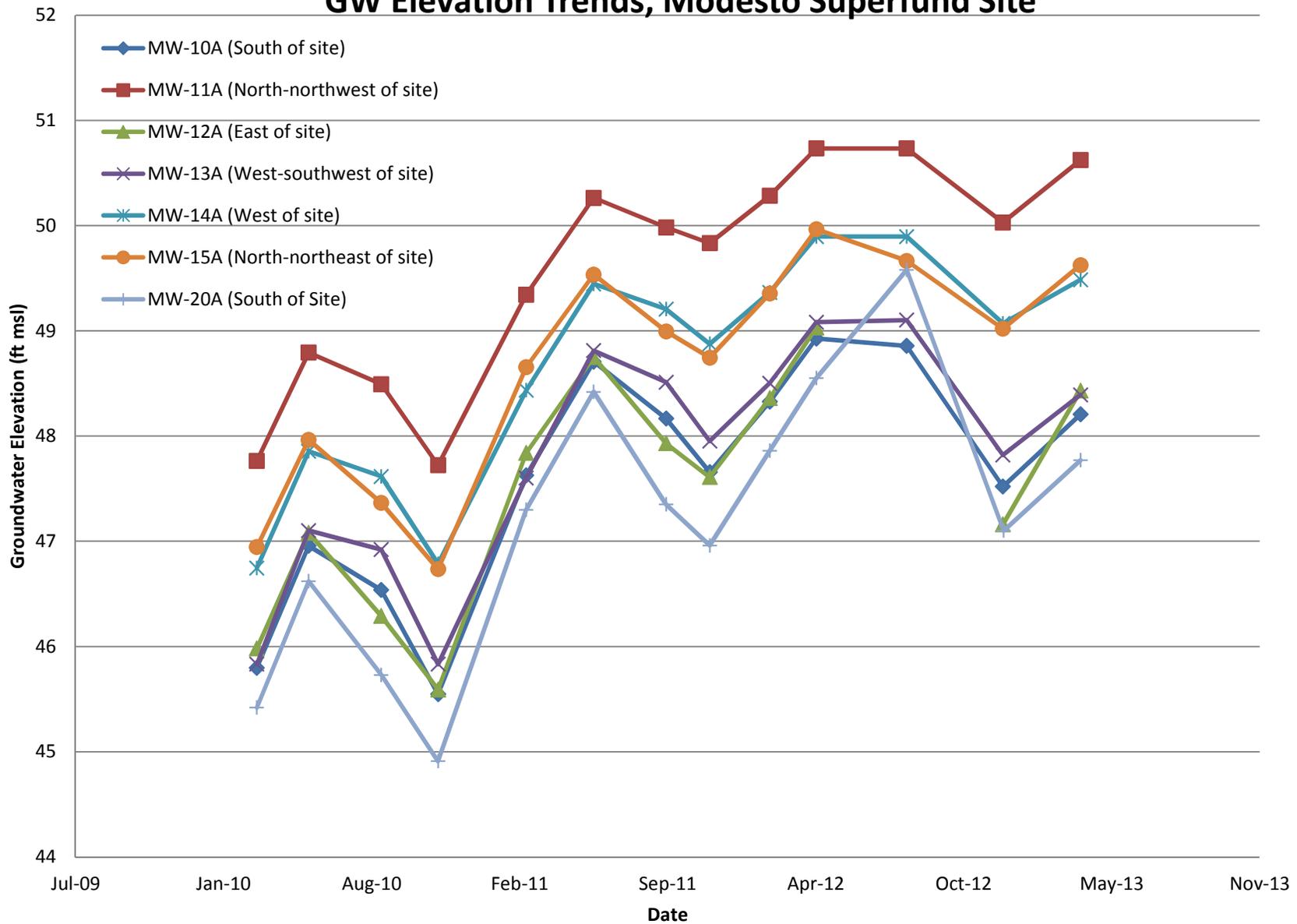
**Figure 2-2  
Groundwater Well Locations  
Modesto Groundwater Superfund Site**

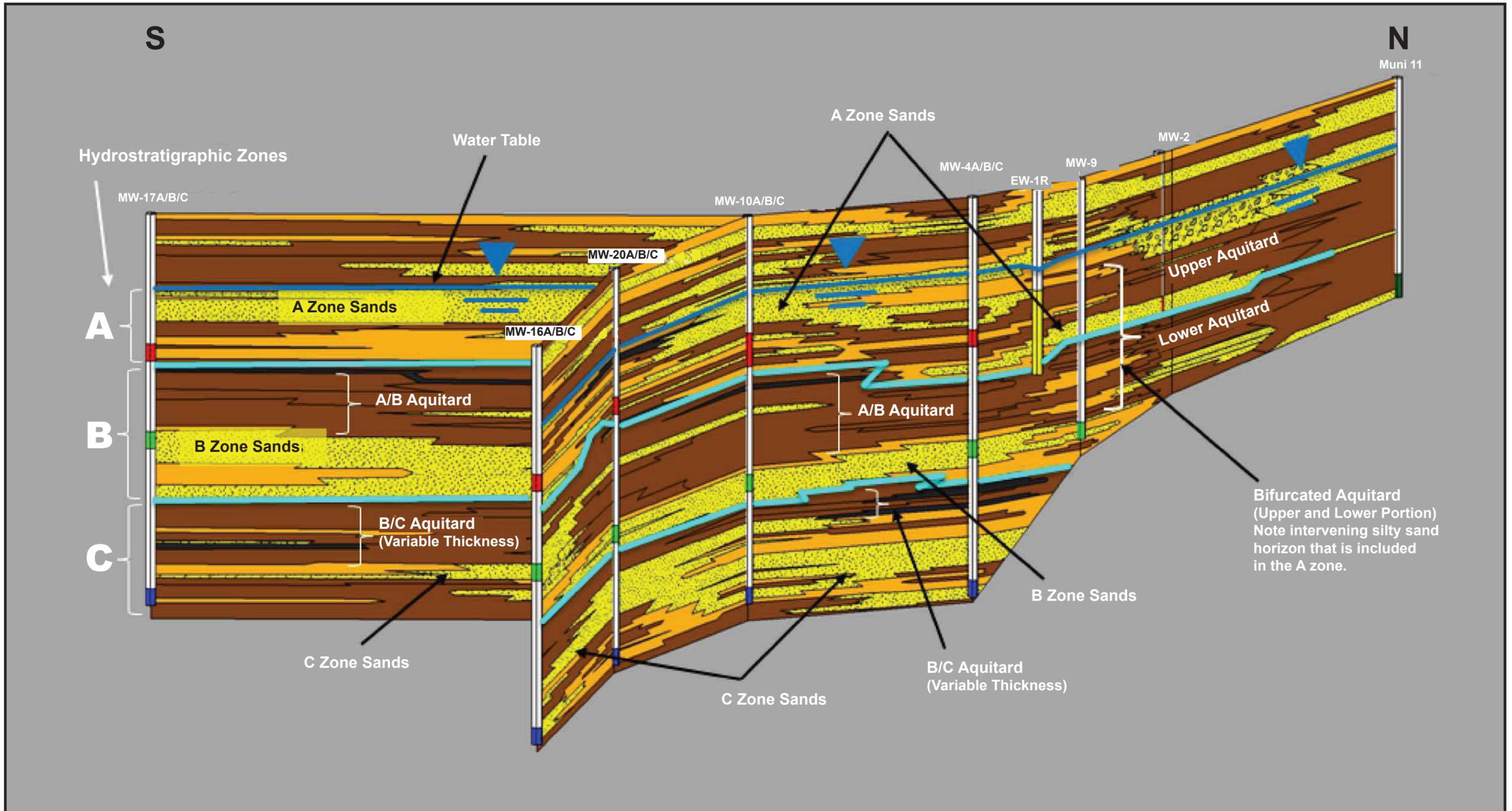




**Figure 2-3. Soil Vapor Well Locations, Halford's Cleaners Area, Modesto Groundwater Superfund Site**

**Figure 3-1**  
**GW Elevation Trends, Modesto Superfund Site**

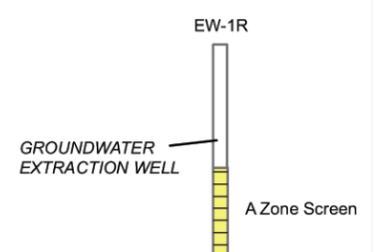
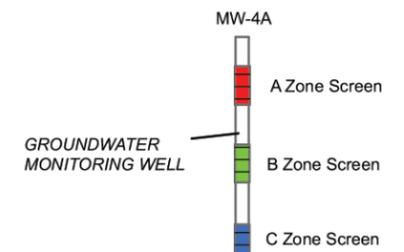




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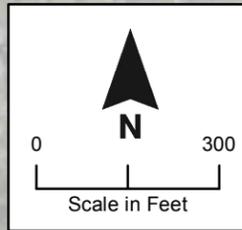
- SAND
- SILTY SAND
- SILT
- CLAY

WATER TABLE SURFACE (A Zone)



Adapted from:  
MWH source file

**Figure 4-1**  
**Stratigraphic Conceptual Model**  
**Modesto Groundwater Superfund Site**



**Legend**

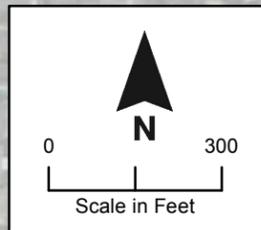
- Groundwater Extraction Well
- Groundwater Monitoring Well
- Approximate Groundwater Flow Direction
- Groundwater Elevation Contour (ft msl)
- J** Estimated Result
- $\mu\text{g/L}$  Micrograms per Liter
- ND** Not Detected
- 18** PCE Concentration ( $\mu\text{g/L}$ )
- PCE Tetrachloroethene
- PCE in Groundwater (dashed where uncertain)**
- 100-999  $\mu\text{g/L}$
- 50-99  $\mu\text{g/L}$
- 5-49  $\mu\text{g/L}$
- PCE Isopleth Less Than MCL



**Figure 4-2**  
**Groundwater Potentiometric Surface**  
**and PCE in A Zone Groundwater**  
**First Quarter 2013**  
**Modesto Groundwater Superfund Site**

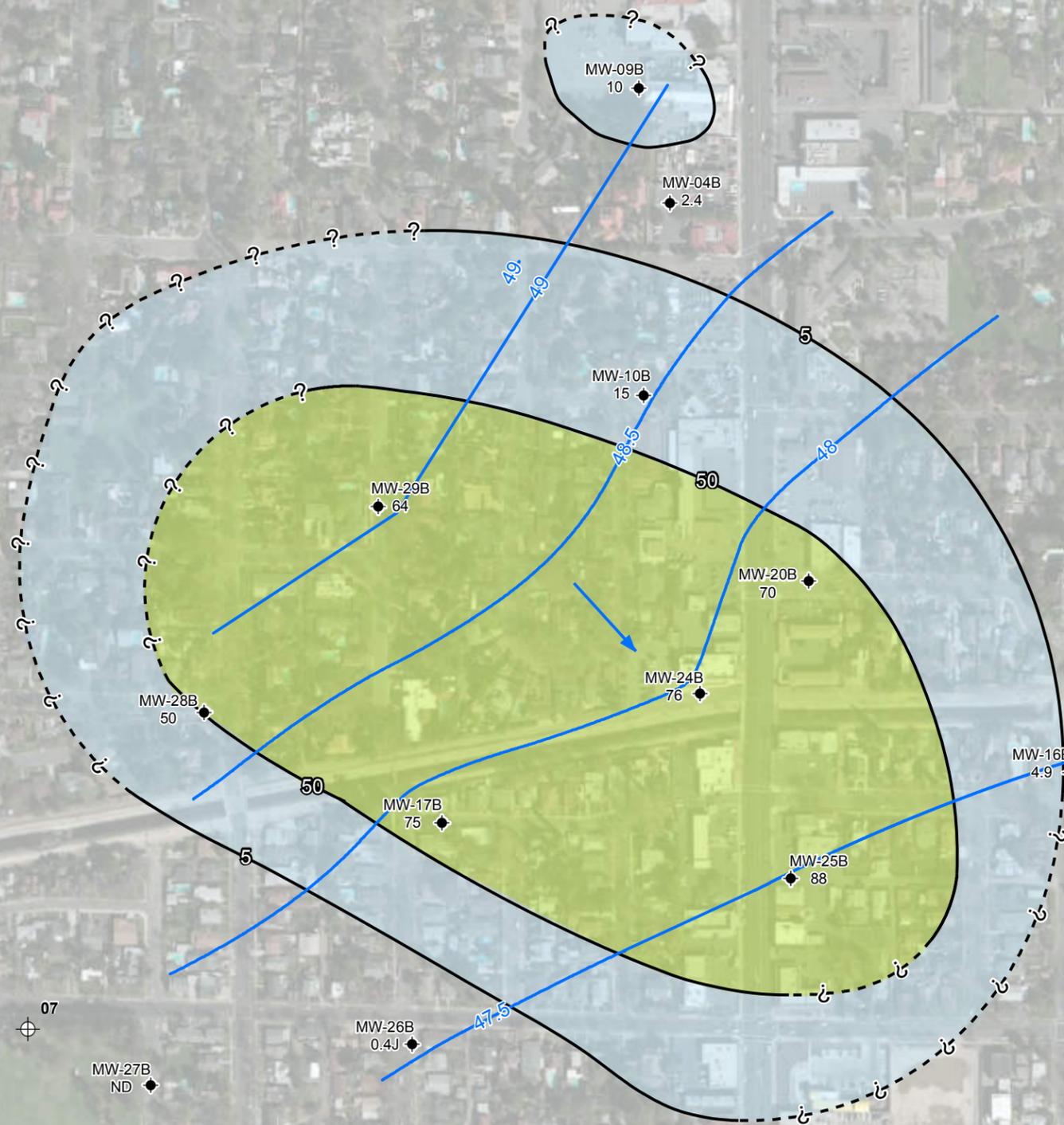
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Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



**Legend**

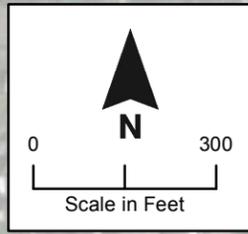
- ◆ Groundwater Monitoring Well
- ⊕ Municipal Drinking Water Well
- ← Approximate Groundwater Flow Direction
- Groundwater Elevation Contour (ft msl)
- J Estimated Result
- µg/L Micrograms per Liter
- ND Not Detected
- 18 PCE Concentration (µg/L)
- PCE Tetrachloroethene
- PCE in Groundwater (dashed where uncertain)**
- 50-99 µg/L
- 5-49 µg/L



**Figure 4-3**  
**Groundwater Potentiometric Surface**  
**and PCE in B Zone Groundwater**  
**First Quarter 2013**  
**Modesto Groundwater Superfund Site**

L:\Projects\Modesto\_SF\Quarries\201311\Q13\ModestoSF\_Plume\_WL\_Bzone\_1Q13.mxd AVS 5/29/2013 SAC

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



**Legend**

- ◆ Groundwater Monitoring Well
- ⊕ Municipal Drinking Water Well
- ← Approximate Groundwater Flow Direction
- Groundwater Elevation Contour (ft msl)
- J Estimated Result
- µg/L Micrograms per Liter
- ND Not Detected
- 18 PCE Concentration (µg/L)
- PCE Tetrachloroethene
- PCE in Groundwater (dashed where uncertain)**
- 5-49 µg/L



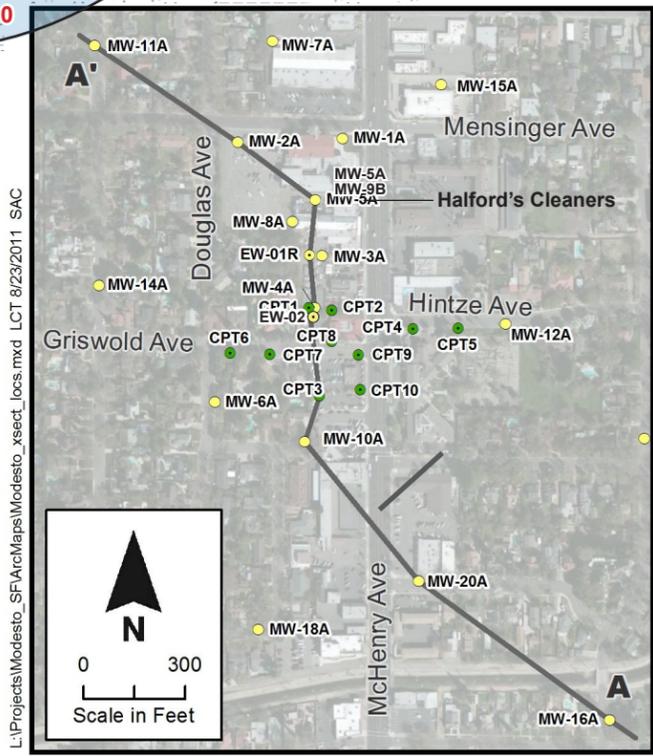
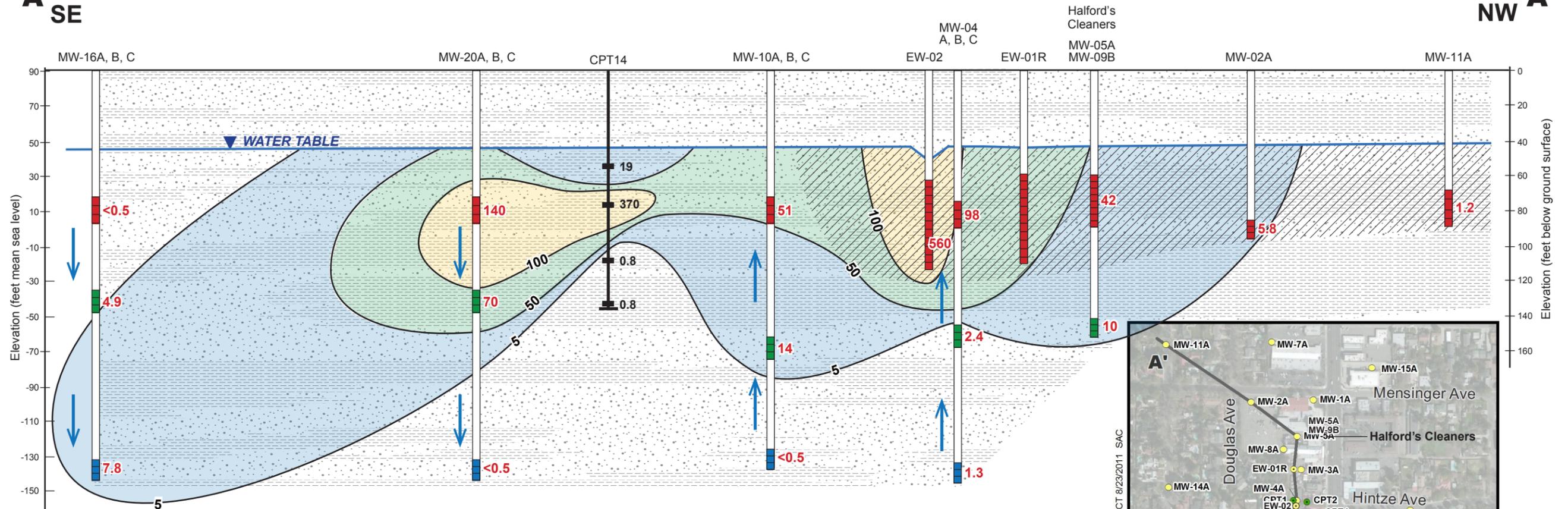
**Figure 4-4**  
**Groundwater Potentiometric Surface**  
**and PCE in C Zone Groundwater**  
**First Quarter 2013**  
**Modesto Groundwater Superfund Site**

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Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**A SE**

**NW A'**

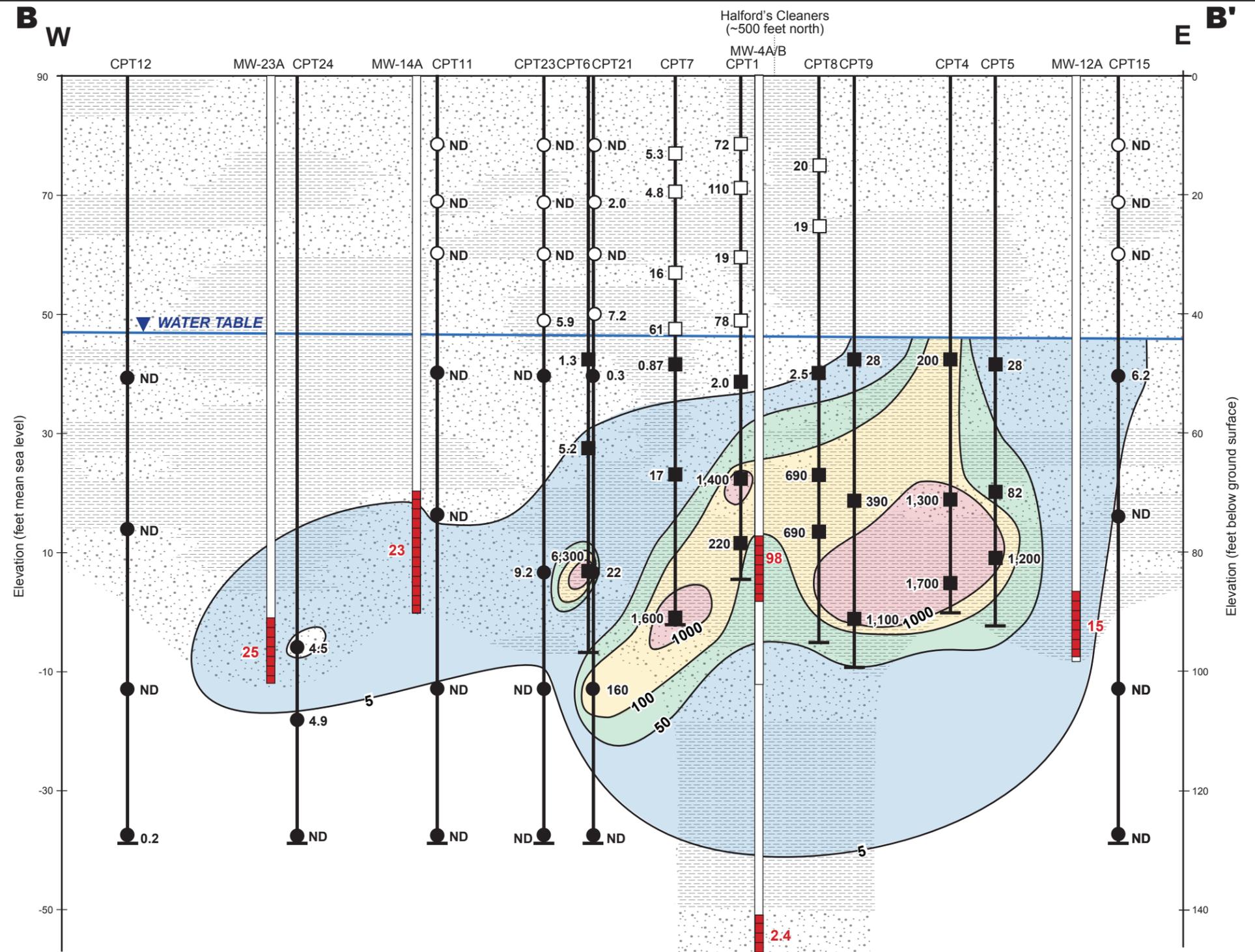
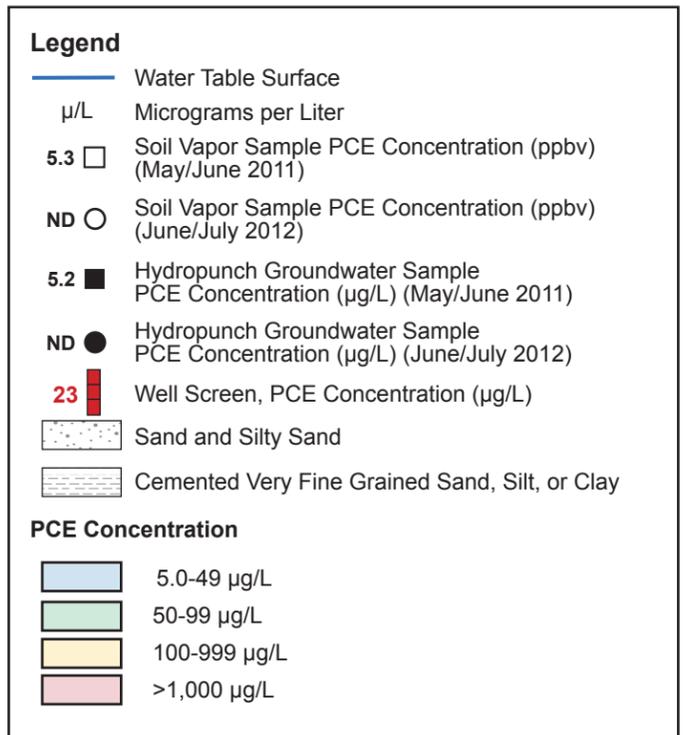
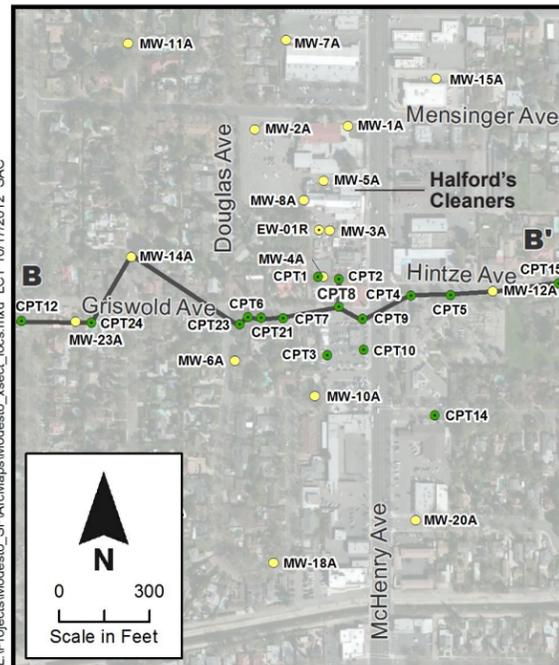


**Legend**

- μ/L Micrograms per Liter
  - 5.2 ■ Hydropunch Groundwater Sample PCE Concentration (μg/L) (May/June 2011)
  - 23 PCE Concentration (μg/L)
  - ↑ Direction of Vertical Gradient
  - A Zone Screen
  - B Zone Screen
  - C Zone Screen
  - Water Table Surface
  - Sand and Silty Sand
  - Cemented Very Fine Grained Sand, Silt, or Clay
  - EW-1R Interpreted Capture Zone
- | PCE Concentration |              |
|-------------------|--------------|
|                   | 5.0-49 μg/L  |
|                   | 50-99 μg/L   |
|                   | 100-999 μg/L |
|                   | ≥1,000 μg/L  |

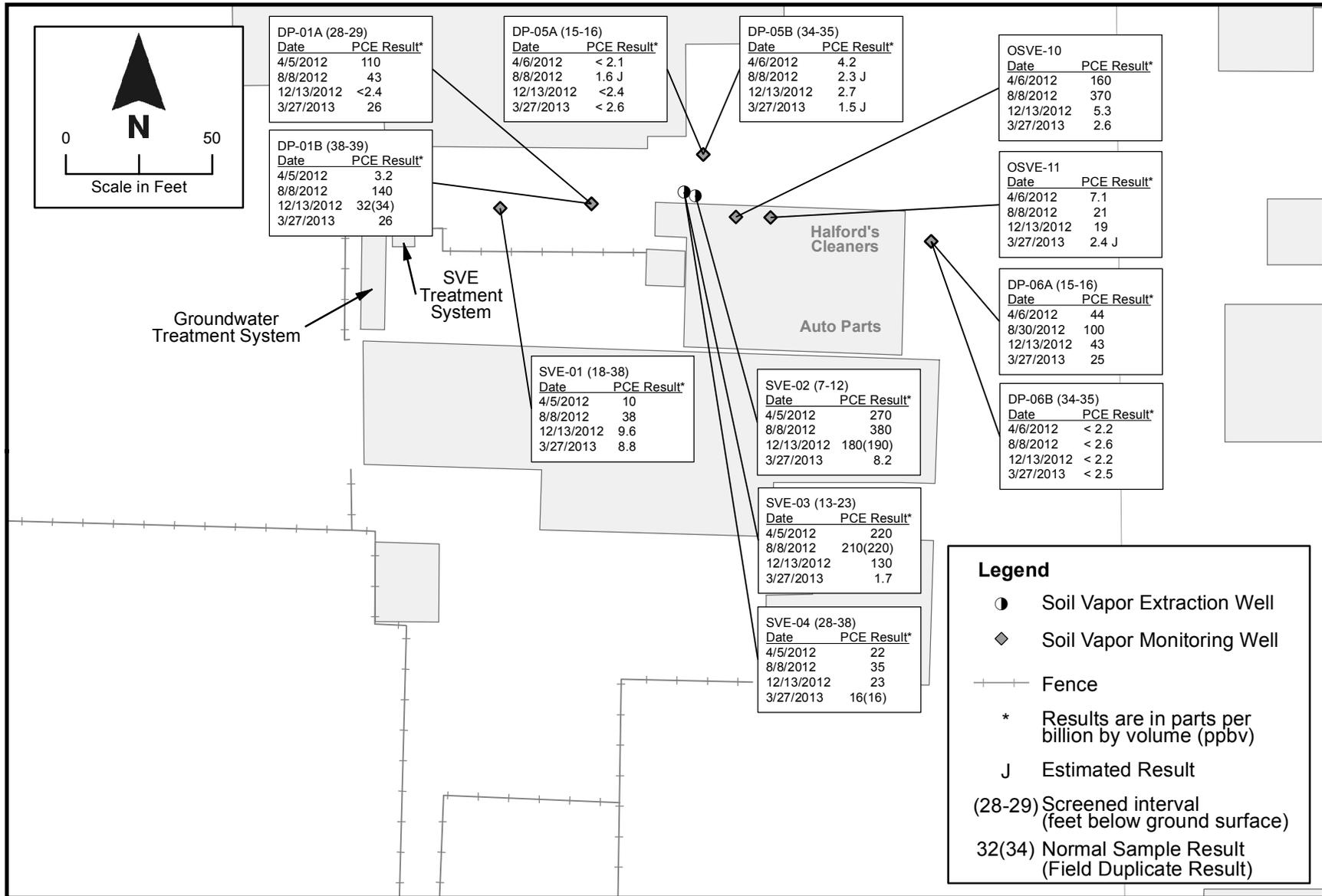


**Figure 4-5**  
**Cross-Section A-A'**  
**Extraction Well EW-02**  
**Estimated Capture Zone**  
**First Quarter 2013**  
**Modesto Groundwater Superfund Site**

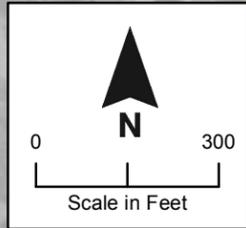


**Figure 4-6**  
**Cross-Section B-B'**  
**First Quarter 2013**  
**Modesto Groundwater Superfund Site**





**Figure 4-7. Soil Vapor Analytical Results, Second Quarter 2012 through First Quarter 2013 Modesto Groundwater Superfund Site**



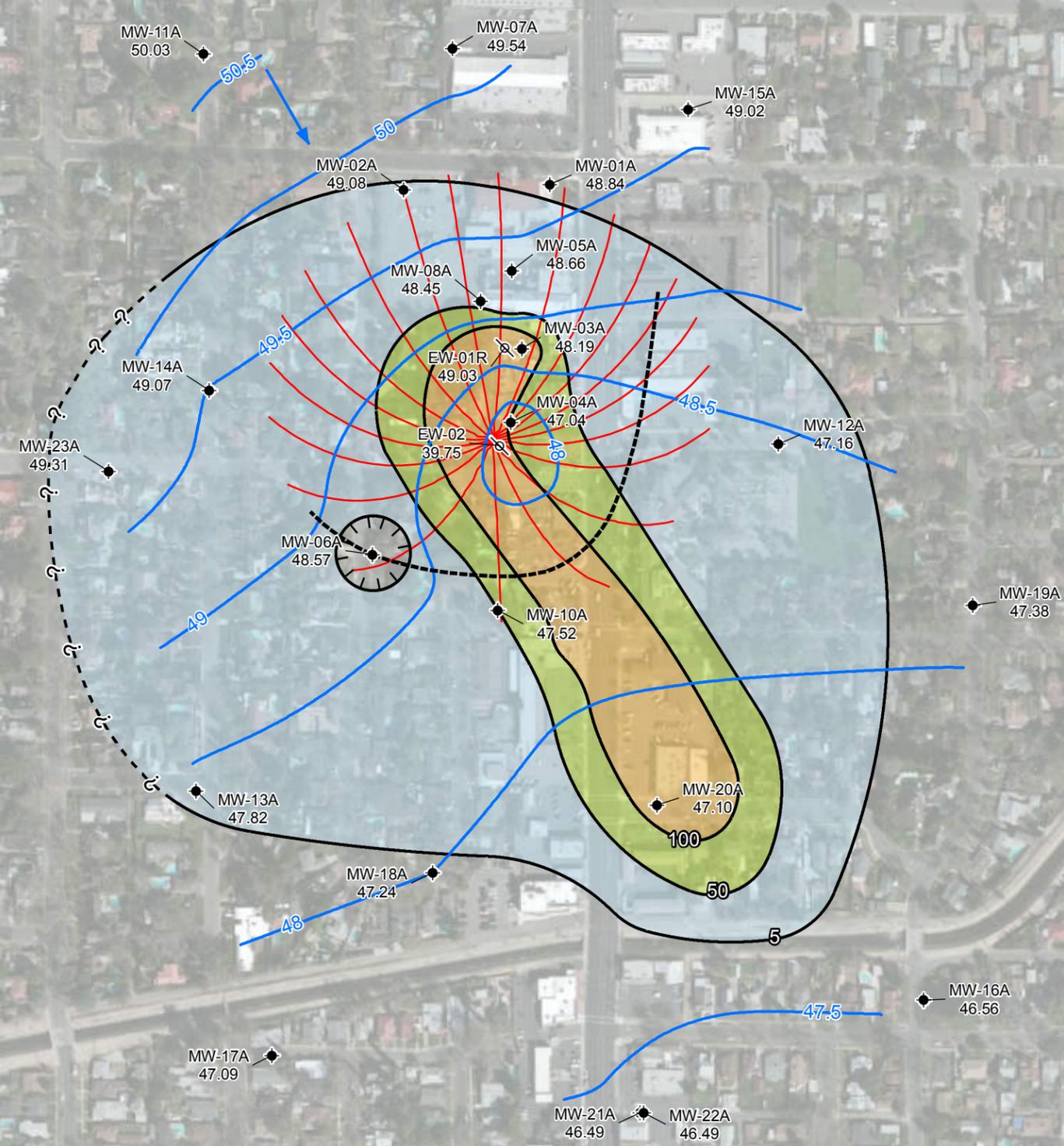
**Legend**

- Groundwater Extraction Well
- Groundwater Monitoring Well
- Approximate Groundwater Flow Direction
- Empirical Capture Zone
- Groundwater Elevation Contour (ft msl)
- Particle Path Line

48.84 Groundwater Elevation (ft msl)

**PCE in Groundwater (dashed where uncertain)**

- 100-999 µg/L
- 50-99 µg/L
- 5-49 µg/L
- PCE Isopleth Less Than MCL

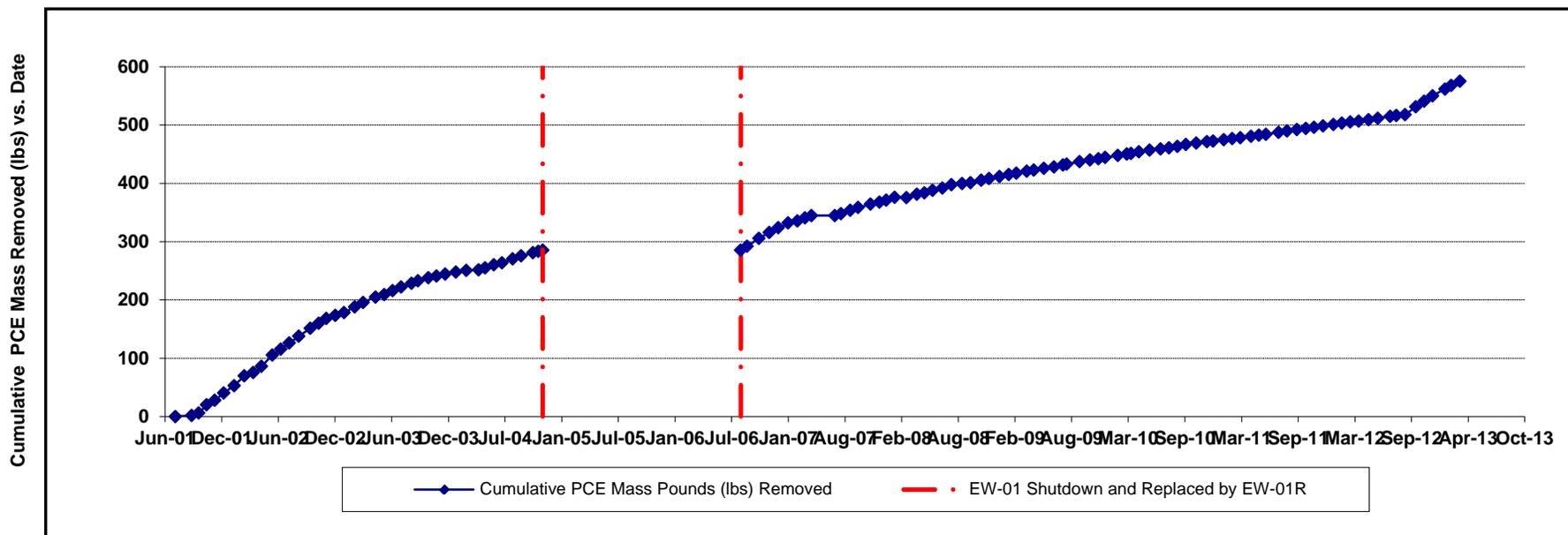
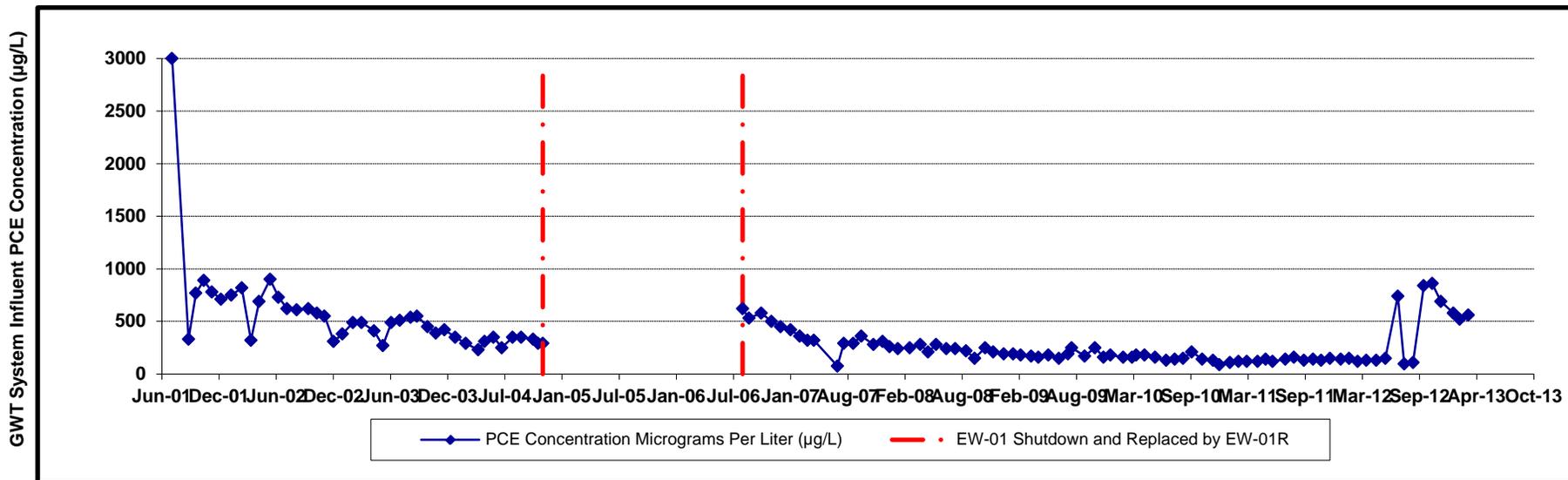


**Figure 4-8**  
**A Zone Extraction well EW-02**  
**Horizontal Capture Analysis**  
**First Quarter 2013**  
**Modesto Groundwater Superfund Site**

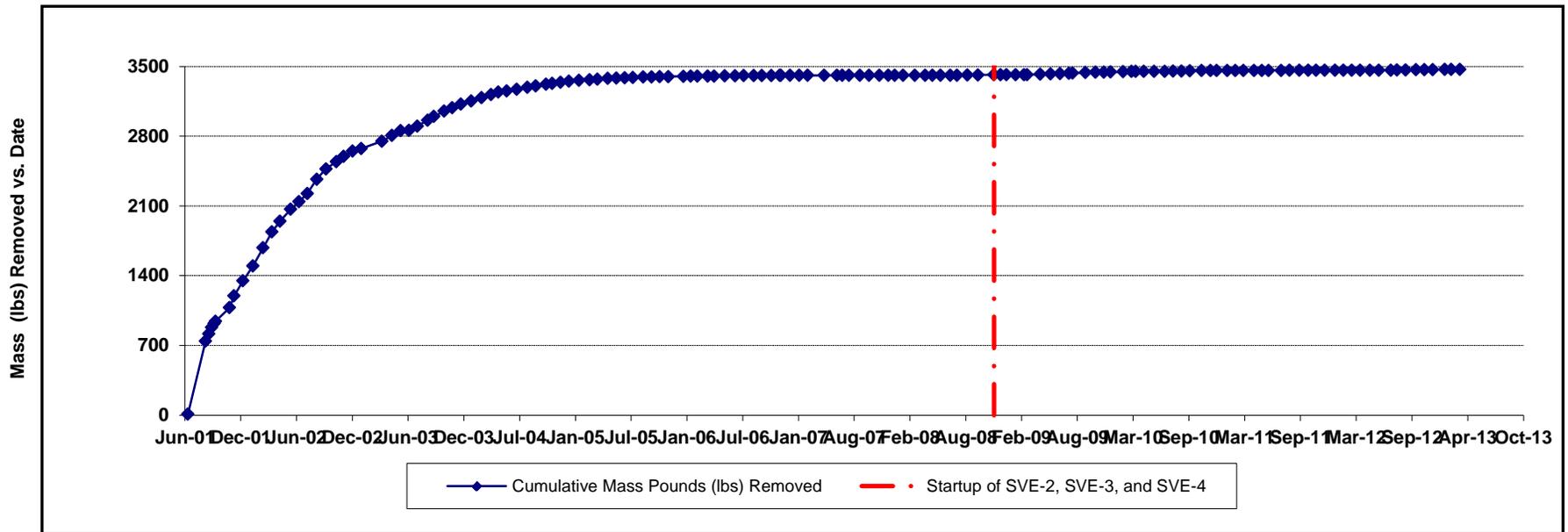
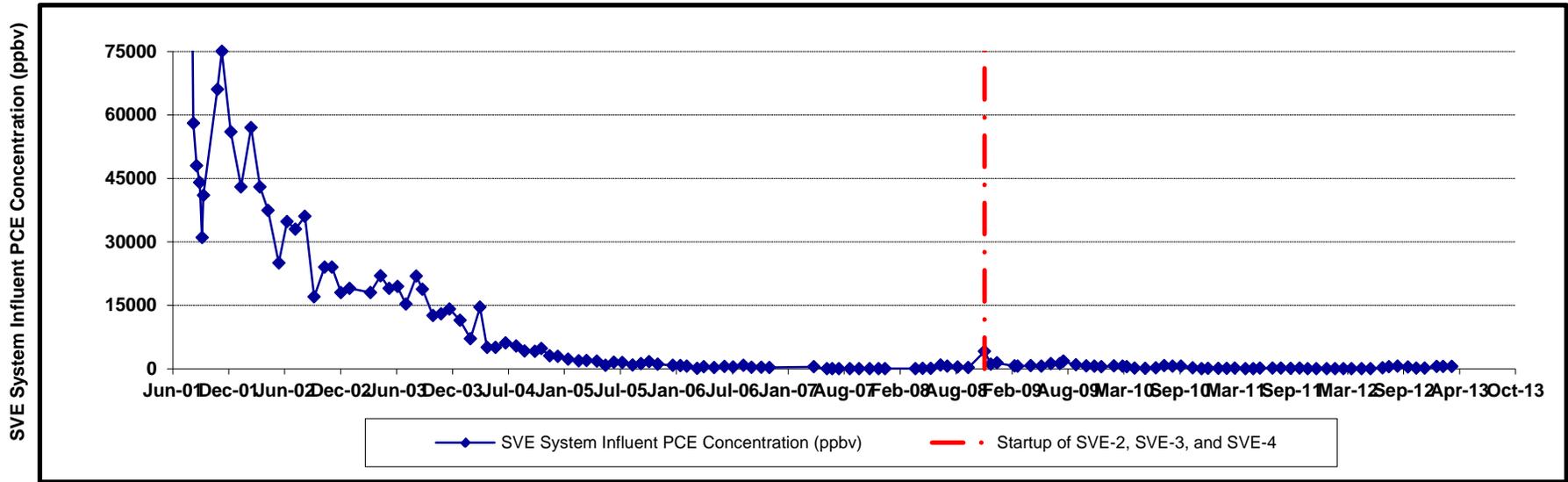
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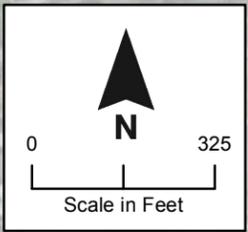
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**Figure 4-9**  
**Cumulative PCE Mass Removed by the Groundwater Treatment System**  
**Modesto Groundwater Superfund Site**



**Figure 4-10**  
**Cumulative Mass Removed by the Soil Vapor Extraction System**  
**Modesto Groundwater Superfund Site**



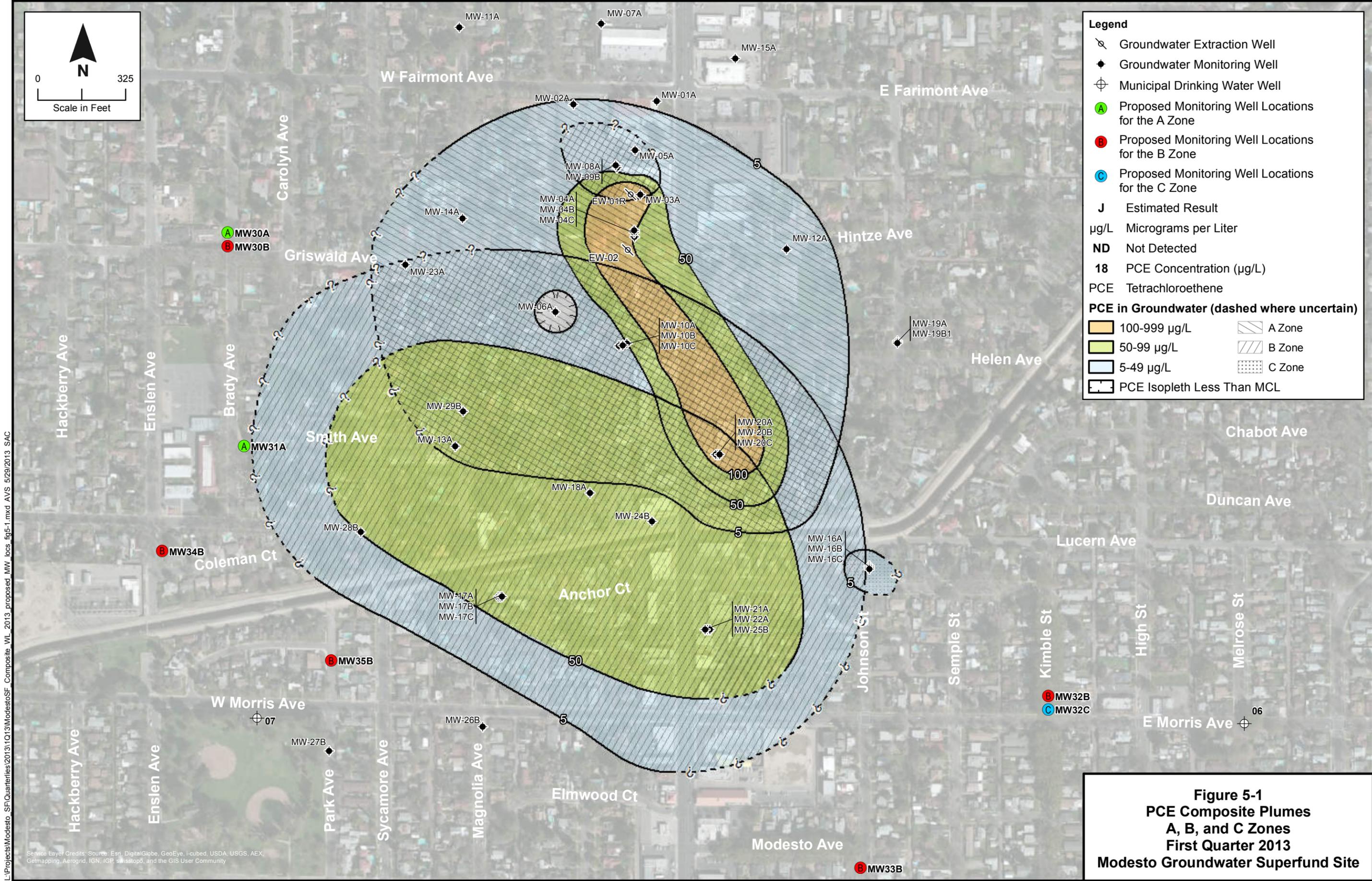


**Legend**

- Groundwater Extraction Well
- Groundwater Monitoring Well
- Municipal Drinking Water Well
- Proposed Monitoring Well Locations for the A Zone
- Proposed Monitoring Well Locations for the B Zone
- Proposed Monitoring Well Locations for the C Zone
- J** Estimated Result
- $\mu\text{g/L}$  Micrograms per Liter
- ND** Not Detected
- 18** PCE Concentration ( $\mu\text{g/L}$ )
- PCE Tetrachloroethene

**PCE in Groundwater (dashed where uncertain)**

	100-999 $\mu\text{g/L}$		A Zone
	50-99 $\mu\text{g/L}$		B Zone
	5-49 $\mu\text{g/L}$		C Zone
	PCE Isopleth Less Than MCL		



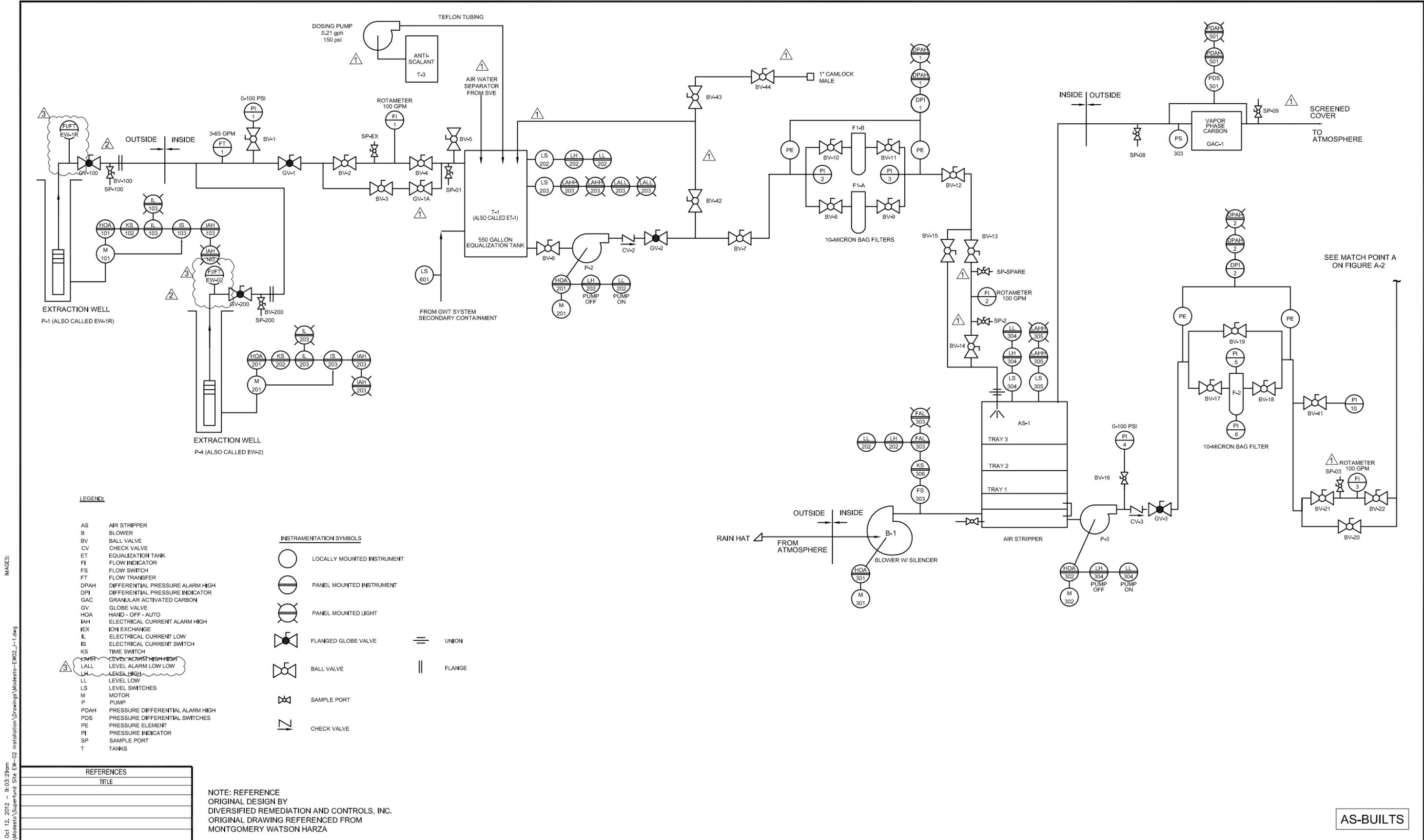
**Figure 5-1  
PCE Composite Plumes  
A, B, and C Zones  
First Quarter 2013  
Modesto Groundwater Superfund Site**

L:\Projects\Modesto\_SF\Quarries\201311\13\ModestoSF\_Composite\_WL\_2013\_proposed\_MW\_locs\_fig5-1.mxd AVS 5/29/2013 SAC

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, Swisstopo, and the GIS User Community

## **Appendix A**

### **Treatment System Process and Instrumentation Diagrams**



**LEGEND:**

- AS AIR STRIPPER
- B BLOWER
- BV BALL VALVE
- CV CHECK VALVE
- ET EQUALIZATION TANK
- FI FLOW INDICATOR
- FS FLOW SWITCH
- FT FLOW TRANSFER
- DPAH DIFFERENTIAL PRESSURE ALARM HIGH
- DPI DIFFERENTIAL PRESSURE INDICATOR
- GAC GRANULAR ACTIVATED CARBON
- GV GLOBE VALVE
- HOA HAND-OFF-AUTO
- IAH ELECTRICAL CURRENT ALARM HIGH
- IEX ION EXCHANGE
- IL ELECTRICAL CURRENT LOW
- IS ELECTRICAL CURRENT SWITCH
- KS TIME SWITCH
- LALL LEVEL ALARM LOW LOW
- LH LEVEL HIGH
- LL LEVEL LOW
- LS LEVEL SWITCHES
- M MOTOR
- P PUMP
- PDAH PRESSURE DIFFERENTIAL ALARM HIGH
- PDS PRESSURE DIFFERENTIAL SWITCHES
- PE PRESSURE ELEMENT
- PI PRESSURE INDICATOR
- SP SAMPLE PORT
- T TANKS

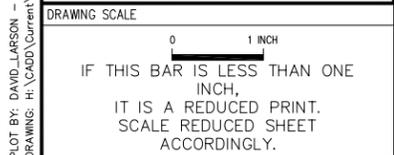
**INSTRUMENTATION SYMBOLS**

- LOCALLY MOUNTED INSTRUMENT
- PANEL MOUNTED INSTRUMENT
- PANEL MOUNTED LIGHT
- FLANGED GLOBE VALVE
- BALL VALVE
- SAMPLE PORT
- CHECK VALVE
- UNION
- FLANGE

REFERENCES	
NO.	TITLE

NOTE: REFERENCE ORIGINAL DESIGN BY DIVERSIFIED REMEDIATION AND CONTROLS, INC. ORIGINAL DRAWING REFERENCED FROM MONTGOMERY WATSON HARZA

AS-BUILTS



REVISIONS				REVISIONS			
NO.	BY.	DATE	DESCRIPTION	NO.	BY.	DATE	DESCRIPTION
1	TM	3/19/10	URS MINOR CHANGES AND UPDATES	1			
2	JAC	8/2011	EW-02 INSTALL AND MINOR CHANGES	2			
3	TM	9/2012	AS-BUILTS	3			

DRAWING SCALE		AS NOTED	
DESIGNED BY:	DATE	DESIGNED BY:	DATE
TM	8/23/2011		
RPT	8/23/2011		
ET	8/23/2011		
RB	8/23/2011		

2870 Gateway Oaks Drive, Suite 150  
 Sacramento, CA 95833  
 TEL: (916) 679-2000  
 FAX: (916) 679-2900

**MODESTO SUPERFUND SITE  
 EW-02 INSTALLATION  
 MODESTO, CALIFORNIA**

**GROUNDWATER TREATMENT P&ID**

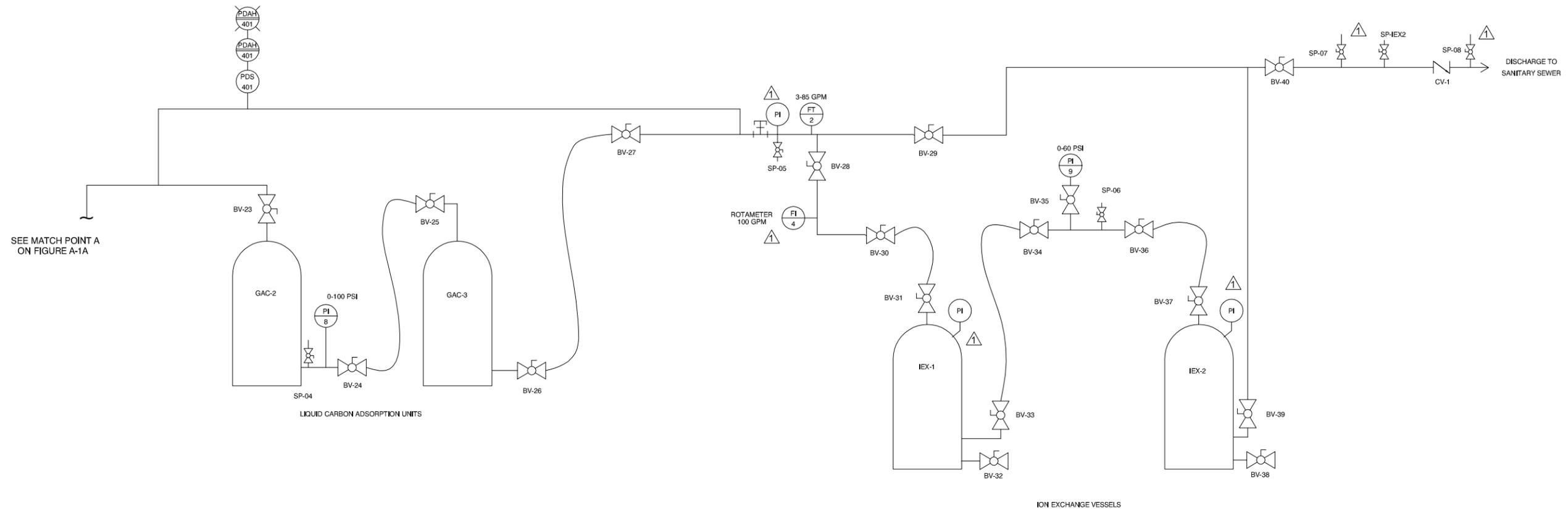
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PLOT BY: ROBERT\_P\_TAYLOR - Mar 19, 2010 - 11:38:02am

DRAWING: T:\current-work files\Modesto\drawings\

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**LEGEND:**

- AS AIR STRIPPER
- B BLOWER
- BV BALL VALVE
- CV CHECK VALVE
- ET EQUALIZATION TANK
- FI FLOW INDICATOR
- FS FLOW SWITCH
- FT FLOW TRANSFER
- DPAH DIFFERENTIAL PRESSURE ALARM HIGH
- DPI DIFFERENTIAL PRESSURE INDICATOR
- GAC GRANULAR ACTIVATED CARBON
- GV GLOBE VALVE
- HOA HAND - OFF - AUTO
- IAH ELECTRICAL CURRENT ALARM HIGH
- IEX ION EXCHANGE
- IL ELECTRICAL CURRENT LOW
- IS ELECTRICAL CURRENT SWITCH
- KS TIME SWITCH
- LAHH LEVEL ALARM HIGH HIGH
- LH LEVEL HIGH
- LL LEVEL LOW
- LS LEVEL SWITCHES
- M MOTOR
- P PUMP
- PDAH PRESSURE DIFFERENTIAL ALARM HIGH
- PDS PRESSURE DIFFERENTIAL SWITCHES
- PE PRESSURE ELEMENT
- PI PRESSURE INDICATOR
- SP SAMPLE PORT
- T TANKS

**INSTRUMENTATION SYMBOLS**

- LOCALLY MOUNTED INSTRUMENT
- PANEL MOUNTED INSTRUMENT
- PANEL MOUNTED LIGHT
- BALL VALVE
- SAMPLE PORT
- CHECK VALVE

**REFERENCES**

TITLE

NOTE: REFERENCE DESIGN BY DIVERSIFIED REMEDIATION AND CONTROLS, INC. ORIGINAL DRAWING REFERENCED FROM MONTGOMERY WATSON HARZA

DRAWING SCALE AS NOTED

IF SHEET IS LESS THAN 22" X 34", IT IS A REDUCED PRINT. SCALE REDUCED SHEET ACCORDINGLY.

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1	TM	3/19/10

REVISIONS		
NO.	BY.	DATE

REVISIONS	
DESCRIPTION	DATE

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DRAWN BY:		DATE
CHECKED BY:		DATE
APPROVED BY:		DATE



2870 Gateway Oaks Drive, Ste. 150  
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**MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA**

**GROUNDWATER TREATMENT P&ID**

JOB NO.

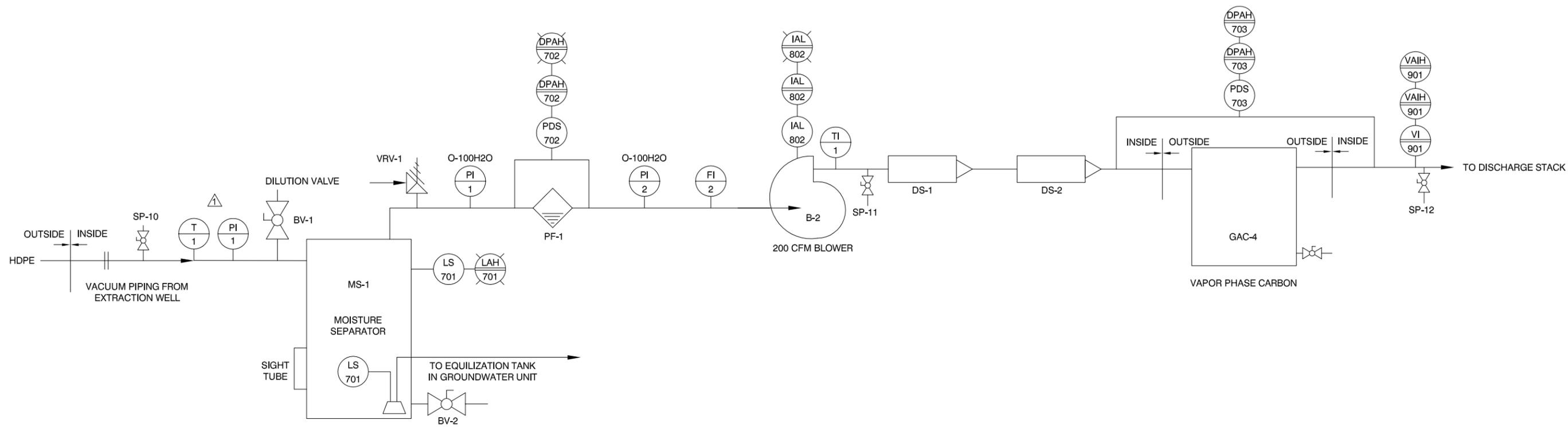
PROJECT

SHEET NO.

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- KEY**
- A ALARM, ACTIVATED
  - B BALL, BLOWER
  - C CARBON, CONTROL
  - D DISCHARGE, DIFFERENTIAL
  - F FILTER, FLOW
  - G GRANULAR
  - E ELECTRIC CURRENT
  - I INDICATOR
  - L LEVEL, LIGHTING, LOW
  - M MOTOR, MOISTURE
  - P PANEL, PARTICULATE, PORT, POWER, PRESSURE R RELIEF
  - S SAMPLING, SENSOR, SEPARATOR, SILENCER, SWITCH
  - T TEMPERATURE, TRANSFORMER
  - V VALVE, VACUUM, VOLATILE ORGANIC COMPOUND

- NOTES:**
1. ALL VACUUM PROCESS PIPING IS 4" Ø SCH80 PVC
  2. DISCHARGE STACK IS 8" Ø SCH80 PVC

REFERENCES
TITLE

NOTE: REFERENCE DESIGN BY DIVERSIFIED REMEDIATION AND CONTROLS, INC. ORIGINAL DRAWING REFERENCED FROM MONTGOMERY WATSON HARZA

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TM	03/19/10	
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RPT	03/19/10	
CHECKED BY:		
APPROVED BY:		

**URS**

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**MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA**

**SOIL VAPOR EXTRACTION P&ID**

JOB NO.
PROJECT
SHEET NO.
<b>1-3</b>

## **Appendix B**

### **Laboratory Analytical Data Tables**

<b>Table B1</b>	<b>Site Contaminants of Concern</b>
<b>Table B2</b>	<b>Results Summary for Long-Term Monitoring and Soil Vapor Extraction, First Quarter 2013, Modesto Superfund Site</b>
<b>Table B3</b>	<b>Results Summary for the Groundwater Treatment System, First Quarter 2013, Modesto Superfund Site</b>

TABLE B1

SITE CONTAMINANTS OF CONCERN  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

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Contaminant of Concern	Discharge Limit
Tetrachloroethene (PCE)	0.5 µg/L
Toluene	15 µg/L
Uranium, total	20 pCi/L
pH	5-12

---

**Notes:**

µg/L - micrograms per liter

pCi/L - picoCuries per liter

**TABLE B2. RESULTS SUMMARY FOR LONG-TERM MONITORING AND SOIL VAPOR EXTRACTION  
FIRST QUARTER 2013, MODESTO GROUNDWATER SUPERFUND SITE**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
0000BLANK	MW-304-1Q13	WQ	E524.2	TB	3/26/2013	No Analytes Detected				
	MW-305-1Q13				3/28/2013	No Analytes Detected				
	MW-401-1Q13	WQ	E524.2	FB	3/28/2013	No Analytes Detected				
DP-1A	DP-1A-1Q13	GS	TO15	NS	3/27/2013	Tetrachloroethene	26	2.50	ppbv	
DP-1B	DP-1B-1Q13	GS	TO15	NS	3/27/2013	Chloroform	2.40	2.60	ppbv	J
						Tetrachloroethene	26	2.60	ppbv	
DP-5A	DP-5A-1Q13	GS	TO15	NS	3/27/2013	No Analytes Detected				
DP-5B	DP-5B-1Q13	GS	TO15	NS	3/27/2013	Chloroform	3.50	2.60	ppbv	
						Tetrachloroethene	1.50	2.60	ppbv	J
DP-6A	DP-94A-1Q13	GS	TO15	FD	3/27/2013	Tetrachloroethene	25	2.40	ppbv	
DP-6B	DP-6B-1Q13	GS	TO15	NS	3/27/2013	No Analytes Detected				
MW-01A	MW-1A-1Q13	WG	E524.2	NS	3/28/2013	Acetone	3.40	4	µg/L	J
						Tetrachloroethene	1.20	0.500	µg/L	J+
MW-02A	MW-2A-1Q13	WG	E524.2	NS	3/28/2013	Acetone	8	4	µg/L	
						Chloroform	2	0.500	µg/L	
						Tetrachloroethene	5.80	0.500	µg/L	
MW-03A	MW-3A-1Q13	WG	E524.2	NS	3/28/2013	Acetone	7.30	4	µg/L	
						Chloroform	0.600	0.500	µg/L	
						Tetrachloroethene	240	25	µg/L	
MW-03A	MW-97A-1Q13	WG	E524.2	FD	3/28/2013	Acetone	7.20	4	µg/L	
						Chloroform	0.600	0.500	µg/L	
						Tetrachloroethene	260	25	µg/L	
MW-04A	MW-4A-1Q13	WG	E524.2	NS	3/26/2013	Acetone	8.40	4	µg/L	
						Chloroform	1.30	0.500	µg/L	
						Tetrachloroethene	98	2.50	µg/L	
MW-04B	MW-4B-1Q13	WG	E524.2	NS	3/26/2013	Acetone	7	4	µg/L	
						Tetrachloroethene	2.40	0.500	µg/L	
MW-04C	MW-4C-1Q13	WG	E524.2	NS	3/26/2013	Acetone	9.90	4	µg/L	
						Tetrachloroethene	1.30	0.500	µg/L	

**TABLE B2 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
MW-05A	MW-5A-1Q13	WG	E524.2	NS	3/25/2013	Acetone	8.40	4	µg/L	
						Tetrachloroethene	42	2.50	µg/L	
MW-06A	MW-6A-1Q13	WG	E524.2	NS	3/28/2013	Acetone	7.90	4	µg/L	
						Chloroform	4.90	0.500	µg/L	
						Tetrachloroethene	3.20	0.500	µg/L	
MW-07A	MW-7A-1Q13	WG	E524.2	NS	3/28/2013	Acetone	22	4	µg/L	
						Chloroform	1.60	0.500	µg/L	
MW-08A	MW-8A-1Q13	WG	E524.2	NS	3/25/2013	Acetone	7.60	4	µg/L	
						Chloroform	1.90	0.500	µg/L	
						Tetrachloroethene	32	2.50	µg/L	
MW-09B	MW-9B-1Q13	WG	E524.2	NS	3/25/2013	Acetone	8.30	4	µg/L	
						Tetrachloroethene	10	0.500	µg/L	
MW-10A	MW-10A-1Q13	WG	E524.2	NS	3/28/2013	Acetone	7.10	4	µg/L	
						Chloroform	4.60	0.500	µg/L	
						Tetrachloroethene	51	5	µg/L	
MW-10B	MW-10B-1Q13	WG	E524.2	NS	3/28/2013	Acetone	3.40	4	µg/L	J
						Tetrachloroethene	14	0.500	µg/L	
	MW-90B-1Q13	WG	E524.2	FD	3/28/2013	Acetone	4.10	4	µg/L	
						Tetrachloroethene	15	0.500	µg/L	
MW-10C	MW-10C-1Q13	WG	E524.2	NS	3/28/2013	Acetone	7.20	4	µg/L	
MW-11A	MW-11A-1Q13	WG	E524.2	NS	3/28/2013	Acetone	18	4	µg/L	
						Chloroform	2.90	0.500	µg/L	
						Tetrachloroethene	2.50	0.500	µg/L	
MW-12A	MW-12A-1Q13	WG	E524.2	NS	3/26/2013	Acetone	6.90	4	µg/L	J
						Bromodichloromethane	0.500	0.500	µg/L	J
						Chloroform	12	0.500	µg/L	J-
						Tetrachloroethene	15	0.500	µg/L	J-
						Trichlorofluoromethane	0.500	0.500	µg/L	J
MW-13A	MW-13A-1Q13	WG	E524.2	NS	3/26/2013	Acetone	7.90	4	µg/L	

**TABLE B2 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
<i>MW-13A continued . . .</i>										
MW-14A	MW-14A-1Q13	WG	E524.2	NS	3/28/2013	Chloroform	2	0.500	µg/L	
						Tetrachloroethene	22	2.50	µg/L	
						Acetone	8	4	µg/L	
MW-15A	MW-15A-1Q13	WG	E524.2	NS	3/26/2013	Chloroform	0.300	0.500	µg/L	J
						Tetrachloroethene	23	2.50	µg/L	
						Acetone	7.90	4	µg/L	
MW-16A	MW-16A-1Q13	WG	E524.2	NS	3/26/2013	Acetone	7.80	4	µg/L	
						Chloroform	0.900	0.500	µg/L	
						Acetone	8.20	4	µg/L	
MW-16B	MW-16B-1Q13	WG	E524.2	NS	3/26/2013	Chloroform	1.60	0.500	µg/L	
						Dichlorodifluoromethane	0.300	0.500	µg/L	J
						Tetrachloroethene	4.90	0.500	µg/L	
MW-16C	MW-16C-1Q13	WG	E524.2	NS	3/26/2013	Acetone	8.60	4	µg/L	
						Chloroform	0.900	0.500	µg/L	
						Tetrachloroethene	7.80	0.500	µg/L	
MW-17A	MW-17A-1Q13	WG	E524.2	NS	3/26/2013	Acetone	4.10	4	µg/L	J
						Bromodichloromethane	0.600	0.500	µg/L	
						Chloroform	11	0.500	µg/L	
MW-17B	MW-17B-1Q13	WG	E524.2	NS	3/26/2013	Tetrachloroethene	0.700	0.500	µg/L	
						Acetone	3.20	4	µg/L	J
						Chloroform	0.300	0.500	µg/L	J
MW-17C	MW-17C-1Q13	WG	E524.2	NS	3/26/2013	Tetrachloroethene	75	2.50	µg/L	
						Acetone	4.50	4	µg/L	J
						Acetone	3.60	4	µg/L	J
MW-18A	MW-18A-1Q13	WG	E524.2	NS	3/28/2013	Chloroform	3.80	0.500	µg/L	
						Tetrachloroethene	3	0.500	µg/L	
						Acetone	4.40	4	µg/L	J
MW-19A	MW-19A-1Q13	WG	E524.2	NS	3/26/2013	Chloroform	2.40	0.500	µg/L	
						Acetone	5.30	4	µg/L	J

**TABLE B2 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
<i>MW-19B1 continued . . .</i>										
MW-20A	MW-20A-1Q13	WG	E524.2	NS	3/26/2013	Tetrachloroethene	0.300	0.500	µg/L	J
						Acetone	6.50	4	µg/L	J
						Chloroform	6.60	0.500	µg/L	
MW-20B	MW-20B-1Q13	WG	E524.2	NS	3/26/2013	Dichlorodifluoromethane	1.50	0.500	µg/L	J
						Tetrachloroethene	140	10	µg/L	
						Acetone	2.20	4	µg/L	J
MW-20C	MW-20C-1Q13	WG	E524.2	NS	3/26/2013	Tetrachloroethene	70	2.50	µg/L	
MW-21A	MW-21A-1Q13	WG	E524.2	NS	3/26/2013	Acetone	5.10	4	µg/L	J
						Acetone	4.20	4	µg/L	J
MW-22A	MW-22A-1Q13	WG	E524.2	NS	3/26/2013	Chloroform	4.20	0.500	µg/L	
						Tetrachloroethene	0.500	0.500	µg/L	
						Acetone	6.40	4	µg/L	
MW-23A	MW-23A-1Q13	WG	E524.2	NS	3/28/2013	Chloroform	5.10	0.500	µg/L	J+
						Acetone	6.10	4	µg/L	
						Chloroform	2.50	0.500	µg/L	
MW-24B	MW-24B-1Q13	WG	E524.2	NS	3/26/2013	Tetrachloroethene	21	2.50	µg/L	
						Acetone	7	4	µg/L	
						Chloroform	2.60	0.500	µg/L	
MW-25B	MW-25B-1Q13	WG	E524.2	NS	3/26/2013	Tetrachloroethene	25	0.500	µg/L	
						Acetone	6.50	4	µg/L	
						Tetrachloroethene	76	5	µg/L	
MW-26B	MW-26B-1Q13	WG	E524.2	NS	3/26/2013	Acetone	7.10	4	µg/L	
						Tetrachloroethene	88	10	µg/L	
						2-Butanone (Mek)	2.80	4	µg/L	J
MW-27B	MW-27B-1Q13	WG	E524.2	NS	3/26/2013	Acetone	32	4	µg/L	
						Tetrachloroethene	0.400	0.500	µg/L	J
						Acetone	7.50	4	µg/L	
MW-28B	MW-28B-1Q13	WG	E524.2	NS	3/28/2013	Acetone	6.30	4	µg/L	
						Tetrachloroethene	50	5	µg/L	

**TABLE B2 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result		
MW-29B	MW-29B-1Q13	WG	E524.2	NS	3/26/2013	Acetone	5.50	4	µg/L			
						Tetrachloroethene	58	5	µg/L			
	MW-71B-1Q13	WG	E524.2	FD	3/26/2013	Acetone	6.50	4	µg/L			
						Tetrachloroethene	64	2.50	µg/L			
OSVE-10	OSVE-10-1Q13	GS	TO15	NS	3/27/2013	Tetrachloroethene	2.60	2.50	ppbv			
OSVE-11	OSVE-11-1Q13	GS	TO15	NS	3/27/2013	Tetrachloroethene	2.40	2.50	ppbv	J		
SP-11	MW-111-0302	GS	TO15	FD	3/7/2013	1,2-Dichlorobenzene	43	7	ppbv			
						1,3-Dichlorobenzene	4.10	2.50	ppbv			
						1,4-Dichlorobenzene	11	2.50	ppbv			
						Chloroform	9.60	2.50	ppbv			
						Tetrachloroethene	120	7	ppbv			
	SVE Pre GAC-0102	GS	TO15	NS	1/9/2013	Chloroform	11	2.40	ppbv			
						Tetrachloroethene	150	24	ppbv			
						SVE Pre GAC-0202	2/6/2013	Chloroform	10	2.50	ppbv	
								Tetrachloroethene	130	25	ppbv	J
	SVE Pre GAC-0302				3/7/2013	Trichloroethylene	3	2.50	ppbv			
						1,2-Dichlorobenzene	43	2.40	ppbv			
						1,3-Dichlorobenzene	3.30	2.40	ppbv			
						1,4-Dichlorobenzene	8.70	2.40	ppbv			
						Chloroform	7.70	2.40	ppbv			
SP-12	SVE Stack-0102	GS	TO15	NS	1/9/2013	Tetrachloroethene	110	8.20	ppbv			
						Trichloroethylene	3.90	2.40	ppbv			
						Chloroform	9.10	2.40	ppbv			
	SVE Stack-0202				2/6/2013	Cis-1,2-Dichloroethene	1.20	2.40	ppbv	J		
						1,2,4-Trichlorobenzene	1.60	2.50	ppbv	J		
						1,2-Dichlorobenzene	5.40	2.50	ppbv			
						Chloroform	11	2.50	ppbv			

**TABLE B2 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
<i>SP-12 continued . . .</i>										
						Cis-1,2-Dichloroethene	1.30	2.50	ppbv	J
						Tetrachloroethene	4.20	2.50	ppbv	
	SVE Stack-0302				3/7/2013	Chloroform	10	2.50	ppbv	
						Tetrachloroethene	8	2.50	ppbv	
SVE-01	SVE-1-1Q13	GS	TO15	NS	3/27/2013	Tetrachloroethene	8.80	2.40	ppbv	
SVE-02	SVE-2-1Q13	GS	TO15	NS	3/27/2013	Tetrachloroethene	8.20	2.40	ppbv	
SVE-03	SVE-3-1Q13	GS	TO15	NS	3/27/2013	Tetrachloroethene	1.70	2.40	ppbv	J
SVE-04	SVE-4-1Q13	GS	TO15	NS	3/27/2013	Chloroform	20	2.40	ppbv	
						Tetrachloroethene	16	2.40	ppbv	
	SVE-96-1Q13	GS	TO15	FD	3/27/2013	Chloroform	20	2.40	ppbv	
						Tetrachloroethene	16	2.40	ppbv	

Matrix

GS = soil gas  
 WG = groundwater  
 WQ = water quality

Sample Type

FD = Field Duplicate  
 FB = Field Blank  
 NS = Normal Sample  
 TB = Trip Blank

Units

ppbv = parts per billion volume  
 µg/L = micrograms/Liter

Qualified Results

J = Analyte concentration considered an estimated value because one or more quality control specifications were not met.  
 J+ = Analyte concentration considered an estimated value because one or more quality control specifications were not met, potential high bias.  
 J- = Analyte concentration considered an estimated value because one or more quality control specifications were not met, potential low bias.

**TABLE B3. RESULTS SUMMARY FOR THE GROUNDWATER TREATMENT SYSTEM  
FIRST QUARTER 2013, MODESTO GROUNDWATER SUPERFUND SITE**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result	
0000BLANK	MW-301-1Q13	WQ	E524.2	TB1	1/9/2013	Bromodichloromethane	0.0800	0.500	µg/L	J	
						Chloroform	2.40	0.500	µg/L		
						Chloromethane	0.0300	0.500	µg/L	J	
						Dichlorodifluoromethane	0.0500	0.500	µg/L	J	
						Hexachlorobutadiene	0.0300	0.500	µg/L	U	
	MW-302-1Q13					1/16/2013	Trichlorofluoromethane	0.0400	0.500	µg/L	J
							Chloroform	0.120	0.500	µg/L	J
							Hexachlorobutadiene	0.0300	0.500	µg/L	U
	MW-303-1Q13					2/6/2013	N-Butyl Benzene	0.0200	0.500	µg/L	U
							Toluene	0.990	0.500	µg/L	
							Chloromethane	0.0300	0.500	µg/L	
	MW-304-1Q13					3/7/2013	Hexachlorobutadiene	0.0300	0.500	µg/L	U
							Toluene	0.170	0.500	µg/L	J
Chloroform							0.0400	0.500	µg/L		
Hexachlorobutadiene							0.0300	0.500	µg/L		
SP-01	GWTS-INF-0103	WG	D5174	NS1	1/16/2013	Uranium	53.4	1	pCi/L		
						GWTS-INF-0103	WG	E524.2	NS1	1/16/2013	1,1,1,2-Tetrachloroethane
	Bromodichloromethane	0.170	0.500	µg/L	J						
	Chloroform	4.10	0.500	µg/L							
	Chloromethane	0.190	0.500	µg/L	J						
	Cis-1,2-Dichloroethene	0.310	0.500	µg/L							
	Dichlorodifluoromethane	0.0900	0.500	µg/L	J						
	Tetrachloroethene	580	25	µg/L							
	Toluene	0.460	0.500	µg/L	U						
	Trichloroethylene	0.530	0.500	µg/L							
	GWTS-INF-0202					2/6/2013	1,1,1,2-Tetrachloroethane	0.170	0.500	µg/L	J
							Bromodichloromethane	0.170	0.500	µg/L	J
							Chloroform	4.30	0.500	µg/L	

**TABLE B3 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
<i>SP-01 continued . . .</i>										
	GWTS-INF-0302				3/7/2013	Chloromethane	0.0300	0.500	µg/L	J
						Cis-1,2-Dichloroethene	0.280	0.500	µg/L	J
						Dichlorodifluoromethane	0.0900	0.500	µg/L	J
						Tetrachloroethene	520	25	µg/L	
						Toluene	0.660	0.500	µg/L	U
						Trichloroethylene	0.480	0.500	µg/L	J
						1,1,1,2-Tetrachloroethane	0.150	0.500	µg/L	J
						Bromodichloromethane	0.180	0.500	µg/L	J
						Chloroform	4.30	0.500	µg/L	
						Cis-1,2-Dichloroethene	0.280	0.500	µg/L	J
						Dichlorodifluoromethane	0.0800	0.500	µg/L	J
						Tetrachloroethene	560	25	µg/L	
						Toluene	0.0700	0.500	µg/L	U
						Trichloroethylene	0.420	0.500	µg/L	J
SP-03	CRB INF-0103	WG	E524.2	NS1	1/16/2013	Benzene	0.0400	0.500	µg/L	J
						Chloroform	0.110	0.500	µg/L	U
						Chloromethane	0.0700	0.500	µg/L	J
						Tetrachloroethene	3.20	0.500	µg/L	
						Toluene	0.610	0.500	µg/L	U
	CRB INF-0202				2/6/2013	Chloroform	0.150	0.500	µg/L	J
						Chloromethane	0.0400	0.500	µg/L	J
						Tetrachloroethene	4.50	0.500	µg/L	
						Toluene	0.190	0.500	µg/L	U
	CRB INF-0302				3/7/2013	Chloroform	0.320	0.500	µg/L	U
						Tetrachloroethene	12	0.500	µg/L	
						Toluene	0.0500	0.500	µg/L	U
	MW-103-NS	WG	E524.2	FD1	1/16/2013	Benzene	0.0300	0.500	µg/L	J
						Chloroform	0.110	0.500	µg/L	U
						Chloromethane	0.100	0.500	µg/L	J

**TABLE B3 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
<i>SP-03 continued . . .</i>										
						Tetrachloroethene	3.20	0.500	µg/L	
						Toluene	0.870	0.500	µg/L	U
SP-04	CRB Mid-0103	WG	E524.2	NS1	1/16/2013	Toluene	0.130	0.500	µg/L	U
	CRB Mid-0202				2/6/2013	Chloromethane	0.0300	0.500	µg/L	J
						Toluene	0.260	0.500	µg/L	U
	CRB Mid-0302				3/7/2013	Chloroform	0.0800	0.500	µg/L	U
						Toluene	0.110	0.500	µg/L	U
SP-05	CRB EFF-0103	WG	E524.2	NS1	1/16/2013	Chloromethane	0.0400	0.500	µg/L	J
						Toluene	0.330	0.500	µg/L	U
	Pre IEX-0202	WG	D5174	NS1	2/6/2013	Uranium	56.5	1	pCi/L	
	Pre IEX-0302				3/7/2013	Uranium	59.6	1	pCi/L	
SP-06	IEX Mid-0103	WG	D5174	NS1	1/16/2013	Uranium	0.488	1	pCi/L	
	IEX Mid-0202				2/6/2013	Uranium	0.918	1	pCi/L	
	IEX Mid-0302				3/7/2013	Uranium	1.39	1	pCi/L	
SP-07	EFF-0102	WG	E524.2	NS1	1/9/2013	1,2-Dichloroethane	0.140	0.500	µg/L	J
						2-Chlorotoluene	0.0700	0.500	µg/L	J
						4-Chlorotoluene	0.0500	0.500	µg/L	J
						Chloroform	0.130	0.500	µg/L	U
						Chloromethane	0.110	0.500	µg/L	U
						Hexachlorobutadiene	0.0300	0.500	µg/L	U
						M,P-Xylenes	0.0600	0.500	µg/L	J
						O-Xylene	0.0300	0.500	µg/L	J
						Tetrachloroethene	0.470	0.500	µg/L	J
						Toluene	0.110	0.500	µg/L	J
	EFF-0103	WG	D5174	NS1	1/16/2013	Uranium	12.2	1	pCi/L	
	EFF-0103	WG	E524.2	NS1	1/16/2013	Toluene	0.470	0.500	µg/L	U
	EFF-0103	WG	SM2540C	NS1	1/16/2013	Total Dissolved Solids	648	10	mg/L	
	EFF-0103	WG	SM2540D	NS1	1/16/2013	No Analytes Detected				
	EFF-0103	WG	SM5210B	NS1	1/16/2013	No Analytes Detected				

**TABLE B3 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
<i>SP-07 continued . . .</i>										
	EFF-0202	WG	E524.2	NS1	2/6/2013	Chloromethane	0.220	0.500	µg/L	J
						Toluene	0.690	0.500	µg/L	U
	EFF-0202	WG	SM2540C	NS1	2/6/2013	Total Dissolved Solids	621	5	mg/L	
	EFF-0202	WG	SM2540D	NS1	2/6/2013	No Analytes Detected				
	EFF-0202	WG	SM5210B	NS1	2/6/2013	No Analytes Detected				
	EFF-0302	WG	E524.2	NS1	3/7/2013	No Analytes Detected				
	EFF-0302	WG	SM2540C	NS1	3/7/2013	Total Dissolved Solids	602	10	mg/L	
	EFF-0302	WG	SM2540D	NS1	3/7/2013	No Analytes Detected				
	EFF-0302	WG	SM5210B	NS1	3/7/2013	No Analytes Detected				
	MW-107-0302	WG	SM2540C	FD1	3/7/2013	Total Dissolved Solids	630	10	mg/L	
	MW-107-0302	WG	SM2540D	FD1	3/7/2013	No Analytes Detected				
	MW-107-0302	WG	SM5210B	FD1	3/7/2013	No Analytes Detected				
SP-08	GWTS Pr GAC-0103	GS	TO15	NS1	1/16/2013	Chloroform	12	4.60	PPBV	
						Dichlorodifluoromethane	0.720	4.60	PPBV	J
						Tetrachloroethene	1400	4.60	PPBV	
						Toluene	0.600	4.60	PPBV	J
	GWTS Pr GAC-0202				2/6/2013	1,2,4-Trichlorobenzene	2.30	4.80	PPBV	U
						1,2,4-Trimethylbenzene	0.810	1.20	PPBV	U
						1,2-Dichlorobenzene	8.40	1.20	PPBV	
						1,3,5-Trimethylbenzene	0.350	1.20	PPBV	U
						1,3-Dichlorobenzene	0.710	1.20	PPBV	U
						1,4-Dichlorobenzene	1.70	1.20	PPBV	U
						Carbon Tetrachloride	11	1.20	PPBV	
						Chloroform	9.70	1.20	PPBV	
						Dichlorodifluoromethane	0.480	1.20	PPBV	J
						Tetrachloroethene	27	1.20	PPBV	
						Toluene	0.350	1.20	PPBV	U
						Trichlorofluoromethane	0.260	1.20	PPBV	U
	GWTS Pr GAC-0302				3/7/2013	Bromomethane	9.70	46	PPBV	J

**TABLE B3 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result	
<i>SP-08 continued . . .</i>											
SP-09	GWTS Stack-0103	GS	TO15	NS1	1/16/2013	Chloroform	12	4.60	PPBV		
						Tetrachloroethene	1100	4.60	PPBV		
						1,2-Dichlorobenzene	0.260	1.10	PPBV	U	
						Benzene	0.620	1.10	PPBV	J	
						Bromomethane	1.40	11	PPBV	U	
						Chloroform	0.860	1.10	PPBV	J	
						Dichlorodifluoromethane	0.760	1.10	PPBV	J	
						M,P-Xylenes	0.540	1.10	PPBV	J	
						O-Xylene	0.240	1.10	PPBV	J	
						Tetrachloroethene	1.90	1.10	PPBV		
	GWTS Stack-0202					2/6/2013	Toluene	0.640	1.10	PPBV	J
							Trichlorofluoromethane	0.210	1.10	PPBV	J
							1,2-Dichlorobenzene	0.890	1.40	PPBV	U
							1,4-Dichlorobenzene	0.260	1.40	PPBV	U
							Bromomethane	2.20	14	PPBV	U
							Chloroform	6.50	1.40	PPBV	
							Dichlorodifluoromethane	0.590	1.40	PPBV	J
							Tetrachloroethene	12	1.40	PPBV	
							Toluene	0.180	1.40	PPBV	U
							Trichloroethylene	3.80	1.40	PPBV	
GWTS Stack-0302					3/7/2013	Trichlorofluoromethane	0.170	1.40	PPBV	U	
						1,2-Dichlorobenzene	0.330	1.10	PPBV	J	
						1,4-Dichlorobenzene	0.180	1.10	PPBV	J	
						Bromomethane	2.40	11	PPBV	J	
						Chloroform	11	1.10	PPBV		
						Cis-1,2-Dichloroethene	0.610	1.10	PPBV	J	
						Dichlorodifluoromethane	0.580	1.10	PPBV	J	
						Tetrachloroethene	58	1.10	PPBV		
						Trans 1,3-Dichloropropene	0.170	1.10	PPBV	J	

**TABLE B3 (Continued)**

Location	Field Sample Identification	Matrix	Method	Sample Type	Date Sampled	Analyte	Result	Reporting Limit	Units	Qualified Result
<i>SP-09 continued . . .</i>										
						Trichloroethylene	0.370	1.10	PPBV	J
						Trichlorofluoromethane	0.260	1.10	PPBV	
SP-10	IEXEFF-0103	WG	D5174	NS1	1/16/2013	No Analytes Detected				
	IEXEFF-0202				2/6/2013	No Analytes Detected				
	IEXEFF-0302				3/7/2013	No Analytes Detected				

Matrix

GS = soil gas  
 WG = groundwater  
 WQ = water quality

Sample Type

FD = Field Duplicate  
 N = Normal Sample  
 TB = Trip Blank

Units

mg/L = milligrams/Liter  
 ppbv = parts per billion volume  
 pci/L = picoCuries/Liter  
 µg/L = micrograms/Liter

Qualified Results

J = Analyte concentration considered an estimated value because one or more quality control specifications were not met.  
 U = Analyte considered not detected due to external contamination.

## **Appendix C**

### **Laboratory Data Validation Reports**

- **Laboratory Data Consultants, Inc.**
- **URS Group, Inc.**

**Laboratory Data Consultants, Inc.**



## Laboratory Data Consultants, Inc.

7750 El Camino Real, Ste. 2L Carlsbad, CA 92009

Phone 760.634.0437

Web [www.lab-data.com](http://www.lab-data.com)

Fax 760.634.0439

URS Corporation  
2870 Gateway Oaks Drive, Suite 300  
Sacramento, CA 95833  
ATTN: Ms. Debbie Casagrande

May 15, 2013

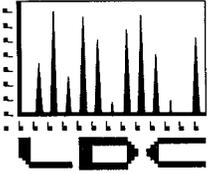
SUBJECT: Modesto Superfund Site Quality Control Summary Report (QCSR) for Quarterly and Monthly Sampling Events, Staged Electronic Data Deliverables (SEDD) and Automated Data Review (ADR) deliverables – 1<sup>st</sup> Quarter 2013

Dear Ms. Casagrande,

Enclosed are the Quality Control Summary Report (QCSR), validation worksheets, Staged Electronic Data Deliverables (SEDD) and Automated Data Review (ADR) electronic deliverables for the six EPA Region 9 Laboratory's sample delivery groups (SDG) listed below. The SDGs are associated with the sampling period of January 9 to March 28, 2013. Not all of the analytical methods may have been required in each of the laboratory SDGs.

<b>LDC Project #: 29167, 29308, 29428, 29518, 29529, 29630</b>	
<b>SDG #</b>	<b>Analytical Methods</b>
13011C 13038B 13067C 13088C 13088A 13088B	EPA Method 524.2 (EPA Region 9 SOP 354, revision 9) EPA Method TO-15 (EPA Region 9 SOP 311, revision 1)

The data validation was performed in accordance with the criteria specified in the EPA Region 9 Standard Operating Procedures (SOP), as well as the National Functional Guidelines for Superfund Organics Methods Data Review (2008). Where specific guidance was not available, the data have been evaluated in a conservative manner consistent with industry standards using professional experience.



The following QCSR deliverables and supporting documents are contained in this report:

- Sample ID Cross Reference and Data Review Level
- Primary and Field QC Samples by Method
- Detected Target Analytes
- Overall Qualified Results Summary
- Completeness Reports
- Reasons for Qualified Results
- Data Qualification Summary Reports
- Manual Data Validation Review Worksheets and ADR reports

If you have any questions, please feel free to contact us at (760) 634-0437.

Sincerely,

Andrew Kong  
Senior Chemist/Project Manager

**Laboratory Data Consultants, Inc.  
Quality Control Summary Report (QCSR)  
Modesto Superfund Site  
Quarterly and Monthly Sampling Events  
Analytical Data for Samples Collected by URS  
During the Period of  
January 9 to March 28, 2013**

**Prepared for:**

**URS Corporation  
Crown Corporate Center  
2870 Gateway Oaks Drive  
Suite 300  
Sacramento, CA 95833**

**Prepared by:**

**Laboratory Data Consultants, Inc. (LDC)  
7750 El Camino Real, Suite 2L  
Carlsbad, CA 92009**

**Reported: May 15, 2013**



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**Andrew Kong, Senior Chemist/Project Manager  
Laboratory Data Consultants, Inc.**

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### APPENDICES

Appendix A	DATA QUALIFICATION SUMMARY REPORTS
Appendix B	MANUAL VALIDATION LEVEL III & IV WORKSHEETS AND ADR REPORTS

## LIST OF ACRONYMS

<b>ADR</b>	<b>Automated Data Review</b>
<b>CA</b>	<b>California</b>
<b>DU</b>	<b>Sample Duplicate</b>
<b>EPA</b>	<b>US Environmental Protection Agency</b>
<b>GW</b>	<b>Groundwater</b>
<b>GWMP</b>	<b>Groundwater Monitoring Program</b>
<b>LCS</b>	<b>Laboratory Control Sample</b>
<b>LDC</b>	<b>Laboratory Data Consultants, Inc.</b>
<b>MDL</b>	<b>Method Detection Limit</b>
<b>MS</b>	<b>Matrix Spike</b>
<b>MSD</b>	<b>Matrix Spike Duplicate</b>
<b>NFG</b>	<b>National Functional Guidelines</b>
<b>RL</b>	<b>Reporting Limit</b>
<b>ND</b>	<b>Non-detected</b>
<b>PCE</b>	<b>Tetrachloroethene</b>
<b>QCSR</b>	<b>Quality Control Summary Report</b>
<b>RL</b>	<b>Reporting Limit</b>
<b>RPD</b>	<b>Relative Percent Difference</b>
<b>SAP</b>	<b>Sampling and Analysis Plan</b>
<b>SDG</b>	<b>Sample Delivery Group</b>
<b>SEDD</b>	<b>Staged Electronic Data Deliverables</b>
<b>SM</b>	<b>Standard Methods</b>
<b>SOP</b>	<b>Standard Operating Procedure</b>
<b>SVE</b>	<b>Soil Vapor Extraction</b>
<b>URS</b>	<b>URS Corporation</b>
<b>VOCs</b>	<b>Volatile Organic Compounds</b>

## EXECUTIVE SUMMARY

This Quality Control Summary Report (QCSR) has been prepared by Laboratory Data Consultants, Inc. (LDC) for URS Corporation (URS) for the Modesto Superfund Site in Modesto, California (CA). The purpose of this report is to provide the data user with an independent evaluation of the results generated by the laboratory. The data reviewed in this report were analyzed by U.S. Environmental Protection Agency (EPA) Region 9 Laboratory located in Richmond, CA. The Region 9 laboratory is certified in the State of California by the Department of Health Services. URS Corporation located in Sacramento, CA, collected the samples analyzed for this report.

The data validation was performed in accordance with the EPA Region 9 Laboratory's internal control limits specified in the EPA Region 9 Laboratory's Standard Operating Procedures (SOPs), "Sampling and Analysis Plan, Modesto Groundwater Superfund Site, Modesto, California" (SAP), (June 2010, U.S. Army Corps of Engineers, Sacramento District, and URS), and the "National Functional Guidelines (NFG) for Superfund Organic Methods Data Review" (USEPA 2008).

Fifty seven field samples, seven field duplicates, and three field Quality Control (QC) samples were reported in six EPA Region 9 Laboratory's sample delivery groups (SDGs) for the R13S37 and R13S53 January-March 2013 Quarterly Groundwater Monitoring and Soil Vapor Extraction (SVE) sampling efforts.

The laboratory provided electronic data in Staged Electronic Data Deliverables (SEDD) files. The SEDD deliverable was processed through the Automated Data Review (ADR) program in order to produce SEDD and ADR deliverable formats, as requested by URS. Any resulting data validation qualifiers from ADR have been appended to the SEDD and ADR files.

Data review was based primarily on the EPA Region 9 Laboratory's internal control limits specified in the EPA Region 9 Laboratory's SOPs and the "Modesto Groundwater Superfund Site SAP" (June 2010) as well as the NFG for Superfund Organics Methods Data Review (USEPA 2008), using biased qualifiers. In the case where no QC acceptance criteria were specified for this analysis, data were evaluated against the appropriate method references and Standard Methods. Where additional guidance was needed, data were evaluated against QC and data validation criteria provided in the NFG for Superfund Organics Methods Data Review (USEPA 2008), using biased qualifiers. Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

For this review, approximately ten percent of project data were subjected to USEPA Level IV equivalent validation with raw data recalculations, and the remaining 90 percent were subjected to USEPA Level III equivalent validation. All sample results from the sampling period were subjected to automated and manual review through an evaluation of QC results, sample holding times, cooler temperatures, sample preservation, initial and continuing calibration, surrogate recoveries, matrix spikes/matrix spike duplicates, laboratory duplicates, laboratory control

samples, method blanks, and reporting limits. Level IV equivalent validation was designated to the following: SDG 13038B (one sample for Volatile Organic Compounds (VOCs) by EPA Method TO-15), SDG 13088A (one sample for VOCs by EPA Method 524.2), SDG 13088B (three samples for VOCs by EPA Method 524.2), and SDG 13088C (two samples for VOCs by EPA Method TO-15). There were no significant findings in the Level IV equivalent validation. However, some sample data were qualified based upon the review of the instrument calibration data.

The following items were evaluated by automated review:

- Holding Times
- Cooler Temperatures
- Blanks
- Surrogates
- Matrix Spike/Matrix Spike Duplicates (MS/MSD) or Sample Duplicates (DUP)
- Laboratory Control Samples (LCS)
- Reporting Limits (RL)
- Field QC Samples

The evaluation of the associated initial and continuing instrument calibrations, internal standards, sample preservation, and Level IV recalculations and data verifications from the raw data packages were performed by manual review.

The ADR was performed using bias indicators and reason codes for data qualification, where applicable. Appendix A contains a summary of data qualifications and the reasons for qualified results. The results of the ADR are included in Appendix B of this report, along with manual validation worksheets.

## Data Qualifier Definitions

Through the data review process, the data were assigned validation qualifiers. The qualifiers assigned by LDC are based on a technical assessment of the data and represent outliers from each of the data review components (blank contamination, holding time, etc.). The following are definitions of the data qualifiers that may appear in this report:

Data Qualifier	Definition
U	Indicates the compound or analyte was analyzed for, but not detected at or above the reported sample quantitation limit. The result is considered non-detected (ND) at the reported value. This qualifier is added before any additional qualifiers for all ND results.
UJ	Indicates the compound or analyte was analyzed for, but not detected. The sample detection limit is an estimated value due to QC failure or data limitations.
J	Indicates the compound or analyte is positively identified, but the reported concentration is an estimate due to QC failure or data limitations.
J+	Indicates the compound or analyte is positively identified, but the reported concentration is an estimate due to QC failure or data limitations. A high quantitative bias exists in the data.
J-	Indicates the compound or analyte is positively identified, but the reported concentration is an estimate due to QC failure or data limitations. A low quantitative bias exists in the data.
R	Quality control indicates the data is not usable. The presence or absence of the compound or analyte cannot be verified or the reported result is compromised as to be unusable.

Data qualified with the “R” qualifier are considered unusable or rejected. Data qualified with the “J” qualifier are considered as estimated. The data user must determine the appropriate use of estimated data.

The data quality assessment is summarized by reporting analytical completeness. The following equations were used to calculate completeness.

$$\% \text{Analytical Completeness} = (\text{Number of unqualified results} / \text{Number of reported results}) \times 100$$

The analytical completeness, which included all QC parameters, attained for the field samples in the sampling effort is presented in Table 5.

$$\% \text{Contract Compliance Completeness} = (\text{Number of contract compliant results} / \text{Number of reported results}) \times 100$$

The contract compliance completeness, which included all QC parameters, attained for the field samples in the sampling effort is presented in Table 6.

$\% \text{Technical Completeness} = (\text{Number of results not rejected} / \text{Number of reported results}) \times 100$

The technical completeness, which included all QC parameters, attained for the field samples in the sampling effort is presented in Table 7.

Based on review of the analytical data and associated QC results, the sample data were assessed to be valid with minor qualifications. A summary of the overall quality of data is as follows:

## **2.0 Quarterly and Monthly Sampling Events**

Based on review of the analytical data and associated QC results, the overall analytical completeness (number of unqualified results divided by the number of reported results) for the sampling effort was 90.6%.

- VOCs by EPA Method 524.2 had analytical completeness of 90.5%,
- VOCs by EPA Method TO-15 had analytical completeness of 91.3%,

If data qualifiers due to trace values were excluded from this calculation, the analytical completeness would be 90.7% for VOCs by EPA Method 524.2 and 92.4% for VOCs by EPA Method TO-15.

The overall contract compliance completeness (number of contract compliant results divided by the number of reported results) for the sampling effort was 93.2%.

- VOCs by EPA Method 524.2 had analytical completeness of 93.7%,
- VOCs by EPA Method TO-15 had analytical completeness of 91.4%,

If data qualifiers due to trace values were excluded from this calculation, the analytical completeness would be 93.9% for VOCs by EPA Method 524.2 and 92.5% for VOCs by EPA Method TO-15.

The overall technical completeness (number of non-rejected results divided by the number of reported results) for the sampling effort was 100.0%.

- VOCs by EPA Method 524.2 had analytical completeness of 100.0%,
- VOCs by EPA Method TO-15 had analytical completeness of 100.0%

The analytical, contract compliance and technical completeness reports are in Tables 5, 6, and 7, respectively.

Appendix A presents a detailed description of the qualified sample results by analytical method.

The overall quality of data by analytical method is summarized below:

### **Volatile Organic Compounds by EPA 524.2 (EPA Region 9 SOP 354, revision 9)**

The analytical completeness for VOCs by EPA 524.2 was 90.5%.

Six of the 2961 sample results were qualified as estimated due to trace values reported between the method detection limit (MDL) and the RL. Ninety one results were qualified as estimated due to initial calibration non-conformances, eleven results were qualified as estimated due to initial calibration verification non-conformances, and eighty three results were qualified as estimated due to continuing calibration non-conformances. Ninety six results in five samples were qualified as estimated due to matrix spike/matrix spike duplicate recoveries and RPD outside the control limits. Twelve acetone results were qualified as estimated due to laboratory control sample recoveries outside the control limits. Table 8 lists specific samples and reasons for all qualified results with the exception of results that are not assessed by ADR (internal standards, professional judgment, etc.).

MS/MSD analyses were performed on samples MW-10C-1Q13 (SDG 13088A), MW-1A-1Q13 (SDG 13088A), MW-20B-1Q13 (SDG 13088A), MW-12A-1Q13 (SDG 13088B), MW-22A-1Q13 (SDG 13088B), and MW-401-1Q13 (SDG 13088B). All acceptance criteria were met with the exceptions noted above.

Two trip blank samples and one field blank sample was collected and analyzed for VOCs. No contaminants were detected in the trip blanks or field blank.

Sample MW-90B-1Q13 was identified as a field duplicate of sample MW-10B-1Q13 (SDG 13088A), sample MW-97A-1Q13 was identified as a field duplicate of sample MW-3A-1Q13 (SDG 13088B), sample MW-77A-1Q13 was identified as a field duplicate of sample MW-23A-1Q13 (SDG 13088B), and sample MW-71B-1Q13 was identified as a field duplicate of sample MW-29B-1Q13 (SDG 13088B). No data were qualified based upon the field duplicate result. The RPDs between the results were within the criteria in Table 2-10 of the SAP.

### **Volatile Organic Compounds by EPA TO-15 (EPA Region 9 SOP 311, revision 2)**

The analytical completeness for VOCs by EPA TO-15 was 92.2%.

Eight of the 747 sample results were qualified as estimated due to trace values reported between the MDL and the RL. Fifty two results were qualified as estimated due to initial calibration verification non-conformances and two results were qualified as estimated due to continuing calibration non-conformances. The tetrachloroethene result in sample SVE Pre GAC-0202 was qualified as estimated due to laboratory duplicate RPD outside the control limits. The 1,1-dichloroethane and styrene results in samples SVE Pre GAC-0202 and SVE Stack-0202 were qualified as estimated due to laboratory control sample recoveries outside the control limits. Table 8 lists specific samples and reasons for all qualified results with the exception of results that are not assessed by ADR (internal standards, professional judgment, etc.).

DUP analyses were performed on samples SVE Pre GAC-0102 (SDG 13011C), SVE Pre GAC-0202 (SDG 13038B), SVE Pre GAC-0302 (SDG 13067C), and DP-1A-1Q13 (SDG 13088C). All acceptance criteria were met with the exceptions noted above.

Sample MW-111-1001 was identified as a field duplicate of sample SVE Pre GAC-0302 (SDG 13067C) and sample SVE-96-1Q13 was identified as a field duplicate of sample SVE-4-1Q13 (SDG 13088C). Additionally, sample DP-94A-1Q13 was identified as a field duplicate of sample DP-6A-1Q13 (SDG 13088C) however per the URS, the sample DP-6A-1Q13 was lost, therefore no results were provided. No data were qualified based upon the field duplicate result. The RPDs between the results were within the criteria in Table 2-10 of the SAP.

## **Table 1**

### **Sample ID Cross Reference**

## Table 1: Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
09-Jan-2013	SVE Stack-0102	1301012-02	N	None	TO-15	III
09-Jan-2013	SVE Pre GAC-0102	1301012-01	N	None	TO-15	III
09-Jan-2013	SVE Pre GAC-0102DUP	B13A036-DUP1	DUP	None	TO-15	III
06-Feb-2013	SVE Stack-0202	1302009-02	N	None	TO-15	III
06-Feb-2013	SVE Pre GAC-0202	1302009-01	N	None	TO-15	IV
06-Feb-2013	SVE Pre GAC-0202DUP	B13B040-DUP1	DUP	None	TO-15	IV
07-Mar-2013	SVE Stack-0302	1303012-03	N	None	TO-15	III
07-Mar-2013	SVE Pre GAC-0302	1303012-02	N	None	TO-15	III
07-Mar-2013	SVE Pre GAC-0302DUP	B13C039-DUP1	DUP	None	TO-15	III
07-Mar-2013	MW-111-0302	1303012-01	FD	None	TO-15	III
25-Mar-2013	MW-9B-1Q13	1303066-05	N	5030B	524.2	III
25-Mar-2013	MW-8A-1Q13	1303066-16	N	5030B	524.2	III
25-Mar-2013	MW-5A-1Q13	1303066-11	N	5030B	524.2	III
26-Mar-2013	MW-22A-1Q13	1303066-17	N	5030B	524.2	III
26-Mar-2013	MW-22A-1Q13MS	B13D015-MS1	MS	5030B	524.2	III
26-Mar-2013	MW-22A-1Q13MSD	B13D015-MSD1	MSD	5030B	524.2	III
26-Mar-2013	MW-21A-1Q13	1303065-11	N	5030B	524.2	III
26-Mar-2013	MW-25B-1Q13	1303066-20	N	5030B	524.2	III
26-Mar-2013	MW-304-1Q13	1303066-26	TB	5030B	524.2	III
26-Mar-2013	MW-16A-1Q13	1303065-19	N	5030B	524.2	III
26-Mar-2013	MW-16B-1Q13	1303065-20	N	5030B	524.2	III
26-Mar-2013	MW-16C-1Q13	1303066-02	N	5030B	524.2	III
26-Mar-2013	MW-20A-1Q13	1303065-08	N	5030B	524.2	III
26-Mar-2013	MW-20B-1Q13	1303065-09	N	5030B	524.2	III
26-Mar-2013	MW-20B-1Q13MS	B13D001-MS1	MS	5030B	524.2	III
26-Mar-2013	MW-20B-1Q13MSD	B13D001-MSD1	MSD	5030B	524.2	III

### Table 1: Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
26-Mar-2013	MW-20C-1Q13	1303065-10	N	5030B	524.2	III
26-Mar-2013	MW-19A-1Q13	1303065-05	N	5030B	524.2	III
26-Mar-2013	MW-19B-1Q13	1303065-06	N	5030B	524.2	III
26-Mar-2013	MW-12A-1Q13	1303066-01	N	5030B	524.2	III
26-Mar-2013	MW-12A-1Q13MS	B13D002-MS1	MS	5030B	524.2	III
26-Mar-2013	MW-12A-1Q13MS	B13D002-MS2	MS	5030B	524.2	III
26-Mar-2013	MW-12A-1Q13MSD	B13D002-MSD1	MSD	5030B	524.2	III
26-Mar-2013	MW-12A-1Q13MSD	B13D002-MSD2	MSD	5030B	524.2	III
26-Mar-2013	MW-15A-1Q13	1303065-18	N	5030B	524.2	III
26-Mar-2013	MW-71B-1Q13	1303066-13	FD	5030B	524.2	III
26-Mar-2013	MW-27B-1Q13	1303066-22	N	5030B	524.2	III
26-Mar-2013	MW-26B-1Q13	1303066-21	N	5030B	524.2	III
26-Mar-2013	MW-17A-1Q13	1303065-01	N	5030B	524.2	III
26-Mar-2013	MW-17B-1Q13	1303065-02	N	5030B	524.2	III
26-Mar-2013	MW-17C-1Q13	1303065-03	N	5030B	524.2	III
26-Mar-2013	MW-4A-1Q13	1303066-08	N	5030B	524.2	III
26-Mar-2013	MW-4B-1Q13	1303066-09	N	5030B	524.2	III
26-Mar-2013	MW-4C-1Q13	1303066-10	N	5030B	524.2	III
26-Mar-2013	MW-24B-1Q13	1303066-19	N	5030B	524.2	III
26-Mar-2013	MW-13A-1Q13	1303065-16	N	5030B	524.2	IV
26-Mar-2013	MW-29B-1Q13	1303066-24	N	5030B	524.2	III
27-Mar-2013	DP-5A-1Q13	1303067-03	N	None	TO-15	III
27-Mar-2013	DP-5B-1Q13	1303067-04	N	None	TO-15	III
27-Mar-2013	SVE-1-1Q13	1303067-10	N	None	TO-15	III
27-Mar-2013	SVE-3-1Q13	1303067-12	N	None	TO-15	III
27-Mar-2013	SVE-4-1Q13	1303067-13	N	None	TO-15	III

### Table 1: Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
27-Mar-2013	SVE-96-1Q13	1303067-14	FD	None	TO-15	III
27-Mar-2013	SVE-2-1Q13	1303067-11	N	None	TO-15	IV
27-Mar-2013	DP-1A-1Q13	1303067-01	N	None	TO-15	III
27-Mar-2013	DP-1A-1Q13DUP	B13D016-DUP1	DUP	None	TO-15	III
27-Mar-2013	DP-1B-1Q13	1303067-02	N	None	TO-15	III
27-Mar-2013	DP-6B-1Q13	1303067-06	N	None	TO-15	IV
27-Mar-2013	DP-94A-1Q13	1303067-07	FD	None	TO-15	III
27-Mar-2013	OSVE-11-1Q13	1303067-09	N	None	TO-15	III
27-Mar-2013	OSVE-10-1Q13	1303067-08	N	None	TO-15	III
28-Mar-2013	MW-28B-1Q13	1303066-23	N	5030B	524.2	III
28-Mar-2013	MW-305-1Q13	1303066-27	TB	5030B	524.2	III
28-Mar-2013	MW-23A-1Q13	1303066-18	N	5030B	524.2	III
28-Mar-2013	MW-18A-1Q13	1303065-04	N	5030B	524.2	III
28-Mar-2013	MW-10A-1Q13	1303065-12	N	5030B	524.2	III
28-Mar-2013	MW-10B-1Q13	1303065-13	N	5030B	524.2	III
28-Mar-2013	MW-10C-1Q13	1303065-14	N	5030B	524.2	III
28-Mar-2013	MW-10C-1Q13MS	B13D017-MS1	MS	5030B	524.2	III
28-Mar-2013	MW-10C-1Q13MSD	B13D017-MSD1	MSD	5030B	524.2	III
28-Mar-2013	MW-6A-1Q13	1303066-12	N	5030B	524.2	III
28-Mar-2013	MW-14A-1Q13	1303065-17	N	5030B	524.2	III
28-Mar-2013	MW-11A-1Q13	1303065-15	N	5030B	524.2	III
28-Mar-2013	MW-7A-1Q13	1303066-15	N	5030B	524.2	III
28-Mar-2013	MW-1A-1Q13	1303065-07	N	5030B	524.2	IV
28-Mar-2013	MW-1A-1Q13MS	B13D008-MS1	MS	5030B	524.2	IV
28-Mar-2013	MW-1A-1Q13MSD	B13D008-MSD1	MSD	5030B	524.2	IV
28-Mar-2013	MW-2A-1Q13	1303066-25	N	5030B	524.2	IV

### Table 1: Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
28-Mar-2013	MW-3A-1Q13	1303066-06	N	5030B	524.2	IV
28-Mar-2013	MW-401-1Q13	1303066-07	FB	5030B	524.2	III
28-Mar-2013	MW-401-1Q13MS	B13D007-MS1	MS	5030B	524.2	III
28-Mar-2013	MW-401-1Q13MSD	B13D007-MSD1	MSD	5030B	524.2	III
28-Mar-2013	MW-90B-1Q13	1303066-03	FD	5030B	524.2	III
28-Mar-2013	MW-97A-1Q13	1303066-04	FD	5030B	524.2	III
28-Mar-2013	MW-77A-1Q13	1303066-14	FD	5030B	524.2	IV

**Table 2**

**Primary and Field QC Samples by Method**

**Table 2: Primary and Field QC Samples by Method**

<b>Analytical Method</b>	<b>Matrix</b>	<b>Primary Samples</b>	<b>Field Duplicates</b>	<b>Trip Blanks</b>	<b>Equipment Blanks</b>	<b>Field Blanks</b>
524.2	Water	40	4	2	None	1
TO-15	Air	17	3	None	None	None

## **Table 3**

### **Detected Target Analytes**

**Table 3: Detected Target Analytes**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Units
<b>SDG: 13011C</b>								
TO-15	SVE Pre GAC-0102	Air	N	CHLOROFORM	2.4	11		ppbv
				TETRACHLOROETHENE	24	150		ppbv
TO-15	SVE Stack-0102	Air	N	CHLOROFORM	2.4	9.1		ppbv
				CIS-1,2-DICHLOROETHENE	2.4	1.2J		ppbv
<b>SDG: 13038B</b>								
TO-15	SVE Pre GAC-0202	Air	N	CHLOROFORM	2.5	10		ppbv
				TETRACHLOROETHENE	25	130J		ppbv
				TRICHLOROETHENE	2.5	3.0		ppbv
TO-15	SVE Stack-0202	Air	N	1,2,4-TRICHLOROENZENE	2.5	1.6J		ppbv
				1,2-DICHLOROENZENE	2.5	5.4		ppbv
				CHLOROFORM	2.5	11		ppbv
				CIS-1,2-DICHLOROETHENE	2.5	1.3J		ppbv
				TETRACHLOROETHENE	2.5	4.2		ppbv
<b>SDG: 13067C</b>								
TO-15	MW-111-0302	Air	FD	1,2-DICHLOROENZENE	7.0	43		ppbv
				1,3-DICHLOROENZENE	2.5	4.1		ppbv
				1,4-DICHLOROENZENE	2.5	11		ppbv
				CHLOROFORM	2.5	9.6		ppbv
				TETRACHLOROETHENE	7.0	120		ppbv
				TRICHLOROETHENE	2.5	4.9		ppbv
TO-15	SVE Pre GAC-0302	Air	N	1,2-DICHLOROENZENE	2.4	43		ppbv
				1,3-DICHLOROENZENE	2.4	3.3		ppbv
				1,4-DICHLOROENZENE	2.4	8.7		ppbv
				CHLOROFORM	2.4	7.7		ppbv
				TETRACHLOROETHENE	8.2	110		ppbv
				TRICHLOROETHENE	2.4	3.9		ppbv
TO-15	SVE Stack-0302	Air	N	CHLOROFORM	2.5	10		ppbv
				TETRACHLOROETHENE	2.5	8.0		ppbv

\*Note: This report excludes laboratory detects that were qualified as ND due to Blank Contamination

N = Normal Sample    TB = Trip Blank  
 FD = Field Duplicate    FB = Field Blank

**Table 3: Detected Target Analytes**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Units
<b>SDG: 13088A</b>								
524.2	MW-10A-1Q13	Water	N	ACETONE	4.0	7.1		ug/L
				CHLOROFORM	0.5	4.6		ug/L
				TETRACHLOROETHENE	5.0	51		ug/L
524.2	MW-10B-1Q13	Water	N	ACETONE	4.0	3.4J		ug/L
				TETRACHLOROETHENE	0.5	14		ug/L
524.2	MW-10C-1Q13	Water	N	ACETONE	4.0	7.2		ug/L
524.2	MW-11A-1Q13	Water	N	ACETONE	4.0	18		ug/L
				CHLOROFORM	0.5	2.9		ug/L
				TETRACHLOROETHENE	0.5	2.5		ug/L
524.2	MW-13A-1Q13	Water	N	ACETONE	4.0	7.9		ug/L
				CHLOROFORM	0.5	2.0		ug/L
				TETRACHLOROETHENE	2.5	22		ug/L
524.2	MW-14A-1Q13	Water	N	ACETONE	4.0	8.0		ug/L
				CHLOROFORM	0.5	0.3J		ug/L
				TETRACHLOROETHENE	2.5	23		ug/L
524.2	MW-15A-1Q13	Water	N	ACETONE	4.0	7.9		ug/L
524.2	MW-16A-1Q13	Water	N	ACETONE	4.0	7.8		ug/L
				CHLOROFORM	0.5	0.9		ug/L
524.2	MW-16B-1Q13	Water	N	ACETONE	4.0	8.2		ug/L
				CHLOROFORM	0.5	1.6		ug/L
				DICHLORODIFLUOROMETHANE	0.5	0.3J		ug/L
				TETRACHLOROETHENE	0.5	4.9		ug/L
524.2	MW-17A-1Q13	Water	N	ACETONE	4.0	4.1J		ug/L
				BROMODICHLOROMETHANE	0.5	0.6		ug/L
				CHLOROFORM	0.5	11		ug/L
				TETRACHLOROETHENE	0.5	0.7		ug/L
524.2	MW-17B-1Q13	Water	N	ACETONE	4.0	3.2J		ug/L
				CHLOROFORM	0.5	0.3J		ug/L
				TETRACHLOROETHENE	2.5	75		ug/L
524.2	MW-17C-1Q13	Water	N	ACETONE	4.0	4.5J		ug/L

\*Note: This report excludes laboratory detects that were qualified as ND due to Blank Contamination

N = Normal Sample    TB = Trip Blank  
 FD = Field Duplicate    FB = Field Blank

**Table 3: Detected Target Analytes**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Units
<b>SDG: 13088A</b>								
524.2	MW-18A-1Q13	Water	N	ACETONE	4.0	3.6J		ug/L
				CHLOROFORM	0.5	3.8		ug/L
				TETRACHLOROETHENE	0.5	3.0		ug/L
524.2	MW-19A-1Q13	Water	N	ACETONE	4.0	4.4J		ug/L
				CHLOROFORM	0.5	2.4		ug/L
524.2	MW-19B-1Q13	Water	N	ACETONE	4.0	5.3J		ug/L
				TETRACHLOROETHENE	0.5	0.3J		ug/L
524.2	MW-1A-1Q13	Water	N	ACETONE	4.0	3.4J		ug/L
				TETRACHLOROETHENE	0.5	1.2J+		ug/L
524.2	MW-20A-1Q13	Water	N	ACETONE	4.0	6.5J		ug/L
				CHLOROFORM	0.5	6.6		ug/L
				DICHLORODIFLUOROMETHANE	0.5	1.5J		ug/L
				TETRACHLOROETHENE	10	140		ug/L
524.2	MW-20B-1Q13	Water	N	ACETONE	4.0	2.2J		ug/L
				TETRACHLOROETHENE	2.5	70		ug/L
524.2	MW-20C-1Q13	Water	N	ACETONE	4.0	5.1J		ug/L
524.2	MW-21A-1Q13	Water	N	ACETONE	4.0	4.2J		ug/L
				CHLOROFORM	0.5	4.2		ug/L
				TETRACHLOROETHENE	0.5	0.5		ug/L

\*Note: This report excludes laboratory detects that were qualified as ND due to Blank Contamination

N = Normal Sample    TB = Trip Blank  
 FD = Field Duplicate    FB = Field Blank

### Table 3: Detected Target Analytes

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Units
<b>SDG: 13088B</b>								
524.2	MW-12A-1Q13	Water	N	ACETONE	4.0	6.9J		ug/L
				BROMODICHLOROMETHANE	0.5	0.5J		ug/L
				CHLOROFORM	0.5	12J-		ug/L
				TETRACHLOROETHENE	0.5	15J-		ug/L
				TRICHLOROFLUOROMETHANE	0.5	0.5J		ug/L
524.2	MW-16C-1Q13	Water	N	ACETONE	4.0	8.6		ug/L
				CHLOROFORM	0.5	0.9		ug/L
				TETRACHLOROETHENE	0.5	7.8		ug/L
524.2	MW-22A-1Q13	Water	N	ACETONE	4.0	6.4		ug/L
				CHLOROFORM	0.5	5.1J+		ug/L
524.2	MW-23A-1Q13	Water	N	ACETONE	4.0	6.1		ug/L
				CHLOROFORM	0.5	2.5		ug/L
				TETRACHLOROETHENE	2.5	21		ug/L
524.2	MW-24B-1Q13	Water	N	ACETONE	4.0	6.5		ug/L
				TETRACHLOROETHENE	5.0	76		ug/L
524.2	MW-25B-1Q13	Water	N	ACETONE	4.0	7.1		ug/L
				TETRACHLOROETHENE	10	88		ug/L
524.2	MW-26B-1Q13	Water	N	2-BUTANONE	4.0	2.8J		ug/L
				ACETONE	4.0	32		ug/L
				TETRACHLOROETHENE	0.5	0.4J		ug/L
524.2	MW-27B-1Q13	Water	N	ACETONE	4.0	7.5		ug/L
524.2	MW-28B-1Q13	Water	N	ACETONE	4.0	6.3		ug/L
				TETRACHLOROETHENE	5.0	50		ug/L
524.2	MW-29B-1Q13	Water	N	ACETONE	4.0	5.5		ug/L
				TETRACHLOROETHENE	5.0	58		ug/L
524.2	MW-2A-1Q13	Water	N	ACETONE	4.0	8.0		ug/L
				CHLOROFORM	0.5	2.0		ug/L
				TETRACHLOROETHENE	0.5	5.8		ug/L
524.2	MW-3A-1Q13	Water	N	ACETONE	4.0	7.3		ug/L
				CHLOROFORM	0.5	0.6		ug/L
				TETRACHLOROETHENE	25	240		ug/L

\*Note: This report excludes laboratory detects that were qualified as ND due to Blank Contamination

N = Normal Sample    TB = Trip Blank  
 FD = Field Duplicate    FB = Field Blank

### Table 3: Detected Target Analytes

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Units
<b>SDG: 13088B</b>								
524.2	MW-4A-1Q13	Water	N	ACETONE	4.0	8.4		ug/L
				CHLOROFORM	0.5	1.3		ug/L
				TETRACHLOROETHENE	2.5	98		ug/L
524.2	MW-4B-1Q13	Water	N	ACETONE	4.0	7.0		ug/L
				TETRACHLOROETHENE	0.5	2.4		ug/L
524.2	MW-4C-1Q13	Water	N	ACETONE	4.0	9.9		ug/L
				TETRACHLOROETHENE	0.5	1.3		ug/L
524.2	MW-5A-1Q13	Water	N	ACETONE	4.0	8.4		ug/L
				TETRACHLOROETHENE	2.5	42		ug/L
524.2	MW-6A-1Q13	Water	N	ACETONE	4.0	7.9		ug/L
				CHLOROFORM	0.5	4.9		ug/L
				TETRACHLOROETHENE	0.5	3.2		ug/L
524.2	MW-71B-1Q13	Water	FD	ACETONE	4.0	6.5		ug/L
				TETRACHLOROETHENE	2.5	64		ug/L
524.2	MW-77A-1Q13	Water	FD	ACETONE	4.0	7.0		ug/L
				CHLOROFORM	0.5	2.6		ug/L
				TETRACHLOROETHENE	0.5	25		ug/L
524.2	MW-7A-1Q13	Water	N	ACETONE	4.0	22		ug/L
				CHLOROFORM	0.5	1.6		ug/L
524.2	MW-8A-1Q13	Water	N	ACETONE	4.0	7.6		ug/L
				CHLOROFORM	0.5	1.9		ug/L
				TETRACHLOROETHENE	2.5	32		ug/L
524.2	MW-90B-1Q13	Water	FD	ACETONE	4.0	4.1		ug/L
				TETRACHLOROETHENE	0.5	15		ug/L
524.2	MW-97A-1Q13	Water	FD	ACETONE	4.0	7.2		ug/L
				CHLOROFORM	0.5	0.6		ug/L
				TETRACHLOROETHENE	25	260		ug/L
524.2	MW-9B-1Q13	Water	N	ACETONE	4.0	8.3		ug/L
				TETRACHLOROETHENE	0.5	10		ug/L

\*Note: This report excludes laboratory detects that were qualified as ND due to Blank Contamination

N = Normal Sample    TB = Trip Blank  
 FD = Field Duplicate    FB = Field Blank

### Table 3: Detected Target Analytes

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Units
<b>SDG: 13088C</b>								
TO-15	DP-1A-1Q13	Air	N	TETRACHLOROETHENE	2.5	26		ppbv
TO-15	DP-1B-1Q13	Air	N	CHLOROFORM	2.6	2.4J		ppbv
				TETRACHLOROETHENE	2.6	26		ppbv
TO-15	DP-5B-1Q13	Air	N	CHLOROFORM	2.6	3.5		ppbv
				TETRACHLOROETHENE	2.6	1.5J		ppbv
TO-15	DP-94A-1Q13	Air	FD	TETRACHLOROETHENE	2.4	25		ppbv
TO-15	OSVE-10-1Q13	Air	N	TETRACHLOROETHENE	2.5	2.6		ppbv
TO-15	OSVE-11-1Q13	Air	N	TETRACHLOROETHENE	2.5	2.4J		ppbv
				TOLUENE	2.5	2.2J		ppbv
TO-15	SVE-1-1Q13	Air	N	TETRACHLOROETHENE	2.4	8.8		ppbv
TO-15	SVE-2-1Q13	Air	N	TETRACHLOROETHENE	2.4	8.2		ppbv
TO-15	SVE-3-1Q13	Air	N	TETRACHLOROETHENE	2.4	1.7J		ppbv
TO-15	SVE-4-1Q13	Air	N	CHLOROFORM	2.4	20		ppbv
				TETRACHLOROETHENE	2.4	16		ppbv
TO-15	SVE-96-1Q13	Air	FD	CHLOROFORM	2.4	20		ppbv
				TETRACHLOROETHENE	2.4	16		ppbv

\*Note: This report excludes laboratory detects that were qualified as ND due to Blank Contamination

N = Normal Sample    TB = Trip Blank  
 FD = Field Duplicate    FB = Field Blank

## **Table 4**

### **Overall Qualified Results**

**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13011C</b>										
TO-15	SVE Pre GAC-0102	Air	N	STYRENE	2.4	2.4J,U,C 3,		UJ	ppbv	Lcs, Ccv
TO-15	SVE Stack-0102	Air	N	CIS-1,2-DICHLOROETHENE	2.4	1.2J,C1		J	ppbv	RI
				STYRENE	2.4	2.4J,U,C 3,		UJ	ppbv	Lcs, Ccv
<b>SDG: 13038B</b>										
TO-15	SVE Pre GAC-0202	Air	N	1,1-DICHLOROETHANE	2.5	2.5J,U,Q 2		UJ	ppbv	Lcs
				TETRACHLOROETHENE	25	130J,Q5		J	ppbv	Ld
TO-15	SVE Stack-0202	Air	N	1,1-DICHLOROETHANE	2.5	2.5J,U,Q 2		UJ	ppbv	Lcs
				1,2,4-TRICHLOROBENZENE	2.5	1.6J,C1		J	ppbv	RI
				CIS-1,2-DICHLOROETHENE	2.5	1.3J,C1		J	ppbv	RI

**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088A</b>										
524.2	MW-10A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,Q 3,		UJ	ug/L	IcRsd
524.2	MW-10B-1Q13	Water	N	ACETONE	4.0	3.4J,C1, Q3		J	ug/L	RI
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-10C-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5J,U,Q 4		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-11A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-13A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-14A-1Q13	Water	N	CHLOROFORM	0.5	0.3J,C1		J	ug/L	RI
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-15A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088A</b>										
524.2	MW-16A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-16B-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.3J,C1		J	ug/L	Lcs, RI, Cc
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-17A-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	4.1J,C4		J	ug/L	Lcs, Ccv
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd

**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088A</b>										
524.2	MW-17B-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	3.2J,C1, C4		J	ug/L	Lcs, RI, Cc
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				CHLOROFORM	0.5	0.3J,C1		J	ug/L	RI
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-17C-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	4.5J,C4		J	ug/L	Lcs, Ccv
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088A</b>										
524.2	MW-18A-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	3.6J,C1, C4		J	ug/L	Lcs, RI, Cc
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-19A-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	4.4J,C4		J	ug/L	Lcs, Ccv
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088A</b>										
524.2	MW-19B-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	5.3J,C4		J	ug/L	Lcs, Ccv
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TETRACHLOROETHENE	0.5	0.3J,C1		J	ug/L	Rl
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-1A-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	3.4J,Q4, C4		J	ug/L	Ms, Lcs, R
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
				TETRACHLOROETHENE	0.5	1.2J,Q4		J+	ug/L	Ms
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088A</b>										
524.2	MW-20A-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	6.5J,C4		J	ug/L	Lcs, Ccv
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	1.5J,C3		J	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-20B-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	2.2J,C1, C4		J	ug/L	Ms, Lcs, R
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd

**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088A</b>										
524.2	MW-20C-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	5.1J,C4		J	ug/L	Lcs, Ccv
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
524.2	MW-21A-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				ACETONE	4.0	4.2J,C4		J	ug/L	Lcs, Ccv
				BROMOMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,C 3		UJ	ug/L	Icv
				METHYLENE CHLORIDE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
524.2	MW-12A-1Q13	Water	N	1,1,1,2-TETRACHLOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,1,1-TRICHLOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,1,2,2-TETRACHLOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,1,2-TRICHLOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,1-DICHLOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,1-DICHLOROETHENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,1-DICHLOROPROPENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,2,3-TRICHLOROBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,2,3-TRICHLOROPROPANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,2,4-TRICHLOROBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,2,4-TRIMETHYLBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,2-DIBROMO-3-CHLOROPROPANE	2.0	2.0J,U,Q 4,		UJ	ug/L	Ms
				1,2-DICHLOROBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,2-DICHLOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,2-DICHLOROPROPANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,3,5-TRIMETHYLBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,3-DICHLOROBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
				1,3-DICHLOROPROPANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				1,4-DICHLOROBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				2,2-DICHLOROPROPANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms, Ccv
				2-BUTANONE	4.0	4.0J,U,Q 4,		UJ	ug/L	Ms
				2-CHLOROTOLUENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				4-CHLOROTOLUENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				ACETONE	4.0	6.9J,Q4, Q6		J	ug/L	Ms, Ms
				BENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				BROMOBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				BROMOCHLOROMETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				BROMODICHLOROMETHANE	0.5	0.5J,Q4, Q6		J	ug/L	Ms, Ms
				BROMOFORM	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				BROMOMETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				CARBON TETRACHLORIDE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				CHLOROBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				CHLOROETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				CHLOROFORM	0.5	12J,Q4, Q6		J-	ug/L	Ms
				CHLOROMETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				CIS-1,2-DICHLOROETHENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms

**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
				CIS-1,3-DICHLOROPROPENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				DIBROMOCHLOROMETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				DIBROMOMETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				DICHLORODIFLUOROMETHANE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ccv
				ETHYLBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				HEXACHLOROBUTADIENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				ISOPROPYLBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				m&p-Xylene	1.0	1.0J,U,Q 6,		UJ	ug/L	Ms
				METHYL TERT-BUTYL ETHER	2.0	2.0J,U,Q 6,		UJ	ug/L	Ms
				METHYLENE CHLORIDE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	Ms, IcRsd
				N-BUTYLBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				N-PROPYLBENZENE	0.5	0.5J,U,Q 6,		UJ	ug/L	Ms
				O-XYLENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				P-ISOPROPYLTOLUENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				SEC-BUTYLBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				STYRENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				TERT-BUTYLBENZENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				TETRACHLOROETHENE	0.5	15J,Q4, Q6		J-	ug/L	Ms

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
				TOLUENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				TRANS-1,2-DICHLOROETHENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				TRICHLOROETHENE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms
				TRICHLOROFLUOROMETHANE	0.5	0.5J,Q4, Q6		J	ug/L	Ms, Ms, M
				VINYL CHLORIDE	0.5	0.5J,U,Q 4,		UJ	ug/L	Ms, Ccv
524.2	MW-16C-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ccv
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-22A-1Q13	Water	N	CHLOROFORM	0.5	5.1J,Q4		J+	ug/L	Ms
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
524.2	MW-23A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
524.2	MW-24B-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
524.2	MW-25B-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd

N = Normal Sample    TB = Trip Blank  
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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
524.2	MW-26B-1Q13	Water	N	2-BUTANONE	4.0	2.8J,C1		J	ug/L	RI
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
				TETRACHLOROETHENE	0.5	0.4J,C1		J	ug/L	RI
524.2	MW-27B-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
524.2	MW-28B-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
524.2	MW-29B-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
524.2	MW-2A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
524.2	MW-304-1Q13	Water	TB	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
524.2	MW-305-1Q13	Water	TB	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-3A-1Q13	Water	N	2,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ccv
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5U		UJ	ug/L	IcRsd
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
524.2	MW-401-1Q13	Water	FB	1,1,1,2-TETRACHLOROETHANE	0.5	0.5U		UJ	ug/L	Ms
				1,1,2,2-TETRACHLOROETHANE	0.5	0.5U		UJ	ug/L	Ms
				1,1,2-TRICHLOROETHANE	0.5	0.5U		UJ	ug/L	Ms
				1,2,3-TRICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ms
				1,2,4-TRICHLOROBENZENE	0.5	0.5U		UJ	ug/L	Ms
				1,2,4-TRIMETHYLBENZENE	0.5	0.5U		UJ	ug/L	Ms
				1,2-DIBROMO-3-CHLOROPROPANE	2.0	2.0U		UJ	ug/L	Ms
				1,2-DICHLOROBENZENE	0.5	0.5U		UJ	ug/L	Ms
				1,2-DICHLOROETHANE	0.5	0.5U		UJ	ug/L	Ms
				1,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ms
				1,3,5-TRIMETHYLBENZENE	0.5	0.5U		UJ	ug/L	Ms
				1,3-DICHLOROBENZENE	0.5	0.5U		UJ	ug/L	Ms
				1,3-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ms
				1,4-DICHLOROBENZENE	0.5	0.5U		UJ	ug/L	Ms
				2-CHLOROTOLUENE	0.5	0.5U		UJ	ug/L	Ms
				4-CHLOROTOLUENE	0.5	0.5U		UJ	ug/L	Ms
				BENZENE	0.5	0.5U		UJ	ug/L	Ms
				BROMOBENZENE	0.5	0.5U		UJ	ug/L	Ms
				BROMOCHLOROMETHANE	0.5	0.5U		UJ	ug/L	Ms
				BROMODICHLOROMETHANE	0.5	0.5U		UJ	ug/L	Ms
				CHLOROBENZENE	0.5	0.5U		UJ	ug/L	Ms
				CIS-1,2-DICHLOROETHENE	0.5	0.5U		UJ	ug/L	Ms
				CIS-1,3-DICHLOROPROPENE	0.5	0.5U		UJ	ug/L	Ms
				DIBROMOCHLOROMETHANE	0.5	0.5U		UJ	ug/L	Ms
				DIBROMOMETHANE	0.5	0.5U		UJ	ug/L	Ms
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				m&p-Xylene	1.0	1.0U		UJ	ug/L	Ms
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				O-XYLENE	0.5	0.5U		UJ	ug/L	Ms
				P-ISOPROPYLTOLUENE	0.5	0.5U		UJ	ug/L	Ms
				STYRENE	0.5	0.5U		UJ	ug/L	Ms

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
				TOLUENE	0.5	0.5U		UJ	ug/L	Ms
				TRANS-1,3-DICHLOROPROPENE	0.5	0.5U		UJ	ug/L	Ms
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-4A-1Q13	Water	N							
				2,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ccv
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-4B-1Q13	Water	N							
				2,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ccv
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-4C-1Q13	Water	N							
				2,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ccv
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-5A-1Q13	Water	N							
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
524.2	MW-6A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-71B-1Q13	Water	FD	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-77A-1Q13	Water	FD	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-7A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3,		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-8A-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088B</b>										
524.2	MW-90B-1Q13	Water	FD	2,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ccv
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-97A-1Q13	Water	FD	2,2-DICHLOROPROPANE	0.5	0.5U		UJ	ug/L	Ccv
				DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv
524.2	MW-9B-1Q13	Water	N	DICHLORODIFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				NAPHTHALENE	0.5	0.5J,U,C 3		UJ	ug/L	IcRsd
				TRICHLOROFLUOROMETHANE	0.5	0.5U		UJ	ug/L	Ccv
				VINYL CHLORIDE	0.5	0.5U		UJ	ug/L	Ccv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088C</b>										
TO-15	DP-1A-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
TO-15	DP-1B-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				CHLOROFORM	2.6	2.4J,C1		J	ppbv	RI
				TRICHLOROFLUOROMETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
TO-15	DP-5A-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.6	2.6J,U,C 3		UJ	ppbv	lcv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088C</b>										
TO-15	DP-5B-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				TETRACHLOROETHENE	2.6	1.5J,C1		J	ppbv	RI
				TRICHLOROFLUOROMETHANE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.6	2.6J,U,C 3		UJ	ppbv	lcv
TO-15	DP-6B-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
TO-15	DP-94A-1Q13	Air	FD	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
TO-15	OSVE-10-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.5	2.5J,U,C 3		UJ	ppbv	lcv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088C</b>										
TO-15	OSVE-11-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				TETRACHLOROETHENE	2.5	2.4J,C1		J	ppbv	RI
				TOLUENE	2.5	2.2J,C1		J	ppbv	RI
				TRICHLOROFLUOROMETHANE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.5	2.5J,U,C 3		UJ	ppbv	lcv
TO-15	SVE-1-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
TO-15	SVE-2-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.4	2.4J,U,C 3		UJ	ppbv	lcv

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**Table 4: Overall Qualified Results**

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Overall Qualifier	Units	Reason Code
<b>SDG: 13088C</b>										
TO-15	SVE-3-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				TETRACHLOROETHENE	2.4	1.7J,C1		J	ppbv	RI
				TRICHLOROFLUOROMETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
TO-15	SVE-4-1Q13	Air	N	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
TO-15	SVE-96-1Q13	Air	FD	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				1,2-DICHLOROTETRAFLUOROETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				TRICHLOROFLUOROMETHANE	2.4	2.4J,U,C 3		UJ	ppbv	lcv
				VINYL CHLORIDE	2.4	2.4J,U,C 3		UJ	ppbv	lcv

N = Normal Sample    TB = Trip Blank  
 FD = Field Duplicate    FB = Field Blank

## **Table 5**

### **Analytical Completeness**

# Analytical Completeness Report

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**Project No. /** R13S37 / Modesto SVE Winter 2013 Sampling ; R13S53 / Modesto Groundwater March 2013 Qtrly  
**Name :** Monitoring

<b>Analytical Method</b>	<b>Total Number of Analytes</b>	<b>Number of Qualified</b>	<b>Percent Completeness</b>
524.2	2961	282	90.5
TO-15	747	65	91.3
<b>Total</b>	<b>3708</b>	<b>347</b>	<b>90.6</b>

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Note:

$$\text{Percent Completeness} = \frac{\text{Number of Unqualified Results}}{\text{Number of Reported Results}} * 100 \%$$

## **Table 6**

### **Contract Compliance Completeness**

# Contract Compliance Completeness Report

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**Project No. /** R13S37 / Modesto SVE Winter 2013 Sampling ; R13S53 / Modesto Groundwater March 2013 Qtrly  
**Name :** Monitoring

<b>Analytical Method</b>	<b>Total Number of Analytes</b>	<b>Number of Qualified</b>	<b>Percent Completeness</b>
524.2	2961	188	93.7
TO-15	747	64	91.4
<b>Total</b>	<b>3708</b>	<b>252</b>	<b>93.2</b>

## **Table 7**

### **Technical Completeness**

# Technical Completeness Report

Project No. / Name : R13S37 / Modesto SVE Winter 2013 Sampling ; R13S53 / Modesto Groundwater March 2013 Qtrly Monitoring

Analytical Method	Total Number of Analytes	Number of Rejects	Percent Completeness
524.2	2961	0	100.0
TO-15	747	0	100.0
<b>Total</b>	<b>3708</b>	<b>0</b>	<b>100.0</b>

Note: 
$$\text{Percent Completeness} = \frac{\text{Number of Useable Results}}{\text{Number of Reported Results}} * 100 \%$$
 [ Useable results are qualified but not Rejected data ]

## **Table 8**

### **Reasons for Qualified Results**

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group ( SDG )	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13011C	SVE Pre GAC-0102	TO-15	100-42-5		J	STYRENE	LCS spike recovery
13011C	SVE Stack-0102	TO-15	100-42-5		J	STYRENE	LCS spike recovery
13038B	SVE Pre GAC-0202	TO-15	75-34-3		J	1,1-DICHLOROETHANE	LCS spike recovery
13038B	SVE Pre GAC-0202	TO-15	127-18-4	J		TETRACHLOROETHENE	Lab Duplicate RPD
13038B	SVE Pre GAC-0202DUP	TO-15	127-18-4	J		TETRACHLOROETHENE	Lab Duplicate RPD
13038B	SVE Stack-0202	TO-15	75-34-3		J	1,1-DICHLOROETHANE	LCS spike recovery
13088A	MW-10A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-10A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-10B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-10B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-10C-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-10C-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-11A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-11A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-13A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-13A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-14A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-14A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-15A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-15A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-16A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-16A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-16B-1Q13	524.2	75-71-8	J		DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088A	MW-16B-1Q13	524.2	75-71-8	J+		DICHLORODIFLUOROMETHANE	LCS spike recovery
13088A	MW-16B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-17A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-17A-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-17A-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-17A-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-17A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-17A-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD

**Reason for Qualified Results**

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group ( SDG )	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088A	MW-17A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-17A-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-17B-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-17B-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-17B-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-17B-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-17B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-17B-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-17B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-17B-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-17C-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-17C-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-17C-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-17C-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-17C-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-17C-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-17C-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-17C-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-18A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-18A-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-18A-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-18A-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-18A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-18A-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-18A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-18A-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-19A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-19A-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-19A-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-19A-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088A	MW-19A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-19A-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-19A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-19A-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-19B-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-19B-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-19B-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-19B-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-19B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-19B-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-19B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-19B-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-1A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-1A-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-1A-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-1A-1Q13	524.2	67-64-1	J-		ACETONE	Matrix spike recovery
13088A	MW-1A-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-1A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-1A-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-1A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-1A-1Q13	524.2	127-18-4	J+		TETRACHLOROETHENE	Matrix spike recovery
13088A	MW-1A-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-20A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-20A-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-20A-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-20A-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-20A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-20A-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-20A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088A	MW-20A-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-20B-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-20B-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-20B-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-20B-1Q13	524.2	67-64-1	J-		ACETONE	Matrix spike recovery
13088A	MW-20B-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-20B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-20B-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-20B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-20B-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-20C-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-20C-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-20C-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-20C-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-20C-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-20C-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-20C-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-20C-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088A	MW-21A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Initial calibration %RSD
13088A	MW-21A-1Q13	524.2	67-64-1	J		ACETONE	Continuing calibration percent difference
13088A	MW-21A-1Q13	524.2	67-64-1	J-		ACETONE	LCS spike recovery
13088A	MW-21A-1Q13	524.2	74-83-9		J	BROMOMETHANE	Initial calibration %RSD
13088A	MW-21A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Initial calibration verification percent difference
13088A	MW-21A-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Initial calibration %RSD
13088A	MW-21A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088A	MW-21A-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Initial calibration %RSD
13088B	MW-12A-1Q13	524.2	630-20-6		J	1,1,1,2-TETRACHLOROETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	71-55-6		J	1,1,1-TRICHLOROETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	79-34-5		J	1,1,2,2-TETRACHLOROETHANE	Matrix spike recovery

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088B	MW-12A-1Q13	524.2	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	79-00-5		J	1,1,2-TRICHLOROETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	75-34-3		J	1,1-DICHLOROETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	75-35-4		J	1,1-DICHLOROETHENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	563-58-6		J	1,1-DICHLOROPROPENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	87-61-6		J	1,2,3-TRICHLOROBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	96-18-4		J	1,2,3-TRICHLOROPROPANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	120-82-1		J	1,2,4-TRICHLOROBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	95-63-6		J	1,2,4-TRIMETHYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	96-12-8		J	1,2-DIBROMO-3-CHLOROPROPANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	95-50-1		J	1,2-DICHLOROBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	107-06-2		J	1,2-DICHLOROETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	78-87-5		J	1,2-DICHLOROPROPANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	108-67-8		J	1,3,5-TRIMETHYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	541-73-1		J	1,3-DICHLOROBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	142-28-9		J	1,3-DICHLOROPROPANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	106-46-7		J	1,4-DICHLOROBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference
13088B	MW-12A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	78-93-3		J	2-BUTANONE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	95-49-8		J	2-CHLOROTOLUENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	106-43-4		J	4-CHLOROTOLUENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	67-64-1	J		ACETONE	Matrix spike Recovery and RPD
13088B	MW-12A-1Q13	524.2	71-43-2		J	BENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	108-86-1		J	BROMOBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	74-97-5		J	BROMOCHLOROMETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	75-27-4	J		BROMODICHLOROMETHANE	Matrix spike Recovery and RPD
13088B	MW-12A-1Q13	524.2	75-25-2		J	BROMOFORM	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	74-83-9		J	BROMOMETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	56-23-5		J	CARBON TETRACHLORIDE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	108-90-7		J	CHLOROBENZENE	Matrix spike recovery

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088B	MW-12A-1Q13	524.2	75-00-3		J	CHLOROETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	67-66-3	J-		CHLOROFORM	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	74-87-3		J	CHLOROMETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	156-59-2		J	CIS-1,2-DICHLOROETHENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	10061-01-5		J	CIS-1,3-DICHLOROPROPENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	124-48-1		J	DIBROMOCHLOROMETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	74-95-3		J	DIBROMOMETHANE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-12A-1Q13	524.2	100-41-4		J	ETHYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	87-68-3		J	HEXACHLOROBUTADIENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	98-82-8		J	ISOPROPYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	179601-23-1		J	m&p-Xylene	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	1634-04-4		J	METHYL TERT-BUTYL ETHER	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	75-09-2		J	METHYLENE CHLORIDE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-12A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	104-51-8		J	N-BUTYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	103-65-1		J	N-PROPYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	95-47-6		J	O-XYLENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	99-87-6		J	P-ISOPROPYLTOLUENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	135-98-8		J	SEC-BUTYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	100-42-5		J	STYRENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	98-06-6		J	TERT-BUTYLBENZENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	127-18-4	J-		TETRACHLOROETHENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	108-88-3		J	TOLUENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	156-60-5		J	TRANS-1,2-DICHLOROETHENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	79-01-6		J	TRICHLOROETHENE	Matrix spike recovery
13088B	MW-12A-1Q13	524.2	75-69-4	J		TRICHLOROFLUOROMETHANE	Matrix spike Recovery and RPD
13088B	MW-12A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-12A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Matrix spike recovery
13088B	MW-16C-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088B	MW-16C-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-16C-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-16C-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-22A-1Q13	524.2	67-66-3	J+		CHLOROFORM	Matrix spike recovery
13088B	MW-22A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-22A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-23A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-23A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-24B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-24B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-25B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-25B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-26B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-26B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-27B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-27B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-28B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-28B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-29B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-29B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-2A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-2A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-304-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-304-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-304-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-304-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-305-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-305-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-305-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-305-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-3A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference
13088B	MW-3A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088B	MW-3A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-3A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-401-1Q13	524.2	630-20-6		J	1,1,1,2-TETRACHLOROETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	79-34-5		J	1,1,2,2-TETRACHLOROETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	79-00-5		J	1,1,2-TRICHLOROETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	96-18-4		J	1,2,3-TRICHLOROPROPANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	120-82-1		J	1,2,4-TRICHLOROBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	95-63-6		J	1,2,4-TRIMETHYLBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	96-12-8		J	1,2-DIBROMO-3-CHLOROPROPANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	95-50-1		J	1,2-DICHLOROBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	107-06-2		J	1,2-DICHLOROETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	78-87-5		J	1,2-DICHLOROPROPANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	108-67-8		J	1,3,5-TRIMETHYLBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	541-73-1		J	1,3-DICHLOROBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	142-28-9		J	1,3-DICHLOROPROPANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	106-46-7		J	1,4-DICHLOROBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	95-49-8		J	2-CHLOROTOLUENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	106-43-4		J	4-CHLOROTOLUENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	71-43-2		J	BENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	108-86-1		J	BROMOBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	74-97-5		J	BROMOCHLOROMETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	75-27-4		J	BROMODICHLOROMETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	108-90-7		J	CHLOROBENZENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	156-59-2		J	CIS-1,2-DICHLOROETHENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	10061-01-5		J	CIS-1,3-DICHLOROPROPENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	124-48-1		J	DIBROMOCHLOROMETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	74-95-3		J	DIBROMOMETHANE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-401-1Q13	524.2	179601-23-1		J	m&p-Xylene	Matrix spike recovery
13088B	MW-401-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-401-1Q13	524.2	95-47-6		J	O-XYLENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	99-87-6		J	P-ISOPROPYLTOLUENE	Matrix spike recovery

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group ( SDG )	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088B	MW-401-1Q13	524.2	100-42-5		J	STYRENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	108-88-3		J	TOLUENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	10061-02-6		J	TRANS-1,3-DICHLOROPROPENE	Matrix spike recovery
13088B	MW-401-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-401-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-4A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference
13088B	MW-4A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-4A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-4A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-4B-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference
13088B	MW-4B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-4B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-4B-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-4C-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference
13088B	MW-4C-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-4C-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-4C-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-5A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-5A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-5A-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-5A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-6A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-6A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-6A-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-6A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-71B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-71B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-71B-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-71B-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-77A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-77A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-77A-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference

**Reason for Qualified Results**

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group ( SDG )	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088B	MW-77A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-7A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-7A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-7A-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-7A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-8A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-8A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-8A-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-8A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-90B-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference
13088B	MW-90B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-90B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-90B-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-97A-1Q13	524.2	594-20-7		J	2,2-DICHLOROPROPANE	Continuing calibration percent difference
13088B	MW-97A-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-97A-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-97A-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088B	MW-9B-1Q13	524.2	75-71-8		J	DICHLORODIFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-9B-1Q13	524.2	91-20-3		J	NAPHTHALENE	Initial calibration %RSD
13088B	MW-9B-1Q13	524.2	75-69-4		J	TRICHLOROFLUOROMETHANE	Continuing calibration percent difference
13088B	MW-9B-1Q13	524.2	75-01-4		J	VINYL CHLORIDE	Continuing calibration percent difference
13088C	DP-1A-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-1A-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUROETHANE	Initial calibration verification percent difference
13088C	DP-1A-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	DP-1A-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	DP-1B-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-1B-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUROETHANE	Initial calibration verification percent difference
13088C	DP-1B-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088C	DP-1B-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	DP-5A-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-5A-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-5A-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	DP-5A-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	DP-5B-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-5B-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-5B-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	DP-5B-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	DP-6B-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-6B-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-6B-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	DP-6B-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	DP-94A-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-94A-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	DP-94A-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	DP-94A-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	OSVE-10-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	OSVE-10-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference

## Reason for Qualified Results

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088C	OSVE-10-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	OSVE-10-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	OSVE-11-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	OSVE-11-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	OSVE-11-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	OSVE-11-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	SVE-1-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	SVE-1-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	SVE-1-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	SVE-1-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	SVE-2-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	SVE-2-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	SVE-2-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	SVE-2-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	SVE-3-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	SVE-3-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUOROETHANE	Initial calibration verification percent difference
13088C	SVE-3-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	SVE-3-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	SVE-4-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference

**Reason for Qualified Results**

SDG Nos. : 13011C,13038B,13067C,13088A,13088B,13088C

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
13088C	SVE-4-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUROETHANE	Initial calibration verification percent difference
13088C	SVE-4-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	SVE-4-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference
13088C	SVE-96-1Q13	TO-15	76-13-1		J	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Initial calibration verification percent difference
13088C	SVE-96-1Q13	TO-15	76-14-2		J	1,2-DICHLOROTETRAFLUROETHANE	Initial calibration verification percent difference
13088C	SVE-96-1Q13	TO-15	75-69-4		J	TRICHLOROFLUOROMETHANE	Initial calibration verification percent difference
13088C	SVE-96-1Q13	TO-15	75-01-4		J	VINYL CHLORIDE	Initial calibration verification percent difference

## **Appendix A**

### **Data Qualification Summary Report**

**SDG 13011C**

# Data Qualifier Summary

Lab Reporting Batch ID: 13011C

Laboratory: FALSE

EDD Filename: 1301012 FINAL\_voc

eQAPP Name: Modesto\_Site\_062812

**Method Category:** VOA  
**Method:** TO-15 **Matrix:** Air

Sample ID: SVE Pre GAC-0102      Collected: 1/9/2013 11:59:00      Analysis Type: Reinjection-01      Dilution: 2.36

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STYRENE	2.4	J,U,C3,Q2	1.2	MDL	2.4	MRL	ppbv	UJ	Lcs, Ccv

Sample ID: SVE Stack-0102      Collected: 1/9/2013 11:53:00      Analysis Type: Initial      Dilution: 2.37

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CIS-1,2-DICHLOROETHENE	1.2	J,C1	1.2	MDL	2.4	MRL	ppbv	J	RI
STYRENE	2.4	J,U,C3,Q2	1.2	MDL	2.4	MRL	ppbv	UJ	Lcs, Ccv

\* denotes a non-reportable result

Project Name and Number: R13S37 - Modesto SVE Winter 2013 Sampling

2/19/2013 10:36:51 AM

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# Data Qualifier Summary

Lab Reporting Batch ID: 13011C  
EDD Filename: 1301012 FINAL\_voc

Laboratory: FALSE  
eQAPP Name: Modesto\_Site\_062812

## Reason Code Legend

<i>Reason Code</i>	<i>Description</i>
Ccv	Continuing Calibration Verification Percent Recovery Lower Estimation
Lcs	Laboratory Control Spike Lower Estimation
RI	Reporting Limit Trace Value

\* denotes a non-reportable result

Project Name and Number: R13S37 - Modesto SVE Winter 2013 Sampling

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**SDG 13038B**

# Data Qualifier Summary

Lab Reporting Batch ID: 13038B

Laboratory: FALSE

EDD Filename: 13038b\_voc\_1302009 FINAL

eQAPP Name: Modesto\_Site\_062812

**Method Category:** VOA  
**Method:** TO-15 **Matrix:** Air

Sample ID: SVE Pre GAC-0202      Collected: 2/6/2013 11:05:00      Analysis Type: Initial      Dilution: 2.52

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	130	J,Q5	13	MDL	25	MRL	ppbv	J	Ld

Sample ID: SVE Pre GAC-0202      Collected: 2/6/2013 11:05:00      Analysis Type: Reinjection-01      Dilution: 2.52

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHANE	2.5	J,U,Q2	1.3	MDL	2.5	MRL	ppbv	UJ	Lcs

Sample ID: SVE Stack-0202      Collected: 2/6/2013 11:00:00      Analysis Type: Initial      Dilution: 2.47

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHANE	2.5	J,U,Q2	1.2	MDL	2.5	MRL	ppbv	UJ	Lcs
1,2,4-TRICHLOROBENZENE	1.6	J,C1	1.2	MDL	2.5	MRL	ppbv	J	RI
CIS-1,2-DICHLOROETHENE	1.3	J,C1	1.2	MDL	2.5	MRL	ppbv	J	RI

\* denotes a non-reportable result

Project Name and Number: R13S37 - Modesto SVE Winter 2013 Sampling

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# Data Qualifier Summary

Lab Reporting Batch ID: 13038B

Laboratory: FALSE

EDD Filename: 13038b\_voc\_1302009 FINAL

eQAPP Name: Modesto\_Site\_062812

## Reason Code Legend

<i>Reason Code</i>	<i>Description</i>
Lcs	Laboratory Control Spike Lower Estimation
Ld	Laboratory Duplicate Precision
RI	Reporting Limit Trace Value

\* denotes a non-reportable result

Project Name and Number: R13S37 - Modesto SVE Winter 2013 Sampling

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**SDG 13067C**

## ***Data Qualifier Summary***

Lab Reporting Batch ID: 13067C

Laboratory: FALSE

EDD Filename: 1303012 FINAL\_voc\_air\_rev

eQAPP Name: Modesto\_Site\_062812

**No Data Review Qualifiers Applied.**

**SDG 13088C**

# Data Qualifier Summary

Lab Reporting Batch ID: 13088C

Laboratory: FALSE

EDD Filename: 13088c\_voc\_1303067 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	TO-15	Matrix: Air

Sample ID: DP-1A-1Q13      Collected: 3/27/2013 10:05:00      Analysis Type: Initial      Dilution: 2.46

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv

Sample ID: DP-1B-1Q13      Collected: 3/27/2013 10:17:00      Analysis Type: Initial      Dilution: 2.57

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
CHLOROFORM	2.4	J,C1	1.3	MDL	2.6	MRL	ppbv	J	RI
TRICHLOROFLUOROMETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv

Sample ID: DP-5A-1Q13      Collected: 3/27/2013 8:13:00      Analysis Type: Initial      Dilution: 2.59

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv

Sample ID: DP-5B-1Q13      Collected: 3/27/2013 8:29:00      Analysis Type: Initial      Dilution: 2.58

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
TETRACHLOROETHENE	1.5	J,C1	1.3	MDL	2.6	MRL	ppbv	J	RI
TRICHLOROFLUOROMETHANE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.6	J,U,C3	1.3	MDL	2.6	MRL	ppbv	UJ	lcv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088C

Laboratory: FALSE

EDD Filename: 13088c\_voc\_1303067 FINAL

eQAPP Name: Modesto\_Site\_042613

<b>Method Category:</b>	VOA	
<b>Method:</b>	TO-15	<b>Matrix:</b> Air

Sample ID: DP-6B-1Q13      Collected: 3/27/2013 10:55:00      Analysis Type: Initial      Dilution: 2.47

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv

Sample ID: DP-94A-1Q13      Collected: 3/27/2013 12:00:00      Analysis Type: Initial      Dilution: 2.44

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv

Sample ID: OSVE-10-1Q13      Collected: 3/27/2013 2:42:00      Analysis Type: Initial      Dilution: 2.47

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv

Sample ID: OSVE-11-1Q13      Collected: 3/27/2013 2:30:00      Analysis Type: Initial      Dilution: 2.47

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
TETRACHLOROETHENE	2.4	J,C1	1.2	MDL	2.5	MRL	ppbv	J	RI
TOLUENE	2.2	J,C1	1.2	MDL	2.5	MRL	ppbv	J	RI
TRICHLOROFLUOROMETHANE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.5	J,U,C3	1.2	MDL	2.5	MRL	ppbv	UJ	lcv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088C

Laboratory: FALSE

EDD Filename: 13088c\_voc\_1303067 FINAL

eQAPP Name: Modesto\_Site\_042613

<b>Method Category:</b>	VOA	
<b>Method:</b>	TO-15	<b>Matrix:</b> Air

Sample ID: SVE-1-1Q13      Collected: 3/27/2013 8:48:00      Analysis Type: Initial      Dilution: 2.45

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv

Sample ID: SVE-2-1Q13      Collected: 3/27/2013 9:48:00      Analysis Type: Initial      Dilution: 2.44

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv

Sample ID: SVE-3-1Q13      Collected: 3/27/2013 9:11:00      Analysis Type: Initial      Dilution: 2.44

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
TETRACHLOROETHENE	1.7	J,C1	1.2	MDL	2.4	MRL	ppbv	J	RI
TRICHLOROFLUOROMETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv

Sample ID: SVE-4-1Q13      Collected: 3/27/2013 9:31:00      Analysis Type: Initial      Dilution: 2.36

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088C

Laboratory: FALSE

EDD Filename: 13088c\_voc\_1303067 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method Category:** VOA  
**Method:** TO-15 **Matrix:** Air

Sample ID: SVE-96-1Q13

Collected: 3/27/2013 9:31:00

Analysis Type: Initial

Dilution: 2.36

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
1,2-DICHLOROTETRAFLUROETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
TRICHLOROFLUOROMETHANE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv
VINYL CHLORIDE	2.4	J,U,C3	1.2	MDL	2.4	MRL	ppbv	UJ	lcv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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## Data Qualifier Summary

Lab Reporting Batch ID: 13088C

Laboratory: FALSE

EDD Filename: 13088c\_voc\_1303067 FINAL

eQAPP Name: Modesto\_Site\_042613

### Reason Code Legend

<i>Reason Code</i>	<i>Description</i>
Icv	Initial Calibration Verification Percent Difference Lower Estimation
RI	Reporting Limit Trace Value

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

5/7/2013 8:25:59 AM

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**SDG 13088A**

# Data Qualifier Summary

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

<b>Method Category:</b>	VOA	
<b>Method:</b>	524.2	<b>Matrix:</b> Water

<b>Sample ID:</b> MW-10A-1Q13	<b>Collected:</b> 3/28/2013 9:06:00	<b>Analysis Type:</b> Initial2	<b>Dilution:</b> 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,Q3,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

<b>Sample ID:</b> MW-10B-1Q13	<b>Collected:</b> 3/28/2013 9:13:00	<b>Analysis Type:</b> Initial	<b>Dilution:</b> 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	3.4	J,C1,Q3	2.0	MDL	4.0	MRL	ug/L	J	RI
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

<b>Sample ID:</b> MW-10C-1Q13	<b>Collected:</b> 3/28/2013 9:21:00	<b>Analysis Type:</b> Initial	<b>Dilution:</b> 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	J,U,Q4	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

<b>Sample ID:</b> MW-11A-1Q13	<b>Collected:</b> 3/28/2013 9:57:00	<b>Analysis Type:</b> Initial	<b>Dilution:</b> 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

<b>Sample ID:</b> MW-13A-1Q13	<b>Collected:</b> 3/26/2013 2:47:00	<b>Analysis Type:</b> Initial2	<b>Dilution:</b> 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

<b>Sample ID:</b> MW-14A-1Q13	<b>Collected:</b> 3/28/2013 9:47:00	<b>Analysis Type:</b> Initial1	<b>Dilution:</b> 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

4/29/2013 8:52:49 AM

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA								
Method:	524.2	Matrix:	Water						

Sample ID: MW-14A-1Q13	Collected: 3/28/2013 9:47:00	Analysis Type: Initial1-	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-15A-1Q13	Collected: 3/26/2013 10:32:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-16A-1Q13	Collected: 3/26/2013 8:18:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-16B-1Q13	Collected: 3/26/2013 8:27:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI, Lcs, Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-17A-1Q13	Collected: 3/26/2013 12:50:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	4.1	J,C4	2.0	MDL	4.0	MRL	ug/L	J	Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

<b>Method Category:</b>	VOA	
<b>Method:</b>	524.2	<b>Matrix:</b> Water

Sample ID: MW-17B-1Q13	Collected: 3/26/2013 12:57:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	3.2	J,C1,C4	2.0	MDL	4.0	MRL	ug/L	J	RI, Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
CHLOROFORM	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-17C-1Q13	Collected: 3/26/2013 1:05:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	4.5	J,C4	2.0	MDL	4.0	MRL	ug/L	J	Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-18A-1Q13	Collected: 3/28/2013 8:54:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	3.6	J,C1,C4	2.0	MDL	4.0	MRL	ug/L	J	RI, Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Sample ID: MW-19A-1Q13      Collected: 3/26/2013 9:42:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	4.4	J,C4	2.0	MDL	4.0	MRL	ug/L	J	Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-19B-1Q13      Collected: 3/26/2013 9:50:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	5.3	J,C4	2.0	MDL	4.0	MRL	ug/L	J	Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TETRACHLOROETHENE	0.3	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-1A-1Q13      Collected: 3/28/2013 10:24:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	3.4	J,Q4,C4	2.0	MDL	4.0	MRL	ug/L	J	RI, Ms, Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3,C4	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TETRACHLOROETHENE	1.2	J,Q4	0.2	MDL	0.5	MRL	ug/L	J+	Ms
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Sample ID: MW-20A-1Q13	Collected: 3/26/2013 9:12:00	Analysis Type: Initial1	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	6.5	J,C4	2.0	MDL	4.0	MRL	ug/L	J	Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	1.5	J,C3	0.2	MDL	0.5	MRL	ug/L	J	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-20B-1Q13	Collected: 3/26/2013 9:19:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	2.2	J,C1,C4,Q4	2.0	MDL	4.0	MRL	ug/L	J	RI, Ms, Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-20C-1Q13	Collected: 3/26/2013 9:27:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	5.1	J,C4	2.0	MDL	4.0	MRL	ug/L	J	Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method Category:** VOA  
**Method:** 524.2 **Matrix:** Water

Sample ID: MW-21A-1Q13

Collected: 3/26/2013 7:54:00

Analysis Type: Initial

Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
ACETONE	4.2	J,C4	2.0	MDL	4.0	MRL	ug/L	J	Lcs, Ccv
BROMOMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
DICHLORODIFLUOROMETHANE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	Icv
METHYLENE CHLORIDE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
NAPHTHALENE	0.5	J,U,C3,C4	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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## Data Qualifier Summary

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

### Reason Code Legend

<i>Reason Code</i>	<i>Description</i>
Ccv	Continuing Calibration Verification Percent Difference Lower Estimation
IcRsd	Initial Calibration Percent Relative Standard Deviation
Icv	Initial Calibration Verification Percent Difference Lower Estimation
Lcs	Laboratory Control Spike Lower Estimation
Lcs	Laboratory Control Spike Upper Estimation
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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**SDG 13088B**

# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA		
Method:	524.2	Matrix:	Water

Sample ID: MW-12A-1Q13

Collected: 3/26/2013 10:18:00

Analysis Type: Initial

Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,1,2-TETRACHLOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1,1-TRICHLOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1,2,2-TETRACHLOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1,2-TRICHLOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1-DICHLOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1-DICHLOROETHENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1-DICHLOROPROPENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2,3-TRICHLOROBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2,3-TRICHLOROPROPANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2,4-TRICHLOROBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2,4-TRIMETHYLBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2-DIBROMO-3-CHLOROPROPANE	2.0	J,U,Q4,Q6	1.0	MDL	2.0	MRL	ug/L	UJ	Ms
1,2-DICHLOROBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2-DICHLOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2-DICHLOROPROPANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,3,5-TRIMETHYLBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,3-DICHLOROBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,3-DICHLOROPROPANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,4-DICHLOROBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
2,2-DICHLOROPROPANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms, Ccv
2-BUTANONE	4.0	J,U,Q4,Q6	2.0	MDL	4.0	MRL	ug/L	UJ	Ms
2-CHLOROTOLUENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
4-CHLOROTOLUENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
ACETONE	6.9	J,Q4,Q6	2.0	MDL	4.0	MRL	ug/L	J	Ms, Ms
BENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMOBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMOCHLOROMETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMODICHLOROMETHANE	0.5	J,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	J	Ms, Ms
BROMOFORM	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMOMETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
CARBON TETRACHLORIDE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
CHLOROBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
CHLOROETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	12	J,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	J-	Ms
CHLOROMETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
CIS-1,2-DICHLOROETHENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
CIS-1,3-DICHLOROPROPENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
DIBROMOCHLOROMETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
DIBROMOMETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
DICHLORODIFLUOROMETHANE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
ETHYLBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
HEXACHLOROBUTADIENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
ISOPROPYLBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
m&p-Xylene	1.0	J,U,Q6,Q4	0.5	MDL	1.0	MRL	ug/L	UJ	Ms
METHYL TERT-BUTYL ETHER	2.0	J,U,Q6,Q4	1.0	MDL	2.0	MRL	ug/L	UJ	Ms
METHYLENE CHLORIDE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
NAPHTHALENE	0.5	J,U,C3,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms, IcRsd
N-BUTYLBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
N-PROPYLBENZENE	0.5	J,U,Q6,Q4	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
O-XYLENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
P-ISOPROPYLTOLUENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
SEC-BUTYLBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
STYRENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TERT-BUTYLBENZENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TETRACHLOROETHENE	15	J,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	J-	Ms
TOLUENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TRANS-1,2-DICHLOROETHENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TRANS-1,3-DICHLOROPROPENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TRICHLOROETHENE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TRICHLOROFLUOROMETHANE	0.5	J,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	J	Ms, Ms, Ms
VINYL CHLORIDE	0.5	J,U,Q4,Q6	0.2	MDL	0.5	MRL	ug/L	UJ	Ms, Ccv

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

\* denotes a non-reportable result

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Sample ID: MW-16C-1Q13	Collected: 3/26/2013 8:33:00	Analysis Type: Initial-	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-22A-1Q13	Collected: 3/26/2013 7:47:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	5.1	J,Q4	0.2	MDL	0.5	MRL	ug/L	J+	Ms
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-23A-1Q13	Collected: 3/28/2013 8:42:00	Analysis Type: Initial2	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-24B-1Q13	Collected: 3/26/2013 2:37:00	Analysis Type: Initial2	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-25B-1Q13	Collected: 3/26/2013 8:03:00	Analysis Type: Initial1	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-26B-1Q13	Collected: 3/26/2013 12:34:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	2.8	J,C1	2.0	MDL	4.0	MRL	ug/L	J	RI
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TETRACHLOROETHENE	0.4	J,C1	0.2	MDL	0.5	MRL	ug/L	J	RI

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Sample ID: MW-27B-1Q13		Collected: 3/26/2013 12:22:00		Analysis Type: Initial		Dilution: 1			
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-28B-1Q13		Collected: 3/28/2013 8:22:00		Analysis Type: Initial2		Dilution: 1			
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-29B-1Q13		Collected: 3/26/2013 2:58:00		Analysis Type: Initial2		Dilution: 1			
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-2A-1Q13		Collected: 3/28/2013 10:36:00		Analysis Type: Initial		Dilution: 1			
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd

Sample ID: MW-304-1Q13		Collected: 3/26/2013 8:15:00		Analysis Type: Initial		Dilution: 1			
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-305-1Q13		Collected: 3/28/2013 8:30:00		Analysis Type: Initial		Dilution: 1			
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA		
Method:	524.2	Matrix:	Water

Sample ID: MW-305-1Q13      Collected: 3/28/2013 8:30:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-3A-1Q13      Collected: 3/28/2013 10:49:00      Analysis Type: Initial2      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-401-1Q13      Collected: 3/28/2013 10:53:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,1,2-TETRACHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1,2,2-TETRACHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,1,2-TRICHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2,3-TRICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2,4-TRICHLOROBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2,4-TRIMETHYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2-DIBROMO-3-CHLOROPROPANE	2.0	U	1.0	MDL	2.0	MRL	ug/L	UJ	Ms
1,2-DICHLOROBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2-DICHLOROETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,3,5-TRIMETHYLBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,3-DICHLOROBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,3-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
1,4-DICHLOROBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
2-CHLOROTOLUENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
4-CHLOROTOLUENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMOBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMOCHLOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
BROMODICHLOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
CHLOROBENZENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
CIS-1,2-DICHLOROETHENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms

\* denotes a non-reportable result

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Sample ID: MW-401-1Q13      Collected: 3/28/2013 10:53:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CIS-1,3-DICHLOROPROPENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
DIBROMOCHLOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
DIBROMOMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
m&p-Xylene	1.0	U	0.5	MDL	1.0	MRL	ug/L	UJ	Ms
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
O-XYLENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
P-ISOPROPYLTOLUENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
STYRENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TOLUENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TRANS-1,3-DICHLOROPROPENE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ms
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-4A-1Q13      Collected: 3/26/2013 2:08:00      Analysis Type: Initial1      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-4B-1Q13      Collected: 3/26/2013 2:15:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-4C-1Q13      Collected: 3/26/2013 2:22:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Sample ID: MW-4C-1Q13	Collected: 3/26/2013 2:22:00	Analysis Type: Initial-	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-5A-1Q13	Collected: 3/25/2013 3:00:00	Analysis Type: Initial2	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-6A-1Q13	Collected: 3/28/2013 9:38:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-71B-1Q13	Collected: 3/26/2013 12:00:00	Analysis Type: Initial1	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-77A-1Q13	Collected: 3/28/2013 12:00:00	Analysis Type: Initial	Dilution: 1						
Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method Category:	VOA	
Method:	524.2	Matrix: Water

Sample ID: MW-7A-1Q13      Collected: 3/28/2013 10:08:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3,Q3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-8A-1Q13      Collected: 3/25/2013 2:36:00      Analysis Type: Initial1      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-90B-1Q13      Collected: 3/28/2013 12:00:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-97A-1Q13      Collected: 3/28/2013 12:00:00      Analysis Type: Initial2      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,2-DICHLOROPROPANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

Sample ID: MW-9B-1Q13      Collected: 3/25/2013 2:26:00      Analysis Type: Initial      Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICHLORODIFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv
NAPHTHALENE	0.5	J,U,C3	0.2	MDL	0.5	MRL	ug/L	UJ	IcRsd
TRICHLOROFLUOROMETHANE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

5/13/2013 6:52:47 AM

ADR version 1.7.0.207

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method Category:** VOA  
**Method:** 524.2 **Matrix:** Water

Sample ID: MW-9B-1Q13

Collected: 3/25/2013 2:26:00

Analysis Type: Initial

Dilution: 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
VINYL CHLORIDE	0.5	U	0.2	MDL	0.5	MRL	ug/L	UJ	Ccv

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

5/13/2013 6:52:47 AM

ADR version 1.7.0.207

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# Data Qualifier Summary

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

## Reason Code Legend

<i>Reason Code</i>	<i>Description</i>
Ccv	Continuing Calibration Verification Percent Difference Lower Estimation
IcRsd	Initial Calibration Percent Relative Standard Deviation
Lcs	Laboratory Control Spike Upper Estimation
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value

\* denotes a non-reportable result

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

5/13/2013 6:52:47 AM

ADR version 1.7.0.207

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## **Appendix B**

### **Manual Validation Level III and IV Worksheets and ADR Reports**

**SDG 13011C**

# Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13011C

Laboratory: FALSE

EDD Filename: 1301012 FINAL\_voc

eQAPP Name: Modesto\_Site\_062812

**Method:** TO-15

**Matrix:** Air

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
B13A036-BS1 (SVE Pre GAC-0102 SVE Stack-0102)	STYRENE	54	-	69.00-122.00	-	STYRENE	J- (all detects) UJ (all non-detects)

# Reporting Limit Outliers

Lab Reporting Batch ID: 13011C

Laboratory: FALSE

EDD Filename: 1301012 FINAL\_voc

eQAPP Name: Modesto\_Site\_062812

Method: TO-15

Matrix: Air

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SVE Stack-0102	CIS-1,2-DICHLOROETHENE	J,C1	1.2	2.4	MRL	ppbv	J (all detects)

LDC #: 29167A48

## VALIDATION COMPLETENESS WORKSHEET

Date: 2-15-13

SDG #: 13011C

ADR

Page: 1 of 1

Laboratory: EPA Region 9 Laboratory

Reviewer: APL

2nd Reviewer: C

METHOD: GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/9/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	2 RSD ≤ 30
IV.	Continuing calibration/ICV	SW	CCV/ICV ≤ 30
V.	Blanks	N	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	Styrene ↓
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A <del>N</del>	
XI.	Target compound identification	N	
XII.	Compound quantitation/RL/LOQ/LODs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A <del>N</del>	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

Validated Samples:

Air

1	SVE Pre GAC-0102	11	B13A036- BLK	21		31	
2	SVE Stack-0102	12		22		32	
3	± 1 DUP	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

## TARGET COMPOUND WORKSHEET

**METHOD: VOA (EPA Method TO-15)**

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO. 1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP. 2-Propanol
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.



**SDG 13038B**

# Lab Duplicate Outlier Report

Lab Reporting Batch ID: 13038B

Laboratory: FALSE

EDD Filename: 13038b\_voc\_1302009 FINAL

eQAPP Name: Modesto\_Site\_062812

Method: TO-15

Matrix: Air

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
SVE Pre GAC-0202DUP (SVE Pre GAC-0202 SVE Stack-0202)	TETRACHLOROETHENE	21	20.00	J (all detects)

# Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13038B

Laboratory: FALSE

EDD Filename: 13038b\_voc\_1302009 FINAL

eQAPP Name: Modesto\_Site\_062812

*Method:* TO-15

*Matrix:* Air

<i>QC Sample ID (Associated Samples)</i>	<i>Compound</i>	<i>LCS %R</i>	<i>LCSD %R</i>	<i>%R Limits</i>	<i>RPD (Limits)</i>	<i>Affected Compounds</i>	<i>Flag</i>
B13B040-BS1 (SVE Pre GAC-0202 SVE Stack-0202)	1,1-DICHLOROETHANE	80	-	82.00-123.00	-	1,1-DICHLOROETHANE	J- (all detects) UJ (all non-detects)

# Reporting Limit Outliers

Lab Reporting Batch ID: 13038B

Laboratory: FALSE

EDD Filename: 13038b\_voc\_1302009 FINAL

eQAPP Name: Modesto\_Site\_062812

Method: TO-15

Matrix: Air

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SVE Stack-0202	1,2,4-TRICHLOROBENZENE	J,C1	1.6	2.5	MRL	ppbv	J (all detects)
	CIS-1,2-DICHLOROETHENE	J,C1	1.3	2.5	MRL	ppbv	

LDC #: 29308A48

## VALIDATION COMPLETENESS WORKSHEET

Date: 3/5/13

SDG #: 13038B

ADR/IV

Page: 1 of 1

Laboratory: EPA Region 9 Laboratory

Reviewer: BK

2nd Reviewer: ←

METHOD: GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/6/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤ 30%
IV.	Continuing calibration/ICV	A	ICV/CCV ≤ 30%
V.	Blanks	N	Not reviewed for ADR validation.
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	Not reviewed for ADR validation.
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	Not reviewed for ADR validation.
XI.	Target compound identification	N	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs		Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)		Not reviewed for ADR validation.
XIV.	System performance		Not reviewed for ADR validation.
XV.	Overall assessment of data		Not reviewed for ADR validation.
XVI.	Field duplicates		
XVII.	Field blanks	✓	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

1	SVE Pre GAC-0202**	11		21		31	B133040-mB
2	SVE Stack-0202	12		22		32	
3	SVE Pre GAC-0202DUP	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Modesto  
**Collection Date:** February 6, 2013  
**LDC Report Date:** March 8, 2013  
**Matrix:** Air  
**Parameters:** Volatiles  
**Validation Level:** EPA Level IV  
**Laboratory:** EPA Region 9 Laboratory  
**Sample Delivery Group (SDG):** 13038B

**Sample Identification**

SVE Pre GAC-0202  
SVE Pre GAC-0202DUP

## Introduction

This data review covers 2 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method TO-15 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## **I. Technical Holding Times**

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

Instrument performance was checked at 24 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration**

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0%.

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

## **V. Blanks**

Method blank analyses were performed at the required frequency. No volatile contaminants were found in the method blanks.

No field blanks were identified in this SDG.

## **VI. Surrogate Spikes**

Surrogates were not required by the method.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
SVE Pre GAC-0202DUP (All samples in SDG 13038B)	Tetrachloroethene	21 (≤20)	J (all detects)	A

### VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	LCS %R (Limits)	Associated Samples	Flag	A or P
B13B040-BS1	1,1-Dichloroethane	80 (82-123)	All samples in SDG 13038B	J- (all detects) UJ (all non-detects)	P

### IX. Regional Quality Assurance and Quality Control

Not applicable.

### X. Internal Standards

All internal standard areas and retention times were within QC limits.

### XI. Target Compound Identifications

All target compound identifications were within validation criteria.

### XII. Compound Quantitation

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 13038B	All compounds reported below the RL.	J (all detects)	A

### XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

#### **XIV. System Performance**

The system performance was acceptable.

#### **XV. Overall Assessment of Data**

Data flags are summarized at the end of this report if data has been qualified.

#### **XVI. Field Duplicates**

No field duplicates were identified in this SDG.

**Modesto  
Volatiles - Data Qualification Summary - SDG 13038B**

SDG	Sample	Compound	Flag	A or P	Reason
13038B	SVE Pre GAC-0202	Tetrachloroethene	J (all detects)	A	Laboratory duplicate (RPD)
13038B	SVE Pre GAC-0202	1,1-Dichloroethane	J- (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
13038B	SVE Pre GAC-0202	All compounds reported below the RL.	J (all detects)	A	Compound quantitation and RLs

**Modesto  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 13038B**

No Sample Data Qualified in this SDG

**Modesto  
Volatiles - Field Blank Data Qualification Summary - SDG 13038B**

No Sample Data Qualified in this SDG

LDC #: 29308A48

## VALIDATION COMPLETENESS WORKSHEET

Date: 3/5/13

SDG #: 13038B

ADR(IV)

Page: 1 of 1

Laboratory: EPA Region 9 Laboratory

Reviewer: BR

2nd Reviewer: A

METHOD: GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/6/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD $\leq$ 30%
IV.	Continuing calibration/ICV	A	ICV/CCV $\leq$ 30%
V.	Blanks	A	Not reviewed for ADR validation.
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	Lab Dup NSW	
VIII.	Laboratory control samples	SW	Not reviewed for ADR validation. LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	Not reviewed for ADR validation.
XI.	Target compound identification	A	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)	N	Not reviewed for ADR validation.
XIV.	System performance	A	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	Not reviewed for ADR validation.
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinstate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

+						
1	SVE Pre GAC-0202**	11		21		31 B13B040 - MB
2	<del>SVE Stack-0202</del>	12		22		32
3	SVE Pre GAC-0202DUP	13		23		33
4		14		24		34
5		15		25		35
6		16		26		36
7		17		27		37
8		18		28		38
9		19		29		39
10		20		30		40

DC #: 29308A48  
 SDG #: 833 COW

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: BR  
 2nd Reviewer: A

**Method: Volatiles (EPA Method TO-15)**

Validation Area	Yes	No	NA	Findings/Comments
<b>II. Technical holding times</b>				
All technical holding times were met.	/			
Canister pressure criteria was met.	/			
<b>III. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>III. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $>$ 0.05?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	/			
<b>V. Blanks</b>				
Was a method blank associated with every sample in this SDG?	/			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
<b>VI. Surrogate spikes</b>				
Were all surrogate %R within QC limits?			/	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	
<b>VII. Matrix spike/Matrix spike/duplicates</b> <u>Dup</u>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	/			Lab Dup
Were the <sup>Dup</sup> MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		/		
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	/			
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		/		

LDC #: 29308 A48  
 SDG #: see env

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
 Reviewer: BR  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?		/		
Were the performance evaluation (PE) samples within the acceptance limits?			/	
<b>X. Internal standards</b>				
Were internal standard area counts within +/-40% from the associated calibration standard?	/			
Were retention times within +/- 20.0 seconds from the associated calibration standard?	/			
<b>XI. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Tentatively identified compounds (TICs)</b>				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			/	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			/	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		/		
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			
<b>XVI. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		/		
Target compounds were detected in the field duplicates.			/	
<b>XVII. Field blanks</b>				
Field blanks were identified in this SDG.		/	/	
Target compounds were detected in the field blanks.			/	

## TARGET COMPOUND WORKSHEET

**METHOD:** VOA (EPA Method TO-15)

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO. 1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP. 2-Propanol
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.





LDC #: 29308A48

**VALIDATION FINDINGS WORKSHEET**  
Initial Calibration Calculation Verification

Page: 1 of 1  
 Reviewer: BR  
 2nd Reviewer: A

METHOD: GC/MS VOA (EPA Method TO-15)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

$%RSD = 100 * (S/X)$

$A_x$  = Area of Compound

$C_x$  = Concentration of compound

S = Standard deviation of the RRFs

$A_{is}$  = Area of associated internal standard

$C_{is}$  = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 10 std)	Recalculated RRF (RRF 10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/12/2013	Chloroform (IS1)	2.019	2.020	2.164	2.164	10.73	10.74
	HP5973K		Trichloroethene (IS2)	0.353	0.354	0.381	0.381	8.15	8.17
			Tetrachloroethene (IS3)	0.512	0.512	0.549	0.549	7.09	7.11

Cis	Cx	Ax	Ais
20.4	10.2	420057	415947
21.20	10	341300	2046619
22.00	10	471412	2023664

Conc	Chloroform	Trichloroethene	Tetrachloroethene
1.00	2.352	0.424	0.603
2.00	2.533	0.416	0.585
5.00	2.146	0.366	0.509
10.00	2.019	0.353	0.512
15.00	1.966	0.358	0.529
20.00	1.969	0.366	0.555
X =	2.164	0.381	0.549
S =	0.232	0.031	0.039

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 29308A48

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: BR  
 2nd Reviewer: A

METHOD: GC/MS VOA (EPA Method TO-15)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. RRF - RRF)/ave. RRF  
 RRF = (Ax)(Cis)/(Ais)(Cx)

Where:  
 ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 Ax = Area of compound,  
 Cx = Concentration of compound,  
 Ais = Area of associated internal standard  
 Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1			Chloroform (IS1)	See ICAL				
			Trichloroethene (IS2)	See ICAL				
			Tetrachloroethene (IS3)	See ICAL				

CCV1				CCV2		
Cis	Cx	Compound	Ax	Ais	Ax	Ais
20.8	10.1	Chloroform (IS1)				
21.6	10.1	Trichloroethene (IS2)				
22	10.1	Tetrachloroethene (IS3)				

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



**SDG 13067C**

# Field Duplicate RPD Report

Lab Reporting Batch ID: 13067C

Laboratory: FALSE

EDD Filename: 1303012 FINAL\_voc\_air\_rev

eQAPP Name: Modesto\_Site\_062812

Method: TO-15

Matrix: Air

Analyte	Concentration (ppbv)		Sample RPD	eQAPP RPD	Flag
	SVE Pre GAC-0302	MW-111-0302			
1,2-DICHLOROENZENE	43	43	0	1.00	No Qualifiers Applied
1,3-DICHLOROENZENE	3.3	4.1	22	1.00	
1,4-DICHLOROENZENE	8.7	11	23	1.00	
CHLOROFORM	7.7	9.6	22	1.00	
TETRACHLOROETHENE	110	120	9	1.00	
TRICHLOROETHENE	3.9	4.9	23	1.00	

LDC #: 29428A48

**VALIDATION COMPLETENESS WORKSHEET**

Date: 4/2/13

SDG #: 13067C

ADR

Page: 1 of 1

Laboratory: EPA Region 9 Laboratory

Reviewer: [Signature]

2nd Reviewer: [Signature]

**METHOD:** GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	Δ	Sampling dates: 3/7/13
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration	A	% PSD ≤ 30
IV.	Continuing calibration/ICV	Δ	1W/CCW ≤ 30
V.	Blanks	N	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	Δ	
XI.	Target compound identification	N	
XII.	Compound quantitation/RL/LOQ/LODs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinstate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

Validated Samples:

1	MW-111-0302	11		21		31	
2	SVE Pre GAC-0302	12		22		32	
3	SVE Stack-0302	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

**SDG 13088C**

## Reporting Limit Outliers

Lab Reporting Batch ID: 13088C

Laboratory: FALSE

EDD Filename: 13088c\_voc\_1303067 FINAL

eQAPP Name: Modesto\_Site\_042613

Method: TO-15

Matrix: Air

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
DP-1B-1Q13	CHLOROFORM	J,C1	2.4	2.6	MRL	ppbv	J (all detects)
DP-5B-1Q13	TETRACHLOROETHENE	J,C1	1.5	2.6	MRL	ppbv	J (all detects)
OSVE-11-1Q13	TETRACHLOROETHENE TOLUENE	J,C1 J,C1	2.4 2.2	2.5 2.5	MRL MRL	ppbv ppbv	J (all detects)
SVE-3-1Q13	TETRACHLOROETHENE	J,C1	1.7	2.4	MRL	ppbv	J (all detects)

# Field Duplicate RPD Report

Lab Reporting Batch ID: 13088C

Laboratory: FALSE

EDD Filename: 13088c\_voc\_1303067 FINAL

eQAPP Name: Modesto\_Site\_042613

Method: TO-15

Matrix: Air

Analyte	Concentration (ppbv)		Sample RPD	eQAPP RPD	Flag
	SVE-4-1Q13	SVE-96-1Q13			
CHLOROFORM	20	20	0	1.00	No Qualifiers Applied
TETRACHLOROETHENE	16	16	0	1.00	

LDC #: 29518A48

**VALIDATION COMPLETENESS WORKSHEET**

Date: 4/17/13

SDG #: 13088C

ADR/IV

Page: 1 of 1

Laboratory: EPA Region 9 Laboratory

Reviewer: F?

2nd Reviewer: E

**METHOD:** GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	N	Sampling dates: 3/27/13
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration	Δ	% PSD ≤ 30
IV.	Continuing calibration/ICV	SW	ICV/CCV ≤ 30
V.	Blanks	N	Not reviewed for ADR validation.
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	✓	Not reviewed for ADR validation.
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	Δ	Not reviewed for ADR validation.
XI.	Target compound identification	N	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs	N	Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)	N	Not reviewed for ADR validation.
XIV.	System performance	N	Not reviewed for ADR validation.
XV.	Overall assessment of data	✓	Not reviewed for ADR validation.
XVI.	Field duplicates	✓	
XVII.	Field blanks	✓	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

*AIR*

1	DP-1A-1Q13	11	SVE-3-1Q13	21		31	
2	DP-1B-1Q13	12	SVE-4-1Q13	22		32	
3	DP-5A-1Q13	13	SVE-96-1Q13	23		33	
4	DP-5B-1Q13	14		24		34	
5	DP-6B-1Q13**	15		25		35	
6	DP-94A-1Q13	16		26		36	
7	OSVE-10-1Q13	17		27		37	
8	OSVE-11-1Q13	18		28		38	
9	SVE-1-1Q13	19		29		39	
10	SVE-2-1Q13**	20		30		40	

## TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO. 1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP. <i>1,2-Dichlorotetrafluoroethane</i>
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBB. tert-Amyl methyl ether	VVVV.



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Modesto  
**Collection Date:** March 27, 2013  
**LDC Report Date:** April 17, 2013  
**Matrix:** Air  
**Parameters:** Volatiles  
**Validation Level:** EPA Level IV  
**Laboratory:** EPA Region 9 Laboratory  
**Sample Delivery Group (SDG):** 13088C

**Sample Identification**

DP-6B-1Q13  
SVE-2-1Q13

## Introduction

This data review covers 2 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method TO-15 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## I. Technical Holding Times

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 24 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0%.

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/3/13	1,2-Dichlorotetrafluoroethane Vinyl chloride 1,1,2-Trichloro-1,2,2-trifluoroethane Trichlorofluoromethane	35 31 31 31	All samples in SDG 13088C	J (all detects) UJ (all non-detects)	A

## V. Blanks

Method blank analyses were performed at the required frequency. No volatile contaminants were found in the method blanks.

No field blanks were identified in this SDG.

## VI. Surrogate Spikes

Surrogates were not required by the method.

**VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

**VIII. Laboratory Control Samples (LCS)**

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

**IX. Regional Quality Assurance and Quality Control**

Not applicable.

**X. Internal Standards**

All internal standard areas and retention times were within QC limits.

**XI. Target Compound Identifications**

All target compound identifications were within validation criteria.

**XII. Compound Quantitation**

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 13088C	All compounds reported below the RL.	J (all detects)	A

**XIII. Tentatively Identified Compounds (TICs)**

Tentatively identified compounds were not reported by the laboratory.

**XIV. System Performance**

The system performance was acceptable.

**XV. Overall Assessment of Data**

Data flags are summarized at the end of this report if data has been qualified.

## **XVI. Field Duplicates**

No field duplicates were identified in this SDG.

**Modesto  
Volatiles - Data Qualification Summary - SDG 13088C**

SDG	Sample	Compound	Flag	A or P	Reason
13088C	DP-6B-1Q13 SVE-2-1Q13	1,2-Dichlorotetrafluoroethane Vinyl chloride 1,1,2-Trichloro-1,2,2-trifluoroethane Trichlorofluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
13088C	DP-6B-1Q13 SVE-2-1Q13	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

**Modesto  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 13088C**

No Sample Data Qualified in this SDG

**Modesto  
Volatiles - Field Blank Data Qualification Summary - SDG 13088C**

No Sample Data Qualified in this SDG

LDC #: 29518A48

**VALIDATION COMPLETENESS WORKSHEET**

Date: 4/17/13

SDG #: 13088C

ADR/IV

Page: 1 of 1

Laboratory: EPA Region 9 Laboratory

Reviewer: F7

2nd Reviewer: Δ

**METHOD:** GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27/13
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration	A	%RSD ≤ 30
IV.	Continuing calibration/ICV	SW	104/CCV ≤ 30
V.	Blanks	Δ	Not reviewed for ADR validation.
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates 1DUP	N/A	
VIII.	Laboratory control samples	A	Not reviewed for ADR validation. LC >
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	Δ	Not reviewed for ADR validation.
XI.	Target compound identification	A	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)	N	Not reviewed for ADR validation. F7 4/17/13
XIV.	System performance	Δ	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	Not reviewed for ADR validation.
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

AIR

1	<del>DP-1A-1Q13</del>	11	<del>SVE-3-1Q13</del>	21	1313 D016	31
2	DP-1B-1Q13 F7 4/17/13	12	SVE-4-1Q13	22		32
3	DP-5A-1Q13	13	SVE-96-1Q13	23		33
4	<del>DP-5B-1Q13</del>	14	<del>#1 DUP</del>	24		34
5	DP-6B-1Q13**	15		25		35
6	<del>DP-9A-1Q13</del>	16		26		36
7	OSVE-10-1Q13	17		27		37
8	OSVE-11-1Q13	18		28		38
9	<del>SVE-1-1Q13</del>	19		29		39
10	SVE-2-1Q13**	20		30		40

**Method:** Volatiles (EPA Method TO-15)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	/			
Canister pressure criteria was met.	/			
<b>II. GC/MS instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>III. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) $\leq 30\%$ and relative response factors (RRF) $> 0.05$ ?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) $\leq 30\%$ and relative response factors (RRF) $\geq 0.05$ ?		/		
<b>V. Blanks</b>				
Was a method blank associated with every sample in this SDG?	/			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			/	
<b>VI. Surrogate spikes</b>				
Were all surrogate %R within QC limits?			/	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?			/	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	/			
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>IX. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?			/	
Were the performance evaluation (PE) samples within the acceptance limits?			/	

LDC #: 29518A18

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
 Reviewer: FT

2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
<b>X. Internal standards</b>				
Were internal standard area counts within +/-40% from the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within +/- 20.0 seconds from the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Tentatively identified compounds (TICs)</b>				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XVI. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field duplicates.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>XVII. Field blanks</b>				
Field blanks were identified in this SDG.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field blanks.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

## TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO. 1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP. 1,2-Dichlorotetrafluoroethane
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ. fluoroethane
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.



## VALIDATION FINDINGS WORKSHEET

### Initial Calibration Calculation Verification

**METHOD:** GC/MS VOA (EPA Method TO-15)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

A<sub>x</sub> = Area of compound,

C<sub>x</sub> = Concentration of compound,

S = Standard deviation of the RRFs

X = Mean of the RRFs

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
				RRF (10 std)	RRF (10 std)	Average RRF (initial)	Average RRF (initial)	%RSD	%RSD
1	1CAL	4/3/13	C (1st internal standard) <small>10.1</small>	0.836	0.836	0.950	0.950	18.02	18.02
			S (2nd internal standard) <small>10.0</small>	0.361	0.3606	0.395	0.395	12.61	12.61
			CC (3rd internal standard) <small>10.1</small>	0.815	0.8152	0.898	0.898	12.66	12.66
			(4th internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

**METHOD:** GC/MS VOA (EPA Method TO-15)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. RRF - RRF)/ave. RRF  
 RRF = (A<sub>x</sub>)(C<sub>is</sub>)/(A<sub>is</sub>)(C<sub>x</sub>)

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 A<sub>x</sub> = Area of compound,                      A<sub>is</sub> = Area of associated internal standard  
 C<sub>x</sub> = Concentration of compound,            C<sub>is</sub> = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	ceV	4/4/13	c (1st internal standard)	0.950	0.782	0.782	17.7	17.7
			S (2nd internal standard)	0.395	0.331	0.331	16.2	16.2
			cc (3rd internal standard)	0.898	0.741	0.741	17.5	17.5
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



**SDG 13088A**

# Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method:** 524.2  
**Matrix:** Water

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-20B-1Q13MS (MW-20B-1Q13)	1,2,3-TRICHLOROENZENE 1,2,4-TRICHLOROENZENE NAPHTHALENE N-BUTYLBENZENE N-PROPYLBENZENE SEC-BUTYLBENZENE	123 - - - 122 124	- - - - - -	73.00-122.00 77.00-119.00 54.00-144.00 86.00-123.00 89.00-120.00 87.00-122.00	26 (20.00) 22 (20.00) 25 (20.00) 24 (20.00) 22 (20.00) 22 (20.00)	1,2,3-TRICHLOROENZENE 1,2,4-TRICHLOROENZENE NAPHTHALENE N-BUTYLBENZENE N-PROPYLBENZENE SEC-BUTYLBENZENE	J (all detects)
MW-20B-1Q13MS (MW-20B-1Q13)	ACETONE TETRACHLOROETHENE	- 26	58 11	60.00-125.00 87.00-118.00	- -	ACETONE TETRACHLOROETHENE	J-(all detects) UJ(all non-detects) Tetrachloroethene, No Qual, >4x
MW-20B-1Q13MS (MW-20B-1Q13)	1,1-DICHLOROPROPENE 1,2,4-TRIMETHYLBENZENE 1,3,5-TRIMETHYLBENZENE 2-CHLOROTOLUENE 4-CHLOROTOLUENE BENZENE ISOPROPYLBENZENE m&p-Xylene O-XYLENE P-ISOPROPYLTOLUENE STYRENE TERT-BUTYLBENZENE TOLUENE TRICHLOROETHENE	124 118 118 115 116 113 122 118 118 121 116 121 115 118	- - - - - - - - - - - - - -	88.00-120.00 90.00-112.00 90.00-115.00 88.00-114.00 90.00-112.00 86.00-112.00 90.00-118.00 90.00-113.00 90.00-111.00 89.00-119.00 86.00-113.00 89.00-118.00 87.00-113.00 90.00-112.00	- - - - - - - - - - - - - -	1,1-DICHLOROPROPENE 1,2,4-TRIMETHYLBENZENE 1,3,5-TRIMETHYLBENZENE 2-CHLOROTOLUENE 4-CHLOROTOLUENE BENZENE ISOPROPYLBENZENE m&p-Xylene O-XYLENE P-ISOPROPYLTOLUENE STYRENE TERT-BUTYLBENZENE TOLUENE TRICHLOROETHENE	J+(all detects)
MW-1A-1Q13MS (MW-1A-1Q13)	ACETONE	57	-	60.00-125.00	-	ACETONE	J-(all detects) UJ(all non-detects)
MW-1A-1Q13MS (MW-1A-1Q13)	1,1,1-TRICHLOROETHANE 1,1-DICHLOROPROPENE 1,2,4-TRIMETHYLBENZENE 1,3,5-TRIMETHYLBENZENE 2-CHLOROTOLUENE 4-CHLOROTOLUENE BENZENE CHLOROBENZENE ETHYLBENZENE ISOPROPYLBENZENE m&p-Xylene N-BUTYLBENZENE N-PROPYLBENZENE O-XYLENE P-ISOPROPYLTOLUENE SEC-BUTYLBENZENE STYRENE TERT-BUTYLBENZENE TETRACHLOROETHENE TOLUENE TRICHLOROETHENE	127 126 118 119 115 116 115 111 120 125 119 126 124 119 124 126 116 124 119 117 119	- - - - - - - - - - - - - - - - - - - - - -	85.00-126.00 88.00-120.00 90.00-112.00 90.00-115.00 88.00-114.00 90.00-112.00 86.00-112.00 88.00-110.00 89.00-117.00 90.00-118.00 90.00-113.00 86.00-123.00 89.00-120.00 90.00-111.00 89.00-119.00 87.00-122.00 86.00-113.00 89.00-118.00 87.00-118.00 87.00-113.00 90.00-112.00	- - - - - - - - - - - - - - - - - - - - - -	1,1,1-TRICHLOROETHANE 1,1-DICHLOROPROPENE 1,2,4-TRIMETHYLBENZENE 1,3,5-TRIMETHYLBENZENE 2-CHLOROTOLUENE 4-CHLOROTOLUENE BENZENE CHLOROBENZENE ETHYLBENZENE ISOPROPYLBENZENE m&p-Xylene N-BUTYLBENZENE N-PROPYLBENZENE O-XYLENE P-ISOPROPYLTOLUENE SEC-BUTYLBENZENE STYRENE TERT-BUTYLBENZENE TETRACHLOROETHENE TOLUENE TRICHLOROETHENE	J+(all detects)

# Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

Method: 524.2

Matrix: Water

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-10C-1Q13MS (MW-10C-1Q13)	1,1,2-TRICHLORO-1,2,2-TRIFLU	154	145	73.00-139.00	-	1,1,2-TRICHLORO-1,2,2-TRIFL	J+(all detects)
	1,1-DICHLOROETHENE	140	131	80.00-126.00	-	1,1-DICHLOROETHENE	
	1,1-DICHLOROPROPENE	129	125	88.00-120.00	-	1,1-DICHLOROPROPENE	
	1,2,4-TRIMETHYLBENZENE	118	113	90.00-112.00	-	1,2,4-TRIMETHYLBENZENE	
	1,3,5-TRIMETHYLBENZENE	124	120	90.00-115.00	-	1,3,5-TRIMETHYLBENZENE	
	1,3-DICHLOROBENZENE	112	-	88.00-111.00	-	1,3-DICHLOROBENZENE	
	2-CHLOROTOLUENE	119	116	88.00-114.00	-	2-CHLOROTOLUENE	
	4-CHLOROTOLUENE	118	114	90.00-112.00	-	4-CHLOROTOLUENE	
	BENZENE	113	-	86.00-112.00	-	BENZENE	
	CHLOROBENZENE	112	-	88.00-110.00	-	CHLOROBENZENE	
	CHLOROETHANE	137	-	75.00-135.00	-	CHLOROETHANE	
	CHLOROMETHANE	144	136	70.00-124.00	-	CHLOROMETHANE	
	DICHLORODIFLUOROMETHAN	236	223	53.00-153.00	-	DICHLORODIFLUOROMETHA	
	ETHYLBENZENE	131	125	89.00-117.00	-	ETHYLBENZENE	
	ISOPROPYLBENZENE	133	128	90.00-118.00	-	ISOPROPYLBENZENE	
	m&p-Xylene	124	118	90.00-113.00	-	m&p-Xylene	
	N-BUTYLBENZENE	128	124	86.00-123.00	-	N-BUTYLBENZENE	
	N-PROPYLBENZENE	133	127	89.00-120.00	-	N-PROPYLBENZENE	
	O-XYLENE	120	115	90.00-111.00	-	O-XYLENE	
	P-ISOPROPYLTOLUENE	124	120	89.00-119.00	-	P-ISOPROPYLTOLUENE	
SEC-BUTYLBENZENE	134	129	87.00-122.00	-	SEC-BUTYLBENZENE		
TERT-BUTYLBENZENE	127	124	89.00-118.00	-	TERT-BUTYLBENZENE		
TETRACHLOROETHENE	125	121	87.00-118.00	-	TETRACHLOROETHENE		
TOLUENE	121	115	87.00-113.00	-	TOLUENE		
TRANS-1,2-DICHLOROETHENE	123	-	86.00-119.00	-	TRANS-1,2-DICHLOROETHEN		
TRICHLOROETHENE	118	114	90.00-112.00	-	TRICHLOROETHENE		
TRICHLOROFLUOROMETHANE	156	147	74.00-141.00	-	TRICHLOROFLUOROMETHAN		
VINYL CHLORIDE	158	151	77.00-127.00	-	VINYL CHLORIDE		

# Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method:** 524.2  
**Matrix:** Water

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
B13D001-BS1 (MW-17A-1Q13 MW-17B-1Q13 MW-17C-1Q13 MW-18A-1Q13 MW-19A-1Q13 MW-19B-1Q13 MW-20A-1Q13 MW-20B-1Q13 MW-20C-1Q13)	ACETONE	56	-	60.00-125.00	-	ACETONE	J- (all detects) UJ (all non-detects)
B13D008-BS1 (MW-17B-1Q13 MW-1A-1Q13 MW-20A-1Q13 MW-21A-1Q13)	ACETONE	58	-	60.00-125.00	-	ACETONE	J-(all detects) UJ(all non-detects)
B13D015-BS1 (MW-10A-1Q13)	CHLOROMETHANE DICHLORODIFLUOROMETHAN	127 190	- -	70.00-124.00 53.00-153.00	- -	CHLOROMETHANE DICHLORODIFLUOROMETHA	J+(all detects)
B13D017-BS1 (MW-10A-1Q13 MW-10B-1Q13 MW-10C-1Q13 MW-11A-1Q13 MW-13A-1Q13 MW-14A-1Q13 MW-15A-1Q13 MW-16A-1Q13 MW-16B-1Q13)	DICHLORODIFLUOROMETHAN	176	-	53.00-153.00	-	DICHLORODIFLUOROMETHA	J+(all detects)
B13D020-BS1 (MW-13A-1Q13 MW-14A-1Q13)	DICHLORODIFLUOROMETHAN	169	-	53.00-153.00	-	DICHLORODIFLUOROMETHA	J+(all detects)

## Reporting Limit Outliers

Lab Reporting Batch ID: 13088A

Laboratory: FALSE

EDD Filename: 13088\_voc\_water\_1303065 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method:** 524.2  
**Matrix:** Water

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
MW-10B-1Q13	ACETONE	J,C1,Q 3	3.4	4.0	MRL	ug/L	J (all detects)
MW-14A-1Q13	CHLOROFORM	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-16B-1Q13	DICHLORODIFLUOROMETHANE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-17B-1Q13	ACETONE CHLOROFORM	J,C1,C 4 J,C1	3.2 0.3	4.0 0.5	MRL MRL	ug/L ug/L	J (all detects)
MW-18A-1Q13	ACETONE	J,C1,C 4	3.6	4.0	MRL	ug/L	J (all detects)
MW-19B-1Q13	TETRACHLOROETHENE	J,C1	0.3	0.5	MRL	ug/L	J (all detects)
MW-1A-1Q13	ACETONE	J,Q4,C 4	3.4	4.0	MRL	ug/L	J (all detects)
MW-20B-1Q13	ACETONE	J,C1,C 4,Q4	2.2	4.0	MRL	ug/L	J (all detects)

LDC #: 29529A1

**VALIDATION COMPLETENESS WORKSHEET**

Date: 4/23/13

SDG #: 13088A

ADR Level IV

Page: 1 of 1

Laboratory: USEPA Region 9 Laboratory

Reviewer: JG

2nd Reviewer: A

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	N	Sampling dates: 3/26-28/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	% RSD ≤ 20%
IV.	Continuing calibration/ICV	SW	CV/ICV ≤ 30%
V.	Blanks	N	Not reviewed for ADR validation.
VI.	Surrogate spikes		Not reviewed for ADR validation.
VII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation.
VIII.	Laboratory control samples		Not reviewed for ADR validation.
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	Not reviewed for ADR validation.
XI.	Target compound identification	N	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs		Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)		Not reviewed for ADR validation.
XIV.	System performance		Not reviewed for ADR validation.
XV.	Overall assessment of data		Not reviewed for ADR validation.
XVI.	Field duplicates		
XVII.	Field blanks		

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

Water

1	MW-17A-1Q13	11	MW-21A-1Q13	21	MW-1A-1Q13MS	31	B13 D001 - B1K1
2	MW-17B-1Q13	12	MW-10A-1Q13 (9-AA)	22	MW-1A-1Q13MSD	32	B13 D008 -
3	MW-17C-1Q13	13	MW-10B-1Q13 D?	23	MW-20B-1Q13MS	33	B13 D015 -
4	MW-18A-1Q13	14	MW-10C-1Q13	24	MW-20B-1Q13MSD	34	B13 D017 -
5	MW-19A-1Q13	15	MW-11A-1Q13	25	MW-10C-1Q13MS	35	B13 D020 - ✓
6	MW-19B-1Q13	16	MW-13A-1Q13** (5-AA)	26	MW-10C-1Q13MSD	36	
7	MW-1A-1Q13**	17	MW-14A-1Q13 (5-AA)	27		37	
8	MW-20A-1Q13	18	MW-15A-1Q13	28		38	
9	MW-20B-1Q13	19	MW-16A-1Q13	29		39	
10	MW-20C-1Q13	20	MW-16B-1Q13	30		40	

## TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method 524.2)

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride <i>(Dichloromethane)</i>	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBB. tert-Amyl methyl ether	VVV.



**VALIDATION FINDINGS WORKSHEET**  
Continuing Calibration

**METHOD:** GC/MS VOA (EPA Method 524.2)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y N N/A Were all percent differences (%D) ≤ 30% ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Associated Samples	Qualifications
	3/20/13	032013J14 (ICV)	JJ	39	1-11, 21-24, B13 D001-B1K1, B13 D008-B1K1	J/N/A/P
	4/01/13	040113J02 (CCV)	F <del>ZZZ</del>	44 <del>47</del>	1-6, 8-10, 21-24, B13 D001-B1K1	✓
	4/02/13	040213J02 (CCV)	F	42	7, 11, B13 D008-B1K1	
	4/03/13	040313H02 (CCV)	JJ	90.1	12, B13 D015-B1K1	
	4/04/13	040413H02 (CCV)	JJ	75.8	13-20, B13 D017-B1K1 <del>25, 26</del>	
	4/05/13	040513H02 (CCV)	JJ	69.2	25, 26, B13 D020-B1K1	✓

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Modesto  
**Collection Date:** March 26 through March 28, 2013  
**LDC Report Date:** April 24, 2013  
**Matrix:** Water  
**Parameters:** Volatiles  
**Validation Level:** EPA Level IV  
**Laboratory:** USEPA Region 9 Laboratory  
**Sample Delivery Group (SDG):** 13088A

**Sample Identification**

MW-1A-1Q13  
MW-13A-1Q13

## Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
2/4/13	Naphthalene	28.42	MW-13A-1Q13 B13D017-BLK1	J (all detects) UJ (all non-detects)	P
3/20/13	Bromomethane Methylene chloride 2,2-Dichloropropane trans-1,3-Dichloropropene Naphthalene	42.72 26.25 25.51 27.61 32.27	MW-1A-1Q13 B13D008-BLK1	J (all detects) UJ (all non-detects)	P

Average relative response factors (RRF) for all compounds were within method and validation criteria.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/2/13	Acetone	42	MW-1A-1Q13 B13D008-BLK1	J (all detects) UJ (all non-detects)	P

Date	Compound	%D	Associated Samples	Flag	A or P
4/4/13	Dichlorodifluoromethane	75.8	MW-13A-1Q13 B13D017-BLK1	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
3/20/13	Dichlorodifluoromethane	39	MW-1A-1Q13 B13D008-BLK1	J (all detects) UJ (all non-detects)	P

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

#### V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

No field blanks were identified in this SDG.

#### VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

#### VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were not within QC limits. Since there were no associated samples, no data were qualified with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-1A-1Q13MS/MSD (MW-1A-1Q13)	Acetone	57 (60-125)	-	-	J- (all detects) UJ (all non-detects)	A

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-1A-1Q13MS/MSD (MW-1A-1Q13)	1,1,1-Trichloroethane	127 (85-126)	-	-	J+ (all detects)	A
	1,1-Dichloropropene	126 (88-120)	-	-	J+ (all detects)	
	Benzene	115 (86-112)	-	-	J+ (all detects)	
	Trichloroethene	119 (90-112)	-	-	J+ (all detects)	
	Toluene	117 (87-113)	-	-	J+ (all detects)	
	Tetrachloroethene	119 (87-118)	-	-	J+ (all detects)	
	Chlorobenzene	111 (88-110)	-	-	J+ (all detects)	
	Ethylbenzene	120 (89-117)	-	-	J+ (all detects)	
	m,p-Xylenes	119 (90-113)	-	-	J+ (all detects)	
	o-Xylene	119 (90-111)	112 (90-111)	-	J+ (all detects)	
	Styrene	116 (86-113)	-	-	J+ (all detects)	
	Isopropylbenzene	125 (90-118)	-	-	J+ (all detects)	
	n-Propylbenzene	124 (89-120)	-	-	J+ (all detects)	
	2-Chlorotoluene	115 (88-114)	-	-	J+ (all detects)	
	4-Chlorotoluene	116 (90-112)	-	-	J+ (all detects)	
	1,3,5-Trimethylbenzene	119 (90-115)	-	-	J+ (all detects)	
	tert-Butylbenzene	124 (89-118)	-	-	J+ (all detects)	
1,2,4-Trimethylbenzene	118 (90-112)	-	-	J+ (all detects)		
sec-Butylbenzene	126 (87-122)	-	-	J+ (all detects)		
p-Isopropyltoluene	124 (89-119)	-	-	J+ (all detects)		
n-Butylbenzene	126 (86-123)	-	-	J+ (all detects)		

### VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
B13D008-BS1	Acetone	58 (60-125)	MW-1A-1Q13 B13D008-BLK1	J- (all detects) UJ (all nondetects)	P
B13D017- BS1	Dichlorodifluoromethane	176 (53-153)	MW-13A-1Q13 B13D017-BLK1	J+ (all detects)	P

### IX. Regional Quality Assurance and Quality Control

Not applicable.

### X. Internal Standards

All internal standard areas and retention times were within QC limits.

### XI. Target Compound Identifications

All target compound identifications were within validation criteria.

### XII. Compound Quantitation

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 13088A	All compounds reported below the RL.	J (all detects)	A

### **XIII. Tentatively Identified Compounds (TICs)**

Tentatively identified compounds were not reported by the laboratory.

### **XIV. System Performance**

The system performance was acceptable.

### **XV. Overall Assessment of Data**

Data flags are summarized at the end of this report if data has been qualified.

### **XVI. Field Duplicates**

No field duplicates were identified in this SDG.



**Modesto  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 13088A**

No Sample Data Qualified in this SDG

**Modesto  
Volatiles - Field Blank Data Qualification Summary - SDG 13088A**

No Sample Data Qualified in this SDG

LDC #: 29529A1

## VALIDATION COMPLETENESS WORKSHEET

Date: 4/23/13

SDG #: 13088A

ADR/Level IV

Page: 1 of 1

Laboratory: USEPA Region 9 Laboratory

Reviewer: DVG

2nd Reviewer: [Signature]

METHOD: GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/26 - 28/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	2 RSD $\leq$ 20%
IV.	Continuing calibration/ICV	SW	CV/IV $\leq$ 30%
V.	Blanks	A	Not reviewed for ADR validation.
VI.	Surrogate spikes	A	Not reviewed for ADR validation.
VII.	Matrix spike/Matrix spike duplicates	SW	Not reviewed for ADR validation. No associated sample, ND
VIII.	Laboratory control samples	SW	Not reviewed for ADR validation. IES
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	Not reviewed for ADR validation.
XI.	Target compound identification	A	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)	N	Not reviewed for ADR validation.
XIV.	System performance	A	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	Not reviewed for ADR validation.
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

Water							
1	MW-17A-1Q13	11	MW-21A-1Q13	21	MW-1A-1Q13MS	31	B13D008-BIK1
2	MW-17B-1Q13	12	MW-10A-1Q13	22	MW-1A-1Q13MSD	32	B13D020- (AA)
3	MW-17C-1Q13	13	MW-10B-1Q13	23	MW-20B-1Q13MS	33	B13D017- ↓
4	MW-18A-1Q13	14	MW-10C-1Q13	24	MW-20B-1Q13MSD	34	
5	MW-19A-1Q13	15	MW-11A-1Q13	25	MW-10C-1Q13MS	35	
6	MW-19B-1Q13	16	MW-13A-1Q13** (2.44)	26	MW-10C-1Q13MSD	36	
7	MW-1A-1Q13**	17	MW-14A-1Q13	27		37	
8	MW-20A-1Q13	18	MW-15A-1Q13	28		38	
9	MW-20B-1Q13	19	MW-16A-1Q13	29		39	
10	MW-20C-1Q13	20	MW-16B-1Q13	30		40	

LDC #: 29529 A1

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: JVG  
 2nd Reviewer: E

**Method:** Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cooler temperature criteria was met.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 30%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Blanks</b>				
Was a method blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate %R within QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**VALIDATION FINDINGS CHECKLIST**

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?		/		
Were the performance evaluation (PE) samples within the acceptance limits?			/	
<b>X. Internal standards</b>				
Were internal standard area counts within +/-40% from the associated calibration standard?	/			
Were retention times within - 30% of the last continuing calibration or +/- 50% of the initial calibration?	/			
<b>XI. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Tentatively identified compounds (TICs)</b>				
Were the major ions (> 25 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			/	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			/	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?			/	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			
<b>XVI. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		/		
Target compounds were detected in the field duplicates.			/	
<b>XVII. Field blanks</b>				
Field blanks were identified in this SDG.		/		
Target compounds were detected in the field blanks.			/	

## TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method 524.2)

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.





LDC #: 29529 A1

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates**

Page: 1 of 2  
 Reviewer: JVL  
 2nd Reviewer: [Signature]

**METHOD** : GC/MS VOA (EPA Method 524.2)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG? (Not required)  
 Y N N/A Were a MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	21/22	F	57 (60-125)	( )	( )	7	J-US A
		N	127 (85-126)	( )	( )		J+dets A
		QQ	126 (88-120)	( )	( )		
		V	115 (86-112)	( )	( )		
		S	119 (90-112)	( )	( )		
		CC	117 (87-113)	( )	( )		
		AA	119 (87-112)	( )	( )		
		DD	111 (88-110)	( )	( )		
		EE	120 (89-117)	( )	( )		
		KRR	119 (90-113)	( )	( )		
		SSS	119 (90-111)	112 (90-111)	( )		
		FF	116 (86-113)	( )	( )		
		VV	125 (90-118)	( )	( )		
		YY	124 (89-120)	( )	( )		
		ZZ	115 (88-114)	( )	( )		
		BBB	116 (90-112)	( )	( )		
		AAA	119 (90-115)	( )	( )		
		CCC	124 (89-118)	( )	( )		

	Compound	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Water)	RPD (Water)
C.	Vinyl chloride	70-130%	<30	V	Benzene	70-130%	<30
L.	1,2-Dichloroethane	70-130%	<30	R	cis-1,3-Dichloropropene	70-130%	<30
O.	Carbon tetrachloride	70-130%	<30	X	Bromoform	70-130%	<30
Q.	1,2-Dichloropropane	70-130%	<30	AA	Tetrachloroethene	70-130%	<30
S.	Trichloroethene	70-130%	<30	TT	1,2-Dibromoethane	70-130%	<30
U.	1,1,2-Trichloroethane	70-130%	<30	HHH	1,4-Dichlorobenzene	70-130%	<30

LDC #: 29529 A1

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates**

Page: 2 of 2  
 Reviewer: SV6  
 2nd Reviewer: A

METHOD : GC/MS VOA (EPA Method 524.2)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG? (Not required)  
 N N/A Were a MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	21 / 22	DDP	118 ( 90-112 )	( )	( )	7	J+dets / A
		EEE	126 ( 87-122 )	( )	( )	↓	↓
		GGG	124 ( 89-119 )	( )	( )		
		III	126 ( 86-123 )	( )	( )	✓	✓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

	Compound	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Water)	RPD (Water)
C.	Vinyl chloride	70-130%	<30	V	Benzene	70-130%	<30
L.	1,2-Dichloroethane	70-130%	<30	R	cis-1,3-Dichloropropene	70-130%	<30
O.	Carbon tetrachloride	70-130%	<30	X	Bromoform	70-130%	<30
Q.	1,2-Dichloropropane	70-130%	<30	AA	Tetrachloroethene	70-130%	<30
S.	Trichloroethene	70-130%	<30	TT	1,2-Dibromoethane	70-130%	<30
U.	1,1,2-Trichloroethane	70-130%	<30	HHH	1,4-Dichlorobenzene	70-130%	<30

LDC #: 29529 A)

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Samples (LCS)**

Page: 1 of 1  
 Reviewer: DV  
 2nd Reviewer: C

**METHOD:** GC/MS VOA (EPA Method 524.2)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Was a LCS analyzed for this SDG?
- Y N N/A Was a LCS analyzed every 20 samples?
- Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	B13D008-BSI	F	58 (60-125)	( )	( )	7, B13D008-BIK1	J - / NJ / P
			( )	( )	( )		
			( )	( )	( )		
	B13D017-BSI	JS	176 (53-153)	( )	( )	16, B13D017-BIK1	J + dets / P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

	Compound	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Water)	RPD (Water)
C.	Vinyl chloride	70-130%	<30	V.	Benzene	70-130%	<30
L.	1,2-Dichloroethane	70-130%	<30	R.	cis-1,3-Dichloropropene	70-130%	<30
O.	Carbon tetrachloride	70-130%	<30	X	Bromoform	70-130%	<30
Q.	1,2-Dichloropropane	70-130%	<30	AA.	Tetrachloroethene	70-130%	<30
S.	Trichloroethene	70-130%	<30	TT.	1,2-Dibromoethane	70-130%	<30
U.	1,1,1-Trichloroethane	70-130%	<30	HHH.	1,4-Dichlorobenzene	70-130%	<30

LDC #: 29529 A1

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: C

METHOD: GC/MS VOA (EPA Method 524.2)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

$A_x$  = Area of Compound

$C_x$  = Concentration of compound,

S= Standard deviation of the RRFs,

$A_{is}$  = Area of associated internal standard

$C_{is}$  = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 5 std)	Recalculated RRF (RRF 5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP5973J	2/4/2013	cis-1,2-DCE (IS1)	3.060	3.060	3.071	3.071	3.87	3.87
			Trichloroethene (IS2)	0.246	0.246	0.246	0.246	3.97	4.01
			Tetrachloroethene (IS3)	0.425	0.425	0.429	0.430	2.03	1.96
2	ICAL HP5973H	3/20/2013	cis-1,2-DCE (IS1)	4.248	4.248	4.289	4.289	4.43	4.43
			Trichloroethene (IS2)	0.320	0.320	0.320	0.320	3.51	3.44
			Tetrachloroethene (IS3)	0.576	0.576	0.586	0.587	4.58	4.63

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC # 29529 A)

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: C

METHOD: GC/MS VOA (EPA Method 524.2)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$$

$$\text{RRF} = (\text{Ax})(\text{Cis}) / (\text{Ais})(\text{Cx})$$

Where:

ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

Ax = Area of compound,

Cx = Concentration of compound,

Ais = Area of associated internal standard

Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	040213j02 HP5973J	4/2/2013	cis-1,2-DCE (IS1)	4.289	4.167	4.167	2.8	2.8
			Trichloroethene (IS2)	0.320	0.303	0.303	5.3	5.3
			Tetrachloroethene (IS3)	0.586	0.572	0.572	2.4	2.4
2	040413h02 HP5973H	4/4/2013	cis-1,2-DCE (IS1)	3.071	2.924	2.924	4.8	4.8
			Trichloroethene (IS2)	0.246	0.245	0.245	0.4	0.4
			Tetrachloroethene (IS3)	0.429	0.458	0.458	6.8	6.8
3	040513h02 HP5973H	4/5/2013	Tetrachloroethene (IS3)	0.429	0.457	0.457	6.5	6.5

LDC #: 29529 A1

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd reviewer: A

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: A7

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8	5.00	4.954	99	99	0
Bromofluorobenzene	↓	4.533	99	99	↓
1,2-Dichlorobenzene-d4	↓	4.430	89	89	↓
<del>1,2-DCE-d4</del> Dibromofluoromethane	↓	4.966	98	98	↓

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

LDC #: 29529A1

### VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

Page: 1 of 1  
Reviewer: JVG  
2nd Reviewer: ↻

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
SA = Spike added

RPD = | LCS - LCSD | \* 2 / (LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS ID: B13D008-b51

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	5.00	NA	4.98	NA	100	100				
Trichloroethene	↓	↓	4.74	↓	95	95				
Benzene	↓	↓	4.76	↓	95	95				
Toluene	↓	↓	4.82	↓	96	96				
Chlorobenzene	↓	↓	4.64	↓	93	93				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



**SDG 13088B**

# Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method:** 524.2  
**Matrix:** Water

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-12A-1Q13MS (MW-12A-1Q13)	DICHLORODIFLUOROMETHAN	240	245	53.00-153.00	52 (20.00)	DICHLORODIFLUOROMETHA	J (all detects)
MW-12A-1Q13MS (MW-12A-1Q13)	1,1,1,2-TETRACHLOROETHANE	60	34	86.00-122.00	56 (20.00)	1,1,1,2-TETRACHLOROETHAN	J(all detects) JJ(all non-detects)
	1,1,1-TRICHLOROETHANE	68	131	85.00-126.00	52 (20.00)	1,1,1-TRICHLOROETHANE	
	1,1,2,2-TETRACHLOROETHANE	52	31	76.00-122.00	50 (20.00)	1,1,2,2-TETRACHLOROETHAN	
	1,1,2-TRICHLORO-1,2,2-TRIFLU	148	150	73.00-139.00	59 (20.00)	1,1,2-TRICHLORO-1,2,2-TRIFL	
	1,1,2-TRICHLOROETHANE	52	32	79.00-116.00	49 (20.00)	1,1,2-TRICHLOROETHANE	
	1,1-DICHLOROETHANE	62	38	85.00-117.00	49 (20.00)	1,1-DICHLOROETHANE	
	1,1-DICHLOROETHENE	74	138	80.00-126.00	51 (20.00)	1,1-DICHLOROETHENE	
	1,1-DICHLOROPROPENE	63	131	88.00-120.00	54 (20.00)	1,1-DICHLOROPROPENE	
	1,2,3-TRICHLOROBENZENE	51	29	73.00-122.00	54 (20.00)	1,2,3-TRICHLOROBENZENE	
	1,2,3-TRICHLOROPROPANE	51	30	77.00-119.00	50 (20.00)	1,2,3-TRICHLOROPROPANE	
	1,2,4-TRICHLOROBENZENE	51	28	77.00-119.00	59 (20.00)	1,2,4-TRICHLOROBENZENE	
	1,2,4-TRIMETHYLBENZENE	58	122	90.00-112.00	57 (20.00)	1,2,4-TRIMETHYLBENZENE	
	1,2-DIBROMO-3-CHLOROPROP	50	28	68.00-134.00	55 (20.00)	1,2-DIBROMO-3-CHLOROPRO	
	1,2-DICHLOROBENZENE	53	32	86.00-111.00	51 (20.00)	1,2-DICHLOROBENZENE	
	1,2-DICHLOROETHANE	52	31	78.00-121.00	50 (20.00)	1,2-DICHLOROETHANE	
	1,2-DICHLOROPROPANE	53	32	83.00-114.00	50 (20.00)	1,2-DICHLOROPROPANE	
	1,3,5-TRIMETHYLBENZENE	59	124	90.00-115.00	57 (20.00)	1,3,5-TRIMETHYLBENZENE	
	1,3-DICHLOROBENZENE	55	114	88.00-111.00	53 (20.00)	1,3-DICHLOROBENZENE	
	1,3-DICHLOROPROPANE	55	33	82.00-116.00	51 (20.00)	1,3-DICHLOROPROPANE	
	1,4-DICHLOROBENZENE	54	114	87.00-111.00	53 (20.00)	1,4-DICHLOROBENZENE	
	2,2-DICHLOROPROPANE	-	41	61.00-163.00	57 (20.00)	2,2-DICHLOROPROPANE	
	2-BUTANONE	55	35	67.00-123.00	46 (20.00)	2-BUTANONE	
	2-CHLOROTOLUENE	56	120	88.00-114.00	54 (20.00)	2-CHLOROTOLUENE	
	4-CHLOROTOLUENE	56	120	90.00-112.00	55 (20.00)	4-CHLOROTOLUENE	
	ACETONE	50	31	60.00-125.00	33 (20.00)	ACETONE	
	BENZENE	58	117	86.00-112.00	50 (20.00)	BENZENE	
	BROMOBENZENE	53	111	90.00-110.00	53 (20.00)	BROMOBENZENE	
	BROMOCHLOROMETHANE	57	35	84.00-114.00	47 (20.00)	BROMOCHLOROMETHANE	
	BROMODICHLOROMETHANE	54	32	82.00-120.00	42 (20.00)	BROMODICHLOROMETHANE	
	BROMOFORM	55	30	70.00-138.00	59 (20.00)	BROMOFORM	
	BROMOMETHANE	-	50	58.00-172.00	41 (20.00)	BROMOMETHANE	
	CARBON TETRACHLORIDE	76	144	77.00-140.00	54 (20.00)	CARBON TETRACHLORIDE	
	CHLOROETHANE	57	112	88.00-110.00	51 (20.00)	CHLOROETHANE	
	CHLOROMETHANE	73	45	75.00-135.00	47 (20.00)	CHLOROMETHANE	
	CIS-1,2-DICHLOROETHENE	60	36	87.00-113.00	51 (20.00)	CIS-1,2-DICHLOROETHENE	
	CIS-1,3-DICHLOROPROPENE	52	30	79.00-127.00	54 (20.00)	CIS-1,3-DICHLOROPROPENE	
	DIBROMOCHLOROMETHANE	58	34	80.00-125.00	51 (20.00)	DIBROMOCHLOROMETHANE	
	DIBROMOMETHANE	52	30	79.00-118.00	54 (20.00)	DIBROMOMETHANE	
	ETHYLBENZENE	60	127	89.00-117.00	54 (20.00)	ETHYLBENZENE	
	HEXACHLOROBUTADIENE	63	124	81.00-123.00	55 (20.00)	HEXACHLOROBUTADIENE	
	ISOPROPYLBENZENE	62	130	90.00-118.00	57 (20.00)	ISOPROPYLBENZENE	
	m&p-Xylene	59	121	90.00-113.00	55 (20.00)	m&p-Xylene	
	METHYL TERT-BUTYL ETHER	-	31	50.00-140.00	54 (20.00)	METHYL TERT-BUTYL ETHER	
	METHYLENE CHLORIDE	57	36	73.00-114.00	44 (20.00)	METHYLENE CHLORIDE	
	NAPHTHALENE	39	23	54.00-144.00	53 (20.00)	NAPHTHALENE	
	N-BUTYLBENZENE	65	132	86.00-123.00	59 (20.00)	N-BUTYLBENZENE	
	N-PROPYLBENZENE	63	128	89.00-120.00	57 (20.00)	N-PROPYLBENZENE	
	O-XYLENE	56	119	90.00-111.00	58 (20.00)	O-XYLENE	
	P-ISOPROPYLTOLUENE	62	128	89.00-119.00	58 (20.00)	P-ISOPROPYLTOLUENE	
	SEC-BUTYLBENZENE	64	133	87.00-122.00	59 (20.00)	SEC-BUTYLBENZENE	
	STYRENE	55	31	86.00-113.00	57 (20.00)	STYRENE	
	TERT-BUTYLBENZENE	62	127	89.00-118.00	58 (20.00)	TERT-BUTYLBENZENE	
	TOLUENE	59	117	87.00-113.00	52 (20.00)	TOLUENE	
	TRANS-1,2-DICHLOROETHENE	66	121	86.00-119.00	51 (20.00)	TRANS-1,2-DICHLOROETHEN	
	TRANS-1,3-DICHLOROPROPEN	56	32	75.00-135.00	56 (20.00)	TRANS-1,3-DICHLOROPROPE	
	TRICHLOROETHENE	-	35	47.00-160.00	52 (20.00)	TRICHLOROETHENE	
	TRICHLOROFLUOROMETHANE	154	155	74.00-141.00	48 (20.00)	TRICHLOROFLUOROMETHAN	
	VINYL CHLORIDE	155	157	77.00-127.00	44 (20.00)	VINYL CHLORIDE	

Project Name and Number: R13S53 - Modesto Groundwater March 2013 Qtrly Monitoring

5/13/2013 6:20:50 AM

ADR version 1.7.0.207

Page 1 of 3

# Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method:** 524.2  
**Matrix:** Water

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-12A-1Q13MS (MW-12A-1Q13)	CHLOROFORM TETRACHLOROETHENE	62 61	33 29	85.00-117.00 87.00-118.00	- -	CHLOROFORM TETRACHLOROETHENE	J-(all detects) UJ(all non-detects)
MW-401-1Q13MS (MW-401-1Q13)	1,1,2-TRICHLORO-1,2,2-TRIFLU 1,1-DICHLOROETHANE 2,2-DICHLOROPROPANE BROMOFORM CARBON TETRACHLORIDE CHLOROFORM DICHLORODIFLUOROMETHAN HEXACHLOROBUTADIENE ISOPROPYLBENZENE N-BUTYLBENZENE N-PROPYLBENZENE SEC-BUTYLBENZENE TERT-BUTYLBENZENE TETRACHLOROETHENE TRANS-1,2-DICHLOROETHENE TRICHLOROFLUOROMETHANE	144 - - - - - 224 - - - - - - - - - 151	- - - - - 182 - - - - - - - - -	73.00-139.00 85.00-117.00 61.00-163.00 70.00-138.00 77.00-140.00 85.00-117.00 53.00-153.00 81.00-123.00 90.00-118.00 86.00-123.00 89.00-120.00 87.00-122.00 89.00-118.00 87.00-118.00 86.00-119.00 74.00-141.00	22 (20.00) 21 (20.00) 23 (20.00) 25 (20.00) 21 (20.00) 21 (20.00) 21 (20.00) 23 (20.00) 22 (20.00) 22 (20.00) 21 (20.00) 22 (20.00) 23 (20.00) 21 (20.00) 21 (20.00) 21 (20.00)	1,1,2-TRICHLORO-1,2,2-TRIFL 1,1-DICHLOROETHANE 2,2-DICHLOROPROPANE BROMOFORM CARBON TETRACHLORIDE CHLOROFORM DICHORODIFLUOROMETHA HEXACHLOROBUTADIENE ISOPROPYLBENZENE N-BUTYLBENZENE N-PROPYLBENZENE SEC-BUTYLBENZENE TERT-BUTYLBENZENE TETRACHLOROETHENE TRANS-1,2-DICHLOROETHEN TRICHLOROFLUOROMETHAN	J(all detects)
MW-401-1Q13MS (MW-401-1Q13)	1,1,1,2-TETRACHLOROETHANE 1,2,4-TRICHLOROBENZENE 1,2-DIBROMO-3-CHLOROPROP 1,2-DICHLOROPROPANE 1,3,5-TRIMETHYLBENZENE 1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 2-CHLOROTOLUENE 4-CHLOROTOLUENE BROMOBENZENE BROMOCHLOROMETHANE DIBROMOCHLOROMETHANE DIBROMOMETHANE m&p-Xylene O-XYLENE P-ISOPROPYLTOLUENE STYRENE TRANS-1,3-DICHLOROPROPEN	- - - - - - - - - - - - - - - - - - - -	79 74 67 75 87 79 78 83 83 75 77 74 70 86 82 88 72 72	86.00-122.00 77.00-119.00 68.00-134.00 83.00-114.00 90.00-115.00 88.00-111.00 87.00-111.00 88.00-114.00 90.00-112.00 90.00-110.00 84.00-114.00 80.00-125.00 79.00-118.00 90.00-113.00 90.00-111.00 89.00-119.00 86.00-113.00 75.00-135.00	21 (20.00) 21 (20.00) 24 (20.00) 21 (20.00) 22 (20.00) 21 (20.00) 21 (20.00) 21 (20.00) 21 (20.00) 21 (20.00) 23 (20.00) 21 (20.00) 22 (20.00) 22 (20.00) 23 (20.00) 23 (20.00) 22 (20.00) 21 (20.00)	1,1,1,2-TETRACHLOROETHAN 1,2,4-TRICHLOROBENZENE 1,2-DIBROMO-3-CHLOROPRO 1,2-DICHLOROPROPANE 1,3,5-TRIMETHYLBENZENE 1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 2-CHLOROTOLUENE 4-CHLOROTOLUENE BROMOBENZENE BROMOCHLOROMETHANE DIBROMOCHLOROMETHANE DIBROMOMETHANE m&p-Xylene O-XYLENE P-ISOPROPYLTOLUENE STYRENE TRANS-1,3-DICHLOROPROPE	J(all detects) UJ(all non-detects)
MW-401-1Q13MS (MW-401-1Q13)	1,1,2,2-TETRACHLOROETHANE 1,1,2-TRICHLOROETHANE 1,2,3-TRICHLOROPROPANE 1,2,4-TRIMETHYLBENZENE 1,2-DICHLOROBENZENE 1,2-DICHLOROETHANE 1,3-DICHLOROPROPANE BENZENE BROMODICHLOROMETHANE CHLOROBENZENE CIS-1,2-DICHLOROETHENE CIS-1,3-DICHLOROPROPENE TOLUENE	- - - - - - - - - - - - -	74 74 73 84 78 73 74 82 76 80 85 71 84	76.00-122.00 79.00-116.00 77.00-119.00 90.00-112.00 86.00-111.00 78.00-121.00 82.00-116.00 86.00-112.00 82.00-120.00 88.00-110.00 87.00-113.00 79.00-127.00 87.00-113.00	- - - - - - - - - - - - -	1,1,2,2-TETRACHLOROETHAN 1,1,2-TRICHLOROETHANE 1,2,3-TRICHLOROPROPANE 1,2,4-TRIMETHYLBENZENE 1,2-DICHLOROBENZENE 1,2-DICHLOROETHANE 1,3-DICHLOROPROPANE BENZENE BROMODICHLOROMETHANE CHLOROBENZENE CIS-1,2-DICHLOROETHENE CIS-1,3-DICHLOROPROPENE TOLUENE	J-(all detects) UJ(all non-detects)
MW-401-1Q13MS (MW-401-1Q13)	CHLOROMETHANE VINYL CHLORIDE	134 143	- -	70.00-124.00 77.00-127.00	- -	CHLOROMETHANE VINYL CHLORIDE	J+(all detects)

# Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

**Method:** 524.2  
**Matrix:** Water

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
MW-22A-1Q13MS (MW-22A-1Q13)	1,1,2-TRICHLORO-1,2,2-TRIFLU	156	150	73.00-139.00	-	1,1,2-TRICHLORO-1,2,2-TRIFLU	J+(all detects)
	1,1-DICHLOROETHENE	136	135	80.00-126.00	-	1,1-DICHLOROETHENE	
	1,1-DICHLOROPROPENE	129	127	88.00-120.00	-	1,1-DICHLOROPROPENE	
	1,2,4-TRIMETHYLBENZENE	115	116	90.00-112.00	-	1,2,4-TRIMETHYLBENZENE	
	1,3,5-TRIMETHYLBENZENE	124	123	90.00-115.00	-	1,3,5-TRIMETHYLBENZENE	
	2-CHLOROTOLUENE	120	117	88.00-114.00	-	2-CHLOROTOLUENE	
	4-CHLOROTOLUENE	119	117	90.00-112.00	-	4-CHLOROTOLUENE	
	BENZENE	114	-	86.00-112.00	-	BENZENE	
	CHLOROBENZENE	113	111	88.00-110.00	-	CHLOROBENZENE	
	CHLOROETHANE	136	-	75.00-135.00	-	CHLOROETHANE	
	CHLOROFORM	120	-	85.00-117.00	-	CHLOROFORM	
	CHLOROMETHANE	145	141	70.00-124.00	-	CHLOROMETHANE	
	DICHLORODIFLUOROMETHAN	241	227	53.00-153.00	-	DICHLORODIFLUOROMETHA	
	ETHYLBENZENE	131	129	89.00-117.00	-	ETHYLBENZENE	
	ISOPROPYLBENZENE	133	131	90.00-118.00	-	ISOPROPYLBENZENE	
	m&p-Xylene	124	122	90.00-113.00	-	m&p-Xylene	
	N-BUTYLBENZENE	129	128	86.00-123.00	-	N-BUTYLBENZENE	
	N-PROPYLBENZENE	134	132	89.00-120.00	-	N-PROPYLBENZENE	
	O-XYLENE	119	118	90.00-111.00	-	O-XYLENE	
	P-ISOPROPYLTOLUENE	124	123	89.00-119.00	-	P-ISOPROPYLTOLUENE	
SEC-BUTYLBENZENE	134	133	87.00-122.00	-	SEC-BUTYLBENZENE		
TERT-BUTYLBENZENE	129	124	89.00-118.00	-	TERT-BUTYLBENZENE		
TETRACHLOROETHENE	131	128	87.00-118.00	-	TETRACHLOROETHENE		
TOLUENE	120	119	87.00-113.00	-	TOLUENE		
TRANS-1,2-DICHLOROETHENE	120	-	86.00-119.00	-	TRANS-1,2-DICHLOROETHEN		
TRICHLOROFLUOROMETHANE	158	153	74.00-141.00	-	TRICHLOROFLUOROMETHAN		
VINYL CHLORIDE	155	154	77.00-127.00	-	VINYL CHLORIDE		

# Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method: 524.2

Matrix: Water

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
B13D002-BS1 (MW-12A-1Q13 MW-16C-1Q13 MW-3A-1Q13 MW-4A-1Q13 MW-4B-1Q13 MW-4C-1Q13 MW-90B-1Q13 MW-97A-1Q13)	CHLOROMETHANE DICHLORODIFLUOROMETHAN VINYL CHLORIDE	127 190 131	- - -	70.00-124.00 53.00-153.00 70.00-130.00	- - -	CHLOROMETHANE DICHLORODIFLUOROMETHA VINYL CHLORIDE	J+ (all detects)
B13D007-BS1 (MW-304-1Q13 MW-305-1Q13 MW-3A-1Q13 MW-401-1Q13 MW-4A-1Q13 MW-5A-1Q13 MW-6A-1Q13 MW-71B-1Q13 MW-77A-1Q13 MW-8A-1Q13 MW-97A-1Q13 MW-9B-1Q13)	CHLOROMETHANE DICHLORODIFLUOROMETHAN VINYL CHLORIDE	129 191 132	- - -	70.00-124.00 53.00-153.00 70.00-130.00	- - -	CHLOROMETHANE DICHLORODIFLUOROMETHA VINYL CHLORIDE	J+(all detects)
B13D015-BS1 B13D015-BS2 (MW-22A-1Q13 MW-23A-1Q13 MW-24B-1Q13 MW-25B-1Q13 MW-26B-1Q13 MW-27B-1Q13 MW-28B-1Q13 MW-29B-1Q13 MW-2A-1Q13 MW-5A-1Q13 MW-71B-1Q13 MW-7A-1Q13 MW-8A-1Q13)	CHLOROMETHANE DICHLORODIFLUOROMETHAN	127 190	- -	70.00-124.00 53.00-153.00	- -	CHLOROMETHANE DICHLORODIFLUOROMETHA	J+(all detects)
B13D017-BS1 (MW-23A-1Q13 MW-24B-1Q13 MW-25B-1Q13 MW-28B-1Q13 MW-29B-1Q13)	DICHLORODIFLUOROMETHAN	176	-	53.00-153.00	-	DICHLORODIFLUOROMETHA	J+(all detects)

## Reporting Limit Outliers

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method: 524.2

Matrix: Water

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
MW-26B-1Q13	2-BUTANONE	J,C1	2.8	4.0	MRL	ug/L	J (all detects)
	TETRACHLOROETHENE	J,C1	0.4	0.5	MRL	ug/L	

# Field Duplicate RPD Report

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method: 524.2

Matrix: Water

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	MW-23A-1Q13	MW-77A-1Q13			
ACETONE	6.1	7.0	14	1.00	No Qualifiers Applied
CHLOROFORM	2.5	2.6	4	1.00	
TETRACHLOROETHENE	21	25	17	1.00	

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	MW-3A-1Q13	MW-97A-1Q13			
ACETONE	7.3	7.2	1	1.00	No Qualifiers Applied
CHLOROFORM	0.6	0.6	0	1.00	
TETRACHLOROETHENE	240	260	8	1.00	

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	MW-29B-1Q13	MW-71B-1Q13			
ACETONE	5.5	6.5	17	1.00	No Qualifiers Applied
TETRACHLOROETHENE	58	64	10	1.00	

# Field Duplicate RPD Report

Lab Reporting Batch ID: 13088B

Laboratory: FALSE

EDD Filename: 13088b\_voc\_water\_1303066 FINAL

eQAPP Name: Modesto\_Site\_042613

Method: 524.2  
Matrix: Water

<i>Analyte</i>	<i>Concentration (ug/L)</i>		<i>Sample RPD</i>	<i>eQAPP RPD</i>	<i>Flag</i>
	MW-10B-1Q13	MW-90B-1Q13			
ACETONE	3.4	4.100000000	19	1.00	No Qualifiers Applied
TETRACHLOROETHENE	14	15.000000000	7	1.00	

LDC #: 29630A1  
 SDG #: 13088B  
 Laboratory: USEPA Region 9 Laboratory

**VALIDATION COMPLETENESS WORKSHEET**  
 ADR Level IV

Date: 5/10/13  
 Page: 1 of 1  
 Reviewer: *N6*  
 2nd Reviewer: *A*

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	<del>A</del>	Sampling dates: 3/26 - 28/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	2 RSD ≤ 20%
IV.	Continuing calibration/ICV	SW	CCV/ICV ≤ 30%
V.	Blanks	N	Not reviewed for ADR validation.
VI.	Surrogate spikes		Not reviewed for ADR validation.
VII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation.
VIII.	Laboratory control samples		Not reviewed for ADR validation.
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	Not reviewed for ADR validation.
XI.	Target compound identification	N	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs		Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)		Not reviewed for ADR validation.
XIV.	System performance		Not reviewed for ADR validation.
XV.	Overall assessment of data		Not reviewed for ADR validation.
XVI.	Field duplicates		
XVII.	Field blanks		TB = 26, 27 FB = 7

Note: A = Acceptable ND = No compounds detected D = Duplicate  
 N = Not provided/applicable R = Rinsate TB = Trip blank  
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

*Water*

1	MW-12A-1Q13	11	MW-5A-1Q13	21	MW-26B-1Q13	31	MW-401-1Q13MSD
2	MW-16C-1Q13	12	MW-6A-1Q13	22	MW-27B-1Q13	32	MW-22A-1Q13MS
3	MW-90B-1Q13	13	MW-71B-1Q13	23	MW-28B-1Q13	33	MW-22A-1Q13MSD
4	MW-97A-1Q13	14	MW-77A-1Q13**	24	MW-29B-1Q13	34	B13D002 - B1k1
5	MW-9B-1Q13	15	MW-7A-1Q13	25	MW-2A-1Q13**	35	B13D007 -
6	MW-3A-1Q13**	16	MW-8A-1Q13	26	MW-304-1Q13	36	B13D015 -
7	MW-401-1Q13	17	MW-22A-1Q13	27	MW-305-1Q13	37	B13D015 - B1k2
8	MW-4A-1Q13	18	MW-23A-1Q13	28	MW-12A-1Q13MS	38	B13D017 - B1k1
9	MW-4B-1Q13	19	MW-24B-1Q13	29	MW-12A-1Q13MSD	39	
10	MW-4C-1Q13	20	MW-25B-1Q13	30	MW-401-1Q13MS	40	

## TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method 524.2)

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.





**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Modesto  
**Collection Date:** March 28, 2013  
**LDC Report Date:** May 13, 2013  
**Matrix:** Water  
**Parameters:** Volatiles  
**Validation Level:** EPA Level IV  
**Laboratory:** USEPA Region 9 Laboratory  
**Sample Delivery Group (SDG):** 13088B

**Sample Identification**

MW-3A-1Q13  
MW-77A-1Q13  
MW-2A-1Q13

## Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
2/4/13	Naphthalene	28.42	All samples in SDG 13088B	J (all detects) UJ (all non-detects)	P

Average relative response factors (RRF) for all compounds were within method and validation criteria.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/1/13	Dichlorodifluoromethane Vinyl chloride 2,2-Dichloropropane	89.7 31.2 38.0	MW-3A-1Q13 B13D002-BLK1	J (all detects) UJ (all non-detects)	P
4/2/13	Dichlorodifluoromethane Vinyl chloride Trichlorofluoromethane	90.8 32.3 31.7	MW-77A-1Q13 B13D007-BLK1	J (all detects) UJ (all non-detects)	P
4/3/13	Dichlorodifluoromethane	90.1	MW-2A-1Q13 B13D015-BLK1	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

## V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

Samples MW-304-1Q13 and MW-305-1Q13 were identified as trip blanks. No volatile contaminants were found.

Sample MW-401-1Q13 was identified as a field blank. No volatile contaminants were found.

## VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were not within QC limits. Since there were no associated samples, no data were qualified.

## VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
B13D002-BS1	Dichlorodifluoromethane Chloromethane Vinyl chloride	190 (53-153) 127 (70-124) 131 (70-130)	MW-3A-1Q13 B13D002-BLK1	J+ (all detects)	P
B13D007- BS1	Dichlorodifluoromethane Chloromethane Vinyl chloride	191 (53-153) 129 (70-124) 132 (70-130)	MW-77A-1Q13 B13D007-BLK1	J+ (all detects)	P
B13D015- BS1	Dichlorodifluoromethane Chloromethane	190 (53-153) 127 (70-124)	MW-2A-1Q13 B13D015-BLK1	J+ (all detects)	P

## IX. Regional Quality Assurance and Quality Control

Not applicable.

## X. Internal Standards

All internal standard areas and retention times were within QC limits.

## XI. Target Compound Identifications

All target compound identifications were within validation criteria.

## XII. Compound Quantitation

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 13088B	All compounds reported below the RL.	J (all detects)	A

## XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

## XIV. System Performance

The system performance was acceptable.

## XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

## XVI. Field Duplicates

Samples MW-97A-1Q13 and MW-3A-1Q13 and samples MW-77A-1Q13 and MW-23A-1Q13 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-97A-1Q13	MW-3A-1Q13	
Acetone	7.2	7.3	1
Chloroform	0.6	0.6	0

Compound	Concentration (ug/L)		RPD
	MW-97A-1Q13	MW-3A-1Q13	
Tetrachloroethene	260	240	8

Compound	Concentration (ug/L)		RPD
	MW-77A-1Q13	MW-23A-1Q13	
Acetone	7.0	6.1	14
Chloroform	2.6	2.5	4
Tetrachloroethene	25	21	17

**Modesto  
Volatiles - Data Qualification Summary - SDG 13088B**

SDG	Sample	Compound	Flag	A or P	Reason
13088B	MW-3A-1Q13 MW-77A-1Q13 MW-2A-1Q13	Naphthalene	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
13088B	MW-3A-1Q13	Dichlorodifluoromethane Vinyl chloride 2,2-Dichloropropane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
13088B	MW-77A-1Q13	Dichlorodifluoromethane Vinyl chloride Trichlorofluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
13088B	MW-2A-1Q13	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
13088B	MW-3A-1Q13 MW-77A-1Q13	Dichlorodifluoromethane Chloromethane Vinyl chloride	J+ (all detects)	P	Laboratory control samples (%R)
13088B	MW-2A-1Q13	Dichlorodifluoromethane Chloromethane	J+ (all detects) J+ (all detects)	P	Laboratory control samples (%R)
13088B	MW-3A-1Q13 MW-77A-1Q13 MW-2A-1Q13	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

**Modesto  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 13088B**

No Sample Data Qualified in this SDG

**Modesto  
Volatiles - Field Blank Data Qualification Summary - SDG 13088B**

No Sample Data Qualified in this SDG

LDC #: 29630A1

**VALIDATION COMPLETENESS WORKSHEET**

Date: 5/10/13

SDG #: 13088B

ADR/Level IV

Page: 1 of 1

Laboratory: USEPA Region 9 Laboratory

Reviewer: JG

2nd Reviewer: A

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	NA	Sampling dates: 3/28/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	2 RSD ≤ 20%
IV.	Continuing calibration/ICV	SW	CCV/ICV ≤ 30%
V.	Blanks	A	Not reviewed for ADR validation.
VI.	Surrogate spikes	A	Not reviewed for ADR validation.
VII.	Matrix spike/Matrix spike duplicates	SW	Not reviewed for ADR validation. No associated sample, NQ
VIII.	Laboratory control samples	SW	Not reviewed for ADR validation. LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	Not reviewed for ADR validation.
XI.	Target compound identification	A	Not reviewed for ADR validation.
XII.	Compound quantitation/RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Tentatively identified compounds (TICs)	N	Not reviewed for ADR validation.
XIV.	System performance	A	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	Not reviewed for ADR validation.
XVI.	Field duplicates	SW	D <sub>1</sub> = 9, 6      D <sub>2</sub> = 14, 18
XVII.	Field blanks	ND	TB = 7, 26, 27

Note: A = Acceptable      ND = No compounds detected      D = Duplicate  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

Validated Samples:\*\* Indicates sample underwent Level IV validation

Water

1	<del>MW-12A-1Q13</del>	11	<del>MW-5A-1Q13</del>	21	<del>MW-26B-1Q13</del>	31	<del>MW-401-1Q13MSD</del>
2	<del>MW-16C-1Q13</del>	12	<del>MW-6A-1Q13</del>	22	<del>MW-27B-1Q13</del>	32	<del>MW-22A-1Q13MS</del>
3	<del>MW-90B-1Q13</del>	13	<del>MW-71B-1Q13</del>	23	<del>MW-28B-1Q13</del>	33	<del>MW-22A-1Q13MSD</del>
4	MW-97A-1Q13      D <sub>1</sub>	14	MW-77A-1Q13**	24	<del>MW-29B-1Q13</del>	34	B13D002 - Blk1
5	<del>MW-9B-1Q13</del>	15	<del>MW-7A-1Q13</del>	25	MW-2A-1Q13**	35	B13D007 -
6	MW-3A-1Q13**      D <sub>1</sub>	16	<del>MW-8A-1Q13</del>	26	<del>MW-30A-1Q13</del>	36	B13D015 -
7	<del>MW-401-1Q13</del>	17	<del>MW-22A-1Q13</del>	27	<del>MW-305-1Q13</del>	37	B13D017 - (A4)
8	<del>MW-4A-1Q13</del>	18	<del>MW-23A-1Q13</del>	28	<del>MW-12A-1Q13MS</del>	38	
9	<del>MW-4B-1Q13</del>	19	<del>MW-24B-1Q13</del>	29	<del>MW-12A-1Q13MSD</del>	39	
10	<del>MW-4C-1Q13</del>	20	<del>MW-25B-1Q13</del>	30	<del>MW-401-1Q13MS</del>	40	

LDC #: 29630 A1

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: JVG  
 2nd Reviewer: [Signature]

**Method:** Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
<b>II. Technical holding times</b>				
All technical holding times were met.	/			
Cooler temperature criteria was met.	/			
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>III. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) < 20%?		/		
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) < 30%?		/		
<b>V. Blanks</b>				
Was a method blank associated with every sample in this SDG?	/			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
<b>VI. Surrogate spikes</b>				
Were all surrogate %R within QC limits?	/			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		/		
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	/			
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		/		

LDC #: 29630A1

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
 Reviewer: JVG  
 2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?		/		
Were the performance evaluation (PE) samples within the acceptance limits?			/	
<b>X. Internal standards</b>				
Were internal standard area counts within +/-40% from the associated calibration standard?	/			
Were retention times within - 30% of the last continuing calibration or +/- 50% of the initial calibration?	/			
<b>XI. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Tentatively identified compounds (TICs)</b>				
Were the major ions (> 25 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			/	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			/	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?			/	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			
<b>XVI. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	/			
Target compounds were detected in the field duplicates.	/			
<b>XVII. Field blanks</b>				
Field blanks were identified in this SDG.	/			
Target compounds were detected in the field blanks.		/		

## TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method 524.2)

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropane	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.





LDC #: 29630 f1

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Samples (LCS)**

Page: 1 of 1  
 Reviewer: JV6  
 2nd Reviewer:

**METHOD:** GC/MS VOA (EPA Method 524.2)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Was a LCS analyzed for this SDG?
- N N/A Was a LCS analyzed every 20 samples?
- N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	B13D002-BS1	JJ	190 (53-153)	( )	( )	6, B13D002-blk1	J+ dets / P
		A	127 (70-124)	( )	( )	↓	
		C	131 (70-130)	( )	( )		
			( )	( )	( )		
	B13D007-BS1	JJ	191 (53-153)	( )	( )	14, B13D007-Blk1	
		A	129 (70-124)	( )	( )	↓	
		C	132 (70-130)	( )	( )		
			( )	( )	( )		
	B13D015-BS1	JJ	190 (53-153)	( )	( )	25, B13D015-Blk1	
		A	127 (70-124)	( )	( )	↓	✓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

	Compound	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Water)	RPD (Water)
C.	Vinyl chloride	70-130%	<30	V.	Benzene	70-130%	<30
L.	1,2-Dichloroethane	70-130%	<30	R.	cis-1,3-Dichloropropene	70-130%	<30
O.	Carbon tetrachloride	70-130%	<30	X	Bromoform	70-130%	<30
Q.	1,2-Dichloropropane	70-130%	<30	AA.	Tetrachloroethene	70-130%	<30
S.	Trichloroethene	70-130%	<30	TT.	1,2-Dibromoethane	70-130%	<30
U.	1,1,2-Trichloroethane	70-130%	<30	HHH.	1,4-Dichlorobenzene	70-130%	<30

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

**METHOD:** GC MS Volatiles (EPA Method 524.2)

Y N NA Were field duplicate pairs identified in this SDG?  
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD
	4	6	
F	7.2	7.3	1
K	0.6	0.6	0
AA	260	240	8

Compound	Concentration (ug/L)		RPD
	14	18	
F	7.0	6.1	14
K	2.6	2.5	4
AA	25	21	17

LDC #: 29630 A1

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: X

METHOD: GC/MS VOA (EPA Method 524.2)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

 $A_x$  = Area of Compound $C_x$  = Concentration of compound,

S= Standard deviation of the RRFs,

 $A_{is}$  = Area of associated internal standard $C_{is}$  = Concentration of internal standard

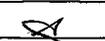
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 5 std)	Recalculated RRF (RRF 5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP5973H	2/4/2013	cis-1,2-DCE (IS1)	3.060	3.060	3.071	3.071	3.87	3.87
			Trichloroethene (IS2)	0.246	0.246	0.246	0.246	3.97	4.01
			Tetrachloroethene (IS3)	0.425	0.425	0.429	0.430	2.03	1.96

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC # 29630A1

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: 

METHOD: GC/MS VOA (EPA Method 524.2)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$$

$$\text{RRF} = (\text{Ax})(\text{Cis}) / (\text{Ais})(\text{Cx})$$

Where:

ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

Ax = Area of compound,

Cx = Concentration of compound,

Ais = Area of associated internal standard

Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	040113H02 HP5973H	4/1/2013	cis-1,2-DCE (IS1)	3.071	3.189	3.189	3.8	3.8
			Trichloroethene (IS2)	0.246	0.249	0.249	1.2	1.2
			Tetrachloroethene (IS3)	0.429	0.477	0.477	11.2	11.2
2	040213h02 HP5973H	4/2/2013	cis-1,2-DCE (IS1)	3.071	3.155	3.155	2.7	2.7
			Trichloroethene (IS2)	0.246	0.249	0.249	1.2	1.2
			Tetrachloroethene (IS3)	0.429	0.466	0.466	8.6	8.6
3	040513h02 HP5973H	4/5/2013	cis-1,2-DCE (IS1)	3.071	3.071	3.071	0.0	0.0
			Trichloroethene (IS2)	0.246	0.249	0.249	1.2	1.2
			Tetrachloroethene (IS3)	0.429	0.457	0.457	6.5	6.5

LDC #: 29630A1

## VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

Page: 1 of 1  
Reviewer: JVG  
2nd Reviewer: ←

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * SSC/SA$

Where: SSC = Spiked sample concentration  
SA = Spike added

RPD =  $|LCS - LCSD| * 2 / (LCS + LCSD)$

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS ID: B13D002-351

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	5.00	NA	5.87	NA	117	117				
Trichloroethene	↓	↓	5.05	↓	101	101				
Benzene	↓	↓	4.86	↓	97	97				
Toluene	↓	↓	5.08	↓	102	102				
Chlorobenzene	↓	↓	4.93	↓	99	99				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



**URS Group, Inc.**

## C.0 QUALITY CONTROL SUMMARY REPORT

### C.1 Introduction

This section summarizes quality assurance (QA) and quality control (QC) results for the samples collected and data generated during the first quarter of 2013 (1Q13) at the Modesto Groundwater Superfund Site, Modesto, California. Sampling activity protocols are provided in the Sampling and Analysis Plan (SAP) (URS Group, Inc. [URS], 2010b). Based on the data review, all data collected and analyzed during this period are of known and acceptable quality in relation to the data quality objectives of this project. All data are considered usable as qualified for the intended purposes.

Between January 9 and March 7, 2013, field samples, field duplicates (FDs), and field QC samples were collected and analyzed. Water and vapor samples were collected from the groundwater treatment system (GWTS). Table B1 (Appendix B) lists contaminants of concern at the Modesto Groundwater Superfund Site.

The following laboratories performed system sampling and monitoring analyses during 1Q13:

#### **ALS Laboratory (Formerly Columbia Analytical Services)**

- Total dissolved solids (TDS) by SM2540C: 3 normal samples (NS), 1 FD
- Total suspended solids (TSS) by SM2540D: 3 NS, 1 FD
- Biochemical oxygen demand (BOD) by SM5210B: 3 NS, 1 FD
- Volatile organic compound (VOCs) in water by United States Environmental Protection Agency (EPA) Method 524.2: 14 NS, 1 FD, and 4 trip blanks (TBs)

#### **Eurofins Laboratory (formerly Air Toxics, Ltd.)**

- VOCs in air by EPA Method TO-15: 6 NS

#### **GEL Laboratories, LLC**

- Total uranium by American Society for Testing and Materials D5174: 10 NS, 1 FD, and 3 matrix spikes/duplicates (MS/MSDs)

Table B3 (Appendix B) summarizes sample results.

Analytical chemistry services were performed by ALS Laboratory in Kelso, Washington; Eurofins Laboratory in Folsom, California; and GEL Laboratories, LLC, in Charleston, South Carolina. All laboratories are certified by the California Department of Health Services through the Environmental Laboratory Accreditation Program to perform hazardous waste analyses.

Data were reviewed and qualified by URS using method and laboratory criteria. Precision and accuracy were evaluated from field and laboratory QC samples. The calculated relative percent difference from MS/MSD and FD and laboratory duplicate pairs provided information on the precision of chemical analyses and field sampling procedures. Evaluation of the percent recoveries of spiked analytes in laboratory control samples (LCSs), MS/MSDs, and surrogates were used to evaluate accuracy. External contamination was assessed through the evaluation of method blanks (MBs) and TBs. Comparability of the data was ensured by having project personnel follow standardized field procedures described in the SAP (URS, 2010b) and having laboratories follow analytical methods and standard operating procedures.

The completeness of the data is the measure of the amount of valid data for each method and matrix (expressed as a percentage). Table C-1 provides the breakdown of completeness of the data sets by method. Completeness and integrity of data were evaluated by validating all the project data, ensuring that all the analytical requests were met, noting whether samples were received in proper condition, and verification that analyses were performed within the appropriated holding times.

- The completeness objective was met for 1Q13 sampling event: 100 percent of the data produced are usable. There are no rejected results.
- Of 1,067 results, 82 normal field results were qualified as estimated or not-detected values, because one or more QA objectives were not met.

Data validation flags were used in the validation process, as defined below:

- U Indicates the compound or analyte was analyzed for but not detected at or above the reported method detection limit (MDL).
- UJ Indicates the compound or analyte was analyzed for but not detected at or above the stated limit. The sample detection limit is considered an estimated value.
- J Indicates the analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.

## **C.2 Quality Control Results**

Table C-1 summarizes the number of analyses performed, the number of estimated results, and the completeness of the data sets by method. Tables C-2 through C-4 provide summaries of all QC sample results for blanks, spikes and duplicates, respectively. Table C-5 presents a summary of the qualified data.

### **C.2.1 Precision and Accuracy**

Precision and accuracy were evaluated based on the results of QC samples collected by the field team and QC samples that originated in the laboratory. Field QC samples are collected throughout the year to meet the QC sample frequency requirements specified in the SAP (URS, 2010b). The calculated relative percent difference for MS/MSDs and FD pairs provided information on the precision of sampling and analytical procedures. All data were reviewed for accuracy based on the surrogate spike, MS/MSD, and LCS percent recoveries. In addition, when applicable, initial and continuing calibration data were reviewed for analytical accuracy. The criteria used for the evaluation are provided in the Quality Assurance Project Plan in the SAP (URS, 2010b). Table C-3 provides the summary of the QC for spikes, and Table C-4 provides the summary of QC for duplicates.

### **C.2.2 Representativeness**

Representativeness was evaluated through the analysis of TB and MB samples along with the temperature blanks. Additionally, sample collection and handling methods and the cooler receipt forms were reviewed. All sample bottles were received in good condition and the chain-of-custody documents agreed with the sample labels.

TBs are required to accompany each cooler of aqueous samples sent to the laboratory for analysis of VOCs. One TB accompanied each cooler for each of the sampling dates. Table C-2 provides the QC results for blanks.

MBs are processed through the same analytical procedures as the associated samples. MBs are analyzed with each batch of samples to provide information on contamination originating in the analytical process.

### C.2.3 Completeness

Completeness of data was evaluated by assuring that all analytical requests were met, samples were received in proper condition, and all analyses were performed within the appropriate holding times. Overall analytical completeness (100 percent) exceeded the project goal of 90 percent. Table C-1 provides the breakdown of completeness by method.

### C.2.4 Comparability

Comparability was evaluated for this sampling event by analyzing all samples according to the specified EPA analytical methods, which use standard units of measurement. Necessary sample dilutions, due to the presence of elevated target compound concentrations, did not affect data usability and comparability. Results for some analytes are reported below the reporting limit (RL) but above the MDL. The “J” flag has been applied to results reported between the MDL and the RL to indicate variability at concentrations near the lower calibration level.

## C.3 Summary of Data Usability

Based on the validation performed, all data for this effort are acceptable and can be used for data interpretation. Any limitations on data use are indicated by qualifier flags. Table C-5 presents the qualified data. The following items summarize data quality by all methods:

- **Method ASTM D5174:** No results for total uranium were qualified due to specific data quality concerns indicated by QC sample results.
- **Method SM2540C:** No results for TDS were qualified due to specific data quality concerns indicated by QC sample results.
- **Method SM2540D:** No results for TSS were qualified due to specific data quality concerns indicated by QC sample results.
- **Method SM5210B:** No results for BOD were qualified due to specific data quality concerns indicated by QC sample results.
- **Method E524.2:** A total of 47 results are qualified. Twenty-nine results are qualified as estimated concentrations because the result is reported between the MDL and RL. One of these 29 results is also qualified due to poor field duplicate precision. Eighteen results are considered not detected due to external contamination.
- **Method TO-15:** A total of 35 results are qualified. Nineteen results are qualified as estimated concentrations because the result is reported between the MDL and RL. Fourteen results are considered not detected due to external contamination. Two results are considered estimated reporting limits due to low LCS recoveries.

**Table C-1. Summary of Completeness by Method, 1Q13**

<b>Method</b>	<b>Number of Samples<sup>a</sup></b>	<b>Number of Analytes</b>	<b>Total Number of Results</b>	<b>Number of Estimated Results</b>	<b>Number of Rejected Results</b>	<b>Percent Completeness</b>
ASTM D5174 (water)	10	1	10	0	0	100
SM2540C (water)	3	1	3	0	0	100
SM2540D (water)	3	1	3	0	0	100
SM5210B (water)	3	1	3	0	0	100
E524.2 (water)	14	59	826	47	0	100
TO-15 (vapor)	6	37	222	35	0	100

<sup>a</sup> This number includes normal field samples only.

ASTM = American Society of Testing and Materials

1Q13 = first quarter 2013

**Table C-2. Summary of Quality Control Results for Blanks, 1Q13**

Method	Number of Blanks	Analyte (Number of Occurrences)	Results
<b>Reagent Blanks</b>			
ASTM D5174	3	No analytes detected	NA
SM2540C	3	No analytes detected	NA
SM2540D	4	No analytes detected	NA
E524.2	4	n-Butylbenzene (2)	0.020 J-0.030 J µg/L
		s-Butylbenzene (1)	0.020 J µg/L
		Hexachlorobutadiene (4)	0.030 J - 0.070 J µg/L
		Methylene chloride (1)	0.23 J µg/L
		Naphthalene (1)	0.10 J µg/L
		1,2,3-Trichlorobenzene (1)	0.080 J µg/L
		1,2,4-Trichlorobenzene (1)	0.070 J µg/L
TO-15	3	Bromomethane (3)	0.33 J – 1.4 J ppbv
		Chlorobenzene (2)	0.093 J – 0.16 J ppbv
		1,2-Dibromoethane (2)	0.11 J – 0.13 J ppbv
		1,3-Dichlorobenzene (3)	0.25 J – 0.47 J ppbv
		1,4-Dichlorobenzene (3)	0.22 J – 0.44 J ppbv
		1,2-Dichlorobenzene (3)	0.22 J – 0.47 J ppbv
		c-1,3-Dichloropropene (1)	0.12 J ppbv
		t-1,3-Dichloropropene (2)	0.16 J – 0.21 J ppbv
		Ethyl benzene (1)	0.11 J ppbv
		Freon 11 (1)	0.062 J ppbv
		Hexachlorobutadiene (3)	0.68 J – 1.1 J ppbv
		Styrene (1)	0.13 J ppbv
		1,1,2,2-Tetrachloroethane (3)	0.055 J – 0.22 J ppbv
		Tetrachloroethene (2)	0.082 J – 0.13 J ppbv
		Toluene (1)	0.11 J ppbv
		1,2,4-Trichlorobenzene (3)	1.2 J – 1.7 J ppbv
		1,2,4-Trimethylbenzene (3)	0.089 J – 0.24 J ppbv
		1,3,5-Trimethylbenzene (2)	0.16 J – 0.27 J ppbv
		o-Xylene (1)	0.13 J ppbv
<b>Trip Blanks</b>			
E524.2	3	Bromodichloromethane (1)	0.080 J ppbv
		Chloroform (2)	0.040 J – 2.4 µg/L
		Chloromethane (1)	0.030 J µg/L
		Dichlorodifluoromethane (1)	0.050 J µg/L
		Toluene (3)	0.050 J – 0.99 µg/L
		Trichlorofluoromethane (1)	0.040 J µg/L

ASTM = American Society of Testing and Materials

J = estimated concentration

NA = not applicable

ppbv = parts per billion by volume

µg/L = micrograms per liter

1Q13 = first quarter 2013

**Table C-3. Summary of Quality Control Results for Spikes, 1Q13**

Method	Number of Spikes	Analyte	Recovery Results (%)	Acceptance Criteria <sup>a</sup> (%)	Results Not Meeting Criteria <sup>b</sup>
<b>Laboratory Control Spikes</b>					
ASTM D5174	6	Uranium	99 – 107	75 – 125	0
SM2540C	3	Total dissolved solids	99 – 103	90 – 108	0
SM2540D	4	Total suspended solids	93 – 98	80 – 115	0
SM5210B	3	Biochemical oxygen demand	96 – 113	85 – 115	0
E524.2	4	59 Analytes	Varies	70 – 130	0
TO-15	6	37 Analytes	Varies	70 – 130	2
<b>Matrix Spikes</b>					
ASTM D5174	3	Uranium	93 – 103	75 – 125	0
<b>Surrogate Spikes</b>					
E524.2	14	4-Bromofluorobenzene	81 – 95	70 – 130	0
		Dibromofluoromethane	99 – 102	82 – 124	0
		Toluene-d8	87 – 100	82 – 124	0
TO-15	6	1,2-Dichloroethane-d4	85 – 122	70 – 130	0
		4-Bromofluorobenzene	95 – 102	70 – 130	0
		Toluene-d8	94 – 98	70 – 130	0

Note: Not detected sample results associated with a high-quality control sample result are considered not affected and are not qualified.

<sup>a</sup> The acceptance criteria represent the acceptable spike recovery ranges.

<sup>b</sup> Refers to individual analytical results, not overall sample results.

ASTM = American Society of Testing and Materials

1Q13 = first quarter 2013

% = percent

**Table C-4. Summary of Quality Control Results for Duplicates, 1Q13**

<b>Method</b>	<b>Number of Duplicates</b>	<b>Analyte (Number of Detected Pairs)</b>	<b>Range of Results RPD (%)</b>	<b>Acceptance Criteria RPD<sup>a</sup> (%)</b>	<b>Results Not Meeting Criteria<sup>b</sup></b>
<b>Field Duplicates<sup>c</sup></b>					
SM2450C	1	Total dissolved solids (1)	4.5	30	0
SM2540D	1	None	NA	30	NA
SM5210D	1	None	NA	30	0
E524.2	1	Benzene (1)	29	30	0
		Chloromethane (1)	35	30	1
		Tetrachloroethene (1)	0	30	0
<b>Laboratory Control Spike Duplicates</b>					
TO-15	3	37 Analytes	Varies	30	0

<sup>a</sup> The acceptance criterion represents the upper acceptable bound of the RPD for duplicates.

<sup>b</sup> Refers to individual analytical results, not overall sample results.

<sup>c</sup> RPDs were calculated only for pairs where both results were greater than the reporting limit.

ASTM = American Society of Testing and Materials

NA = not applicable

RPD = relative percent difference

1Q13 = first quarter 2013

% = percent

**Table C-5. Qualified Data for the GWTS 1Q13**

Sample Port	Sample ID	Sample Date	Analyte	Result	Detection Limit	Reporting Limit	Units	EPA Flag	Reason Code	
<b>E524.2</b>										
SP-01	GWTS-INF-0103	1/16/2013	1,1,1,2-Tetrachloroethane	0.120	0.0710	0.500	µg/L	J	6G	
			Bromodichloromethane	0.170	0.0490	0.500	µg/L	J	6G	
			Chloromethane	0.190	0.0210	0.500	µg/L	J	6G	
			Dichlorodifluoromethane	0.0900	0.0440	0.500	µg/L	J	6G	
			Toluene	0.460	0.0500	0.500	µg/L	U	1B	
	GWTS-INF-0202	2/6/2013	1,1,1,2-Tetrachloroethane	0.170	0.0710	0.500	µg/L	J	6G	
			Bromodichloromethane	0.170	0.0490	0.500	µg/L	J	6G	
			Chloromethane	0.0300	0.0210	0.500	µg/L	J	6G	
			Cis-1,2-Dichloroethene	0.280	0.0420	0.500	µg/L	J	6G	
			Dichlorodifluoromethane	0.0900	0.0440	0.500	µg/L	J	6G	
			Toluene	0.660	0.0500	0.500	µg/L	U	1B	
	GWTS-INF-0302	3/7/2013	Trichloroethylene	0.480	0.0270	0.500	µg/L	J	6G	
			1,1,1,2-Tetrachloroethane	0.150	0.0710	0.500	µg/L	J	6G	
			Bromodichloromethane	0.180	0.0490	0.500	µg/L	J	6G	
			Cis-1,2-Dichloroethene	0.280	0.0420	0.500	µg/L	J	6G	
SP-03	CRB INF-0103	1/16/2013	Dichlorodifluoromethane	0.0800	0.0440	0.500	µg/L	J	6G	
			Toluene	0.0700	0.0500	0.500	µg/L	U	1B	
			Trichloroethylene	0.420	0.0270	0.500	µg/L	J	6G	
			Benzene	0.0400	0.0220	0.500	µg/L	J	6G	
			Chloroform	0.110	0.0320	0.500	µg/L	U	1B	
	CRB INF-0202	2/6/2013	Chloromethane	0.0700	0.0210	0.500	µg/L	J	3D,6G	
			Toluene	0.610	0.0500	0.500	µg/L	U	1B	
			Chloroform	0.150	0.0320	0.500	µg/L	J	6G	
			Chloromethane	0.0400	0.0210	0.500	µg/L	J	6G	
	CRB INF-0302	3/7/2013	Toluene	0.190	0.0500	0.500	µg/L	U	1B	
			Chloroform	0.320	0.0320	0.500	µg/L	U	1B	
			Toluene	0.0500	0.0500	0.500	µg/L	U	1B	
	SP-04	CRB Mid-0103	1/16/2013	Toluene	0.130	0.0500	0.500	µg/L	U	1B
		CRB Mid-0202	2/6/2013	Chloromethane	0.0300	0.0210	0.500	µg/L	J	6G
				Toluene	0.260	0.0500	0.500	µg/L	U	1B
CRB Mid-0302		3/7/2013	Chloroform	0.0800	0.0320	0.500	µg/L	U	1B	
			Toluene	0.110	0.0500	0.500	µg/L	U	1B	

**Table C-5. (Continued)**

Sample Port	Sample ID	Sample Date	Analyte	Result	Detection Limit	Reporting Limit	Units	EPA Flag	Reason Code
<b>E524.2</b>									
SP-05	CRB EFF-0103	1/16/2013	Chloromethane	0.0400	0.0210	0.500	µg/L	J	6G
			Toluene	0.330	0.0500	0.500	µg/L	U	1B
SP-07	EFF-0102	1/9/2013	1,2-Dichloroethane	0.140	0.0380	0.500	µg/L	J	6G
			2-Chlorotoluene	0.0700	0.0230	0.500	µg/L	J	6G
			4-Chlorotoluene	0.0500	0.0270	0.500	µg/L	J	6G
			Chloroform	0.130	0.0320	0.500	µg/L	U	1B
			Chloromethane	0.110	0.0210	0.500	µg/L	U	1B
			Hexachlorobutadiene	0.0300	0.0300	0.500	µg/L	U	1A
			M,P-Xylenes	0.0600	0.0450	0.500	µg/L	J	6G
			O-Xylene	0.0300	0.0230	0.500	µg/L	J	6G
			Tetrachloroethene	0.470	0.0300	0.500	µg/L	J	6G
			Toluene	0.110	0.0500	0.500	µg/L	J	6G
	EFF-0103	1/16/2013	Toluene	0.470	0.0500	0.500	µg/L	U	1B
	EFF-0202	2/6/2013	Chloromethane	0.220	0.0210	0.500	µg/L	J	6G
			Toluene	0.690	0.0500	0.500	µg/L	U	1B
SP-08	GWTS Pr GAC-0103	1/16/2013	Dichlorodifluoromethane	0.720	0.650	4.60	PPBV	J	6G
			Toluene	0.600	0.320	4.60	PPBV	J	6G
	GWTS Pr GAC-0202	2/6/2013	1,2,4-Trichlorobenzene	2.30	0.310	4.80	PPBV	U	1A
			1,2,4-Trimethylbenzene	0.810	0.250	1.20	PPBV	U	1A
			1,3,5-Trimethylbenzene	0.350	0.210	1.20	PPBV	U	1A
			1,3-Dichlorobenzene	0.710	0.150	1.20	PPBV	U	1A
			1,4-Dichlorobenzene	1.70	0.180	1.20	PPBV	U	1A
			Dichlorodifluoromethane	0.480	0.170	1.20	PPBV	J	6G
			Toluene	0.350	0.0830	1.20	PPBV	U	1A
			Trichlorofluoromethane	0.260	0.140	1.20	PPBV	U	1A
	GWTS Pr GAC-0302	3/7/2013	1,1,2,2-Tetrachloroethane		0.410	4.60	PPBV	UJ	2A-
			Bromomethane	9.70	3	46	PPBV	J	6G
SP-09	GWTS Stack-0103	1/16/2013	1,2-Dichlorobenzene	0.260	0.210	1.10	PPBV	U	1A
			Benzene	0.620	0.420	1.10	PPBV	J	6G
			Bromomethane	1.40	0.510	11	PPBV	U	1A
			Chloroform	0.860	0.200	1.10	PPBV	J	6G
			Dichlorodifluoromethane	0.760	0.160	1.10	PPBV	J	6G

**Table C-5. (Continued)**

Sample Port	Sample ID	Sample Date	Analyte	Result	Detection Limit	Reporting Limit	Units	EPA Flag	Reason Code
<b>TO15</b>									
	GWTS Stack-0202	2/6/2013	M,P-Xylenes	0.540	0.250	1.10	PPBV	J	6G
			O-Xylene	0.240	0.180	1.10	PPBV	J	6G
			Toluene	0.640	0.0800	1.10	PPBV	J	6G
			Trichlorofluoromethane	0.210	0.130	1.10	PPBV	J	6G
			1,2-Dichlorobenzene	0.890	0.260	1.40	PPBV	U	1A
			1,4-Dichlorobenzene	0.260	0.210	1.40	PPBV	U	1A
			Bromomethane	2.20	0.620	14	PPBV	U	1A
			Dichlorodifluoromethane	0.590	0.200	1.40	PPBV	J	6G
	GWTS Stack-0302	3/7/2013	Toluene	0.180	0.0960	1.40	PPBV	U	1A
			Trichlorofluoromethane	0.170	0.160	1.40	PPBV	U	1A
			1,1,2,2-Tetrachloroethane		0.100	1.10	PPBV	UJ	2A-
			1,2-Dichlorobenzene	0.330	0.250	1.10	PPBV	J	6G
			1,4-Dichlorobenzene	0.180	0.0850	1.10	PPBV	J	6G
			Bromomethane	2.40	0.730	11	PPBV	J	6G
			Cis-1,2-Dichloroethene	0.610	0.500	1.10	PPBV	J	6G
			Dichlorodifluoromethane	0.580	0.160	1.10	PPBV	J	6G
			Trans 1,3-Dichloropropene	0.170	0.120	1.10	PPBV	J	6G
			Trichloroethylene	0.370	0.260	1.10	PPBV	J	6G

- CRB = carbon
- EPA = United States Environmental Protection Agency
- GWTS = groundwater treatment system
- ID = identification
- INF = influent
- J = Analyte concentration considered an estimated value because one or more quality control specifications were not met.
- PPBV = part per billion by volume
- SP = sample port
- U = Analyte considered not detected due to external contamination.
- µg/L = micrograms per liter
- 1Q13 = first quarter 2013
- Reason Code**
- 1A = method blank contamination
- 1B = trip blank contamination
- 2A- = low laboratory control sample recovery
- 3D = poor field duplicate precision
- 6G = result reported between the detection limit and reporting limit

## **Appendix D**

### **System Uptime and Shutdown Tables**

## Appendix D

### System Uptime and Shutdown Tables

This section presents quantitative results on operational time for the groundwater treatment system (GWTS) and soil vapor extraction (SVE) systems. Operation time and percentage of uptime for this reporting period (January 1 through March 31, 2013) are as follows:

<u>Remedial System</u>	<u>Total Operation Hours</u>	<u>Percentage of Operation</u>
Groundwater Treatment	1,912	88.5%
Soil Vapor Extraction	2,057	95.2%

Tables D-1 through D-3 presents the GWTS shutdown summaries for January, February, and March 2013, respectively.

Table D-4 through D-6 presents the SVE systems shutdown summaries for January, February, and March 2013, respectively.

**Table D-1. GWTS Shutdown Summary, January 2013**

<b>Date</b>	<b>Duration, hours</b>	<b>Reason</b>	
1/4/13 – 1/9/13	123	Plant shut down to exchange media for LGAC, VGAC, and IX vessels.	
<b>Total</b>	123	Hours in month: 744	% operational: >83

GWTS = groundwater treatment system  
 IX = ion exchange  
 LGAC = liquid-phase granular activated carbon  
 VGAC = vapor-phase granular activated carbon  
 % = percent

**Table D-2. GWTS Shutdown Summary, February 2013**

<b>Date</b>	<b>Duration, hours</b>	<b>Reason</b>	
2/14/13 – 2/19/13	124	Plant shut down to replace LGAC lid gasket and airstripper tray.	
<b>Total</b>	124	Hours in month: 672	% operational: 82

GAC = granular activated carbon  
 GWTS = groundwater treatment system  
 LGAC = liquid-phase granular activated carbon  
 % = percent

**Table D-3 GWTS Shutdown Summary, March 2013**

<b>Date</b>	<b>Duration, hours</b>	<b>Reason</b>	
3/14/13 – 3/14/13	1.3	Plant shut down to replace VGAC inlet flange gasket.	
<b>Total</b>	1.3	Hours in month: 744	% operational: >99.9

GWTS = groundwater treatment system  
 VGAC = vapor-phase granular activated carbon  
 % = percent  
 > = greater than

**Table D-4. SVE System Shutdown Summary, January 2013**

<b>Date</b>	<b>Duration, hours</b>	<b>Reason</b>	
1/8/13 – 1/9/13	29.2	Plant shut down due to full knock-out pot.	
Total	29.2	Hours in month: 744	% operational: 96

SVE = soil vapor extraction  
% = percent

**Table D-5. SVE System Shutdown Summary, February 2013**

<b>Date</b>	<b>Duration, hours</b>	<b>Reason</b>	
—	—	No plant shutdowns reported.	
Total	—	Hours in month: 672	% operational: 100

SVE = soil vapor extraction  
% = percent

**Table D-6 SVE System Shutdown Summary, March 2013**

<b>Date</b>	<b>Duration, hours</b>	<b>Reason</b>	
3/8/13 – 3/21/13	73.5	The plant shut down due to broken blower motor fan which was replaced.	
Total	73.5	Hours in month: 744	% operational: 90

SVE = soil vapor extraction  
% = percent

## **Appendix E**

### **Operation and Maintenance Process Logs**

URS Corporation  
 Modesto, Superfund Site  
 Process Data Sheet

Groundwater Treatment System																	
			Hour Meter Hrs.	Utility Power		System Influent				Anti-Scaling Sequestant T-3 Gallons	Air Stripper Water						
Initials	Date	Time		kW	kWh	Flow GPM	Pressure PSI	Total Flow Gallons	pH		Influent Pressure PSI	Effluent Pressure PSI	Flow GPM	Pressure PSI	Influent Pressure PSI	Effluent Pressure PSI	Flow GPM
TH	11/3/13	0815	56198	15.98	38742	48	14	—	7.24	27	7.8	4.6	58	46.5	45.1	43.7	60
TH	11/9/13	1225	56223	15.98	39018	47	14.5	—	7.10	26.5	8.8	3.4	58	58.0	58.8	51.0	60
TH	11/16/13	0830	56387	15.98	40631	47	14	—	7.00	23.5	8.1	4.9	58	43.5	42.1	40.7	60
TH	11/24/13	0800	56579	15.98	42492	47	13	—	6.72	26	8.9	5.7	58	42	42.0	40.1	60
TH	11/30/13	0830	56723	15.98	43913	47	13	—	7.01	23	8.5	4.9	59	43.6	41.8	44	61
Design Range or Target Value				10.0-30	N/A	3.0-45	30-50	n/a	5.0-12.0	3.0-25	30-50	30-50	40-70	30-50	30-50	30-50	40-70

Groundwater Treatment System																	
Air Stripper Vapor						Liquid Carbon			Ion Exchange			System Effluent				Radiation Meter	
Sump Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Influent Pressure	Mid-Bed Pressure	Effluent Pressure	Influent Pressure	Mid-Bed Pressure	Flow	Flow	Pressure	pH	Effluent Total Flow	Outside GWTS	Inside GWTS
Air Stripper Trays		VGAC Vessel		Stack													
in. H2O	in. H2O	ppm	ppm	°F	CFM	PSI	PSI	PSI	PSI	PSI	GPM	Gpm	in H2O	pH	Gallons	mR/hr Peak	mR/hr Peak
5	0	0	0	67.0	645	41	35	29	21	11	43	53	0	8.00	89809	0	0
5	0	0	0	67.7	655	49	38	33.5	22	14	42	52	0	8.28	90500	0	0
10	0	0	0	67.7	595	38	32	28	18.5	11.5	43	53	0	7.82	95054	0	0
9.5	0	0	0	67.8	600	37	31	27	19	11	42	52	0	7.65	80355	0	0
10	0	0	0	67.7	600	38.5	32	28	19	11.5	43	53	0	8.02	84358	0	0
5.0-25	5.0-25	0-100	0-10	65-75	550-650	25-70	25-60	25-50	1.0-10	1.0-10	3.0-60	3.0-50	1.0-5	5.0-12	N/A	0-1	0-1

Soil Vapor Extraction System																	
SVE Influent						Blower			Filter		Vapor				Radiation Meter		
Date	Time	Pressure in. H2O	Temp °F	Flow CFM	Dilution Yes/No	Hour Meter Hrs.	Effluent Pressure in. H2O	Temp °F	Flow CFM	Influent Pressure in. H2O	Effluent Pressure in. H2O	Influent P.I.D.	Effluent P.I.D.	Temp °F	Flow CFM	Outside SVE	Inside SVE
		VGAC Vessel		Stack													
		ppm	ppm	°F	CFM												
11/3/13	0915	-60	60.4	164	N	16018	2	182.8	163	-65	-69	0	0	182.8	163	0	0
11/9/13	1145	-56	59.7	164	N	16135	2.75	182.9	163	-68	-65	0	0	182.9	163	0	0
11/16/13	1115	-55	60.2	160	N	16303	2.75	188.0	159	-60	-63	0	0	188.0	159	0	0
11/24/13	0845	-55	61.1	150	N	16492	2.25	195.4	157	-59	-62	0	0	195.4	157	0	0
11/30/13	0920	-52	61.5	150	N	16637	2.50	192.9	153	-56	-59	0	0	192.9	153	0	0
		25-70	65-75	100-200	NO	N/A	2.0-10	65-75	100-200	N/A	N/A	0-100	0-10	65-75	100-200	0-1	0-1

Note: For pressures measured relative to atmospheric (barometric) pressure, use (+) for vacuum.

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

SVE

11/3/13 9.09 39379 11/24/13 9.09 43440  
 11/9/13 9.09 40397 11/30/13 9.09 44683

URS Corporation  
 Modesto Superfund Site  
 Site Inspections

Task Description	1/3/13 TH	1/7/13 DT	1/16/13 TH	1/24/13 TH	1/30/13
WEEKLY	Task Performed (Technician Initials or Value)				
<b>Groundwater Treatment System</b>					
Record Process Logs	✓	✓	✓	✓	✓
Check Blowers and motors for heat, noise, and vibration					
Check Air Stripper Feed pump/motor (P-2) for heat, noise, and vibration.					
Inspect all process piping for leaks					
Inspect all process hoses/fittings for leaks					
Check Air Stripper Effluent pump/motor (P-3) for heat, noise, and vibration.					
Inspect Sump (Pump as Necessary).					
Check Air Stripper sump level site glass. Clean as necessary					
Inspect IX system influent vacuum break for leaks					
Clean up compound area					
Drain VGAC condensate					
Perform autodialer operational check					
Autodialer battery check					
Perform inspection of EW-1R pipeline					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					
<b>Soil Vapor Extraction System</b>					
Record Process Logs	✓	✓	✓	✓	✓
Check Blowers and motors for heat, noise, and vibration					
Inspect all process piping for leaks					
Clean up compound area					
Drain VGAC condensate					
Perform autodialer operational check					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					

Task Description	Date	Performed Initials	Reading
<b>MONTHLY</b>			
Check fire extinguisher	1/9/13	TH	
Inspect EW-1R vault	1/9/13	DT	
Inspect VI Mitigation operations - "Part House"	1/16/13	DT	
Replace Auto Dialer Batteries (if necessary)			
<b>Quarterly</b>			
Interlock Checks Groundwater			
Interlock Checks SVE			
Collect Well Flow read at SVE-02			
Collect Well Flow read at SVE-03			
Collect Well Flow read at SVE-04			
<b>ANNUAL</b>			
Collect Amp readings			
<b>Instrument Calibration</b>			
System Effluent Flow Meter (Performed in June and December)	12/11/12	TH	

Notes:

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

**URS Group  
Preventative and Corrective Maintenance Log  
Modesto Superfund Site**

Site Name: \_\_\_\_\_  
 Period: 11/1/13 to 11/31/13  
(month/day/year) (month/day/year)

Date	Initials	Hour Meter	Maintenance Performed	LOTO Required	LOTO Description (Where?Why?)	LOCK ON (Date/Time)	Zero Energy Check	LOCK OFF (Date/Time)	LOCK ID (Lock No.)
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		

**URS Group  
Preventative and Corrective Maintenance Log  
Modesto Superfund Site**

Site Name: \_\_\_\_\_

Shutdown Date: <u>11/4/13</u>	Startup Date: <u>11/9/13</u>
Shutdown Time: <u>0745</u> <b>GWTP</b>	Startup Time: <u>1100</u>
Shutdown Purpose or Cause: <b>planned shutdown because of pce overage, drained LGACs, VGAC, and IEX vessels to prepare for change-outs with Baker.</b>	
Corrective Actions Taken (if shutdown was unplanned):	
Performed By: <b>TH</b>	

Shutdown Date: <u>11/8/13</u>	Startup Date: <u>11/9/13</u>
Shutdown Time: <u>0500</u> <b>SVE</b>	Startup Time: <u>1010</u>
Shutdown Purpose or Cause: <b>shutdown because knockout pot full.</b>	
Corrective Actions Taken (if shutdown was unplanned): <b>Emptied knockout pot</b>	
Performed By: <b>TH</b>	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause:	
Corrective Actions Taken (if shutdown was unplanned):	
Performed By:	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause:	
Corrective Actions Taken (if shutdown was unplanned):	
Performed By:	

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Date: Wednesday, January 16, 2013  
 Weather: Sunny  
 Sampler: Tanrah Headrick

SAMPLE COLLECTION RECORD  
 MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
830	GWTS Effluent	95054	53

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
900	EFF-0113	E524.2	Effluent-NS	SP-07	3	40 ml VOA	HCL	7.82	0.99	16.6
900	EFF-0113	D5174	Effluent-NS	SP-07	1	1 Liter Poly	HNO3	7.82	0.99	16.6
900	EFF-0113	SM2540C	Effluent-NS	SP-07	1	250 ml Poly	None	7.82	0.99	16.6
915	EFF-0113	SM2540D, SM5210B	Effluent-NS	SP-07	1	500 ml Poly	None	8	0.99	11.3
930	CRB EFF-0113	E524.2	CRB EFF		3	40 ml VOA	HCL	7.84	0.98	17.8
935	CRB Mid-0113	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCL	7.83	0.98	18
940/1200 FD	CRB INF-0113	E524.2	CRB INF	SP-03	3	40 ml VOA	HCL	7.84	0.98	17.9
922	IEX EFF-0113	D5174	IEX Eff	SP-10	1	1 Liter Poly	HNO3	7.81	0.97	18.3
925	IEX Mid-0113	D5174	IEX Mid	SP-06	1	1 Liter Poly	HNO3	7.82	0.97	17.9
950	GWTS-INF-0113	E524.2	Influent-NS	SP-01	3	40 ml VOA	HCL	7	0.99	18.8
950	GWTS-INF-0113	D5174	Influent-NS	SP-01	1	1 Liter Poly	HNO3	7	0.99	18.8
1200	MW-103-NS	E524.2	FD	SP-03	3	40 ml VOA	HCL	--	--	--
700	MW-302-1Q13	E524.2	TB	TB	2	40 ml VOA	HCL	--	--	--
1104	GWTS Stack-0113	TO-15	GWTP VGAC Effluent-NS	SP-09	1	1 Liter Summa	None	-30 in. Hg	can # 24402	
1108	GWTS Pr GAC-0113	TO-15	GWTP VGAC Influent-NS	SP-08	1	1 Liter Summa	None	-30 in. Hg	can # 35674	
1153 on 1/9	SVE Stack-0113	TO-15	SVE VGAC Effluent-NS	SP-12	1	400ml Summa	None	-30 in. Hg	can # 1579	
1159 on 1/9	SVE Pre GAC-0113	TO-15	SVE VGAC Influent-NS	SP-11	1	400ml Summa	None	-30 in. Hg	can # 1576	

Sampler Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Notes:

	FD = Field Duplicate
	FB = Field Blank (ambient)
	NS = Normal Sample
	TB = Trip Blank
Scan COCs to:	
URS Attn: Debbie Casagrande (916) 679-2040	

URS Corporation  
Modesto, Superfund Site  
Process Data Sheet

Groundwater Treatment System																		
			Hour Meter Hrs.	Utility Power		System Influent				Anti-Sealant Sequestrant T-3 Gallons	Air Stripper Water							
Initials	Date	Time		kW	kWh	Flow GPM	Pressure PSI	Total Flow Gallons	pH		Influent Pressure PSI	Effluent Pressure PSI	Flow GPM	Pressure PSI	Influent Pressure PSI	Effluent Pressure PSI	Flow GPM	
TH	2/6/13	0820	56891	15.98	45563	47	13	—	6.97	27	8.5	5.2	59	44	43.8	42.1	61	
TH	2/14/13	0820	57083	15.98	47453	47	13	—	6.72	24	8.8	5.3	60	44	43.9	42.3	62	
TH	2/21/13	0815	57127	15.98	47922	48	13	—	6.65	23	8.5	5.3	60	44	43.6	42.0	62	
TH	2/28/13	1200	57299	15.98	49639	48	13	—	6.62	26	9.9	6.7	60	44	45.3	42.8	62	
Design Range or Target Value				10.0-30	N/A	3.0-85	30-50	n/a	5.0-12.0	3.0-25	30-50	30-50	40-70	30-50	30-50	30-50	40-70	

Groundwater Treatment System																		
Air Stripper Vapor						Liquid Carbon			Ion Exchange			System Effluent				Radiation Meter		
Sump Pressure	Effluent Pressure	Influent P.L.D.	Effluent P.L.D.	Temp	Flow	Influent Pressure	Mid-Bed Pressure	Effluent Pressure	Influent Pressure	Mid-Bed Pressure	Flow	Flow	Pressure	pH	Effluent Total Flow	Outside GWTS	Inside GW	
Air Stripper Trays		VGAC Vessel		Stack		PSI	PSI	PSI	PSI	PSI	GPM	Gpm	in H2O	pH	Gallons	mR/hr Peak	mR/hr Pos	
In. H2O	In. H2O	ppm	ppm	°F	CFM													
10	8	0	0	68.3	580	39	32	28	19	11.5	43	53	0	7.92	09008	0	0	
10	8	0	0	68.0	545	39	32	28.5	19	12	43	53	0	7.53	14328	0	0	
9	7	0	0	68.0	630	39	32	28	19	11.5	43	53	0	7.50	15552	0	0	
8	7	0	0	70.0	635	38.5	31.5	28	19	12	43	53	0	7.49	20309	0	0	
5.0-25	5.0-25	0-100	0-10	63-75	350-650	25-70	25-60	25-50	1.0-10	1.0-10	3.0-60	3.0-50	1.0-3	5.0-12	N/A	0-1	0-1	

Soil Vapor Extraction System																		
SVE Influent						Blower			Filter		Vapor				Radiation Meter			
Date	Time	Pressure In. H2O	Temp °F	Flow CFM	Dilution Yes/No	Hour Meter Hrs.	Effluent Pressure in. H2O	Temp °F	Flow CFM	Influent Pressure in. H2O	Effluent Pressure in. H2O	Influent P.L.D.	Effluent P.L.D.	Temp	Flow	Outside SVE	Inside SVE	
		VGAC Vessel		Stack		ppm	ppm	°F	CFM	ppm	ppm	ppm	ppm	°F	CFM	mR/hr Peak	mR/hr Pos	
2/6/13	1040	-50	62.2	144	N	16806	2.5	196.2	157	-55	-58	0	0	196.2	157	0	0	
2/14/13	1205	-49	63.5	140	N	16999	2.5	202.9	144	-53	-56	0	0	202.9	144	0	0	
2/21/13	1300	-50	62.5	146	N	17168	2.5	204.4	143	-53	-55	0	0	204.4	143	0	0	
2/28/13	1230	-49	67.3	148	N	17336	2.5	209.9	153	-51	-54	0	0	209.9	153	0	0	
		25-70	65-75	100-200	NO	N/A	2.0-10	65-75	100-200	N/A	N/A	0-100	0-10	65-75	100-200	0-1	0-1	

Note: For pressures measured relative to atmospheric (barometric) pressure, use (-) for vacuum.

SVE

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

2/6/13 9.27 46130 2/28/13 9.39 50761  
 2/14/13 9.27 47792  
 2/21/13 9.27 47922

**URS Group  
Preventative and Corrective Maintenance Log  
Modesto Superfund Site**

Site Name: \_\_\_\_\_  
 Period: \_\_\_\_\_ to \_\_\_\_\_  
(month/day/year) (month/day/year)

Date	Initials	Hour Meter	Maintenance Performed	LOTO Required	LOTO Description (Where?Why?)	LOCK ON (Date/Time)	Zero Energy Check	LOCK OFF (Date/Time)	LOCK ID (Lock No.)
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		

**URS Group  
Preventative and Corrective Maintenance Log  
Modesto Superfund Site**

Site Name: \_\_\_\_\_

Shutdown Date: <u>2/14/13</u>	Startup Date: <u>2/19/13</u>
Shutdown Time: <u>0845</u>	Startup Time: <u>1300</u>
Shutdown Purpose or Cause: <u>Replace gasket on secondary LGAC lid. Stripper tower gaskets found to be leaking on restart. System shut back down until replacements ordered and installed.</u>	
Corrective Actions Taken (if shutdown was unplanned): <u>order new gaskets to be installed week of 2/18.</u>	
Performed By: <u>TT</u>	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause:	
Corrective Actions Taken (if shutdown was unplanned):	
Performed By:	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause:	
Corrective Actions Taken (if shutdown was unplanned):	
Performed By:	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause:	
Corrective Actions Taken (if shutdown was unplanned):	
Performed By:	

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

URS Corporation  
 Modesto Superfund Site  
 Site Inspections

Task Description	2/6/13 TH	2/14/13 TH	2/21/13 TH	2/28/13	11
WEEKLY					
Task Performed (Technician Initials or Value)					
Groundwater Treatment System					
Record Process Logs					
Check Blowers and motors for heat, noise, and vibration					
Check Air Stripper Feed pump/motor (P-2) for heat, noise, and vibration.					
Inspect all process piping for leaks					
Inspect all process hoses/fittings for leaks					
Check Air Stripper Effluent pump/motor (P-3) for heat, noise, and vibration.					
Inspect Sump (Pump as Necessary).					
Check Air Stripper sump level site glass. Clean as necessary					
Inspect IX system influent vacuum break for leaks					
Clean up compound area					
Drain VGAC condensate					
Perform autodialer operational check					
Autodialer battery check					
Perform inspection of EW-1R pipeline					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					
Soil Vapor Extraction System					
Record Process Logs					
Check Blowers and motors for heat, noise, and vibration					
Inspect all process piping for leaks					
Clean up compound area					
Drain VGAC condensate					
Perform autodialer operational check					
Inspection of Spill Response Kit					
Inspection of Emergency Response Plan/MSDS Binder					

Task Description	Date	Performed Initials	Reading
MONTHLY			
Check fire extinguisher	2/6/13	TH	
Inspect EW-1R vault	2/14/13	DM	
Inspect VI Mitigation operations - "Part House"	2/21/13	TH	
Replace Auto Dialer Batteries (if necessary)	N/A	TH	
Quarterly			
Interlock Checks Groundwater	—	—	
Interlock Checks SVE	—	—	
Collect Well Flow read at SVE-02	—	—	—
Collect Well Flow read at SVE-03	—	—	—
Collect Well Flow read at SVE-04	—	—	—
ANNUAL			
Collect Amp readings			
Instrument Calibration			
System Effluent Flow Meter (Performed in June and December)	12/11/12	DT	

Notes:

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Date: Wednesday, February 06, 2013  
 Weather: Cloudy  
 Sampler: Tamrah Headrick

**SAMPLE COLLECTION RECORD  
 MODESTO SUPERFUND SITE**

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
820	GWTS Effluent	9008	53

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
854	EFF-0202	E524.2	Effluent-NS	SP-07	3	40 ml VOA	HCL	7.92	1000	18.8
854	EFF-0202	SM2540C	Effluent-NS	SP-07	1	1 Liter Poly	None	7.92	1000	18.8
900	EFF-0202	SM2540D, SM5210B	Effluent-NS	SP-07	1	1 Liter Poly	None	8.08	1000	3.5
908	IEXEFF-0202	D5174	IEX Eff	SP-10	1	250 ml Poly	HNO3	7.71	980	19
911	IEX Mid-0202	D5174	IEX Mid	SP-06	1	250 ml Poly	HNO3	7.67	980	18.9
915	Pre IEX-0202	D5174	Pre IEX		1	250 ml Poly	HNO3	7.69	980	18.9
923	CRB Mid-0202	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCL	7.71	980	18.5
931	CRB INF-0202	E524.2	CRB INF	SP-03	3	40 ml VOA	HCL	7.73	980	18.7
938	GWTS-INF-0202	E524.2	Influent-NS	SP-01	3	40 ml VOA	HCL	6.97	1000	19.2
600	MW-303-IQ13	E524.2	TB	TB	2	40 ml VOA	HCL	--	--	--
1010	GWTS Stack-0202	TO-15	GWTP VGAC Effluent-NS	SP-09	1	1 Liter Summa	None	-30 in. Hg	can # 35659	
1015	GWTS Pr GAC-0202	TO-15	GWTP VGAC Influent-NS	SP-08	1	1 Liter Summa	None	-29 in. Hg	can # 36376	
1100	SVE Stack-0202	TO-15	SVE VGAC Effluent-NS	SP-12	1	400ml Summa	None	-30 in. Hg	can # 885	
1105	SVE Pre GAC-0202	TO-15	SVE VGAC Influent-NS	SP-11	1	400ml Summa	None	-30 in. Hg	can # 864	

Sampler Signature: _____	Date: _____
--------------------------	-------------

Notes:

FD = Field Duplicate
FB = Field Blank (ambient)
NS = Normal Sample
TB = Trip Blank
Scan COCs to:
URS      Attn: Debbie Casagrande      (916) 679-2040

URS Corporation  
 Modesto, Superfund Site  
 Process Data Sheet

Groundwater Treatment System																		
			Hour Meter		Utility Power		System Influent				Anti-Solvent Sequestant	Air Stripper Water						
Initials	Date	Time	Hrs.	kW	kWh	Flow	Pressure	Total Flow	pH		Influent Pressure	Effluent Pressure	Flow	Pressure	Influent Pressure	Effluent Pressure	Flow	
						GPM	PSI	Gallons	pH	T-3 Gallons	PSI	PSI	GPM	PSI	PSI	PSI	PSI	GPM
TH	3/7/13	0800	57463	15.98	51282	47	13	-	6.91	23.5	9.0	5.7	60	44	44.0	42.0	62	
TH	3/14/13	0800	57630	15.98	52959	47	13	-	6.83	20.5	9.0	6.0	60	44	43.9	42.0	62	
TH	3/21/13	0900	57798	15.98	54643	47	13	-	6.80	24.5	9.0	5.9	60	44	43.7	41.9	62	
TH	3/28/13	0800	57965	15.98	56324	47	13	-	6.75	22	9.3	6.2	60	44	44.1	42.2	62	
Design Range or Target Value				10.0-30	N/A	3.0-35	30-50	n/a	5.0-12.0	3.0-25	30-50	30-50	40-70	30-50	30-50	30-50	40-70	

Groundwater Treatment System																	
Air Stripper Vapor						Liquid Carbon			Ion Exchange			System Effluent				Radiation Meter	
Sump Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Influent Pressure	Mid-Bed Pressure	Effluent Pressure	Influent Pressure	Mid-Bed Pressure	Flow	Flow	Pressure	pH	Effluent Total Flow	Outside GWTS	Inside GWTS
Air Stripper Trays		VGAC Vessel		Stack													
in. H2O	in. H2O	ppm	ppm	°F	CFM	PSI	PSI	PSI	PSI	PSI	GPM	Gpm	in H2O	pH	Gallons	mR/hr Peak	mR/hr Peak
7.5	6.5	0	0	67.8	650	39	32	28	19	11.5	43	53	0	7.54	24859	0	0
7.5	6.5	0	0	68.2	745	38.5	31.5	28	19	11.5	43	53	0	7.60	29402	0	0
7.5	6.0	0	0	66.4	690	38.5	31.5	27.5	19	11.5	42	52	0	7.53	34122	0	0
7.5	6.5	0	0	68.8	655	39	32	27.5	19	11.5	42	52	0	7.62	38751	0	0
5.0-25	5.0-25	0-100	0-10	65-75	550-650	25-70	25-60	25-50	1.0-10	1.0-10	3.0-60	3.0-50	1.0-5	5.0-12	N/A	0-1	0-1

Soil Vapor Extraction System																	
SVE Influent						Blower				Filter		Vapor				Radiation Meter	
Date	Time	Pressure	Temp	Flow	Dilution	Hour Meter	Effluent Pressure	Temp	Flow	Influent Pressure	Effluent Pressure	Influent P.I.D.	Effluent P.I.D.	Temp	Flow	Outside SVE	Inside SVE
		in. H2O	°F	CFM	Yes/No	Hrs.	in. H2O	°F	CFM	in. H2O	in. H2O	VGAC Vessel		Stack			
							ppm	ppm	°F	CFM						mR/hr Peak	mR/hr Peak
3/7/13	1040	-50	64.5	145	N	17502	2.5	202.7	148	-53	-55	0	0	202.7	148	0	0
3/14/13	0945	-50	67.5	145	N	17667	2.5	200.8	149	-54	-57	0	0	200.8	149	0	0
3/21/13	0945	-60	66.0	170	N	17740	3	169.0	188	-63.5	-67.5	0	0	169.0	188	0	0
3/28/13	0830	-60	68.3	168	N	17907	3	179.1	178	-66	-69	0	0	179.1	178	0	0
		25-70	65-75	100-200	NO	N/A	2.0-10	65-75	100-200	N/A	N/A	0-100	0-10	65-75	100-200	0-1	0-1

Note: For pressures measured relative to atmospheric (barometric) pressure, use (+) for vacuum.

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

SVE  
 3/7/13 9.39 / 52239  
 3/28/13 9.39 / 55845  
 3/14/13 9.39 / 53716

URS Corporation  
 Modesto Superfund Site  
 Site Inspections

Task Description	3/7/13	TH	3/14/13	3/21/13	3/28/13	1	1
WEEKLY	Task Performed (Technician Initials or Value)						
<b>Groundwater Treatment System</b>							
Record Process Logs							
Check Blowers and motors for heat, noise, and vibration							
Check Air Stripper Feed pump/motor (P-2) for heat, noise, and vibration.							
Inspect all process piping for leaks							
Inspect all process hoses/fittings for leaks							
Check Air Stripper Effluent pump/motor (P-3) for heat, noise, and vibration.							
Inspect Sump (Pump as Necessary).							
Check Air Stripper sump level site glass. Clean as necessary							
Inspect IX system influent vacuum break for leaks							
Clean up compound area							
Drain VGAC condensate							
Perform autodialer operational check							
Autodialer battery check							
Perform inspection of EW-1R pipeline							
Inspection of Spill Response Kit							
Inspection of Emergency Response Plan/MSDS Binder							
<b>Soil Vapor Extraction System</b>							
Record Process Logs							
Check Blowers and motors for heat, noise, and vibration							
Inspect all process piping for leaks							
Clean up compound area							
Drain VGAC condensate							
Perform autodialer operational check							
Inspection of Spill Response Kit							
Inspection of Emergency Response Plan/MSDS Binder							

Task Description	Date	Performed Initials	Reading
<b>MONTHLY</b>			
Check fire extinguisher	3/7/13	TH	
Inspect EW-1R vault	3/8/13	TH	
Inspect VI Mitigation operations - "Part House"	3/14/13		
Replace Auto Dialer Batteries (if necessary)	N/A	-	
<b>Quarterly</b>			
Interlock Checks Groundwater	9/13/12	TH/GB	
Interlock Checks SVE	11/20/12	TH/GB	
Collect Well Flow read at SVE-02			
Collect Well Flow read at SVE-03			
Collect Well Flow read at SVE-04			
<b>ANNUAL</b>			
Collect Amp readings			
<b>Instrument Calibration</b>			
System Effluent Flow Meter (Performed in June and December)	12/11/12	TH	

Notes:

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

**URS Group  
Preventative and Corrective Maintenance Log  
Modesto Superfund Site**

Site Name: \_\_\_\_\_  
 Period: \_\_\_\_\_ to \_\_\_\_\_  
(month/day/year) (month/day/year)

GWRP

Date	Initials	Hour Meter	Maintenance Performed	LOTO Required	LOTO Description (Where?Why?)	LOCK ON (Date/Time)	Zero Energy Check	LOCK OFF (Date/Time)	LOCK ID (Lock No.)
3/14/13	TH	57630	Replaced VGAC inlet gasket	(Y) N	control panel to prevent start up	3/14/13 0920	(Y) N	3/14/13 1045	green
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		
				Y / N			Y / N		

**URS Group  
Preventative and Corrective Maintenance Log  
Modesto Superfund Site**

Site Name: \_\_\_\_\_

Shutdown Date: <u>3/18/13</u>	Startup Date: <u>3/21/13</u>
Shutdown Time: <u>0800</u>	Startup Time: <u>0930</u>
Shutdown Purpose or Cause: <u>SVE system shutdown on input 4 (high knock out rod), but there was no water. Found blower fan broken - needs to be replaced before restart</u>	
Corrective Actions Taken (if shutdown was unplanned): <u>Fan replaced, Input 4 = blower off - blower was over heating because of broken fan, and restarting after condition cleared.</u>	
Performed By: <u>TH GB</u>	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause: _____	
Corrective Actions Taken (if shutdown was unplanned): _____	
Performed By: _____	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause: _____	
Corrective Actions Taken (if shutdown was unplanned): _____	
Performed By: _____	

Shutdown Date: _____	Startup Date: _____
Shutdown Time: _____	Startup Time: _____
Shutdown Purpose or Cause: _____	
Corrective Actions Taken (if shutdown was unplanned): _____	
Performed By: _____	

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Date: Thursday, March 07, 2013  
 Weather: Sunny  
 Sampler: Tamrah Headrick

SAMPLE COLLECTION RECORD  
 MODESTO SUPERFUND SITE

Time	Description	Totalizer Reading (gallons)	Flow (gpm)
800	GWTS Effluent	24859	53

Time	Sample Location - Test Method		Sample Description	LOCID	No. of Containers	Container Type	Preservative	pH	Cond	Temp
910	EFF-0302	E524.2	Effluent-NS	SP-07	3	40 ml VOA	HCL	7.54	1050	18.7
910/1200FD	EFF-0302	SM2540C	Effluent-NS	SP-07	1	1 Liter Poly	None	7.54	1050	18.7
915/1200FD	EFF-0302	SM2540D, SM5210B	Effluent-NS	SP-07	1	1 Liter Poly	None	8.03	1110	3.9
924	IEXEFF-0302	D5174	IEX Eff	SP-10	1	250 ml Poly	HNO3	7.69	990	17.6
927	IEX Mid-0302	D5174	IEX Mid	SP-06	1	250 ml Poly	HNO3	7.71	980	18.9
930	Pre IEX-0302	D5174	Pre IEX		1	250 ml Poly	HNO3	7.69	980	18.9
934	CRB Mid-0302	E524.2	CRB Mid	SP-04	3	40 ml VOA	HCL	7.7	1000	19
940	CRB INF-0302	E524.2	CRB INF	SP-03	3	40 ml VOA	HCL	7.71	990	19.6
945	GWTS-INF-0302	E524.2	Influent-NS	SP-01	3	40 ml VOA	HCL	6.91	1010	19.5
800	MW-304-1Q13	E524.2	TB	TB	2	40 ml VOA	HCL	--	--	--
1027	GWTS Stack-0302	TO-15	GWTP VGAC Effluent-NS	SP-09	1	1 Liter Summa	None	-29.5 in. Hg	can # 34097	
1032	GWTS Pr GAC-0302	TO-15	GWTP VGAC Influent-NS	SP-08	1	1 Liter Summa	None	-29.5 in. Hg	can # 36533	
1054	SVE Stack-0302	TO-15	SVE VGAC Effluent-NS	SP-12	1	400ml Summa	None	-29 in. Hg	can # 662	
1100/1200FD	SVE Pre GAC-0302	TO-15	SVE VGAC Influent-NS	SP-11	1	400ml Summa	None	-30 in. Hg	can # 1998	FD can # 2002

Sampler Signature	Date

Notes:

	FD = Field Duplicate
	FB = Field Blank (ambient)
	NS = Normal Sample
	TB = Trip Blank
Scan COCs to:	
URS      Attn: Debbie Casagrande      (916) 679-2040	

**Appendix F**  
**Operational History**

## **Appendix F**

### **Operational History**

This section presents a summary of operation and maintenance events performed on the remedial treatment systems. Table F-1(a) (July 1, 2001 through January 31, 2010) lists the event, start and end dates, and the type of maintenance (Routine, Non-routine, Reimbursable, or Optimization) that was performed. Table F-1(b) (March 1, 2010 through March 31, 2013) lists the event and start and end dates.

TABLE F-1(a)

**OPERATIONAL HISTORY  
GROUNDWATER TREATMENT AND SOIL VAPOR EXTRACTION SYSTEM  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA**

(Page 1 of 3)

No.	Event	Start Date	End Date	Type of Maintenance
1	Start up of groundwater treatment and soil vapor extraction system	05-Jul-01		Routine
2	Replaced motor starter in 7.5 horsepower transfer pump	07-Jul-01	16-Jul-01	Reimbursable
3	Installed hour meter in SVE system	17-Jul-01	17-Jul-01	Reimbursable
4	Replaced equalization tank float assembly	26-Jul-01	31-Jul-01	Reimbursable
5	Moved vacuum breaker to location after ion exchange vessels	31-Jul-01	31-Jul-01	Reimbursable
6	Repaired faulty pipe joint in SVE system	08-Aug-01	09-Aug-01	Reimbursable
7	Installed duplex bag filters	11-Aug-01	27-Aug-01	Reimbursable
8	Switched 5.0 horsepower and 7.5 horsepower transfer pump	11-Aug-01	27-Aug-01	Reimbursable
9	Replaced ruptured 1/4 inch hose on the liquid GAC vessels	29-Aug-01	30-Aug-01	Reimbursable
10	Programmed duplex bag filters into PLC logic	06-Sep-01	06-Sep-01	Reimbursable
11	Backflushed lead ion exchange vessel	11-Sep-01	11-Sep-01	Routine
12	Carbon change out for SVE vapor GAC	18-Sep-01	27-Sep-01	Routine
13	Bypassed lead ion exchange vessel	20-Sep-01	20-Sep-01	Routine
14	Water chemistry data collected from GWT system	25-Sep-01	25-Sep-01	Reimbursable
15	Repair of PID meter in SVE system	09-Oct-01	26-Oct-01	Reimbursable
16	Carbon change out for GWT vapor GAC	23-Oct-01	23-Oct-01	Routine
17	Replaced anti-scalant with Redux-300	02-Nov-01	02-Nov-01	Routine
18	Installed pulsation damper after filter #2	07-Nov-01	07-Nov-01	Reimbursable
19	Carbon change out for SVE vapor GAC	05-Dec-01	19-Dec-01	Routine
20	Installed polishing ion exchange vessel using virgin resin. Sixty (60) percent of flow through ion exchange and 40 percent bypassed.	13-Dec-01	13-Dec-01	Routine
21	Carbon change out for GWT vapor GAC	19-Dec-01	19-Dec-01	Routine
22	SVE Vapor Carbon Changeout	06-Feb-02	06-Feb-02	Routine
23	Air Stripper Annual Inspection. No abnormal conditions were reported	28-Mar-02	28-Mar-02	Routine
24	Installed air conditioning unit inside SVE treatment system trailer.	04-Jun-02	04-Jun-02	Optimization
25	Optimization of GWT system 1) Switched location of vapor GAC and liquid GAC vessel. 2) Replace filter unit with 10-micron bag filter after air stripper. 3) Insulated vapor GAC vessel. 4) Added two additional phone lines. 5) Addition of floor drains. 6) Installed cooling/air conditioning unit in GWT and SVE control panel.	11-Jun-02	14-Jun-02	Optimization
26	Carbon change out for GWT vapor GAC	14-Jun-02	14-Jun-02	Routine
27	Removed and replaced leaking hoses in GWT system. Bag Filter 2 to GAC-2 manifold and GAC-3 to effluent manifold.	26-Jun-02	26-Jun-02	Reimbursable
29	SVE Vapor Carbon Changeout	17-Jul-02	17-Jul-02	Routine
30	GWT Liquid Carbon Changeouts (Lead and Lag Vessels)	12-Oct-02	12-Oct-02	Routine
31	SVE Vapor Carbon Changeout	13-Dec-02	13-Dec-02	Routine
32	Carbon Changeout for GWT Vapor GAC	23-Apr-03	23-Apr-03	Routine
33	GWT Ion Exchange Changeout	23-Apr-03	23-Apr-03	Routine
34	Replaced P-2 Motor Starter. Fixed EQ Tank Level Indicators	07-May-03	07-May-03	Non Routine
35	Calibrated pH meter and repaired MiniRAE PID	07-Jul-03	07-Jul-03	Non Routine
36	Emptied and cleaned chemical dry tank, and cleaned CMI pump.	17-Jul-03	17-Jul-03	Non Routine

TABLE F-1(a)

**OPERATIONAL HISTORY  
GROUNDWATER TREATMENT AND SOIL VAPOR EXTRACTION SYSTEM  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA**

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No.	Event	Start Date	End Date	Type of Maintenance
37	SVE Vapor Carbon changeout.	13-Aug-03	13-Aug-03	Routine
38	Exhaust fan not working. Fan was removed and replaced.	04-Sep-03	25-Sep-03	Non Routine
39	Disassembled, inspected and cleaned P-2.	11-Sep-03	11-Sep-03	Non Routine
40	Redeveloped EW-1 and replaced the EW-1 submersible pump	17-Mar-04	06-Apr-04	Non Routine
41	Replaced influent and effluent totalizers.	07-Apr-04	07-Apr-04	Non Routine
42	Replaced broken lead GAC vessel camlock fitting	16-May-04	17-May-04	Non Routine
43	Removed lag GAC vessel from service due to leak in vessel	17-May-04	17-May-04	Non Routine
44	GWT Liquid Carbon Changeouts (Lead Vessel)	03-Jun-04	03-Jun-04	Routine
45	GWT Ion Exchange Changeout (Lead Vessel)	18-Jun-04	18-Jun-04	Routine
46	Installed refurbished lag GAC vessel with fresh carbon	08-Oct-04	08-Oct-04	Non Routine
47	GWT system shutdown because of a high current alarm. The system was left off line and not repaired as requested by USACE	04-Nov-04	04-Nov-04	Non Routine
48	Replaced GWT system effluent flow meter (new baseline - 870 gallons), calibrated digital display meter.	09-Jun-05	09-Jun-05	Non Routine
49	Repaired air conditioning unit in SVE trailer	02-Jun-05	28-Jun-05	Non Routine
50	Repaired vent fan unit in GWTS trailer.	21-Jul-05	28-Jul-05	Non Routine
51	SVE System GAC changeout.	03-Nov-05	03-Nov-05	Routine
52	Drill and developed extraction well EW-1R, located adjacent to MW-3. This well replaces failed extraction well EW-1	21-Jun-06	28-Jun-06	Non Routine
53	Start up of groundwater treatment system with replacement well EW-1R	24-Aug-06	24-Aug-06	Non Routine
54	Installed new digital display for effluent flow totalizer on GWTS.	22-Sep-06	22-Sep-06	Non Routine
55	Replaced effluent sample port on the GWTS.	20-Oct-06	20-Oct-06	Non Routine
56	Replaced Filters F1 and F2 on the GWTS.	24-Oct-06	24-Oct-06	Routine
57	Replaced bag filters on GWTS	13-Jan-07	13-Jan-07	Routine
58	Replaced hoses mid-GAC on GWTS	22-Jan-07	22-Jan-07	Non Routine
59	Replaced piping on SVE (post-stack)	12-Mar-07	16-Apr-07	Non Routine
60	Changed ion exchange resin filters on GWTS	25-Jun-07	02-Jul-07	Non Routine
61	Repaired SVE control system	19-Jul-07	31-Jul-07	Non Routine
62	Replaced hour meter	27-Aug-07	27-Aug-07	Non Routine
63	Replaced detective float switch	05-Sep-07	05-Sep-07	Non Routine
64	Replaced Influent bag filters for GWTS	22-Oct-07	22-Oct-07	Routine
65	Pressure sensors cleaned and replaced on GWTS	23-Oct-07	23-Oct-07	Non Routine
66	GWTS Carbon change out (water and vapor phase)	19-Nov-07	19-Nov-07	Routine
67	Replaced filter socks on 3 filter vessels	14-Mar-08	14-Mar-08	Routine
68	Replaced the broken effluent valve	05-Apr-08	07-Apr-08	Non Routine
69	Replaced gasket on GAC vessel #1	16-Aug-08	16-Aug-08	Routine
70	Replaced gasket on GAC vessel #1	21-Aug-08	21-Aug-08	Routine
71	SVE System Carbon change-out	05-Oct-08	5-Oct-08	Routine
72	Replaced filter bags in 3 canisters on the GWTS.	24-Feb-09	24-Feb-09	Routine
73	Replaced air stripper sump pump flow meter on GWTS.	13-Mar-09	13-Mar-09	Non-routine
74	Replace PVC pipe with iron pipe on SVE effluent/blower.	19-Mar-09	19-Mar-09	Non-routine
75	Changed out carbon in the GAC filter vessels (GWTS).	25-Jun-09	26-Jun-09	Routine
76	Replace 2" ball valve at groundwater treatment system (GWTS).	25-Sep-09	02-Oct-09	Non-routine

TABLE F-1(a)

OPERATIONAL HISTORY  
 GROUNDWATER TREATMENT AND SOIL VAPOR EXTRACTION SYSTEM  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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No.	Event	Start Date	End Date	Type of Maintenance
77	Replace broken 2" ball valve, re-piped effluent piping system, added piping reinforcement (GWTS).	15-Oct-09	16-Oct-09	Non-routine
78	Replace broken one-way ball check valve (GWTS).	17-Nov-09	19-Nov-09	Non-routine
79	Repaired a loose wire at the GWTS secondary containment alarm system.	20-Jan-10	20-Jan-10	Non-routine

**Notes:**

GAC - Granular Activate Carbon

GWTS - Groundwater Treatment System

PID - Photoionization Detector

PLC - Programmable Logic Controller

SVE - Soil Vapor Extraction

**TABLE F-1(b)**  
**OPERATIONAL HISTORY**  
**GROUNDWATER TREATMENT AND SOIL VAPOR EXTRACTION SYSTEM**  
**MODESTO SUPERFUND SITE**  
**MODESTO, CALIFORNIA**

(Page 1 of 2)

No.	Event	Start Date	End Date
1	URS Corporation Inc. begins operation and maintenance activities.	01-Mar-10	
2	Reprogrammed emergency call-out system with URS contact information	01-Mar-10	01-Mar-10
3	Installed a vacuum break anti-syphon valve at effluent of the LGAC vessels.	18-Mar-10	18-Mar-10
4	Performed a backwash of the primary LGAC vessel.	01-Apr-10	01-Apr-10
5	Performed a backwash of the secondary LGAC vessel.	29-Apr-10	29-Apr-10
6	Replaced a dry disconnect coupling at the effluent of the primary IX vessel.	27-May-10	27-May-10
7	Calibrated and certified the sewer outfall flow meter.	09-Jun-10	09-Jun-10
8	Installed an automatic composite sampler at GWTS effluent.	20-Jul-10	20-Jul-10
9	Performed a changeout of the GWTS airstripper and SVE system VGAC.	19-Aug-10	19-Aug-10
10	Performed a backwash of the primary LGAC vessel.	21-Oct-10	21-Oct-10
11	Tested GWTS interlock controls.	03-Nov-10	03-Nov-10
12	Tested SVE system interlock controls.	03-Nov-10	03-Nov-10
13	Performed a changeout of the resin in the primary IX system vessel.	09-Dec-10	09-Dec-10
14	Calibrated and certified the sewer outfall flow meter.	09-Dec-10	09-Dec-10
15	Lubricated all pumps and motors.	21-Jan-11	21-Jan-11
16	Performed a changeout of the resin in the primary and secondary IX system vessel.	24-Feb-11	24-Feb-11
17	Calibrated the pressure sensors on the GWTS bag filters.	24-Feb-11	24-Feb-11
18	Performed a backwash of the primary LGAC vessel.	26-May-11	26-May-11
19	Calibrated and certified the sewer outfall flow meter.	04-Jun-11	04-Jun-11
20	Replaced sequestrant relay and cleared chemical blockage in pump and tubing.	06-Sep-11	06-Sep-11
21	Replaced all tubing on sequestrant delivery system. Disassembled chemical dosing pump. Cleaned out pump and tank and reassembled. Filtered existing sequestrant product for reuse.	08-Sep-11	08-Sep-11
22	Replaced gasket on primary LGAC.	28-Nov-11	28-Nov-11
23	Performed a changeout of the resin in the primary IX system vessel.	15-Dec-11	15-Dec-11
24	Calibrated and certified the sewer outfall flow meter.	21-Dec-11	21-Dec-11
25	Inspected IX resin vessels and installed new lid gaskets.	16-Feb-12	16-Feb-12
26	Changed bag filters.	08-Mar-12	08-Mar-12
27	Changed bag filters.	15-Mar-12	15-Mar-12
28	Replaced high level float switch in influent equalization tank.	20-Mar-12	20-Mar-12
29	New stainless steel float switches installed in influent equalization tank.	16-Mar-12	20-Mar-12
30	Changed bag filters.	02-Apr-12	02-Apr-12
31	Changed bag filters.	09-Apr-12	09-Apr-12
32	Changed bag filters.	24-Apr-12	24-Apr-12
33	Performed a changeout of the resin in the secondary IX system vessel.	17-May-12	17-May-12
34	Performed interlock alarm testing for proper functionality.	24-May-12	24-May-12
35	Replaced high level float switch in influent equalization tank.	30-May-12	30-May-12
36	Replaced all IX vessel hose connections.	14-Jun-12	14-Jun-12
37	Replaced effluent Y-strainer.	18-Jun-12	18-Jun-12
38	Cleaned out all flow indicators and meters.	19-Jun-12	19-Jun-12
39	Disassembled and cleaned airstripper.	20-Jun-12	20-Jun-12
40	Added air filter element to external air stripper inlet port.	21-Jun-12	21-Jun-12
41	Utility power meter replaced to separate usage billing for SVE unit.	25-Jun-12	25-Jun-12

**TABLE F-1(b)**  
**OPERATIONAL HISTORY**  
**GROUNDWATER TREATMENT AND SOIL VAPOR EXTRACTION SYSTEM**  
**MODESTO SUPERFUND SITE**  
**MODESTO, CALIFORNIA**

(Page 2of 2)

No.	Event	Start Date	End Date
42	Installed new effluent pump in GWTS.	03-Jul-12	03-Jul-12
43	Installed external filtering system to process quarterly monitoring purge water.	25-Jul-12	25-Jul-12
44	Installation of EW-02 included new well, electrical, vault, and conveyance line. Work will continue in August.	01-Jul-12	31-Jul-12
45	Completed electrical, vault, and conveyance line for EW-02.	01-Aug-12	31-Aug-12
46	Shut off EW-01R to discharge from EW-02 frac tank.	01-Aug-12	01-Aug-12
47	Shut down system due to leak in hose between LGACs. Repaired hose and restarted.	09-Aug-12	09-Aug-12
48	Changed bag filters.	06-Sep-12	06-Sep-12
49	Shut down system for electrical modification to EW-02.	13-Sep-12	13-Sep-12
50	Changed bag filters and replaced sight glass tubing for stripper.	13-Sep-12	13-Sep-12
51	Changed bag filters.	20-Sep-12	20-Sep-12
52	Changed bag filters.	21-Sep-12	21-Sep-12
53	Replaced three floats in the stripper sump and changed bag filters.	25-Sep-12	25-Sep-12
54	Shut down for influent tank cleanout.	04-Oct-12	04-Oct-12
55	Shut down system to install Timemark at EW-02.	18-Oct-12	18-Oct-12
56	Shut down system to clean out stripper sump.	25-Oct-12	25-Oct-12
57	Changed bag filters.	01-Nov-12	01-Nov-12
58	Changed bag filters.	14-Nov-12	14-Nov-12
59	Replaced four hoses: two at the influent and effluent of the post airstripper bag filter housing, one at the GAC-2 (lead LGAC vessel) influent, and one at the GAC-3 (lag LGAC vessel) effluent.	27-Nov-12	27-Nov-12
60	Changed bag filters.	29-Nov-12	29-Nov-12
61	Calibrated the sewer outfall flow meter. Changed bag filters.	11-Dec-12	11-Dec-12
62	Changed bag filters due to processing purge water from sampling event.	14-Dec-12	14-Dec-12
63	Installed new exhaust fan/motor assembly in GWTS trailer. Changed bag filters due to processing water from sampling event.	20-Dec-12	20-Dec-12
64	Changed bag filters.	3-Jan-13	3-Jan-13
65	GWTS media exchange of LGAC, VGAC, and IX vessels. Spent media removed from site by Baker Filtration. SVE system knockout pot emptied.	9-Jan-13	9-Jan-13
66	Changed bag filters.	16-Jan-13	16-Jan-13
67	Primed and painted connex.	17-Jan-13	18-Jan-13
68	Changed bag filters.	30-Jan-13	30-Jan-13
69	LGAC manway gasket replaced and bag filters changed.	14-Feb-13	14-Feb-13
70	Air stripper tray gaskets replaced and the trays and sump were cleaned.	19-Feb-13	19-Feb-13
71	Changed bag filters.	28-Feb-13	28-Feb-13
72	VGAC inlet flange gasket replaced and bag filters changed.	14-Mar-13	14-Mar-13
73	Replaced SVE system blower motor fan.	21-Mar-13	21-Mar-13

**Notes:**

GWTS = groundwater treatment system  
IX = ion exchange  
LGAC = liquid-phase granular activated carbon  
VGAC = vapor-phase granular activated carbon  
SVE = soil vapor extraction

## **Appendix G**

### **Historical Well Construction, Analytical, and Mass Removed Data**

**Table G-1. Well Construction Details**

<b>Well No.</b>	<b>Casing Diameter (inches)</b>	<b>Boring Depth (ft bgs)</b>	<b>Screen Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft msl)<sup>a</sup></b>
<b>Groundwater Monitoring Wells</b>				
MW-01A	4	101	91-101	91.61
MW-02A	4	96	86-96	90.88 <sup>b</sup>
MW-03A	4	94	84-94	91.49 <sup>b</sup>
MW-04A	4	89	78-88	91.13
MW-04B	2	154	144-154	91.11
MW-04C	2	237	227-237	91.25
MW-05A	2	90	60-90	90.74
MW-06A	2	90	60-90	89.72 <sup>b</sup>
MW-07A	2	90	60-90	91.24
MW-08A	2	90	60-90	91.44
MW-09A	2	155	144-154	91.20 <sup>b</sup>
MW-09B		155	144-154	91.19
MW-10A	2	91	60-89	90.48
MW-10B	2	160	153-163	90.21
MW-10C	2	230	220-230	90.5
MW-11A	2	92	70-90	89.91
MW-12A	2	99	87-97	91.15 <sup>b</sup>
MW-13A	2	99	77-97	89.27
MW-14A	2	92	70-90	89.79
MW-15A	2	102	80-100	91.76
MW-16A	2	86	76-86	91.89
MW-16B	2	139	129-139	91.82
MW-16C	2	236	226-236	91.64
MW-17A	2	88	77-87	89.64
MW-17B	2	140	129-139	89.69
MW-17C	2	232	222-232	89.76
MW-18A	2	66	56-66	90.14
MW-19A	2	101	91-101	91.22
MW-19B1	2	147	137-147	91.08
MW-20A	2	86	76-86	90.7
MW-20B		162	152-162	90.65
MW-20C		235	225-235	90.79
MW-21A	2	102	90-100	91.75 <sup>c</sup>
MW-22A	2	62	50-60	91.69 <sup>c</sup>
MW-23A	2	102	89-99	90.26 <sup>c</sup>
MW-24B	2	157	145-155	92.93 <sup>c</sup>
MW-25B	2	157	145-155	91.78 <sup>c</sup>
MW-26B	2	157	145-155	89.71 <sup>c</sup>
MW-27B	2	157	145-155	89.34 <sup>c</sup>
MW-28B	2	157	145-155	89.21 <sup>c</sup>
MW-29B	2	157	145-155	89.74 <sup>c</sup>
EW-01	5	115	65-95	89.54
EW-01R	6	120	59-109	90.65 <sup>b</sup>
EW-02	6	116	60.5-110.5	91.64 <sup>d</sup>

**Table G-1. (Continued)**

<b>Well No.</b>	<b>Casing Diameter (inches)</b>	<b>Boring Depth (ft bgs)</b>	<b>Screen Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft msl)<sup>a</sup></b>
<b>Soil Vapor Wells</b>				
SVE-01	2	40	18-38	89.84
SVE-02	2	13	7-12	91.36
SVE-03	2	39	13-23	91.38
SVE-04	2	39	28-38	91.38
<b>DP-1</b>				91.44
DP-1A	1	40	28-29	
DP-1B	1	40	38-39	
<b>DP-2</b>			-	91.27
DP-2A	1	40	15-16	
DP-2B	1	40	34-35	
<b>DP-3</b>			-	91.86
DP-3A	1	40	19-20	
DP-3B	1	40	29-30	
<b>DP-4</b>			-	91.92
DP-4A	1	40	23-24	
DP-4B	1	40	38.5-39.5	
<b>DP-5</b>			-	91.27
DP-5A	2	37	15-16	
DP-5B	2	37	34-35	
<b>DP-6</b>			-	91.69
DP-6A	2	36	15-16	
DP-6B	2	36	34-35	

<sup>a</sup> Wells resurveyed in February 2003.

<sup>b</sup> Wells resurveyed in September 2006.

<sup>c</sup> Wells installed and surveyed in September 2011.

<sup>d</sup> Well installed June 2012 and surveyed August 2012

bgs = below ground surface

ft = feet

msl = mean sea level

TABLE G-2(a)

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA**

(Page 1 of 13)

Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
MW-1A	101	91 - 101	89.14	Apr-00 <sup>a</sup>	NA	50.62
			89.14	Aug-00 <sup>a</sup>	NA	50.34
			89.14	Nov-00 <sup>a</sup>	NA	48.92
			89.14	Feb-01 <sup>a</sup>	NA	50.28
			89.14	Aug-01	42.71	46.43
			89.14	Oct-01	44.55	44.59
			89.14	Nov-01	44.41	44.73
			89.14	Feb-02	43.17	45.97
			89.14	May-02	42.44	46.70
			89.14	Aug-02	45.60	43.54
			89.14	Nov-02	46.00	43.14
			89.14	Feb-03	44.95	44.19
			91.611	May-03	44.15	47.46
			91.61	Aug-03	45.55	46.06
			91.61	Nov-03	46.15	45.46
			91.61	Feb-04	44.70	46.91
			91.61	May-04	43.95	47.66
			91.61	Aug-04	46.20	45.41
			91.61	Nov-04	45.70	45.91
			91.61	Feb-05	44.30	47.31
			91.61	May-05	42.60	49.01
			91.61	Aug-05	43.40	48.21
			91.61	Nov-05	44.40	47.21
			91.61	Feb-06	43.04	48.57
			91.61	May-06	41.65	49.96
			91.61	Aug-06	42.53	49.08
			91.61	Aug-06 <sup>b</sup>	43.07	48.54
			91.61	Nov-06	43.66	47.95
			91.61	Feb-07	42.34	49.27
			91.61	May-07	40.94	50.67
			91.61	Aug-07	43.25	48.36
			91.61	Nov-07	43.85	47.76
91.61	Feb-08	42.73	48.88			
91.61	May-08	42.10	49.51			
91.61	Aug-08	43.45	48.16			
91.61	Dec-08	44.28	47.33			
91.61	Feb-09	43.71	47.90			
91.61	Jun-09	43.88	47.73			
91.61	Aug-09	49.45	42.16			
91.61	Nov-09	46.45	45.16			
MW-2A	96	86 - 96	88.63	Apr-00 <sup>a</sup>	NA	50.48
			88.63	Aug-00 <sup>a</sup>	NA	50.19
			88.63	Nov-00 <sup>a</sup>	NA	48.80
			88.63	Feb-01 <sup>a</sup>	NA	50.32
			88.63	Aug-01	42.00	46.63
			88.63	Oct-01	44.30	44.33
			88.63	Nov-01	44.20	44.43
			88.63	Feb-02	42.77	45.86
			88.63	May-02	42.10	46.53
			88.63	Aug-02	45.50	43.13
			88.63	Nov-02	45.70	42.93
			88.63	Feb-03	44.60	44.03
			90.911	May-03	43.75	47.16
			90.91	Aug-03	45.10	45.81
			90.91	Nov-03	45.65	45.26
90.91	Feb-04	44.13	46.78			

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

(Page 2 of 13)

Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			90.91	May-04	43.10	47.81
			90.91	Aug-04	45.81	45.10
			90.91	Nov-04	45.14	45.77
			90.91	Feb-05	43.43	47.48
			90.91	May-05	41.93	48.98
			90.91	Aug-05	42.90	48.01
			90.91	Nov-05	43.75	47.16
			90.91	Feb-06	42.25	48.66
			90.91	May-06	40.97	49.94
			90.882	Aug-06	41.52	49.36
			90.88	Aug-06 <sup>b</sup>	44.20	46.68
			90.88	Nov-06	42.90	47.98
			90.88	Feb-07	41.61	49.27
			90.88	May-07	40.20	50.68
			90.88	Aug-07	42.52	48.36
			90.88	Nov-07	43.10	47.78
			90.88	Feb-08	42.01	48.87
			90.88	May-08	41.35	49.53
			90.88	Aug-08	42.65	48.23
			90.88	Dec-08	43.48	47.40
			90.88	Feb-09	42.94	47.94
			90.88	Jun-09	43.25	47.63
			90.88	Aug-09	44.63	46.25
			90.88	Nov-09	45.57	45.31
MW-3A	94	84 - 94	89.42	Apr-00 <sup>a</sup>	NA	50.75
			88.42	Aug-00 <sup>a</sup>	NA	50.12
			89.42	Nov-00 <sup>a</sup>	NA	48.62
			88.42	Feb-01 <sup>a</sup>	NA	50.22
			89.42	Aug-01	43.00	46.42
			88.42	Oct-01	45.35	44.07
			89.42	Nov-01	44.09	45.33
			88.42	Feb-02	43.98	45.44
			89.42	May-02	43.14	46.28
			88.42	Aug-02	46.55	42.87
			89.42	Nov-02	46.70	42.72
			88.42	Feb-03	45.80	43.62
			91.591	May-03	44.10	47.49
			91.59	Aug-03	46.25	45.34
			91.59	Nov-03	47.95	43.64
			91.59	Feb-04	45.25	46.34
			91.59	May-04	44.35	47.24
			91.59	Aug-04	47.05	44.54
			91.59	Nov-04	46.52	45.07
			91.59	Feb-05	44.85	46.74
			91.59	May-05	43.20	48.39
			91.59	Aug-05	44.27	47.32
			91.59	Nov-05	46.25	45.34
			91.59	Feb-06	44.65	46.94
			91.59	May-06	43.25	48.34
			91.492	Aug-06	43.82	47.67
			91.49	Aug-06 <sup>b</sup>	45.64	45.85
			91.49	Nov-06	46.61	44.88
			91.49	Feb-07	45.91	45.58
			91.49	May-07	41.19	50.30
			91.49	Aug-07	46.53	44.96
			91.49	Nov-07	47.2	44.29
			91.49	Feb-08	46.1	45.39
			91.49	May-08	45.25	46.24
			91.49	Aug-08	46.6	44.89

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			91.49	Dec-08	46.36	45.13
			91.49	Feb-09	46.18	45.31
			91.49	Jun-09	46.28	45.21
			91.49	Aug-09	47.73	43.76
			91.49	Nov-09	48.5	42.99
MW-4A	89	78 - 88	88.66	Apr-00 <sup>a</sup>	NA	50.15
			88.66	Aug-00 <sup>a</sup>	NA	50.01
			88.66	Nov-00 <sup>a</sup>	NA	48.11
			88.66	Feb-01 <sup>a</sup>	NA	49.74
			88.66	Aug-01	43.50	45.16
			88.66	Oct-01	44.11	44.55
			88.66	Nov-01	44.46	44.20
			88.66	Feb-02	43.21	45.45
			88.66	May-02	42.13	46.53
			88.66	Aug-02	44.80	43.86
			88.66	Nov-02	45.50	43.16
			88.66	Feb-03	44.35	44.31
			91.131	May-03	44.05	47.08
			91.13	Aug-03	45.10	46.03
			91.13	Nov-03	46.25	44.88
			91.13	Feb-04	44.85	46.28
			91.13	May-04	44.25	46.88
			91.13	Aug-04	45.90	45.23
			91.13	Nov-04	46.32	44.81
			91.13	Feb-05	44.68	46.45
			91.13	May-05	42.90	48.23
			91.13	Aug-05	43.75	47.38
			91.13	Nov-05	44.80	46.33
			91.13	Feb-06	43.36	47.77
			91.13	May-06	41.80	49.33
			91.13	Aug-06	42.34	48.79
			91.13	Aug-06 <sup>b</sup>	43.17	47.96
			91.13	Nov-06	44.05	47.08
			91.13	Feb-07	43.03	48.10
			91.13	May-07	40.83	50.30
			91.13	Aug-07	43.53	47.60
			91.13	Nov-07	44.39	46.74
			91.13	Feb-08	43.30	47.83
			91.13	May-08	42.36	48.77
			91.13	Aug-08	43.64	47.49
			91.13	Dec-08	44.79	46.34
			91.13	Feb-09	44.21	46.92
			91.13	Jun-09	44.18	46.95
			91.13	Aug-09	45.62	45.51
			91.13	Nov-09	46.89	44.24
MW-4B	154	144-154	91.11	Dec-08	44.73	46.38
			91.11	Feb-09	43.78	47.33
			91.11	Jun-09	44.80	46.31
			91.11	Aug-09	46.72	44.39
			91.11	Nov-09	46.73	44.38
MW-4C	237	227-237	91.25	Dec-08	44.35	46.90
			91.25	Feb-09	42.76	48.49
			91.25	Jun-09	49.75	41.50
			91.25	Aug-09	53.94	37.31
			91.25	Nov-09	46.00	45.25

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
MW-5A	90	60 - 90	90.61	Apr-00 <sup>a</sup>	NA	50.39
			90.61	Aug-00 <sup>a</sup>	NA	50.45
			90.61	Nov-00 <sup>a</sup>	NA	48.41
			90.61	Feb-01 <sup>a</sup>	NA	50.11
			90.61	Aug-01	42.44	48.17
			90.61	Oct-01	43.75	46.86
			90.61	Nov-01	43.86	46.75
			90.61	Feb-02	42.65	47.96
			90.61	May-02	41.62	48.99
			90.61	Aug-02	44.60	46.01
			90.61	Nov-02	45.60	45.01
			90.61	Feb-03	44.35	46.26
			90.741	May-03	43.30	47.44
			90.74	Aug-03	44.45	46.29
			90.74	Nov-03	45.55	45.19
			90.74	Feb-04	44.13	46.61
			90.74	May-04	43.10	47.64
			90.74	Aug-04	45.12	45.62
			90.74	Nov-04	45.25	45.49
			90.74	Feb-05	43.55	47.19
			90.74	May-05	41.93	48.81
			90.74	Aug-05	42.70	48.04
			90.74	Nov-05	43.75	46.99
			90.74	Feb-06	42.36	48.38
			90.74	May-06	40.90	49.84
			90.74	Aug-06	41.47	49.27
			90.74	Aug-06 <sup>b</sup>	42.07	48.67
			90.74	Nov-06	43.15	47.59
			90.74	Feb-07	41.95	48.79
			90.74	May-07	40.21	50.53
			90.74	Aug-07	42.55	48.19
			90.74	Nov-07	43.35	47.39
			90.74	Feb-08	42.34	48.40
90.74	May-08	41.50	49.24			
90.74	Aug-08	42.68	48.06			
90.74	Dec-08	43.81	46.93			
90.74	Feb-09	43.33	47.41			
90.74	Jun-09	43.19	47.55			
90.74	Aug-09	44.68	46.06			
90.74	Nov-09	45.97	44.77			
MW-6A	90	60 - 90	89.98	Apr-00 <sup>a</sup>	NA	50.23
			89.98	Aug-00 <sup>a</sup>	NA	50.21
			89.98	Nov-00 <sup>a</sup>	NA	47.96
			89.98	Feb-01 <sup>a</sup>	NA	49.78
			89.98	Aug-01	41.30	48.68
			89.98	Oct-01	42.90	47.08
			89.98	Nov-01	43.48	46.50
			89.98	Feb-02	41.98	48.00
			89.98	May-02	40.87	49.11
			89.98	Aug-02	44.20	45.78
			89.98	Nov-02	44.50	45.48
			89.98	Feb-03	43.65	46.33
			89.481	May-03	42.60	46.88
			89.48	Aug-03	44.10	45.38
89.48	Nov-03	45.22	44.26			

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			89.48	Feb-04	43.45	46.03
			89.48	May-04	42.85	46.63
			89.48	Aug-04	44.62	44.86
			89.48	Nov-04	45.25	44.23
			89.48	Feb-05	43.60	45.88
			89.48	May-05	41.81	47.67
			89.48	Aug-05	42.65	46.83
			89.48	Nov-05	43.78	45.70
			89.48	Feb-06	42.35	47.13
			89.48	May-06	40.71	48.77
			89.722	Aug-06	40.86	48.86
			89.72	Aug-06 <sup>b</sup>	41.16	48.56
			89.72	Nov-06	42.20	47.52
			89.72	Feb-07	40.94	48.78
			89.72	May-07	39.52	50.20
			89.72	Aug-07	41.61	48.11
			89.72	Nov-07	42.56	47.16
			89.72	Feb-08	41.42	48.30
			89.72	May-08	40.44	49.28
			89.72	Aug-08	41.75	47.97
			89.72	Dec-08	42.98	46.74
			89.72	Feb-09	42.32	47.40
			89.72	Jun-09	42.23	47.49
			89.72	Aug-09	43.61	46.11
			89.72	Nov-09	44.89	44.83
MW-7A	90	60 - 90	91.23	Apr-00 <sup>a</sup>	NA	50.86
			91.23	Aug-00 <sup>a</sup>	NA	51.06
			91.23	Nov-00 <sup>a</sup>	NA	49.24
			91.23	Feb-01 <sup>a</sup>	NA	50.73
			91.23	Aug-01	41.33	49.90
			91.23	Oct-01	42.72	48.51
			91.23	Nov-01	43.07	48.16
			91.23	Feb-02	41.96	49.27
			91.23	May-02	40.67	50.56
			91.23	Aug-02	43.70	47.53
			91.23	Nov-02	44.60	46.63
			91.23	Feb-03	43.60	47.63
			91.241	May-03	42.65	48.59
			91.24	Aug-03	43.85	47.39
			91.24	Nov-03	45.05	46.19
			91.24	Feb-04	43.70	47.54
			91.24	May-04	42.80	48.44
			91.24	Aug-04	44.30	46.94
			91.24	Nov-04	44.98	46.26
			91.24	Feb-05	43.38	47.86
			91.24	May-05	41.82	49.42
			91.24	Aug-05	42.35	48.89
			91.24	Nov-05	43.40	47.84
			91.24	Feb-06	42.17	49.07
			91.24	May-06	40.82	50.42
			91.24	Aug-06	41.31	49.93
			91.24	Aug-06 <sup>b</sup>	41.50	49.74
			91.24	Nov-06	42.53	48.71
			91.24	Feb-07	41.46	49.78
			91.24	May-07	40.21	51.03
			91.24	Aug-07	41.77	49.47

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			91.24	Nov-07	42.63	48.61
			91.24	Feb-08	41.82	49.42
			91.24	May-08	40.96	50.28
			91.24	Aug-08	41.98	49.26
			91.24	Dec-08	43.15	48.09
			91.24	Feb-09	NA	NA
			91.24	Jun-09	42.65	48.59
			91.24	Aug-09	43.92	47.32
			91.24	Nov-09	45.29	45.95
MW-8A	90	60 - 90	91.53	Apr-00	NA	50.52
			91.53	Aug-00	NA	50.42
			91.53	Nov-00	NA	48.54
			91.53	Feb-01	NA	50.25
			91.53	Aug-01	42.41	49.12
			91.53	Oct-01	45.60	45.93
			91.53	Nov-01	45.68	45.85
			91.53	Feb-02	44.36	47.17
			91.53	May-02	43.31	48.22
			91.53	Aug-02	46.20	45.33
			91.53	Nov-02	47.50	44.03
			91.53	Feb-03	45.65	45.88
			91.441	May-03	44.40	47.04
			91.44	Aug-03	45.40	46.04
			91.44	Nov-03	46.57	44.87
			91.44	Feb-04	45.22	46.22
			91.44	May-04	43.85	47.59
			91.44	Aug-04	46.15	45.29
			91.44	Nov-04	45.97	45.47
			91.44	Feb-05	44.35	47.09
			91.44	May-05	42.75	48.69
			91.44	Aug-05	43.39	48.05
			91.44	Nov-05	44.47	46.97
			91.44	Feb-06	43.14	48.30
			91.44	May-06	41.61	49.83
			91.44	Aug-06	42.21	49.23
			91.44	Aug-06	42.94	48.50
			91.44	Nov-06	44.03	47.41
			91.44	Feb-07	42.88	48.56
			91.44	May-07	40.96	50.48
			91.44	Aug-07	43.43	48.01
			91.44	Nov-07	44.28	47.16
			91.44	Feb-08	43.32	48.12
			91.44	May-08	42.41	49.03
			91.44	Aug-08	43.53	47.91
			91.44	Dec-08	44.73	46.71
			91.44	Feb-09	44.28	47.16
			91.44	Jun-09	44.08	47.36
			91.44	Aug-09	45.55	45.89
			91.44	Nov-09	46.91	44.53
MW-9B	155	144 - 154	91.19	Apr-00 <sup>a</sup>	NA	50.24
			91.19	Aug-00 <sup>a</sup>	NA	48.38
			91.19	Nov-00 <sup>a</sup>	NA	47.72
			91.19	Feb-01 <sup>a</sup>	NA	50.05
			91.19	Aug-01	44.04	47.15
			91.19	Oct-01	45.17	46.02

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			91.19	Nov-01	44.76	46.43
			91.19	Feb-02	42.64	48.55
			91.19	May-02	42.72	48.47
			91.19	Aug-02	47.05	44.14
			91.19	Nov-02	45.90	45.29
			91.19	Feb-03	44.45	46.74
			91.181	May-03	44.20	46.98
			91.18	Aug-03	47.00	44.18
			91.18	Nov-03	46.55	44.63
			91.18	Feb-04	44.37	46.81
			91.18	May-04	44.55	46.63
			91.18	Aug-04	47.25	43.93
			91.18	Nov-04	46.42	44.76
			91.18	Feb-05	44.45	46.73
			91.18	May-05	43.15	48.03
			91.18	Aug-05	45.25	45.93
			91.18	Nov-05	45.40	45.78
			91.18	Feb-06	43.31	47.87
			91.18	May-06	42.30	48.88
			91.202	Aug-06	43.51	47.69
			91.2	Aug-06 <sup>b</sup>	43.98	47.22
			91.20	Nov-06	43.80	47.40
			91.20	Feb-07	42.14	49.06
			91.20	May-07	40.52	50.68
			91.20	Aug-07	44.37	46.83
			91.20	Nov-07	44.05	47.15
			91.20	Feb-08	42.45	48.75
			91.20	May-08	42.54	48.66
			91.20	Aug-08	44.50	46.70
			91.20	Dec-08	44.47	46.73
			91.20	Feb-09	43.62	47.58
			91.20	Jun-09	44.52	46.68
			91.20	Aug-09	46.54	44.66
			91.20	Nov-09	46.52	44.68
MW-10A	91	60 - 89	90.47	Apr-00 <sup>a</sup>	NA	49.66
			90.47	Aug-00 <sup>a</sup>	NA	50.67
			90.47	Nov-00 <sup>a</sup>	NA	46.94
			90.47	Feb-01 <sup>a</sup>	NA	49.03
			90.47	Aug-01	42.54	47.93
			90.47	Oct-01	44.19	46.28
			90.47	Nov-01	44.51	45.96
			90.47	Feb-02	42.93	47.54
			90.47	May-02	41.86	48.61
			90.47	Aug-02	45.20	45.27
			90.47	Nov-02	46.00	44.47
			90.47	Feb-03	44.70	45.77
			90.481	May-03	43.55	46.93
			90.48	Aug-03	45.20	45.28
			90.48	Nov-03	46.35	44.13
			90.48	Feb-04	44.70	45.78
			90.48	May-04	43.85	46.63
			90.48	Aug-04	45.81	44.67
			90.48	Nov-04	46.48	44.00
			90.48	Feb-05	44.74	45.74
			90.48	May-05	42.87	47.61
			90.48	Aug-05	43.90	46.58

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			90.48	Nov-05	45.07	45.41
			90.48	Feb-06	43.45	47.03
			90.48	May-06	41.70	48.78
			90.48	Aug-06	42.33	48.15
			90.48	Aug-06 <sup>b</sup>	42.59	47.89
			90.48	Nov-06	43.51	46.97
			90.48	Feb-07	42.21	48.27
			90.48	May-07	40.81	49.67
			90.48	Aug-07	43.03	47.45
			90.48	Nov-07	43.96	46.52
			90.48	Feb-08	42.70	47.78
			90.48	May-08	41.77	48.71
			90.48	Aug-08	43.24	47.24
			90.48	Dec-08	44.40	46.08
			90.48	Feb-09	43.69	46.79
			90.48	Jun-09	43.55	46.93
			90.48	Aug-09	45.02	45.46
			90.48	Nov-09	46.34	44.14
MW-10B	163	153-163	90.21	Dec-08	44.12	46.09
			90.21	Feb-09	43.18	47.03
			90.21	Jun-09	43.90	46.31
			90.21	Aug-09	45.81	44.40
			90.21	Nov-09	46.07	44.14
			90.21	Mar-10	44.01	46.20
MW-10C	230	220-230	90.5	Dec-08	44.13	46.37
			90.5	Feb-09	42.50	48.00
			90.5	Jun-09	48.50	42.00
			90.5	Aug-09	53.44	37.06
			90.5	Nov-09	45.75	44.75
MW-11A	92	70 - 90	89.91	Apr-00 <sup>a</sup>	NA	50.83
			89.91	Aug-00 <sup>a</sup>	NA	50.64
			89.91	Nov-00 <sup>a</sup>	NA	49.38
			89.91	Feb-01 <sup>a</sup>	NA	50.93
			89.91	Aug-01	40.32	49.59
			89.91	Oct-01	41.50	48.41
			89.91	Nov-01	43.12	46.79
			89.91	Feb-02	40.15	49.76
			89.91	May-02	39.56	50.35
			89.91	Aug-02	42.60	47.31
			89.91	Nov-02	43.90	46.01
			89.91	Feb-03	41.90	48.01
			89.911	May-03	41.15	48.76
			89.91	Aug-03	42.65	47.26
			89.91	Nov-03	43.52	46.39
			89.91	Feb-04	42.00	47.91
			89.91	May-04	41.35	48.56
			89.91	Aug-04	42.86	47.05
			89.91	Nov-04	43.35	46.56
			89.91	Feb-05	41.75	48.16
			89.91	May-05	40.22	49.69
			89.91	Aug-05	40.85	49.06
			89.91	Nov-05	41.80	48.11
			89.91	Feb-06	40.53	49.38
			89.91	May-06	39.27	50.64

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

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Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			89.91	Aug-06	39.86	50.05
			89.91	Aug-06 <sup>b</sup>	40.05	49.86
			89.91	Nov-06	40.90	49.01
			89.91	Feb-07	39.79	50.12
			89.91	May-07	38.74	51.17
			89.91	Aug-07	40.34	49.57
			89.91	Nov-07	41.07	48.84
			89.91	Feb-08	40.11	49.80
			89.91	May-08	39.38	50.53
			89.91	Aug-08	40.47	49.44
			89.91	Dec-08	41.47	48.44
			89.91	Feb-09	41.01	48.90
			89.91	Jun-09	41.12	48.79
			89.91	Aug-09	42.44	47.47
			89.91	Nov-09	43.52	46.39
MW-12A	99	87 - 97	91.17	Apr-00 <sup>a</sup>	NA	50.01
			91.17	Aug-00 <sup>a</sup>	NA	49.45
			91.17	Nov-00 <sup>a</sup>	NA	47.28
			91.17	Feb-01 <sup>a</sup>	NA	49.51
			91.17	Aug-01	43.18	47.99
			91.17	Oct-01	44.63	46.54
			91.17	Nov-01	44.86	46.31
			91.17	Feb-02	43.21	47.96
			91.17	May-02	42.04	49.13
			91.17	Aug-02	46.10	45.07
			91.17	Nov-02	46.30	44.87
			91.17	Feb-03	45.05	46.12
			91.151	May-03	44.50	46.65
			91.15	Aug-03	46.20	44.95
			91.15	Nov-03	46.88	44.27
			91.15	Feb-04	44.95	46.20
			91.15	May-04	44.50	46.65
			91.15	Aug-04	46.75	44.40
			91.15	Nov-04	47.02	44.13
			91.15	Feb-05	45.10	46.05
			91.15	May-05	43.52	47.63
			91.15	Aug-05	44.95	46.20
			91.15	Nov-05	45.80	45.35
			91.15	Feb-06	44.01	47.14
			91.15	May-06	42.41	48.74
			91.152	Aug-06	43.22	47.93
			91.15	Aug-06 <sup>b</sup>	43.51	47.64
			91.15	Nov-06	44.05	47.10
			91.15	Feb-07	42.61	48.54
			91.15	May-07	41.44	49.71
			91.15	Aug-07	43.91	47.24
			91.15	Nov-07	44.43	46.72
			91.15	Feb-08	43.02	48.13
			91.15	May-08	42.45	48.70
			91.15	Aug-08	44.15	47.00
			91.15	Dec-08	44.90	46.25
			91.15	Feb-09	44.14	47.01
			91.15	Jun-09	44.27	46.88
			91.15	Aug-09	46.04	45.11
			91.15	Nov-09	47.02	44.13

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

(Page 10 of 13)

Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
MW-13A	99	77 - 97	89.33	Apr-00 <sup>a</sup>	NA	49.21
			89.33	Aug-00 <sup>a</sup>	NA	49.30
			89.33	Nov-00 <sup>a</sup>	NA	46.88
			89.33	Feb-01 <sup>a</sup>	NA	48.67
			89.33	Aug-01	41.68	47.65
			89.33	Oct-01	43.23	46.10
			89.33	Nov-01	43.64	45.69
			89.33	Feb-02	41.99	47.34
			89.33	May-02	40.82	48.51
			89.33	Aug-02	44.10	45.23
			89.33	Nov-02	44.70	44.63
			89.33	Feb-03	43.60	45.73
			89.271	May-03	42.35	46.92
			89.27	Aug-03	43.80	45.47
			89.27	Nov-03	45.25	44.02
			89.27	Feb-04	43.72	45.55
			89.27	May-04	42.65	46.62
			89.27	Aug-04	42.65	46.62
			89.27	Nov-04	45.30	43.97
			89.27	Feb-05	43.63	45.64
			89.27	May-05	41.75	47.52
			89.27	Aug-05	42.45	46.82
			89.27	Nov-05	43.70	45.57
			89.27	Feb-06	42.31	46.96
			89.27	May-06	40.52	48.75
			89.27	Aug-06	40.92	48.35
			89.27	Aug-06 <sup>b</sup>	41.08	48.19
			89.27	Nov-06	42.15	47.12
			89.27	Feb-07	40.99	48.28
			89.27	May-07	39.68	49.59
			89.27	Aug-07	41.80	47.47
			89.27	Nov-07	42.64	46.63
89.27	Feb-08	41.48	47.79			
89.27	May-08	40.38	48.89			
89.27	Aug-08	41.66	47.61			
89.27	Dec-08	43.01	46.26			
89.27	Feb-09	42.40	46.87			
89.27	Jun-09	42.25	47.02			
89.27	Aug-09	43.40	45.87			
89.27	Nov-09	44.84	44.43			
MW-14A	92	70 - 90	89.81	Apr-00 <sup>a</sup>	NA	50.19
			89.81	Aug-00 <sup>a</sup>	NA	49.93
			89.81	Nov-00 <sup>a</sup>	NA	48.39
			89.81	Feb-01 <sup>a</sup>	NA	49.95
			89.81	Aug-01	41.21	48.60
			89.81	Oct-01	42.57	47.24
			89.81	Nov-01	42.89	46.92
			89.81	Feb-02	41.35	48.46
			89.81	May-02	40.60	49.21
			89.81	Aug-02	43.80	46.01
			89.81	Nov-02	44.00	45.81
			89.81	Feb-03	43.10	46.71
			89.791	May-03	42.15	47.64
			89.79	Aug-03	43.30	46.49
			89.79	Nov-03	44.60	45.19
			89.79	Feb-04	43.03	46.76

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

(Page 11 of 13)

Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			89.79	May-04	42.33	47.46
			89.79	Aug-04	43.85	45.94
			89.79	Nov-04	44.40	45.39
			89.79	Feb-05	42.87	46.92
			89.79	May-05	41.20	48.59
			89.79	Aug-05	41.85	47.94
			89.79	Nov-05	42.90	46.89
			89.79	Feb-06	41.60	48.19
			89.79	May-06	40.15	49.64
			89.79	Aug-06	40.49	49.30
			89.79	Aug-06 <sup>b</sup>	40.72	49.07
			89.79	Nov-06	41.72	48.07
			89.79	Feb-07	40.60	49.19
			89.79	May-07	39.31	50.48
			89.79	Aug-07	41.18	48.61
			89.79	Nov-07	42.03	47.76
			89.79	Feb-08	41.05	48.74
			89.79	May-08	40.15	49.64
			89.79	Aug-08	41.35	48.44
			89.79	Dec-08	42.45	47.34
			89.79	Feb-09	41.92	47.87
			89.79	Jun-09	41.95	47.84
			89.79	Aug-09	43.18	46.61
			89.79	Nov-09	44.40	45.39
MW-15A	102	80 - 100	91.75	Apr-00 <sup>a</sup>	NA	50.80
			91.75	Aug-00 <sup>a</sup>	NA	50.40
			91.75	Nov-00 <sup>a</sup>	NA	48.76
			91.75	Feb-01 <sup>a</sup>	NA	50.55
			91.75	Aug-01	42.48	49.27
			91.75	Oct-01	43.88	47.87
			91.75	Nov-01	44.05	47.70
			91.75	Feb-02	42.73	49.02
			91.75	May-02	41.92	49.83
			91.75	Aug-02	45.10	46.65
			91.75	Nov-02	45.60	46.15
			91.75	Feb-03	44.45	47.30
			91.761	May-03	44.05	47.71
			91.76	Aug-03	45.25	46.51
			91.76	Nov-03	46.05	45.71
			91.76	Feb-04	44.46	47.30
			91.76	May-04	43.85	47.91
			91.76	Aug-04	45.82	45.94
			91.76	Nov-04	46.05	45.71
			91.76	Feb-05	44.30	47.46
			91.76	May-05	42.85	48.91
			91.76	Aug-05	43.95	47.81
			91.76	Nov-05	44.80	46.96
			91.76	Feb-06	43.26	48.50
			91.76	May-06	41.92	49.84
			91.76	Aug-06	42.66	49.10
			91.76	Aug-06 <sup>b</sup>	42.90	48.86
			91.76	Nov-06	43.55	48.21
			91.76	Feb-07	42.30	49.46
			91.76	May-07	41.09	50.67
			91.76	Aug-07	43.20	48.56
			91.76	Nov-07	43.80	47.96
			91.76	Feb-08	42.65	49.11

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

(Page 12 of 13)

Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
			91.76	May-08	42.05	49.71
			91.76	Aug-08	43.40	48.36
			91.76	Dec-08	44.25	47.51
			91.76	Feb-09	43.68	48.08
			91.76	Jun-09	43.86	47.90
			91.76	Aug-09	45.47	46.29
			91.76	Nov-09	46.46	45.30
MW-16A	86	76-86	91.89	Dec-08	47.01	44.88
			91.89	Feb-09	45.81	46.08
			91.89	Jun-09	46.43	45.46
			91.89	Aug-09	48.65	43.24
			91.89	Nov-09	48.95	42.94
MW-16B	139	129-139	91.82	Dec-08	46.98	44.84
			91.82	Feb-09	45.75	46.07
			91.82	Jun-09	46.40	45.42
			91.82	Aug-09	48.67	43.15
			91.82	Nov-09	48.90	42.92
MW-16C	236	226-236	91.64	Dec-08	46.70	44.94
			91.64	Feb-09	45.01	46.63
			91.64	Jun-09	50.05	41.59
			91.64	Aug-09	54.46	37.18
			91.64	Nov-09	48.52	43.12
MW-17A	88	77-87	89.64	Dec-08	44.20	45.44
			89.64	Feb-09	43.45	46.19
			89.64	Jun-09	43.25	46.39
			89.64	Aug-09	44.43	45.21
			89.64	Nov-09	46.03	43.61
MW-17B	140	129-139	89.69	Dec-08	44.39	45.30
			89.69	Feb-09	43.41	46.28
			89.69	Jun-09	43.60	46.09
			89.69	Aug-09	45.29	44.40
			89.69	Nov-09	46.20	43.49
MW-17C	232	222-232	89.76	Dec-08	44.33	45.43
			89.76	Feb-09	42.55	47.21
			89.76	Jun-09	48.68	41.08
			89.76	Aug-09	52.98	36.78
			89.76	Nov-09	45.91	43.85
MW-18A	66	56-66	90.14	Dec-08	44.47	45.67
			90.14	Feb-09	43.70	46.44
			90.14	Jun-09	43.57	46.57
			90.14	Aug-09	45.03	45.11
			90.14	Nov-09	46.35	43.79
MW-19A	101	91-101	91.22	Dec-08	45.51	45.71
			91.22	Feb-09	44.55	46.67
			91.22	Jun-09	45.45	45.77
			91.22	Aug-09	47.14	44.08
			91.22	Nov-09	47.50	43.72
MW-19B	147	137-147	91.08	Dec-08	45.89	45.19
			91.08	Feb-09	44.76	46.32
			91.08	Jun-09	46.07	45.01
			91.08	Aug-09	48.26	42.82
			91.08	Nov-09	47.92	43.16

TABLE G-2(a)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO SUPERFUND SITE  
 MODESTO, CALIFORNIA

(Page 13 of 13)

Monitoring Well Number	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth to Water (feet from TOC)	Water Table Elevation (feet above MSL)
MW-20A	86	76-86	90.70	Dec-08	45.27	45.43
			90.70	Feb-09	44.31	46.39
			90.70	Jun-09	44.56	46.14
			90.70	Aug-09	47.12	43.58
			90.70	Nov-09	47.26	43.44
MW-20B	162	152-162	90.65	Dec-08	45.45	45.20
			90.65	Feb-09	44.36	46.29
			90.65	Jun-09	45.08	45.57
			90.65	Aug-09	48.22	42.43
			90.65	Nov-09	47.40	43.25
MW-20C	235	225-235	90.79	Dec-08	45.01	45.78
			90.79	Feb-09	43.53	47.26
			90.79	Jun-09	48.60	42.19
			90.79	Aug-09	53.44	37.35
			90.79	Nov-09	46.73	44.06
EW-1			89.54	Nov-06	43.40	46.14
			89.54	Feb-07	42.21	47.33
			89.54	May-07	40.28	49.26
			89.54	Aug-07	42.90	46.64
			89.54	Feb-08	42.48	47.06
			89.54	May-08	41.75	47.79
			89.54	Aug-08	42.99	47.66
			89.54	Feb-09	43.55	45.99
			89.54	Jun-09	43.34	46.20
			89.54	Aug-09	44.99	44.55
			89.54	Nov-09	46.16	43.38
EW-1R <sup>3</sup>	114	59-109	90.65	Aug-06	41.80	48.85
			90.65	Aug-06 <sup>b</sup>	48.70	41.95
			90.65	Nov-06	49.40	41.25
			90.65	Feb-07	48.24	42.41
			90.65	May-07	40.33	50.32
			90.65	Aug-07	48.60	42.05
			90.65	Nov-07	49.50	41.15
			90.65	Feb-08	49.98	40.67
			90.65	May-08	49.50	41.15
			90.65	Aug-08	51.51	39.14
			90.65	Dec-08	52.16	38.49
			90.65	Feb-09	53.88	36.77
			90.65	Jun-09	52.04	38.61
			90.65	Aug-09	54.86	35.79
90.65	Nov-09	55.82	34.83			

**Notes:**

<sup>1</sup>Wells re-surveyed in May 2003.

<sup>2</sup>Wells re-surveyed in September 2006

<sup>3</sup>EW-1R is the replacement extraction well. It was installed in August 2006 and started on August 24,

<sup>a</sup>Historical data from Ecology and Environment

<sup>b</sup>Second round of Aug. 2006 water levels recorded after the start of EW-1R

ft bgs - feet below ground surface

MSL - Mean Sea Level

MW - Monitoring Well

NA - Not Applicable

TOC - Top of Casing

TABLE G-2(b)

GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
 MODESTO GROUNDWATER SUPERFUND SITE  
 MODESTO, CALIFORNIA

Well Identification	Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Casing Elevation (ft bgs)	Date	Depth To Water (feet from TOC)	Water Table Elevation (feet above MSL)
EW-01R (SP-01)	120.00	59 - 109	92.03	Mar-10	54.23	37.80
				Nov-10	55.82	36.21
				Mar-11	54.27	37.76
				Jun-11	53.82	38.21
				Sep-11	54.52	37.51
				Nov-11	56.14	35.89
				Jan-12	55.58	36.45
				Apr-12	41.18	50.85
				Aug-12	54.89	37.14
				Dec-12	42.82	47.83
				Mar-13	41.90	48.75
				EW-02	-	
Mar-13						
MW-01A		91 - 101	91.61	Mar-10	44.81	46.80
				May-10	43.78	47.83
				Aug-10	44.41	47.20
				Nov-10	44.98	46.63
				Mar-11	43.11	48.50
				Jun-11	42.20	49.41
				Sep-11	42.73	48.88
				Nov-11	42.97	48.64
				Jan-12	42.19	49.42
				Apr-12	41.51	50.10
				Aug-12	42.00	49.61
				Dec-12	42.94	48.67
				Mar-13	41.89	49.72

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-02A	96.00	86 - 96	90.88	Mar-10	44.02	46.86
				May-10	43.03	47.85
				Aug-10	43.52	47.36
				Nov-10	44.21	46.67
				Mar-11	42.38	48.50
				Jun-11	41.44	49.44
				Sep-11	41.90	48.98
				Nov-11	42.12	48.76
				Jan-12	41.52	49.36
				Apr-12	40.80	50.08
				Aug-12	41.15	49.73
				Dec-12	42.13	48.75
				Mar-13	41.11	49.77
				MW-03A	94.00	84 - 94
May-10	45.76	45.73				
Aug-10	46.38	45.11				
Nov-10	46.89	44.60				
Mar-11	44.95	46.54				
Jun-11	44.00	47.49				
Sep-11	44.56	46.93				
Nov-11	44.89	46.60				
Jan-12	44.19	47.30				
Apr-12	41.84	49.65				
Aug-12	43.82	47.67				
Dec-12	43.76	47.73				
Mar-13	42.70	48.79				
MW-04A	89.00	78 - 88	91.13			
				May-10	44.23	46.90
				Aug-10	44.58	46.55
				Nov-10	45.47	45.66
				Mar-11	43.51	47.62
				Jun-11	42.47	48.66
				Sep-11	42.94	48.19
				Nov-11	43.33	47.80
				Jan-12	42.74	48.39
				Apr-12	41.90	49.23
				Aug-12	42.10	49.03
				Dec-12	44.50	46.63
				Mar-13	43.43	47.70

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-04B	154.00	144 - 154	91.11	Mar-10	44.70	46.41
				May-10	43.82	47.29
				Aug-10	45.31	45.80
				Nov-10	45.24	45.87
				Mar-11	43.08	48.03
				Jun-11	42.18	48.93
				Sep-11	43.48	47.63
				Nov-11	43.38	47.73
				Jan-12	42.44	48.67
				Apr-12	41.83	49.28
				Aug-12	42.80	48.31
				Dec-12	43.57	47.54
				Mar-13	42.35	48.76
				MW-04C	237.00	227 - 237
May-10	44.64	46.61				
Aug-10	50.22	41.03				
Nov-10	45.22	46.03				
Mar-11	42.86	48.39				
Jun-11	42.75	48.50				
Sep-11	47.15	44.10				
Nov-11	43.69	47.56				
Jan-12	41.94	49.31				
Apr-12	41.49	49.76				
Aug-12	47.47	43.78				
Dec-12	43.31	47.94				
Mar-13	42.33	48.92				
MW-05A	90.00	60 - 90	90.74			
				May-10	43.39	47.35
				Aug-10	43.72	47.02
				Nov-10	44.60	46.14
				Mar-11	42.71	48.03
				Jun-11	41.75	48.99
				Sep-11	42.08	48.66
				Nov-11	42.48	48.26
				Jan-12	41.87	48.87
				Apr-12	41.09	49.65
				Aug-12	41.34	49.40
				Dec-12	42.38	48.36
				Mar-13	41.39	49.35

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-06A	90.00	60 - 90	89.72	Mar-10	43.49	46.23
				May-10	42.24	47.48
				Aug-10	42.53	47.19
				Nov-10	43.54	46.18
				Mar-11	41.66	48.06
				Jun-11	40.50	49.22
				Sep-11	40.96	48.76
				Nov-11	41.40	48.32
				Jan-12	40.81	48.91
				Apr-12	40.24	49.48
				Aug-12	40.27	49.45
				Dec-12	41.90	47.82
				Mar-13	40.89	48.83
				MW-07A	90.00	60 - 90
May-10	42.89	48.35				
Aug-10	43.00	48.24				
Nov-10	43.97	47.27				
Mar-11	42.30	48.94				
Jun-11	41.36	49.88				
Sep-11	41.55	49.69				
Nov-11	41.85	49.39				
Jan-12	41.40	49.84				
Apr-12	40.92	50.32				
Aug-12	40.82	50.42				
Dec-12	41.99	49.25				
Mar-13	41.11	50.13				
MW-08A	90.00	60 - 90	91.44			
				May-10	44.33	47.11
				Aug-10	44.64	46.80
				Nov-10	45.53	45.91
				Mar-11	43.69	47.75
				Jun-11	42.66	48.78
				Sep-11	42.98	48.46
				Nov-11	43.38	48.06
				Jan-12	42.80	48.64
				Apr-12	41.91	49.53
				Aug-12	42.28	49.16
				Dec-12	43.27	48.17
				Mar-13	42.28	49.16

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-09B	155.00	144 - 154	91.2	Mar-10	44.47	46.73
				May-10	43.68	47.52
				Aug-10	45.13	46.07
				Nov-10	45.16	46.04
				Mar-11	42.91	48.29
				Jun-11	42.07	49.13
				Sep-11	43.33	47.87
				Nov-11	43.18	48.02
				Jan-12	42.31	48.89
				Apr-12	41.60	49.60
				Aug-12	42.61	48.59
				Dec-12	43.30	47.89
				Mar-13	42.10	49.09
				MW-10A	91.00	60 - 89
May-10	43.52	46.96				
Aug-10	43.94	46.54				
Nov-10	44.93	45.55				
Mar-11	42.85	47.63				
Jun-11	41.77	48.71				
Sep-11	42.31	48.17				
Nov-11	42.82	47.66				
Jan-12	42.15	48.33				
Apr-12	41.55	48.93				
Aug-12	41.62	48.86				
Dec-12	43.37	47.11				
Mar-13	42.27	48.21				
MW-10B	160.00	153 - 163	90.21			
				May-10	43.08	47.13
				Aug-10	44.44	45.77
				Nov-10	44.55	45.66
				Mar-11	42.37	47.84
				Jun-11	41.37	48.84
				Sep-11	42.66	47.55
				Nov-11	42.66	47.55
				Jan-12	41.72	48.49
				Apr-12	41.11	49.10
				Aug-12	41.90	48.31
				Dec-12	42.95	47.26
				Mar-13	41.68	48.53

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-10C	230.00	220 - 230	90.5	Mar-10	42.87	47.63
				May-10	44.22	46.28
				Aug-10	49.92	40.58
				Nov-10	44.88	45.62
				Mar-11	42.47	48.03
				Jun-11	42.20	48.30
				Sep-11	46.99	43.51
				Nov-11	43.51	46.99
				Jan-12	41.65	48.85
				Apr-12	41.30	49.20
				Aug-12	47.14	43.36
				Dec-12	43.50	47.00
				Mar-13	41.96	48.54
				MW-11A	92.00	70 - 90
May-10	41.12	48.79				
Aug-10	41.42	48.49				
Nov-10	42.19	47.72				
Mar-11	40.57	49.34				
Jun-11	39.65	50.26				
Sep-11	39.93	49.98				
Nov-11	40.08	49.83				
Jan-12	39.63	50.28				
Apr-12	39.18	50.73				
Aug-12	39.18	50.73				
Dec-12	40.24	49.67				
Mar-13	39.29	50.62				
MW-12A	99.00	87 - 97	91.15			
				May-10	44.07	47.08
				Aug-10	44.86	46.29
				Nov-10	45.56	45.59
				Mar-11	43.31	47.84
				Jun-11	42.40	48.75
				Sep-11	43.22	47.93
				Nov-11	43.54	47.61
				Jan-12	42.79	48.36
				Apr-12	42.12	49.03
				Aug-12	46.93	44.22
				Dec-12	43.49	47.66
				Mar-13	42.72	48.43

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-13A	99.00	77 - 97	89.27	Mar-10	43.44	45.83
				May-10	42.17	47.10
				Aug-10	42.35	46.92
				Nov-10	43.44	45.83
				Mar-11	41.67	47.60
				Jun-11	40.46	48.81
				Sep-11	40.76	48.51
				Nov-11	41.32	47.95
				Jan-12	40.77	48.50
				Apr-12	40.19	49.08
				Aug-12	40.17	49.10
				Dec-12	41.87	47.40
				Mar-13	40.88	48.39
				MW-14A	92.00	70 - 90
May-10	41.93	47.86				
Aug-10	42.17	47.62				
Nov-10	43.00	46.79				
Mar-11	41.35	48.44				
Jun-11	40.34	49.45				
Sep-11	40.58	49.21				
Nov-11	40.91	48.88				
Jan-12	40.42	49.37				
Apr-12	39.89	49.90				
Aug-12	39.89	49.90				
Dec-12	41.25	48.54				
Mar-13	40.30	49.49				
MW-15A	102.00	80 - 100	91.76			
				May-10	43.80	47.96
				Aug-10	44.40	47.36
				Nov-10	45.03	46.73
				Mar-11	43.11	48.65
				Jun-11	42.23	49.53
				Sep-11	42.77	48.99
				Nov-11	43.02	48.74
				Jan-12	42.41	49.35
				Apr-12	41.80	49.96
				Aug-12	42.10	49.66
				Dec-12	43.10	48.66
				Mar-13	42.14	49.62

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-16A	86.00	76 - 86	91.89	Mar-10	46.55	45.34
				May-10	45.41	46.48
				Aug-10	47.34	44.55
				Nov-10	47.40	44.49
				Mar-11	44.62	47.27
				Jun-11	43.58	48.31
				Sep-11	45.51	46.38
				Nov-11	45.53	46.36
				Jan-12	44.29	47.60
				Apr-12	43.54	48.35
				Aug-12	44.46	47.43
				Dec-12	45.71	46.18
				Mar-13	44.37	47.52
				MW-16B	139.00	129 - 139
May-10	45.33	46.49				
Aug-10	47.32	44.50				
Nov-10	47.34	44.48				
Mar-11	44.60	47.22				
Jun-11	43.53	48.29				
Sep-11	45.43	46.39				
Nov-11	45.46	46.36				
Jan-12	44.24	47.58				
Apr-12	43.51	48.31				
Aug-12	44.43	47.39				
Dec-12	45.64	46.18				
Mar-13	44.32	47.50				
MW-16C	236.00	226 - 236	91.64			
				May-10	46.22	45.42
				Aug-10	52.77	38.87
				Nov-10	47.40	44.24
				Mar-11	44.73	46.91
				Jun-11	44.07	47.57
				Sep-11	49.02	42.62
				Nov-11	45.99	45.65
				Jan-12	44.12	47.52
				Apr-12	43.39	48.25
				Aug-12	48.55	43.09
				Dec-12	45.85	45.79
				Mar-13	44.67	46.97

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-17A	88.00	77 - 87	89.64	Mar-10	44.36	45.28
				May-10	43.01	46.63
				Aug-10	43.42	46.22
				Nov-10	44.48	45.16
				Mar-11	42.51	47.13
				Jun-11	41.15	48.49
				Sep-11	41.81	47.83
				Nov-11	42.48	47.16
				Jan-12	41.75	47.89
				Apr-12	41.04	48.60
				Aug-12	41.10	48.54
				Dec-12	43.07	46.57
				Mar-13	41.92	47.72
				MW-17B	140.00	129 - 139
May-10	43.02	46.67				
Aug-10	43.98	45.71				
Nov-10	44.60	45.09				
Mar-11	42.42	47.27				
Jun-11	41.17	48.52				
Sep-11	42.31	47.38				
Nov-11	42.68	47.01				
Jan-12	41.70	47.99				
Apr-12	41.06	48.63				
Aug-12	41.54	48.15				
Dec-12	43.09	46.60				
Mar-13	41.88	47.81				
MW-17C	232.00	222 - 232	89.76			
				May-10	44.10	45.66
				Aug-10	51.62	38.14
				Nov-10	45.08	44.68
				Mar-11	42.36	47.40
				Jun-11	41.85	47.91
				Sep-11	43.30	46.46
				Nov-11	44.07	45.69
				Jan-12	41.60	48.16
				Apr-12	40.97	48.79
				Aug-12	47.40	42.36
				Dec-12	43.56	46.20
				Mar-13	42.26	47.50

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-18A	66.00	56 - 66	90.14	Mar-10	44.58	45.56
				May-10	43.39	46.75
				Aug-10	43.89	46.25
				Nov-10	44.00	46.14
				Mar-11	42.77	47.37
				Jun-11	41.56	48.58
				Sep-11	42.28	47.86
				Nov-11	42.83	47.31
				Jan-12	42.11	48.03
				Apr-12	41.48	48.66
				Aug-12	41.57	48.57
				Dec-12	43.30	46.84
				Mar-13	42.14	48.00
				MW-19A	101.00	91 - 101
May-10	44.37	46.85				
Aug-10	45.83	45.39				
Nov-10	46.02	45.20				
Mar-11	43.65	47.57				
Jun-11	42.63	48.59				
Sep-11	44.07	47.15				
Nov-11	44.14	47.08				
Jan-12	43.18	48.04				
Apr-12	42.58	48.64				
Aug-12	44.18	47.04				
Dec-12	44.25	46.97				
Mar-13	43.13	48.09				
MW-19B1	147.00	137 - 147	91.08			
				May-10	44.68	46.40
				Aug-10	46.78	44.30
				Nov-10	46.42	44.66
				Mar-11	43.84	47.24
				Jun-11	42.93	48.15
				Sep-11	44.85	46.23
				Nov-11	44.59	46.49
				Jan-12	43.45	47.63
				Apr-12	42.81	48.27
				Aug-12	44.03	47.05
				Dec-12	44.61	46.47
				Mar-13	43.44	47.64

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-20A	86.00	76 - 86	90.7	Mar-10	45.28	45.42
				May-10	44.08	46.62
				Aug-10	44.97	45.73
				Nov-10	45.79	44.91
				Mar-11	43.40	47.30
				Jun-11	42.28	48.42
				Sep-11	43.35	47.35
				Nov-11	43.74	46.96
				Jan-12	42.84	47.86
				Apr-12	42.15	48.55
				Aug-12	41.12	49.58
				Dec-12	44.08	46.62
				Mar-13	42.93	47.77
				MW-20B	162.00	152 - 162
May-10	44.11	46.54				
Aug-10	45.74	44.91				
Nov-10	45.96	44.69				
Mar-11	43.38	47.27				
Jun-11	42.34	48.31				
Sep-11	43.94	46.71				
Nov-11	44.00	46.65				
Jan-12	42.69	47.96				
Apr-12	42.21	48.44				
Aug-12	43.06	47.59				
Dec-12	44.21	46.44				
Mar-13	42.94	47.71				
MW-20C	235.00	225 - 235	90.79			
				May-10	44.42	46.37
				Aug-10	50.67	40.12
				Nov-10	45.78	45.01
				Mar-11	43.14	47.65
				Jun-11	42.65	48.14
				Sep-11	47.52	43.27
				Nov-11	44.74	46.05
				Jan-12	42.48	48.31
				Apr-12	41.89	48.90
				Aug-12	47.39	43.40
				Dec-12	45.05	45.74
				Mar-13	43.10	47.69

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-21A	102.00	90 - 100	91.75	Nov-11	45.34	46.41
				Jan-12	44.62	47.13
				Apr-12	43.42	48.33
				Aug-12	44.83	46.92
				Dec-12	45.68	46.07
				Mar-13	44.31	47.44
MW-22A	62.00	50 - 60	91.69	Nov-11	45.36	46.33
				Jan-12	44.20	47.49
				Apr-12	43.45	48.24
				Aug-12	44.02	47.67
				Dec-12	45.63	46.06
				Mar-13	44.33	47.36
MW-23A	102.00	89 - 99	90.26	Nov-11	40.85	49.41
				Jan-12	40.71	49.55
				Apr-12	40.19	50.07
				Aug-12	40.26	50.00
				Dec-12	41.33	48.93
				Mar-13	40.49	49.77
MW-24B	157.00	145 - 155	92.93	Nov-11	45.94	46.99
				Jan-12	44.89	48.04
				Apr-12	44.21	48.72
				Aug-12	44.91	48.02
				Dec-12	46.20	46.73
				Mar-13	44.96	47.97
MW-25B	157.00	145 - 155	91.78	Nov-11	45.40	46.38
				Jan-12	44.27	47.51
				Apr-12	43.44	48.34
				Aug-12	44.12	47.66
				Dec-12	45.62	46.16
				Mar-13	44.29	47.49
MW-26B	157.00	145 - 155	89.71	Nov-11	43.03	46.68
				Jan-12	41.95	47.76
				Apr-12	41.23	48.48
				Aug-12	41.78	47.93
				Dec-12	43.50	46.21
				Mar-13	42.19	47.52

**TABLE G-2(b)**

**GROUNDWATER MONITORING WELL WATER TABLE ELEVATION  
MODESTO GROUNDWATER SUPERFUND SITE  
MODESTO, CALIFORNIA**

<b>Well Identification</b>	<b>Well Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Top of Casing Elevation (ft bgs)</b>	<b>Date</b>	<b>Depth To Water (feet from TOC)</b>	<b>Water Table Elevation (feet above MSL)</b>
MW-27B	157.00	145 - 155	89.34	Nov-11	42.36	46.98
				Jan-12	41.40	47.94
				Apr-12	40.70	48.64
				Aug-12	41.19	48.15
				Dec-12	42.89	46.45
				Mar-13	41.65	47.69
MW-28B	157.00	145 - 155	89.21	Nov-11	41.40	47.81
				Jan-12	40.62	48.59
				Apr-12	40.06	49.15
				Aug-12	40.52	48.69
				Dec-12	41.91	47.30
				Mar-13	40.46	48.75
MW-29B	157.00	145 - 155	89.74	Nov-11	41.45	48.29
				Jan-12	40.72	49.02
				Apr-12	40.15	49.59
				Aug-12	40.63	49.11
				Dec-12	41.74	48.00
				Mar-13	40.67	49.07

ft bgs - feet below ground surface  
 MSL - Mean Sea Level  
 MW - Monitoring Well  
 NA - Not Applicable  
 TOC - Top of Casing

Table G-3. Historical through Current Analytical Data

Included as excel file on this CD.



FIGURE G-4(b)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

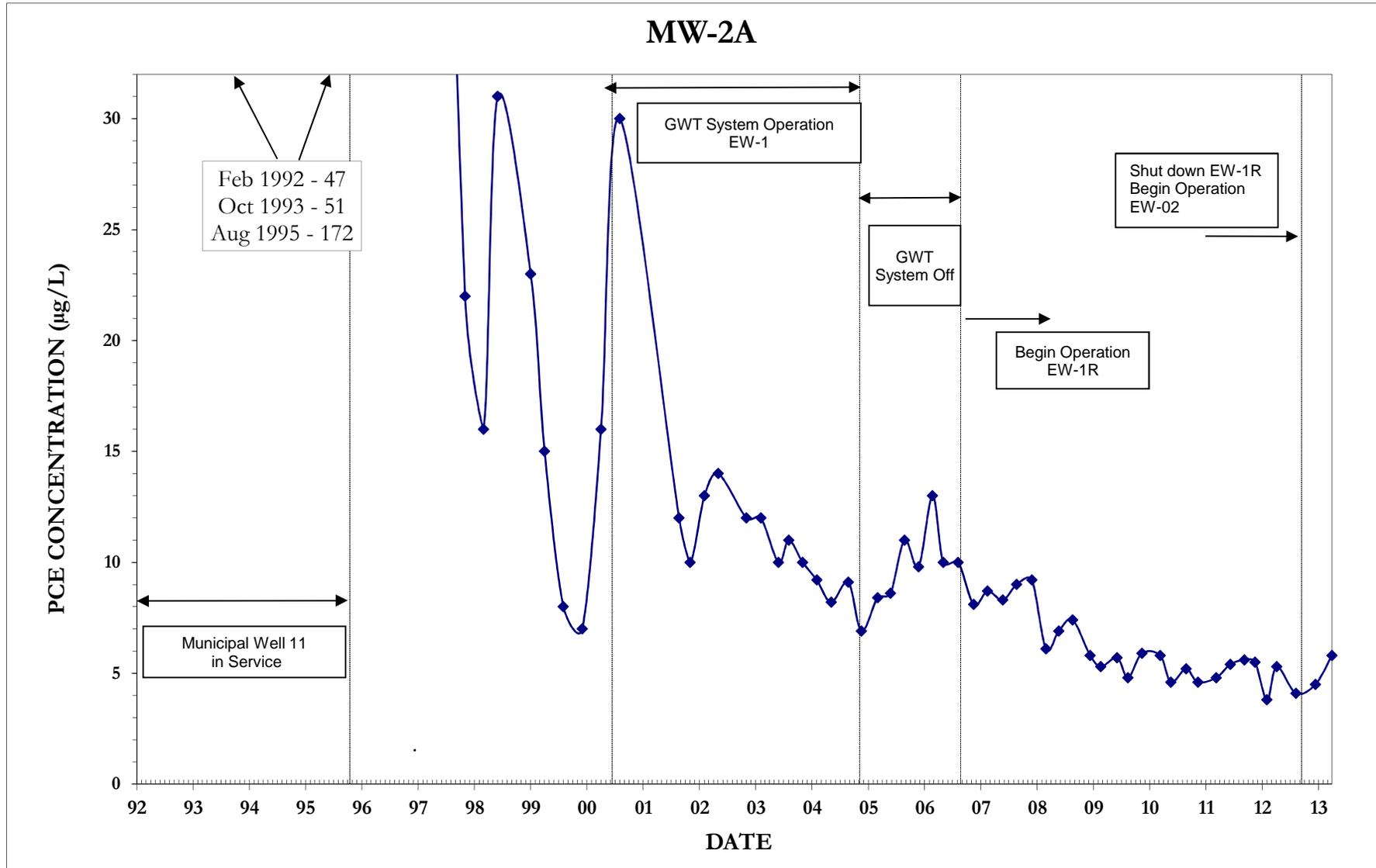




FIGURE G-4(d)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

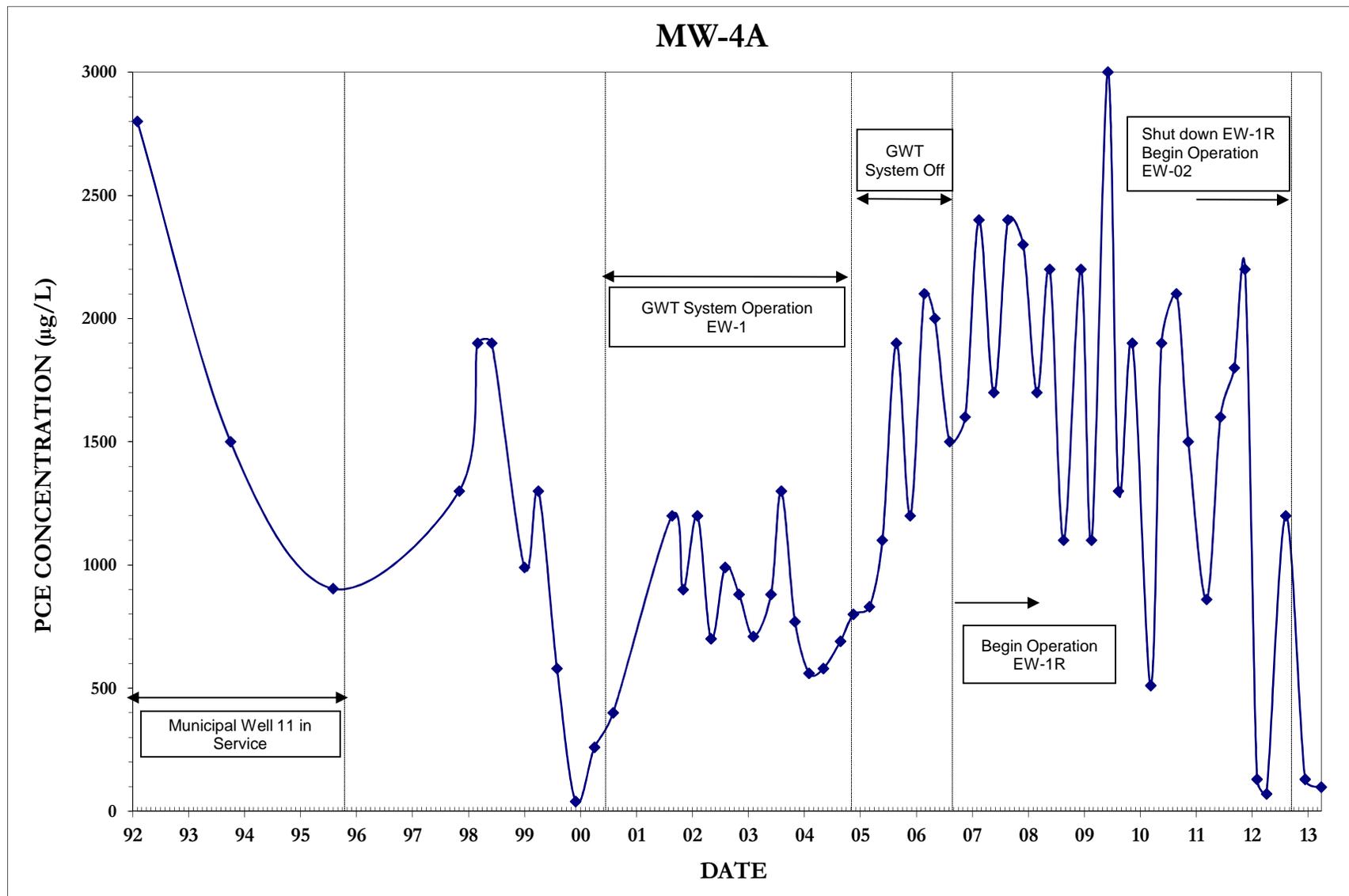


FIGURE G-4(e)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

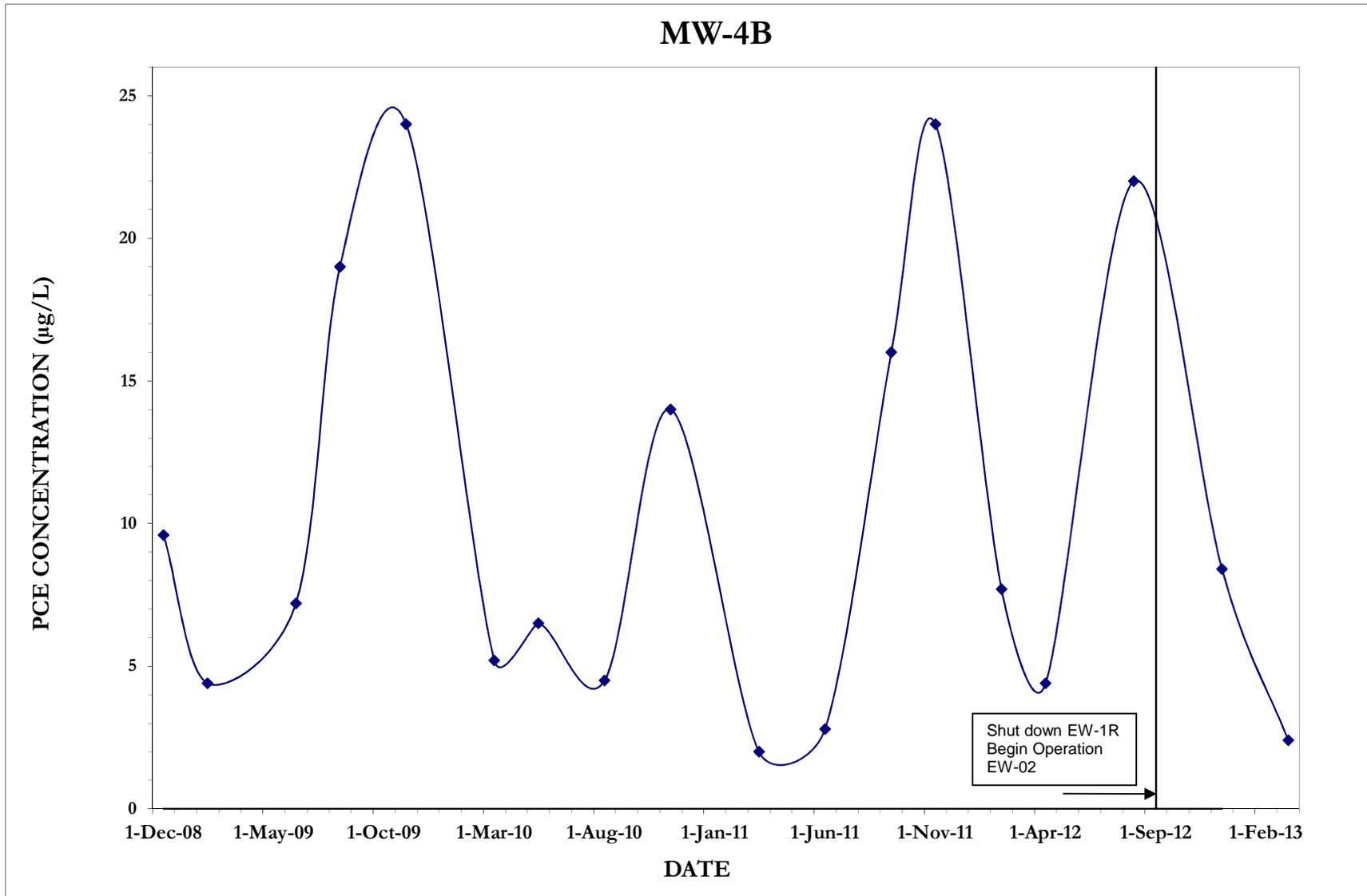


FIGURE G-4(f)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

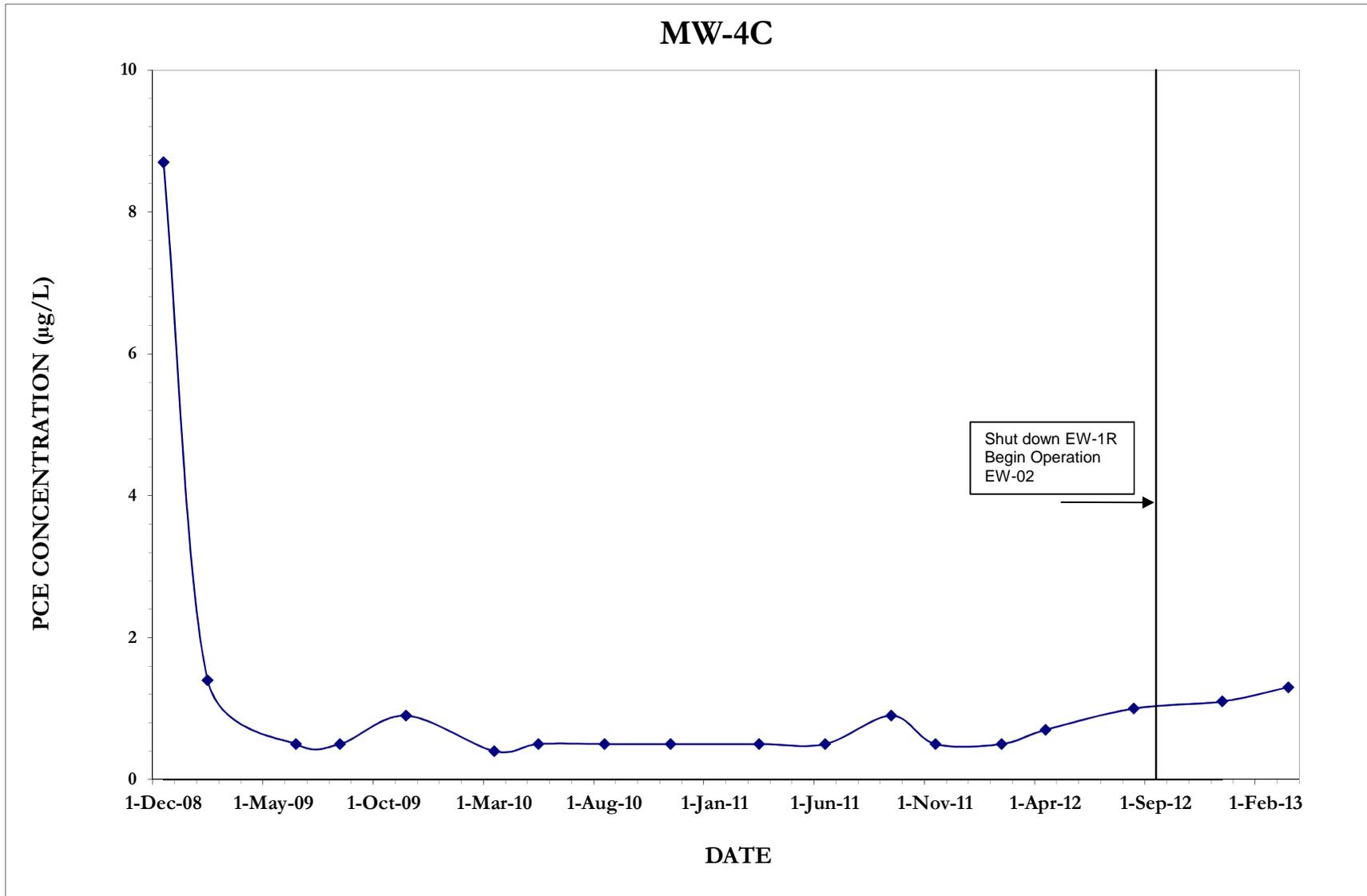


FIGURE G-4(g)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

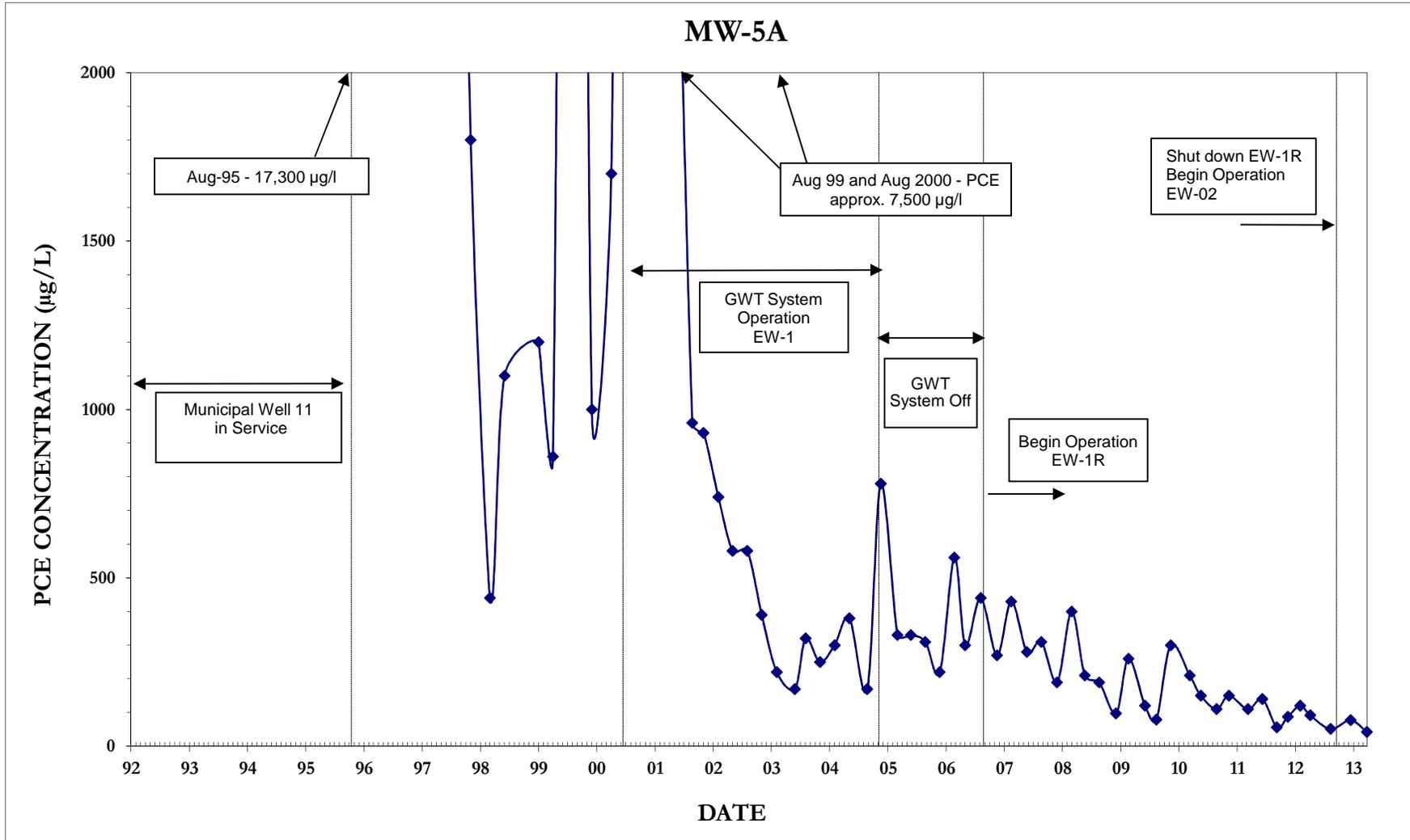


FIGURE G-4(h)

HISTORICAL PCE CONCENTRATION IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

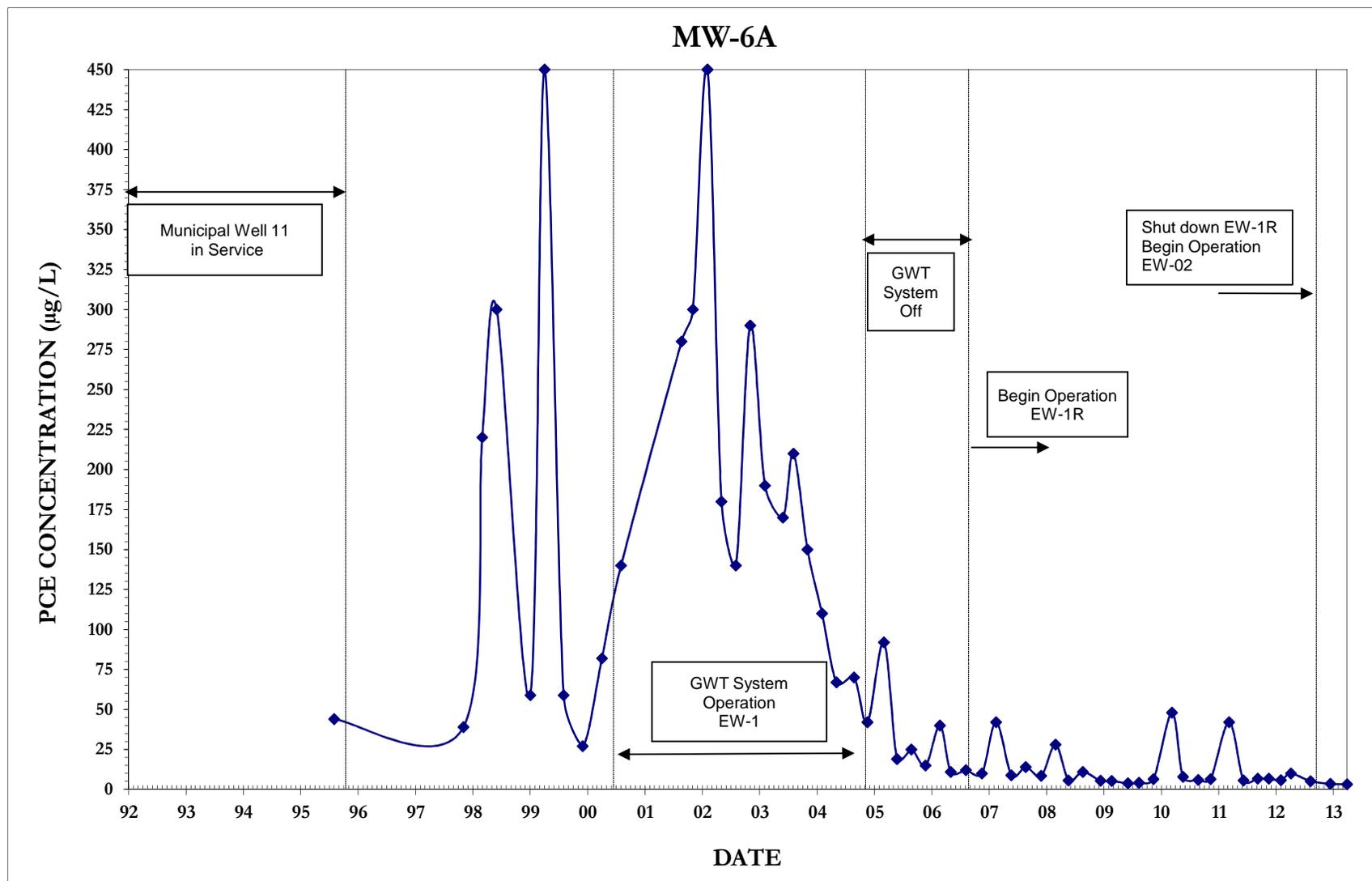


FIGURE G-4(i)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

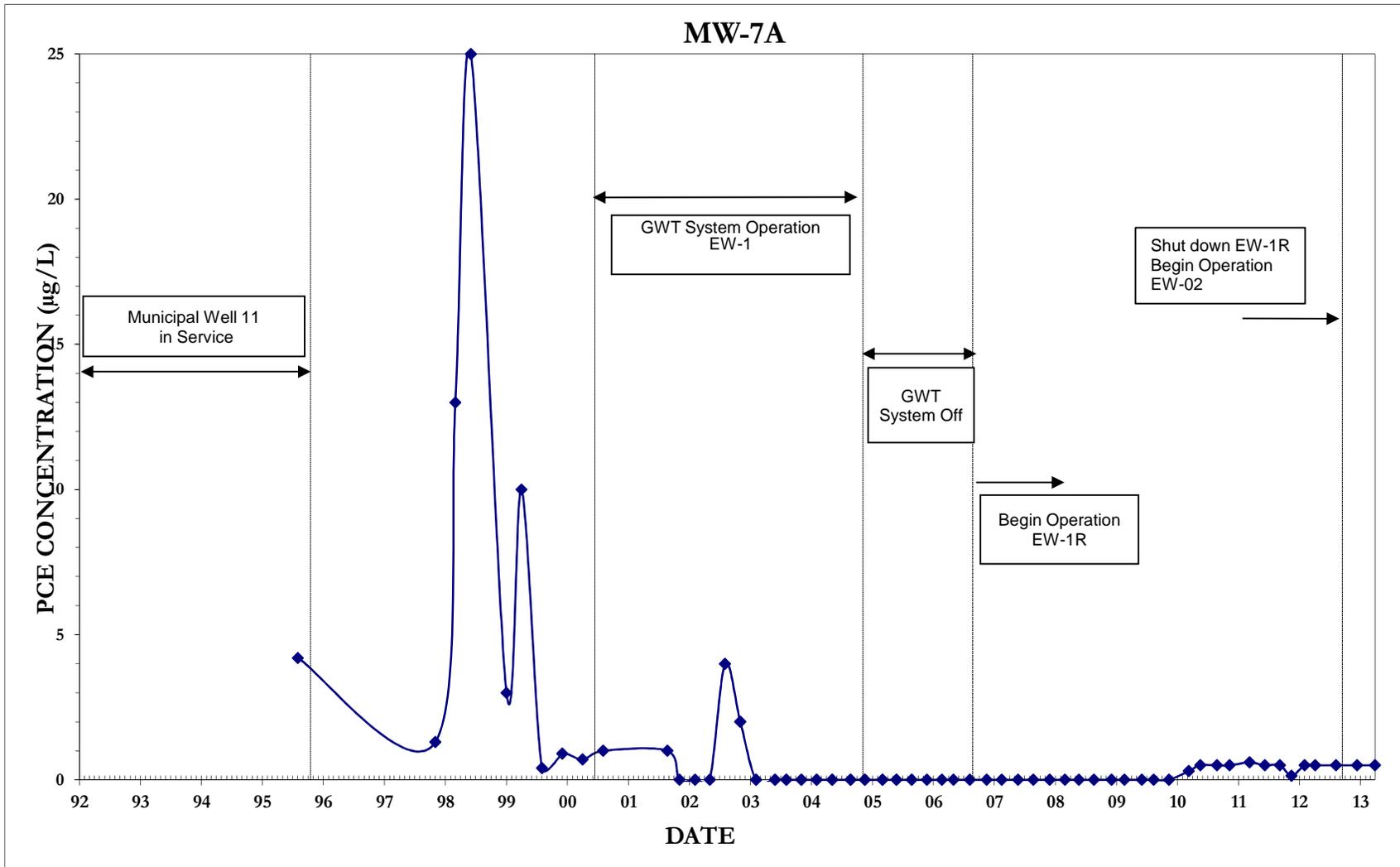


FIGURE G-4(j)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

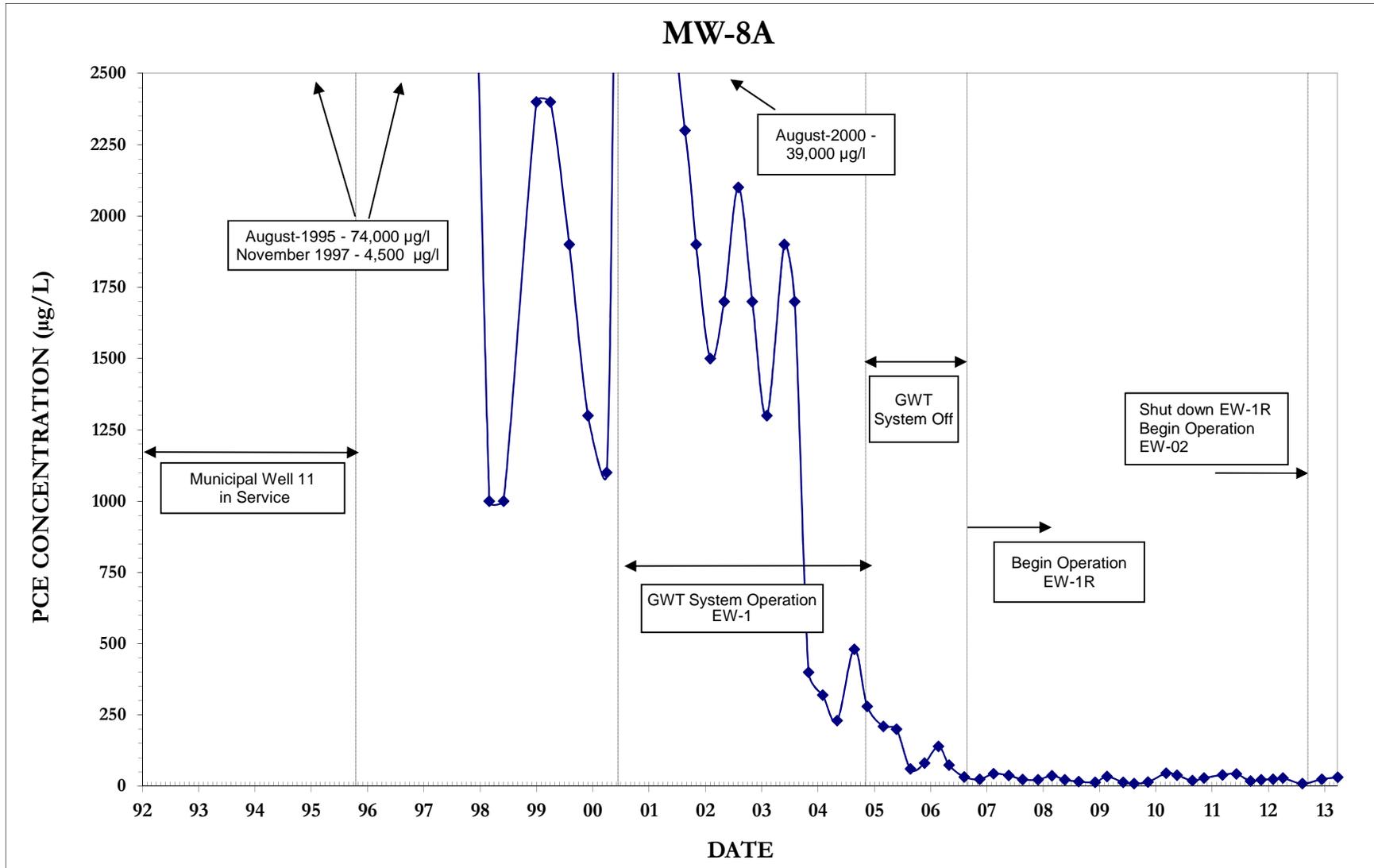


FIGURE G-4(k)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

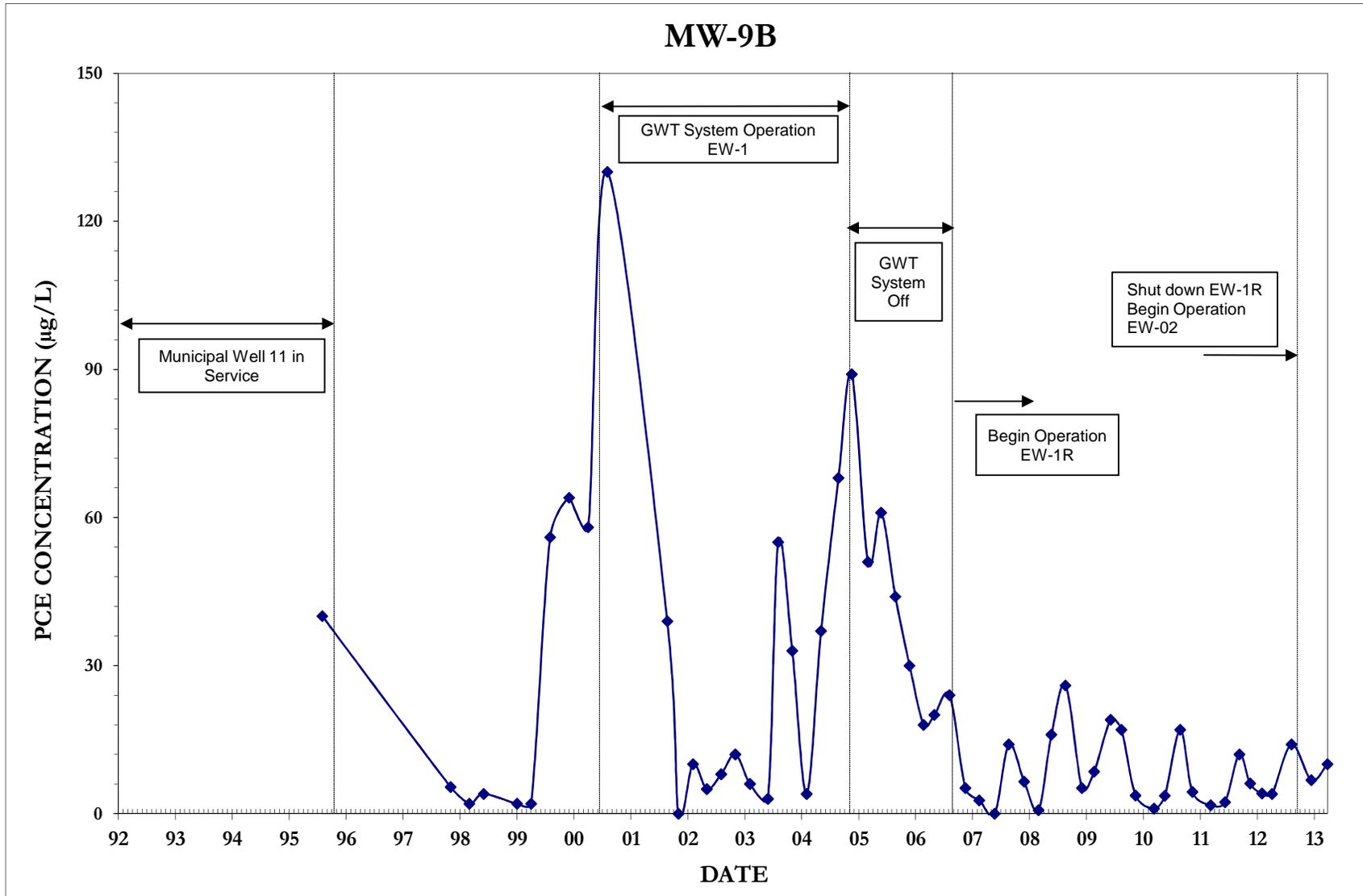


FIGURE G-4(I)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

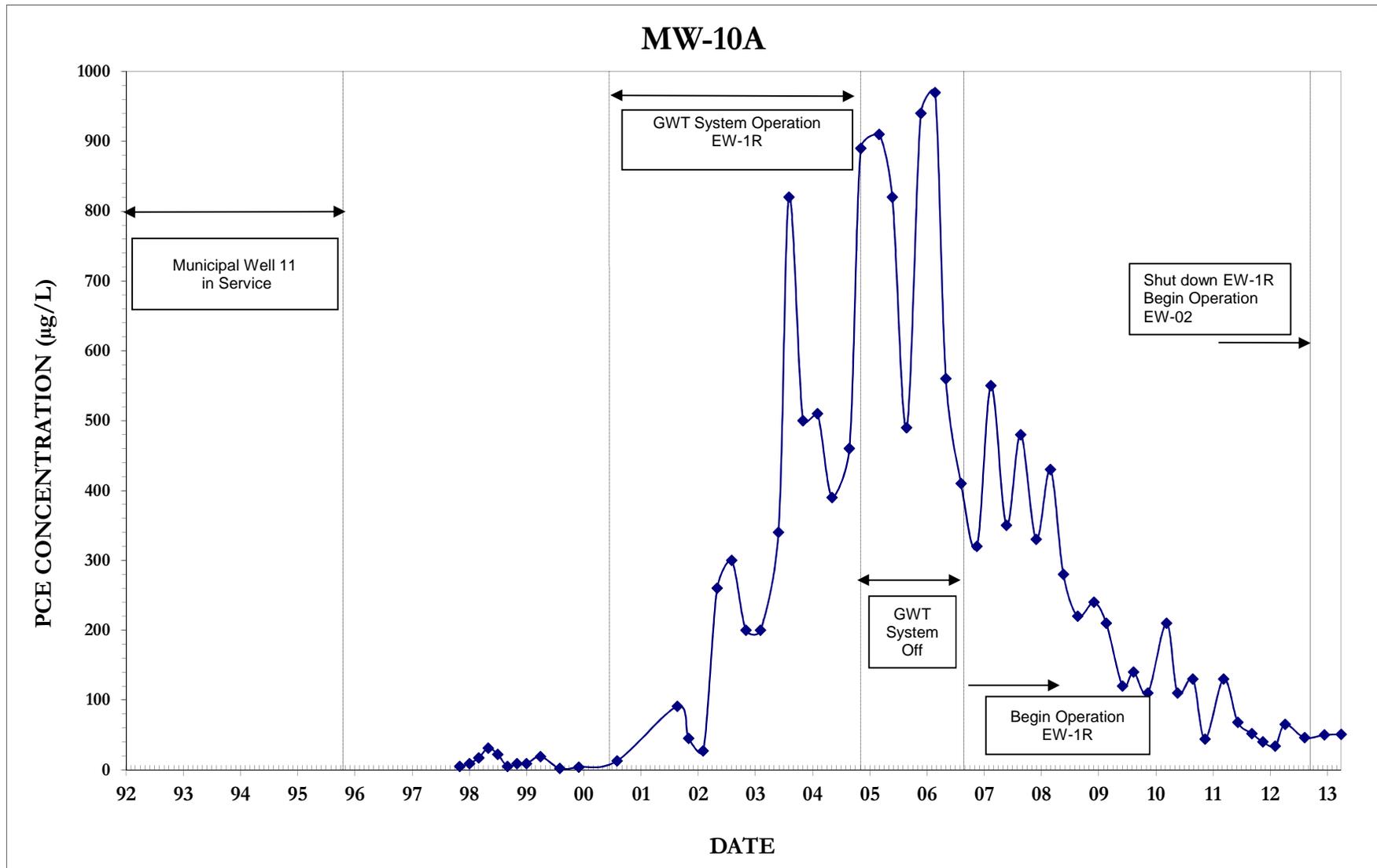


FIGURE G-4(m)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

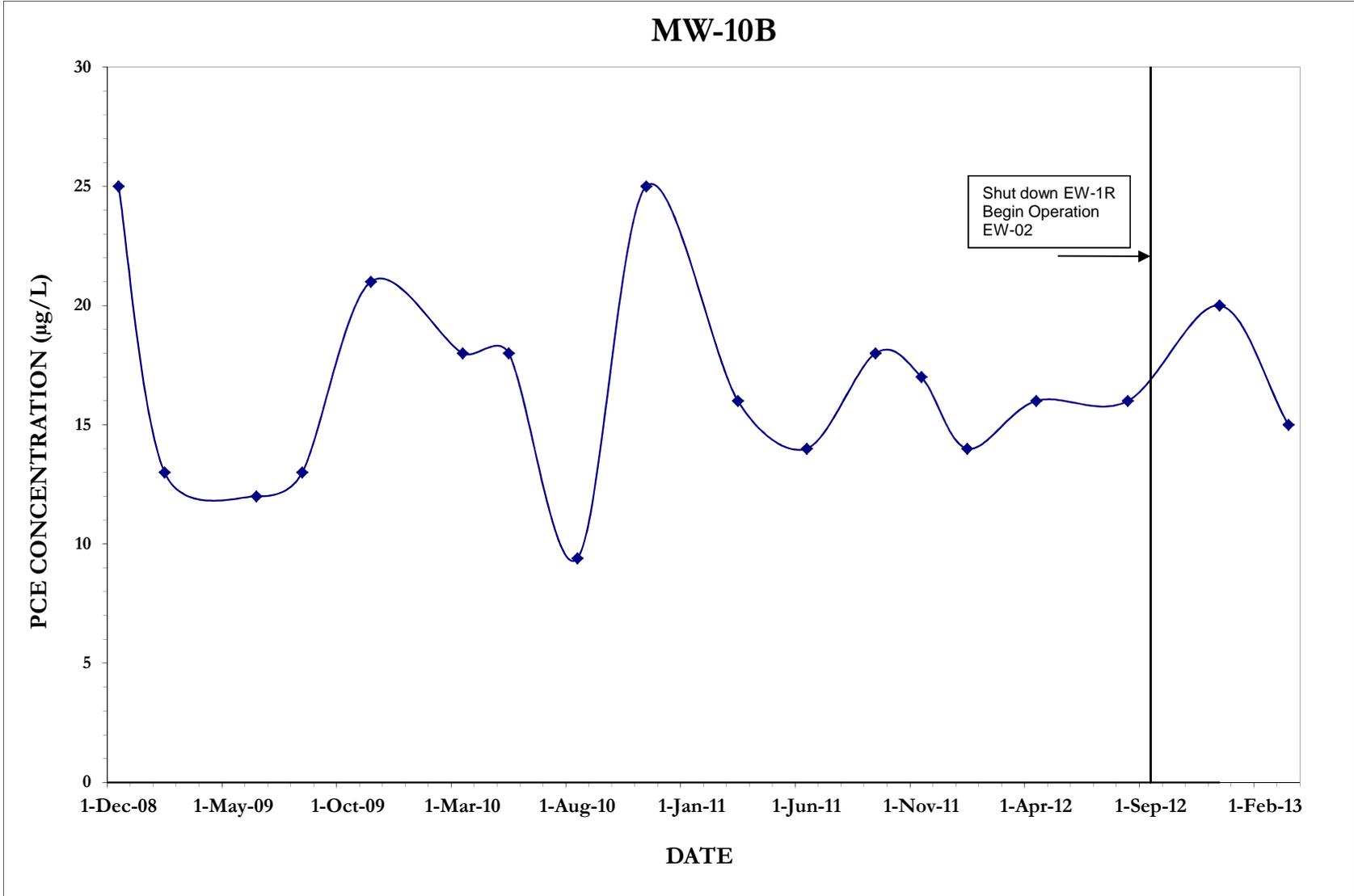


FIGURE G-4(n)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

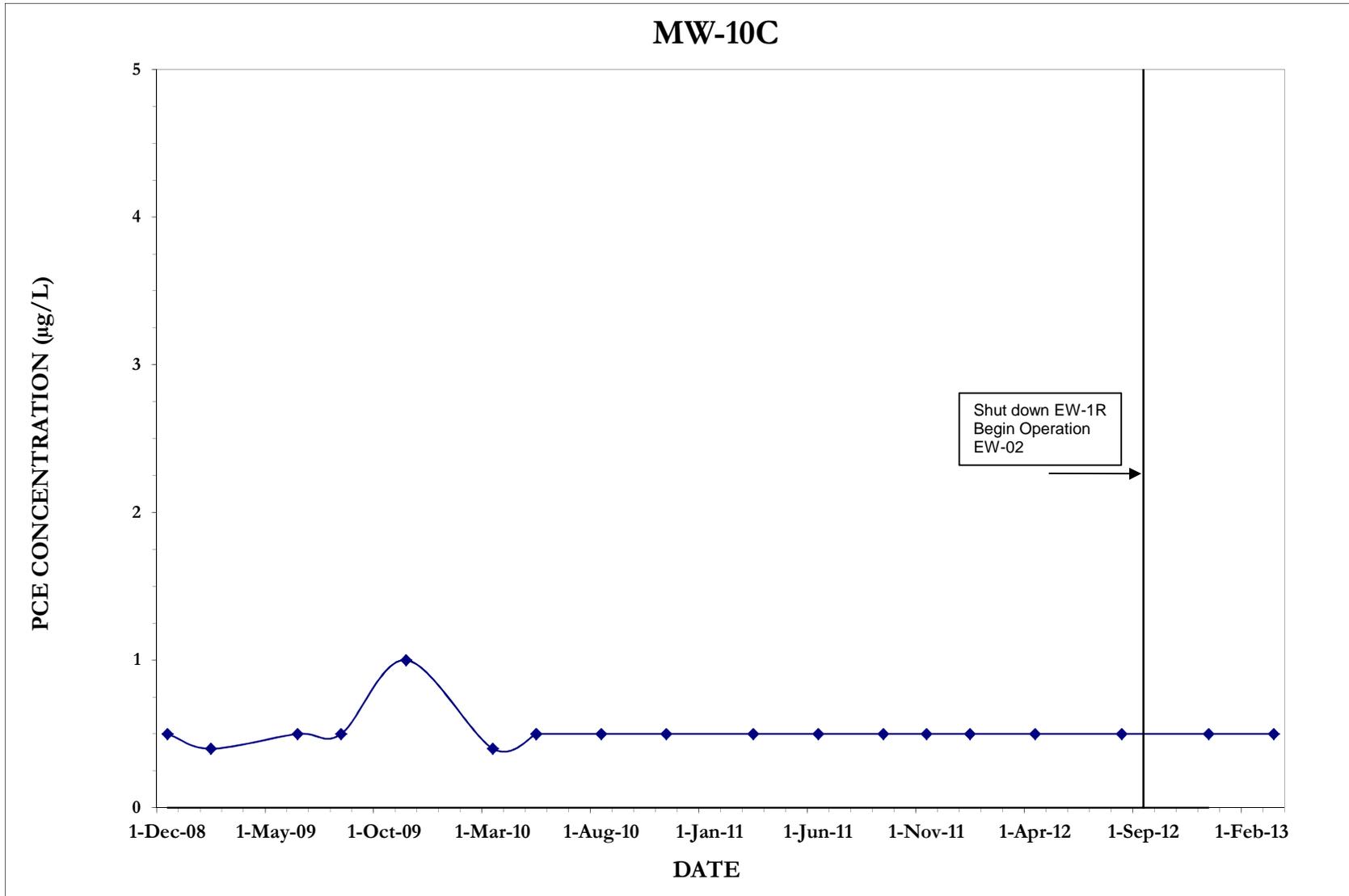


FIGURE G-4(o)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

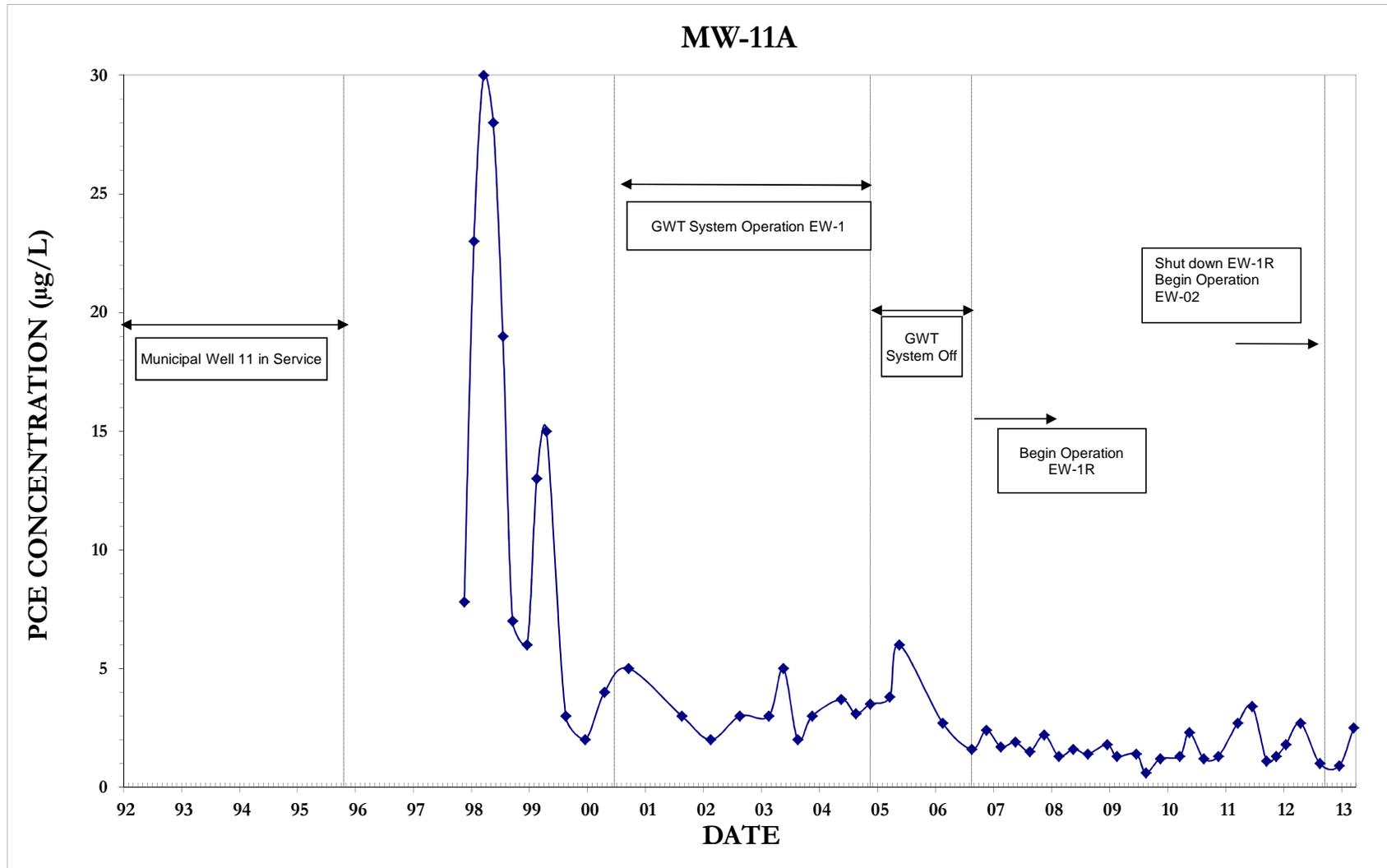


FIGURE G-4(p)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

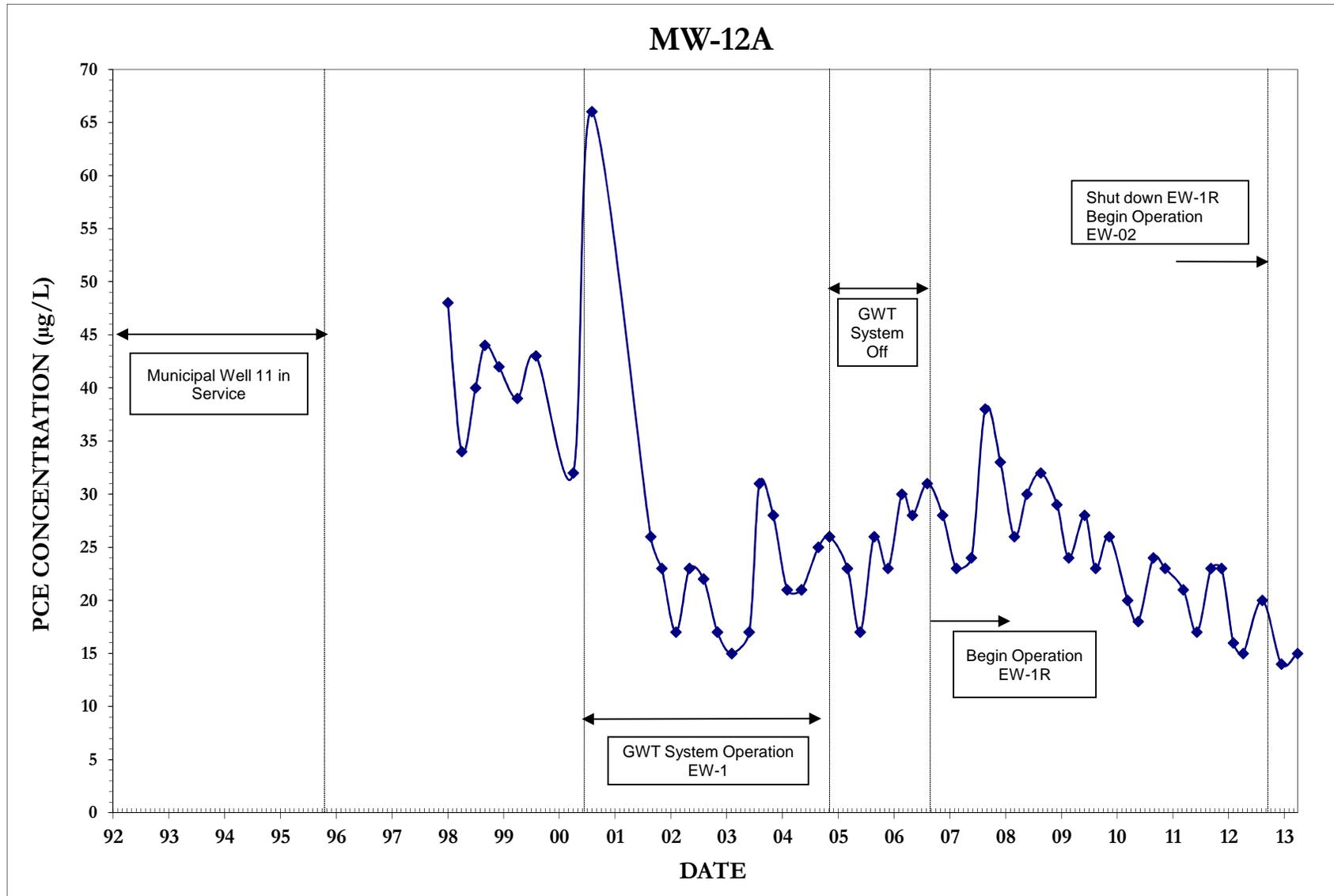


FIGURE G-4(q)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

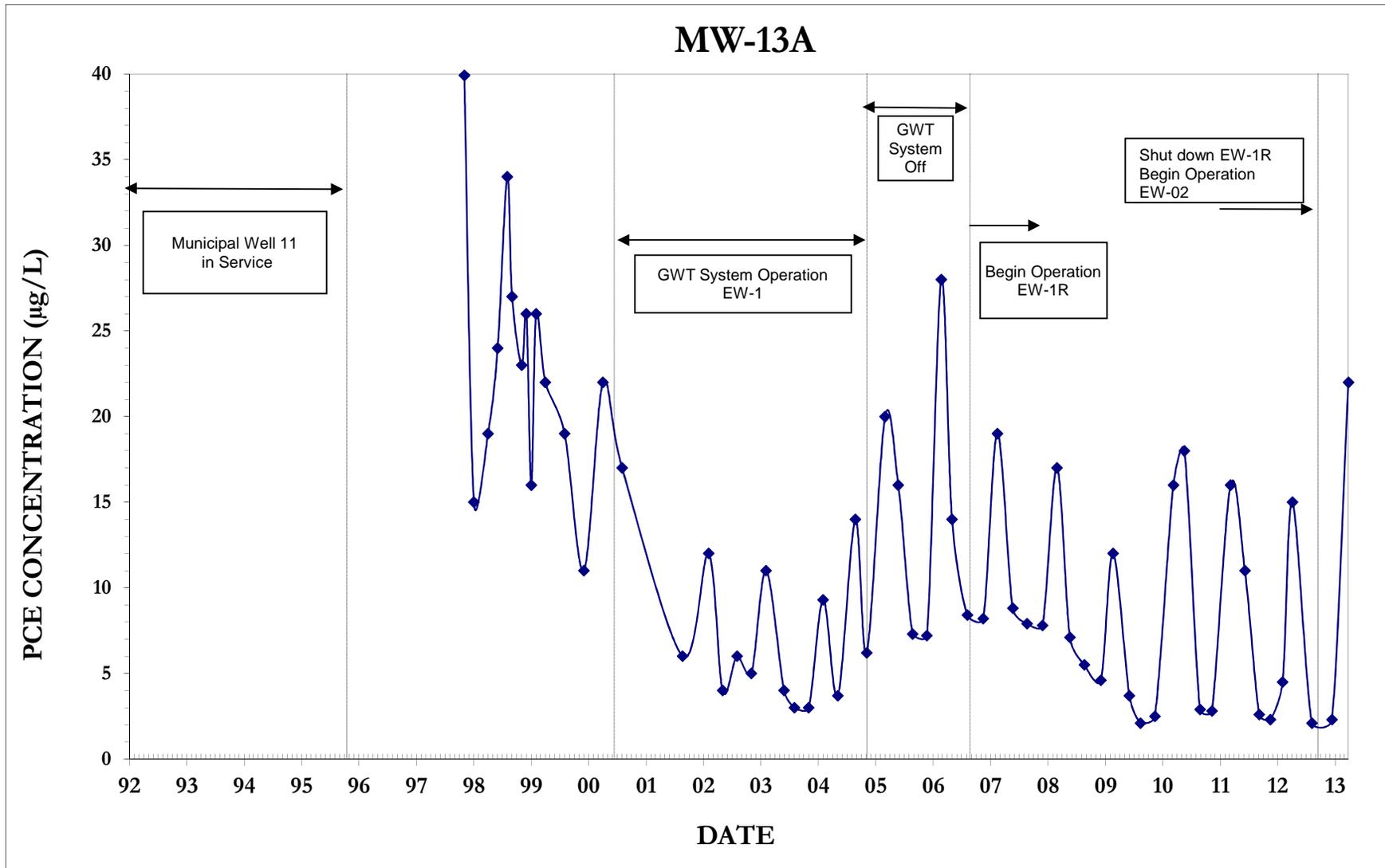


FIGURE G-4(r)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

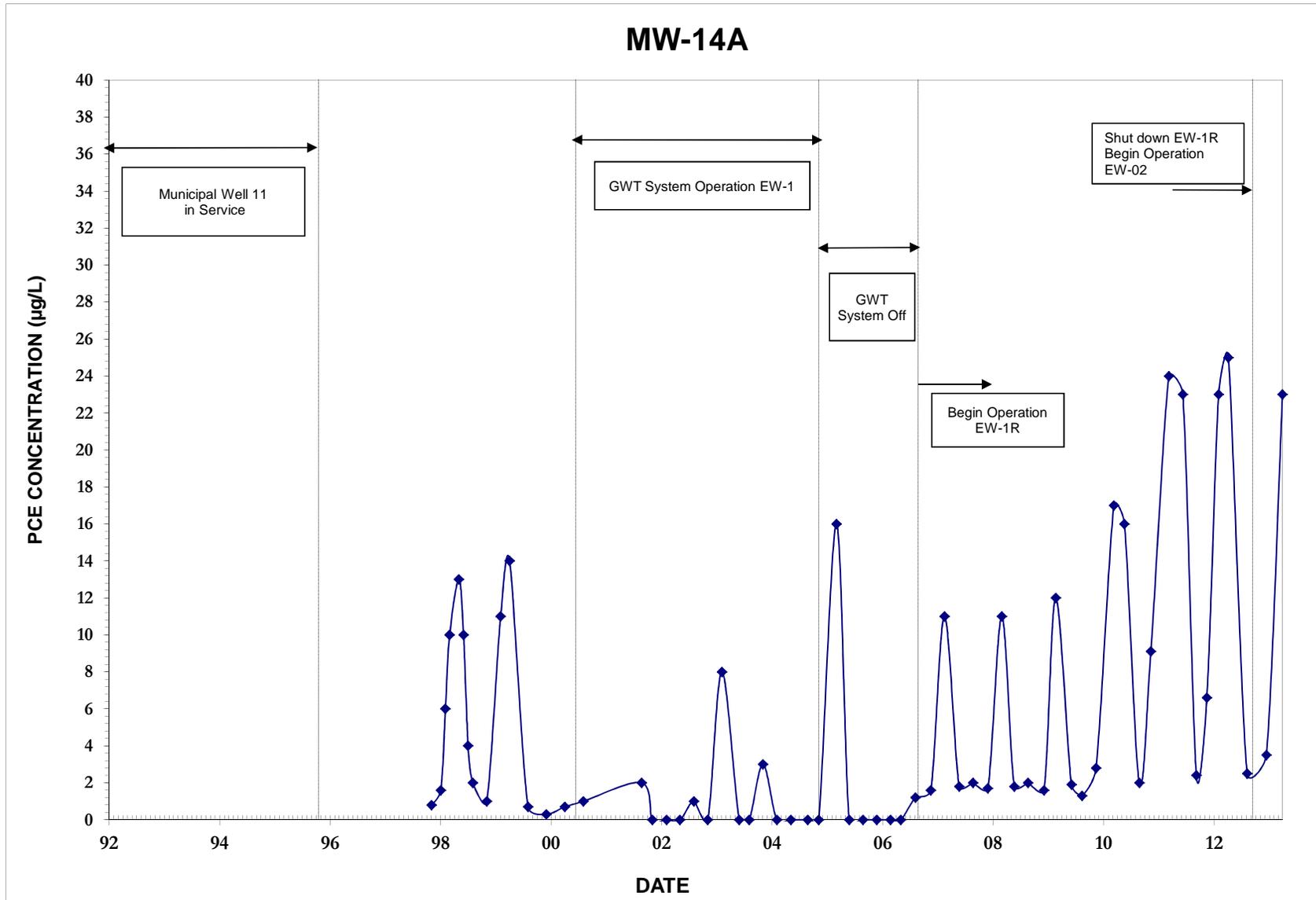




FIGURE G-4(t)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

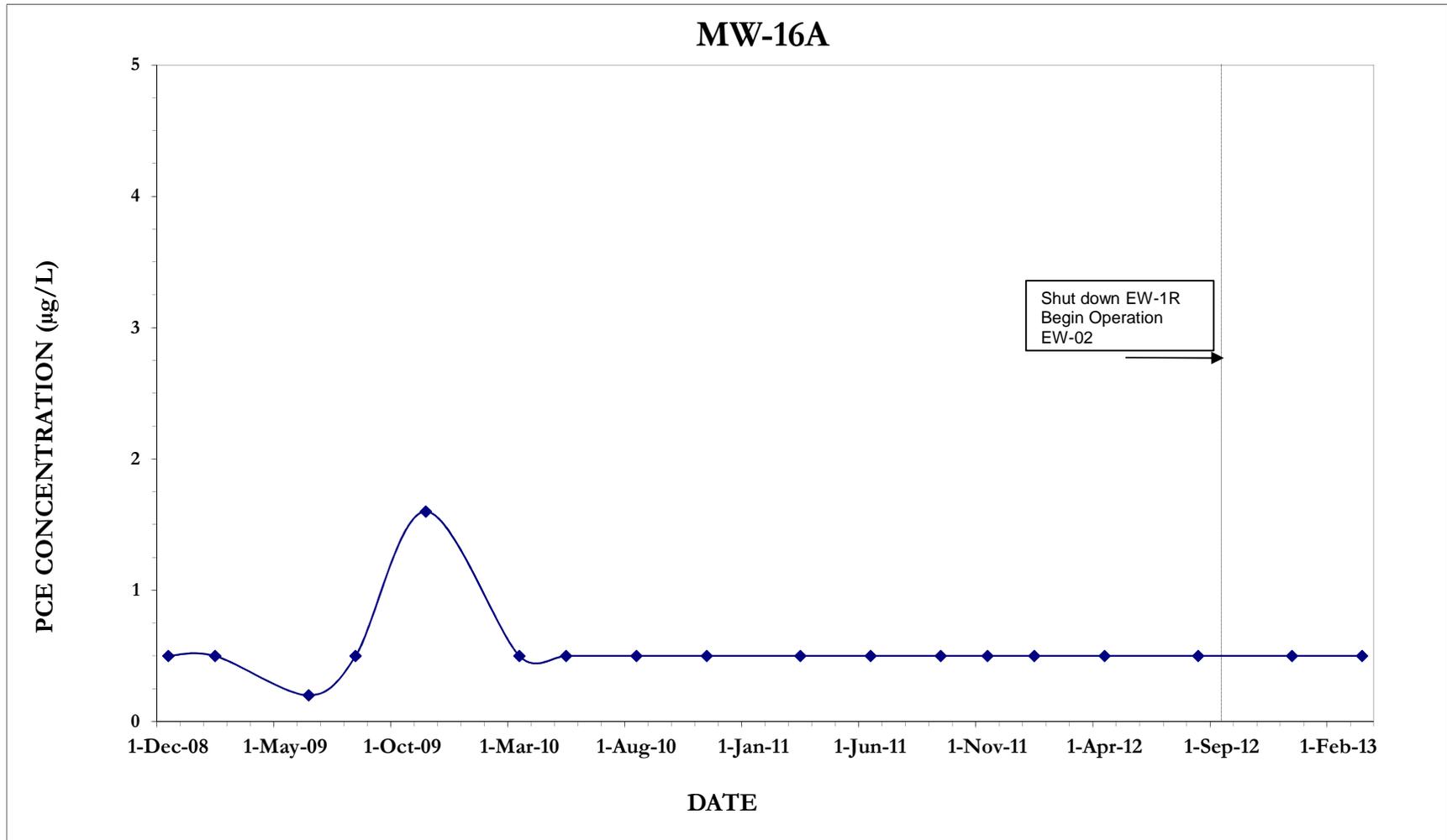


FIGURE G-4(u)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

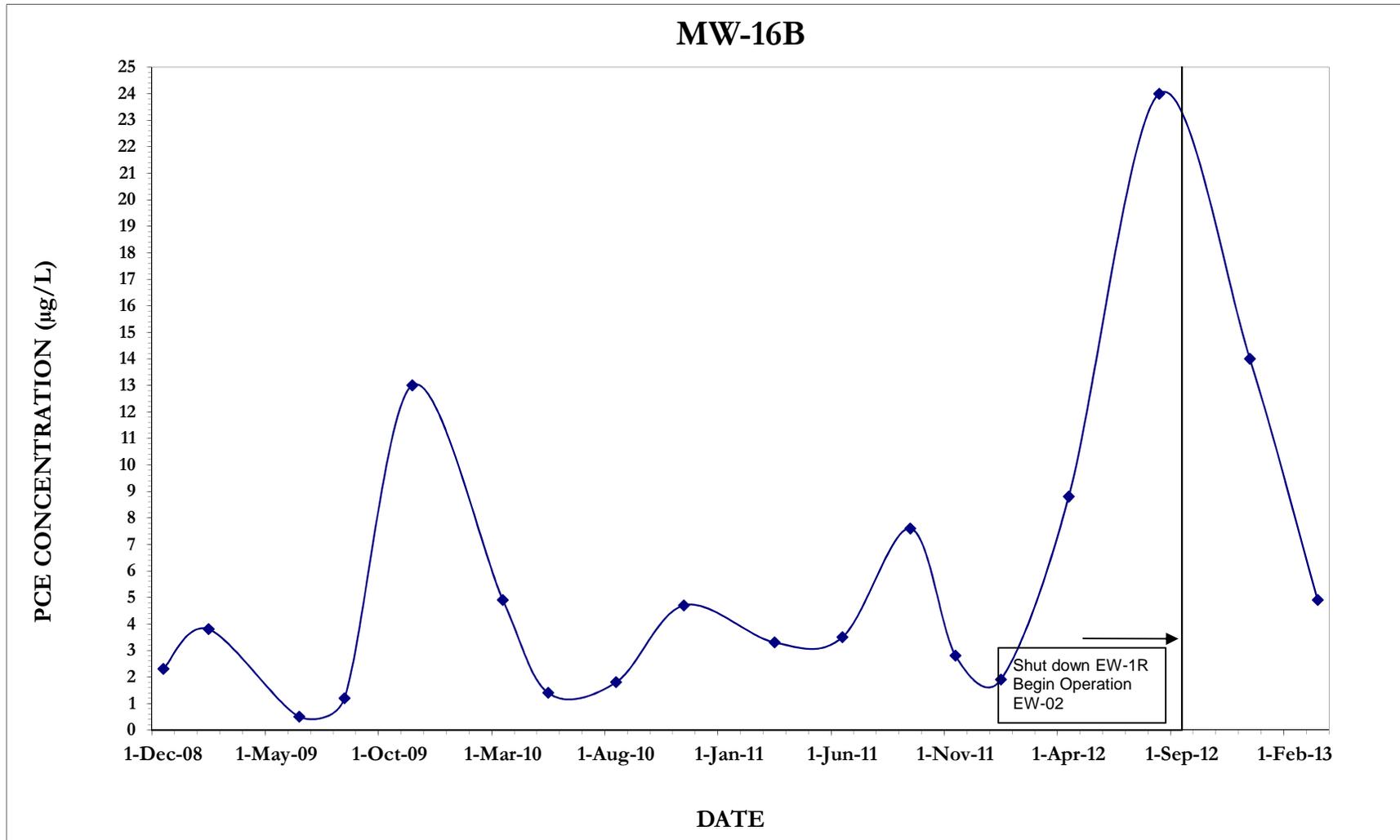


FIGURE G-4(v)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

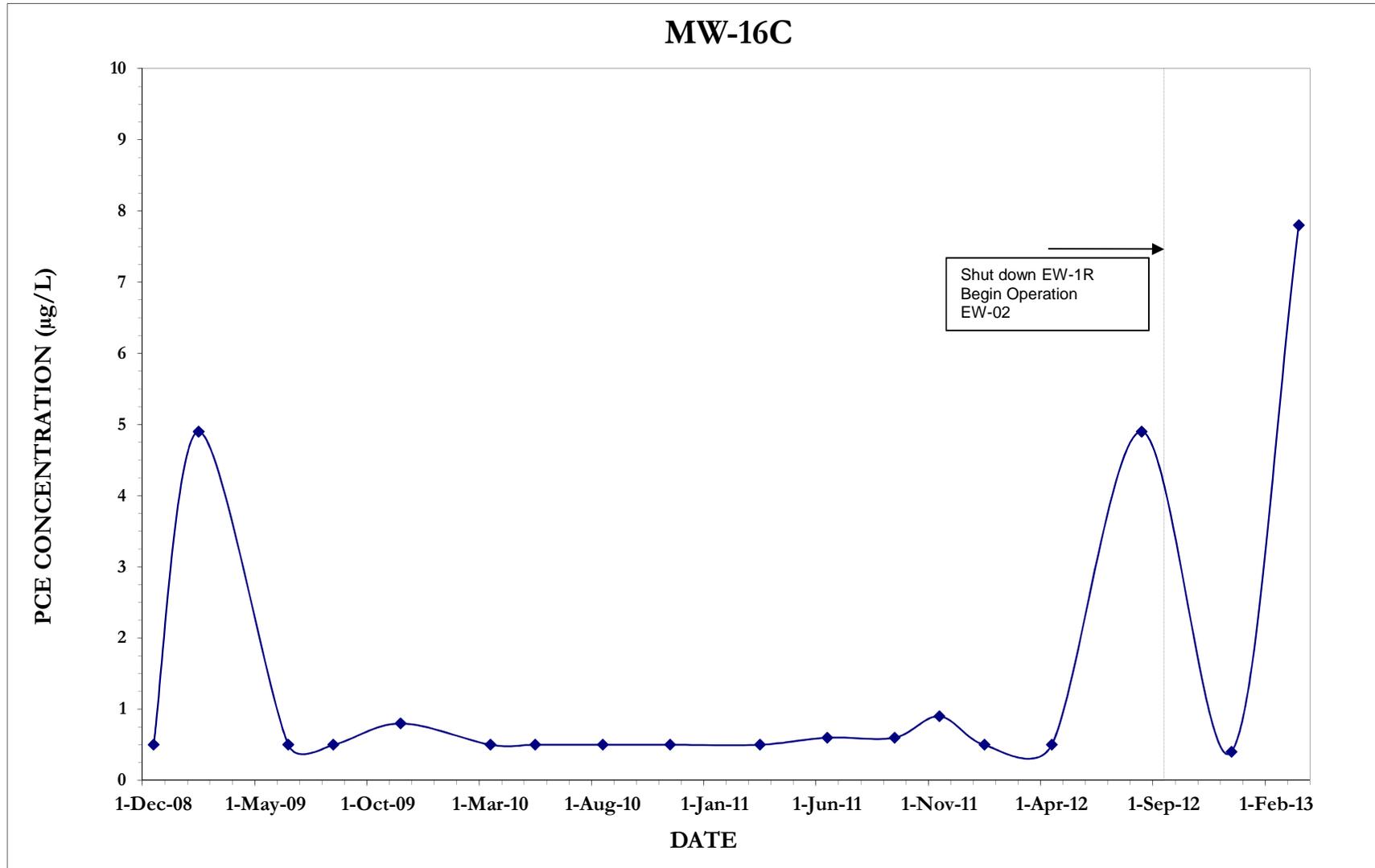


FIGURE G-4(w)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

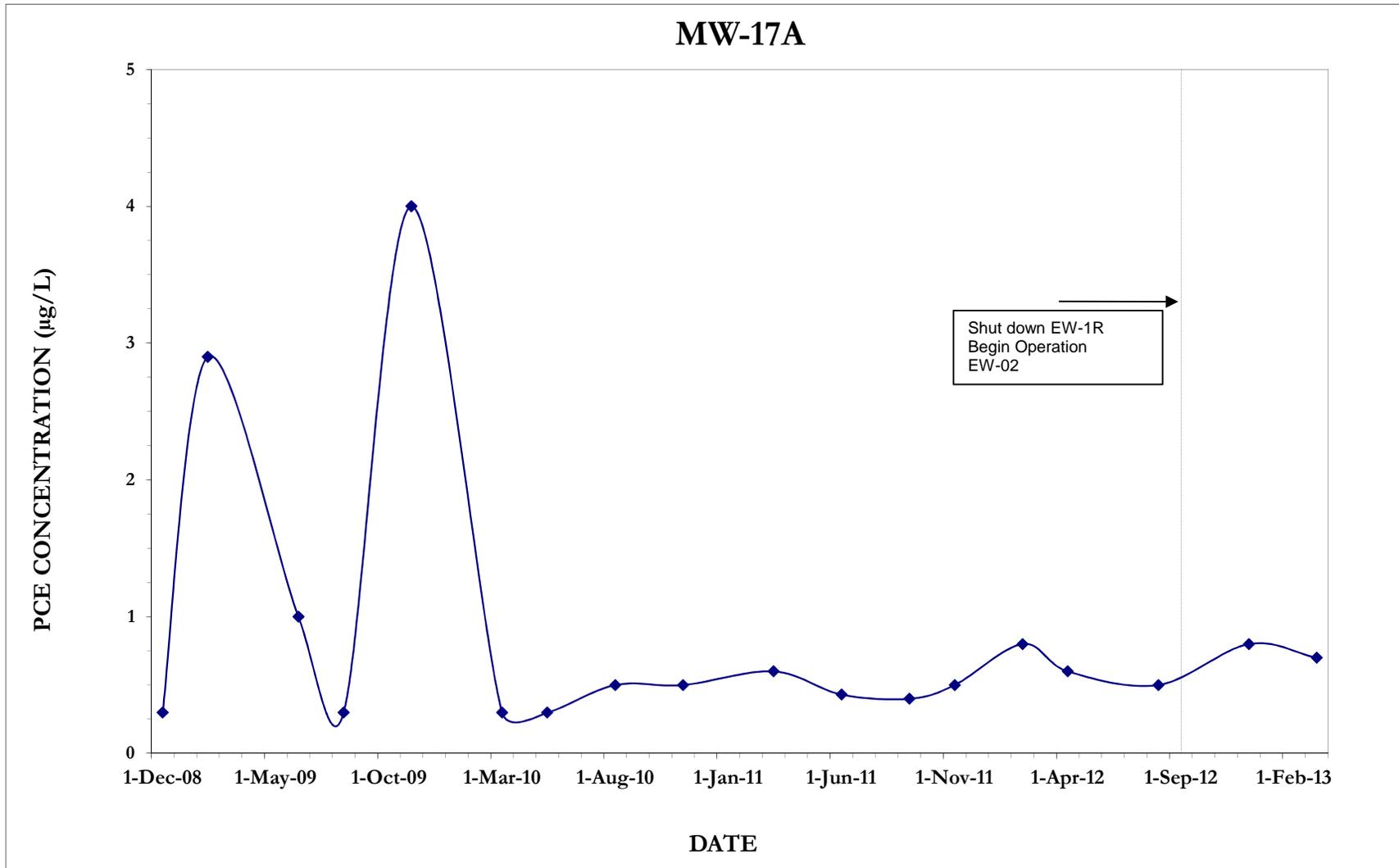


FIGURE G-4(x)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

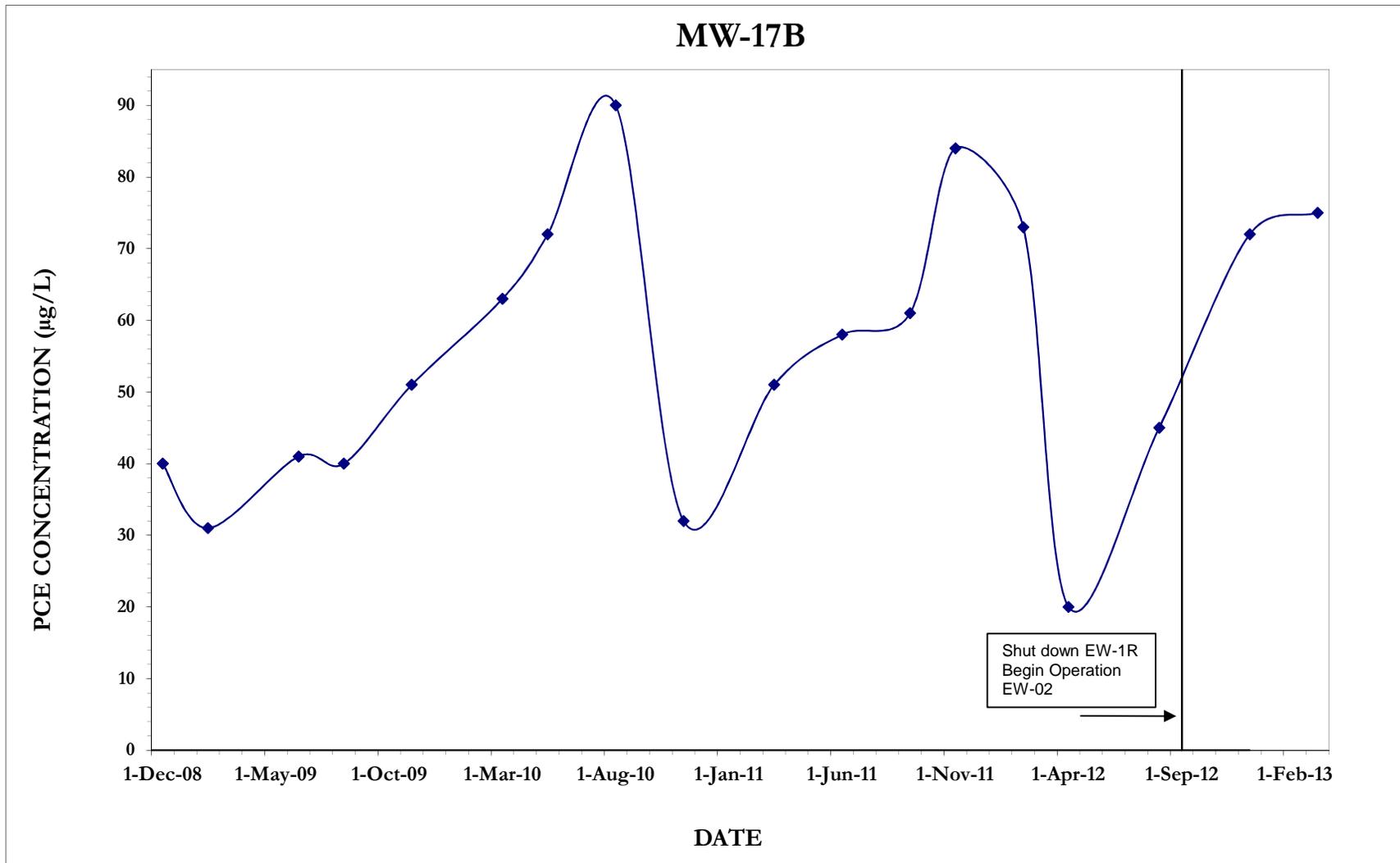


FIGURE G-4(y)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

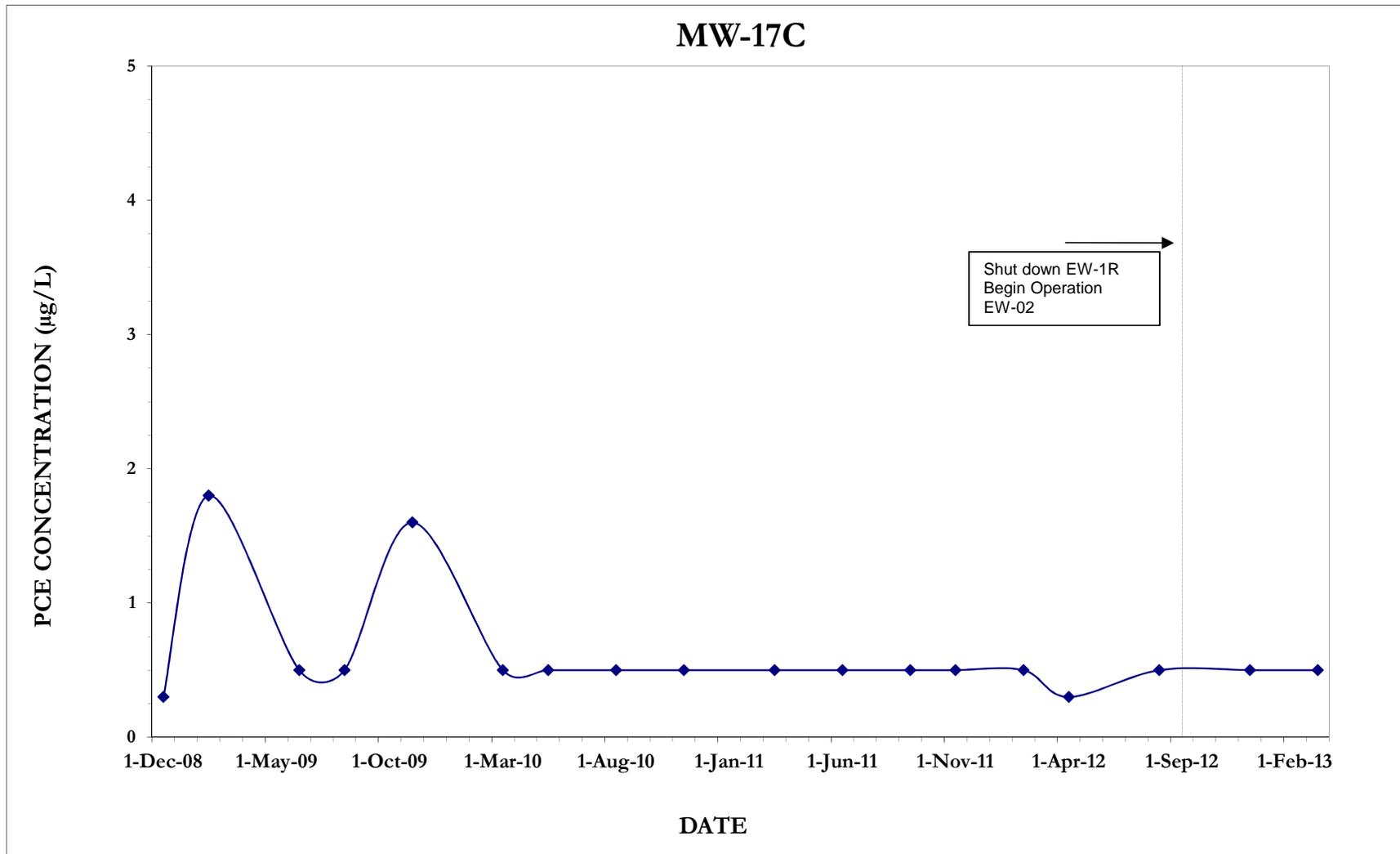


FIGURE G-4(z)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

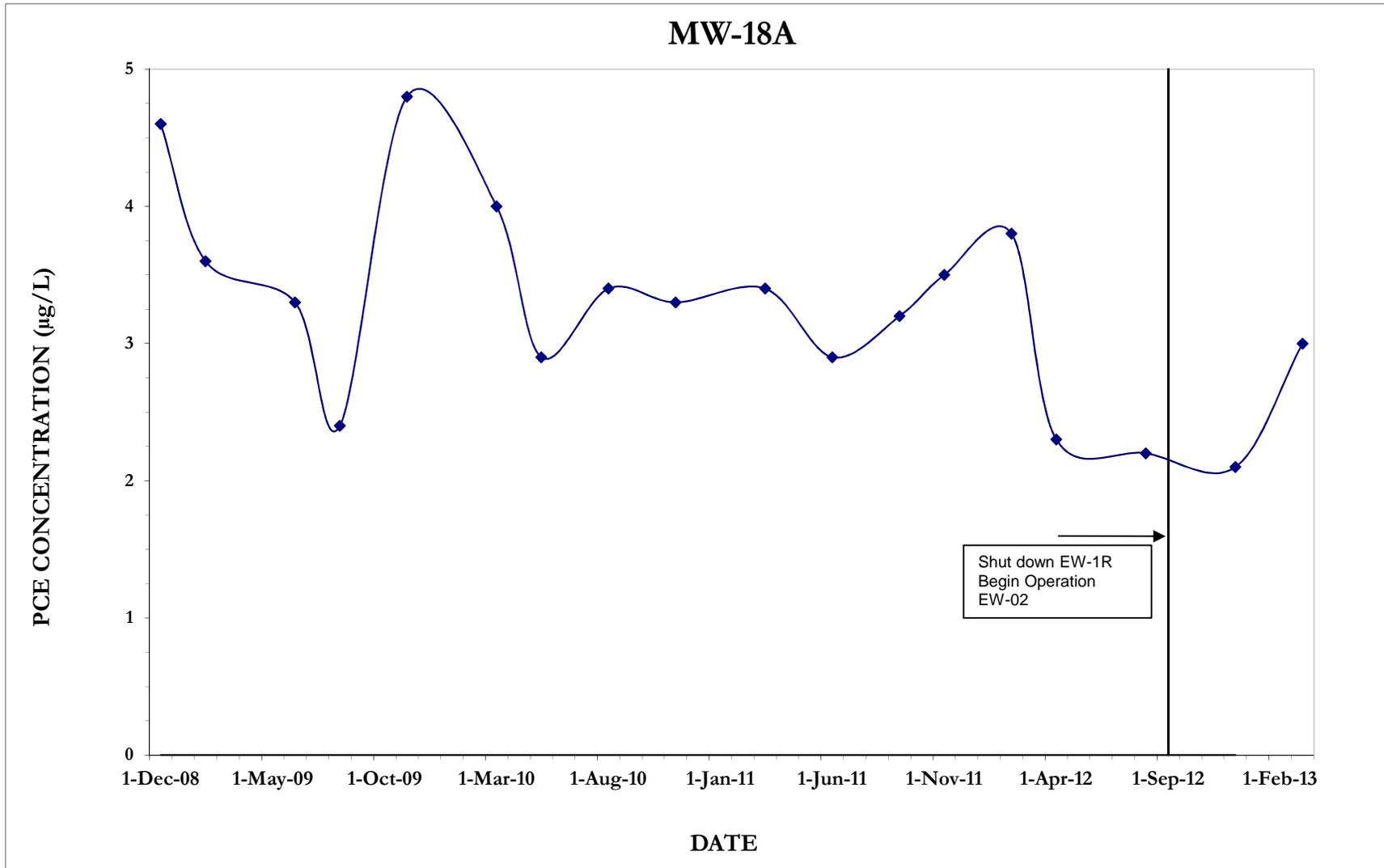


FIGURE G-4(aa)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

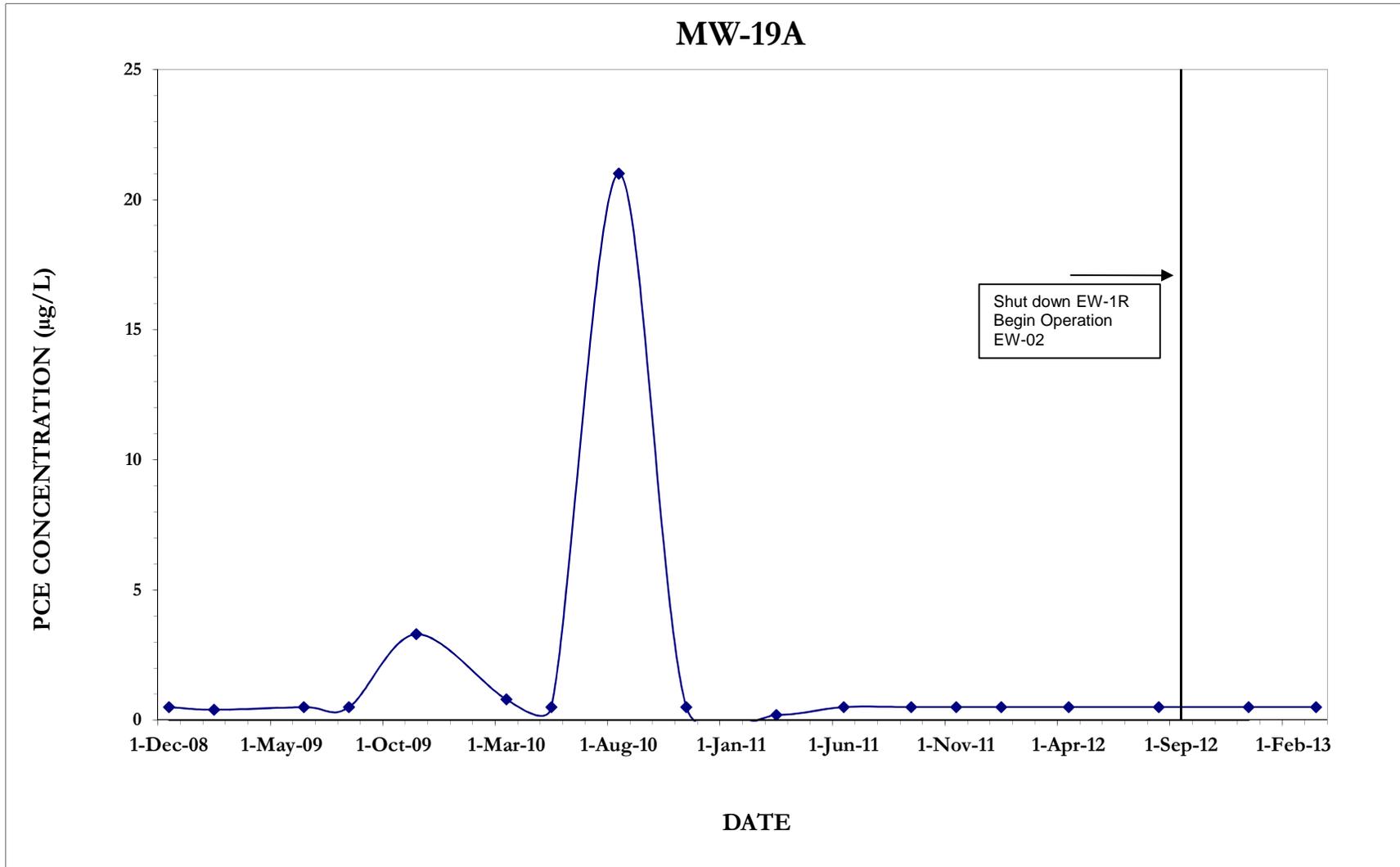


FIGURE G-4(ab)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

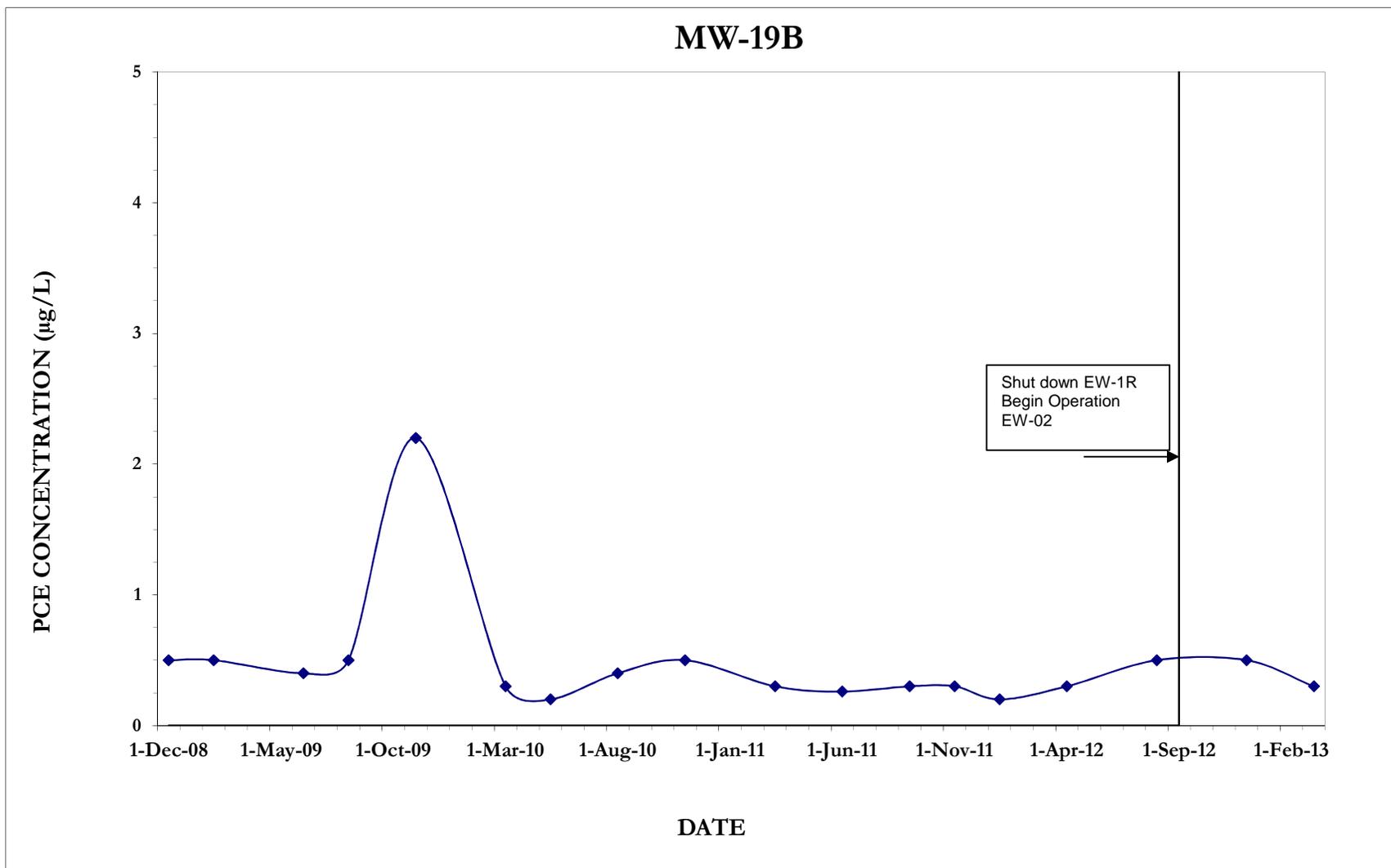


FIGURE G-4(ac)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

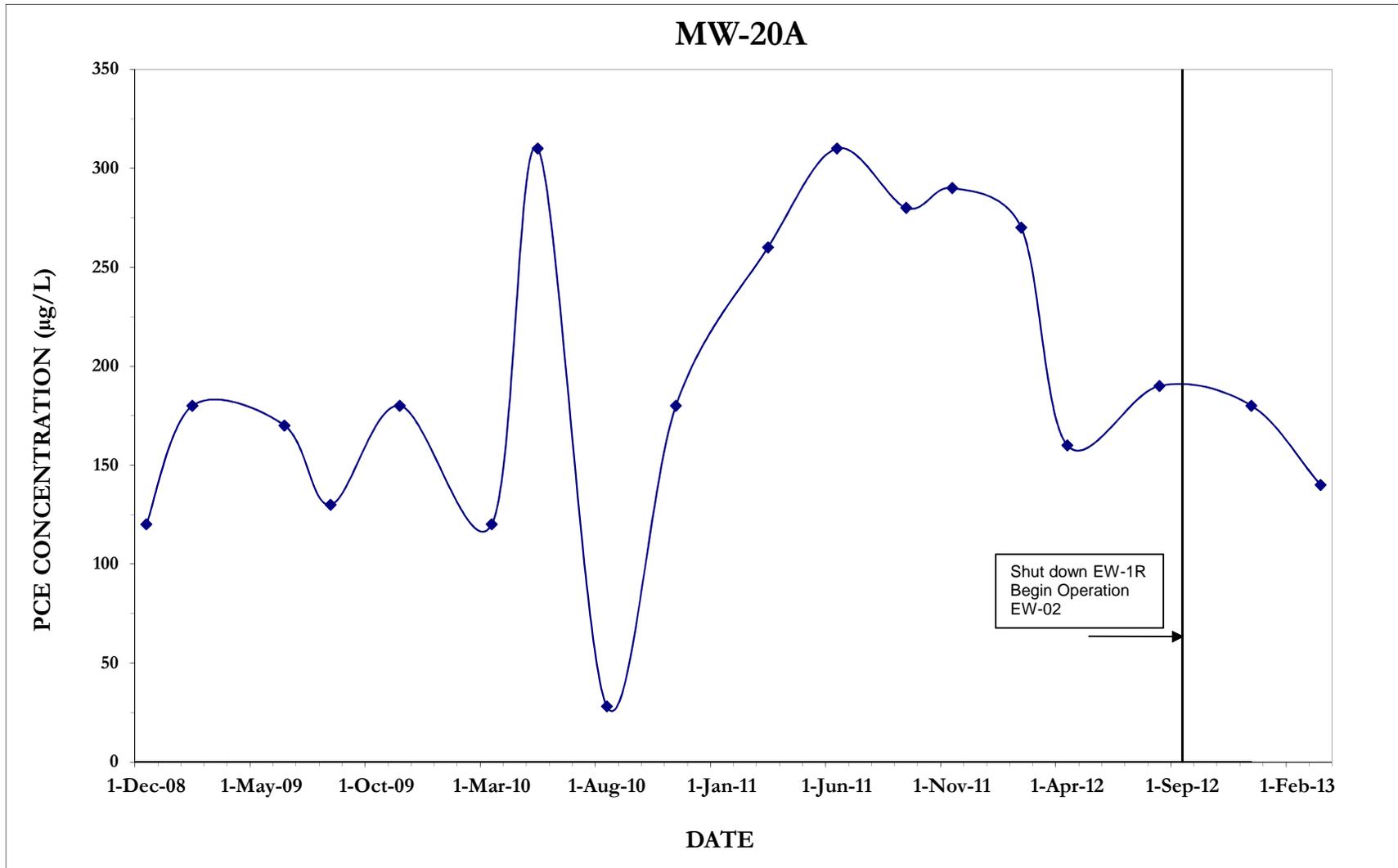


FIGURE G-4(ad)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

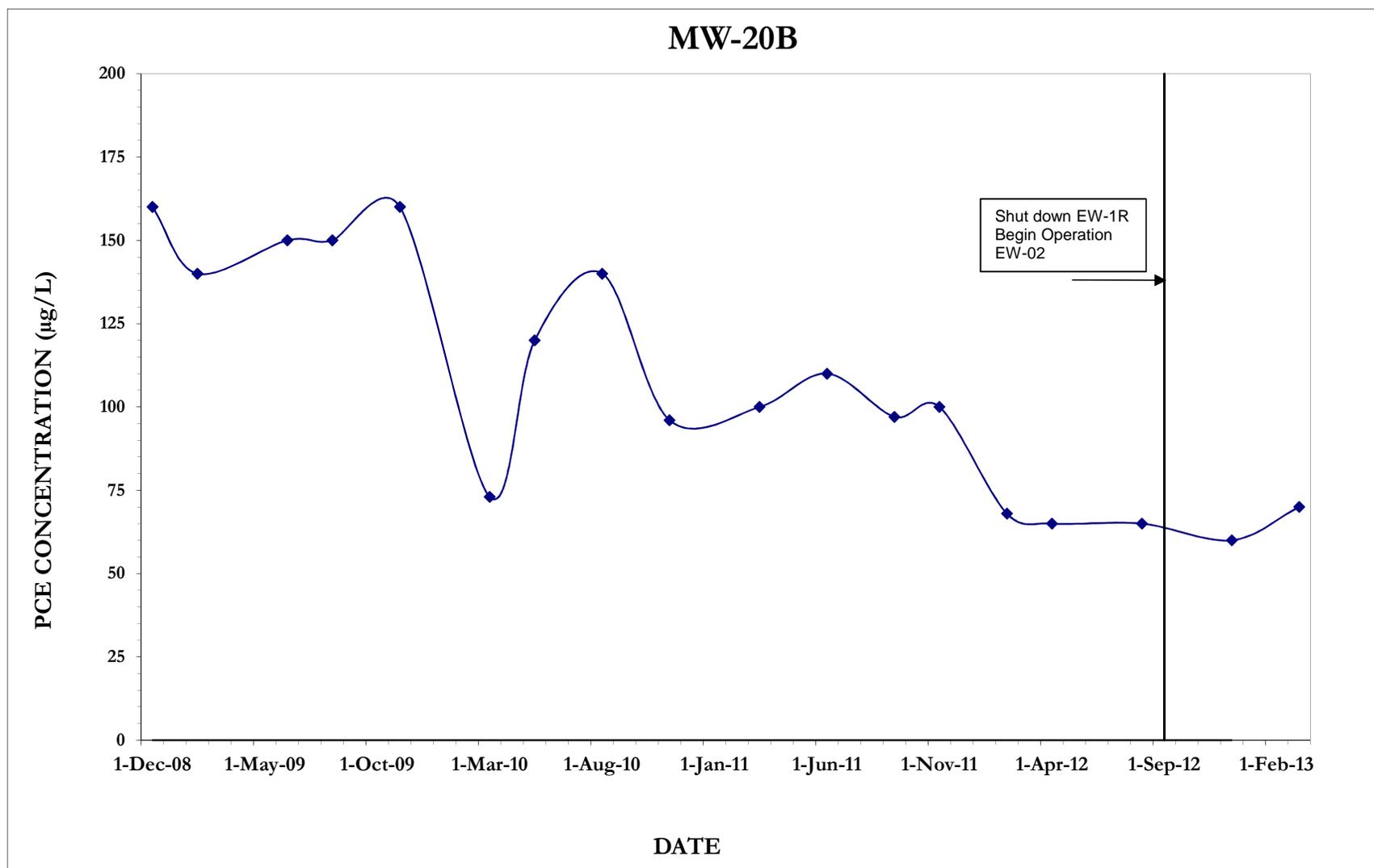


FIGURE G-4(ae)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

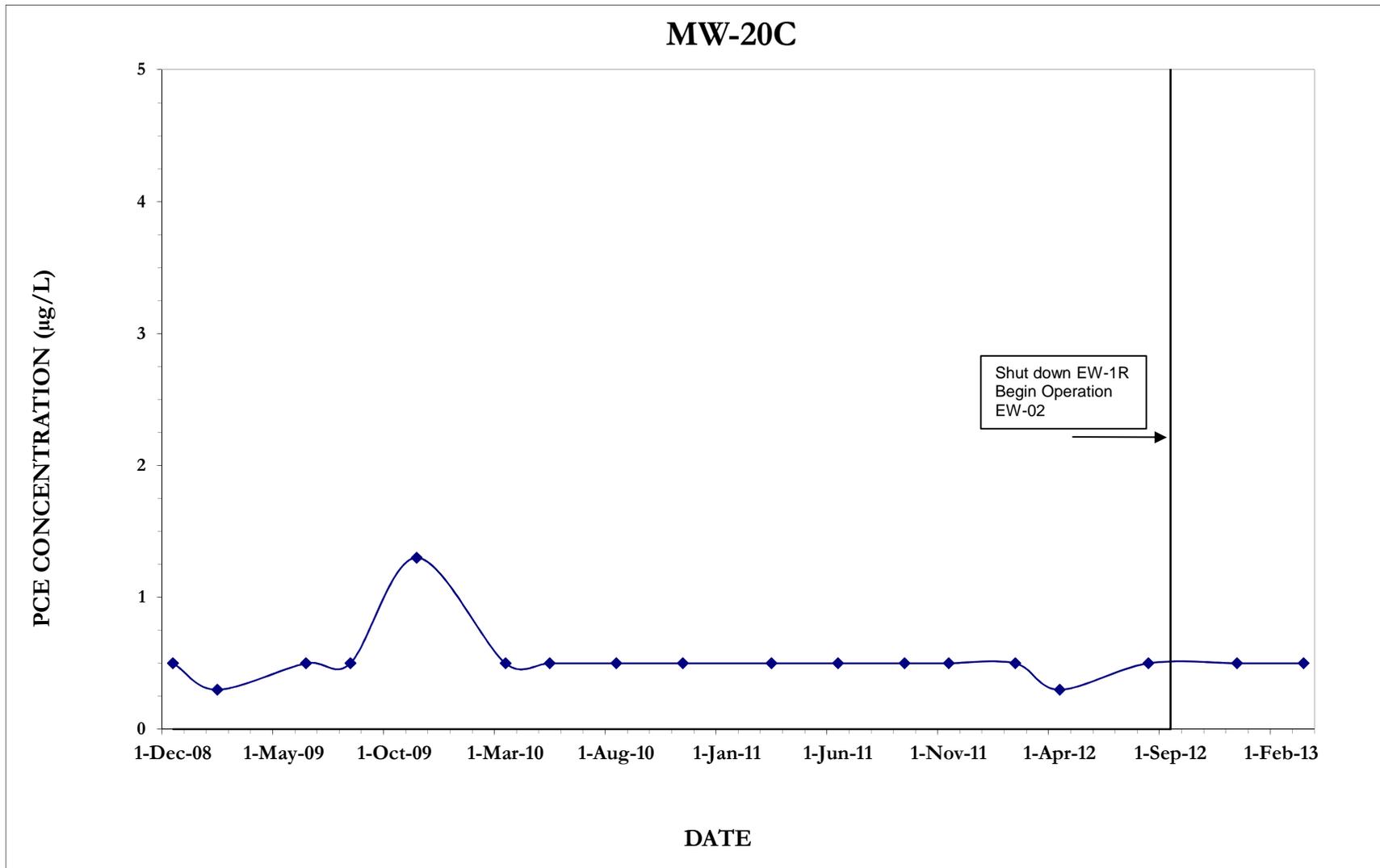


FIGURE G-4(af)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

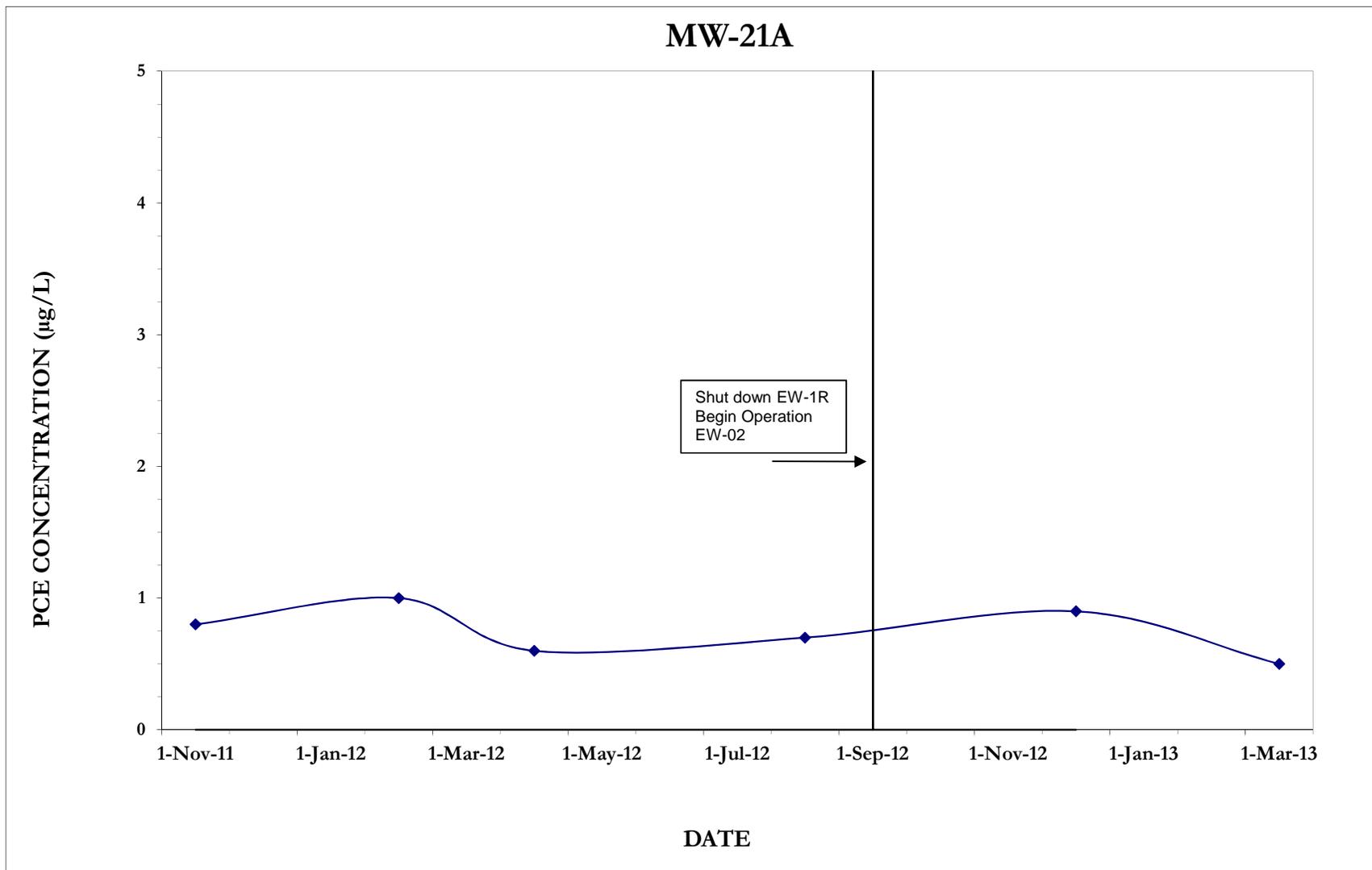


FIGURE G-4(ag)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

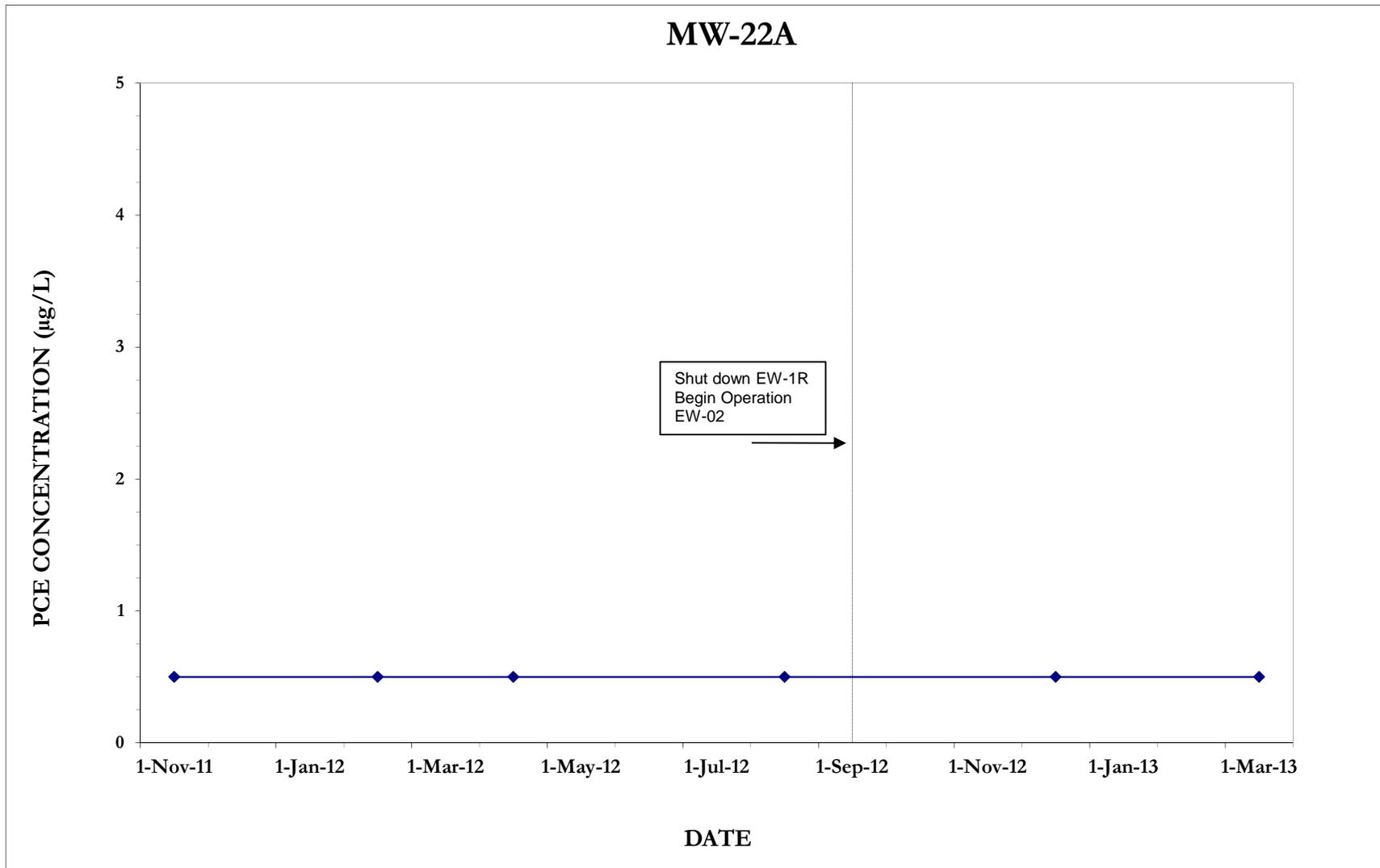


FIGURE G-4(ah)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

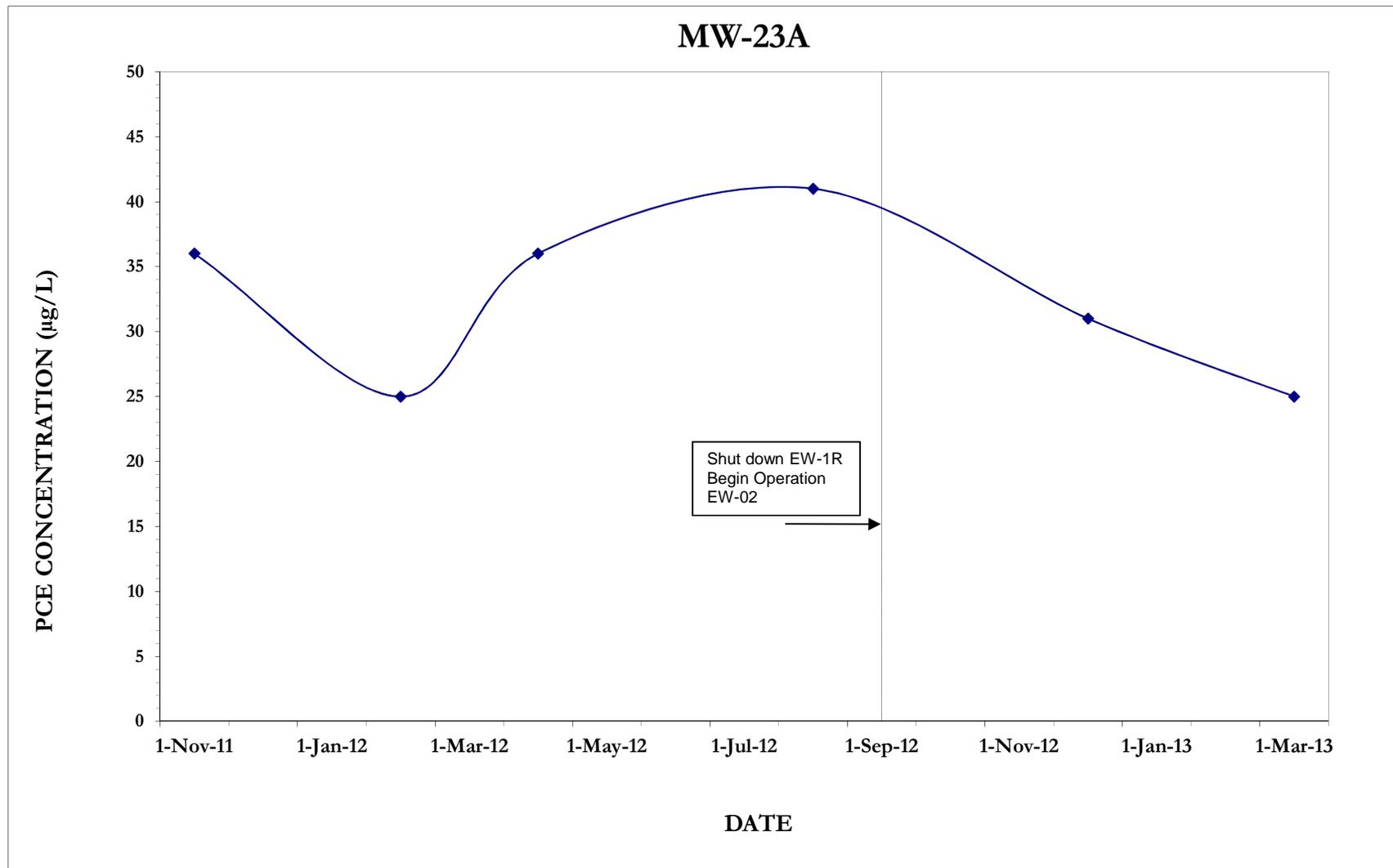


FIGURE G-4(ai)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

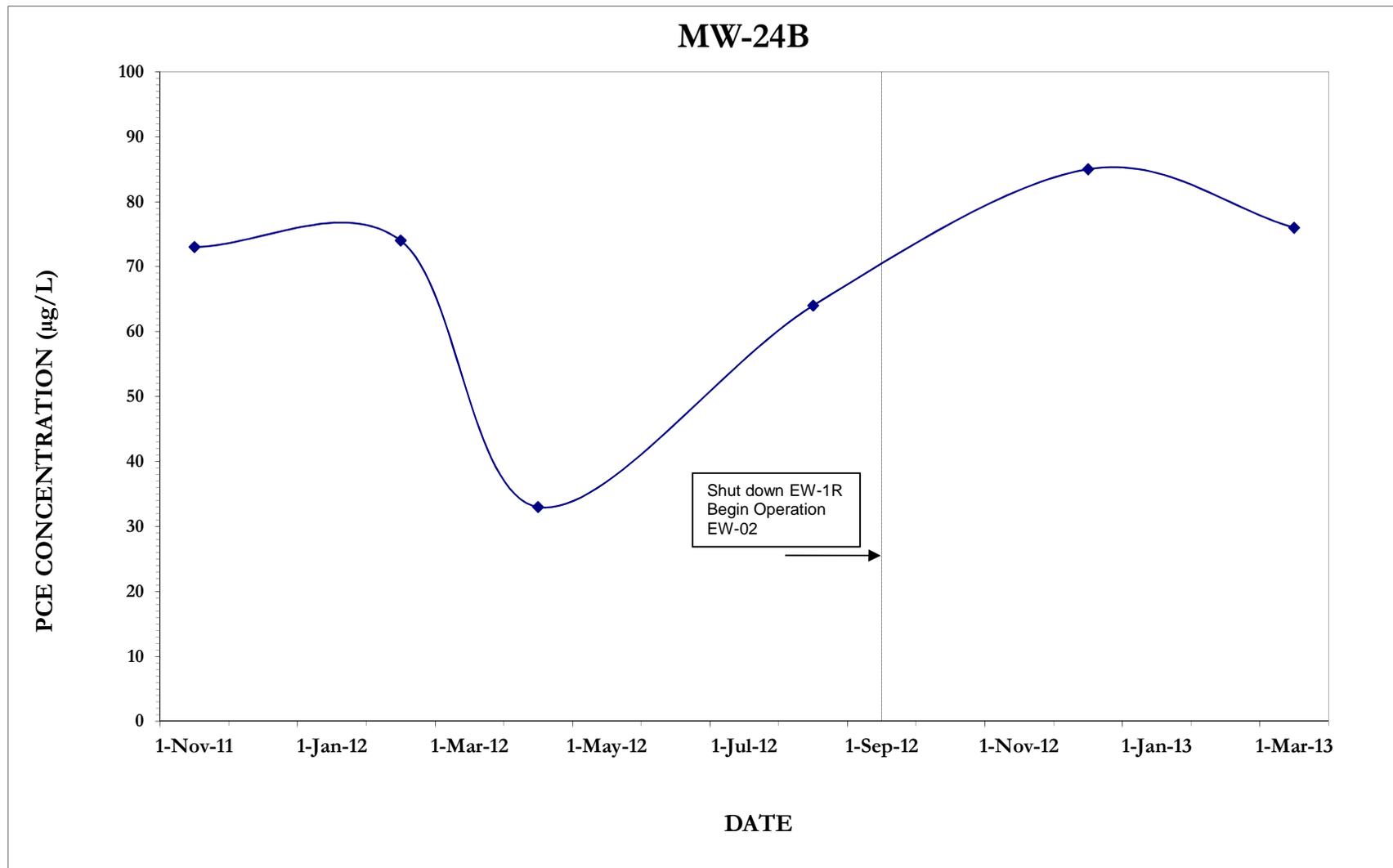


FIGURE G-4(a)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

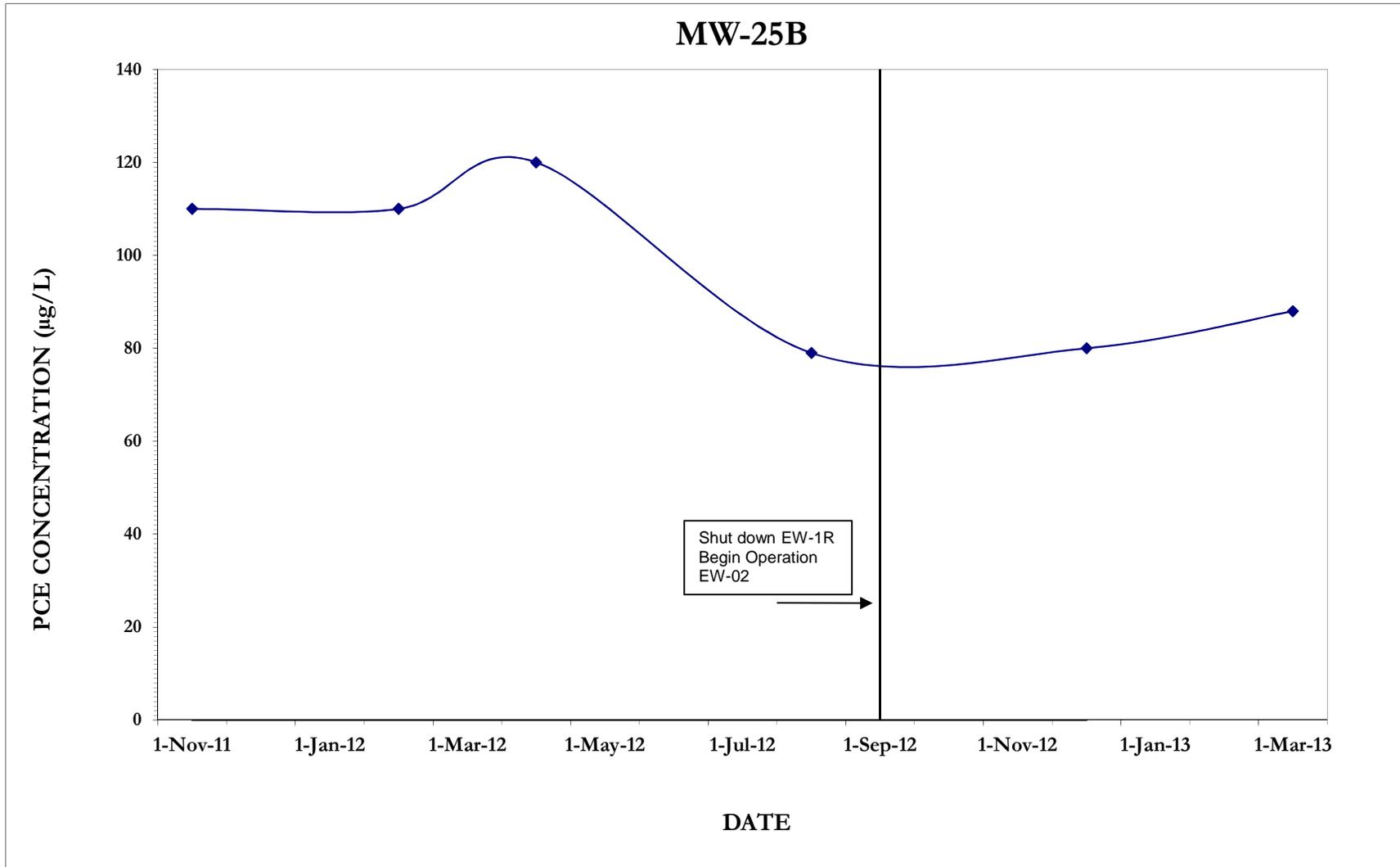


FIGURE G-4(ak)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

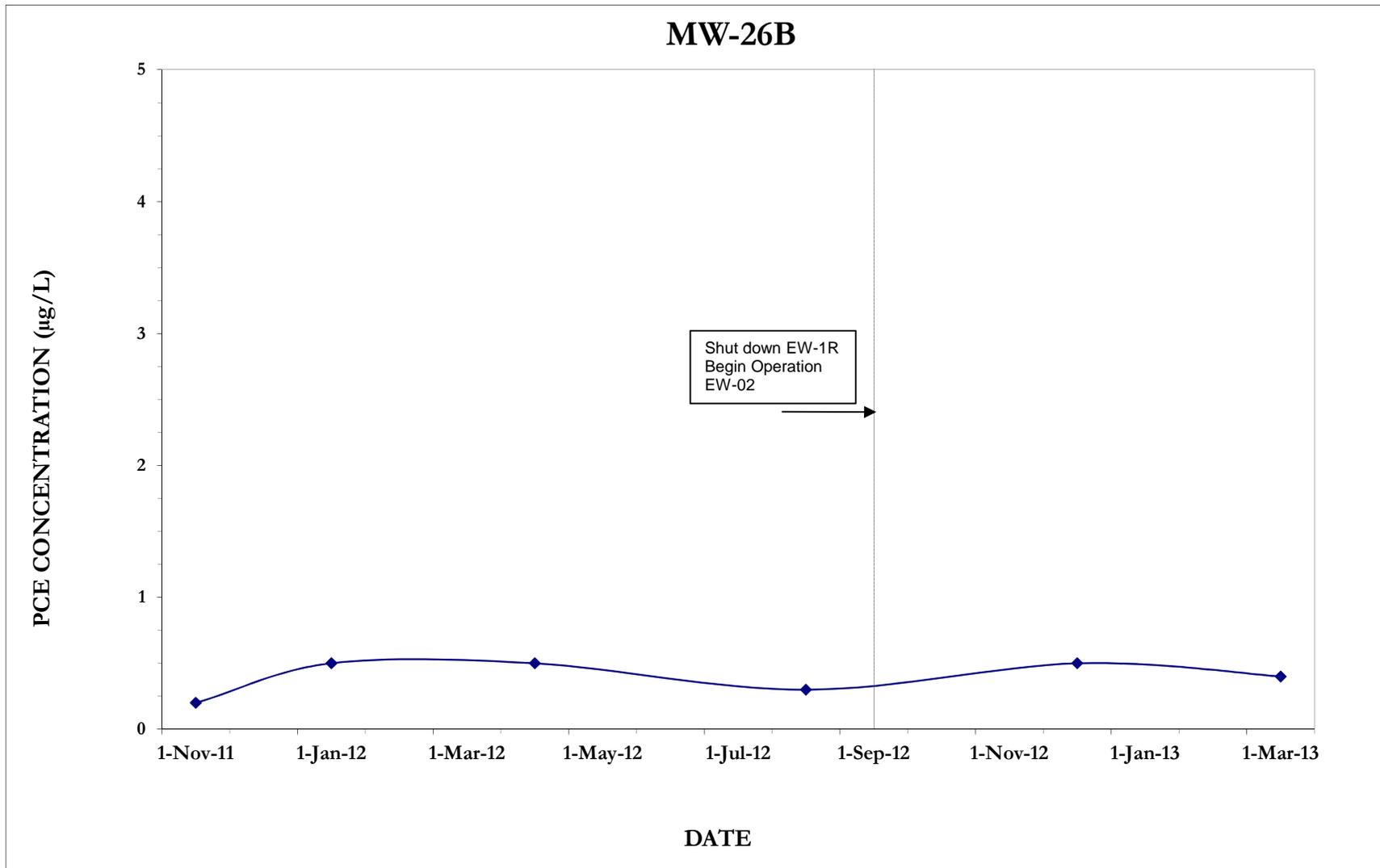


FIGURE G-4(a)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

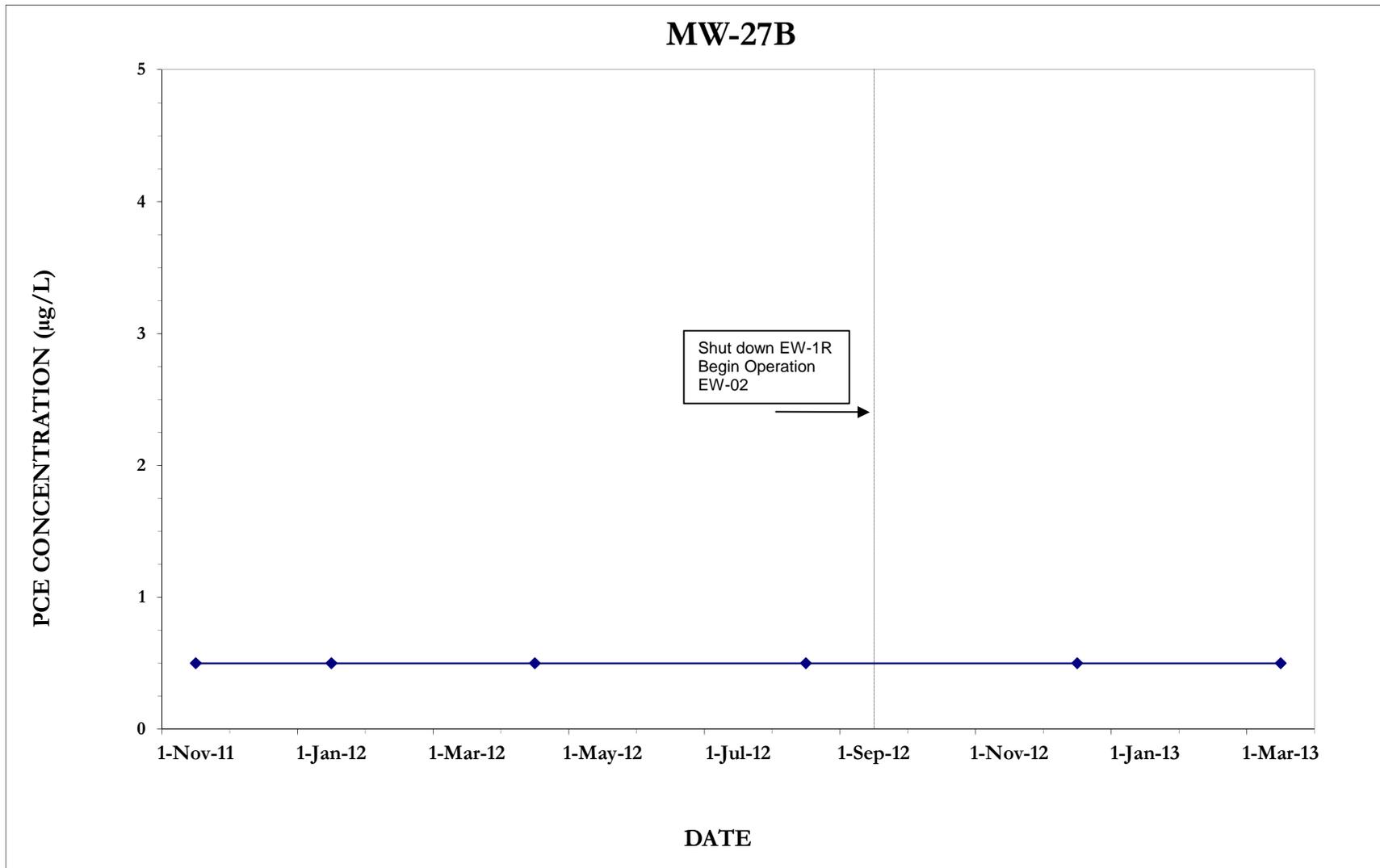


FIGURE G-4(am)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

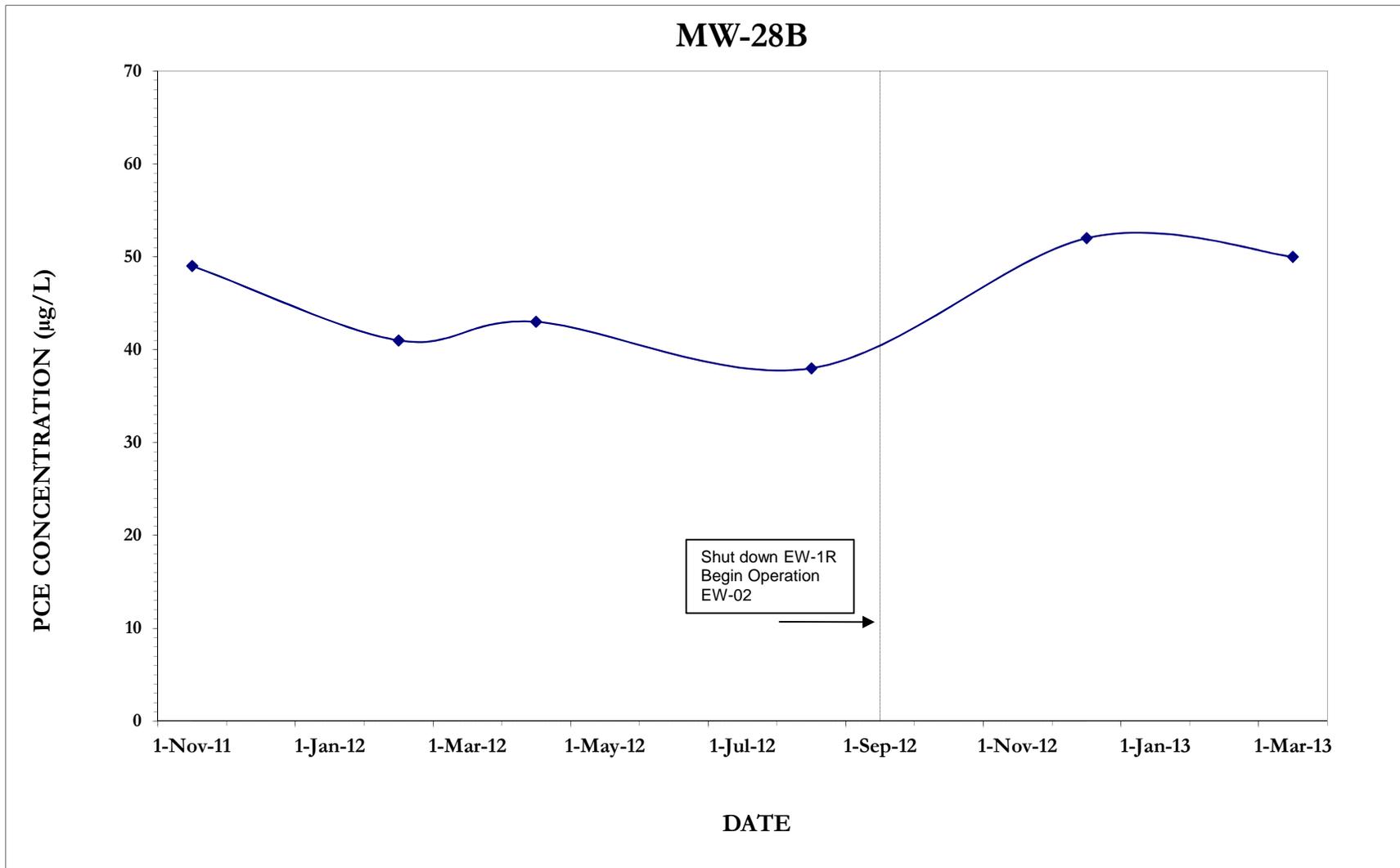


FIGURE G-4(an)

HISTORICAL PCE CONCENTRATIONS IN  
GROUNDWATER MONITORING WELLS  
MODESTO SUPERFUND SITE  
MODESTO, CALIFORNIA

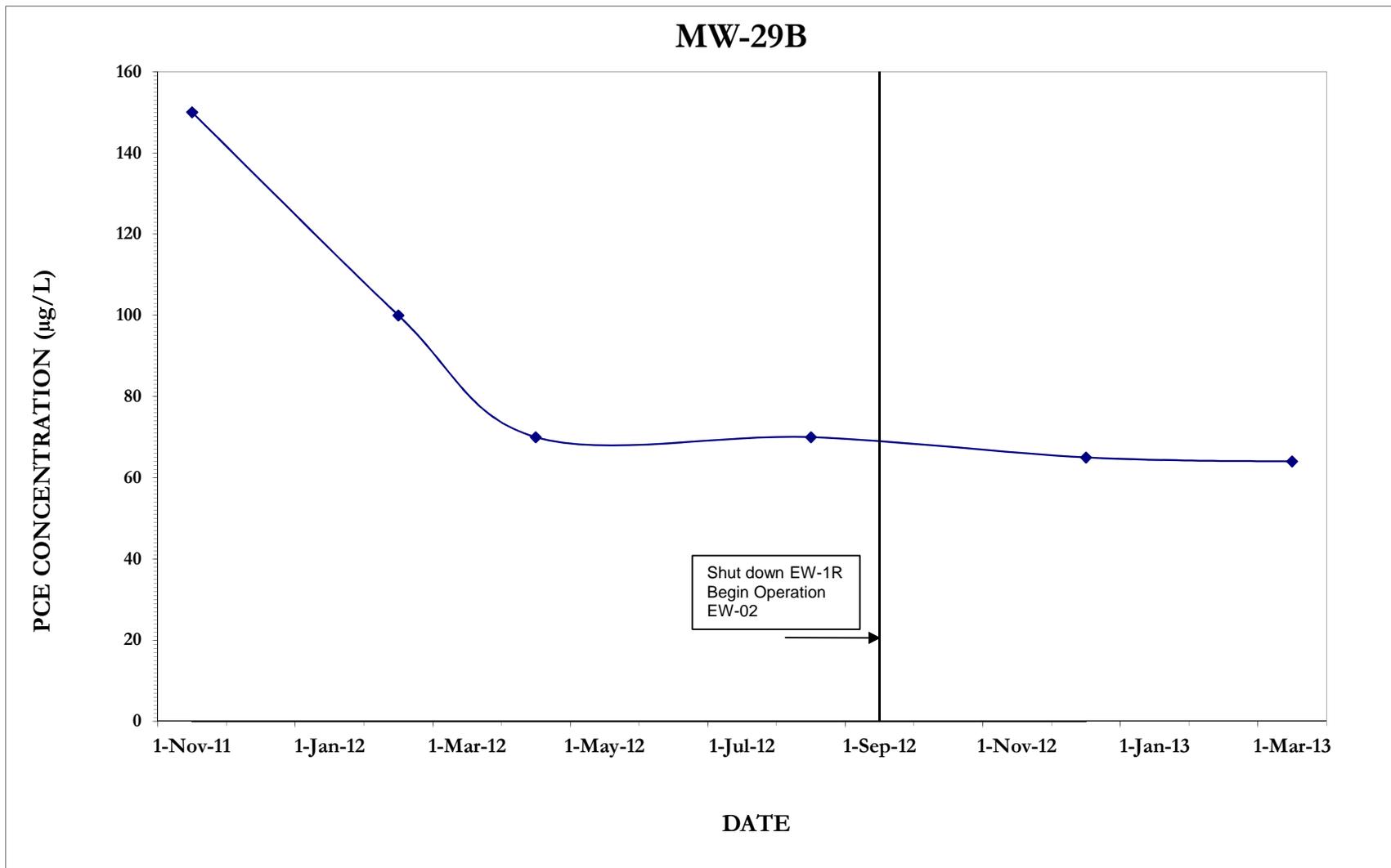


TABLE G-5 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEMMODESTO SUPERFUND SITEMODESTO, CALIFORNIA(Page 1 of 3)

Sample Date	Volume of Water Treated Since Previous sample (gallons)	Total Volume of Water Treated (gallons)	Influent PCE concentration (µg/L)	Mass of PCE Removed Since Previous sample (lbs)	Cumulative Mass of PCE Removed (lbs)
28-Aug-01	701,200	701,200	330	1.93	1.93
21-Sep-01	673,100	1,374,300	770	4.33	6.26
17-Oct-01	1,842,900	3,217,200	890	13.69	19.95
13-Nov-01	1,208,800	4,426,000	780	7.87	27.81
13-Dec-01	2,126,600	6,552,600	710	12.60	40.42
16-Jan-02	1,992,550	8,545,150	750	12.47	52.89
19-Feb-02	2,435,550	10,980,700	820	16.67	69.56
21-Mar-02	2,144,100	13,124,800	321	5.74	75.30
17-Apr-02	1,908,400	15,033,200	690	10.99	86.29
23-May-02	2,543,200	17,576,400	900	19.10	105.39
20-Jun-02	1,699,600	19,276,000	730	10.35	115.75
18-Jul-02	1,989,500	21,265,500	620	10.29	126.04
19-Aug-02	2,289,500	23,555,000	610	11.66	137.70
26-Sep-02	2,659,200	26,214,200	620	13.76	151.46
24-Oct-02	1,769,600	27,983,800	580	8.57	160.02
18-Nov-02	1,764,700	29,748,500	550	8.10	168.12
18-Dec-02	2,086,100	31,834,600	310	5.40	173.52
16-Jan-03	1,503,500	33,338,100	380	4.77	178.29
20-Feb-03	2,377,800	35,715,900	490	9.72	188.01
20-Mar-03	1,877,700	37,593,600	490	7.68	195.69
30-Apr-03	2,701,900	40,295,500	410	9.25	204.94
29-May-03	1,794,800	42,090,300	270	4.04	208.98
26-Jun-03	1,679,200	43,769,500	490	6.87	215.85
24-Jul-03	1,470,800	45,240,300	510	6.26	222.11
28-Aug-03	1,402,800	46,643,100	540	6.32	228.43
18-Sep-03	902,600	47,545,700	550	4.14	232.58
23-Oct-03	1,420,900	48,966,600	450	5.34	237.91
19-Nov-03	962,500	49,929,100	390	3.13	241.05
18-Dec-03	870,100	50,799,200	420	3.05	244.10
22-Jan-04	1,210,000	52,009,200	350	3.53	247.63
26-Feb-04	1,191,800	53,201,000	290	2.88	250.51
8-Apr-04	431,700	53,632,700	230	0.83	251.34
22-Apr-04	1,369,164	55,001,864	310	3.54	254.89
20-May-04	1,844,450	56,846,313	350	5.39	260.27
23-Jun-04	1,502,110	58,348,423	250	3.13	263.41
29-Jul-04	2,355,600	60,704,023	350	6.88	270.29
26-Aug-04	1,767,150	62,471,173	350	5.16	275.45
4-Oct-04	1,931,540	64,402,713	330	5.32	280.77
21-Oct-04	1,168,970	65,571,683	290	2.83	283.60
24-Aug-06	0	0	620.00	0.00	285.42
28-Sep-06	1,460,060	67,784,613	530.00	6.46	291.88
24-Oct-06	2,861,570	70,646,183	580	13.85	305.73
15-Nov-06	2,370,250	73,016,433	500	9.89	315.62
27-Dec-06	2,139,250	75,155,683	450	8.03	323.66
29-Jan-07	2,365,450	77,521,133	420.0	8.29	331.95
28-Feb-07	1,240,000	78,761,133	360.0	3.73	335.67
26-Mar-07	1,847,900	80,609,033	320.0	4.94	340.61

TABLE G-5 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEMMODESTO SUPERFUND SITEMODESTO, CALIFORNIA(Page 2 of 3)

Sample Date	Volume of Water Treated Since Previous sample (gallons)	Total Volume of Water Treated (gallons)	Influent PCE concentration (µg/L)	Mass of PCE Removed Since Previous sample (lbs)	Cumulative Mass of PCE Removed (lbs)
16-Apr-07	1,521,900	82,130,933	320.0	4.06	344.67
2-Jul-07	0	82,130,933	76.0	0.00	344.67
23-Jul-07	1,281,000	83,411,933	290.0	3.10	347.77
23-Aug-07	2,451,700	85,863,633	290.0	5.93	353.71
18-Sep-07	1,554,100	87,417,733	360.0	4.67	358.38
29-Oct-07	2,562,300	89,980,033	280.0	5.99	364.36
28-Nov-07	1,285,700	91,265,733	310.0	3.33	367.69
20-Dec-07	1,538,400	92,804,133	260.0	3.34	371.03
17-Jan-08	2,473,700	95,277,833	240.0	4.95	375.98
25-Feb-08	2,249,000	97,526,833	250.0	4.69	375.72
31-Mar-08	2,318,700	99,845,533	280.0	5.42	381.14
25-Apr-08	1,569,600	101,415,133	210.0	2.75	383.89
22-May-08	1,761,600	103,176,733	280.0	4.12	388.01
24-Jun-08	2,024,600	105,201,333	240.0	4.06	392.06
23-Jul-08	2,905,200	108,106,533	240.0	5.82	397.88
28-Aug-08	1,045,500	109,152,033	220.0	1.92	399.80
25-Sep-08	1,148,600	110,300,633	150.0	1.44	401.24
30-Oct-08	2,067,400	112,368,033	250.0	4.31	405.55
25-Nov-08	1,437,600	113,805,633	210.0	2.52	408.07
30-Dec-08	2,350,906	116,156,539	190.0	3.73	411.80
30-Jan-09	2,004,294	118,160,833	190.0	3.18	414.98
24-Feb-09	1,677,300	119,838,133	180.0	2.52	417.50
30-Mar-09	2,266,700	122,104,833	170.0	3.22	420.72
23-Apr-09	1,565,200	123,670,033	160.0	2.09	422.81
26-May-09	2,045,500	125,715,533	180.0	3.07	425.88
29-Jun-09	1,844,200	127,559,733	150.0	2.31	428.19
29-Jul-09	1,952,600	129,512,333	190.0	3.10	431.28
10-Aug-09	793,600	130,305,933	250.0	1.66	432.94
22-Sep-09	2,874,700	133,180,633	170.0	4.08	437.02
26-Oct-09	1,407,400	134,588,033	250.0	2.94	439.95
23-Nov-09	1,712,600	136,300,633	160.0	2.29	442.24
16-Dec-09	1,351,400	137,652,033	180.0	2.03	444.27
27-Jan-10	2,585,600	140,237,633	160.0	3.45	447.72
25-Feb-10	1,771,800	142,009,433	160.0	2.37	450.09
11-Mar-10	882,600	142,892,033	180.0	1.33	451.42
7-Apr-10	1,743,300	144,635,333	180.0	2.62	454.03
12-May-10	2,337,600	146,972,933	160.0	3.12	457.16
17-Jun-10	1,527,400	148,500,333	130.0	1.66	458.81
15-Jul-10	1,846,600	150,346,933	140.0	2.16	460.97
12-Aug-10	1,846,600	152,193,533	150.0	2.31	463.28
9-Sep-10	1,832,100	154,025,633	210.0	3.21	466.49
14-Oct-10	2,295,600	156,321,233	140.0	2.68	469.18
18-Nov-10	2,268,500	158,589,733	130.0	2.46	471.64
9-Dec-10	1,365,000	159,954,733	88.0	1.00	472.64
13-Jan-11	2,271,000	162,225,733	110.0	2.08	474.72
10-Feb-11	1,850,600	164,076,333	120.0	1.85	476.58
9-Mar-11	1,747,400	165,823,733	120.0	1.75	478.33
14-Apr-11	2,373,000	168,196,733	120.0	2.38	480.70
10-May-11	1,730,400	169,927,133	140.0	2.02	482.73
2-Jun-11	1,516,100	171,443,233	120.0	1.52	484.25
14-Jul-11	2,753,400	174,196,633	140.0	3.22	487.46
11-Aug-11	1,833,700	176,030,333	160.0	2.45	489.91
13-Sep-11	1,966,400	177,996,733	130.0	2.13	492.04
13-Oct-11	1,960,000	179,956,733	140.0	2.29	494.33

TABLE G-5 PCE MASS REMOVED BY GROUNDWATER TREATMENT SYSTEMMODESTO SUPERFUND SITEMODESTO, CALIFORNIA(Page 3 of 3)

Sample Date	Volume of Water Treated Since Previous sample (gallons)	Total Volume of Water Treated (gallons)	Influent PCE concentration (µg/L)	Mass of PCE Removed Since Previous sample (lbs)	Cumulative Mass of PCE Removed (lbs)
9-Nov-11	1,761,100	181,717,833	130.0	1.91	496.25
8-Dec-11	1,745,200	183,463,033	150.0	2.18	498.43
12-Jan-12	2,269,900	185,732,933	140.0	2.65	501.08
9-Feb-12	1,811,900	187,544,833	150.0	2.27	503.35
8-Mar-12	1,794,700	189,339,533	120.0	1.80	505.15
5-Apr-12	1,448,800	190,788,333	130.0	1.57	506.72
8-May-12	2,039,800	192,828,133	130.0	2.21	508.93
7-Jun-12	1,932,900	194,761,033	150.0	2.42	511.35
18-Jul-12	592,700	195,353,733	740.0	3.66	515.01
8-Aug-12	1,363,800	196,717,533	97.0	1.10	516.12
6-Sep-12	1,837,500	198,555,033	110.0	1.69	517.80
11-Oct-12	1,907,200	200,462,233	840.0	13.37	531.17
8-Nov-12	1,367,800	201,830,033	860.0	9.82	540.99
6-Dec-12	1,611,200	203,441,233	690.0	9.28	550.27
16-Jan-13	2,374,000	205,815,233	580.0	11.49	561.76
6-Feb-13	1,395,400	207,210,633	520.0	6.06	567.82
7-Mar-13	1,585,100	208,795,733	560.0	7.41	575.23

**Notes:**

µg/L - micrograms per liter

lbs - pounds

PCE - Tetrachloroethene

**TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEMMODESTO SUPERFUND  
SITEMODESTO, CALIFORNIA(Page 1 of 6)**

Date Sampled	Cumulative Hours of Operation	Cumulative Days of Operation	Mass Extraction Rate (lbs/day)	Cumulative Mass Extracted (a) (lbs)
6/11/2001	5.8	0.2	53.0	12.70
8/9/2001	590.8	24.6	7.0	744.00
8/20/2001	854.8	35.6	6.4	817.63
8/30/2001	1,094.8	45.6	6.2	880.30
9/7/2001	1,286.8	53.6	3.9	920.57
9/12/2001	1,406.8	58.6	4.9	942.62
10/29/2001	1,920.0	80.0	7.9	1,079.84
11/13/2001	2,272.0	94.7	8.1	1,197.56
12/13/2001	2,787.8	116.2	6.0	1,348.99
1/16/2002	3,469.3	144.6	4.6	1,498.66
2/19/2002	4,283.8	178.5	6.1	1,679.54
3/21/2002	5,003.8	208.5	4.6	1,839.44
4/17/2002	5,603.8	233.5	4.0	1,946.39
5/23/2002	6,467.8	269.5	2.7	2,066.49
6/20/2002	7,039.0	293.3	3.7	2,142.61
7/18/2002	7,526.0	313.6	4.3	2,223.90
8/19/2002	8,294.0	345.6	4.7	2,367.84
9/19/2002	9,037.0	376.5	2.0	2,471.06
10/24/2002	9,839.6	410.0	2.3	2,542.57
11/18/2002	10,441.0	435.0	2.0	2,596.51
12/18/2002	11,167.0	465.3	1.6	2,650.80
1/16/2003	11,519.0	480.0	1.8	2,675.27
3/27/2003	12,578.0	524.1	1.6	2,748.88
4/30/2003	13,390.1	557.9	1.8	2,806.77
5/29/2003	14,037.2	584.9	1.7	2,854.55
6/26/2003	14,067.7	586.2	1.7	2,856.70
7/24/2003	14,737.8	614.1	1.5	2,901.48
8/28/2003	15,502.0	645.9	2.0	2,958.25
9/18/2003	15,980.8	665.9	1.9	2,997.31
10/23/2003	16,797.6	699.9	1.3	3,050.65

**TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEMMODESTO SUPERFUND  
SITEMODESTO, CALIFORNIA(Page 2 of 6)**

Date Sampled	Cumulative Hours of Operation	Cumulative Days of Operation	Mass Extraction Rate (lbs/day)	Cumulative Mass Extracted (a) (lbs)
11/19/2003	17,448.4	727.0	1.3	3,085.25
12/18/2003	18,092.9	753.9	1.4	3,121.56
1/22/2004	18,688.3	778.7	1.1	3,153.22
2/26/2004	19,529.0	813.7	0.7	3,185.64
3/29/2004	20,245.3	843.6	1.4	3,217.84
4/22/2004	20,872.0	869.7	0.5	3,242.93
5/20/2004	21,408.8	892.0	0.5	3,253.44
6/23/2004	22,174.7	923.9	0.6	3,269.99
7/29/2004	22,976.8	957.4	0.6	3,289.24
8/26/2004	23,644.1	985.2	0.5	3,303.77
9/30/2004	24,481.0	1020.0	0.4	3,319.59
10/21/2004	24,988.4	1041.2	0.5	3,329.59
11/18/2004	25,653.5	1068.9	0.3	3,341.19
12/16/2004	26,349.7	1097.9	0.3	3,350.62
1/19/2005	27,140.5	1130.9	0.2	3,359.30
2/24/2005	28,011.5	1167.1	0.2	3,366.49
3/22/2005	28,628.3	1192.8	0.2	3,371.23
4/26/2005	29,759.6	1240.0	0.2	3,379.36
5/25/2005	30,455.6	1269.0	0.07	3,382.64
6/22/2005	31,175.6	1299.0	0.13	3,385.63
7/20/2005	31,847.6	1327.0	0.13	3,389.39
8/24/2005	32,663.6	1361.0	0.07	3,392.81
9/21/2005	33,335.6	1389.0	0.09	3,394.98
10/18/2005	33,672.0	1403.0	0.13	3,396.49
11/16/2005	33,985.0	1416.0	0.08	3,397.84
1/6/2006	34,992.1	1458.0	0.06	3,399.62
1/31/2006	35,760.1	1490.0	0.06	3,401.52
2/22/2006	36,288.1	1512.0	0.04	3,402.03

**TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEMMODESTO SUPERFUND  
SITEMODESTO, CALIFORNIA(Page 3 of 6)**

Date Sampled	Cumulative Hours of Operation	Cumulative Days of Operation	Mass Extraction Rate (lbs/day)	Cumulative Mass Extracted (a) (lbs)
3/29/2006	37,128.1	1547.0	0.01	3,402.92
4/20/2006	37,703.0	1571.0	0.04	3,403.50
5/25/2006	38,543.6	1606.0	0.02	3,404.62
6/29/2006	39,260.2	1635.8	0.05	3,405.63
7/28/2006	39,954.0	1664.8	0.03	3,406.78
8/31/2006	40,099.3	1670.8	0.06	3,407.06
9/28/2006	40,602.1	1691.8	0.03	3,407.94
10/30/2006	41,216.9	1717.4	0.02	3,408.57
11/27/2006	41,986.1	1749.4	0.04	3,409.58
12/1/2006	41,986.1	1749.4	0.00	3,409.58
1/1/2007	41,986.1	1749.4	0.00	3,409.58
2/1/2007	41,986.1	1749.4	0.00	3,409.58
3/1/2007	41,986.1	1749.4	0.00	3,409.58
4/25/2007	41,998.1	1749.9	0.05	3,409.60
6/8/2007	43,030.1	1792.9	0.003	3,410.65
6/26/2007	43,460.5	1810.9	0.00	3,410.68
7/18/2007	43,988.5	1832.9	0.00	3,410.68
8/24/2007	44,540.5	1855.9	0.00	3,410.68
9/24/2007	45,308.5	1887.9	0.00	3,410.69
10/29/2007	46,148.5	1922.9	0.001	3,410.71
11/28/2007	46,868.5	1952.9	0.000	3,410.73
12/20/2007	47,396.5	1974.9	0.001	3,410.75
1/17/2008	48,068.5	2002.9	0.000	3,410.76
2/25/2008	49,004.5	2041.9	0.000	3,410.76
3/31/2008	49,844.5	2076.9	0.001	3,410.77
4/25/2008	50,444.5	2101.9	0.001	3,410.80
5/22/2008	51,092.5	2128.9	0.001	3,410.82
6/24/2008	51,884.5	2161.9	0.012	3,411.03
7/16/2008	52,412.5	2183.9	0.047	3,411.67

**TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEMMODESTO SUPERFUND  
SITEMODESTO, CALIFORNIA(Page 4 of 6)**

Date Sampled	Cumulative Hours of Operation	Cumulative Days of Operation	Mass Extraction Rate (lbs/day)	Cumulative Mass Extracted (a) (lbs)
8/20/2008	53,252.5	2218.9	0.032	3,413.06
9/25/2008	54,116.5	2254.9	0.019	3,413.98
11/18/2008	55,412.5	2308.9	0.038	3,415.50
12/10/2008	55,940.5	2330.9	0.012	3,416.04
12/30/2008	56,420.5	2350.9	0.001	3,416.16
1/30/2009	57,164.5	2381.9	0.000	3,416.18
2/27/2009	57,836.5	2409.9	0.050	3,416.89
3/10/2009	58,100.5	2420.9	0.057	3,417.48
4/23/2009	59,156.5	2464.9	0.088	3,420.68
5/28/2009	59,996.5	2499.9	0.067	3,423.39
6/29/2009	60,764.5	2531.9	0.122	3,426.40
7/29/2009	61,484.5	2561.9	0.122	3,430.06
8/10/2009	61,772.5	2573.9	0.184	3,431.90
9/22/2009	62,804.5	2616.9	0.097	3,437.94
10/26/2009	63,620.5	2650.9	0.071	3,440.79
11/23/2009	64,292.5	2678.9	0.063	3,442.66
12/16/2009	64,844.5	2701.9	0.051	3,443.97
1/27/2010	65,852.5	2743.9	0.077	3,446.66
2/25/2010	66,548.5	2772.9	0.060	3,448.65
3/11/2010	66,884.5	2786.9	0.001	3,449.08
4/7/2010	67,532.5	2813.9	0.012	3,449.27
5/12/2010	68,372.5	2848.9	0.012	3,449.70
6/17/2010	69,236.5	2884.9	0.024	3,450.35
7/15/2010	69,908.5	2912.9	0.076	3,451.76
8/12/2010	70,580.5	2940.9	0.059	3,453.65
9/9/2010	71,252.5	2968.9	0.063	3,455.36
10/19/2010	72,212.5	3008.9	0.024	3,457.11
11/18/2010	72,932.5	3038.9	0.004	3,457.54
12/9/2010	73,436.5	3059.9	0.007	3,457.66

**TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEM MODESTO SUPERFUND  
SITE MODESTO, CALIFORNIA (Page 5 of 6)**

Date Sampled	Cumulative Hours of Operation	Cumulative Days of Operation	Mass Extraction Rate (lbs/day)	Cumulative Mass Extracted (a) (lbs)
1/13/2011	74,276.5	3094.9	0.008	3,457.93
2/10/2011	74,948.5	3122.9	0.010	3,458.17
3/9/2011	75,596.5	3149.9	0.016	3,458.51
4/14/2011	76,460.5	3185.9	0.0003	3,458.79
5/10/2011	77,084.5	3211.9	0.0002	3,458.80
6/2/2011	77,636.5	3234.9	0.009	3,458.90
7/14/2011	78,644.5	3276.9	0.017	3,459.44
8/11/2011	79,316.5	3304.9	0.016	3,459.90
9/13/2011	80,108.5	3337.9	0.015	3,460.41
10/13/2011	80,828.5	3367.9	0.014	3,460.84
11/9/2011	81,476.5	3394.9	0.0003	3,461.04
12/8/2011	82,128.7	3422.0	0.003	3,461.07
1/12/2012	82,968.7	3457.0	0.001	3,461.14
2/9/2012	83,640.7	3485.0	0.003	3,461.20
3/8/2012	84,312.7	3513.0	0.004	3,461.29
4/5/2012	84,984.7	3541.0	0.004	3,461.40
5/8/2012	85,776.7	3574.0	0.005	3,461.55
6/7/2012	86,496.7	3604.0	0.001	3,461.63
7/18/2012	87,480.7	3645.0	0.021	3,462.07
8/8/2012	87,984.7	3666.0	0.053	3,462.84
9/6/2012	88,680.7	3695.0	0.073	3,464.67
10/11/2012	89,520.7	3730.0	0.040	3,466.66
11/8/2012	90,192.7	3758.0	0.015	3,467.43
12/6/2012	90,864.7	3786.0	0.013	3,467.82
1/16/2013	91,848.7	3827.0	0.014	3,468.38
2/6/2013	92,352.7	3848.0	0.012	3,468.65
3/7/2013	93,048.7	3877.0	0.016	3,469.06
<b>TOTAL</b>	<b>93,048.7</b>			<b>3,469.06</b>

**Notes:**

(a) Cumulative mass extracted was determined by multiplying the average mass extraction rate times the days of operation.  
lbs - pounds

**TABLE G-6 PCE MASS REMOVED BY SOIL VAPOR EXTRACTION SYSTEMMODESTO SUPERFUND  
SITEMODESTO, CALIFORNIA(Page 6 of 6)**

Date Sampled	Cumulative Hours of Operation	Cumulative Days of Operation	Mass Extraction Rate (lbs/day)	Cumulative Mass Extracted (a) (lbs)
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lbs/day - pounds per day